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Abstracts

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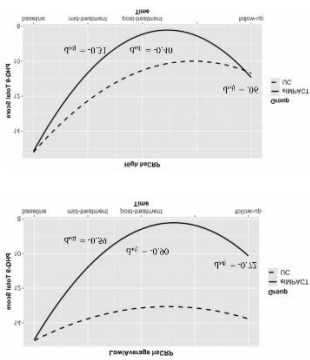are presented first and represent the highest rated posters.*

CITATION POSTERS

1

Abstract 1241

SYSTEMIC INFLAMMATION AS A MODERATOR OF THE EFFECTIVENESS OF MODERNIZED COLLABORATIVE CARE FOR DEPRESSION: EIMPACT TRIAL

Zachary Jones; Matthew Schuiling, M.S.; Wei Wu, PhD; JiHee Yoon, M.S.; Gouri Ambily, M.A.; Jesse Stewart, PhD, Indiana University Indianapolis

A subgroup of people with depression exhibits elevated systemic inflammation, which may moderate treatment effects, leading to poorer responses. To assess inflammation's moderating role in depression treatment, we examined data from the eIMPACT trial (R01HL122245, NCT02458690). In total, 216 primary care patients with depression and elevated cardiovascular disease risk from a safety net healthcare system (M_{age} = 59 years, 78% women, 50% Black, 5% Hispanic, 46% with income <$10,000/year) were randomized to either 12 months of the eIMPACT intervention (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). Plasma high-sensitivity C-reactive protein (hsCRP) was measured in duplicate using ELISA kits (R&D Systems DCRP00) at baseline. hsCRP was dichotomized using the accepted clinical cut point (low/average: <3.0 mg/L; high: $\geq$3.0 mg/L). Depressive symptoms were measured by the Patient Health Questionnaire–9 (PHQ-9; range: 0–27) at baseline, mid-treatment , post-treatment, and follow-up. A mixed-effects model – including linear and quadratic time effects and interaction effects among time, treatment group, and hsCRP – revealed that baseline hsCRP did not significantly moderate the effect of eIMPACT intervention on depressive symptoms over 24 months (i.e., three-way interactions were null: $\beta_{quadratic}$=-0.13, p=0.67; β_{linear}=1.51, p=0.26). These findings suggest that the eIMPACT intervention was equally effective among participants with low/average and high hsCRP. However, differences in intervention effect sizes (Cohen d adjusted for baseline difference, d_{adj}) emerged when stratified by hsCRP. The largest difference was seen at follow-up, with the second largest difference being at post-treatment. These differences appeared to be driven by participants with high hsCRP in the usual care group improving more than participants with low hsCRP in the usual care group (Figure 1). Overall, these findings (a) suggest that modernized collaborative care for depression is similarly effective across levels of systemic inflammation and (b) challenge the hypothesis that elevated inflammation predicts poorer depression treatment response.

Figure 1. Effect of the eIMPACT intervention compared to usual primary care for depression by baseline high-sensitivity C-reactive protein (hsCRP). Outcomes were assessed in baseline-stratified subgroups: high-hsCRP = high-inflammation group (≥3 mg/L) and low-hsCRP = low/average-inflammation group (<3 mg/L). Timepoints: baseline, mid-treatment (6 months), post-treatment (12 months), and follow-up (24 months). UC = usual care; eIMPACT = intervention. hsCRP = high-sensitivity C-reactive protein. N = 216.

2

Abstract 1178

SOCIAL FACTORS AS PREDICTORS OF CHRONIC CONDITIONS IN BLACKFEET AMERICAN INDIAN ADULTS

Reece Kothe , Montana State University; Megan Gordon, Degree in progress ; Betty Henderson-Matthews , M.A., Blackfeet Community College ; Neha John-Henderson, Ph.D., Montana State University

American Indians face persistent health inequities, with disproportionately high
incidence of chronic health conditions. These inequities are linked to historical trauma and loss associated with European colonization. Across other racial and ethnic groups, social factors including social networks, social support, and reported loneliness have been linked to health and disease risk. While the literature on these relationships is relatively limited in American Indian adults living in tribal reservations, accumulating data highlights the role of social factors in shaping health-relevant outcomes. Given the low population density and relative geographic isolation which characterizes
tribal reservations, social factors may be particularly relevant for health. To date, it is unknown which social factors are most closely linked to health and disease risk in these communities. In the current study, in sample of 276 Blackfeet American Indian adults residing in the Blackfeet Nation in Montana, we used a hierarchical linear regression to understand the relevance of social networks, social support and loneliness in predicting the number of chronic health conditions for Blackfeet AI adults. Covarying for age, biological sex, and education level, we found that only reported loneliness was a statistically significant predictor of the number of chronic health conditions reported
(ß=0.15; 95% CI = 0.03 to 0.33 p=.02), with higher levels of loneliness relating to more chronic health conditions in the preceding year. Our findings suggest that loneliness may be a particularly important informant of risk for chronic health conditions in Blackfeet American Indian adults.

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Abstract 1175

DISEASE THREAT, THOUGHT FREQUENCY, AND COVID-19 MEDIA EXPOSURE: A VICIOUS CYCLE?

Talia Morstead, MA; Nancy Sin, PhD; Anita DeLongis, PhD, University of British Columbia

The COVID-19 pandemic media landscape was characterized by an unrelenting stream of information about the disease that varied in tone, factual accuracy, and degree of ascribed certainty. Given the increasing centrality and integration of media technology in daily life, examining how media exposure contributed to individuals' experiences coping with the threat posed by COVID-19 is crucial. In this study, we used longitudinal data collected monthly from June 2020 through January 2021 to examine reciprocal associations among media exposure, COVID-19 thought frequency, and perceived threat of COVID-19 at the within-person level of analysis. Drawing on a transactional model of stress and coping to frame our investigation, we hypothesized that increases from one's typical level of media exposure, COVID-19 thought frequency, or perceived threat of COVID-19 in a given month would predict increases in these variables in the subsequent month. Apart from the effect of media exposure on perceived threat of COVID-19, results from random intercept cross-lagged panel models supported our hypotheses, revealing cyclical effects at the within-person level. Additionally, between-person associations indicated that those who were prone to score highly on any of the three study variables, also tended to score highly on the others. These findings are consistent with previously documented cross-sectional associations. In extending these effects to the within-person level, our findings point to a potential vicious cycle of media exposure, COVID-19 thought frequency and perceived threat of COVID-19 across 8-months at the height of the pandemic. The findings aid in identifying targets for intervention that can be leveraged to mitigate adverse public health impacts in the context of future pandemics and other global crises.

4

Abstract 1428

PHYSICAL NEGLECT IN CHILDHOOD PREDICTS LATER BIOPSYCHOSOCIAL HEALTH OUTCOMES WITH KEY MECHANISTIC FACTORS

Micah McWhorter; Kelsey Julian, MA; Michael Persin, MS; Jeanette Bennett, PhD, University of North Carolina at Charlotte

Introduction: Childhood experiences have a significant impact on how an individual develops across the lifespan. Physical neglect (PN) in childhood alone has been shown to lead to adverse health outcomes in later life, by leading to a dysfunctional hypothalamic-adrenal-pituitary (HPA) axis functioning and ultimately physiological dysfunction. Allostatic load (AL), or the accumulation of stress over the lifetime, damages biophysiological systems holistically, causing worsened psychological states, psychiatric conditions, immunological adaptations, and chronic disease. PN likely increases AL throughout the lifespan through various psychosocial pathways. To investigate this relationship, we tested how PN may longitudinally influence biopsychosocial outcomes.

Methods: Using MIDUS Wave 2 and 3 data, 1137 participants aged M=53.93 SD=11.495 (87.7% White, 56.8% female) were included. At time 1 (T1), self-report questionnaires were collected measuring PN,

subjective well-being (SWB), depressive symptoms (CESD), and perceived stress (PSS). At T1 and time 2 (T2), cardiometabolic data and a blood serum sample were collected. AL was quantified utilizing Hba1c, HDL, CRP, waist to hip ratio, and resting HR. Process Macro model 6 was used to examine the links between PN and AL; with SWB, PSS, and CESD as serial mediators and controlling for age, gender, ethnoracial minority status, T1 BMI and T1 AL.

Results: T2 AL was predicted by the full model including PN, SWB, PSS, and CESD. The model accounted for 19.5% of the variance in the change of AL over 10 years; $F(9, 1127) = 28.5$, $p < .000$. Bootstrapped estimations revealed several significant serial indirect effects that fully explained the relationship between PN and change in AL; (1) through SWB, PSS, and CESD ($b = .0039$ $SE = .0019$, 95% CI [.0004, .0079]), (2) through SWB and subsequent CESD ($b = .0023$ $SE = .0012$, 95% CI [.0002, .0049]), (3) though PSS and subsequent CESD ($b = .0057$ $SE = .0029$, 95% CI [.0006, .0119]), and (4) CESD alone ($b = .0067$ $SE = .0038$, 95% CI [.0006, .0155]).

Conclusion: Depression may serve as a mechanistic link between PN and the change in AL. Increasing SWB or lowering PSS could ultimately lead to lower AL, especially due to their relationship to depressive symptoms.

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Abstract 1238

DIGITAL MINDFULNESS TRAINING FOR LATE ADOLESCENTS WITH IBS

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Irritable Bowel Syndrome (IBS) is a debilitating chronic gastrointestinal disorder, defined by symptoms of abdominal pain and changes in bowel habits, that typically presents in adolescence and early adulthood. The unpredictable nature of symptom flares can increase stress and impact daily functioning. Furthermore, it is well established that stress can exacerbate symptoms. Adolescence can be a turbulent developmental period with increased stress, and the addition of coping with IBS during this time comes with unique challenges, thus negatively impacting psychosocial development and academic functioning among adolescent IBS patients. Despite this evidence, there has been a lack of investigating the efficacy of stress reduction interventions among this population. Mindfulness-based interventions (MBIs) have been shown to reduce stress among other populations, offering a promising non-invasive approach for improving health outcomes in IBS, but these interventions have not been examined in late adolescents with IBS. We conducted a proof-of-concept, pre-test/post-test designed study that investigated the impact of an MBI in late adolescents with IBS ($N = 34$). Patients ($M = 20$ years old, 76.47% female, 17.65% male, and 5.88% nonbinary/genderqueer) provided self-reported measures of psychosocial health and IBS quality of life, and then completed a 2-week mindfulness training program on the *Equa* application, followed by repeat assessments of baseline measures. Equa's

curriculum is built from previous rigorous clinical trials, tracks participant's progress in developing mindfulness skills (i.e., learning to monitor their present momentary experiences with an attitude of acceptance), and produces a respiration chart following the completion of a lesson. Following the intervention, participants experienced reductions in depressive symptoms (CES-D) $t(29) = 2.17$, $p = 0.04$, $d = 0.22$, perceived stress (PSS-10) $t(29) = 2.82$, $p = 0.01$, $d = 0.35$, anxiety (GAD-7) $t(29) = 2.26$, $p = 0.03$, $d = 0.30$, and improvements in IBS quality of life (IBS-QOL) $t(21) = -3.38$, $p = 0.003$, $d = 0.51$, compared to baseline. These findings suggest that a brief, digitally-delivered MBI may be effective in improving outcomes among late adolescents with IBS. Further randomized controlled trials are needed to test the durability and efficacy of digital mindfulness training among adolescents with IBS.

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Abstract 1074

DECONSTRUCTING THE DISCRIMINATION AND SLEEP RELATIONSHIP: EXAMINING HOW EVERYDAY DISCRIMINATION, PERCEIVED ETHNIC DISCRIMINATION, AND ETHNIC MICROAGGRESSION INFLUENCE SLEEP QUALITY, INSOMNIA, AND FATIGUE

Amish Patel, University of California at Merced; Matthew Zawadzki, PhD, University of California, Merced

Research has found robust associations between discrimination (mistreatment based on a social identity) and sleep indices. Yet, there are multiple ways in which discrimination can be operationalized, and it is unclear if they all equally matter in the context of sleep. This project will replicate and extend prior research by delineating how different facets of discrimination – everyday discrimination, microaggressions, perceived ethnic discrimination – influence different sleep dimensions – sleep quality, insomnia, fatigue. This research also utilizes a sample of ethnically diverse university students who underrepresented in health research. Data from university students were collected ($n = 266$), with ages ranging from 18 to 51 (M = 20.89). The majority of students identified as Latinx ($n = 152$) and female ($n = 183$). Data was collected online cross-sectionally through self-report questionnaires. These measures captured experiences of everyday discrimination, perceived ethnic discrimination, microaggressions, sleep quality, insomnia, and fatigue. Correlational and regression analyses were conducted on SPSS. Microaggressions showed small to moderate correlations with sleep quality ($r = .41$), insomnia ($r = .40$) and fatigue ($r = .36$). Everyday discrimination showed small to moderate correlations with sleep quality ($r = .42$), insomnia ($r = .41$), and fatigue ($r = .38$). Lastly, ethnic discrimination showed small correlations with sleep quality ($r = .31$), insomnia ($r = .27$), and fatigue ($r = .32$). We then entered each discrimination measure concurrently when predicting sleep to test whether any measure independently mattered. For sleep quality, only microaggressions were independently related ($b = 2.065$, $SE = .848$, $p = .016$). For insomnia, both microaggression ($b = 2.065$, $SE = .848$, $p = .016$) and everyday discrimination ($b = 1.807$, $SE = .670$, $p = .008$) were independent predictors. No discrimination measure independently predicted fatigue, and ethnic discrimination was not an independent predictor in any model.

Microaggressions and everyday discrimination appeared particularly important for sleep. These measures purportedly capture daily experiences of discrimination, which may better translate to sleep as a daily health behavior. Future work may wish to use an ecological momentary assessment approach to hone in on daily levels of discrimination and sleep.

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Abstract 1272

DIURNAL CORTISOL AND RUMINATION: EXAMINING GENDER DIFFERENCES

Nathan Stuart; Peggy Zoccola, PhD, Ohio University ; Sally Dickerson, PhD, Pace University

Prior work has shown that ruminative episodes (i.e., repetitive negative thought) are associated with prolonged activation of the hypothalamic-pituitary-adrenal (HPA) axis and elevated levels of its end-product, cortisol. However, research into rumination and diurnal cortisol, particularly in relation to prolonged HPA activation and gender differences, is limited. Diurnal cortisol slope (DCS), a measure of the typical decline in cortisol throughout the day, is linked to many psychosocial factors and can serve as a proxy for daily HPA activation. The present study extends laboratory studies of prolonged HPA axis activation—particularly in women with high trait rumination—to a naturalistic setting. We examined the relationship between DCS, two forms of rumination (stressor-related and brooding), and the potential moderating role of gender. We hypothesized that trait rumination would be associated with a flatter DCS, particularly in women. The study also examined whether these associations differed by rumination type: stressor-related rumination involves dwelling on past and current stressors, while brooding rumination focuses on depressive symptoms and emotional reactions to events. Methods: Healthy undergraduate students (n = 116, women = 63, men = 53) completed measures of trait rumination and then provided 6 salivary cortisol samples throughout the day over 5 days. Multilevel models were fitted to account for the nesting of occasions within persons using all available cortisol samples while controlling for body mass index and wake time. Results: Gender moderated the relationship between trait stressor-related rumination and DCS, with women higher in stressor-related rumination exhibiting the flattest DCS, b = -.006, r = .19, p = .037. This association remained robust when accounting for brooding rumination, b = -.008, r = .21, p = .019. There was no main effect of trait stressor-related rumination on DCS, and no significant associations were found with brooding rumination. These findings suggest that women who engage in higher levels of stressor-related rumination may experience prolonged activation in daily life, potentially leading to a greater physiological toll compared to men.

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Abstract 1156

LONELINESS MODERATES THE ASSOCIATION BETWEEN NEGATIVE SOCIAL INTERACTIONS AND DIURNAL CORTISOL SLOPE IN AFRICAN

AMERICAN ADULTS

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Background: Close relationships influence health by operating as psychosocial stressors and protective factors. African Americans have been found to report higher levels of social strain (e.g., family conflicts) than White Americans, still the physiological implications of these interpersonal stressors are understudied in this population. Further, little is known about other psychosocial factors that might exacerbate the effect of social strain on physiological stress. Evidence suggests loneliness may magnify the effects of psychosocial stressors, including social strain, on diurnal cortisol rhythms, as loneliness may signify a lack of coping resources. Using data from the Health among Older Adults Living in Detroit (HOLD) study, we investigate how loneliness may function as a risk factor for flatter diurnal cortisol slopes among those facing frequent negative interactions.

Methods: The analytic sample consists of 203 participants (M_{age}=67.6 yrs, SD=8.5, range=50–89) who provided cortisol data during a 5-day monitoring period. Participants logged daily diaries, provided saliva samples four times each day, and completed questionnaires – including the Short Loneliness Scale and Negative Interaction Scale. Hierarchical linear models were run to examine the interactive effect of loneliness and negative interactions of diurnal cortisol patterns.

Results: The effects of negative social interactions on diurnal cortisol slope were significantly moderated by loneliness. Examination of simple slopes suggested that higher levels of negative social interactions were associated with flatter diurnal cortisol slopes among participants with high levels of loneliness but not among those with low levels of loneliness.

Conclusion: This study demonstrates that high levels of loneliness exacerbated the adverse effect of negative social interactions on dysregulated biological stress systems characterized by flattened diurnal slopes. These results are consistent with previous work suggesting that loneliness exacerbates the physiological consequences of psychosocial stressors. However, further research is needed to understand underlying mechanisms and explore how loneliness can impact diurnal cortisol rhythm over time.

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Abstract 1170

ASSOCIATION OF POST-DIAGNOSIS WEIGHTLIFTING AND AEROBIC EXERCISE ON ALL-CAUSE MORTALITY IN OLDER CANCER SURVIVORS

Alexis Hosch; Jessica Gorzelitz, PhD, University of Iowa

Introduction: Both muscle strengthening (i.e. weightlifting) and aerobic exercise (i.e., moderate to vigorous physical activity [MVPA]) are recommended for cancer survivors for health benefits, but many cancer survivors do not meet recommended exercise levels. Moreover, little is known about the relation between types of exercise after diagnosis and subsequent survival. Thus, we examined the independent and combined associations between weightlifting and aerobic exercise on all-cause mortality in older cancer survivors.

Methods: Cancer survivors from the Prostate, Lung, Colorectal, and Ovarian Cancer screening trial (N = 16,962; M_{age}=72.5) who self-reported post-diagnosis weightlifting (frequency/week) and MVPA (minutes/week) were included in this analysis. Cox proportional hazards models adjusted for demographics, lifestyle factors, and cancer grade at diagnosis, were used to measure the associations of weightlifting (in the past month) and MVPA (minutes) on all-cause mortality measured via hazard ratio (HR) and 95% confidence intervals [95%CI].

Results: Over 9.5 years of follow-up, there were 7362 deaths with a dose-response relationship of 4% reduction in mortality per unit of weightlifting (HR=0.96, [0.94, 0.98]). Weightlifting was independently associated with lowered mortality with the lowest mortality for those reporting weightlifting 1-2 times/week (HR=0.89, [0.80, 0.98]) and 3-7+ times/week (HR=0.84, [0.76, 0.93]). MVPA was also independently associated with lower all-cause mortality; a 16% dose-response mortality reduction (HR=0.84, [0.81, 0.87]) was observed with the lowest mortality for those reporting 150-300 MVPA mins/week (HR=0.66, [0.61, 0.72]) or 300+ MVPA mins/week (HR=0.65, [0.57, 0.73]). MVPA also was associated with lower all-cause mortality (HR=0.85, [0.82, 0.88]) after adjusting for weightlifting.

Conclusion: Both weightlifting and MVPA were independently associated with lower all-cause mortality in a sample of older cancer survivors. Findings support muscle strengthening exercise (i.e. weightlifting) and aerobic exercise as critical health behaviors associated with improved survival, particularly for older cancer survivors meeting aerobic exercise guidelines of 150 MVPA mins/week+. Exercise may be a protective factor for survival in older cancer survivors and future work should examine ways to increase and sustain exercise behaviors.

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Abstract 1408

SOCIOECONOMIC STATUS, PERCEIVED CONTROL, AND DNA METHYLATION-BASED AGE ACCELERATION AMONG BLACK AND WHITE AMERICAN ADULTS

Madeline Plummer; Agus Surachman, Ph.D., Drexel University

Socioeconomic status (SES) is a critical social hallmark of biological aging. Psychosocial factors like perceived control or believing that one is in control over the internal state, behavior, and environment to gain desirable outcomes, may be an important pathway through which lower SES contributes to the accelerated biological aging process, especially among racially minoritized groups. We hypothesized that perceived control mediated the association between SES and epigenetic age acceleration. We also explored whether this mediation pathway differed between Black and white adults. We used data from the Midlife in the United States (MIDUS) wave 2 and Refresher, where epigenetic age data were available from 1,177 participants (M age = 54.3, 45.1% male) who self-identified as non-

Hispanic (NH) Black (n = 290) and NH white (n = 887). We used education as a proxy for SES. Perceived control was measured using the 12-item Midlife Developmental Inventory scale, including domains of perceived control, personal mastery (4 items), and perceived constraints (8 items). Finally, we included seven measures of DNA Methylation-Based age acceleration (Horvath, Horvath 2, Hannum, PhenoAge, GrimAge, GrimAge 2, and DunedinPACE). We conducted analyses with all samples and stratified analyses based on race/ethnicity. Analyses were adjusted for age, sex, race/ethnicity, body mass index (BMI), and smoking status. Having a bachelor's degree was associated with decelerated epigenetic aging in the fully adjusted model with all participants. However, perceived control was not associated with accelerated epigenetic aging. Analyses stratified by race/ethnicity indicated significant associations between higher perceived control with decelerated GrimAge and GrimAge 2, but only among NH Black participants. Analysis based on domains indicated that higher perceived constraint was associated with accelerated GrimAge and GrimAge 2 among NH Black participants. Finally, among Black participants, perceived control and perceived constraint mediated the association between education and GrimAge and GrimAge 2 age acceleration. Perception regarding control over one's outcomes, especially perception about obstacles and factors beyond one's control, is an important psychosocial factor that may contribute to socioeconomic disparities in accelerated biological aging among Black individuals.
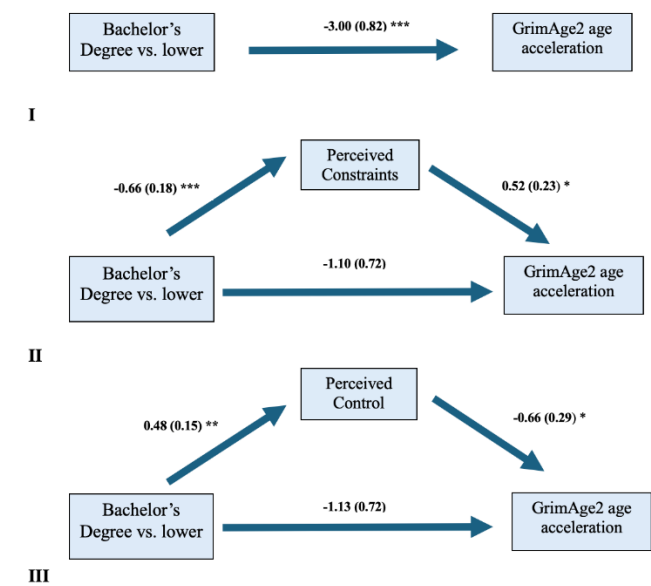
Figure 1. (I) Education was associated with GrimAge2 among Black participants. (II) Perceived constraints mediated the association between education and GrimAge2 among Black participants. (III) Perceived control mediated the association between education and GrimAge2 among Black participants (N = 290); The analyses were adjusted for age, sex, race, BMI, and smoking status; $p < 0.05*$, $p < 0.01**$, $p < 0.001***$.

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Abstract 1045

FEELING YOUNGER PREDICTS BETTER BEHAVIOURAL AND SUBJECTIVE WORKING MEMORY IN MIDDLE-AGED AND OLDER ADULTS, BUT NOT YOUNGER ADULTS

Nicole Stuart; Lydia Ong, MA; Nancy Sin, PhD, University of British Columbia

Background: Subjective age (SA), or the proportional difference between chronological age and how old one feels, has received attention in recent years due to its associations with physiological and cognitive health outcomes. Stereotype embodiment theory posits that age stereotypes become embodied as they become self-relevant and self-defining for older adults. As individuals get older, negative age stereotypes, such as the belief that aging is marked by cognitive decline, become more salient, thus possibly influencing cognitive outcomes. However, this work has largely centered on older adults, and it remains unclear how SA relates to cognitive outcomes over the adult lifespan. This pre-registered study evaluated the relationship between SA and working memory (WM) performance, as well as self-reported WM failures; and whether this relationship differs by chronological age.

Method: Adults aged 26-92 years (N = 176; 69% women, 34% racial minorities) reported their chronological and felt ages, and completed the WM subscale of the Adult Executive Functioning Inventory and 150 trials of a 1-back task. Two linear regression models evaluated SA and its interaction with chronological age as predictors of behavioural WM performance and self-reported WM failures, controlling for sociodemographic factors.

Results: On average, people felt 7.26 (SD=10.91) years younger than their chronological age, and this discrepancy was larger for older adults. Younger SA predicted better overall WM performance (*Est*=1.20, *p*=.009). This association was moderated by chronological age, such that younger SA predicted better WM performance in middle-aged (*Est*=1.13, *p*=.010) and older adults (*Est*=2.55, *p*<.001), but not younger adults. No main effect of SA was found on subjective WM failures (*Est*=12.02, *p*=.658); however, a SA x chronological age interaction revealed that younger SA predicted fewer reported WM failures in middle-aged (*Est*=-4.80, *p*=.03) and older adults (*Est*=-10.40, *p*<.001), but this relationship was not significant in younger adults.

Conclusion: Younger subjective age predicted better behavioural and subjective WM in middle-aged and older adults, but not younger adults. Future work may assess the relationship between SA and cognition within-persons, to identify proximal biopsychosocial mechanisms and to evaluate how this relationship may unfold over time.

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Abstract 1365

WHO IS MORE PRONE TO CHRONIC DEPRESSIVE OR FATIGUE SYMPTOMS? INSIGHT INTO SUBTYPES OF DEPRESSIVE SYMPTOMS AND THEIR DEVELOPMENT OVER TIME IN PATIENTS WITH CORONARY HEART DISEASE.

Heidi Hermans, Tilburg University; Paul Lodder, PhD; Nina Kupper, PhD, Dept. of Medical & Clinical Psychology, Tilburg University

Background: Coronary heart diseases (CHD) are highly prevalent and bidirectionally related to depression. Insight into the development of

depressive symptoms in patients with CHD over time and additional knowledge regarding the way in which medical and psychological factors may influence such patterns may help to discover potential mechanisms in symptom progression and to identify those at risk. Our aim was to explore depressive symptom patterns and its related medical and psychological factors in patients with CHD.

Methods: 1530 patients (21.3% women, mean age: 64.7 years (SD=10.1)) who received a percutaneous coronary intervention (PCI) were included. Depressive subtypes one month post-PCI were explored with latent class analysis with nine indicators derived from the PHQ-9 and BDI-II representing symptoms of depression as described in the DSM-5 criteria. Stability and transition-patterns of subtypes six months, one and two years post-PCI were studied with latent transition analysis. Patterns were characterized using demographic, medical, psychiatric, and cardiovascular (risk) factors.

Results: A 3-class model demonstrated the best fit to the data, resulting in a depressed (5.4%), fatigued (13.5%), and non-depressed class (81.1%). The LTA showed 72.9% to 81.9% stability of the classes across the 2-year follow-up, with the greatest stability in the non-depressed class (ranging between 89.9 – 98.4%). Most common patterns over a 2-year time period were having no depressive symptoms (71.6%), being chronically fatigued (11.6%), and a delayed pattern (starting 6 months post-PCI) of fatigue or depressive symptoms (5.6%). Stable depression was present in 1.4% of the patients. Multiple demographic, medical, psychiatric, and cardiovascular (risk) factors were related to the different patterns, e.g., less cardiac self-efficacy (OR: 1.06, 95%CI: 1.03-1.08) and medical comorbidities (OR: 2.20, 95%CI: 1.34-2.90) increased the odds to belong to the chronically fatigued group and having a history of cardiac diseases (OR: 2.09, 95%CI: 1.22-3.59) and less optimism (OR: 0.86, 95%CI: 0.78-0.94) to the group with delayed symptoms.

Conclusions: Depressive symptoms, and particularly fatigue symptoms, are common and enduring in patients with CHD. Long-term consequences of lasting symptoms and interventions to decrease the burden for patients with CHD should be studied.

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Abstract 1245

BETWEEN- AND WITHIN-PERSON ASSOCIATIONS BETWEEN DAILY CONFLICT AND DAILY BLOOD PRESSURE AMONG AFRICAN AMERICANS

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Introduction: Experiences of social strain and conflict can adversely affect cardiovascular physiology. African Americans are at elevated risk of cardiovascular disease and more likely to report high levels of social strain and interpersonal mistreatment. However, few studies of daily social interaction quality and cardiovascular function have focused exclusively on African Americans. To address this gap, we used ecological momentary assessment to examine the link between daily conflictual interactions and evening blood pressure among older African Americans.

Methods: The present study was conducted with 477 older African American adults (M_{age} = 65.8 yrs; *SD* = 5.5; range = 55-75; female = 72.5%) from The Heart of Detroit Study (N = 523), who completed daily assessments. Participants provided data up to 4 times a day for up to 7 days on their experience of conflictual social interactions (none, mild, moderate, severe). During this period, participants also measured their blood pressure in the morning and before going to bed.

Results: Data were analyzed using two-level multilevel models, adjusting for age, sex, socioeconomic status, waist-to-hip ratio, chronic conditions, and blood pressure medication use. Participants who reported higher average conflict across the 7 days had significantly higher evening systolic and diastolic blood pressure, regardless of that day's conflict level. Individuals with low average conflict had higher diastolic blood pressure on days when their level of conflict was higher than average.

Discussion: This study extends the literature on interpersonal conflict and cardiovascular health among African Americans. Experiences of high levels of average conflict across the week appear to be related to consistently elevated blood pressure. However, those who generally experienced low conflict still had elevated diastolic blood pressure on days they experienced higher than usual amounts of conflict. This study provides evidence that daily experiences of conflictual interactions may be linked to cardiovascular function among older African Americans, even among those who generally experience low levels of conflict.

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Abstract 1240

EFFECT OF MODERNIZED COLLABORATIVE CARE FOR DEPRESSION ON DIABETES-RELEVANT HEALTH BEHAVIORS: EIMPACT-DM PILOT TRIAL

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Depression is an independent risk factor for type 2 diabetes, but no trials in people with prediabetes have tested whether depression treatment lowers diabetes risk. One candidate mechanism is improved diabetes-relevant health behaviors. We explored this utilizing data from the eIMPACT-DM pilot trial (R21DK123582; NCT04437485). Forty-six primary care patients with depression and prediabetes from a safety net healthcare system (*M*age=50 years, 78% female, 72% Black, 9% Hispanic/Latinx, 33% with income <$10,000/year) were randomized to 6 months of the eIMPACT-DM intervention (INT) (modernized collaborative care for depression offering internet cognitive-behavioral therapy [CBT], telephonic CBT, and/or select antidepressants) or active control (AC) (depression

education, depressive symptom monitoring, and usual primary care for depression). Validated pre- and post-treatment questionnaires assessed depressive symptoms, physical activity, sedentary behavior, eating behaviors, smoking, alcohol use, insomnia symptoms, and overall sleep quality. Due to smaller sample and lower power, clinically meaningful changes were predefined as an effect size (Hedges' g)≥0.50. ANCOVAs comparing treatment group differences in post-treatment outcome level were adjusted for baseline outcome level and baseline treatment group imbalance in depressive disorder diagnosis (p=0.053). Compared to AC, the INT group showed large, clinically meaningful improvements in depressive symptoms at post-treatment (p=0.01, g=-0.94). The INT group also exhibited clinically meaningful reductions in sitting time (p=0.15, g=-0.50). Other notable effects favoring the INT group were found for reduced alcohol use (p=0.18, g=-0.48) and reduced insomnia symptoms (p=0.27, g=-0.40). There was also a significant effect favoring the INT group for total physical activity (MET minutes/week) driven by decreases in physical activity in the AC group (p=0.04, g=-0.73). No meaningful differences were observed for eating behaviors, smoking, or overall sleep quality. Our findings suggest that successful depression treatment may meaningfully improve some, but not all, diabetes-relevant health behaviors. To maximize effect sizes, future trials should consider testing intervention packages that concurrently address depression and the behavioral candidate mechanisms underlying the depression-to-diabetes relationship.

Table 1. Treatment Group Differences in Post-Treatment Outcome Level: Analysis of COVARIANCE (ANCOVA) Models Adjusted for Baseline Depressive Disorder and Baseline Outcome Level ($N = 46$)

	Intervention ($n = 24$) M (SD)	Active Control ($n = 22$) M (SD)	p value (effect size)
Depressive Symptoms			
Post-Treatment SCL-20 (possible range: 0-4)	1.07 (0.63)	1.66 (0.63)	0.01 $g = 0.94$
Diabetes Related Health Behaviors			
Post-Treatment PSQI	8.99 (4.03)	9.83 (4.05)	0.55 $g = 0.21$
Post-Treatment ISI	10.88 (5.50)	13.07 (5.51)	0.27 $g = -0.40$
Post-Treatment IPAQ Total MET	5062.63 (3931.46)	2171.01 (3947.32)	0.04 $g = -0.73$
Post-Treatment IPAQ Sitting Time	351.99 (289.50)	496.07 (290.96)	0.15 $g = -0.50$
Post-Treatment AUDIT	2.03 (1.80)	2.90 (1.81)	0.18 $g = -0.48$
Post-Treatment DEBQ Emotional Eating Dimension	2.12 (0.62)	2.18 (0.63)	0.77 $g = -0.10$
Post-Treatment DEBQ External Eating Dimension	2.75 (0.45)	2.76 (0.45)	0.96 $g = -0.02$
Post-Treatment Current Smoking	6	3	0.29 $OR = 2.31$, 95% CI [0.48,11.12]

Note. Values are estimated marginal means and corresponding standard deviations. Observed ns for each outcome variable were (post-treatment): SCL-20 (37), PSQI (37), ISI (33), IPAQ Total MET (37), IPAQ Sed (38), Audit (35), DEBQ Emo (36), DEBQ Ext (37), Nicotine Use (37). SCL-20 = Hopkins Symptom Checklist-20; PSQI = Pittsburgh Sleep Quality Index; ISI = Insomnia Severity Index; IPAQ = International Physical Activity Questionnaire; AUDIT = Alcohol Use Disorders Identification Test; DEBQ = Dutch Eating Behavior Questionnaire.

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Abstract 1081

CONSCIENTIOUSNESS MODERATES THE RELATIONSHIP BETWEEN INTERLEUKIN-6 AND MEMORY DECLINE

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Evidence supports the role of the pro-inflammatory cytokine interleukin-6 in accelerating cognitive decline and increasing ADRD risk. Personality may influence this relationship in a pathoplastic way, by protecting against or exacerbating the cognitive consequences of inflammation. Conscientious (i.e., controlled, planful, organized) people are characterized by healthier behaviors, which may play a protective role. Among 182 older adults (Mage=74 years, 41% female), Rey Auditory Verbal Learning Test (RAVLT) performance was measured annually for up to 16.6 years (M=6.5 years). Total learning and delayed recall were regressed on expected performance (norms based on age, gender, and IQ), time, IL-6, conscientiousness, and their interactions with each other and with gender. There was a significant interaction among time, IL-6, and conscientiousness (F(1,167.51)=5.36, p=.021) such that people with high conscientiousness and low IL-6 maintained total learning and thus increased their performance relative to norms over time; people with low conscientiousness and/or high IL-6 maintained performance relative to norms. The same interaction was observed for delayed recall (F(1,165.22)=5.20, p=.024). The recall effect decreased after adjusting for learning, but in a gender-specific way (interaction with gender, F(1,164.74)=4.97, p=.027). Adjusting for total learning eliminated the interaction for men but not for women. Rather than a pathoplastic relationship, IL-6 and conscientiousness had a synergistic effect on memory decline over time. Neither low IL-6 nor high conscientiousness alone were sufficient to preserve memory. The healthy habits of conscientious older people may need an advantageous physical environment in order to affect memory and possibly other cognitive functions.

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Abstract 1083

DIMENSIONS OF EARLY LIFE ADVERSITY AND ACCELERATED BIOLOGICAL AGING IN ADOLESCENTS: AN EXAMINATION OF FEAR-RELATED MECHANISMS

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Early life adversity (ELA) may accelerate development, leading to adverse health outcomes, and ELA characterized by threat, but not deprivation, has been particularly associated with accelerated biological aging in youth. However, understanding of underlying biobehavioral processes is limited, even though fear-related responses are a promising mechanism. We addressed this gap by evaluating if threat and deprivation ELA experiences related to responses during a fear conditioning and extinction task in a community-based sample of youth (n=146). We also tested if these fear-related responses explained associations of threat with accelerated biological aging, as indexed by advanced pubertal stage and epigenetic age.

Youth and caregivers reported on youths' lifetime ELA experiences; these reports were combined to create threat and deprivation composites. Youth also reported their pubertal maturation and

provided saliva samples for Horvath epigenetic age estimation. Youth completed a fear conditioning and extinction task as well; skin conductance response (SCR) and self-reported fear were recorded during the task. We used multilevel modeling with Bayesian estimation to test our hypotheses, with repeated exposures to stimuli nested within individuals.

Youth were aged 12.6 years on average; 51% were male. When adjusting for co-occurring threat, greater deprivation was associated with a greater ability to discriminate between danger and safety cues based on SCR during late conditioning (*Median*=0.03, *p*=.009) and late extinction (*Median*=0.03, *p*=.011). Threat-related ELA did not relate to cue discrimination based on SCR but was inversely associated with discrimination between cues during conditioning based on self-reported fear (*Median*=-0.60, *p*=.001). Youth with greater threat also had lower SCR to both cues during early conditioning, when accounting for deprivation (*Median*=-0.01, *p*=.014). However, there were no indirect effects of fear-related responses underlying associations of threat-related ELA with accelerated biological aging.

Although we did not find evidence of indirect effects for fear-related responses, ELA characterized by threat, but not deprivation, was associated with blunted responses and the absence of danger-safety discrimination during conditioning—characteristics relevant to adverse consequences for health defined broadly.

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Abstract 1088

TESTING AN INTEGRATED FRAMEWORK OF ENVIRONMENTAL SAFETY, SOCIAL SAFETY, AND SOCIAL VIGILANCE AS PSYCHOSOCIAL CONTRIBUTORS TO CARDIOVASCULAR DISEASE

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Background: Over 40 years of robust evidence links psychological stress to cardiovascular disease (CVD), but explanatory models have not identified mediating mechanisms through which daily stress impacts disease risk. Contemporary theories (i.e., Generalized Unsafety Theory of Stress, Social Safety Theory) point to stress as a common experience in daily life, with exposure to perceived threats and perception of social safety cues predicting acute physiological stress reactivity through constant environmental safety evaluation or "vigilance." This study investigated a novel, harmonized framework testing the extent to which social vigilance (SV) mediates associations between social safety, environmental safety, and 2-year change in carotid intima media thickness (cIMT), a CVD-risk indicator.

Methods: A diverse community adult sample from the North Texas Heart Study was used (N=300, M_{age}=46.10 years, 60% non-Hispanic White, 19% Hispanic/Latino). Self-reported social safety and SV were assessed via 2-day ecological momentary assessment. Environmental safety was measured as residential crime exposure geocoded at 1, 5, and 10-mile radii. Change (Δ) in cIMT was calculated for 4 arterial locations via ultrasound imaging at baseline and 2-year follow-up. Data were analyzed using fully adjusted multivariable, multilevel linear models to test mediation with zip code as a level of random effect.

Results: As hypothesized, greater social safety was related to decreased SV (B=-0.10, SE=0.03, 95% CI: -0.14, -0.03). Social safety and SV were not directly related to cIMT Δ, and SV did not mediate effects of social safety on cIMT Δ. For the regression models focused on environmental safety, crime exposure was not related to SV; however, greater SV was directly related to more cIMT Δ at the arterial bifurcation (B=0.05, SE=0.02, 95% CI: 0.01, 0.09). Crime exposure was not directly related to cIMT Δ, and SV did not mediate effects of crime exposure on cIMT Δ.

Conclusions: Overall, individuals who perceived more safety in their daily social environments reported less vigilance for social threats. Furthermore, higher vigilance for social threats was related to greater cIMT Δ at 2-year follow-up. We will discuss implications for ecological models of stress and disease risk and call for future examination of how perceptions of social safety and threat predict other CVD risk markers.

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Abstract 1087

EFFICACY OF A BLENDED COLLABORATIVE CARE PROGRAM FOR DEPRESSION AND ANXIETY DISORDERS IN ACUTE CARDIAC SETTINGS: A RANDOMIZED, CONTROLLED TRIAL

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Depression and anxiety disorders are associated with the development and progression of cardiovascular disease. Blended collaborative care programs, which utilize a care manager to facilitate the treatment of psychiatric and medical disorders, are effective in outpatient settings but have had limited study when initiated following acute cardiac events. In this clinical trial (N=260), we evaluated the efficacy of Total Health, a nurse-led, phone-delivered, blended collaborative care intervention to treat depression and anxiety disorders after acute cardiac events. Participants were adults hospitalized for acute coronary syndrome (ACS) or heart failure exacerbation and found to have clinical depression, generalized anxiety disorder, and/or panic disorder. Participants were randomly assigned to receive Total Health or enhanced usual care (serial notification of depression or anxiety symptoms). Individuals in the Total Health program completed phone sessions for 6 months with a nurse care manager, who

monitored psychiatric symptoms, blood pressure (following ACS), or weight (heart failure); provided targeted psychotherapy; assisted with health behavior goal setting; and conveyed medication recommendations from a study psychiatrist and cardiologist. Between-group differences in study outcomes, including function (Duke Activity Status Index) and other psychological, functional, and medical outcomes, were assessed at 6 and 12 months using mixed effects regression. The primary study outcome was physical function at 6 months. Total Health led to significantly greater improvements in physical function at 12 months (B=4.10, 95% CI 0.001-8.20) but not at 6 months (B=2.47, 95% CI -1.36, 6.29). It also led to significantly greater improvements in depressive symptoms (B=-0.23, 95% CI -0.41, -0.06) and physical health-related quality of life (B=4.25, 95% CI 1.49, 7.01) at 6 months and anxiety at 12 months (B=-1.11, 95% CI -2.21, -0.00). Total Health did not significantly impact other psychological, functional, or cardiovascular outcomes (all p > .05). Ultimately, though the Total Health program led to significantly greater improvements than enhanced usual care in some psychological outcomes, it did not significantly improve function at our primary endpoint. Modifications to increase the intervention's efficacy are needed prior to its implementation in clinical settings.

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Abstract 1267

DAILY VS. TRAIT SOCIAL STATUS: WHICH BETTER PREDICTS FOR SELF-RATED HEALTH?

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Self-rated health has been shown to be a robust predictor of disease and mortality (Schnittker & Bacak, 2014). Higher trait subjective social status is positively associated with self-rated health, even when controlling for objective socioeconomic status (Cundiff et al., 2016; Cundiff & Matthews, 2017). This relation may be partially accounted for by day-to-day interpersonal interactions informing one's own perception of their social status. Thus, daily measures of subjective social status may be more reflective of day-to-day interpersonal interactions and therefore better predict health outcomes. 154 undergraduate students from the University of Alabama provided self-reports of their self-rated health using a standard single item measure (Wu et al., 2013) and rated their trait subjective social status using the McArthur Scale of Subjective Social Status (Adler et al., 2000). Participants' subjective social status during day-to-day social interactions was assessed using a visual-analogue ladder that mirrored the McArthur ladder but was anchored to a recent social interaction. Participants completed these assessments of momentary social status hourly over the course of one day, and daily subjective social status was calculated as the average of these ratings. Bivariate correlations revealed that better self-rated health was associated with higher trait subjective social status (r [152] = -.18, p < .05) and higher daily subjective social status (r [93] = -.24, p < .05). Further, regression analyses showed that daily subjective social status was a significant predictor of self-rated health (β = -.24, p < .05). When trait subjective social was added, daily status continued to be a significant predictor (β = -.20, p = .10), but trait status was not a significant predictor (β = -.08, p = .49) and

did not explain significant additional variance in self-rated health over and above daily status (ΔR^2 = .005, F (1, 92) = 0.48, p = .49). When controlling for age, sex, and race, results were unchanged. Ecologically valid assessment of subjective social status in everyday life was a better predictor of health than trait subjective social status. This finding suggests that interpersonal experiences of social status may be more closely related to health, and perhaps account for much of the variance typically attributed to trait measures of subjective social status.

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Abstract 1297

THE ASSOCIATION OF CHILD MALTREATMENT HISTORY AND POST-TRAUMATIC STRESS DISORDER SYMPTOMS WITH EPSTEIN-BARR VIRUS INFECTION AND LATENT CONTROL AMONG YOUTH

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Background: Epstein-Barr Virus (EBV) infection is common and poorer latent EBV control has been linked to greater stress and poorer health in adults (Gequelin et al., 2011). EBV infection may be one mechanism connecting child maltreatment (CM) to later poorer health, especially as post-traumatic stress disorder (PTSD) symptoms may weaken EBV control among CM survivors (Gao et al., 2019; Pace et al., 2012); this has not been studied in youth.

Objective: To test whether, among 8-13-year-olds, CM history is related to a greater risk of EBV infection and whether greater PTSD symptoms worsen latent EBV control among those with prior EBV exposures, especially those with a CM history.

Methods: Data came from 8-13-year-old participants in an ongoing prospective longitudinal cohort study with available plasma samples (*n* = 501). Youth reported PTSD symptoms on the UCLA PTSD Reaction Index (Pynoos & Steinberg, 2014). EBV infection status and antibody titers were assessed in plasma using ELISAs (EUROIMMUN, Lübeck, Germany). Logistic and linear regression were used to predict EBV infection and antibody titers (in those positive for EBV, n = 263), respectively. Interaction effects were tested using PROCESS (Hayes, 2022). Models were adjusted for age, assigned sex at birth, household income, BMI, ethnicity, race, smoking, and vaping.

Results: CM history was associated with greater risk of EBV infection (*OR* = 2.51, 95% *CI* [1.51, 4.18]). Among youth with prior EBV infections, greater PTSD symptoms were related to greater EBV antibody titers (*B* = 0.00, *SE* = 0.00, *p* = .005). The CM history x PTSD symptoms interaction was not associated with EBV antibody titers (p > .7).

Discussion: Odds of EBV infection were greater among youth with a CM history. Greater PTSD symptoms predicted greater EBV antibody titers, suggesting weakened latent EBV control, irrespective of CM history. Long-term consequences of earlier EBV exposures among CM survivors should be investigated. Further, EBV control may be a mechanism towards future adverse health not only among CM survivors but more generally individuals experiencing PTSD symptoms.

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Abstract 1431

STRESS-INDUCED MOVEMENT INHIBITION DURING ACUTE PSYCHOSOCIAL STRESS PREDICTS HPA AXIS RESPONSE

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Background: The experience of social-evaluative threat leads to strong physiological and behavioral responses. Individuals exposed to acute psychosocial stress via the Trier Social Stress Test (TSST) show significant reductions in body movements, such as head rotation, upper body sway, and arm movement, compared to a stress-free control condition (friendly-TSST; f-TSST). While these differences can be consistently observed across all individuals, they are characterized by high inter-individual variability, requiring the normalization of movement parameters using the f-TSST as a baseline. This work aims to characterize the temporal characteristics of movement reduction induced by social-evaluative threat using only movement information from the TSST.

Methods: Thirty-nine healthy individuals (41% women) underwent the TSST while wearing a full-body motion capture suit. We extracted movement features for multiple body parts for overlapping signal windows during TSST and used 1-d and 2-d polynomial regression models to operationalize temporal feature changes.

Results: Individuals showed a reduction in head and upper body movements during the TSST. Higher cortisol increases were, among others, predicted by stronger head velocity reduction (F = 7.039, p = 0.012, adj. R2 = 0.137) and stronger trunk entropy reduction (F = 7.325, p < 0.001, adj. R2 = 0.333).

Conclusion: Our study suggests that the amount of movement reduction during the TSST can predict established psychobiological stress responses without the need for an external baseline, providing an important link between objective movement parameters and acute psychosocial stress. These findings can lay the groundwork for establishing body movements as a novel digital stress biomarker.

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Abstract 1218

SELF-PERCEPTIONS OF AGING AND POSITIVE AFFECTIVE REACTIVITY IN DAILY LIFE

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Age stereotypes can become internalized across the lifespan to influence one's self-perceptions of aging (SPA). Stereotype Embodiment Theory suggests a stress response pathway through which SPA influence downstream health outcomes. Daily diary research found that individuals with less positive SPA had greater upticks in negative affect in response to a stressor. However, less is known about SPA and event-related fluctuations in positive affect, despite the importance of positive affect dynamics for longer-term health. Theory and evidence suggest that fragile positive affect (e.g., positive affect that is contingent on external events) is associated with less favorable health and well-being. Thus, the current pre-registered study used 14 days of ecological momentary assessment to examine whether individuals with less positive SPA (measured using Attitudes Toward Own Aging) display greater changes in positive affect in response to daily interpersonal stressors and positive social events. Participants were 223 adults from British Columbia, Canada (ages 25-86, M=45, 68% women, 34% racial minorities). On average, they reported similar frequency of interpersonal stressors (M=1) and positive events (M=12) regardless of their SPA, but those with more positive SPA had higher average positive affect. Three-level multilevel models (moments nested within days within persons) showed that SPA did not moderate the link between interpersonal stressors and positive affect. However, SPA moderated the relationship between positive social events and momentary positive affect, such that those with less positive SPA had greater upticks in positive affect on moments with a positive social event (simple slope for -1 SD: b=0.39, SE=0.04, p<0.001), compared to those with more positive SPA (simple slope for +1 SD: b=0.27, SE=0.04, p<0.001). Results indicate that individuals with less positive SPA derived more positive affect from their positive social events, whereas those with more positive SPA had relatively stable and higher levels of positive affect that did not depend on the occurrence of positive social events. Findings demonstrate that SPA are associated with positive affect dynamics, specifically for positive but not negative social events. Future research could further examine positive experience dynamics as a potential mechanism in the link between SPA and health.

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Abstract 1527

INVESTIGATING THE ROLE OF GUT MICROBIOTA IN STRESS AND IMMUNITY: INSIGHTS FROM A RANDOMIZED, TRIPLE-BLIND, PLACEBO-CONTROLLED TRIAL

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Introduction

Interventional studies using gut microbiota metabolites, such as short-chain fatty acids, have shown attenuated neurohumoral responses to acute psychosocial stress, likely due to anti-inflammatory effects. Here, we investigate the effects of gut microbiota modulation on stress and inflammation using, rifaximin, a non-systemic antibiotic known to modulate the gut microbiota in humans safely.

Methods

Participants were randomly assigned to receive rifaximin (550 mg PO, BID) or placebo for two weeks. Pre- and post-intervention visits assessed psychobiological responses to the Maastricht Acute Stress Test, including serum C-reactive protein (CRP) levels as a marker of peripheral inflammation and State-Trait Anxiety Inventory (STAI) ratings for momentary anxiety. Brain metabolite concentrations of myoinositol (mI) and choline (Cho) were measured as central inflammatory markers using magnetic resonance spectroscopy.

Results

Interim blinded analyses of serum CRP concentrations and self-reported STAI ratings were conducted in 47 out of 60 healthy men (n group 1=23, n group 2=24), revealing differences in CRP levels between rifaximin and placebo consumption (group×visit interaction effects, (p=0.027)). Planned contrasts showed an increase in CRP from pre- to post-intervention in Group 1 (p-unadjusted=0.027) and no change in Group 2 (p=0.339). The interventions did not differentially modulate STAI ratings (group×visit and group×visit×timepoint, all p>0.05). In a subset of 22 participants (n group 1=12, n group 2=10), concentrations of brain metabolites mI and Cho in the anterior insula did not differ between the groups in either hemisphere (group×visit interaction, all p> 0.05).

Conclusion

Our results suggest that gut microbiota modulation may impact peripheral inflammation, without affecting central inflammation or affective states. Future analyses will include comprehensive assessments of cytokines, a broader evaluation of affective states, and gut microbiota profiling to confirm gut microbiota modulation.

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Abstract 1380

COMMUNITY GREENSPACE AND CHRONIC SYSTEMIC INFLAMMATION

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Community greenspace is linked to lower risk for hypertension, atherosclerosis, and cardiovascular disease. Studies of acute exposures to greenspace showed decreases in markers of systemic inflammation, suggesting that inflammation may play a role in its health benefits. This study tested cross-sectional associations of 1) spatial coverage of and 2) resident access to proximal greenspace in relation to markers of systemic inflammation. We hypothesized that greater proximity and access to greenspace would inversely correlate with systemic inflammation, in line with the presumptive protective health benefits of greenspace. We also examined whether associations would be independent of community-level socioeconomic status (SES), as the latter may not be redundant with community greenspace.

Participants were 366 healthy adults ages 28-56 (62% female; 82% White) in the Neurobiology of Adult Health (NOAH) project. Circulating levels of interleukin (IL)-6 and C-reactive protein (CRP) were measured in fasting morning blood samples. Presence of and access to greenspace were quantified by geocoding vegetation coverage and park access among participants' residential areas, respectively. Vegetation coverage was estimated from impenetrable surface areas at the census tract level, obtained from the Child Opportunity Index. Park access was represented by areas within a 10-minute walk of open access greenspace (1 = Yes, 0 = No). Park data was derived from Pennsylvania Department of Conservation & Natural Resources and analyzed in ArcGIS. Participants were also assigned a census-based Area Deprivation Index (ADI) score as a proxy of community-level SES. Linear regression tested whether vegetation coverage and park access predicted Il-6 and CRP levels, controlling for community- and individual-level SES and BMI, age, and sex at birth.

Park access, but not vegetation coverage, predicted lower levels of IL-6 but not CRP in fully-adjusted models controlling for ADI score (B = -0.22, *p* = 0.01, 95% CI [-0.39, -0.04]). These patterns remained consistent after excluding participants who exhibited signs of acute infection or illness.

These findings suggest that individuals with access to greenspace via nearby recreational parks may exhibit lower levels of systemic inflammation than those without, though IL-6 may be more sensitive to this relationship.

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Abstract 1242

CUMULATIVE EXPOSURE TO HARDSHIPS OF THE GREAT RECESSION AND CHANGES IN INFLAMMATION: FINDINGS FROM THE MIDLIFE IN THE US STUDY

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Objective: There is limited data on how the 2008 Great Recession influenced long-term changes in biological health. This longitudinal study examined self-reported recession hardships in relation to changes in systemic inflammatory physiology at midlife and tested differential vulnerability by sex, age, race, education, and pre-recession psychological well-being. **Methods:** Adults from the Midlife in the United States Core sample completed survey and biomedical assessments before/during the recession (2003-2009) and after (2013-2022; n = 537 White respondents, n = 113 Black respondents, n = 36 respondents with other race/ethnicity). Cumulative recession hardship was the sum of financial, housing, and employment-related events. Inflammatory proteins included interleukin-6 (IL-6), C-reactive protein (CRP) and fibrinogen. General linear regression models tested main effects and interactions between primary predictor variables. **Results:** Age was inversely associated with hardships (*b* = -0.29 95% CI = -0.37 to -0.22, *p* <.001). Females reported more hardships than males (*b* = 0.16, 95% CI =

0.003 to 0.32, *p* = 0.045), and educational attainment was inversely associated with hardships (*b* = −0.17, 95% CI = −0.24 to −0.09, *p* < .001). Black respondents reported more hardships than White respondents (*b* = 0.88, 95% CI = 0.68 to 1.08, *p* < .001). Adjusting for pre-recession inflammatory markers and sociodemographics, hardships were positively associated with post-recession IL-6 (*b* = 0.11, 95% CI = 0.03 to 0.18, *p* = .005) and fibrinogen (*b* = 0.08, 95% CI = 0.002 to 0.16, *p* = .044). Hardships were not associated with CRP. Higher levels of education attenuated the association between hardships and fibrinogen (*b* = -0.09, 95% CI = -0.15 to -0.02, *p* = .016). Though main effects were not significant, pre-recession positive affect attenuated the positive association between recession hardship and IL-6 (*b* = -0.09, 95% CI = -0.16 to -0.03, *p* = .006). **Conclusions:** Race, education, sex, and age were associated with disparities in cumulative recession hardship exposure. Longitudinal findings demonstrated that recession hardship predicted greater increases of inflammatory proteins associated with long-term health. Education and positive affect prior to the Great Recession mitigated some associations.

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Abstract 1512

ASSESSING MEASUREMENT INVARIANCE IN ALLOSTATIC LOAD ACROSS BLACK AND WHITE ADOLESCENTS

Abbey Collins, Doctoral Candidate; Vanessa Volpe, PhD, North Carolina State University; Steven Holochwost, PhD, City University of New York

Allostatic load reflects the cumulative dysregulation of physiological systems due to repeated stress responses (McEwan & Stellar, 1993) and is associated with increased morbidity and mortality (McEwen & Gianaros, 2010; McEwen & Wingfield, 2003). Adolescence is one relatively early life-course sensitive period for allostatic load, when the biological embedding of exposure to adversity may catalyze racial differences we see in allostatic load and subsequent health risk (Howard & Sparks, 2016; Baltes et al., 2006; Cedillo et al., 2019; Lucente & Guidi, 2023). Research suggests that allostatic load is higher in Black adolescents compared to White adolescents (Rainisch et al., 2013). Clinicians currently use the same measurement of allostatic load for screening purposes for both Black and White adolescents and the existing body of literature assumes that the construct of allostatic load measures the same thing for both Black and White adolescents and subsequently draws inferences about differences between these racial groups. However, this crucial measurement assumption has not been tested. Therefore, this study examines whether allostatic load displays properties of measurement invariance across Black and White adolescents. We first conducted a confirmatory factor analysis on eight biomarkers using a nationally representative sample of Black and White adolescents (n = 1064, ages 8-19) drawn from the National Health and Nutrition Examination Survey dataset. The final model included waist circumference (λ=.672), systolic blood pressure (λ=.265), diastolic blood pressure (λ=.079), and creatinine (λ=.092). After establishing the configural model ($\chi2(2)$=1.66, p=.436, TLI=1.00, CFI=1.00), we tested for measurement invariance by conducting a multigroup model. Results revealed that this model did not display

properties of strong factorial invariance ($\chi2(9)$=57.14, p<.001, TLI=.85, CFI=.80), only weak factorial invariance ($\chi2(5)$=7.65, p=.177, TLI=.99, CFI=.98). Meaning that the same biomarkers can be used to index allostatic load, however, numerically equivalent scores can not be interpreted to indicate the same level of allostatic load across groups. These results underscore the importance of testing assumptions about measurement invariance in allostatic load before drawing substantive conclusions by directly comparing levels of allostatic load across Black and White adolescents. The next step is to examine measurement invariance in allostatic load longitudinally and assess the impact of various factors on allostatic load over time in Black and White adolescents.

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Abstract 1534

EXPLORING RACIAL DIFFERENCES IN BRAIN AGING IN ALLEGHENY COUNTY, PITTSBURGH

Yemi Tchala; Chloe Newbill, B.S. Neuroscience ; Anna Marsland, PhD; Peter Gianaros, PhD; Gabriella Alvarez, PhD, University of Pittsburgh

Background: Racial segregation is linked to significant health disparities, with Black adults facing higher rates of chronic disease and lower life expectancy than White adults. Segregation's relationship to physical health is well-documented, but its impact on brain aging remains underexplored. Notably, accelerated brain aging is associated with increased risk of Alzheimer's disease and dementia – conditions that disproportionately affect Black adults and are potentially worsened by racial segregation. We aimed to examine if 1) increased Black-White residential segregation is related to brain age, an emerging biomarker of Alzheimer's disease and dementia risk, in Black and White adults and 2) whether race moderates the relationship between segregation and brain age.

Method: To examine Black-White brain age disparities (calculated via machine learning models applied to structural MRIs) across varying levels of neighborhood segregation, we analyzed data from three adult health studies conducted in Allegheny County, Pennsylvania, between 2008 and 2021 (N = 966; 16.4% Black). The dissimilarly index of segregation was calculated using census block data from ACS 5-year estimates. A linear regression model was conducted to assess the effect of dissimilarity on residualized brain age adjusted for sex, BMI, education, income, area-level deprivation, and MRI quality. A follow-up interaction model then assessed whether the effect of dissimilarity on brain age differed by race.

Results: Segregation, measured by dissimilarity, independently predicted brain age (b = -0.018, t(888)=-2.13, p=.034), with greater dissimilarity associated with younger predicated brain age. Contrary to our second aim, race did not moderate this effect (p > .05). Although the interaction by race was not significant, there was a main effect of race, with Black individuals having a significantly older predicted brain age than White individuals (b = 1.25, t(888)=2.09, p=.037).

Conclusion: Contrary to expectations, greater neighborhood segregation is associated with younger predicted brain age across races. However, race alone has a

significant independent effect, with Black adults exhibiting older predicted brain ages than White adults. These findings suggest that future studies should explore other environmental and social factors to better understand this racial disparity in brain age.

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Abstract 1540

STRESS-INDUCED GLUCOCORTICOID RESISTANCE: ACES BLUNT THE RELATION BETWEEN SALIVARY CORTISOL OUTPUT AND PLASMA GLUCOSE CONCENTRATION

Dylan Hoell, Claremont McKenna College; Thomas Fuller-Rowell, Ph.D., Auburn University; Stacey Doan, Ph.D., Claremont McKenna College

Dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis is thought to be a key mechanism by which early life stress (ELS) influences later mental and physical health (Dunlavey, 2018). Such dysregulation may occur as glucocorticoid receptor (GR) resistance, where GRs become desensitized or downregulated following overexposure to elevated stress hormones (e.g. cortisol). In theory, GR resistance should diminish the physiological impact of cortisol, which normatively elevates blood glucose as part of the acute stress response. Characterizing stress-induced GR resistance can inform novel strategies to assess HPA dysregulation and offer valuable insight into how ELS shapes health over time. We hypothesized that ELS will diminish the hyperglycemic effect of cortisol via GR resistance. This study analyzed data from 191 college students (Mage= 19.46, SDage= 1.12, 60.5% female) who completed a battery of self-report measures and provided dried blood spot and saliva samples, assayed for glucose and cortisol concentrations, respectively. Salivary cortisol output was calculated as area under the curve with respect to ground from four samples collected before and after the Trier Social Stress Task. Linear regression models were used to assess the effects of Adverse Childhood Experiences (ACEs) on the relation between glucose concentration and salivary cortisol output. All models controlled for sex, age, ethnicity, average parent income, BMI, self-reports of dietary fat and sugar, and sampling time. There were no main nor moderating effects of ACEs on the relation between cortisol and glucose. However, exploratory analyses of subtypes of ACEs demonstrated a significant moderating effect of physical (but not psychological) abuse (β = -.174, SE = .239, p=.05). Simple slopes were significant among participants who did not experience childhood physical abuse (B=.247, SE = .087, p = .004), but not among those who did (B = -.182, SE = .168, p = .441). Consistent with our hypothesis, this indicates that participants who experienced physical abuse in early life do not exhibit the normative positive cortisol-glucose relation, suggestive of GR resistance. This illuminates a fuller picture of enduring stress-induced HPA dysregulation beyond what can be shown by cortisol alone, offering novel insight into the mechanisms by which ELS may shape health throughout the lifecourse.

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Abstract 1505

GESTATIONAL AGE AND POSTNATAL ANXIETY AS MEDIATORS OF THE RELATIONSHIP BETWEEN PREGNANCY LOSS AND CHILD SOCIOEMOTIONAL DEVELOPMENT

Lisa Yang; Sarah Horn, PhD; Kyle Dewsnap, MA, University of British Columbia; Gerald Giesbrecht, PhD; Catherine Lebel, PhD, University of Calgary; Lianne Tomfohr-Madsen, PhD, University of British Columbia

Background: Pregnancy loss is linked to increased perinatal anxiety, and both are associated with adverse birth outcomes, such as preterm birth and earlier gestational age (GA). Parents of preterm infants report elevated anxiety about their child's well-being, which increases the risk of socioemotional difficulties in children. While studies have explored how GA at birth and parental mental health affect child outcomes, the pathways involving pregnancy loss remain unclear. This study investigated whether GA at birth and postnatal anxiety mediate the association between pregnancy loss and child socioemotional development. We hypothesized that a history of pregnancy loss would be associated with poorer child socioemotional development through its effects on earlier GA at birth and elevated postnatal anxiety.

Methods: Participants (n=3792, Mage= 34.45 years) are from a longitudinal pregnancy cohort recruited between April 2020 and July 2022. Participants reported their history of pregnancy loss and their child's GA at birth during the baseline assessment. Both postnatal anxiety and child socioemotional development were assessed at 24 months postpartum. A serial mediation model was used to examine the indirect effect of pregnancy loss on socioemotional development through GA and postnatal anxiety.

Results: Pregnancy loss significantly predicted earlier GA at birth (B = -0.23, p < .001). Earlier GA was associated with higher postnatal anxiety levels at 24 months postpartum (B = -.30, p < .001). Elevated postnatal anxiety at 24 months postpartum was a significant predictor of poorer child socioemotional outcomes at 24 months of age (B = 0.64, p < .001). The serial mediation analysis revealed a significant indirect effect of pregnancy loss on child socioemotional development through GA and postnatal anxiety (B = 0.04, 95% CI [0.02, 0.08]). The direct effect of pregnancy loss on child socioemotional development was not statistically significant (B = -0.47, p = 0.57). All analyses controlled for child sex.

Conclusion: This study demonstrates that pregnancy loss indirectly affects child socioemotional development through its impact on GA at birth and subsequent postnatal anxiety. These findings underscore the importance of providing comprehensive support for parents following pregnancy loss, extending from pregnancy into the early years of parenting.

Figure 1

Serial Mediation of the Relationship Between Pregnancy Loss and Child Socioemotional Development Through Gestational Age and Postnatal Anxiety
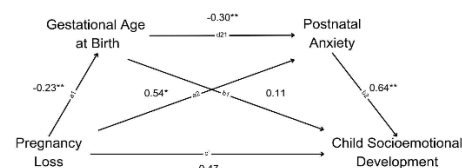
Note. Gestational age at birth and postnatal anxiety mediate the relationship between pregnancy loss and child socioemotional development at 24 months postpartum (indirect effect = 0.04, SE = 0.017, 95% CI [0.02, 0.08]). Path values are unstandardized regression coefficients.
* $p < .05$, ** $p < .001$

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Abstract 1508

INFLAMMATION AND LIFETIME STRESSOR SEVERITY ARE ASSOCIATED WITH BLUNTED CORTISOL BUT NOT SKIN CONDUCTANCE RESPONSES TO ACUTE PSYCHOSOCIAL STRESS

Estelle Higgins, University of Wisconsin-Madison; Jinx Recchio , M.S., University of Wisconsin Institute on Aging ; Elizabeth Nord, B.A., University of Wisconsin-Madison Institute on Aging ; Alexandra Barnes, B.A., Penn Medicine, University of Pennsylvania Health System; Lauren Gresham, B.A., University of Wisconsin-Madison Institute on Aging; Melissa Rosenkranz, Ph.D.; Richard J. Davidson, Ph.D., University of Wisconsin-Madison; George M. Slavich, Ph.D., University of California-Los Angeles; Stacey M. Schaefer, Ph.D., University of Wisconsin-Madison Institute on Aging

Both inflammation and lifetime exposure to stressors have been linked to dysregulated hypothalamic-pituitary-adrenal (HPA) axis and sympathetic nervous system (SNS) responses to acute stress. We previously showed that lifetime stressor severity predicts blunted cortisol reactivity and recovery in this sample. However, whether inflammation interacts with lifetime stressors to predict acute stress responses, and whether these effects differ between the HPA axis and SNS, remains unknown. Here, we examined associations between basal inflammation, lifetime stressor severity, and trajectories of cortisol and skin conductance responses to an acute psychosocial stressor.

Salivary cortisol and skin conductance were collected before (baseline), during (reactivity), and after (recovery) the Trier Social Stress Test (TSST) to index HPA axis and SNS responses, respectively. Lifetime stressor severity was assessed using the Stress and Adversity Inventory (STRAIN), and dried blood spot samples were collected to measure c-reactive protein (CRP) and tumor necrosis factor-α (TNF-α). Linear piecewise mixed-effects models featured lifetime stressor severity, inflammation, and their interaction as predictors. Outcomes included reactivity and recovery trajectories from the TSST for both cortisol and number of nonspecific skin conductance responses (SCR). Models were adjusted for sociodemographic factors.

Lifetime stressor severity is associated with blunted cortisol reactivity and recovery in this sample. Higher basal CRP was also associated with blunted cortisol reactivity (t(219) = 2.27, p = .024) and recovery (t(218) = -3.7, p = .0003), but inflammation did not interact with lifetime stressor severity to predict cortisol responses to acute stress. SCR was not significantly associated with inflammation or lifetime stressor severity.

Overall, higher inflammation levels were associated with blunted cortisol reactivity and recovery, but not SCR responses to the TSST. Follow-up analyses should explore whether other measures of SNS activity are more sensitive to individual differences in stress reactivity, recovery, and associations with lifetime stressor severity and inflammation. Understanding how stressor exposure and inflammation shape the dynamics of acute stress responses could help identify mechanisms of stress-related vulnerabilities and guide targeted interventions.

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Abstract 1480

LIFETIME BURDEN OF DISCRIMINATION AND CAROTID INTIMA-MEDIA THICKNESS AMONG AFRICAN AMERICAN MEN AND WOMEN: THE MODERATING ROLE OF RELIGIOUS COPING

Jason Ashe; Shari Waldstein, PhD, Univ of Maryland Baltimore County; Adolfo Cuevas, PhD, New York University School of Global Public Health; Antonius Skipper, PhD, The Gerontology Institute, Georgia State University; Michele Evans, MD; Alan Zonderman, PhD, National Institute on Aging; Allana Forde, PhD, MPH, Division of Intramural Research, National Institute on Minority Health and Health Disparities, National Institutes of Health

Background: Religion is often considered a protective factor associated with better health outcomes. It may also reduce the adverse impact of interpersonal discrimination on atherosclerotic risk factors. These effects have been consistently observed among AA men and not women. Fewer studies have examined these influences over time or with subclinical risk endpoints.

Objective: Examine the interactive effects of lifetime burden of discrimination (LBD), religious coping, and biological sex on the development of abnormal carotid intima-media thickness (CIMT).

Methods: Data were collected from a longitudinal cohort of 947 AA adult participants (43.4% men; mean age = 50.5 years) in the Healthy Aging in Neighborhoods of Diversity across the Life Span study (baseline visit: 2004-2009; visit 3: 2013-2017). Multivariable logistic regression estimated associations between LBD and abnormal CIMT (>1.0 mm of plaque buildup), and a 3-way interaction term (LBD, religious coping, sex) was included in fully adjusted models to test for interaction adjusted for age, poverty status, and education.

Results: A 3-way interaction was observed for LBD, religious coping, and sex (p-value <0.05), but LBD (i.e., those whose lives were made harder because of discrimination) was only associated with higher odds of developing abnormal CIMT among AA men who engaged in religious coping the least (b = 0.33, SE = 0.12, p-value = 0.01). Specifically, at higher levels of religious coping use, the association between LBD and odds of developing abnormal CIMT development attenuated. These associations were independent of other clinical and biomedical risk factors (body mass index, total cholesterol, and medical history of CVD).

Conclusions: Findings from this study suggest that religious coping buffers the adverse effects of LBD on CIMT, and these associations vary by sex. AA men are more likely to report that discrimination made their lives harder, but religious coping appears to serve as a protective mechanism that may provide cardiovascular health benefits for this population. Encouraging such coping behaviors may contribute to delaying the onset of subclinical and clinical CVD. However, further research is needed to examine other dimensions of religious coping and alternative psychosocial resources that may be effective in mitigating the effects of discrimination on health outcomes for AA women.

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Abstract 1544

CHILDHOOD MALTREATMENT AND INFLAMMATION: THE ROLE OF SOCIAL SUPPORT IN ADULTHOOD ACROSS CTRA GENE EXPRESSION AND CIRCULATING IMMUNE MARKERS

Sumaiyah U. Syed, Southern Methodist University; Stephanie J. Wilson, PhD, University of Alabama at Birmingham

Childhood maltreatment (CM) increases the risk of morbidity and mortality in adulthood, with chronic inflammation emerging as a key pathway. Given the prevalence of childhood maltreatment, identifying protective factors in adulthood is crucial. Social support during childhood has been shown to mitigate the effects of early life stress on immune function. However, the role of adult social support from various relationship sources remains unclear. The current study examined the association between CM and two immune outcomes: (1) the Conserved Transcriptional Response to Adversity (CTRA), a pattern of immune-related genes, and (2) circulating inflammatory markers, including C-reactive protein (CRP), interleukin-6 (IL-6), and tumor necrosis factor-α (TNF-α). This study also investigated whether social support from romantic partners, family, and friends

moderated this association. Data were drawn from a community sample (N = 204 adults, Mage = 50.8) that participated in a larger study on immune health in couples. Multilevel models controlled for gene (CTRA models), batch effects (circulating models), age, sex, race, body mass index (BMI), comorbidities, alcohol, and tobacco use. Contrary to expectations, CM was not significantly associated with overall CTRA expression, including proinflammatory and antiviral gene subsets (ps > .57). Adult social support from partners, family, or friends did not moderate these associations (ps > .22). Similarly, CM showed no significant associations with CRP or IL-6 (ps > .28) across all social support models. While TNF-α exhibited the same nonsignificant pattern for partner and friend support, family support significantly moderated the association between CM and TNF-α (p = .02). Higher CM was significantly associated with higher TNF-α when family support was low, but this association was not significant when family support was high. These findings align with prior research yielding mixed evidence on the link between CM and immune outcomes, suggesting that associations may vary depending on distinct immune markers, such as TNF-α, and the buffering potential of specific moderating factors, such as family support. Investigating social support sources in adulthood may offer a promising avenue for informing interventions aimed at reducing inflammation-related health risks linked to early life stress.

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Abstract 1539

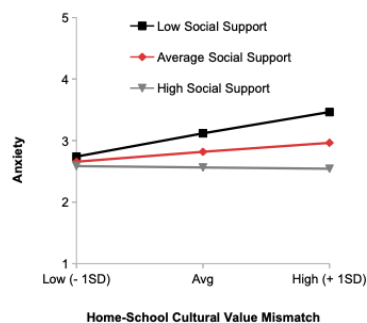### THE RELATIONSHIP BETWEEN HOME-SCHOOL CULTURAL MISMATCH AND ANXIETY: THE MODERATING ROLE OF SOCIAL SUPPORT

Katelan Galvan; Evelyn Arrieta, B.A.; Yolanda Vasquez-Salgado, Ph. D., California State University, Northridge

Previous research has documented that home-school cultural value mismatch (HSCM)—
a cultural mismatch between interdependent family obligations and independent academic obligations—serves as a predictor of anxiety and other mental health symptoms during students' transition to university (Vasquez-Salgado et al., 2021). In a separate vein, research has shown that social support is associated with lower levels of anxiety among university students (Johnson-Esparza et al., 2021). However, these two constructs have not been examined together. This study aimed to extend this body of work by examining the relationship between HSCM and anxiety symptoms in a sample of Latinx first-generation college students during their transition to a four-year university and explored whether social support would moderate this relationship. We hypothesized that (H1) higher levels of HSCM will be associated with higher reports of anxiety and that (H2) social support will weaken this relationship. Latinx first-generation college students (N = 188; Mage = 18.15, SD = .36) completed a self-report online survey gathering information on their experiences with HSCM (14-items; e.g., "I had to choose between doing my academic work and attending family events"), anxiety (8-items; e.g., "I felt nervous"), and social support (11-items; e.g., "I have someone who will listen to me when I need to talk") towards the end of their first semester/quarter at university. A moderation analysis using Hayes

PROCESS macro 4.2, controlling for education context (teaching-centered vs. research-centered four-year institution), biological sex, and socioeconomic status, revealed all hypotheses were confirmed. (H1) Higher levels of HSCM was associated with higher levels of anxiety (b = .21, p = .004), and (H2) social support significantly moderated this relationship (b = -.21, p = .002). In particular, the association between HSCM and anxiety was strongest at lower levels of social support (p < .001), moderate at average levels of support (p = .014), and non-significant (p = .808) at higher levels of support. These findings suggest the need for cultural awareness workshops for university staff and the implementation of mentorship programs for Latinx first-generation students to help mitigate symptoms of anxiety during the transition to university.

Figure 1

The Relationship Between Home-School Cultural Value Mismatch and Anxiety for Latinx

Students with Low, Average and High Social Support

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Abstract 1519

IMPACT OF WORK SCHEDULE AND NIGHTLY CALL VOLUME ON SLEEP AND PHYSIOLOGICAL STRESS MARKERS IN FIREFIGHTERS: A PROSPECTIVE, NATURAL EXPERIMENT

Nicole Bowles; Aanuoluwakiitan Ayeni, MPH, Oregon Health and Science University; Todd Bodner, PhD, Portland State University; Shelby Watkins, MPH; LaTroy Robinson, BA; David Hurtado, SD; Andrew McHill, PhD; Steven Shea, PhD, Oregon Health and Science University

Introduction: A number of fire departments across the U.S. have transitioned from a 24-hour on, 48-hour off (24/48) schedule to alternative work schedules that provide their workers with more consecutive days off (e.g., 1 day on, 3 days off, 2 days on, 3 days off [1/3/2/3]). However, these schedule changes come at the expense of longer work shifts, which may have negative safety and health consequences. In a prospective, natural experiment, we examined the effect of schedule on total sleep time, 48-hour ambulatory blood pressure, and urinary cortisol and catecholamines.

Methods: Portland firefighters participated in three 14-day assessments (phases: while working a 24/48 schedule [baseline]; 2 months after transitioning to a 1/3/2/3 schedule; and 9-10 months after schedule change). During each assessment interval, participants wore an actigraph (wGT3X-BT, ActiGraph), completed a daily sleep diary, provided a 24-hour urine collection, and wore an ambulatory blood pressure monitor for 48 hours. Linear mixed models, with schedule as the fixed effect and participant as a random effect nested within station, were adjusted for study phase, age, gender, number of children, and nightly call volume.

Results: Of the 117 firefighters enrolled, 113 completed the baseline assessment, 82 completed the 2-month follow-up, and 71 completed the final collection. Overall, there was no difference in total sleep time between work schedules. On-duty sleep was significantly affected by call volume, with each call resulting in 13.7 ± 2.3-minute reduction in sleep (p<0.001). Neither systolic nor diastolic blood pressure, nor urinary cortisol, epinephrine, or norepinephrine, differed by work schedule. However, each night call resulted in a 3.2 µg increase in total 24-hour urinary norepinephrine (p=0.002).

Conclusion: During a 9-10 month follow-up, workload assessed via nightly call volume—but not the work schedule itself—was associated with total sleep time and urinary norepinephrine levels. These findings need to be replicated with another department.

POSTER SESSION 1

1

Abstract 1459

MODERATING EFFECTS OF LONELINESS ON THE RELATIONSHIP BETWEEN PERCEIVED STRESS AND INFLAMMATION

Valentina Maza; Daniel Argueta, B.A. , Rice University; Jensine Paoletti-Hatcher, Ph.D. , Portland State University; Kelly Brice, Ph.D. ; Vincent Lai, B.A. ; Bryan Denny, Ph.D. , Rice University; Charles Green, Ph.D., University of Texas Health Science Center at Houston; Samantha Henry, Ph.D. , Baylor College of Medicine; Luis Medina, Ph.D. , University of Houston; Paul Schulz, MD, University of Texas Health Science Center at Houston; Jennifer Stinson, Ph.D. ; Lydia Wu-Chung, Ph.D. , University of Pittsburgh; Cobi Heijnen, Ph.D. ; Christopher Fagundes, Ph.D., Rice University

It is well recognized that caregivers of spouses with Alzheimer's disease or related dementias (ADRD) experience higher levels of

stress due to the emotional, mental, and physical demands of caregiving. Perceived stress reflects how people interpret and manage stressors predicts higher inflammation levels. Loneliness is associated with poor health and dysregulated immune function, including heightened immune cell reactivity, particularly in response to lipopolysaccharide (LPS) stimulation. This study aimed to evaluate the potential moderating effect of loneliness on the relationship between perceived stress and pro-inflammatory cytokine production in ADRD spousal caregivers. A sample of 284 ADRD spousal caregivers (M = 71.44, SD = 7.85; 71.5% female) provided demographic information, self-reports of perceived stress (PSS) and loneliness (UCLALS), and provided blood samples during in-person lab visits. We also determined LPS-induced whole-blood cytokine production as the primary measure of inflammation. We measured interleukin-6 (IL-6), interleukin-1β (IL-1β), tumor necrosis factor-α (TNF- α), and interleukin-10 (IL-10). We created a composite score of these cytokines as the primary measure of pro-inflammatory cytokine production. We conducted multiple regression analyses to explore the relationship between perceived stress, loneliness, and systemic inflammation. While the main effects of perceived stress (B = −31.95, p = .083) and loneliness (B = −9.80, p = .206) on proinflammatory cytokine production were not statistically significant. However, loneliness moderated the relationship between perceived stress and proinflammatory cytokine production (B = 1.06, p = .018) such that the relationship between perceived stress and proinflammatory cytokine production was stronger for caregivers who reported high levels of loneliness compared to those who reported mean or low levels of loneliness. (Figure 1). Given that lonelier individuals tend to be more psychologically reactive to stress, this heightened sensitivity may amplify the impact of stress on caregivers. In turn, this may contribute to greater inflammation through increased perceived stress. By illustrating that loneliness amplifies the inflammatory response to perceived stress, the findings highlight the importance of considering psychological factors in the health outcomes of caregivers.

Interaction between Perceived Stress and Loneliness
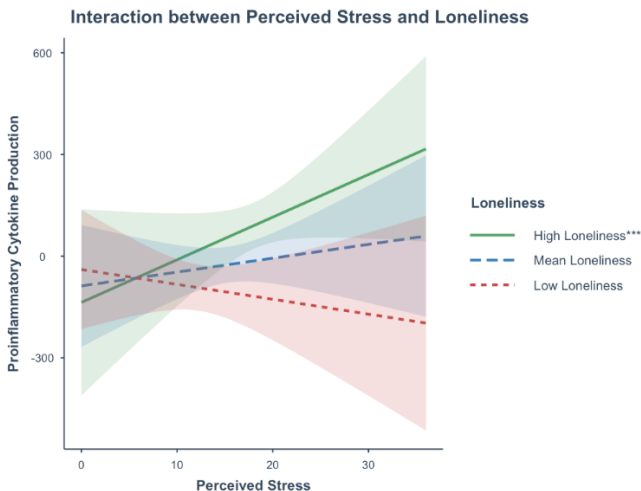
2

Abstract 1258

CHARACTERIZING PATTERNS OF EXPOSURE TO RACIAL DISCRIMINATION AND ASSOCIATIONS WITH REPORTED PSYCHOLOGICAL DISTRESS IN BLACK MOTHERS

Gabriela Revi; Lori Francis, PhD, The Pennsylvania State University

Racial discrimination is a significant psychological stressor for Black Americans (Paradies et al., 2015). Evidence has shown that reports of racial discrimination are differentially associated with several sociocultural (i.e., religious support, neighborhood social capital, and caregiver role overload; Woods-Giscombe et al., 2023) and sociodemographic (i.e., neighborhood deprivation, cumulative sociodemographic risk, and economic strain) factors (English et al., 2014). However, minimal research has explored differential patterns of exposure to racial discrimination and related psychological distress (PD) in Black mothers. As such, we explored associations between racial discrimination, PD, and related factors in 398 Black mothers from households who experienced poverty, drawn from the Family Life Project. A 13-item measure was used to assess how often mothers experienced racially discriminatory events. Using latent class analysis, we identified four classes of exposure to racial discrimination: High Exposure (High 29%), Exposure to Overt Discrimination (Overt; 3%), Exposure to Indirect Discrimination (Indirect; 29%), and Low Exposure (Low; 3 9%). Compared to the Low Exposure class, mothers in the Overt Exposure class had increased odds of reporting higher PD (p = 0.03) and higher caregiver role overload (p < 0.001). Increased cumulative sociodemographic risk was associated with membership in the High and Indirect Exposure classes (p < 0.001). Compared to mothers in the Low Exposure class, those in the High and Indirect exposure classes had reduced odds of appraising experiences with racial discrimination as stressful. Class membership was not associated with neighborhood deprivation, neighborhood social capital, religious support or economic strain. Findings suggest that different patterns of experiences with racial discrimination may have unique impacts on PD and may be uniquely associated with caregiver burden and sociodemographic risk. Future research should investigate additional factors that mitigate effects on Black mothers' PD and examine associations between exposure to racial discrimination, physical health outcomes and biological responses to stressors to inform future intervention and policy efforts to best support Black mothers who experience racial discrimination and related PD.

3

Abstract 1125

VITAL MEASURES AND SKIN CONDUCTANCE REACTIVITY TO RECALLING A TRAUMATIC STROKE EVENT AS PREDICTORS OF STROKE-INDUCED POSTTRAUMATIC STRESS DISORDER SYMPTOMS

Katherine Fu; Corinne Meinhausen , MA; Jennifer A. Sumner, PhD, University of California, Los Angeles

Background: Strokes and transient ischemic attacks (TIAs) are acute, life-threatening medical events that can trigger the onset of posttraumatic stress disorder (PTSD) symptoms, but understanding

of risk factors is limited. This study examined basal physiology vital measures collected in-hospital during evaluation for stroke/TIA as predictors of stroke-induced PTSD symptoms 1 month later. Further, we compared these basal markers to skin conductance reactivity (SCR) to recalling the stroke/TIA event in-hospital–an established predictor of stroke-induced PTSD symptoms.

Methods: Participants (n=88) were enrolled in-hospital following evaluation for stroke/TIA. Basal vital measures (heart rate [HR], diastolic blood pressure [DBP], systolic blood pressure [SBP]) were collected in the emergency department and extracted from medical records. SC levels were measured continuously during a resting baseline and standardized interview about the stroke/TIA event during hospitalization. Stroke-induced PTSD symptoms were assessed via phone 1 month later. Using linear regression, we examined basal vital measures (HR, pulse pressure [PP, calculated as the difference between SBP and DBP, given high correlation between SBP and DBP]) as predictors of stroke-induced PTSD symptoms at 1-month, and compared them to SCR to recalling the stroke/TIA event.

Results: Participants had a mean age of 60.4 years (SD=16.3) and were 53.4% female. Both PP (β=0.38, p=.015) and SCR (β=0.41, p=.003) were positively associated with total PTSD symptoms at 1-month follow-up when adjusting for numerous relevant covariates (Table 1). In contrast, HR was not significantly associated with stroke-induced PTSD (β=-0.04, p=.763). In separate analyses of fear- and dysphoria-related PTSD symptom dimensions, PP and SCR were more strongly positively associated with fear-related symptom levels than dysphoria-related symptom levels (Table 1). Further analyses suggested that the association of PP with stroke-induced PTSD symptoms was driven by SBP, not DBP.

Conclusion: This is the first study to prospectively examine associations between basal and trauma reactivity physiological markers in the acute aftermath of stroke/TIA with stroke-induced PTSD symptoms. These non-invasive, objective measures can be collected naturalistically and may hold promise for identifying those at heightened risk for developing PTSD.

Table 1. Regression parameters for associations between basal physiology vital measures and trauma reactivity physiology measures with stroke-induced PTSD symptoms at 1-month follow-up, adjusting for relevant covariates.

Stroke/TIA-induced PTSD symptoms at 1 month	b	95% CI	β	p-value
Total PTSD symptom severity				
Age	0.09	[-0.10, 0.27]	.14	.359
Gender	2.73	[-1.55, 7.02]	.16	.205
Charlson Comorbidity Index	0.79	[-0.56, 2.14]	.14	.246
NIH Stroke Severity score	-0.06	[-0.72, 0.60]	-.02	.855
Perceived threat during stroke/TIA	0.30	[-0.06, 0.66]	.21	.102
Acute stroke-induced PTSD symptoms in-hospital	0.57	[0.26, 0.88]	.51	<.001*
SCR to recalling the stroke/TIA (µS)	2.34	[0.83, 3.85]	.41	.003*
Heart rate (bpm)	-0.02	[-0.19, 0.14]	-.04	.763
Pulse pressure (mmHg)	0.14	[0.03, 0.26]	.38	.015*
Higher-order fear symptoms				
Age	0.03	[-0.07, 0.13]	.09	.565
Gender	1.34	[-1.03, 3.70]	.14	.262
Charlson Comorbidity Index	-0.01	[-0.76, 0.73]	-.00	.970
NIH Stroke Severity score	-0.02	[-0.39, 0.34]	-.02	.907
Perceived threat during stroke/TIA	0.18	[-0.02, 0.38]	.23	.075
Acute stroke-induced PTSD symptoms in-hospital	0.30	[0.12, 0.47]	.47	.001*
SCR to recalling the stroke/TIA (µS)	1.45	[0.61, 2.28]	.45	.001*
Heart rate (bpm)	0.02	[-0.07, 0.11]	.05	.716
Pulse pressure (mmHg)	0.08	[0.02, 0.14]	.38	.013*
Higher-order dysphoria symptoms				
Age	0.06	[-0.06, 0.17]	.16	.337
Gender	1.40	[-1.27, 4.07]	.14	.297
Charlson Comorbidity Index	0.80	[-0.04, 1.65]	.25	.062
NIH Stroke Severity score	-0.04	[-0.45, 0.37]	-.03	.850
Perceived threat during stroke/TIA	0.12	[-0.11, 0.34]	.14	.296
Acute stroke-induced PTSD symptoms in-hospital	0.28	[0.08, 0.47]	.43	.007*
SCR to recalling the stroke/TIA (µS)	0.90	[-0.05, 1.84]	.27	.062
Heart rate (bpm)	-0.04	[-0.14, 0.06]	-.11	.422
Pulse pressure (mmHg)	0.06	[-0.01, 0.13]	.29	.080

Note: CI=confidence interval; NIH=National Institutes of Health; PTSD=posttraumatic stress disorder; SCR=skin conductance reactivity; TIA=transient ischemic attack. *p-value <.05.

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Abstract 1140

SIMULTANEOUS USE OF EXERCISE AND PRESCRIPTION OPIOIDS DEMONSTRATES GREATER PREVALENCE OF PAIN SYMPTOMS AMONG MIGRAINEURS ENDORSING CHRONIC PAIN

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INTRODUCTION: Migraine is a chronic pain condition whose symptomatology is often comorbid with chronic pain (CP). Prescription opioids (RxO) and exercise (EX) are strategies often employed to manage migraines and CP. However, findings are mixed regarding the impact of RxO and EX on migraine symptoms, including which may be more effective. This study explores how migraineurs are impacted by RxO, EX, or simultaneous use. METHODS: The 2021 Migraine in America Survey was completed virtually by 4,992 adults with migraine, 1,761 of whom reported co-occurring CP. Participants reported if they had any of the listed 51 common migraine symptoms and which aid(s), including EX and RxO, were used to manage symptoms. A two-way ANOVA was done to assess differences in total number of reported symptoms for those with CP(+) and without CP(-) among groups utilizing (A) EX only, (B) RxO only, (C) both EX and RxO, or (D) neither aid for their treatment. RESULTS: There was a significant main effect for CP+ migraineurs (F(1, 4984)=2.733, p=.042, η2 =.002), wherein CP+ reported more symptoms (M=21.973, SD=8.366) than CP- (M=17.911, SD=7.674). There was a similar significant main effect with aid strategy (F(3, 4984)=44.847, p<.001, η2 =.026), where EX only yielded significantly more symptoms with CP+ migraineurs (M=25.019, SD=8.479) than CP- (M=18.948, SD=7.800). Among groups, EX only predicted more

symptoms than Group D (AMD=2.848, SD=.411, p<.001), similar to RxO with Group D (AMD=2.196, SD=.250, p<.001). Groups A had fewer symptoms than C (AMD=2.132, SD=.489, p<.001), like Groups B had against C (AMD=2.78, SD=.365, p<.001). Other simple effects were significant (p<.001) between Group C and Group D to all groups. No significant interactions were found with RxO only to EX only (p=NS). DISCUSSION: CP+ migraineurs using EX reported more symptoms, suggesting EX may trigger migraines in CP+ regardless of RxO status. CP- migraineurs, however, report more symptoms with EX or RxO only, and even more if using both, suggesting EX may worsen migraine severity for CP-. While CP- may seek EX and RxO for managing symptoms, CP+ are more likely to use RxO, blurring conceptualizations of symptoms with RxO. Interactions between diagnoses of migraines and CP, and determining effective interventions for managing relevant pain symptoms, are important and beneficial areas for future investigations.

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Abstract 1421

DOES PULSE WAVE VELOCITY AS MEASURED BY DUAL IMPEDANCE CARDIOGRAPHY ASSOCIATE WITH TRADITIONAL CARDIOMETABOLIC RISK FACTORS AND MARKERS OF PRECLINICAL ATHEROSCLEROSIS?

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Pulse wave velocity (PWV) is a widely utilized non-invasive method to estimate arterial stiffness, which is a known cardiovascular health risk factor and clinical marker of vascular aging. We recently developed a novel technique to collect PWV using dual-impedance cardiography (d-ICG), which was designed to address some of the limitations imposed by other available methods (e.g., ultrasound, tonometry, cuff-based applications), such as the ability to simultaneously measure other key psychophysiological variables of interest, the ease of application and burden on participants, and the associated costs of highly-trained expert technicians. Accordingly, the current pre-registered study tested for the first time whether PWV assessed by d-ICG associates with established biomarkers of cardiometabolic risk (i.e., indices of adiposity, dyslipidemia, autonomic physiology, blood pressure, and glucose regulation) and a vascular indicator of preclinical atherosclerosis (i.e., carotid artery intima media thickness [C-IMT]) in a young to midlife community sample (N = 366, ages 28-56; 63.4% female). Estimates of d-ICG and carotid-femoral PWV (cfPWV), via pulse pressure sensors, were also compared in a subset of participants (N = 181). As hypothesized, both techniques revealed similar positive associations between faster PWV (i.e., greater stiffness), older age, and higher blood pressure (r's ≥ .24, p's ≤ .001), despite the relatively low consistency between the two methods when directly compared (ICC = 0.38; p <.001). Further, across the included cardiometabolic risk factors, the average composite (Fisher's Z-score) correlation with arterial stiffness tended to be stronger with cfPWV compared to d-ICG (cfPWV r = .17; d-ICG r =.11; p = .003), which was likely driven by

the independent positive associations between cfPWV, waist circumference (r = .26, p < .001), and fasting glucose/insulin levels (r's ≥ .20, p's ≤ .001). However, with respect to preclinical atherosclerosis, both estimates of PWV demonstrated a comparable, significant positive correlation with C-IMT (cfPWV r = .31; d-ICG r =.26; p =.42). The current findings suggest that d-ICG PWV is a viable alternative for generating reliable estimates of arterial stiffness that may help further our understanding of the cardiometabolic risk factors implicated in the development and progression of atherosclerosis.

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Abstract 1080

THE IMPACT OF ANTI-IMMIGRANT RHETORIC ON STRESS
Monica Adams, University of Houston

The American Public Health Association has opposed anti-immigrant political rhetoric and policies since 1978 given the links between rhetoric and deleterious effects on population health. This study investigated the impact of exposure to anti-immigrant rhetoric on psychological and physiological stress responses among young adults. It was hypothesized that participants would experience greater psychological stress, heart rate (HR) and blood pressure (BP) when exposed to anti-immigrant rhetoric compared to neutral rhetoric about museum architecture.

A within-subjects experimental design was used to expose participants to both anti-immigrant and neutral rhetoric. Rhetoric type was counterbalanced across participants. Measures of psychological stress, HR, and BP were collected before, during, and after rhetoric exposure. Paired sample t-tests were used to test differences in outcomes for each rhetoric exposure.

Participants (n = 127) exhibited significantly higher psychological stress during exposure to anti-immigrant rhetoric (M = 4.4, SD = 2.2) compared to neutral rhetoric (M = 2.9, SD = 2.2) [t(126)=-8.25, p < 0.001]. Participants exhibited an increase in HR recovery after anti-immigrant rhetoric (M = 1.9, SD = 4.3) compared to neutral rhetoric (M = -1.82, SD = 4.4) [t(126)=6.07, p < 0.001]. Participants had higher SBP during anti-immigrant rhetoric (M = 106.3, SD = 10.86) than during neutral rhetoric (M = 104.29, SD = 11.34) [t(126)=3.44, p < 0.001], and lower SBP recovery after anti-immigrant rhetoric (M = -1.5, SD = 4.8) compared to neutral rhetoric (M = 0.6, SD = 4.8) [t(126)=-3.58, p < 0.001]. There were no significant differences in HR, HR reactivity, SBP reactivity, DBP, DBP reactivity, or DBP recovery between exposure to anti-immigrant rhetoric and neutral rhetoric (see Table 1).

This study provides insight into the immediate and lingering effects of anti-immigrant rhetoric on psychological and physiological stress. Exposure to such rhetoric not only increased psychological stress but also induced distinct patterns in HR and SBP responses. These findings underscore the pervasive influence of political rhetoric on health and wellbeing. As public health discussions on immigration unfold, it is important to consider both mental and physiological aspects, emphasizing the holistic impact of anti-immigrant rhetoric.

Measure	Anti-immigrant		Neutral			
	M(SD)	Range	M(SD)	Range	t-test	p-value
Psychological Stress	4.4 (2.2)	1-10	2.9 (2.2)	1-10	-8.25	< 0.001
Mean HR (bpm)	74.7 (10.3)	52.5-99.5	74.4 (9.9)	51.5-97	0.97	0.34
HR Reactivity (bpm)	-1.62 (4.14)	-13.16 - 7.16	-1.82 (4.4)	-17.84 - 8.83	0.39	0.7
HR Recovery (bpm)	1.9 (4.3)	-10 - 12.17	-1.82 (4.4)	-17.8 - 8.8	6.00	< 0.001
Mean SBP (mmHg)	106 (10.4)	83-138.5	104.5 (10.5)	58.5-137.5	3.43	< 0.001
SBP Reactivity (mmHg)	-0.44 (4.76)	-17 - 11.16	-1.47 (5.1)	-18.6 - 9.7	1.6	0.11
SBP Recovery (mmHg)	-1.5 (4.8)	-13.7 - 12.83	0.6 (4.8)	-13 - 15.25	-3.42	<0.001
Mean DBP (mmHg)	63.9 (6.9)	51.5-83	63.6 (6.7)	48-82	0.95	0.34
DBP Reactivity (mmHg)	-0.19(4.3)	-12.7 - 11.5	-0.29(4.5)	-11.33 - 13.3	0.17	0.87
DBP Recovery (mmHg)	-0.85(4.3)	-11 - 10.2	-0.18(4.3)	-14 - 12.25	-1.33	0.19

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Abstract 1309

FUNCTIONAL AND BIOLOGICAL INDICATORS OF ENDOTHELIAL FUNCTION AND THEIR ASSOCIATION WITH THE AHA LIFE'S ESSENTIAL 8.

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Atherosclerotic cardiovascular disease (ACVD) is the leading cause of morbidity and mortality among adults. A preclinical risk factor for ACVD is endothelial dysfunction (ED), which refers to the reduced capacity of blood vessels to respond to a vasodilator stimulus. A common noninvasive assessment of ED is the magnitude of reactive hyperemia (RH), which refers to an endothelium-dependent arterial dilation following external restriction of blood flow. Increasingly studied cellular markers of ED include vascular cell adhesion molecule 1 (VCAM-1) and intracellular cell adhesion 1 (ICAM-1). Little is known about the intercorrelations of noninvasive functional and cellular markers of ED or the extent to which these ED markers relate to behavioral and other risk factors for ACVD. Accordingly, we tested associations of ED markers to the American Heart Association's Life's Essential 8 (LE8) score, a metric composed of both health behaviors (i.e., diet, physical activity, smoking, and sleep) and factors (i.e., BMI, non-HDL cholesterol, fasting blood glucose, and blood pressure). In 267 midlife adults (162 female; 37 nonwhite, M = 41.5 years), RH was assessed by venous occlusion plethysmography, and VCAM-1, ICAM-1, glucose, and non-HDL cholesterol were collected following an overnight fast. Self-report inventories were administered to assess LE8 behavior scores. Results revealed that LE8 scores were negatively related to ICAM-1 concentrations (r = -0.426, p<0.001), whereas greater LE8 scores were associated with larger percent increases in RH (r = 0.275, p<0.001). Additionally, higher levels of ICAM-1 were associated with smaller percent changes in RH (r = -0.117, p = 0.004). VCAM-1 was not associated with the LE8 score or RH. The current

findings suggest that LE8 scores relate to functional and cellular endothelial markers. Future longitudinal and intervention studies are needed to better understand the divergent associations of ICAM and VCAM and to determine if changes in LE8 scores may influence endothelial health and emergent ACVD risk.

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Abstract 1257

ASSOCIATION OF COMMON RESPIRATORY DISEASE MEDICATIONS WITH COGNITIVE FUNCTION AND IMPAIRMENTS IN MIDDLE AGED TO OLDER ADULTS

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Purpose: Recent studies have explored links of chronic inflammation with higher risks of developing cognitive impairments and dementia. Emerging research shows higher risks of cognitive impairment in respiratory diseases such as asthma and chronic obstructive pulmonary disease, but few studies that have examined the role of medications used to treat respiratory diseases. The current study sought to explore respiratory disease medications and their potential for predicting global cognitive status and cognitive domains of functioning in a large cohort of middle aged to older adults, ages 40-97.

Methods: The National Alzheimer's Coordinator Center(NACC) database from September 2005 to June 2024 (N= 8,587) was employed to investigate in a cross-sectional study whether the use of inhaled corticosteroids(ICS), short acting bronchodilators(SABA), leukotriene receptor antagonists(LTRA), oral corticosteroids, and combination medications of ICS and long-acting bronchodilators(LABA) were significant predictors of cognitive impairment status using a binary logistics regression. Additionally, we tested associations of these medications with the Montreal Cognitive Assessment(MoCA) and the following specific cognitive domains: Working and episodic memory(Craft Story I and II), executive function(Trails B), language(Multilingual Naming Test), and psychomotor processing speed(Trails A) using a linear regressions.

Results: The combination medication of ICS+LABA showed significant positive associations with global cognitive status(OR=.391) when controlling for demographics including BMI, depression, anxiety, hypertension, diabetes, thyroid disease, and the APOE4 allele. Furthermore, both combination medication of ICS+LABA and SABA were significant predictors of higher MoCA scores. For cognitive domains of functioning, SABA use predicted better scores on executive function, language, and memory tests.

Conclusions: SABA use in older age is associated with better cognitive function across a number of domains, possibly due to systemic sympathetic activation conferred by this medication. Beneficial effects of ICS+LABA may be due to reductions in inflammation and sleep interruptions by nighttime symptoms, since LABA is often prescribed to harness these. Further research is needed to study the impact of these medications on cognitive status in different respiratory diseases.

Abstract 1274

IMPACT OF PERSEVERATIVE COGNITIONS ON AFFECT AND CARDIOVASCULAR RESPONSES: A COMPARISON OF WORRY, BROODING, AND REFLECTION

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Perseverative cognitions are maladaptive forms of emotional regulation involving repetitive, negative thoughts linked to adverse health outcomes. Yet, there are different types of perseverative cognitions: worry – a focus on anticipated future threats; ruminative brooding – negative self-focused thoughts about the past; and ruminative reflection – an effort to gain insight into one's feelings and problems. While worry and brooding are typically maladaptive, it is not clear if one type of worse than the other. More so, the role of reflection remains unclear and may have adaptive qualities. This study aimed to compare the effects of worry, brooding, and reflection on affective (valence and arousal) and physiological (heart rate variability) reactivity and recovery in a psychophysiological framework.

A total of 202 participants (age M = 19.48 years, SD = 1.45; 73.3% female) completed the laboratory experiment. After a 10-minute resting period, participants were randomly assigned to one of four 8-minute cognitive inductions (worry, brooding, reflection, or neutral), followed by a stimulus-free 10-minte recovery period. Heart rate variability was assessed continuously during each study phase (baseline, induction, recovery) using root mean square of successive differences; affective valence and arousal were measured at the end of each phase.

Data were analyzed using a 4 (between-person: cognitive induction) x 3 (within-person: study period) repeated measures ANOVA. Significant interaction effects were observed for valence and arousal (ps < .001). For valence, brooding participants reported the lowest positive emotions post-induction, followed by worry, reflection, and control (with each significantly different than the other); this pattern persisted through the recovery period. For arousal, brooding participants felt the least activated post-induction, followed by worry, reflection, and control. By the end of recovery, reflection was associated with the lowest activation levels; brooding and worry were similar, and control participants remained the most activated. Although significant within-group changes in HRV were observed, there was a lack of significant differences between groups.

These findings highlight the differential impact of perseverative cognitions on affect and underscore the need for further research on their cardiovascular effects.

Abstract 1410

ACADEMIC STRESS EFFECTS ON THE ORAL MICROBIOME AND THEIR MODIFICATION BY DIETARY NITRATE

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Background: Academic stress negatively impacts the immune system, in part by reducing the production of exhaled nitric oxide (NO), which serves as a crucial antimicrobial defense in the airways. NO production can be boosted by dietary nitrate, which is partly converted to nitrite by the oral bacteria and then further reduced to nitric oxide in various tissues, including the lungs. Although dietary nitrate has been shown to enhance exhaled NO, the role of specific bacteria in boosting NO production under stress and dietary nitrate supplementation remains unknown.

Method: We investigated the oral microbiome during academic stress in a double-blind, randomized, placebo-controlled study. Students (N=39) were randomly assigned to either two daily doses of nitrate (beetroot juice, 400mg nitrate per dose) or placebo (nitrate-depleted beetroot juice). Saliva was collected, exhaled NO was measured, and mood was assessed during a low-stress period in the semester and during the high-stress final exam period. The oral microbiome composition was determined by deep sequencing of the ribosomal rRNA subunit (16S rRNA) gene and analyzed for previously identified nitrate-converting bacterial genera, including Neisseria, Prevotella, Alloprevotella, Veillonella, Actinomyces, and Rothia.

Results: Beetroot juice led to an increase in exhaled NO compared to placebo (p<.004) and reduced negative affect (p=.075). Notable changes in the abundance of five bacterial genera occurred during exam stress and in response to dietary supplementation. Neisseria increased (p<.001) and Prevotella 7 decreased (p<.038) with beetroot juice, but remained stable in the placebo group. Veillonella decreased (p=.012) whereas Rothia increased (p=.013) in both groups. Actinomyces increased with beetroot juice, but decreased with placebo (p=.063). Abundance of Rothia was positively correlated with increases in NO levels following beetroot juice (p=.026).

Conclusion: The oral microbiome was significantly altered by dietary nitrate during periods of stress, accompanied by a concurrent increase in exhaled NO. Thus, it potentially supports the innate immune function of the airways, which is critical during periods of stress. Neisseria and Rothia appear to be important contributors to NO production under stress. Contributions of individual species of bacteria and mood-related effects require further study.

Abstract 1330

SUBJECTIVE COGNITIVE CONCERNS AND MENTAL HEALTH IN COLLEGE STUDENTS

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Subjective cognitive concerns (SCC), such as trouble concentrating, slowed thinking, and difficulty remembering, are associated with a higher severity of depression and anxiety symptoms. SCC rarely correlate with objective neuropsychological test performances, but are associated with stress, substance use, sleep quality, and severity

of mental illness. The current study examined the incidence of SCC in a sample of 633 undergraduate students (M_{age}=19.0, 82.3% White, 81.4% female) at a university in the Southern United States and assessed the association between SCC and mental health conditions. Participants completed the Neuro-QoL Cognitive Function questionnaire, assessing SCC; PHQ-8 assessing depression; GAD-7, assessing anxiety; and PCL-5, assessing PTSD. Participants were excluded if they reported any neurodevelopmental condition other than attention-deficit/hyperactivity disorder (ADHD), a neurological condition, a traumatic brain injury, or a concussion within 3 months. In this sample, 27.3% reported elevated cognitive concerns and they reported a significantly higher severity of concerns than the general population (t(632)=-15.25, p<.001, d=-.61). The most common concerns were difficulty reading (61.6%), concentrating (57.2%), and paying attention (46.9%). In terms of mental health, 28.4% screened positive for depression, 31.8% for an anxiety disorder, and 21.2% for PTSD. Participants who screened positive for a mental health disorders reported significantly higher rates of SCC than participants who screened negative (Depression=60%, Anxiety=55.7%, PTSD=61.9%; Negative screens: range=14.1-18.0%). SCC are associated with lower academic self-efficacy, and students with mental illness are more likely to drop out of college. It is unclear what percentage of this sample is currently seeking treatment or resources for support, but the high rates of both cognitive concerns and positive screens for mental health disorders in this undergraduate sample merits further investigation. Evidence-based treatments for mental health disorders and other behavioral interventions (e.g., exercise, compensatory cognitive training) may improve SCC in college students. Undergraduate students appear at increased risk for mental health conditions and elevated SCC, indicating potential need for resources to support this population and assist them with their academic success.

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Abstract 1252

INTERNALIZATION AND SOMATIZATION THROUGH REACTIVE AGGRESSION AS A CAUSE OF SUBJECTIVE PAIN

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Background: Individuals with nociplastic pain (NP) often report pain-related symptoms that are difficult to describe and have no clear physical basis or biomarkers. NP has been linked to cognitive dysfunctions, such as difficulties in control and attention, as well as problems in describing one's emotional states (alexithymia). However, it has not yet been clarified how various psychological factors can explain the onset of subjective pain. This study aimed to investigate the relationship between subjective pain and cognitive control. **Methods**: 44 participants (25 females; M = 21.9 years, SD = 1.58) administered the perceptual and pain thresholds tests using the PainVision. They were then requested to perform the stop-signal task for evaluating cognitive inhibition and the Taylor Aggression Paradigm (TAP) for evaluating emotional inhibition through reactive aggression and decision-making under provocation (low/middle/high). Finally, they completed the following questionnaires: Somatic Symptom Scale-8 (SSS-8), Patient Health Questionnaire-15 (PHQ-15), Toronto Alexithymia Scale (TAS-20), and

State-Trait Anxiety Inventory (STAI). Based on the questionnaire results, participants with overall SSS-8 scores of 8 or higher and mild or higher PHQ-15 scores were classified as the NP group. Participants who did not meet these criteria were classified as the control group. **Results**: Significant differences were found between the NP and the control group in both the low and middle provocation conditions in TAP, indicating lower reactive aggressions in the NP group ($p < 0.05$). The two groups showed no significant differences in the perceptual and pain thresholds and the scores in the stop-signal task. The TAS-20 subscale of "difficulties identifying feelings (DIF)" and STAI trait anxiety were both significantly higher in the NP group compared to the control group. The overall significance of the regression model was confirmed ($F (2, 41) = 11.45, p < .001$), indicating that both trait anxiety and TAS-20 DIF have a positive effect on somatic symptoms ($R^2 = .36$). **Conclusion**: The present findings suggest that the subjective pain may be associated with emotional inhibition. NP individuals may be internalizing their stress up to the point where it becomes intolerable and then externalizing it in the form of somatic symptoms of pain.

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Abstract 1366

PERCEIVED STRESS AND ANXIETY SYMPTOMS: TESTING THE BUFFERING EFFECTS OF PERCEIVED FAMILY SUPPORT AND RESILIENCE

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Background: Stress among college students is common and increases the risk for developing stress-related psychological disorders including anxiety. Prior research suggests psychosocial factors such as perceived family support (PFS) and resilience—the ability to adapt to stress and adversity—can reduce or ameliorate the effects of perceived stress (PS) on anxiety symptoms (AS). However, it remains unclear whether PFS and resilience confer protection in a sample of racially diverse undergraduate students and if the association between PS and AS is moderated by PFS and resilience independently or conjointly, which is examined in the present study.

Method: Data was drawn from the Healthy Student Brain (HSB) study — an 8-week pilot physical activity and cognitive training intervention project. Participants (n = 103) completed the Multidimensional Scale of Perceived Social Support (MSPSS), Connor-Davidson Resilience Scale (CD-RISC), Perceived Stress Scale (PSS), and the Patient-Reported Outcomes Measurement Information System (PROMIS) Anxiety measure at baseline. The MSPSS family subscale and total scores for the CD-RISC, PSS, and PROMIS anxiety measures were used to assess PFS, resilience, PS, and AS. Participants who did not complete the study or who had missing data for study variables were dropped. Moderation analysis on continuous values using R with 5,000 bootstrapping and 95% BCa confidence intervals was used to test the study hypotheses.

Results: The final sample (n= 63, Mage(SD) =20.9(3.1)) for this study was majority female (73.0%) and racially diverse (42.9% Black, 25.4% Asian, 12.7% Hispanic, 12.7% White). Results revealed significant

correlations between AS and PS (r =.62 [.46, .75], p< .001), PFS (r = -.27 [-0.47, -0.05], p= 0.036), and resilience (r = -.26, [-0.46, -0.03], p = 0.036). There was a significant main effect of perceived stress on anxiety, b=.74 [.44, 1.02] , p< .001. This association was not moderated by PFS, resilience, or PFS*resilience.

Conclusion: Consistent with prior research, these findings highlight the association between PS and AS. However, findings did not confirm study hypotheses as neither PFS, resilience, nor PFS*resilience buffered against PS on AS. Further studies in larger samples are needed to examine the relationship among PS, PFS, resilience, other biopsychosocial factors, and AS in diverse samples of college students.

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Abstract 1418

TITLE: IS THERE AN ASSOCIATION OF PATIENT ACCOMMODATION OF AGING AND MINDSET FACTORS, AND LEVELS OF COMFORT AND CAPABILITY?

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Background: Many conditions for which people seek musculoskeletal care are conditions of senescence, meaning the expected deterioration of cells and tissues with age. Despite worsening pathology with age, symptom severity is often independent of severity of disease. This phenomenon raises the question if psycho-social factors play a role in symptom severity and how one accommodates to the aging process.

Methods: We conducted a cross-sectional observational cohort study of 140 English-speaking adults (18 to 89 years) presenting for initial or return specialist evaluation of a musculoskeletal problem in single large city in the United States from April 2024 to August 2024. We hypothesized feelings of distress, intolerance to uncertainty, and unhelpful thought patterns were associated with one's attitude toward their age and symptom severity. Demographics, pain intensity, levels of capability and attitudes towards aging were obtained through validated questionaries and assessed using multivariable regression.

Results: Accounting for potential confounders such as age, marital status, income status, unhelpful thoughts, feelings of distress, and intolerance of uncertainty we found that lower accommodation of aging was associated with greater feelings of distress (regression coefficient [β] -0.10 [95% confidence interval (CI) -0.18 to -0.02]; p = 0.02), greater unhelpful thoughts ([β] -0.09, 95% CI = -0.18 to -0.01; p = 0.01), and greater intolerance of uncertainty ([β] -0.03, 95% CI = -0.05 to -0.00; p = 0.02). Higher pain intensity was associated with feelings of distress ([β] 0.38, 95% CI = 0.02 to 0.05; p < 0.01) and inversely associated with post-college graduate education ([β] -1.70, 95% CI = -3.1 to -0.03; p = 0.02). Patients who were younger ([β] -0.17, 95% CI = -0.29 to -0.05; p = 0.05) with less distress ([β] -0.76, 95% CI = -1.39 to -0.13; p = 0.02), and post-college graduates ([β] 6.10, 95% CI = 0.53 to 11.68; p = 0.03) reported higher levels of capability.

Conclusion: Psycho-social factors including feelings of distress, intolerance of uncertainty, unhelpful thoughts, and patient's formal education are associated with pain, capability, and one's attitude toward their age. Addressing patient's cognitive flexibility around their age, pain, and capability through techniques such as cognitive behavioral therapy may improve patient symptomology.

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Abstract 1347

EARLY AND LOW-THRESHOLD PSYCHOTHERAPEUTIC CARE AT THE WORKPLACE: RESULTS OF AN RCT

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Mental disorders contribute to the increasing number of sick leave days and disability benefits. However, a significant treatment gap exists globally, with many individuals facing high barriers to seek help, resulting in delays in receiving care. The workplace, as a central aspect of daily life, serves as an important access point for early, low-threshold, and rapid intervention.

The German nationwide multicentered RCT project friaa ("Frühe Intervention am Arbeitsplatz") investigates the implementation of early psychotherapeutic intervention at work (PT-A). Participants were recruited via (social) media and from small, middle, and large-sized companies being located around five study centers. Prerequisites included a common mental disorder (ICD-10 criteria) or a reduced functional level (GAF scale). A manual for modular work-related short-term psychotherapy was designed. Low-threshold initial contact, counseling in all phases of mental issues, workplace relevance and networking with co-treaters are elements of the PT-A. Days of sickness absence serve as primary and self-efficacy, clinical and work-related stress indicators serve as secondary outcomes 15

months after enrolment with a 9-month intervention phase. A mixed negative binomial regression model and a linear mixed model will be used hierarchically to analyze the date, as specified in the study protocol.

60 companies took part and 54,869 people were reached via social media. 549 participants (55% female; mean age=46, SD=11) were randomized to intervention (IG) or to control group (CG). In the IG, 257 participants were followed by at least 4 psychotherapeutic sessions (mean=8, SD=3.5, min=4, max=16). Consultation reasons were: 29% work-related, 5% personal, and 66% both. 15 months after enrolment, the IG showed fewer days of sickness absence, though not statistically significant (p=.679). The IG showed a significant higher return-to-work self-efficacy (p=.033). Significant treatment effects were observed for depression (p=.006), anxiety (p=.006), somatic symptoms (p=.028) and quality of life (p=.041).

While the intervention did not significantly decrease sick leave days, it notably improved self-efficacy and reduced depressive symptoms. These outcomes are remarkable, considering the early-stage intervention for employees with mental health issues and the brief treatment duration of about 8 sessions.

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Abstract 1212

KIND KIDS, HEALTHY TEENS: LINKS BETWEEN CHILD PROSOCIALITY AND FRUIT AND VEGETABLE CONSUMPTION

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Objective: Establishing healthy eating habits in adolescence is critical for preventing chronic disease in adulthood. Most research focuses on adverse exposures that shape dietary patterns rather than protective factors. Childhood prosocial behaviors (i.e., being kind, caring, and cooperative) may be an important but underexplored asset that helps young people sustain positive health and related behaviors over time. This longitudinal study examined associations between childhood prosocial behaviors and fruit and vegetable consumption across adolescence.

Methods: Participants were enrolled in the UK Millennium Cohort Study (N=6,265). Caregivers reported children's prosocial behaviors using the Strengths and Difficulties Questionnaire at ages 5, 7, and 11. Poisson regression models assessed associations between prosocial behaviors at age 5 and sustained healthy levels of self-reported fruit and vegetable consumption across ages 14 and 17, defined as eating ≥2 servings of each daily. To evaluate heterogeneity by developmental stage, secondary analyses considered associations with prosocial behaviors at ages 7 and 11, respectively. All analyses adjusted for relevant confounders, including early childhood socioeconomic factors, emotional problems, and fruit consumption patterns.

Results: More engagement in prosocial behaviors at age 5 was associated with a greater likelihood of sustaining healthy fruit and vegetable consumption over time (adjusted prevalence ratio [aPR]$_{per}$

$_{1-SD}$=1.14; 95% CI=1.02-1.27). Participants with the highest level of prosociality were 38% more likely to sustain healthy consumption compared to those with the lowest levels of prosociality (aPR=1.38, 95% CI=1.06–1.78). Similar associations were observed with prosocial behaviors at ages 7 (aPR$_{per 1-SD}$=1.12, 95% CI=1.03-1.23; aPR$_{High vs. low}$=1.45, 95% CI=1.15-1.83) and 11 (aPR$_{per 1-SD}$=1.13, 95% CI=1.03-1.24; aPR$_{High vs. low}$=1.27, 95% CI=1.00-1.61).

Conclusions: Prosocial behaviors were related to fruit and vegetable consumption patterns across adolescence with comparable associations noted with prosocial behaviors at ages 5, 7, and 11, respectively. Interventions aimed at cultivating prosociality at home and school may not only help children become kind and caring adults, but may also have implications for physical health by promoting healthy eating over time.

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Abstract 1055

PATTERNS OF ADAPTATION TO STRESS CARDIOVASCULAR RESPONSES IN SMOKERS DURING AD LIBITUM SMOKING AND WITHDRAWAL

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There is considerable evidence documenting associations between tobacco smoking, including initiation, maintenance, and relapse of addiction, with diminished cardiovascular responses to acute psychological stress. However, less is known about how smokers respond to repeated stress across time. The current study examined patterns of cardiovascular reactivity and adaptation to recurrent stress among 24-hr abstinence smokers, smokers who continued to smoke at their normal rate, and non-smokers. Smokers were randomly assigned to one of two conditions; ad libitum (n = 42), or 24h abstinence (n = 61); and non-smokers (n = 43) provided comparative referencing. Across the two laboratory sessions, participants (n = 149) were asked to complete a modified version of the trier social stress test (TSST), while monitoring systolic and diastolic blood pressure, and heart rate activity. Results showed that while non-smokers had elevated cardiovascular reactivity to begin with, they showed a greater capacity to habituate to recurrent stress across sessions. The data also suggest that smokers displayed attenuated cardiovascular reactivity to acute psychological stress and showed little habituation to repeated stress. In adjusted models, smokers exhibited less systolic blood pressure habituation to stress. This poorer response profile in smokers may be a potential mechanism that leads to further cardiotoxic effects on health.

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Abstract 1386

REFLECTIVE RUMINATION MODERATES THE RELATIONSHIP BETWEEN SOCIAL OSTRACISM AND SLEEP HEALTH IN COLLEGE STUDENTS

Elizabeth Pantesco; Melanie Schanke, B. S., Villanova University

Social ostracism is associated with poor sleep health among young adults, but this relationship may be moderated by psychological processes such as rumination. In this study, we investigated the association between social ostracism and self-reported sleep health in a sample of 174 college students, focusing on whether this relationship was moderated by two types of rumination: reflective rumination and brooding rumination. Participants completed the SATED sleep health scale (Buysse, 2014), the 10-item Ruminative Response Scale (Treynor et.al., 2003), and the Ostracism Experience Scale for Adolescents (OES-A; Gilman et al., 2013), along with measures of depressive symptoms and social status. They also reported demographic information, including gender, race, and ethnicity. After adjusting for demographic covariates, depressive symptoms, and social status, the relationship between social ostracism and sleep health was moderated by reflective rumination (B=.02, p=.04) but not by brooding rumination (B=−0.001, p=.89). Simple slopes analysis showed that ostracism was associated with poorer sleep health among individuals with low levels of reflective rumination (B=-.07, p=.002), but not among individuals with high levels of reflective rumination (B=.04, p = .10). Follow-up analyses indicated that the association of ostracism with sleep health was driven by the *exclusion* subscale of the ostracism measure rather than the *ignore* subscale. These findings suggest that reflective rumination may serve as a psychological buffer against the negative impact of social ostracism on sleep health in college students and highlight the potential importance of addressing cognitive processes in interventions aimed at improving sleep outcomes in socially excluded individuals.

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Abstract 1134

PERCEIVED CONTROL PREDICTS LOWER END-OF-DAY STRESS THROUGH ENGAGEMENT IN MODERATE OR VIGOROUS PHYSICAL ACTIVITY: A DAILY DIARY STUDY IN A US ADULT SAMPLE

Zachary Magin, MS; Katherine Gnall, MS; Mariel Emrich, BS; Crystal Park, PhD, Department of Psychological Sciences, University of Connecticut

Perceived control is associated with lower perceived stress, but the mechanisms of this relationship have not yet been established. The current study examined whether moderate or vigorous intensity physical activity (MVPA) mediated the relationship between perceived control and daily stress in a sample of US adults. Participants (N = 264, M_{age} = 34.08, 61.4% female) completed a baseline measure of two dimensions of perceived control (i.e., mastery and constraints), followed by 11 days of daily surveys that assessed daily MVPA and perceived stress. We employed linear mixed effects modeling to estimate the within-and between-person indirect effects (IE) of MVPA on the relationships between each dimension of perceived control and daily perceived stress. Greater perceived control (i.e., higher mastery and lower constraints) was associated with a higher frequency of MVPA engagement, and participants reported lower levels of end-of-day perceived stress on the days in which they had engaged in MVPA. We observed within-person mediating effects of MVPA on the relationship between both perceived control dimensions and daily stress (mastery: within-

person IE = -0.03, 95% CI: [-0.06, -0.01]; constraints: within-person IE = 0.03, 95% CI: [0.01, 0.06]). These findings suggest that MVPA is a potential mechanism through which US adults with greater perceived control experience reduced levels of daily stress. The current study illuminates a key pathway for the stress-reducing impact of perceived control to inform future research and interventions targeting stress and its associated sequelae.

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Abstract 1513

PERCEIVED NEIGHBORHOOD DISADVANTAGE AND BIOLOGICAL AGING AMONG BLACK AND WHITE AMERICAN ADULTS

Allyson Bisgay, BA; Agus Surachman, Ph.D., Drexel University

Community stress is one of the fundamental causes of social disparities in morbidity and premature mortality. Accelerated biological aging is a critical biological mediator that links community stress to social disparities in morbidity and premature mortality. This analysis examined the association between community stress and three different measures of biological aging: age-related decrements in kidney function, inflammation, and accelerated epigenetic aging. We also explored if this association differs across different racial/ethnic groups. We use data from the Midlife in the United States (MIDUS) 2 and Refresher. We included 1309 participants (ages 25-86; 55.46% female) who participated in the biomarker study, consented to genetic analysis, and self-identified as NH Black (n = 290) and NH white (n = 887). Community stress was based on the mean perceived neighborhood disadvantage score (PND), measured using six indicators that assessed perception regarding neighborhood safety, neighborhood social cohesion, and physical environment (ranges 1-4; higher scores reflect higher neighborhood disadvantage). Kidney function was based on the estimated glomerular filtration rate (eGFR) calculated from serum creatinine (using the CKD-EPI formula without race adjustment). We included two measures of inflammation, serum IL6 and CRP (log transformed), and two measures of accelerated epigenetic aging, GrimAge and DunedinPACE. Analyses were adjusted for age, sex, education, and health-related factors. Higher PND was associated with faster age-related decrements in kidney function (b = -0.23, SE = 0.06, p < .001), elevated CRP (b = 0.15, SE = 0.07, p < .05; but not IL6), and faster accelerated GrimAge (b = 0.86, SE = 0.26, p < .01) and DunedinPACE (b = 0.02, SE = 0.01, p < .01). Stratified analyses based on race/ethnicity showed that the association between PND and age-related decrements in kidney finction was only significant among NH white (b = -0.23, SE = 0.09, p < .01), but higher PND was associated with faster DunedinPACE only among NH Black participants (b = 0.04, SE = 0.02, p < .05). These findings underscore the critical role of community stress in contextualizing the biological aging process and the heterogeneity of these associations across racial groups. Future studies should include additional measures of community stress, especially objective indicator of neighborhood resources or disadvantage.

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Abstract 1194

DOES MINDFUL AWARENESS DECREASE STRESS IN INDIVIDUALS POST STROKE AND THEIR PARTNERS? EVIDENCE FROM A DAILY DIARY STUDY

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Background: Individuals with a history of stroke (short: post stroke, PS) and their partners (short: no stroke, NS) experience elevated stress and have been shown to influence each other's stress levels. Mindfulness, encompassing present-moment awareness as a central component, has been shown to be a protective factor against stress in other populations. However, it is unknown whether these dyadic associations between stress, and the links between mindful awareness and lowered stress within and between individuals can also be found in the daily lives of couples with one partner PS.

Methods: 86 community-dwelling couples (67.0±9.8 years old, 50% female), with one partner PS, living in Canada, provided information on their daily mindful awareness, daily stress, and their partners' daily stress every evening for 14 days. Distinguishable dyads models (two-level, two-intercept linear mixed models) were used for data analysis.

Results: Individuals reporting that their partners felt more stress (daily: $p < .001$, overall $p < .001$), and whose partners reported more stress (daily: $p < .001$, overall $p < .001$), each experienced more daily stress themselves. In contrast, when individuals reported more mindful awareness (daily: $p < .001$, overall $p < .001$), they reported less daily stress. Extending this to the dyad, we found that individuals PS reported less daily stress when their NS partners reported more overall mindful awareness ($p = .037$). However, this dyadic association was not found in the other direction ($p = .940$) or for daily mindful awareness (PS: $p = .748$; NS: $p =.158$).

Conclusion: Our results suggest bidirectional dyadic associations of stress between partners in daily life. They further indicate that mindful awareness may reduce stress within individuals. Within the dyad, only stress of partners PS seems to benefit from mindful awareness of NS partners. These results highlight the significant role of the partner for individuals PS and emphasize the need to consider individual differences when studying interpersonal dynamics, particularly in couples with one partner living with a medical condition. Results may further inform future stress management interventions for this subpopulation, specifically by pointing towards the benefits of including partners in interventions and using ecological momentary interventions.

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Abstract 1316

BOOSTING BIRTHWEIGHT: THE POTENTIAL ROLE OF CORTISOL AND SOCIAL SUPPORT

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In the United States, approximately 1 in 10 births results in an infant being born with a lower birth weight, which poses significant health risks such as higher infant mortality (Kramer et al., 1987) and long-term neurologic disability (Zerbeto et al., 2015). Increased levels of cortisol, a stress hormone during pregnancy, especially during the second trimester, have been linked to lower birth weight in infants (Guardino et al., 2016). High stress is associated with dysfunctional cortisol levels, which may disrupt placental blood flow and nutrient delivery to the fetus, potentially leading to slower growth and reduced birth weight (Bulblitz et al., 2016). Additionally, low social support during pregnancy may worsen these effects by amplifying the impact of increased cortisol levels on fetal growth and birth weight (Giesbrechtt et al., 2013). Thus, we hypothesize that mothers with increased overall cortisol levels in their second trimester who have low social support are more likely to have infants with lower birth weights. The study involved 85 participants, majority 70% were Latina, followed by 18% African American, 4% Asian Pacific Islander, 4% Caucasian, and 3% Mixed-race individuals. Additionally, 76% of the participants reported a combined family income of less than $20,000 annually. Salivary cortisol levels (AUC) and social support (MOSS) were measured during the second trimester and infant birthweights were reported in a health interview three months postpartum. Results showed no significant relationship between overall cortisol levels in the second trimester, social support, and infant birthweight outcomes ($b < 000.1$, $p = 0.65$). One potential reason for this outcome is that previous studies that showed a link between high salivary cortisol concentrations and low infant birthweight found this particularly among depressed mothers, and only 13% of our sample met the criteria for postpartum depression (Shiriyan et al. 2023). Further studies are required to parse out the effects of psychosocial factors, including depression, on the relationship between high cortisol levels during pregnancy and infant birth weight.

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Abstract 1390

MID-LIFE COGNITIVE PERFORMANCE PREDICTS PHYSIOLOGICAL DYSREGULATION 10 YEARS LATER WITH DEPRESSIVE SYMPTOMS PLAYING A ROLE

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Introduction: Cognitive performance and depression are heavily associated with cognitive deficits serving as one of the diagnostic hallmarks of depression. However, questions remain on how they interact and what this means for health holistically. Both cognitive performance and depression have been linked to physiological deficits, such as suboptimal biomarker levels, which can give us insight into an individual's overall health or risk burden, though the relationship is still relatively unexplored. Utilizing publicly available data for the Midlife in the United States (MIDUS) study waves II (M2) and III (M3), this study investigated the relationship between

depressive symptoms, cognitive performance, and physiological dysregulation.

Method: The participants included 992 adults (56% female, 15.8% ethnoracial minority) who were on average 54.51 ± 11.48 years old at M2. Physiological and psychosocial variables were collected at M2 and M3, allowing for the creation of an allostatic load variable, including several biomarkers, resting heart rate, and anthropometrics was computed using a top quartile and summation method resulting in higher values indicating greater physiological dysregulation. Cognitive performance, depressive symptoms, and allostatic load mediation pathways were tested using Process macro-Model 6.

Results: The total effect of M2 cognitive performance on the change in allostatic load was significant (B= -0.2163, p= 0.0049) as was the direct effect (B= -0.1634, p=.0343). This relationship was partially mediated by depressive symptoms (β=.0313, t= 4.21), while controlling for gender, race, education, and time 1 allostatic load. Specifically, higher cognitive performance was related to lower depressive symptoms (B= -.1970, p<.0001), which ultimately led to lower allostatic load (B=.1271, p<.0001).

Conclusion: Our findings suggest that better cognitive performance can lead to better physiological functioning partially due to its link with lower depressive symptoms. Taken together, for adults to maintain better physiological functioning over time, reducing depressive symptoms as a modifiable risk factor may result in better cognitive functioning allowing individuals to make salutary health choices and achieving optimal health and successful aging. Future studies should investigate potential behavioral mechanisms underlying these findings.

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Abstract 1461

DAILY ASSOCIATIONS BETWEEN DOMAIN GENERAL AND SLEEP-SPECIFIC PERCEIVED CONTROL WITH SLEEP: RESULTS FROM AN ADULT LIFESPAN COMMUNITY SAMPLE

Odalis Garcia, MS; Jeremy Hamm, PhD; Laura Klepacz, MA; Katherine Duggan, North Dakota State University

Perceived control (PC), the beliefs people hold about their influence over important outcomes in their lives, is a modifiable psychosocial resource that is related to health. However, little research has examined PC and sleep, an important health behavior *and* outcome in its own right. Here, we investigated dynamics between self-reported PC (general, sleep-specific, and bedtime-specific) and sleep (onset latency, wake after sleep onset, efficiency, duration, quality, and refreshed ratings) at the daily level.

Daily data were collected from an adult lifespan sample for 1 week (N=219, 65% female, M_{age}=53, range 30-80). We conducted two-level multi-level models to examine associations between self-reported PC and sleep. Analyses considered within- and between-person differences as predictors and adjusted for 3-day lagged effects.

At the between-person level, participants with more general, bedtime-, and sleep-specific PC reported better sleep quality and refreshed sleep. Additionally, those with more sleep-specific PC also reported less wake after sleep onset.

At the within-person level (in the PC-sleep direction), on evenings when participants reported more sleep-specific PC, they reported better sleep quality and refreshed sleep that night. Domain-general and bedtime-specific PC were not significantly related to sleep at the within-person level.

Additionally (in the sleep-PC direction), on nights when participants reported better sleep (i.e., less wake after sleep onset and better efficiency, sleep quality, and refreshed sleep), they reported better sleep-specific PC on the subsequent day. Finally, on nights when participants reported more refreshed sleep, they also reported more sleep-specific, bedtime-specific, and general PC the subsequent evening.

These results provide preliminary evidence that sleep may potentially be a more consistent predictor of next-day domain general PC than the reverse. Additionally, domain-specific PC may be a more sensitive correlate of health behaviors such as sleep. Since PC is modifiable, these results have implications for future longitudinal studies and interventions.

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Abstract 1286

PRIMARY AND SECONDARY ALLOSTATIC PROCESSES IN THE CONTEXT OF STRESSFUL WORK: A MULTI-GROUP MODERATION FROM THE ENGLISH LONGITUDINAL STUDY OF AGEING.

Thomas O'Toole; Christopher Armitage, PhD; Martie Van Tongeren, PhD, The University of Manchester; Kim Dienes, PhD, Swansea University

Evidence suggests that chronic cortisol excess may precede the development of an allostatic load, and that this association may be influenced by the level of work stress. This study aims to investigate the associations between hair cortisol concentration and the development of systemic allostatic load cross-sectionally and at a lag of four years, stratified by level of effort-reward imbalance.

The sample consisted of respondents from the English Longitudinal Study of Ageing (ELSA) who were in employment with hair cortisol measurements at baseline (wave 6), and allostatic load markers at baseline and follow-up (wave 8; n=411; 64% female). Hair cortisol was used as a measure of total cortisol expression over the preceding two months. Allostatic load was modelled as a count-based index using nine markers; three per system, across the immune, metabolic and cardiovascular systems. This model was then grouped by a median-cut effort reward-imbalance scale (0.83) and regression pathways were compared between groups using a series of Chi-Squared tests of difference.

Results provide evidence that higher hair cortisol concentrations predict an increase in immune and cardiovascular allostatic load cross-sectionally, and a metabolic allostatic load at a lag of four years. These pathways were found in the high effort-reward imbalance group, but not in the low effort-reward imbalance group. There were also significant differences found between

groups for hair cortisol concentration as a predictor of concurrent immune and cardiovascular allostatic load

Findings may indicate a novel temporality to the accumulation of an allostatic load, and that the "tipping point" between allostasis and allostatic load may lie within the ability of the HPA axis to regulate the cardiovascular system concurrently, with longitudinal consequences for metabolic syndrome indicators.

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Abstract 1464

PSYCHEDELICS AS NOVEL IMMUNOMODULATORY AGENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Emerging data support serotonergic psychedelics as novel treatments for neuropsychiatric disorders. Preclinical and epidemiological evidence also support their therapeutic effects in cardiometabolic disorders. Immunomodulatory effects of psychedelics may play a role in their clinical efficacy, but only one recently published systematic review exists, and meta-analysis of these effects is lacking. On March 22nd, 2024, we systematically searched PubMed, EMBASE, Web of Science, PsycINFO, LILACS and ClinicalTrials.gov for all studies published in English examining changes in immunological markers following exposure to serotonergic psychedelics, and we meta-analyzed any eligible studies. Of 7,963 articles screened, 46 studies met eligibility criteria for systematic review including 22 *in vitro* studies, 17 non-human *in vivo* studies, and 10 human studies from seven articles (4/7 were eligible for meta-analysis). A large majority of *in vitro* (17/22) and non-human *in vivo* (16/17) studies reported anti-inflammatory effects of serotonergic psychedelics. Results in humans were mixed (3/7 showed anti-inflammatory effects) and there were no significant changes in inflammatory markers in blood from pre- to post-exposure in our primary meta-analyses of four human studies (N = 65-87). In a separate analysis including data from the two available randomized controlled trials (RCTs), we observed significantly greater decreases in the systemic inflammatory marker C-reactive protein following exposure to a serotonergic psychedelic versus placebo (standardized mean difference = -0.68, 95% CI [-0.33 to -1.03], k = 2, N = 133). Our systematic review indicates that serotonergic psychedelics have anti-inflammatory effects in models of elevated baseline inflammation in preclinical studies, but findings from the limited number of small human studies are mixed. Importantly, only two human studies included participants with elevated baseline C-reactive protein (CRP), and CRP was reduced by psychedelics in both cases. Altogether, the immunomodulatory effects of psychedelics may contribute to their therapeutic effects in psychiatric, cardiometabolic, and inflammatory disorders. Future studies should increase sample sizes, recruit participants with elevated baseline

inflammation, and use RCT designs.

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Abstract 1357

ASSOCIATIONS OF DEPRESSION-RELATED APPETITE SYMPTOMS WITH CARDIOMETABOLIC BIOMARKERS IN PRIMARY CARE PATIENTS WITH DEPRESSION

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Depression is an independent risk factor for cardiometabolic diseases (CMD). A candidate mechanism for this relationship is that the somatic symptoms of depression, such as changes in appetite and subsequent eating behavior, contribute to CMD risk. Therefore, we analyzed baseline data from the eIMPACT trial (R01HL122245, NCT02458690) to examine associations between depression-related appetite symptoms (hyperphagia and poor appetite) and plasma CMD biomarkers (leptin, insulin, fasting glucose, high-density lipoprotein [HDL] cholesterol, low-density lipoprotein [LDL] cholesterol, and triglycerides [TG]) in primary care patients with depression from a safety net healthcare system (N=216; Mage=59 years, 78% women, 50% Black). Depressive symptoms were assessed by the Hopkins Symptom Checklist-20 (SCL-20). Leptin was quantified using enzyme-linked immunosorbent assay kits (DLP00 R&D Systems). Insulin was quantified using a Roche e411 clinical analyzer. Fasting glucose and lipid fractions were quantified using a Daytona Clinical Analyzer.

In initial linear regression models (see Table 1 for covariates and results), hyperphagia was associated with higher leptin, insulin, and triglycerides (approached significance) and lower HDL cholesterol. In contrast, poor appetite was associated with lower insulin and LDL cholesterol (approached significance) and higher HDL cholesterol (approached significance). The magnitude of most associations remained similar after further adjustment for body mass index (BMI; see Table 1).

In primary care patients with depression, we observed several opposing associations of hyperphagia (increased risk) and poor appetite (decreased risk) with CMD biomarkers. This raises the possibility that the heterogeneous presentation of depression-related appetite symptoms represents distinct depression phenotypes. If confirmed, tailoring interventions to depression phenotypes could be an effective strategy for reducing CMD risk in depression.

		Initial Model		Initial Model + BMI	
Leptin	N	β	p	β	p
Hyperphagia	208	0.225	0.001	0.095	0.107
Poor Appetite	206	-0.099	0.193	-0.052	0.404
Insulin					
Hyperphagia	208	0.300	<0.001	0.218	0.001
Poor Appetite	206	-0.218	0.005	-0.187	0.009
Fasting Glucose					
Hyperphagia	208	-0.490	0.390	-0.040	0.501
Poor Appetite	206	0.001	0.988	-0.003	0.961
HDL Cholesterol					
Hyperphagia	208	-0.249	<0.001	-0.182	0.006
Poor Appetite	206	0.132	0.073	0.106	0.128
LDL Cholesterol					
Hyperphagia	208	0.000	0.998	-0.004	0.957
Poor Appetite	206	-0.124	0.090	-0.125	0.090
Triglycerides					
Hyperphagia	208	0.118	0.086	0.130	0.067
Poor Appetite	206	-0.072	0.337	-0.740	0.322

Table 1. Multiple Linear Regression Models Examining the Association Between Appetite-Related Depressive Symptoms and Cardiometabolic Biomarkers. The initial models are adjusted for age, sex, race, education, diabetes, hypercholesterolemia, hypertension, cholesterol medication use, diabetes medication use, and the SCL-18 (the mean SCL-20 score minus the two appetite items). The adjusted model includes the same covariates, with the addition of BMI.

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Abstract 1101

A SYSTEMATIC REVIEW OF RACE/ETHNICITY, SOCIOECONOMIC STATUS AND PRETERM BIRTH: EVIDENCE OF DIMINISHING RETURNS OF SOCIOECONOMIC STATUS

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Background: Diminishing returns of socioeconomic status (SES) is a race/ethnicity-by-SES interactive pattern such that higher SES does not confer the same health benefits for non-White race/ethnicities as compared to White. Although increasingly recognized, the robustness of the diminishing returns of SES pattern is not clear due to possible file drawer or "cherry-picking" issues. The **purpose** of this study was to determine the robustness of the diminishing returns of SES interactive effect by conducting a systematic review of peer-reviewed articles that tested associations between a race/ethnicity-by-SES interactive effect and preterm birth risk. **Methods**. English-language, peer-reviewed journal articles that examined associations between any race/ethnicity and any SES indicator with gestational length or preterm birth risk were obtained through PubMed (up to March 2024; PROSPERO: CRD42024529241). Inclusion criteria were testing a race/ethnicity-by-SES interactive effect (interaction term or race/ethnicity-stratified analyses), a White comparison group, and primary outcome gestational length or preterm birth. Exclusion criteria was a focus on non-White immigrants. A race/ethnicity-by-SES interactive effect was interpreted as diminishing returns of SES when higher SES was associated with lower preterm birth for White participants, but the association was attenuated, non-significant or

reversed in non-White participants. **Results**: Forty-eight journal articles were included, most of U.S. samples and comparing White and Black participants. Thirty-seven reported a significant interactive effect (77%), and 28 (76%) provided information needed to interpret the pattern. Of those, most (N=17, 61%) reported a pattern consistent with diminishing returns of SES. Another eight (29%) detected a different pattern, such that lower SES, non-White participants were at highest risk for preterm birth. The remaining three studies reported complex or mixed patterns. **Conclusion**: The diminishing returns of SES pattern was the most consistent race/ethnicity-by-SES interactive effect reported in the preterm birth literature, but other interactive patterns were also detected.

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Abstract 1201

MATERNAL DEPRESSIVE SYMPTOMS, CHILD HEALTH BEHAVIORS, AND CHILD BMI IN US HISPANICS/LATINOS: FINDINGS FROM THE STUDY OF LATINOS FAMILY LIFESTYLE OUTCOMES RESEARCH (SOL-FLOR)

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Depression is a significant problem among Hispanic/Latina women in the US, with higher rates of untreated and chronic depression than in non-Hispanic/Latina women. Prior research links maternal depression to obesity in offspring, however, this research is limited. This study investigates the relationship between maternal depressive symptoms and BMIz in Hispanic/Latino children (3-11y) and whether children's health behaviors contribute to the relationship. Participants included 217 Hispanic/Latino mother-child dyads in the Study of Latinos Family Lifestyle Outcomes Research recruited from Bronx, NY; Chicago, IL; Miami, FL; and San Diego, CA. Maternal depressive symptoms were evaluated with the Center for Epidemiologic Studies Depression Scale (CES-D10). Child height and weight were measured to calculate BMI for age z scores. Child health behaviors included child daily media use (hours), outdoor playtime (hours), and sleep duration (hours) and irregularity (1-5 Likert), measured by standard questionnaires. A structural equation modeling framework was used to examine the direct and indirect effects of maternal depressive symptoms on child BMIz through child health behaviors adjusting for maternal age, income, education, place of birth, parity, marital status, and whether the study was completed before the onset of COVID-19. Means were CES-D10 (5.2 +/- 4.6), child age (8.0 +/- 1.6 yr), and child BMIz (0.7 +/- 1.3). Model fit indices in the adjusted model were acceptable (χ^2 (13) = 14.88, p = .31, CFI = 0.94, RMSEA = 0.03, SRMR = 0.02). There was a significant direct effect from maternal depressive symptoms to child BMIz (β = 0.15; 95% CI 0.02, 0.29). A total indirect effect (β = 0.02; 95% CI -0.03, 0.07) or indirect effect through child health behaviors

was not detected in this sample. There was a trending indirect effect of maternal depressive symptoms to child BMIz through child sleep irregularity (β = -0.04, 95% CI -0.09, 0.01). Despite mild maternal depressive symptoms in this sample, we observed a significant effect on child BMI, suggesting that components of maternal depression (e.g., behavioral inactivation), rather than overall depression severity, may be particularly relevant to BMI in Hispanic/Latino children. Future research should explore alternative pathways, like stress and parenting behaviors, linking maternal depressive symptoms to child BMI.

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QUALITATIVE PERSPECTIVES ON POSITIVE SOCIAL RELATIONSHIPS AND CARDIOVASCULAR HEALTH: A MIXED METHODS INVESTIGATION IN THE MIDUS STUDY

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Background: Positive social relationships are central to long and healthy lives, including for the presence of cardiovascular health (i.e., healthy blood pressure, cholesterol, glucose, body mass index (BMI), diet, regular physical activity, adequate sleep, and avoiding nicotine). We draw on qualitative data on aspects of social relationships that matter for well-being and examine their association with cardiovascular health in cross-sectional and longitudinal models.

Methods: Cross-sectional analyses involved MIDUS 2 (M2) and MIDUS Refresher (MR) biomarker samples (N = 2,036), and longitudinal analyses involved participants with both M2 and MIDUS 3 (M3) biological data (N = 650). M2 and MR participants wrote responses to the question "What do you do to make your life go well?" A team of judges evaluated each response for the presence of 11 aspects of positive relationships (e.g., good communication, mentoring, intimacy). Cardiovascular health was assessed at M2, MR, and M3 via the American Heart Association's Life's Essential 8 measure that includes health behaviors (i.e., diet, physical activity, smoking, sleep) and biological factors (i.e., blood pressure, cholesterol, glucose, BMI). Pre-registered linear regression models examined associations between each positive relationship aspect and cardiovascular health in unadjusted models and in models adjusted for age, sex, education, race, and response word count.

Results: Aspects of relationships that were associated with cardiovascular health in unadjusted cross-sectional and longitudinal models included positively evaluating a relationship (i.e., loving, caring, respecting), physical intimacy, spending time together, and communicating. Positively evaluating a relationship and being non-judgmental were associated with better cardiovascular health in fully adjusted cross-sectional models. In longitudinal models adjusting for all covariates, respondents who wrote about helping, serving, and taking care of others had better cardiovascular health 11 years later than those who did not mention this aspect of positive relationships.

Conclusions: Combining qualitative assessments of the aspects of social relationships that matter for well-being with objective

cardiovascular health measures highlights unique perspectives that are relevant for health and may not be evident with conventional self-report measures.

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EMOTIONAL EATING AND DAILY STRESS EXPERIENCES: AN ANALYSIS OF DATA FROM MIDLIFE IN THE UNITED STATES

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Objective: This study aims to evaluate the interactions between stress experiences and dietary behaviors in midlife individuals. Prior literature has demonstrated that there is a relationship between stress and emotional eating behaviors however, additional work is needed looking at the relationship between daily stress experiences and dietary habits, inclusive of but not restricted to emotional eating. This study intends to expand on the literature by looking at the association between emotional eating and daily stressful events among middle-aged adults in the United States.

Methods: Participants (*N* = 873) from the National Midlife in the United States (MIDUS) 2 and National Study of Daily Experiences (NSDE) 2 completed an 8-day daily telephone diary and a self-administered questionnaire (SAQ). The MIDUS 2 SAQ data included their food coping and demographic variables while daily reported stressors were sourced from the NSDE. All models were adjusted for age, biological sex, race, and education level. Continuous variables were centered for analyses and linear regressions were performed to check for an association.

Results: Participants' average number of daily stressors were associated with their food coping score such that experiencing greater numbers of daily stressors was associated with higher food coping scores (B = 1.34, *p* < .001) when controlling for age, sex, race, and education level. Additionally, this significance was greater in the female participants than the male participants (B = .87, *p* < .001).

Conclusion: This study supports previous findings indicating that people who experience higher levels of stress are more likely to use food to cope with stressful experiences. Additionally, our findings are consistent with the literature supporting that this experience is more apparent in females versus males. This analysis serves as a foundational analysis to further evaluate the relationship between dietary habits (food consumption patterns and coping mechanisms) and daily stress processes.

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DIFFERENCES IN SOCIAL STATUS IN EVERYDAY INTERACTIONS MAY HELP EXPLAIN SOCIOECONOMIC HEALTH DISPARITIES

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Lower subjective social status (SSS) is consistently linked to poorer health, often more strongly than objective measures such as income and education. An assumption underlying many theories of the

influence of SSS on physical health is that individual differences in SSS reflect individual differences in people's experience of status in their daily lives, with lower SSS associated with more interactions in which individuals perceive themselves to be low-status or socially subordinate to others. However, there is currently no evidence supporting or refuting this assumption. Data were collected from undergraduate students in the U.S. deep south (N=199; 78% white), who reported their subjective social status relative to both the U.S. (SSSus) and their self-defined community (SSSc), as well as their families' SSS in these contexts (famSSSus and famSSSc) because of their developmental phase (emerging adults). Participants also completed one day of hourly ecological momentary assessment (EMA), which included ratings of themselves and interaction partners on a social status ladder that mirrored the McArthur ladder. Measures reflecting daily subjective social status (own ladder rating) and relative rank (own rating minus partner rating) during social interactions were calculated by averaging across EMA ratings. Results revealed strong positive associations between daily experiences of subjective social status and all four trait measures of subjective social status [SSSc, r (117) = .53, p<.001; famSSSc, r (117) = .51, p<.001; SSSus r (117) = .49, p<.001and famSSSus r (117) = .46, p<.001]. Results also revealed a positive association between daily experiences of relative social rank and SSSus, r (117) = .27, p =.003, and famSSSus r (117) = .27, p = .003, but was not associated with community measures of SSS. These are the first data to show that individuals who report higher SSS also experience higher status during interactions in daily life. Results provide support for the idea that differential experiences of social status in the real world may inform individual differences in SSS. These data advance our understanding of how lower SSS may get under the skin to influence health by providing proof-of-concept support for recurring interpersonal experiences of low(er) status as a potential mechanism.

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Abstract 1220

REDUCING LIVER FAT LOWERS GLUTAMATE CONCENTRATIONS IN THE HUMAN BRAIN

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Introduction: In a randomized controlled trial (NCT05216796), we tested a potential central mechanism for diminished global brain health associated with Metabolic Syndrome (MetS) in human participants. Through *in vivo* multiorgan imaging, we sought to demonstrate that elevated free cerebral glutamate concentrations detected in MetS are associated with early-stage non-alcoholic fatty liver disease (NAFLD) and that this vulnerability can be reversed by dietary alterations.

Methods: Following a 3-day weight maintenance diet, forty-nine adults with MetS risk factors were randomized to a two-week low carbohydrate (LoCHO, <30g/d) or low-calorie (LoCAL, women: ~1200 kcal/d; men ~1500 kcal/d) diet. A commercial meal delivery service (Snap Kitchen) provided all meals. Participants received liver and brain magnetic resonance spectroscopy (MRS) scans pre and post intervention. Thirteen participants were excluded from the analyses: 5 for diet non-compliance (either weight gain or a weight loss <1 lbs/wk), 2 for poor quality brain MRI data, and 6 for missing data, leaving thirty-six participants (31 female; average age 54.4 +/- 8.7 years).

Results: Liver imaging revealed that 24/36 participants fulfilled clinical criteria for NAFLD (>5% hepatic triglyceride level as measured by proton density fat fraction (PDFF) at study entry. Repeated measures analysis of variance revealed a significant decrease in hepatic triglyceride post intervention in both LoCHO and LoCAL groups. There was also a concomitant decrease in cerebral glutamate, both in the overall sample (hepatic triglyceride: t(35)=5.29%, p<0.001; cerebral glutamate: t(35)=3.82 Glu/tNAA, p<0.001) and in the sub-sample of participants with NAFLD (hepatic triglyceride: t(23)=6.38%, p<0.001; cerebral glutamate: t(23)=3.94 Glu/tNAA, p<0.001).

Conclusions: We found that low calorie and low carbohydrate diets effectively reduced hepatic triglyceride as well as free cerebral glutamate concentrations. Since increases in free cerebral glutamate can be neurotoxic, this work provides a way to protect brain health in adults with NAFLD/MetS and potentially delay cognitive decline, given the increased risk associated with these conditions. Dietary intervention is a cost effective and easy to scale preventive strategy, and our findings add to our understanding of the neurocognitive impact of obesity and MetS.

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Abstract 1250

MEASUREMENT GRANULARITY DIFFERENCE EFFECTS IN EXAMINING RELATIONSHIPS BETWEEN DAILY AFFECT AND BLOOD PRESSURE

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Introduction: Robust evidence indicates affective states are related to risk for cardiovascular disease (CVD), the global leading cause of death. Frequent negative affect (NA) has been linked to CVD-risk and morbidity, whereas positive affect (PA) has been associated with cardioprotective benefits. Importantly, methods to capture affect may not be interchangeable and could lead to different degrees of reported relationships with health. The aim of this study is to compare two common methodologies in affect data capture and illustrate their relationship with daily blood pressure (BP).

Methods: A diverse community sample of 300 healthy participants from the North Texas Heart Study (50% women, M_{age}=46.10 years; 60% non-Hispanic White, 19% Hispanic/Latino) were examined.

Affect was collected via Ecological Momentary Assessment (EMA) at random times within 45 minute blocks during waking hours over two consecutive days. Participants also completed retrospective cumulative affect data with the same items via an end-of-day survey. Within-person averages for PA and NA were calculated from responses to both methods. Within-person average daytime BP (systolic BP, diastolic BP) was derived from ambulatory measurements yoked to the EMA. Analyses included partial correlations and fully adjusted linear regression models.

Results: For PA and NA, respective EMA and EOD measurements were highly correlated (r's>.81, p's<.001). EMA-measured affect was correlated with DBP in expected directions (PA: r=-.14, p<.05; NA: r=.15, p<.05). There were no other significant correlations between affect (EMA or EOD) and BP. Linear models for EMA-measured affect demonstrated expected relationships, such that more NA was related to higher SBP (β = .11, SE=1.56, p< .05) and higher DBP (β = 0.13, SE=0.97, p< .01), whereas more PA was related to lower DBP (β = -0.13, SE=-0.13, p< .05). Linear models for EOD-measured affect indicated there were no significant relationships between affect and BP.

Conclusions: Results supported predicted affect-health relationships such that more NA related to higher BP and more PA related to lower BP. Furthermore, the increased granularity of EMA appeared critical to capturing affect-BP relationships. Future affect-health research should employ optimal repeated measurement approaches for truly capturing daily affect.

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Abstract 1097

ESTRADIOL AND PROGESTERONE PATTERNS DURING PREGNANCY AND THEIR ASSOCIATION TO POSTPARTUM MOTHER-INFANT ATTACHMENT

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There has been an increased interest in exploring the link between prepartum hormonal profiles, such as estradiol and progesterone, and postpartum maternal behavior. Initial studies suggest that increases of estradiol and progesterone during gestation may be associated with heightened caregiving behavior and attachment processes between mother and infant after birth. The current research aimed to explore whether prepartum estradiol and progesterone patterns from early to late pregnancy were associated with maternal attachment to infants at 3 months postpartum. We hypothesized that higher levels of estradiol and progesterone (and the estradiol/progesterone ratio) across pregnancy, would be more prevalent in mothers with higher vs. lower postpartum maternal-infant attachment (Postpartum Maternal Attachment Scale). Our sample consisted of 84 low-income, pregnant women (71% Latina) from a longitudinal study examining the effects of stress on maternal and infant health. Salivary estradiol and progesterone were collected upon awakening on one collection day, at four different study time points (1st, 2nd, 3rd trimesters of pregnancy and 3

months postpartum). Repeated measures ANOVA analyses showed a marginally significant main effect of progesterone levels on postpartum attachment, F=3.74, p=.057. Specifically, prenatal progesterone levels increased at a higher rate in women who reported higher vs. lower levels of postpartum maternal attachment. No associations were found for estradiol or the estradiol/progesterone ratio with postpartum attachment. Our findings support emerging evidence that higher prenatal progesterone can predict postpartum maternal attachment behavior in human mothers. Animal studies provide more insight into progesterone's specific role in influencing mother-infant attachment, citing that it functions by increasing mothers' sensitivity to infant cues and positively influencing mothers' affective state. While our research provided important biological underpinnings in understanding maternal attachment to infants, it didn't account for psychological and social factors that may also influence attachment. These may be important pathways to further explore in elucidating how progesterone profiles during pregnancy interact with other psychosocial factors to facilitate a stronger attachment relationship between mothers and their infants.

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Abstract 1142

EXAMINING WHETHER HISPANIC IDENTITY MODERATES RELATIONSHIPS BETWEEN CRIME EXPOSURE, SUBJECTIVE STRESS, AND INFLAMMATION

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Background: Hispanics/Latinos (H/Ls) in the U.S. tend to live healthier, longer lives compared to non-Hispanics despite greater psychosocial burden, a phenomenon known as the Hispanic Health Paradox. The Psychosocial Resilience Hypothesis posits that sociocultural processes may promote adaptive appraisals that reduce subjective responses to objective stressors (e.g., unsafe environments). The aim of the current study is to test this hypothesized relationship that Hispanic ethnicity moderates the relationship between stress exposure and inflammation as a health-relevant biomarker and whether this occurs through altered stress perceptions.

Methods: A subset of 236 community adults from the North Texas Heart Study was analyzed (23.7% H/L, 76.3% NHW). Crime exposure data were geocoded from residential addresses at 1-, 5-, and 10-mile radii. Perceived stress was assessed via a one-time survey. Inflammatory markers (hs-CRP, IL-6, TNF-α) were measured through blood assays. Data were analyzed using Wilcoxon rank sum tests and

multivariable, multilevel linear models, with zip code as a level of nesting/random effect to test moderated mediation.

Results: To begin, no group differences were observed for crime exposure by ethnicity. Ethnic differences were observed in perceived stress where H/L displayed higher perceived stress as well as higher hs-CRP levels (all *Ws,* p<.05). In contrast, NHWs displayed higher TNF-α levels (p<.001). Contrary to expectations, higher crime exposure was not related to higher perceived stress or inflammation. Higher perceived stress was also not associated with inflammation. Despite observed differences in inflammation across ethnic groups, we did not find any moderating role for ethnicity. Post-hoc analyses revealed an interaction between 1-mile crime exposure and ethnicity on perceived stress, which approached significance (B = 0.00, t = 1.663, 95% CI: -0.00, 0.01). Specifically, the effect of higher 1-mile crime exposure on greater perceived stress indicated a steeper slope for NHW compared to H/L.

Conclusions: Contrary to expectations, stress exposure was not related to inflammation via stress perceptions and ethnicity did not moderate group differences in inflammation. Data limitations may have contributed. Further research is needed to understand these relationships and their implications on health among H/Ls and NHW.

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Abstract 1288

PERCEIVED EMOTION REGULATION SUCCESS IS ASSOCIATED WITH CARDIOMETABOLIC RISK FACTORS IN MIDLIFE ADULTS

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Background. Individuals who experience high levels of negative emotion show increased risk for cardiovascular disease (CVD). These effects may be explained by individual differences in the ability to regulate emotion. We examined the association between emotion regulation, negative affect, and CVD risk in a sample of healthy middle-aged adults (ages 30-54).

Approach. Negative emotions and blood pressure (BP) were assessed every hour over 4 days in midlife adults free of CVD. A 7-item scale measuring emotion regulation strategies was administered once at the end of each day of hourly monitoring. Metabolic and anthropometric risk factors for CVD were measured via a single blood sample and laboratory visit. Negative emotion was defined as the average of three items (feeling sad, frustrated/angry, and nervous/tense). Mean scores for emotion regulation, negative emotion and BP, across all hourly interviews were computed to form person-level averages. Linear regression tested between-subjects effects; and, mixed effects modeling was used to examine within-subjects effects. 314 individuals completed daily-life monitoring: of these, 264 reported regulating their emotions at least once during this period, comprising the final sample for analyses (83% white, 63% female, 64 % college educated, mean age = 41.8).

Results. People high in daily-life negative emotion did not show increased CVD risk compared to people low in daily life negative emotion. Neither frequent use of reappraisal, suppression, or acceptance strategies were associated with negative emotion or CVD risk. However, individuals reporting a high degree of success in regulating their emotions (*"If you tried to change…how successful were you?"*) exhibited a smaller average waist circumference (b = -1.28, p <.01), less negative emotion (b = -0.152, p <.001), and less systolic BP across all momentary assessments (b = -.94, p <.01). Negative emotion did not appear to account for the association between emotion regulation success and CVD risk; neither was emotional regulation success associated with negative emotion or blood pressure at the level of the day in within-person analyses. Results suggest that perceived ability to regulate one's emotions is associated with some measures of CVD risk and negative affect, however, the daily life processes associated with these effects remain unclear.

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Abstract 1046

BIOMARKER PROFILES OF SLEEP PROBLEMS IN EMERGING ADULTS: RESULTS FROM NHANES 2015-2020

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Objectives: Sleep problems are common in emerging adults and may contribute to morbidity and mortality, but the associations between sleep disruption and biological indicators of disease risk have not been examined in youth. This research evaluates profiles of allostatic load (AL) and their associations with sleep disturbance in a nationally representative sample of late adolescents and young adults.

Methods: Biomarker and sleep data were extracted for 16–24-year-olds (1,228 females, 1,199 males weighted to represent 16,874,148 females, 16,668,144 males) from the 2015-2020 National Health and Nutrition Examination Survey (NHANES). Sex-stratified, bias-adjusted, latent profile analyses were used to identify biomarker profiles and predict sleep problems based on profile membership, controlling for sociodemographic characteristics.

Results: Three AL profiles were identified in both females and males. In females, the profiles were characterized as low dysregulation, lipid-inflammatory dysregulation, and gluco-inflammatory dysregulation. In males, the profiles were labelled low dysregulation, metabolic dysregulation, and immuno-glucometabolic dysregulation. Compared to the low dysregulation groups for each sex, snoring was more likely to be reported in females with lipid-inflammatory dysregulation (aOR = 2.67, 95% CI: 1.02, 6.97), males with metabolic dysregulation (aOR = 3.49, 95% CI: 1.97, 6.19), and males with immuno-glucometabolic dysregulation (aOR = 2.86, 95% CI: 1.05, 7.80).

Conclusions: Distinct AL profiles can be observed in emerging adults, and profiles of high biological dysregulation are associated with snoring, a key indicator of sleep apnea. Screening and interventions for sleep apnea and related medical comorbidities should be tailored to age- and gender-specific AL biomarker profiles.

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Abstract 1073

PSYCHOPHYSIOLOGICAL EFFECTS OF SOCIAL FEEDBACK DURING SOCIAL MEDIA USE

Lorena Nunes

In recent years, rates of depression, anxiety, and other indices of poor mental health have increased dramatically among adolescents and young adults. Some research suggests that social media use has contributed to this mental health crisis, but few studies have examined psychophysiological mechanisms that may underlie effects of social media on mental health, especially effects on anxiety levels and stress reactivity tied to social evaluation on social media. The present study filled this gap through examining psychophysiological stress responses to experimentally-manipulated social media feedback. College aged students were first prompted to create captions for various images and memes that would later be used as mock social media posts—as part of a presumably new social media platform designed for the university's students (Part 1). Next, participants came into the lab (Part 2) and were exposed to positive and negative feedback on the mock posts and captions they provided in Part 1, while having their heart rate and heart rate variability measured. Throughout the task, participants also reported how positively or negatively they felt after receiving different kinds of feedback. Findings revealed that the valence of the feedback mattered most when it came to participants' affect ratings, with individuals scoring high on Need to Belong (NTB), approval-related Contingent Self-Worth on Instagram (IGCSW), and Social Anxiety (SA) most sensitive to positive/negative feedback. Moreover, there was a psychophysiological stress response marked by lower heart rate variability when participants high on IGCSW received low likes and negative feedback. These findings suggest that interactions on social media can begin to be considered a social evaluative threat, which may adversely affect biopsychosocial health over the lifespan.

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Abstract 1465

EXAMINING THE EFFECTS OF BIOFIELD THERAPY THROUGH SIMULTANEOUS ASSESSMENT OF ELECTROPHYSIOLOGICAL AND CELLULAR OUTCOMES

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In this study, a biofield therapy (BT) therapist took part in multiple (n=60) treatment and control (non-treatment) sessions under double-blind conditions. During the treatment phases, the participant provided BT treatment from a distance of about 12 inches from the cells, alternating with rest phases where no such efforts were made. Human pancreatic cancer cell activity was assessed using three markers – cytoskeleton changes (tubulin and β-actin) and Ca^{2+} uptake. The study examined changes in the participant's physiological parameters including electroencephalogram (EEG) and heart rate measures during the treatment of: 1) live cells and 2) either dead cells or medium only with no cells (control group). Changes in cellular outcomes and if there was an association between the participant's physiological parameters and cellular outcomes were examined. The experimental setup was a 2x2 design, contrasting cell type (live vs. control) against session type (treatment vs. non-treatment). Parallel sham-treated control cells were examined for changes in the cell parameters over time while controlling for the presence of a person in front of the cells with no directed intention. The participant's physiological data, including 64-channel EEG and heart rate, were continuously monitored throughout these sessions. We observed significant (p<0.01) spectral changes in the participant's EEG during BT treatment in all frequency bands of interest, as well as in heart rate variability (HRV) (RMSSD measure; p<0.01). We also observed significant differences in beta and gamma EEG and HRV (pNN50 measure) when the participant treated live but not control cells (p=0.02). We observed Ca^{2+} uptake increased over time during both BT and sham treatment, but the increase was significantly less for the BT group relative to the sham-treatment controls (p=0.03). When using Granger causality to assess causal directional associations between cell markers and participant's physiological parameters, EEG measurements showed significant bidirectional causal effects with cell metrics, especially β-actin and intracellular Ca^{2+} levels(p<0.000001). These outcomes suggest a complex relationship between physiological responses and cellular effects during BT treatment sessions, recognizing the study's limitations, and follow-up investigations are warranted.

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Abstract 1334

EXAMINING THE MODERATING EFFECTS OF ANGER EXPRESSION STYLE ON THE ASSOCIATION BETWEEN FACETS OF TRAIT ANGER AND CARDIOVASCULAR RESPONSES TO ACUTE PSYCHOLOGICAL STRESS

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Objective: The current study aims to (1) examine the association between measures of trait anger (i.e., anger temperament and anger reaction) and cardiovascular reactivity to acute psychological stress, and (2) to identify if anger expression styles moderate the association between trait anger and cardiovascular reactivity.

Methods: A sample of 669 participants completed a standardized cardiovascular reactivity protocol consisting of resting baseline and stressor phase (mental arithmetic and Stroop), with systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) monitored throughout. Participants also completed measures of trait anger including anger temperament and anger reaction, as well as measures assessing anger expression styles including anger-in, anger-out and anger control.

Results: Anger temperament was significantly associated with blunted cardiovascular reactivity, as well as increased levels of

subjective stress. Moreover, the association between anger temperament and cardiovascular reactivity was significantly moderated by anger-in, with associations observed only amongst those who reported an increased tendency to suppress their anger. The association between anger reaction and cardiovascular reactivity was moderated by both anger-out and anger control.

Conclusion: While blunted cardiovascular responses may be a mechanism linking facets of trait anger to adverse health outcomes, the current findings accentuate the importance of considering expression styles when examining the association between anger experience and cardiovascular reactivity.

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Abstract 1132

THEORETICAL SHIFTS IN THE BIOPSYCHOSOCIAL SCIENCE OF STRESS: A SCOPING REVIEW WITH TRANSLATIONAL IMPLICATIONS

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Social determinants of health are widely recognized as key factors shaping health outcomes across the lifespan. Stress is often cited as a central pathway linking social factors to individual health, with stress driving physiological activity that disrupts health over time. However, more recent biopsychosocial theories suggest that perceptions of safety play a fundamental role in physiology, with some proposing that safety is the key to inhibiting physiological stress. This shift could substantially change the approach to interventions aimed at decreasing health disparities and improving wellness across the lifespan. Our objective is to present a scoping review exploring the theories and supporting evidence behind the biopsychosocial salience of safety and describe the implications for intervention.

We conducted a scoping review following established guidelines (i.e., PRISMA_ScR), searching PubMed, PsycINFO, and Scopus. Inclusion criteria focused on peer-reviewed articles published within the last ten years that considered biological, psychological, and social factors in a theoretical framework of safety. Articles solely focused on animal models were excluded. After removing duplicates, we screened 74 titles/abstracts, conducted full-text reviews on 37 articles, and included 12 in the final review. Title/abstract screening, full-text review, and data extraction were conducted independently by two researchers.

We identified several relevant theories through the search: Polyvagal Theory (N=6), Generalized Unsafety Theory of Stress (N=4), and Social Safety Theory (N=3), with one article discussing multiple theories. Half of the articles developed or described the theories, while the other half applied them to specific contexts.

While these biopsychosocial theories underscore the importance of safety for health, their theoretical differences have distinct implications for interventions. In our presentation, we will highlight these differences and describe gaps in evidence. We will also discuss the theoretical implications for interventions across multiple levels

(e.g., public health, policy), which have the potential to improve health outcomes and reduce disparities across the lifespan.

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Abstract 1281

EXAMINING LONELINESS AS A MECHANISM LINKING SYMPTOMS OF PTSD TO INSOMNIA AMONG EMERGING AND MIDLIFE ADULTS.

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Insomnia is common among individuals with post-traumatic stress disorder (PTSD). Symptoms of PTSD may lead to relational dysfunction and subsequently to feelings of social isolation. Further, research has demonstrated that loneliness is also associated with insomnia. Considering that feelings of loneliness may vary as a function of age, examining loneliness as a mediator in the relationship between symptoms of PTSD and insomnia across age cohorts would provide important insights into the mechanisms that maintain the association between PTSD and insomnia across the lifespan. Thus, the present study sought to examine loneliness as a mediator in the relationship between symptoms of PTSD and insomnia among emerging and midlife adults. A sample of midlife adults living in the deep south (N=109; Age=51.26±8.60; Female=75.20%), and emerging adults (N=569; Age=18.87±2.27; Female=87.00%) participated in separate studies and completed demographic measures, along with the UCLA Loneliness Scale, the Insomnia Severity Index, and validated measures for symptoms of PTSD. In bivariate correlations symptoms of PTSD, loneliness, and insomnia were all significantly positively associated (ps<.001). Correlation analyses conducted among midlife adults suggested that symptoms of PTSD were significantly positively associated with insomnia and loneliness (ps<.001). However, loneliness was unrelated to insomnia among midlife adults (p>.05). In separate regression models controlling for age and sex, symptoms of PTSD were positively associated with loneliness (b=0.373, t=15.020, p<.001, R^2=0.289) and insomnia (b=0.196, t=15.931, p<.001, R^2=0.314) among emerging adults, and midlife adults (loneliness b=0.557, t=5.563, p<.001, R^2=0.237; insomnia b=0.174, t=3.599, p<.001, R^2=0.128). In follow-up mediation analyses controlling for age and sex, loneliness mediated the relationship between symptoms of PTSD and insomnia among emerging adults (b=0.038, SE=0.007, 95% CI=[0.023, 0.054]), but not midlife adults (b=-0.012, SE=0.029, 95% CI=[-0.054, 0.028]). Thus, loneliness may play an important role in linking symptoms of PTSD and insomnia among emerging adults, but not necessarily among midlife adults. Further, these results are important as rates of loneliness have increased in emerging adults and subsequently may play a more pronounced mechanistic role for their mental and physical health.

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Abstract 1084

PSYCHOSOCIAL AND BIOCHEMICAL CORRELATES OF NICOTINE ADMINISTRATION VIA VAPING BEHAVIOR

Mira Kirschner

E-cigarette use is rising in popularity, especially among adolescents and emerging adults. A growing body of literature demonstrates that e-cigarette usage increases the risk of many fatal diseases, such as cardiovascular and respiratory disease. Previous work has also found connections between depression and e-cigarette usage in high school students. However, there is not much known about the biopsychosocial correlates and consequences of nicotine in young, college-aged, adults, a population that exhibits high rates of vaping behavior. This interdisciplinary project synergized two comparative studies. The first study assessed vaping behaviors, peer influences, and mental health among 173 undergraduate students. The second study used *C. elegans* as a model organism to measure social behaviors through the avoidance response after exposure to varying concentrations of nicotine. Study 1 results revealed that younger vapers tend to have higher depressive symptoms. Additionally, vaping appeared to function as a social activity in this sample, rather than a downstream outcome of poor wellbeing indicators. Study 2 revealed that *C. elegans* exhibit avoidance behavior in response to increasing concentrations of nicotine. This work further elucidates the psychosocial context of vaping in adolescents and emerging adults and highlights potential pathways through which nicotine influences social behavior at the biochemical level. Follow-up work is already underway to examine these trends in a larger sample of students and expand assay protocols to further investigate the effects of nicotine in the *C. elegans*.

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Abstract 1367

THE ASSOCIATION BETWEEN SLEEP TRAJECTORIES THROUGHOUT PREGNANCY AND POSTPARTUM PAIN: A PROSPECTIVE COHORT STUDY

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Objective: Pain following childbirth is a significant aspect of postpartum recovery, important to both patients and clinicians, as it influences maternal and infant outcomes. While sleep is known to affect pain in general adult populations, limited research exists on this relationship during the perinatal period. This study examines the association between sleep quality and duration trajectories from mid to late pregnancy and self-reported pain during postpartum hospitalization. **Methods**: A secondary data analysis was conducted on an observational cohort of pregnant individuals between 12-20 weeks of gestation with a pre-pregnancy body mass index (BMI) ≥ 25 kg/m² (N=118). Six prenatal visits assessed sleep quality and duration using the Pittsburgh Sleep Quality Index. Group-based trajectory models identified distinct sleep quality and duration trajectories. The primary outcome, postpartum pain, was measured as the Area Under the Curve (AUC) during postpartum

hospitalization. Regression analyses were performed to determine the association between sleep trajectories and postpartum pain, adjusting for relevant covariates. **Results**: Two distinct sleep trajectories were identified for both sleep quality and duration. The "Very poor and decreasing" sleep quality group (n=43) had a median PSQI score of 9 in early to mid-pregnancy, increasing to 11 by the end of pregnancy. The "Good to poor" sleep quality group (n=75) had median PSQI scores between 4-5 in early to mid-pregnancy, rising to 6 by the end of pregnancy. For sleep duration, the "Normal and moderate" group (n=93) consistently slept 6-7 hours per night, while the "Short to very short" group (n=25) slept 5-6 hours per night throughout pregnancy. No statistically significant associations were found between sleep quality and postpartum pain (expβ = 1.2, 95% CI: 0.7 to 2.06, p = 0.50) or between sleep duration and postpartum pain (expβ = 1.07, 95% CI: 0.67 to 1.72, p = 0.78). **Conclusions**: Sleep quality and duration during pregnancy were not significantly associated with postpartum pain during hospitalization. Further research is warranted to explore the impact of sleep on long-term postpartum pain, especially chronic pain that may develop weeks or months after delivery.
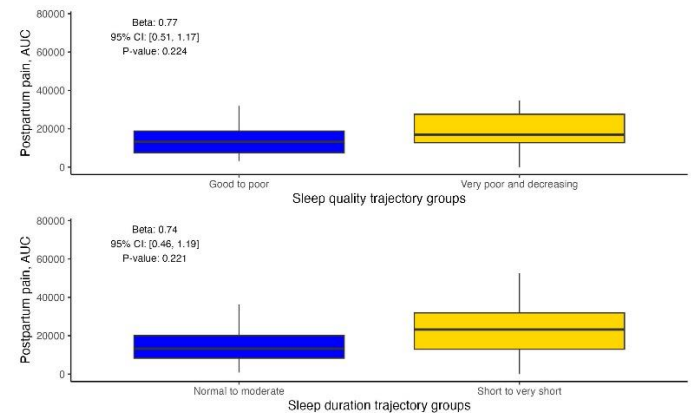
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Abstract 1119

THE IMPACT OF SLOW-PACED BREATHING ON EMOTION REGULATION IN PATIENTS AWAITING PSYCHOSOMATIC TREATMENT: INITIAL RESULTS FROM THE VAST STUDY

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Background: Patients with psychosomatic disorders frequently experience difficulties with emotional regulation, a transdiagnostic problem. A recent neuroimaging studies suggest that yogic breathing enhances functional connectivity in emotion-regulation regions, such as the medial prefrontal cortex (mPFC) and the amygdala, in healthy students. It is unclear whether daily breathing exercises could similarly improve emotional regulation in patients awaiting psychosomatic treatment. The VAST study was designed to assess if slow-paced breathing (SPB) could effectively enhance emotional control during the therapy wait period in psychosomatic patients.

Methods: The VAST study is a pre-registered (DRKS00032629), ongoing RCT at the Clinic for Psychosomatic Medicine, Ulm, Germany. Patients are randomized into treatment-as-usual (TAU) or a 4-week SPB intervention group (IG), practicing at 6 breaths per minute (4:6 inhale-to-exhale ratio) for at least 10 minutes twice daily. Primary outcomes include EPS25 subdimensions. Group-by-time interactions were analyzed using linear mixed models and likelihood ratio (LR) tests.

Results: Of 60 participants, 42 patients (50% female, mean age 40) completed the first phase. Primary diagnoses included depression (69%), somatoform disorder (24%), and generalized anxiety disorder (7%). The IG was categorized into protocol-adherent (≥70% of practice minutes, N=9) and non-adherent (<70%, N=10) subgroups, while the TAU group had 23 participants. A significant group-by-time interaction was observed for emotional control (EPS25), with LR $\chi^2(2)$ = 10.08, p=.007. Other EPS25 subdimensions showed no significant interaction effects: processing (p = .103), avoidance (p=.275), experience (p=.348), and suppression (p=.491) and EPS mean score (p=.058).

Discussion: These preliminary results suggest that adherence to the SPB intervention may improve emotional control during the waiting period for in- and outpatient treatment. The trial will continue to follow patients for up to three months post-discharge, with further assessments of emotional regulation at therapy start, four weeks thereafter and at discharge, providing additional insights into the long-term efficacy of SPB on emotion regulation.

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Abstract 1275

INFLAMMATORY GENE EXPRESSION AS A MECHANISM LINKING EARLY CAREGIVING ADVERSITY WITH CHILDHOOD INTERNALIZING SYMPTOMS

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Early caregiving adversity (ECA), which involves interruptions and/or dysfunctions in the parent-child relationship, is associated with heightened risk for internalizing (i.e., depression and anxiety) disorders. Disrupted inflammatory biology is one mechanism thought to underlie the connection between ECA, internalizing symptoms, and fatigue, a physical symptom common across internalizing disorders. However, it remains unclear when in development links between ECA, inflammation, and internalizing and fatigue symptoms emerge. Examining inflammatory gene expression can reveal more upstream and earlier-emerging aspects of inflammatory biology in childhood, when circulating inflammatory markers are typically low.

We will examine inflammatory gene expression associations with ECA and internalizing and fatigue symptoms in a sample of N=68 children tracked across 3 annual waves (ages 6-16 years in Wave 1):

N=28 with significant ECA exposure (maltreatment and/or extended parental separation), and N=40 without history of maltreatment or parental separation. Children provided dried blood spot samples for analysis of an a priori specified composite of RNA transcripts from 19 pro-inflammatory genes at one study wave, and children and caregivers completed questionnaires on children's internalizing and fatigue symptoms at each wave. Prior analyses of this sample found that ECA-exposed children exhibited more internalizing and fatigue symptoms. In a set of pre-registered analyses (https://osf.io/fahyp), we will test (1) whether inflammatory gene expression differs according to ECA, (2) whether inflammatory gene expression is associated with caregiver-proxy or child-self reported internalizing and fatigue symptoms concurrently and one year later, and (3) explore whether inflammatory gene expression mediates the positive relationships between ECA and symptoms. Multilevel linear models, with symptoms nested within participants, will be run; missing symptom and covariate data will be handled with model-based multiple imputation. Data have been processed; analyses will be complete by February 2025.

Findings will contribute a more sophisticated understanding of how ECA shapes inflammatory health in childhood, with the potential to inform novel interventions that supplement current gold-standard treatments for internalizing symptoms in youth, which are only 40-60% effective.

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Abstract 1152

ASSOCIATIONS OF DIMENSIONS OF EARLY LIFE ADVERSITY WITH MITOCHONDRIAL DYSFUNCTION

Shiloh Cleveland, BA; Judith Carroll, PhD; Linsey Stiles, PhD; Jennifer A. Sumner, PhD

Early life adversity (ELA) is linked to adverse mental and physical health across the lifespan, including cardiometabolic disease. One key, yet understudied, mechanism that may be relevant in understanding how ELA leads to cardiometabolic risk is mitochondrial dysfunction. Mitochondria are targets of the body's stress response and mediators of stress-related pathology, and mitochondrial dysfunction has been associated with accelerated biological aging and cardiometabolic risk. However, little clinical research has examined experiences of ELA and mitochondrial function. Further, the few prior studies of ELA and mitochondrial function have adopted either specificity (e.g., childhood sexual abuse) or cumulative risk (e.g., cumulative experiences of abuse and neglect) approaches to conceptualizing ELA. Conversely, dimensional models of ELA postulate that various early adversities can be organized into core underlying dimensions of experience based on common features; these dimensions, in turn, can have distinct developmental consequences. As such, dimensional models of ELA may be well-suited to studying mechanisms by which these early experiences may translate into various health outcomes. This study will investigate whether key dimensions of ELA—threat and deprivation—are differentially associated with mitochondrial

dysfunction in a community-based sample of trauma-exposed adults (*n*=145). Participants reported on various ELA experiences, used to create composites for dimensions of threat and deprivation. Various indices of mitochondrial bioenergetics and energy metabolism (i.e., oxygen consumption rate and extracellular acidification rate) of live peripheral blood mononuclear cells were assessed using the Agilent Seahorse X96 Extracellular Flux Analyzer. Multiple linear regression will be used to examine associations between threat- and deprivation-related ELA with metrics of mitochondrial dysfunction, adjusting for relevant covariates (e.g., age, gender, batch). Data collection and processing for this study were completed in September 2024, allowing sufficient time for analysis in advance of the annual meeting. As the first study to adopt a dimensional approach to examining ELA and mitochondrial dysfunction, this study has the potential to shed light on unique dimensions of ELA associated with an important process of biological embedding of early experience.

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Abstract 1163

EXAMINING THE ROLE OF PERCEIVED DISCRIMINATION AND MICROAGGRESSIONS ON DEPRESSIVE SYMPTOMS AMONG YOUNG ADULTS

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Background: Acts of discrimination exert an overt and hostile environment to dehumanize an individual based on a marginalized identity; in contrast, microaggressions are subtle or ambiguous against one's marginalized group (Midgette & Mulvey, 2021). Previous literature focuses on explicit forms of racial discrimination associated with negative mental health outcomes, with less focus on microaggressions and gender-based discrimination. In the present study, we aim to investigate the relation between discrimination and microaggressions with depressive symptoms among young adults, additionally considering a possible moderating gender role. **Study Design and Timeline**: This is a secondary study based on cross-sectional data from an ongoing longitudinal study, Allostatic Load In Los Angeles Youth (ALLY). The sample (target sample n=200) so far consists of 104 young adults (M_{age} = 21, 71% female, 66% Latinx) residing in Los Angeles County. The secondary data analysis will be conducted within the data collection period of July 1, 2023 to January 31, 2025. Participants completed an online self-reported survey composed of sociodemographic data and social stressors including the Everyday Discrimination Scale (EDS; α = .90), Racial and Ethnic Microaggressions Scale (REMS; α = .93), and the Center for Epidemiological Studies – Depression scale (CES-D; α = .70). **Statistical plan**: Separate linear regressions will be used to assess the relation between 1) EDS scores and 2) REMS scores with CES-D scores. Gender (assessed by sex at birth) will also be examined as a moderating variable. *A priori* covariates include age, sex, and race/ethnicity. **Anticipated clinical and/or scientific significance**: Identifying the link between discrimination and microaggressions with depression is essential to understand how this complex interplay can exacerbate mental health, particularly among marginalized groups. Ongoing research is vital to assist clinicians in fostering a culturally competent setting validating an individual's experience. Findings can further inform policymakers to create policies that lead to societal change in efforts of reducing discrimination and microaggressions among educational and workplace settings. Longitudinal research is also needed to address the long-term impact of depression and its co-morbidities.

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Abstract 1159

PSYCHOLOGICAL DISTRESS AND SLEEP OUTCOMES FOLLOWING MARITAL SEPARATION: EXPLORING SOCIAL INTEGRATION AS A KEY MODERATOR

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RESEARCH QUESTION: Marital dissolution is associated with an increased risk for a range of poor health outcomes, including disturbed sleep. Existing literature has also linked low levels of perceived social integration, or loneliness, with poor sleep. In this analysis, we assess the possibility that objectively-assessed social integration moderates the impact of psychological distress on actigraphy-assessed sleep efficiency after marital separation.

SAMPLE SIZE, DATA COLLECTION, & TIMELINE: This poster uses data from Divorce, Sleep, and Environment (DSE) Study (https://osf.io/s4ven/) which followed 122 adults over five months following a marital separation. At each of the three measurement occasions during the course of the study, the following data were collected: 1) sleep actigraphy data for a week, 2) data on naturalistically-observed daily social behaviors for a weekend, and 3) data from self-report questionnaires to assess separation-related psychological distress (SRPD). Sleep efficiency was objectively measured using wrist actiwatch devices (Actiwatch 2, Phillips Respironics), and daily social behaviors were objectively measured using the Electronically Activated Recorder (EAR; Mehl, 2017). All data are collected, and we are in the process of computing a social integration composite using the following EAR categories: time spent (a) with others, (b) socializing or entertaining, (c) in substantive conversation, and (d) receiving positive social support.

PLANNED ANALYSES: The primary hypothesis is that higher levels of social integration experienced by individuals in the months following marital dissolution will reduce the negative impact of separation-related psychological distress on sleep efficiency. Given that all data are collected over time, we will account for main effects and examine the time-varying interaction between SRPD and social integration predicting sleep efficiency.

SCIENTIFIC SIGNIFICANCE: If social integration is found to be a significant moderator between psychological distress and sleep after marital separation, it could be a key potential target in interventions that aim to reduce poor health outcomes following stressful life events.

REFERENCES: Mehl, M. R. (2017). The electronically activated recorder (EAR). *Current directions in Psychological Science*, 33(4), 517–523. https://doi.org/10.1177/0963721416680611

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Abstract 1306

BREATHING IN BLUES: EXPLORING THE INTERPLAY OF ENVIRONMENTAL EXPOSURES AND PSYCHOSOCIAL STRESS ON CARDIOVASCULAR RISK IN URBAN YOUNG ADULTS

Breana Aceituno, BSPH; Renee Medina, B.S.; Kimberly Felix, MPH; Joshua Vazquez, H.S.; Evelyn Sarsar, Ph.D.; Claudia Toledo-Corral, Ph.D.

Research has consistently shown that in addition to psychosocial stress, environmental stress exposure plays a crucial role in the development of cardiovascular health, including heart disease and hypertension. However, minimal literature exists on how environmental stressors relate to progression of cardiovascular risk among young adults in Los Angeles, while taking into account important cofactors, such as psychosocial stress. This study aims to investigate the relation between environmental burden and psychosocial stressors with cholesterol levels and blood pressure. This study will also investigate the moderating role of race/ethnicity.

This secondary, cross-sectional study will use data derived from an ongoing longitudinal study, the Allostatic Load in Los Angeles Youth (ALLY), composed of individuals between the ages of 18 and 24 who identify as Latinx or Caucasian and live within the greater Los Angeles area. Data collection began on July 1, 2023 and will continue through January 31, 2025. We currently have a sample size of 42 with a target sample size of 60. After data collection, we will run four logistic regressions to assess the relation between environmental stressors with 1) LDL-cholesterol, 2) HDL-cholesterol, 3) systolic blood pressure, and 4) diastolic blood pressure. We will adjust for perceived stress, age, sex, and ethnicity.

Participants self-reported their sociodemographic information. Participants also completed the Perceived Stress Scale (PSS; α =.701) and the CalEnviroScreen4.0, using residential addresses at the census tract level, to measure environmental burden. Systolic and diastolic blood pressure was measured in triplicate, and blood from a fasting draw was used to evaluate high-density lipoprotein (HDL) and low-density lipoprotein (LDL) cholesterol.

Understanding pollution's impact on cardiovascular health is crucial, particularly as it intersects with social and economic inequalities. Many people lack the freedom to choose their living environment due to these constraints. This study aims to inform early interventions, policy advocacy, and health literacy by identifying environmental health risks in young adults. The findings may help prevent or delay cardiovascular issues and empower young adults to advocate for environmental justice and policy changes, promoting broader awareness of how environmental factors influence health.

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Abstract 1442

CHILDHOOD SHADOWS: EXPLORING THE LINK BETWEEN ADVERSE CHILDHOOD EXPERIENCES AND DEPRESSION IN LOS ANGELES YOUTH

Renee Medina, BSPH; Kimberly Felix, MPH; Breana Aceituno, BSPH; Joshua Vazquez, H.S.; Evelyn Sarsar, PhD; Claudia Toledo-Corral, PhD, MPH

Background and Study Aim: Adverse Childhood Experiences (ACEs) have been consistently linked to adverse biopsychosocial health outcomes, with research demonstrating strong positive correlations between ACEs and poor mental health, including depression. Previous studies have also found differences between biological sexes in the prevalence of ACEs and their associated mental health outcomes, particularly depression. The aim of this research study is to determine the relation between ACEs and depressive symptoms and whether this relation differs by biological sex.

Study Design and Methods: The Allostatic Load in Los Angeles Youth (ALLY) is an ongoing study focused on understanding the role of social stressors on stress biology in young adults (ages 18-24 years old) residing in Los Angeles County. Primary data was collected online which included ten ACEs (yes/no responses) questions and the 10-item Center for Epidemiologic Studies – Depression Scale (CES-D; α =.70).

Study Timeline and Proposed Analysis: This secondary, cross-sectional research study will used data from the ALLY study, a cohort study which commenced in of July of 2023. The current sample size is 112 however the target sample size for this study is 200 participants (to be collected by January of 2025). The final data analysis will include multiple variable linear regression model to examine the association between ACE exposure and CES-D scores, while adjusting for sociodemographic factors (age, sex, and ethnicity). A moderation analysis will also be conducted to explore potential differences in the relation between ACEs and depressive symptoms based on biological sex.

Anticipated Clinical Significance: The findings of this study will contribute to the growing body of literature on the long-term, mental health impacts of childhood adversity between biological sex. It may also provide support for developing targeted interventions to mitigate the effects of ACEs on clinical and mental health outcomes in young adults.

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Abstract 1504

ENERGETIC STRESS CAUSED BY MITOCHONDRIAL ALLOSTATIC LOAD INCREASES SYSTEMIC ALLOSTATIC LOAD

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Background: Chronic psychosocial stress is known to increase allostatic load (AL), but we do not yet know the physiological mechanism through which stress gets 'under the skin.' We previously found that cells exposed to chronic glucocorticoid stress

had to spend more energy to survive (i.e., increased energy expenditure), aged faster, and died younger. This *in vitro* evidence agrees with the energetic model of allostatic load (EMAL) where external stressors increase the energetic costs of life, leading to mitochondrial allostatic load and, eventually, maladaptive tradeoffs that increase systemic AL. Here, we explore the EMAL in a clinical population by asking whether mitochondrial defects that trigger energetic stress increase AL.

Methods: Energetic stress was operationalized in the Mitochondrial Stress, Brain Imaging, and Epigenetics (MiSBIE) study as 1) genetic mitochondrial disease (MitoD n=36, control=69) or 2) plasma growth differentiation factor 15 (GDF15) (n=105), a circulating marker of cellular energetic stress. Allostatic load was calculated using 32 biomarkers across the metabolic, immune, neuroendocrine, cardiovascular, and hematologic systems. Categorical differences were assessed using nonparametric Mann-Whitney t-tests, and correlations were assessed using Spearman's rank correlation.

Results: AL was significantly higher in people with mitochondrial disease (g=0.52, p=0.01). AL was significantly correlated with age among controls (r=0.41, p<0.0001) but not patients (r=0.19, p=0.26). Using GDF15 as a continuous marker of energetic stress, AL was correlated with GDF15 in all participants (r=0.51, p<0.0001), with a slightly stronger relationship for controls (r=0.47, p<0.0001) than patients with mitochondrial disease (r=0.40, p=0.02).

Discussion: These data confirm that higher energetic stress is associated with higher AL. We provide the first clinical support for the energetic model of allostatic load (EMAL). The lack of correlation between age and AL for mitochondrial disease patients reflects the accelerated aging phenotype seen with higher energetic stress. Future research needs to explore the relationships between energetic stress and the internalization of chronic psychosocial stress as AL.

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Abstract 1520

PROFILES OF PROTECTIVE FACTORS IN A CULTURALLY ADAPTIVE INTERVENTION FOR REDUCING HEALTH RISK IN ALASKA NATIVE YOUNG PEOPLE

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Background: Alaska Native (AN) young people have numerous strengths, yet they face substantial health disparities stemming from historic and contemporary sources of stress and trauma (e.g., forced relocation from tribal lands, limited healthcare access,). The BeWel (Because We Love You) intervention is a community-oriented strength-based intervention to address suicide, substance use, and mental health among AN young people in Alaska. BeWel is culturally adapted to focus on building and strengthening protective cultural factors (PCF) and experiences, and increasing intergenerational interconnectedness. To better understand heterogeneity in PCF among AN young people, we used latent profile analysis of 5 protective cultural domains. Profiles were compared at baseline and 3-month follow-up on PCF and substance use and health outcomes. **Methods**: Data were collected (n=144, mean age = 18 years, 49% female) across 5 PCF domains: Awareness of connectedness, community protective factors, individual protective factors, reasons for life, and reflective process; alcohol and cannabis use/dependence; anxiety, depression; and general health. **Results**: Model fit supported 2-profiles. Profile 1 (26%) reported relatively low scores across all 5 PCF domains whereas Profile 2 (74%) reported higher scores. At baseline, Profile 2 was significantly lower than Profile 1 on suicide risk/intention, mental health, alcohol and cannabis use/dependence, and reported better general health. At follow-up, Profile 2 was relatively stable; however, Profile 1 improved on PCF measures and, notably, also improved across all substance use and health outcomes. Many previous differences between Profiles 1 and 2 were no longer significant. **Conclusions.** This work provides evidence of the value and impact culturally adaptive interventions have on reducing risk across a variety of domains. At baseline, greater protective factors in Profile 2 were associated with better outcomes across a variety of domains, relative to Profile 1, characterized by lower protective factors. However, Profile 1 reported greater increases in protective factors and improvement across all health outcomes. Thus, this work not only supports the importance of emphasizing PCF in interventions but also highlights that greater benefits might be conferred to youth with initially lower protective factors.

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Abstract 1495

ASSOCIATIONS BETWEEN CHILDHOOD ADVERSITY, INTERNALIZED WEIGHT STIGMA, AND COMPULSIVE EXERCISE BEHAVIOR AMONG COLLEGE STUDENTS

Harley Layman, Oklahoma State University; Natalie Keirns, PhD, Ball State University; Misty Hawkins, PhD, Department of Health & Wellness Design, Indiana University

Adverse childhood experiences (ACEs) are difficult events (i.e., abuse, neglect, and household dysfunction) occurring before the age of 18. ACEs have been associated with greater internalized weight stigma (IWS), which occurs when individuals apply negative weight-based stereotypes to themselves. ACEs and IWS have additionally been linked to maladaptive health behaviors, such as compulsive exercise, but little is known about specific pathways between ACEs, IWS, and health behaviors.

The aim of this study is to examine the relationship between ACEs, IWS, and compulsive exercise among college students. Participants (N=337) were attending a large Southern university and completed an online survey including validated assessments of ACEs (total and subtypes), IWS, compulsive exercise behavior, and key demographic variables and covariates (i.e., age, gender, race, discrimination, education, and body mass index). Indirect effect analyses revealed that IWS accounted for the relationship between ACE-total score and compulsive exercise (*b*=0.49, SE=0.24, *CI*[0.10, 1.01]). Higher ACE

scores were associated with greater IWS (b=0.08, SE=0.03, *CI*[0.02, 0.15], *p*=.009) and greater IWS was associated with greater compulsive exercise (b=5.88, SE=0.93, *CI*[4.05, 7.70], *p*<.001). When ACE-subtypes were examined, IWS accounted for the relationship between abuse-type ACEs and compulsive exercise (b=0.69, SE=0.34, *CI*[0.11, 1.45]), as well as the relationship between neglect-type ACEs and compulsive exercise (b=0.493, SE=0.50, *CI*[0.20, 2.12]). Higher abuse-ACE scores were associated with greater IWS (b=0.12, SE=0.05, *CI*[0.03, 0.22], *p*=.013) and greater IWS was associated with greater compulsive exercise (b=5.57, SE=0.87, *CI*[3.86, 7.27], *p*<.001). Similarly, higher neglect-ACE scores were associated with greater IWS (b=0.17, SE=0.06, *CI*[0.05, 0.29], *p*=.007) and greater IWS was associated with greater compulsive exercise (b=5.50, SE=0.87, *CI*[3.78, 7.21], *p*<.001). IWS did not account for a significant portion of the relationship between household dysfunction-type ACEs and compulsive exercise behavior.

ACEs – primarily abuse and neglect subtypes – may increase risk for IWS in young adulthood, which is in turn associated with greater compulsive exercise. Future work should examine IWS as an intervention point for promoting healthy exercise behavior in young adults with a history of ACEs.

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Abstract 1057

FEELING BLUE AND TRYING NOT TO LOSE HEART: ASSOCIATIONS BETWEEN MENTAL HEALTH AND CARDIOVASCULAR DISEASE RISK PROFILES FOR BLACK YOUNG ADULT WOMEN

Vanessa Volpe; Abbey Collins, BA, North Carolina State University

Background: Black women (Felix et al., 2019) experience high cardiovascular disease (CVD) burden. Research on CVD risk for Black women often focuses on midlife and beyond (Jones et al., 2022), yet CVD risk in young adulthood is amplified (Aggarwal et al., 2023). Focusing on early life-course CVD prevention (Gooding et al., 2020), we take an intersectional (i.e., racially gendered age-specific) person-centered approach to investigate CVD risk profiles of Black young adult women (RQ1). One psychological correlate of CVD risk is symptoms of depression and anxiety (Zhao et al., 2024) and Black young adult women (Walker et al., 2024) report high levels. We examined if CVD risk profiles differed by depression and anxiety (RQ2).
Method: Data come from a larger cross-sectional study of Black young adult women (ages 18 - 35). 432 Black women (M age = 24.55, 72.9% African American, 98.6% cisgender) self-reported symptoms of depression and anxiety (DASS-21) and 6 indicators of CVD risk selected to match Life's Essential 8 based on available data. They included: 1) BMI categories, 2) sleep quality (PSQI), 3) meals comprised of foods high in fiber and fat (Toobert et al., 2000), 4) physical activity (IPAQ), and 5) high BP medication (no/yes) as a proxy for cardiac biomarkers.
Results: A latent class analysis uncovered 4 profiles of CVD risk. Profiles included: healthy on most indicators except sleep (31.94% of the sample), high CVD risk on most indicators (39.12%), healthy physical activity, mixed diet, poor sleep, and obesity (17.82%), and moderate physical activity, good sleep, poor diet, and overweight

(11.11%). Black young adult women with depression were less likely to be in the healthy compared to the CVD risk profile (B = -.74; p = .001). Those with anxiety were less likely to be in the profile distinguished by good sleep compared to the CVD risk profile (B = -.87 p < .001).
Discussion: Results suggest nuances in the presentation of CVD risk among Black young adult women. Beyond unhealthy and healthy, profiles with some physical activity yet other CVD risk indicators emerged. Physical activity in isolation may not be as protective a CVD risk factor for all groups of Black young adult women. Mental health appeared to matter for some but not all risk profiles. Depression is an important correlate of the riskiest CVD profile, suggesting that depression screenings could be used to indicate the need for CVD risk screening and vice versa. Rumination and worry associated with anxiety may distinguish CVD risk profiles with worse sleep.

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Abstract 1497

MEASURING EXPOSURE TO INTIMATE PARTNER ABUSE HELPS IDENTIFY DIVORCED WOMEN WITH SIGNS OF WORSE FUTURE HEALTH

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Divorce is common and has implications for future health. When directly compared to other psychosocial factors, divorce history (yes vs. no) is a top predictor of premature mortality. Yet, connections between divorce and mortality are heterogeneous, raising questions about which divorced persons are at highest risk and how to identify them. Assessing intimate partner abuse (IPA) in prior marriages may address these questions, but initial research has focused on single forms of IPA, which is limiting. IPA involves multiple forms of abuse. These forms can cluster, yielding subgroups with qualitatively different IPA exposures, and potentially qualitatively different impacts on health.

In an initial test of this hypothesis, the present cross-sectional study used an analytic approach for identifying subgroups (latent class analysis; LCA) and focused on self-rated health (SRH), a predictor of all-cause mortality. Two subsamples were selected from the National Violence Against Women Survey: divorced (N=1427; 47% men) and continuously married (N=7456; 55% men). Divorced persons reported on IPA in prior marriages: emotional (verbal, coercion), physical, fear, sexual, threat, stalking. LCA was used to identify IPA subgroups in divorced persons. Ordinal logistic regression predicted the odds of worse SRH from IPA subgroups, adjusted for age (18-91 yrs), income, and other lifetime trauma.

For divorced women, analyses revealed a 3-subgroup LCA solution for IPA: Emotional (38%), Emotional/Physical/Fear (31%), and All Forms (31%). The All Forms subgroup had increased odds of worse SRH compared to the other two subgroups (ORs = 1.71,

1.56, $ps \leq .02$). In analyses comparing the three IPA subgroups (all divorced) to continuously married women, only the All Forms subgroup had increased odds of worse SRH (OR = 1.62, $p=.0004$). For divorced men, a 3-class LCA solution for IPA was found: Emotional (32%), Emotional/Physical (49%), Emotional/Physical/Fear (20%). There were no statistically significant associations between IPA subgroups and SRH among divorced men ($ps \geq 0.54$) or compared to continuously married men ($ps \geq .15$).

IPA exposure in prior marriages helps identify divorced women with worse self-rated health and, by extension, potentially greater risk for premature mortality. However, multidimensional measurement of IPA and identification of distinct subgroups are key.

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Abstract 1498

UNDERSTANDING CONNECTIONS BETWEEN MARITAL STATUS AND CHRONIC DISEASE IN WOMEN BY ATTENDING TO INTIMATE PARTNER ABUSE

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A marital status of divorced (vs. married) has been associated with new onset chronic diseases in prospective studies. One proposed explanation for this association is the stress of divorce and poor-quality close relationships. However, the specific role of intimate partner abuse (IPA) in prior marriages has been overlooked, even though divorced (vs. married) women report a higher prevalence of IPA exposure. The present cross-sectional study tested the hypothesis that attending to IPA exposure in prior marriages will help clarify the connection between divorce and chronic disease.

Divorced persons (N=1427; 47% men) and continuously married persons (N=7456; 55% men) from the National Violence Against Women Survey reported on the presence of chronic diseases that were disabling and impairing. Divorced persons reported on multiple forms of IPA in prior marriages—emotional (verbal, coercion), physical, fear, sexual, threat, stalking—and these forms were analyzed using latent class analysis (LCA) to identify qualitatively different IPA subgroups. Adjusting for age (18-91 yrs), other lifetime trauma, and annual income, binary logistic regression tested the association between IPA subgroups and the presence vs. absence of a set of chronic diseases that have been empirically linked with divorce history: cardiovascular diseases, diabetes, cancer, stroke.

Among divorced women, LCA revealed a 3-subgroup solution: Emotional (38%), Emotional/Physical/Fear (31%), and All Forms (31%). The All Forms IPA subgroup had odds of reporting a disabling chronic disease 2.66 times higher than the Emotional IPA subgroup [95% CI 1.33 – 5.32]. In analyses comparing the three IPA subgroups (all divorced) to the continuously married women, only the All Forms IPA subgroup had increased odds of reporting a disabling chronic disease [OR = 1.81, 95% CI 1.14-2.85]. For divorced men, a 3-subgroup LCA solution was found—Emotional (32%), Emotional/Physical (49%), Emotional/Physical/Fear (20%)—but there

were no statistically significant associations with chronic disease among the divorced men ($ps > .40$) or compared to the continuously married men ($ps > .06$).

Assessing IPA exposure in prior marriages may help clarify the connection between divorce and chronic disease in women, and ultimately reveal mechanisms that can be targeted to extend healthy lifespan in higher risk divorced women.

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Abstract 1481

THE IMPACT OF MENTAL HEALTH COMORBIDITIES ON POST-OPERATIVE PAIN MANAGEMENT IN PATIENTS UNDERGOING LUMBAR SURGERIES

Sukhpreet Badesha

Objective: This study examines the role of mental health comorbidities in influencing pain management efficacy in patients undergoing lumbar surgeries, with an emphasis on psychosomatic factors.

Methods: We conducted a retrospective cohort study on 42 patients categorized by the presence (n=28) or absence (n=14) of mental health comorbidities (anxiety or depression). Patients underwent microdiscectomy, laminectomy, or fusion surgeries at spinal levels L1-L5, all performed by the same surgeon to ensure consistency in surgical technique. Data on pain levels at admission, immediately post-operation, and throughout the hospital stay, along with morphine milligram equivalents (MMEs), were analyzed. Statistical adjustments were made for age, BMI, and initial pain levels.

Results: Patients with comorbidities reported significantly higher pain at admission (Mean: 5.20 vs. 3.65, p=0.0386) and demonstrated trends toward higher MME usage (Mean: 53.38 vs. 29.4, p=0.0710). Immediate and overall postoperative pain scores were higher in the comorbid group, though not reaching statistical significance.

Conclusion: The findings underscore the impact of mental health on pain management in surgical settings and advocate for the integration of psychological evaluations into pre-operative planning. By considering both psychological and physical factors, this could enhance pain management strategies and improve patient outcomes.

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Abstract 1500

DIMENSIONS OF DAILY LONELINESS AND THEIR IMPLICATIONS FOR INFLAMMATION AND TRAIT LONELINESS

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Background: With robust links between trait loneliness and healthy aging, the etiology of loneliness in daily life is an important next research direction. The current study validates a daily approach to studying loneliness in two ways. 1) We examine a source of daily loneliness fluctuation: how daily loneliness increases (i.e., reactivity)

with social isolation. We test how loneliness reactivity is cross-sectionally related to inflammation as a pathway between loneliness and health. 2) We test whether daily loneliness means, fluctuations, and reactivity predict future trait loneliness.

Method: Adults (*N* = 997, age 33-84) from Wave 2 of the Midlife in the United States study reported their daily loneliness (0=not at all, 4=all of the time) on 8 nights, gave blood samples assayed for interleukin(IL)-6 and C-reactive protein (CRP), and reported sociodemographics and trait loneliness. Individual loneliness reactivity slopes were extracted from multilevel models that predicted daily loneliness from daily social isolation. In regression models, these slopes predicted IL-6 and CRP with standard covariates (Table 1). Ten years later, 562 adults reported their trait loneliness again. A regression predicted future trait loneliness by average (individual means), fluctuations (individual standard deviations) of, and reactivity in daily loneliness, controlling for baseline trait loneliness.

Results: Spending less time with others predicted higher daily loneliness [*B(SE)* = 0.19(0.04), *p* < .001], and individuals varied in this loneliness reactivity (Random SD: 0.52). Higher loneliness reactivity predicted higher IL-6 [*B(SE)* = 0.26(0.12), *p* = .03] and CRP [*B(SE)* = 0.40(0.20), *p* = .04] (Table 1). Higher average levels [*B(SE)* = 0.54(0.08), *p* < .001] and fluctuation in daily loneliness [*B(SE)* = 1.05(0.30), *p* < .001] at baseline predicted later trait loneliness above and beyond baseline trait loneliness (Table 2). An interaction showed the joint effects of daily means and fluctuations in loneliness (Figure 1).

Discussion: Findings uncover reactivity as a novel dimension of daily loneliness and highlight the importance of examining loneliness in daily life. Health implications of loneliness reactivity to isolation in daily life provide a point of intervention. Together, these findings shed light on daily loneliness in a self-reinforcing cycle that poses escalating health risks.

Table 1. Regressions of Associations between IL-6 and CRP with Daily Loneliness Reactivity

|	IL-6				CRP			
	B	*SE*	*t*	*p*	*B*	*SE*	*t*	*p*
(Intercept)	-0.21	0.06	-3.33	<0.001***	-0.28	0.11	-2.49	0.013*
Loneliness Reactivity	0.26	0.12	2.14	0.032*	0.40	0.20	2.03	0.043*
Average Daily Loneliness	0.03	0.06	-0.51	0.612	-0.09	0.12	-0.74	0.463
Age	0.01	0.00	7.42	<0.001***	0.00	0.00	1.11	0.267
Gender	0.02	0.04	0.56	0.578	0.39	0.07	5.89	<0.001***
BMI	0.03	0.00	11.38	<0.001***	0.07	0.01	14.34	<0.001***
Comorbid Conditions	0.02	0.01	2.62	0.009**	0.02	0.01	1.89	0.059
Education	-0.02	0.01	-3.12	0.002**	-0.03	0.01	-2.36	0.018*
Project Time Lag	-0.02	0.01	-1.33	0.183	0.05	0.02	2.16	0.031*
R²	.21				.23			

*Note: *p < .05, **p < .01,***p <.001; N = 997; Project Time Lag accounts for differing time in months between the participation in the daily diary and blood sampling.*

Table 2. Regression Predicting Trait Loneliness at Wave 3

	B	*SE*	*t*	*p*
(Intercept)	-1.41	0.25	-5.54	<0.001***
Baseline Trait Loneliness	0.54	0.09	6.15	<0.001***
Baseline Average Daily Loneliness	0.69	0.19	3.69	<0.001***
Baseline Loneliness Fluctuation	1.01	0.30	3.41	<0.001***
Loneliness Reactivity	-0.57	0.43	-1.34	0.181
Baseline Average Daily Loneliness x Baseline Loneliness Fluctuation	-0.85	0.26	-3.20	<0.001***
Age	-0.01	0.01	-1.71	0.09
Gender	-0.07	0.14	-0.51	0.61
R²	.19			

*Note: *p < .05, **p <.01,***p <.001; N = 562; Trait loneliness measured by CES-D loneliness item.*

Figure 1. Trait Loneliness (CES-D Loneliness) Predicted by Daily Mean and Fluctuation in Loneliness

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Abstract 1523
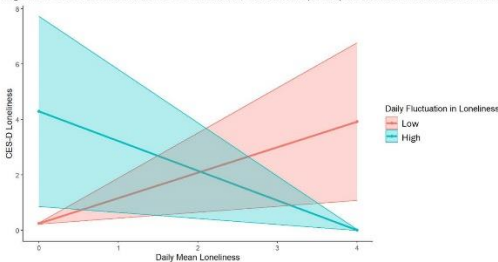
TITLE: COPING STRATEGIES MEDIATE THE ASSOCIATION OF CANCER-RELATED WORRY AND EMOTIONAL WELL-BEING AMONG WOMEN WITH OVARIAN CANCER

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Introduction: The diagnosis and treatment of ovarian cancer are often associated with high levels of worry, which may contribute to worse overall emotional well-being. Adaptive coping strategies have been associated with improved stress management and overall quality of life. This study examined the association between cancer worry, coping strategies, and emotional well-being among ovarian cancer survivors.

Methods: Ovarian cancer survivors (*N*=229) less than 5 years post-treatment completed measures prior to randomization into a

psychosocial or health promotion web-delivered intervention. Participants completed surveys, including the Cancer Worry Scale, Brief COPE, and Functional Assessment of Cancer Therapy-Ovarian (FACT-O). The emotional well-being subscale of the FACT-O was used to assess emotional well-being. Descriptive statistics and correlations explored relationships between these variables, and parallel mediation analyses were conducted to examine the role of coping subtypes in the association between cancer worry and emotional well-being.

Results: The mean age of participants was 60.74 (SD=10.51). Most participants had stage III ovarian cancer (47.16%). Cancer worry was elevated across the sample (M=13.5, SD=4), was positively associated with cancer stage (r =.24, p =.001), and negatively associated with emotional well-being (r =-.70, p <.001). Concerning coping strategies, cancer worry was positively associated with self-blame (r =.42, p <.001), self-distraction (r =.40, p <.001), denial (r =.22, p = .001), behavioral disengagement (r =.21, p <.01), venting (r =.21, p <.01), substance use (r =.14, p = .04), use of instrumental support (r =.14, p = .03), planning (r =.13, p =.04), and negatively associated with acceptance (r =-.24, p <.001). Adjusting for age and stage, maladaptive coping strategies mediated the relationship between cancer worry and emotional well-being, including self-blame (β =-.12, p <.001), self-distraction (β =-.10, p <.001), behavioral disengagement (β =-.04, p =.02), and venting (β=-.03, p =.04).

Discussion: The results emphasize the critical relationship between coping strategies and emotional well-being among ovarian cancer survivors experiencing cancer-related worry. These findings highlight the need for interventions addressing possible maladaptive coping strategies while promoting adaptive strategies such as acceptance.

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Abstract 1526

BIOPSYCHOSOCIAL CORRELATES OF RESTING AND STRESS-REACTIVE SALIVA GDF15: PRELIMINARY FINDINGS

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Background: We recently found that acute mental stress increases saliva growth differentiation factor 15 (GDF15), a biomarker of cellular energetic stress elevated in aging and induced by defective mitochondria. Here, we explore associations between saliva GDF15 and health-related biopsychosocial factors including chronic stress, mental and physical health, metabolic biomarkers, and sex and gender characteristics.

Methods: Participants from the Sex- and Gender-Based Analysis (SGA) Study (n=204, 71% females, age 18-72) were exposed to the Trier Social Stress Test (TSST) and saliva was collected at 6 timepoints (-10, 0, 10, 20, 30, 40min). Heart rate and blood pressure stress reactivity were monitored, saliva stress (cortisol) and sex

(testosterone, estradiol, progesterone) hormones and allostatic load blood biomarkers were measured, anticipatory stress and biopsychosocial self-report questionnaires were completed. Saliva GDF15 was quantified by ELISA for 194 participants (total=1178 samples). GDF15 reactivity was calculated as % change from -10min to 10min post-TSST. Correlations between baseline or reactive GDF15 and biopsychosocial factors were assessed with Spearman's rank correlation, categorical differences were assessed with Kruskal Wallis and Dunn's tests. Exploratory analyses reported met uncorrected p<0.05.

Results: We first confirmed TSST-induced increases in saliva GDF15, peaking at 10min post-TSST (+28.3%, g=0.50). Baseline GDF15 was higher in men than women (g=0.68), correlated positively with testosterone (r=0.24), but negatively with estrogen (r=-0.21) and femininity (r=-0.19). Participants with greater GDF15 stress reactivity exhibited greater burnout, job stress, and PTSD symptoms (r's=0.18-0.25). Extraversion also correlated with lower baseline GDF15 (r=-0.15). Consistent with GDF15's role in metabolic and renal diseases, baseline GDF15 correlated positively with waist-to-hip ratio, creatinine, and albumin (r's=0.16-0.29). Finally, GDF15 reactivity correlated negatively with reactive cortisol (r's=-0.15--0.24) suggesting an interaction among these stress axes.

Discussion: These data confirm that socio-evaluative stress induces saliva GDF15 and suggests associations between GDF15 and various biopsychosocial factors that need to be explored further. Saliva GDF15 is a novel metabolic stress biomarker to examine the mind-mitochondria connection.

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Abstract 1545

EXPLORING THE RELATIONSHIP BETWEEN RISKY FAMILY ENVIRONMENT AND MINDFULNESS ON STRESS APPRAISAL

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Primary stress appraisals affect how individuals cope with stress. Challenge appraisals focus on potential growth gained from stress-inducing situations, whereas threat appraisals focus on harm or loss in the future. Risky family environments are characterized as families that lack nurturance, have unaffectionate interaction styles, or are neglectful. Mindfulness, or enhanced attention and awareness of the present moment, has been found to mitigate the negative health outcomes of adverse childhood experiences, and intervention research suggests it might reduce individuals' perception of stressful situations as threats. While there is research on how mindfulness mitigates stress from early childhood experiences, there is little research on whether low mindfulness might be a pathway by which childhood environments affect one's perception of stressful situations as threatening rather than challenging. The current study tested the hypothesis that risky family environments would impact stress appraisal indirectly through lower mindfulness. Participants included young adult women from a minority-serving public university in the Western United States (n=169; Mean age= 21.5

years old; 33% Latinx; 27% Asian). Participants completed an interpersonal conflict role-play task and perceptions of challenge/threat were measured immediately after the task. Participants then completed the Mindfulness, Awareness, and Acceptance Scale (Westen, 1999) and the Risky Family Environment scale (Taylor et al., 2004). Analyses were conducted using the SPSS PROCESS Macro. As hypothesized, an indirect effect of risky family environments on threat appraisal via lower mindfulness (95% CI .01, .14) was found. There was a significant negative association between risky family environments and mindfulness post-role-play task (b=-.22, p=.012). There was also a negative association between mindfulness and threat appraisal post-role-play task (b=-.28, p<.001). Notably, the same associations were not present for challenge appraisals after the task. These findings suggest that growing up in risky family environments may affect appraisals of threat following interpersonal stress in adulthood. Future research can be done to explore the relationship between childhood experiences and stress appraisals.

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Abstract 1548

FROM EMOTIONAL WOUNDS TO PHYSICAL PAIN: THE MEDIATING ROLE OF PTSD SYMPTOMS IN THE RELATIONSHIP BETWEEN LIFE STRESSORS AND CENTRALIZED PAIN AMONG ASIAN AMERICAN ADULTS

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Introduction: Chronic pain affects one in five Americans, yet research has primarily focused on White populations, overlooking racially and ethnically diverse groups. These communities face life stressors that may contribute to central sensitization - a condition of intensified pain perception. For Asian Americans, cultural values like emotional self-control may shape how life stressors and pain are experienced. Similar to the effect of emotional suppression on increased pain in White Americans with Posttraumatic Stress Disorder (PTSD), emotional self-control may impact pain in Asian Americans. This study examined how stressful life events relate to centralized pain, with PTSD symptoms as a mediator and emotional self-control as a moderator.

Method: 170 Asian American adults with at least three months of chronic pain, recruited via Prolific, completed self-report measures: Stressful Life Events Questionnaire – Revised (SLESQ), Short Form PTSD Checklist-5 (PCL-5), Central Sensitization Inventory: Part A (CSI), and the Emotional Self-Control subscale of the Asian Americans Values Scale – Multidimensional (AAVS-M). A simple mediation analysis using R tested PTSD symptoms as a mediator between stressful life events and centralized pain, while a moderation analysis examined emotional self-control as a moderator in this relationship.

Results: Participants had a mean age of 32.27 years (SD = 10.03), with 49% identifying as female, 46% as male, and 6% as other genders. PTSD symptoms mediated the association between stressful life events and centralized pain, with significant direct (β =

0.74, p<.05, $CI95$ [0.27, 1.22]) and indirect (β = 0.78, p<.001, $CI95$ [0.43, 1.24]) effects. Stressful life events were positively associated with PTSD symptoms (r = .35, p<.001), which were positively associated with centralized pain (r = .65, p < .001). The model explained 45% of the variance in centralized pain and 12% in PTSD symptoms. Emotional self-control did not moderate the relationship (B = .03, SE = .25, p = .92).

Discussion: This may be the first study to replicate the role of PTSD symptoms in chronic pain in Asian Americans. The results emphasize the need to assess life stressors and PTSD symptoms in chronic pain patients. Further study is needed to identify cultural risk or protective factors for Asian American adults.

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Abstract 1551

IS CHILDHOOD TEASING A PREDICTOR OF ALL-CAUSE MORTALITY RISK?

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Bullying/teasing is a salient childhood experience. Bullying is repeated intentional, harmful acts of physical, verbal, relational or cyber aggression, in which the perpetrator holds more power than the victim (Olweus, 1993; Mishna, 2012; Smith, 2014). Bullying encompasses more behaviors than teasing, which is a specific sub-type of verbal bullying (Roth et al., 2002). Such adverse experiences are sometimes labelled peer victimization (PV), which does not require a power differential (Hong & Espelage, 2012). PV is relatively common and is related to negative psychological and behavioral outcomes (Ettekal et al., 2023; Kerr et al., 2017; Moore et al., 2007; Takizawa et al., 2014), at least into early adulthood. However, relatively little is known about how childhood PV tie in to biopsychosocial phenomena at older ages. Thus, this study aims to examine whether childhood PV (i.e., bullying, teasing) is related to increased risk of all-cause mortality across the lifespan.

We used the Terman data, a prospective cohort study which has followed 1,528 gifted Californian children from the 1920s until their deaths. In 1922 parents and teachers were asked to indicate how frequently the child was teased by others. The question was reassessed in 1928, but only for parents. Mortality data was collected from death certificates through 2009. For analysis, the sample was limited to participants who lived at least to the 1940 assessment and to those who had at least one response to the teasing question (773 M, 602 F).

Nested Cox survival analyses were performed separately by sex to assess whether childhood PV is related to lifespan all-cause mortality risk after adjusting for baseline age. We found no statistically significant effect of childhood teasing on all-cause mortality for men (HR = 1.02 , p = .65) or for women (HR = 1.05, p = .38).

These findings suggest that PV in childhood is not significantly related to all-cause mortality in a lifespan, cohort sample. However, a lack of significant lifespan health associations does not

preclude the possibility of childhood, adolescence, and/or young adulthood being sensitive periods for links between PV and poor health. Future work should disentangle whether and when adverse interpersonal experiences (e.g., PV, social exclusion) are associated with poor biopsychosocial sequelae in childhood and beyond.

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Abstract 1552

TRAINING MINDFUL REFLECTION AND PSYCHOLOGICAL DISTANCING FOR INTERPERSONAL DISTRESS: ALTERATIONS IN NEURAL ACTIVITY, EMOTIONAL REACTIVITY, AND WELL-BEING
Megan M Lipsett

Background: Interpersonal distress is a common source of psychological stress, particularly during developmental transitions, and is associated with heightened emotional reactivity and maladaptive self-reflection. Mindfulness-based interventions that foster psychological distancing—reflecting on adverse events from a self-distanced perspective—may mitigate this distress. However, evidence regarding neural mechanisms and well-being outcomes remains limited. Objective: This study examined the effects of training mindful reflection and psychological distancing on neural activity, emotional reactivity, and well-being in young adults reflecting on adverse interpersonal events. Methods: First-year undergraduate students (N = 44) participated a 4-week mindful self-reflection training combined with a 10-week positive psychology and neuroscience (PPN) course (experimental group) or an introductory psychology course (control group, N = 49). Pre- and post-intervention assessments included self-report surveys, linguistic analysis of reflection prompts, and functional magnetic resonance imaging (fMRI). Participants reflected on emotionally challenging interpersonal experiences under self-distanced and self-immersed conditions during the neuroimaging task. Results: Compared to controls, participants in the mindful self-reflection training group exhibited significant decreases in emotional reactivity following self-distanced reflection tasks. fMRI analyses revealed greater pre-to-post reductions in neural activity in the posterior precuneus (t = -3.87, p = .001), TPJ (t = -2.1, p = .039), and dmPFC during self-distanced > self-immersed contrasts. The training group also demonstrated significant improvements in well-being outcomes, including reduced perceived stress and depression (ps < .05). Conclusion: Training mindful reflection and psychological distancing for interpersonal distress alters neural activity in regions associated with self-referential processing, mentalizing, and emotion regulation. These changes correspond with reductions in emotional reactivity and improvements in psychological well-being. Findings highlight the potential of mindfulness-based interventions to target neural and psychological mechanisms underlying interpersonal stress.

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Abstract 1531

INTEGRATING MOOD AND ENERGY-RELATED BIOMARKER DYNAMICS: PRELIMINARY FINDINGS FROM THE MITOCHONDRIAL DAILY ENERGY EXPENDITURE (MDEE) STUDY
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Background

Mood states arise from interrelated psychobiological and behavioral processes necessarily fueled by the flow of energy through mitochondria populating cells of the body and brain. But how mitochondrial biology and the resulting whole-body metabolic states relate to dynamic changes in mood across the day has not been examined. We hypothesized that hourly mood dynamics is related to metabolism, and that this mood-metabolism connection would depend on mitochondrial health.

Methods

We analyzed repeated-measures data from healthy controls (N=6, 50% female, age 24–56) and individuals with rare mitochondrial diseases (MitoD, N=6, 50% female, age 32–58) as part of the Mitochondrial Daily Energy Expenditure (MDEE) Study, involving a ~24-hour stay in a metabolic chamber to collect whole-body energy expenditure. Blood was sampled 26 times via an intravenous catheter, and hourly complete blood counts (CBC), mood assessments, continuous blood glucose, skin temperature, and physical activity (accelerometer) data were collected. Spearman correlations were used to explore continuous associations, effect sizes comparing Controls and MitoD were estimated with Hedge's g.

Results

Exploratory analyses showed that the absolute effect sizes for psychobiological correlations for *positive mood* were on average 8.7% larger in controls (r_{avg}=0.12, SD=0.06) compared to MitoD (r_{avg}=0.11, SD=0.09). Conversely for *negative mood*, the associations were 11.1% larger in MitoD (r_{avg}=0.10, SD=0.07) compared to controls (r_{avg}=0.09, SD=0.06). *Positive mood* and monocyte-to-lymphocyte ratio (MLR) showed positive trends in controls (r_{avg}=0.14) and negative trends in MitoD (r_{avg}=-0.13), with a large, non-significant effect size between groups (g=1.16, p=0.082). The pattern was reversed for negative mood (g=0.88, p=0.056). Finally, higher positive mood was associated with less physical activity in all control participants (r_{avg}=-0.20), but not in MitoD (r_{avg}=0.06), yielding a medium group difference (g=0.74, p=0.095).

Conclusion

These preliminary findings reveal potential mood-metabolism correlations in individuals with a broad range of energy transformation capacity. Individuals with mitochondrial diseases may exhibit altered mood-metabolism patterns. The final MDEE sample size will provide a more robust dataset to dynamically examine the mind-mitochondria connection in humans.

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Abstract 1514

ASSOCIATIONS BETWEEN SOCIAL INTEGRATION, SOCIAL ISOLATION, AND INFLAMMATION ACROSS THE LIFESPAN: A META-ANALYSIS

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Background: *Social integration*, the degree of participation in a variety of social relationships, and *social isolation*, having few to no social ties, are relevant for health. The former represents a continuous model, where holding additional social roles continues to confer positive health benefits. The latter represents a threshold model, where experiencing social isolation has negative effects on health. The current meta-analysis synthesizes the evidence for the associations between each model and systemic inflammation alongside each other. Further, it examines whether age moderates these associations.

Method: We searched PubMed and PsycINFO, obtaining 421 articles and 47 articles provided an effect size for the association between isolation/integration and inflammation. For integration analyses, this resulted in 21 unadjusted samples (33 effect sizes) and 23 age-adjusted samples (50 effect sizes). For isolation analyses, this resulted in 21 unadjusted samples (51 effect sizes) and 18 age-adjusted samples (39 effect sizes). Meta-analyses were conducted using robust variance estimation correlated effects models to account for dependency of effect sizes within samples. All models controlled for study quality and effect size conversion confidence. Meta-regression analyses tested whether sample mean age was a moderator of the overall effect sizes.

Results: For integration analyses, being more socially integrated had a graded association with lower levels of inflammation in both the unadjusted (r= -.048, *p*=.001) and age-adjusted models (r= -.040, *p*<.001). For isolation analyses, being socially integrated, compared to being isolated, was associated with lower levels of inflammation in both the unadjusted (r= -.066, *p*<.001) and age-adjusted models (r= -.046, *p*<.001). Sample mean age emerged as a moderator in the unadjusted integration model (*b*= -.002, *p*= .028), above and beyond other study characteristics (e.g., inflammatory marker, study design). Specifically, the effect of social integration on inflammation was stronger for older samples. Age did not operate as a moderator in isolation analyses.

Conclusion: This is the first study to bring together the literatures on social isolation and integration, and these findings highlight the positive health benefits of holding more social relationships, particularly for older adults.

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Abstract 1507

THE ASSOCIATION BETWEEN CIRCADIAN DISRUPTION IN CORE BODY TEMPERATURE RHYTHM AND POST-CHEMOTHERAPY SLEEP DISTURBANCES IN BREAST CANCER SURVIVORS

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Introduction: Sleep disturbance is a common symptom experienced by approximately 70% of breast cancer survivors and persists after the conclusion of chemotherapy. The relationship between core body temperature and sleep disturbance with regard to sleep latency has been investigated in healthy individuals, yet remains unstudied in breast cancer patients. This study aimed to quantify the circadian disruption of the core body temperature (CBT) rhythm and its correlation with sleep disturbance following chemotherapy.

Methods: In a sample of 25 breast cancer survivors, CBT was measured using an ingestible thermometer pill to calculate the relative amplitude (RA) prior to chemotherapy (T0). The remaining circadian variables of the CBT rhythm were evaluated through the implementation of nonparametric and cosinor analyses. The Pittsburgh Sleep Quality Index (PSQI) was employed to assess global sleep quality at three time points: prior to the commencement of chemotherapy, at one month (T1) and nine months (T2) following the conclusion of chemotherapy. Subjective and objective sleep latency (SL_s and SL_o) were measured using the PSQI and actigraphy, respectively.

Results: The low RA group exhibited higher intradaily variability of CBT (*p*<0.001) and a higher average temperature of the lowest 5-hour period in comparison to the high RA group (*p*=0.027). The low RA group exhibited lower global sleep quality than the high RA group at both time points (T1 and T2). SL_s in the low RA group was significantly longer compared to the high RA group at both time points. Furthermore, the discrepancy in SL (ΔSL_s-SL_o) demonstrated a notable between-group difference at both time points.

Conclusion: The findings of this study suggest that breast cancer survivors with pronounced circadian disruption of the CBT rhythm prior to chemotherapy are more prone to sleep disturbances following chemotherapy. Additionally, prolonged SL_s may be a contributing factor to their poor sleep quality.
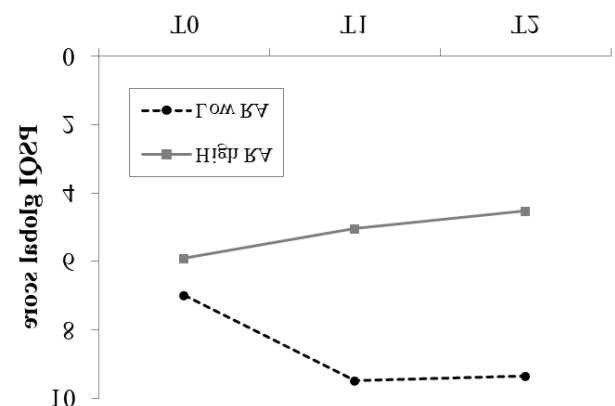
77

EFFECTS OF NEIGHBOURHOOD SOCIOECONOMIC DISPARITY ON PRETERM BIRTH DURING THE PANDEMIC: SECONDARY ANALYSIS OF PREGNANCY DURING THE PANDEMIC COHORT

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Background: Preterm birth (PTB) is defined as a live birth before 37 weeks of gestation and remains a major public health concern, affecting a global estimate of 15 million births annually with a prevalence of 11%. Socioeconomic disparities play a crucial role in PTB rates, with neighborhood-level factors contributing uniquely to the risk. Stress response pathway has been identified as a key mechanism in the relationship between neighborhood socioeconomic status (nSES) and PTB. As such, the unique challenges added due to the COVID-19 pandemic were expected to increase PTB rates. However, studies found lack of change or even decrease in the incidence during this period. It is suggested that such counter intuitive findings are due to lack of consideration for the differential exposure to the pandemic-related hardships based on nSES. The objective of the present study is to test whether a measure of objective pandemic hardship and psychological distress mediate the relationship between nSES and PTB.

Methods: Present study is a secondary analysis of the data collected from a prospective longitudinal cohort study, Pregnancy during the Pandemic. We tested two serial mediation path models with a measure of baseline objective pandemic hardship and psychological distress included as mediators between nSES and PTB. The models were then adjusted for individual SES to capture the unique effects of nSES.

Results: The indirect pathway from nSES to pandemic objective hardship, psychological distress, then PTB, was significant for both the depression ((B=0.006, $p<.001$) and the anxiety ((B=0.097, $p<.001$) models. The significance diminished when adjusted for individual SES.

Discussion: The present paper is the first to test a comprehensive model of the role of nSES on PTB with an explicit measure of pandemic objective hardship and psychological distress included as mediators. The significance of the indirect serial mediation pathway supports the proposed stress-response mechanism through which global stressors, such as the pandemic, may differentially impact birth outcomes based on socioeconomic disparities across communities. The importance of assessing for psychological distress both for risk estimation and as a point of intervention are also discussed.

Keywords: Preterm birth, COVID-19 Pandemic, neighbourhood, socioeconomic disparity, depression, anxiety

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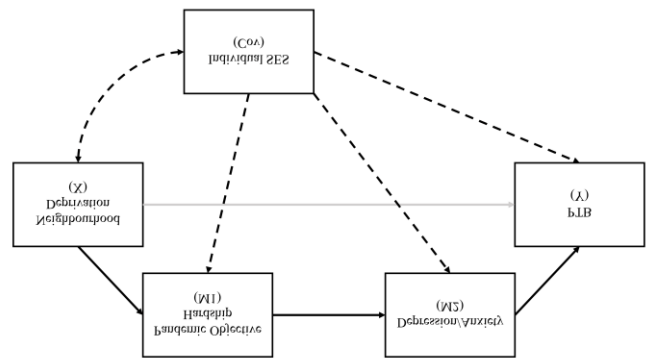
RACE DIFFERENCES IN THE ASSOCIATION BETWEEN DEPRESSIVE SYMPTOMS AND C-REACTIVE PROTEIN

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Racial disparities exist in depressive symptoms measured by The Center for Epidemiology Studies Depression Scale (CES-D), with elevated levels seen in Black adults. These symptoms have been found to be associated with greater risk of cardiovascular disease (CVD) mortality, but it is unclear whether racial disparities exist in this association. There is also mixed research on socioeconomic disparities in the association between CES-D scores and CVD. Elevated depressive symptoms have been associated with higher CVD incidence for adults with low income versus those with high income, but incidence did not significantly differ by education level. Further, inflammation appears to mediate the relationship between depression and physical illness, but few studies have examined how social factors affect this. This study served to analyze the influence of social factors and depressive symptoms on CRP. We used 2010 and 2012 cross-sectional data from the Health and Retirement Study, a longitudinal study of older adults (n=13252). Demographics and CES-D scores (0-8) were self-reported, and C-reactive protein (CRP) was measured using dried blood spots. A multivariate regression analyses was conducted to assess the effects of CES-D score and race on CRP, controlling for depression and psychiatric diagnoses and other social factors. Mean CES-D score significantly differed between non-Hispanic Whites (n=9565), non-Hispanic Blacks (n=2587), and Hispanics (n=1907). CES-D score had a significant positive association with CRP (β=.22, SE=.047, p=.00). The effect of CES-D score on CRP was greater for Black than White adults (β=1.14, SE=.25, p=.00), controlling for other factors; however, there was no significant interaction between race and CES-D score on CRP. Additionally, those with a bachelor's degree had lower mean CRP than those without one (β=-.70, SE=.14, p=.00). Further, compared to adults with no insurance, those with private insurance had a lower mean CRP (β=-.78, SE=.26, p=.003). Race and other social factors had a significant effect on the relationship between depressive symptomatology and inflammation. CES-D scores seem more indicative of inflammation than diagnoses, and further research is warranted to contextualize disparities in diagnoses. Future research should analyze the effect of mental health treatment on CRP among those with depression.

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Abstract 1487

DISCRIMINATION AND PERCEIVED STRESS PREDICT POORER PRACTICE EFFECTS IN INTENSIVE AMBULATORY COGNITIVE TESTING IN OLDER ADULTS

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Discrimination is a key driver of health disparities in part due to its role as a chronic stressor. Yet, the research linking discrimination and cognitive health in older adults has yielded mixed results; it is unclear if discrimination impacts cognitive health in the same way as other chronic stressors. One early indicator of cognitive health issues (including pre-dementia states) in older adults is weakened practice effects on cognitive testing. We hypothesize that higher levels of discrimination and perceived stress will predict poorer practice effects on cognitive tasks measured using ecological momentary assessment (EMA).

Data were sourced from the Einstein Aging Study, with 257 participants aged 70-90 (65% women, 47% Black, 29% mild cognitive impairment (MCI)). Everyday discrimination (ED) and perceived stress (PSS) were assessed at baseline; participants then completed up to 6 daily EMA for 14 days. Four tests were used to assess feature binding (color-shape position), processing speed (symbol search reaction time), spatial working memory (dot-grid), and working memory precision (color-dot task). Cognitive data were averaged within day for analyses. We ran separate models for ED and PSS, predicting the linear and quadratic effects of time for each cognitive task, controlling for MCI, race, age, and education.

Higher levels of ED predicted delayed and weakened practice effects on processing speed (BL= 0.001, p=0.03, BQ=-0.0001, p=0.023) and spatial working memory (BL = 0.003, p=0.02, BQ=-0.0001, p=0.07) compared to lower levels of ED. Higher levels of PSS predicted delayed and weakened practice effects on feature binding (BL = -0.002, p=0.05, BQ=0.0002, p=0.03) and, marginally, spatial working memory (BL = 0.001, p=0.06, BQ=-0.0001, p=0.16). Neither stressor predicted practice effects on working memory precision.

Discrimination and perceived stress each correlated with poorer practice effects on EMA cognitive tasks in older adults over and above the effects of MCI, race, age, and education level. Practice effects during ambulatory cognitive testing appears to be yet another area in which increased discrimination and stress act as predictors of the poor outcomes often associated with racial and economic health disparities.

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Abstract 1488

INTEROCEPTIVE ACCURACY DURING BREATH-HOLDING LEADS TO PAIN INTENSITY THROUGH SOMATOSENSORY AMPLIFICATION IN PATIENTS WITH CHRONIC PRIMARY PAIN

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Background: Patients with chronic pain exhibit reduced interoceptive accuracy (IAcc), with previous studies showing no correlation between IAcc and pain intensity. IAcc, evaluated through heartbeat tapping tasks during inspiratory breath-holding, enhances in healthy individuals but not in patients with depression or anxiety disorders. Patients with chronic pain also demonstrate a heightened tendency for somatosensory amplification. However, it is unclear how IAcc changes during breath-holding, how it relates to pain intensity, and how somatosensory amplification relates to pain intensity in patients with chronic pain. This study aimed to address these questions.

Methods: The study conducted heartbeat counting tasks in resting and breath-holding states for 52 patients with chronic primary pain and age- and sex-matched 30 healthy controls. Somatosensory amplification was assessed using the Somatosensory Amplification Scale (SSAS), and pain intensity was measured by the Brief Pain Inventory in the patient group.

Results: The findings revealed significantly lower IAcc in patients than healthy controls during both states. A significant enhancement in the patient group's IAcc was observed during breath-holding compared to the resting state (p=0.017), with no significant changes in the control group (p=0.559). SSAS scores were significantly higher in the patient group (p=0.018). SSAS scores significantly correlated with IAcc during both states, and with maximum, average, and current pain intensity. Mediation analysis revealed that SSAS scores fully mediated the relationship between IAcc during breath-holding and maximum pain, with a significant indirect effect (p=0.032).

Discussion: The mediation analysis suggests that in patients with chronic primary pain, a more precise ability to detect deviations from physiological baseline states in heartbeat may indicate a greater tendency to focus attention on bodily sensations and perceive these variations as potentially threatening. Consequently, even minimal changes from the normal sensory state might be amplified, possibly transforming slight increases in pain intensity into disproportionately severe pain experiences. This study suggests that in patients with chronic pain, IAcc improves during breath-holding, potentially mediating a mechanism by which somatosensory amplification intensifies pain perception.

POSTER SESSION 2

1

Abstract 1176

COPING ACROSS CULTURES: THE ROLE OF ETHNICITY IN CONNECTING EMOTION REGULATION TO CARDIOVASCULAR FUNCTION

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Passive coping (e.g., emotional suppression) – which is more characteristic of Eastern cultures – has often been deemed ineffective and maladaptive. In contrast, active coping strategies (e.g., emotional expression) – which are more common among Western cultures – are regarded as more successful and healthy. This is often associated with lower levels of stress, improved psychological well-being, and higher heart rate variability (HRV) – which marks better cardiovascular health and resilience to stress. However, this may not be a universal experience, as past literature alludes to variability in responses to different coping styles. Thus, to tease out the potential influence of ethnicity and culture on coping behaviors and responses to coping, this study explores how Asian (n = 56, Mage = 32.78, 62.5% female) and White (n = 60, Mage = 39.07, 70.0% female) healthy individuals in California differ in their preferred emotion regulation and coping styles (as measured by the COPE scale), as well as how these styles differentially relate to resting cardiovascular function (indexed by HRV). Age was included as a covariate in analyses. In both groups, coping via self-blame was linked to lower HRV (r(60) = -.44, p <.001), while using religion to cope was linked to higher HRV (r(60) = .27, p = .035). Interestingly, for Asian but not White individuals, coping through humor (often described as a passive coping style) was related to higher baseline HRV (r(29) = .48, p = .006). Similarly, self-distraction (a passive coping style) was associated with higher resting HRV in only the Asian sample (R2 = .36, R2adj = .31, b = 0.37, SE = 0.15, t(31) = 2.44, p = .021, 95% CI [0.06, 0.68]). Results offer a new perspective, implying that passive coping may not always be a maladaptive emotion regulation strategy for everyone, with outcomes varying by ethnicity and culture. These findings highlight important cultural nuances of emotion regulation and coping and emphasize the need to continue conducting culturally inclusive research in the field of emotion and biopsychosocial medicine.

Keywords: emotion regulation, coping styles, ethnicity, culture, heart rate variability

2

Abstract 1393

ASSOCIATION BETWEEN CAREGIVER INFLAMMATION AND CHILD'S ASTHMA SYMPTOMS IS MODERATED BY STRESSFUL LIFE EVENTS

Alexis Pinela; Jacqueline Rodriguez-Stanley, MA; Samuele Zilioli, PhD, Wayne State University

Objective. Parents of youth with chronic conditions, such as asthma, face caregiver burden – a form of chronic stress associated with increased inflammation. Little work has documented caregiver burden's impact on biological processes implicated in disease, such as systemic inflammation. Using chronic disease symptoms as an indirect measure of caregiver burden, previous work has shown that children's symptoms are associated with parent inflammatory dysregulation. Notably, no previous work has tested this relationship solely among parents of children with asthma. Therefore, the present study tested whether the frequency of children's asthma symptoms would predict the primary caregiver's levels of C-reactive protein (CRP), an index of systemic inflammation. To investigate whether stress exacerbated the effect of caregiving burden on inflammation, we tested caregiver exposure to stressful life events in the past 12 months as a moderator for the association between pediatric asthma symptoms and caregiver's CRP levels. **Methods.** Data was collected among youth with asthma (N c = 32 M_{age} = 13.0, SD = 2.0, range 10 – 16, 59% female, 94% African American) and their primary caregiver (N w = 32, M_{age} = 45.6, SD = 12.6, range 25 – 78, 100% female, 90% African American) from the Asthma in the Lives of Families Today 2.0 study. Primary caregivers provided dried blood spot samples and self-reported the frequency of stressful life events in the last 12 months. The frequency of asthma symptoms in the last 12 months was reported by youth with asthma. **Results.** There were no main effects of child asthma symptoms or caregiver life events on caregiver CRP levels. However, an interaction effect between these two variables emerged such that worse child asthma symptoms were related to higher CRP levels among caregivers who reported more stressful life events, but not among those who reported less stressful life events. Effects remained significant while controlling for caregiver age and socioeconomic status. **Conclusion.** We found a significant interaction between child symptoms and caregiver stressful life events on CRP, suggesting that life stressors exacerbate the impact of caregiving on physical health. Such findings support caregiver burden being a potential risk factor for medical morbidity, given that high systemic inflammation is a pervasive feature of age-related diseases.

3

Abstract 1341

COPING WITH DISCRIMINATION: IMPLICATIONS FOR CARDIOVASCULAR HEALTH

Grace Fishback; DeWayne Williams, PhD; Julian Thayer, PhD, University of California, Irvine

Prior research demonstrates that emotion regulation in response to stress has implications for physical health, including cardiovascular functioning. Understanding how emotion regulation strategies are related to physiological responses is especially important in Black Americans, who are subjected to social stressors such as discrimination and experience cardiovascular conditions at disproportionate rates.

Data from the Midlife in the United States study were utilized for this analysis. Participants (N = 282) had physiological measures collected during a resting baseline. Discrimination was measured by self-

reports of how many forms of discrimination they had experienced (summary discrimination) and the number of times they had these experiences (discrimination number). Reappraisal and suppression were assessed via the Emotion Regulation Questionnaire.

After adjusting for covariates (age, sex, BMI, and smoking status), summary discrimination was negatively associated with total peripheral resistance (TPR; b = -0.03, p = 0.06). Suppression was negatively associated with baroreflex sensitivity (cBRS; b = -0.14, p = 0.01). Suppression was found to significantly moderate the associations of discrimination with MAP and TPR. At high suppression, there was a negative association between summary discrimination and mean arterial pressure (MAP; b = -1.00, p = 0.02). Additionally, at high suppression there was a negative association between discrimination number and TPR (b = -0.12, p = 0.06) and MAP (b = -1.23, p = 0.07). At low suppression, there was a positive association between discrimination number and MAP (b = 1.47, p = 0.03).

These results are consistent with previous findings that amongst Black Americans, suppression of emotional responses to discrimination is associated with lower cardiovascular reactivity. Importantly, although greater use suppression was found to be associated with lower blood pressure (MAP) and vascular resistance (TPR) under conditions of higher discrimination, this emotional regulation style also lowered cBRS. Dysfunction of the cBRS has been consistently linked to adverse cardiovascular conditions. Suppression of discriminatory experiences may therefore act as a mechanism to initially dampen cardiovascular reactivity, but may lead to long-term impaired ability to regulate cardiovascular functioning via the baroreflex.

4

Abstract 1251

SOCIAL SUPPORT MODERATES THE RELATIONSHIP BETWEEN CANCER WORRY AND PSYCHOLOGICAL DISTRESS IN WOMEN WITH OVARIAN CANCER

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Introduction: Ovarian cancer has a poor overall survival rate with only 51% of patients surviving for 5 years. Fear of recurrence is often cited as a primary concern among cancer survivors, contributing to psychological distress, while social support serves as a protective factor against distress. Here we examined whether social support moderates the relationship between cancer worry and psychological distress (anxiety and depressive symptoms). We hypothesized that social support would buffer the negative impact of cancer worry on psychological distress in ovarian cancer survivors.

Methods: Ovarian cancer survivors (N=229) less than 5 years post-primary treatment were recruited from 3 academic cancer centers and online to participate in a 10-week web-delivered and group-based psychosocial intervention. Participants completed surveys, including the Cancer Worry Scale, the Profile of Mood States (POMS-SF), and the Social Provisions Scale, pre-intervention. Two subscales of the POMS-SF (anxiety and depression) measured psychological distress. Moderation models were analyzed using base R and investigated social support as a moderator of cancer worry on psychological distress, adjusting for age and disease stage.

Results: Mean age of participants was 60.76 (SD=10.50). Cancer worry was significantly higher in advanced stage survivors than in early-stage survivors (p<.001). Greater cancer worry was associated with significantly higher anxiety (β=.52, p<.001) and depressive (β = .38, p<.001) symptoms. Greater social support was associated with less depressive symptoms (β = -0.35, p<.001) but was not associated with anxiety (β = -0.08, p=.142). Social support significantly moderated the relationship between cancer worry and both anxiety (β = -0.17, p=.005) and depressive symptoms (β = -0.26, p<.001), such that among those with higher levels of social support, the association between cancer worry and both depression and anxiety was significantly lower than for those with lower levels of social support.

Discussion: These findings highlight the critical role of social support, independent of disease stage, in moderating psychological distress associated with cancer worry among ovarian cancer survivors. This may provide further support for the importance of integrating interventions that enhance social support for ovarian cancer survivors.

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Abstract 1185

CORTISOL RESPONSE TO AN ACUTE STRESSOR AMONG ADOLESCENTS: ASSOCIATIONS WITH STATE AFFECT AND AFFECTIVE REACTIVITY

Jacqueline Rodriguez-Stanley, MA, Wayne State University; Alexis Pinela, BS; Samuele Zilioli, PhD, Wayne State University

Objective. State measures of negative affect (NA) change throughout acute stressors. Compared to one timepoint, state NA measured over multiple timepoints during a stressor shows stronger positive associations with cortisol Yet, it is unknown how multiple measures of NA and how change in NA from one timepoint to another differentially relate to the magnitude and direction of three aspects of the cortisol response: reactivity slope, peak concentration, and recovery slope. We hypothesized that greater state NA throughout the stressor would be associated with steeper cortisol reactivity, higher peak, and delayed recovery, but that associations would be stronger for NA change. **Methods.** Data came from the Asthma in the Lives of Families Today (ALOFT) 2.0 study in Detroit (*N* =

30, M_{age} = 13.4, SD = 2.1, range 10 – 17, 50% female, 90% African American). Adolescents with and without asthma underwent the Trier Social Stress Test (TSST). Saliva was collected at seven timepoints (i.e., baseline through 45 minutes post-TSST). An affective scale ranging from happy to unhappy was measured at four timepoints (i.e., anticipation, mid-TSST, immediately post-TSST, 30 minutes post-TSST). Two-piece multilevel growth curve modeling with landmark registration was used to capture participants' unique cortisol peak time and their reactivity and recovery slopes. Models included age, sex, time since waking, and asthma status as covariates. **Results.** NA and cortisol did not differ between youth with and without asthma. On average, NA was highest mid-TSST and cortisol peaked 30 minutes post-TSST. More anticipatory, but not mid-TSST NA, was associated with a greater cortisol peak. More NA 30 minutes post-TSST, but not immediately post-TSST, was associated with a flatter cortisol recovery slope. Finally, greater increase in NA from immediately post-TSST to 30 minutes post-TSST was associated with a lower cortisol peak and flatter recovery slope. Changes in NA across the other timepoints were not associated with cortisol. **Conclusion.** Results suggest that NA fluctuates throughout the TSST. Change in NA during recovery seemed to be a stronger predictor of cortisol recovery than isolated state NA measures. Findings support NA as a psychological factor associated with cortisol response among adolescents, but the direction of these relationships varies with the timing of NA.

6

Abstract 1314

DISCRIMINATION AND MULTIDIMENSIONAL SLEEP HEALTH: THE ROLE OF DEPRESSION

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Discrimination is increasingly recognized as a determinant of sleep health across the life span. African Americans' sleep health may be particularly vulnerable to the effects of discrimination. However, for African Americans discrimination typically occurs in the context of other psychosocial stressors. Depression is a psychosocial stressor known to be associated with both discrimination and poor sleep health. Thus, it is likely that the association between discrimination and sleep health among African Americans may be more pronounced among those reporting higher levels of depression. To test this hypothesis, we collected data from a nationally representative sample of 137 African American couples (M_{age} Women = 29.01; M_{age} Men = 31.93; 50.0% female). Participants were required to be in a heterosexual relationship and share a bed at least four nights per week with their partner. Both dyad members responded independently to an online survey. Participants completed demographic measures, along with measures of multidimensional sleep health, perceived experiences of discrimination, and symptoms of depression. In multilevel models accounting for dyadic data and controlling for age, we found that depressive symptoms were significantly negatively associated with multidimensional sleep health (b = -0.059, p < .0001), but perceived discrimination was not (p =0.163). However, there was a significant interaction between discrimination and depression on

multidimensional sleep health (b=.0061, t= 4.59, p<.0001). Follow-up analyses revealed that there was no differential effect of depression on sleep health at high levels of discrimination (p > .05), but higher depression was associated with poorer multidimensional sleep health at lower levels of discrimination (p <.0001). Thus, discrimination could be masking associations between depression and sleep health in African Americans, a group particularly vulnerable to the effects of discrimination on mental and physical health.

7

Abstract 1053

THE ASSOCIATION BETWEEN THE CIRCADIAN MISALIGNMENT OF SERUM CORTISOL ACROPHASE AND SLEEP END TIME WITH CHEMOTHERAPY-INDUCED PERIPHERAL NEUROPATHY

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Background: Chemotherapy-induced peripheral neuropathy (CIPN) is a common adverse effect of chemotherapy. No studies have yet investigated the relationship between circadian misalignment (CM) and CIPN.

Methods: This prospective observational study recruited 39 breast cancer patients awaiting chemotherapy, of whom 23 were assessed for CM prior to chemotherapy. The CM was quantified by measuring the phase angle difference (PAD) of the acrophase of serum cortisol concentration and sleep end time assessed with actigraphy and sleep diary. CIPN was evaluated using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-CIPN20 (EORTC QLQ-CIPN20) and the MD Anderson Symptom Inventory (MDASI) throughout the course of chemotherapy, at one month (T1) and at nine months (T2) after the completion of chemotherapy.

Results: The assessment of CM revealed that the sleep end time of the high and low PAD groups were not statistically different, cortisol acropahse of the low PAD group was more advanced compared to the high PAD group (p<0.001). The low PAD group showed a significantly higher EORTC QLQ-CIPN20 global and sensory scores compared to the high PAD group at T1 (both p < 0.001), while these scales decreased in the high PAD group after completion of chemotherapy. For the MDASI "numbness and tingling" item, a significant difference was observed between the low and high PAD groups across all time points (p=0.014).

Discussion: While the high PAD group can be considered to have a phase relationship between biological and behavioral rhythms similar to the average population with a similar sleep placement, the low PAD group has a more delayed behavioral rhythm relative to the biological rhythm. The low PAD group can be interpreted as a population with a higher degree of circadian misalignment compared to the high PAD group. According to previous studies, circadian misalignment is associated with systemic inflammation, which may contribute to the worsening and persistence of CIPN observed in the low PAD group.

Conclusions: The results of this study indicate that the low PAD group, which had a higher degree of CM, had a higher susceptibility to CIPN. By evaluating CM using objective measures and analyzing its association with CIPN, this study suggests that CM may contribute to the pathogenesis of CIPN.

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Abstract 1124

BLOOD PRESSURE BLUES: EXAMINING RESTING BLOOD PRESSURE AND NEURAL RESPONSES TO SOCIAL PAIN

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Just as physical pain signals potential tissue injury, social pain may signal injury in the form of disconnection. Similar to health findings linking higher resting blood pressure (BP) with higher physical pain tolerance, previous work suggests an association between BP and sensitivity to social pain, in which individuals with higher BP are more tolerant of adverse social experiences, such as ostracism or rejection. Additionally, previous findings demonstrate activation of neural regions involved in physical pain and cardiovascular regulation (e.g., anterior insula (AI) and dorsal anterior cingulate cortex (dACC)) during instances of social pain. However, no study has examined the relationship between resting BP and neural activity to social pain. Thus, the current study explores these links among 45 healthy volunteers (ages 19-37 years, 86.7% female). We hypothesized that higher BP would correlate with lower self-reported and neural sensitivity to social pain, with no similar associations for BP and negative affect, or dACC and AI activity to negative and positive emotional images. To test this, participants' resting BP was collected, after which they completed both social exclusion and emotional image processing fMRI test paradigms. Participants also completed self-report assessments of sensitivity to social pain. Results replicated previous findings, with higher systolic BP related to lower sensitivity on trait measures of social pain, even when controlling for BMI ($t(44)$ = -2.35, 90% CI [-12.187, -2.013], BF_{10} = 3.222, BF_{01} = .310). However, there were no associations between BP and reported sensitivity to social pain during the social exclusion task. Moreover, after accounting for BMI, we found no statistical association between BP and neural activity to social exclusion. Finally, as hypothesized, there were no reliable associations between BP and reported valence or arousal to viewing emotional images, nor AI and dACC activity to viewing emotional images. These findings partly replicate and extend prior findings on resting BP and

sensitivity to social pain; however, they appear inconsistent with predictions from prior findings at the level of the brain. Future experimental manipulation of BP may provide for causal inferences and adjudication of conceptual perspectives on social algesia.
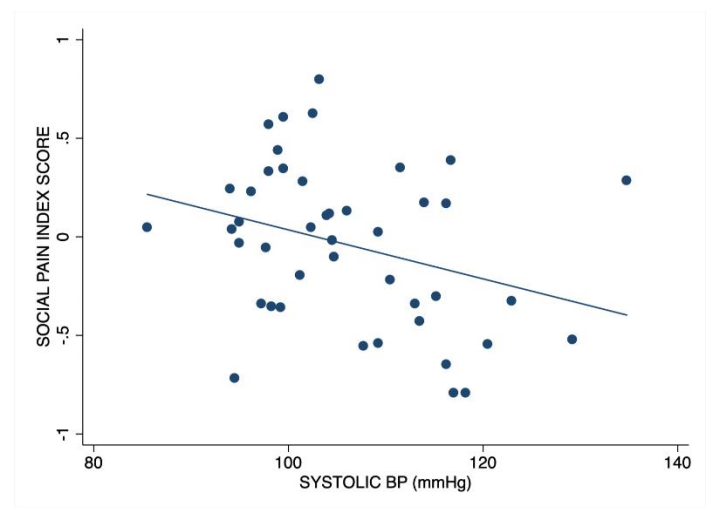
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Abstract 1233

EUDAIMONIA AND HEALTH: AN EXPLORATION OF THE RELATIONSHIP OF PURPOSE IN LIFE, PERSONAL GROWTH, PERCEIVED CONTROL, AND PHYSICAL ACTIVITY WITH INFLAMMATION AND INFLAMMATION REGULATION

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Introduction: This study explores the longitudinal stability of the relationship between purpose in life, personal growth, sense of control, and physical activity with inflammation (interleukin-6) and inflammation regulation (a ratio of interleukin-6/interleukin-10) across 9 years.

Methods: Hypotheses and methods were pre-registered on OSF prior to analysis. Longitudinal analysis used a large, nationally representative study (MIDUS), funded by the National Institute on Aging, comprised of middle-aged American participants. Subsamples included MIDUS II in 2004-2006 (n = 1255, M_{age}= 55, Range 34-84) and MIDUS III in 2013 (n = 747, M_{age}= 61, Range 43-90). To analyze data, non-standard distributions of IL-6, IL-10, and metabolic equivalence tasks (MET) were natural log transformed, extreme scores were removed, and individuals with fevers at time of biomarker collection were excluded.

Results: Hierarchical linear regression controlling for demographic information (age, sex, race, education level), health status (chronic medical condition count, medication use, waist circumference), and regular cigarette use (never, past, currently) indicated that purpose in life, personal growth, sense of control, and MET all predicted IL-6 in MIDUS II. MET also significantly predicted IL-6/IL-10 ratio in MIDUS II ($R^2\Delta$ = .003, β = -0.06, p = .04). Within MIDUS III, purpose in life significantly predicted IL-6 ($R^2\Delta$ = .01, β = 0.08, p = .02). Purpose in life also trended towards a prediction of IL-6/IL-10 ratio ($R^2\Delta$ = .01,

β = 0.07, *p* = .05). Additionally, MET significantly predicted IL-6 in MIDUS III ($R^2\Delta$ = .01, β = -0.11, *p* = .001).

Implications: These results suggest that the significant variance accounted for by purpose in life, though modest, is independent of the variance accounted for by the covariates. The chronologically unstable relationships of personal growth and sense of control with inflammation could be due to inflammation increases with age, as the mean value of IL-6 in MIDUS II was significantly lower than in MIDUS III (F(1964,1) = 26.12, *p* < .001), as was IL-10 (F(1953,1) = 6.57, *p* = .01). It seems that physical activity is a more stable predictor of lower inflammation in healthy adults than eudaimonic variables. Together, these results further explore the complex relationships between biopsychosocial factors in middle-aged adults in the United States.

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Abstract 1255

EXPLORING THE RELATIONSHIP BETWEEN COHABITATION AND INFLAMMATORY MARKERS IN A COMMUNITY SAMPLE

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Introduction: Substantial data links social support, social integration, and coupled-relationships with better health and lower premature mortality. However, little evidence has looked at the impact of cohabitation which may encompass many of these integration concepts with physical proximity. One hypothesis is that social others may influence health through their positive impact on stress including shared responsibility which may impact appraisals (e.g., Social Baseline Theory) as well as greater coping resources to mitigate impact. The aim of this study was to examine household with inflammation in a healthy, diverse, community sample.
Methods: A sample of 300 community adults from the North Texas Heart Study was analyzed (27.92% H/L, 72.08% NHW). Fasting blood samples were collected to measure inflammatory markers at three points in the inflammation cascade (hs-CRP, IL-6, TNF-α). A hierarchical regression analysis was conducted to examine the effects of cohabitation and perceived stress on inflammation levels. All models were controlled by age, gender, and household income.
Results: Habitation varied greatly with 12% reporting living alone, 33% living with one other, 20% with two others, and 33% living with in households of four or more. Household size was not correlated with perceived stress (r=.07, p=NS). With respect to inflammation, hs-CRP and IL6 levels did not vary by household size (p= NS). However, higher household size was significantly associated with lower TNF- α levels (β = -0.66, SE=0.26, p= 0.0149*), consistent with our hypothesis.
Conclusions: Household size was related to one marker of inflammation but not through the path of general perceived stress. Despite study limitations including the use of a broad stress

measure, these data support the plausibility of a broader proximal social network hypothesis in health.

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Abstract 1343

LONELINESS MEDIATES THE ASSOCIATION BETWEEN SOCIAL ANXIETY AND CARDIOVASCULAR REACTIVITY TO ACUTE PSYCHOLOGICAL STRESS

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Objective: The current study aims to (1) examine if social anxiety is associated with cardiovascular reactivity to acute psychological stress and (2) to identify if loneliness mediates the association between social anxiety and cardiovascular responses to stress.

Methods: Data was taken from the MIDUS Refresher dataset (The National Survey of Midlife Development in the United States). A sample of 675 participants completed a standardized cardiovascular reactivity protocol consisting of resting baseline and stressor phase (mental arithmetic and Stroop), with systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) monitored throughout. Participants also completed measures to assess levels of social anxiety and loneliness.

Results: In mediation models, loneliness significantly mediated the association between increased levels of social anxiety and cardiovascular reactivity to stress. Here, greater social anxiety predicted greater levels of loneliness, which in turn predicted blunted cardiovascular stress responses. There were no significant direct effects of social anxiety on cardiovascular reactivity in mediation models, indicating complete mediation.

Conclusion: The current study indicates that social anxiety is indirectly associated with blunted cardiovascular responses to acute psychological stress via increased levels of subjective loneliness. These blunted cardiovascular responses may indicate a potential physiological mechanism leading to adverse cardiovascular health.

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Abstract 1383

EFFECT OF ACUTE MENTAL STRESS ON CIRCULATING ADHESION MOLECULES AND BRAIN-DERIVED NEUROTROPHIC FACTOR.

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Background. Circulating adhesion molecules (ICAM1 and VCAM1) and Brain-derived neurotrophic factor (BDNF) maintain endothelial integrity. Acute psychological stress has been linked to adverse cardiovascular health. However, the link between cardiovascular reactivity and adhesion molecules and BDNF has not been addressed in humans. We hypothesize that acute mental stress modulates the

circulating levels of adhesion molecules and BDNF in a sex-dependent manner. **Method.** Eighteen volunteers (aged 30 to 48 years) participated in the study, encompassing an experimental visit that included 30 minutes of stress, during which they were exposed to a car driving video combined with mental arithmetic. Before and during stress, we measured BP, CO, ANP, galectin-3, and endothelial biomarkers, including ICAM1, VCAM1, and BDNF. **Results.** At the baseline, the mean age was 37.78 (± 5.90). There were 61% males and 50% African Americans. The average BMI was 30.48 (± 5.75) kg/m2. The time effect indicated that subjects exhibited significant increases in systolic BP, while the rise in diastolic BP and TPR did not reach statistical significance. Across the group, there were no significant changes for ICAM1, VCAM1, and BDNF, but looking at the individuals, there were different trends. There were groups of increase and decrease. The highest decrease in soluble ICAM1 was in males compared to females. The trend of decrease in VCAM1 and BDNF was greater in males compared to females. Other factors, such as Race and BMI, did not appear to change soluble ICAM1, VCAM1, and BDNF significantly. **Conclusion.** In line with our hypothesis, our study provides preliminary evidence that soluble ICAM1, VCAM1, and BDNF may play a role in human stress-induced changes in endothelial integrity and Sex differences in cardiovascular disease.

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Abstract 1077

THE IMPACT OF CHILDHOOD ADVERSITY, ANXIETY, AND C-REACTIVE PROTEIN ON ADULT MEDICATION USE FOR CHRONIC PAIN IN THE UNITED STATES

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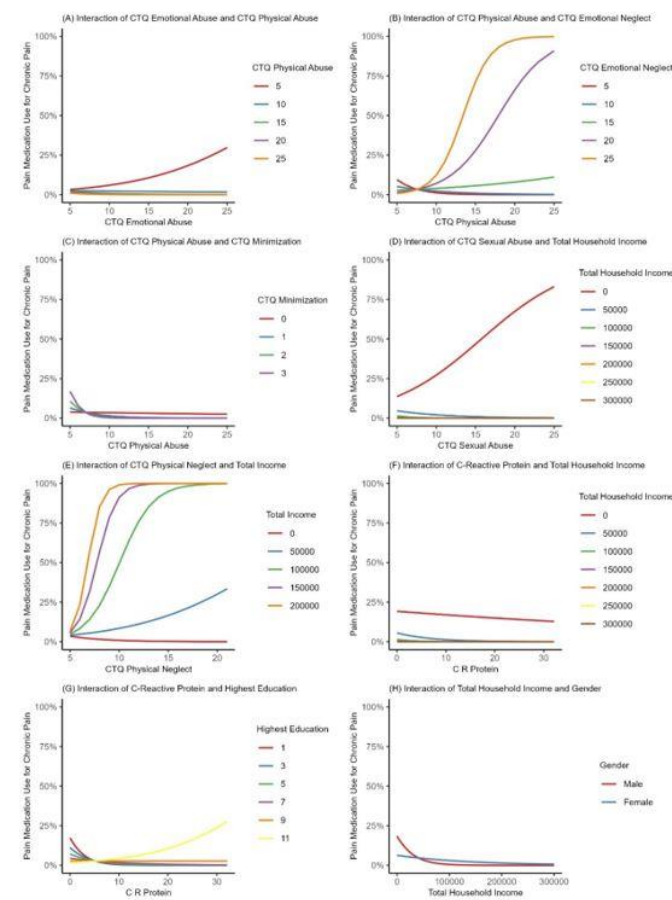
Objective: This study used the Midlife-Development in the United States (MIDUS) dataset to explore how childhood-adversity (CA), anxiety, and C-reactive Protein (CRP) may impact medication use for chronic pain.

Methods: Project-4 of MIDUS-II (n=1225) data were used, which featured self-reported MIDUS Project-1 demographics augmented by additional medical history and questionnaire. A participant had chronic pain if they had any valid chronic pain diagnosis, reported zero time without feeling pain in the last month, saw a professional about chronic pain, indicated having chronic pain, or physician-diagnosed chronic back pain. Criteria for long term medication use for pain included any prescription, alternative, or over the counter medicine for chronic pain; or if the pain medicine was taken with >3 months duration, and for ICD9 code 338 ("pain, not elsewhere classified"). Logistic regression was conducted. and tuned to maximizing sensitivity (true positives) to ensure the model correctly predicted taking long term medication for chronic pain.

Results: Overall, the most common chronic pain diagnoses (n=1098) were other (32.42%), arthritis (30.5%), back/spine/scoliosis/rib (12.3%), injury from an accident (4.4%), and fibromyalgia (3.7%). For participants with pain medication use (n=600), there were no significant main-effects, but a large variety of interactions were. Variables with a direct impact on predicting medication for chronic

pain usage were emotional abuse, male gender, and income (both household and personal). Lower rates of physical abuse plus increased emotional abuse led to a moderate increase in pain medication use. At the highest rates of emotional neglect and increasing physical abuse, the likelihood of taking pain medication for chronic pain greatly increased, but lost impact at lower rates. At lowest household income, increasing sexual abuse increased the likelihood of medication for chronic pain use. At the highest education level, increasing CRP increased the likelihood of taking pain medication.

Conclusions: Based on this MIDUS-sample, the impact of individual CAs to predict pain-medication consumption was dependent on other CAs and participants' socio-demographics. These results reinforce how complex CA outcomes are in regard to adult pain, and how pain management and prevention needs to account for more trauma-informed approaches to care.

Figure. Partial regressions of long-term medication use for chronic pain

Note: The likelihood of medication use for chronic pain presences increase as the y-axis increases to 100%.

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Abstract 1291

LENGTH OF PSYCHIATRIC HOSPITALIZATION AND FUTURE RISK OF UNFAVORABLE METABOLIC BIOMARKERS

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Background: Psychiatric disorders and symptoms have been related to cardiometabolic outcomes (e.g., diabetes incidence). This relation could partially be explained by metabolic dysregulation (e.g., elevated glucose). Yet, most studies evaluating this hypothesis have used subjective mental health measures like self-reported scales and scarce research has focused on psychiatric inpatients. **Aim:** Examine whether an objective mental health measure, namely the length of psychiatric hospitalization, predicts metabolic dysregulation after hospitalization. **Hypothesis:** A longer hospitalization, possibly reflecting poorer mental health, is related to a greater future risk of metabolic dysregulation. **Method:** This study used longitudinal data from 633 participants of the Signature Biobank, a richly characterized study that recruited patients hospitalized at a psychiatric emergency from 2012 to 2020. Length of hospitalization, taken from participants' medical records, was divided into tertiles to evaluate potential threshold effects: 1-12 days, 13-28 days, ≥29 days. Eight biomarkers were collected upon participants' arrival at the hospital (T1) and during an outpatient follow-up (T2; mean=65.25 days post-T1): glucose, triglycerides, HDL cholesterol, LDL cholesterol, total cholesterol, waist circumference, and systolic and diastolic blood pressure. Metabolic dysregulation status was determined according to public health guidelines (e.g., systolic blood pressure ≥130mmHg=unfavorable; else=favorable). Logistic regressions assessed if hospitalization length at T1 predicts the odds of an unfavorable level for each metabolic biomarker separately at T2. Models controlled for key demographic, clinical, and behavioral factors that influence psychiatric hospitalization and biomarkers, as well as for metabolic biomarker status at T1. **Results:** Relative to patients hospitalized for 1-12 days, those hospitalized for 13-28 days or ≥29 days respectively had 46% and 51% lower odds of unfavorable levels of systolic blood pressure only at T2 (95% CI$_{13-28\ days}$=0.33, 0.88; 95% CI$_{≥29\ days}$=0.30, 0.81). **Conclusion:** A longer psychiatric hospitalization may have a protective effect on systolic blood pressure, but not on other metabolic markers, over time. Future work should assess possible mechanisms involved (e.g., lower stress exposure, sustained healthy lifestyle, more intensive medical care).

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Abstract 1352

HOME-SCHOOL CULTURAL VALUE MISMATCH AND ANXIETY: THE MODERATING ROLE OF SOCIAL SUPPORT

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Home-school cultural value mismatch–defined as a mismatch between collectivistic family obligations and individualistic academic obligations–has been shown to predict anxiety and depression (internalizing symptoms [IS]) during students' transition to four-year universities (Vasquez-Salgado et al., 2015, 2021). This study explores the novel concept of *cultural harmonization*, categorizing it into *full harmonization*, where participants equally prioritize family and academic obligations, and *partial/no harmonization*, where participants either prioritize each obligation only some of the time or

prioritize one over the other. Participants (N = 306, M_{age} = 18.0, 66.2% female, 87.7% Latinx) completed an online self-report survey on mismatch, harmonization, and IS (anxiety, depression) toward the end of their first semester as undergraduates at a four-year university. We hypothesized that (H1) higher mismatch will predict higher IS, (H2) higher mismatch will decrease the likelihood of participants reporting full harmonization, (H3) partial/no harmonization will predict higher IS, and (H4) harmonization will fully mediate the relationship between mismatch and IS. Binary logistic and linear regressions were used to test these hypotheses, controlling for cohort, biological sex, parental education, and geographical distance from one's family home. A z-test was used to assess mediation by combining results from logistic and ordinary least squares regressions (Iacobucci, 2012). H1, H2, and H3 were supported: higher mismatch predicted higher IS (β = .16, SE = .07, p = .017), every unit increase in cultural mismatch was associated with a 42.3% decrease in the odds of reporting full harmonization (p < .001), and partial/no harmonization predicted higher IS (β = -.52, SE = .10, p < .001). Contrary to expectations (H4), harmonization partially (not fully) mediated approximately 25% of the relationship between mismatch and IS ($z_{mediation}$ = 2.80, p < .05). These findings suggest that while harmonization plays a partial role in mediating the relationship between mismatch and IS, other factors may be more significant. Nevertheless, our results highlight an additional consequence of cultural mismatch and underscore the salience of cultural harmonization for student mental health. Exploration of culturally sensitive strategies to address the impact of mismatch will be discussed.

Figure 1

Standardized Regression Coefficients for the Relationship Between Cultural Mismatch and Internalizing Symptoms as Mediated by Cultural Harmonization
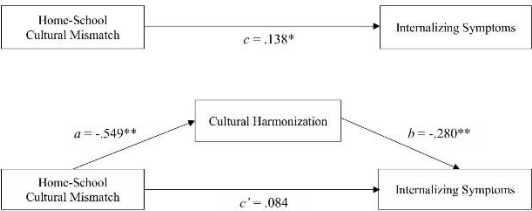
Note. Path *a* was analyzed using binary logistic regressions while paths *b*, *c*, and *c'* were analyzed using linear regressions. All analyses controlled for cohort, biological sex, parental education, and geographic distance from participant's family home. Cultural Harmonization coded as 1 = *full harmonization* and 0 = *partial/no harmonization*. * *p* < .05, ** *p* < .001

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Abstract 1355

EXPLORING PROFILES OF DISCRIMINATORY EXPERIENCES AMONG COLLEGE STUDENTS: LINKS TO MENTAL HEALTH, STRESS, AND COPING

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Discrimination, in both daily experiences and over a lifetime, is a chronic stressor associated with adverse physical and mental health outcomes. However, limited research has explored the nuanced

patterns of exposure to discrimination in relation to mental health outcomes and stress. The current study aims to: 1) identify distinct profiles of discrimination (i.e., daily and lifetime) among a sample of college students, and 2) investigate patterns of emotion regulation, mental health (i.e., depressive symptoms, anxiety) and stress associated with these distinct profiles. All measures are listed in Table 1. Participants consisted of 201 (35.3% Hispanic, 30.3% Asian, 21.4% White, 13% Other) young adults (Mage= 22 years) who completed self-report measures of daily discrimination, lifetime discrimination, mental health, perceived stress, coping, and emotion regulation. Latent class analyses identified three distinct profiles (entropy = .98) Low Daily Discrimination and High Lifetime Discrimination (Low-High) group (MD=-.18, ML=3.56); 2) High Daily Discrimination and Low Lifetime Discrimination (High-Low) group (MD=4.99, ML=.31); and 3) Low Daily Discrimination and Low Lifetime Discrimination (Low-Low) group (MD=-.18, ML=-.21). Significant differences were observed in perceived stress, with the Low daily-High lifetime Discrimination group experiencing the highest levels. Additionally, this group reported higher self-blame compared to the other profiles, whereas depressive symptoms and anxiety did not differ significantly across the classes. These results suggest that perceived stress and emotion regulation vary among different discrimination profiles. Exposure to discrimination over one's lifetime discrimination may lead to more deeply ingrained maladaptive stress responses, such as self-blame that disrupt physiological stress systems over time. In contrast, daily discrimination, while disruptive, may allow for more adaptive coping due to its episodic and less intensive characteristics. Future research should explore the biopsychosocial mechanisms through which prolonged exposure to lifetime discrimination influences both psychological and physiological health, with the goal of developing targeted interventions for populations disproportionately affected by discrimination's long-term impacts.

Table 1

Comparison of Latent Classes on Mental Health, Coping, and Emotion Regulation Variables

Variable	Class 1 (Low Daily, High Lifetime)	Class 2 (High Daily, Low Lifetime)	Class 3 (Low Daily, Low Lifetime)	Class 1 vs. 2	Class 1 vs. 3	Class 2 vs. 3
Perceived Stress (PSS)	28.341 (1.545)	24.857 (1.731)	23.658 (0.365)	0.733	0.012	0.295
Self-Blame Emotion Regulation (CERQSELF)	11.688 (1.415)	7.714 (0.850)	10.829 (0.296)	0.016	0.555	0.001
Acceptance Emotion Regulation (CERQACPT)	12.219 (1.004)	11.000 (2.100)	12.349 (0.273)	0.600	0.901	0.524
Blaming Others Emotion Regulation (CERQBLAME)	7.426 (0.561)	8.000 (0.535)	8.143 (0.184)	0.459	0.228	0.800
Adaptive Emotion Regulation (AdaptER)	2.774 (0.253)	2.845 (0.185)	2.915 (0.057)	0.821	0.590	0.718
Non-Adaptive Emotion Regulation (NonAdapER)	2.579 (0.224)	2.455 (0.159)	2.477 (0.048)	0.821	0.658	0.897
Coping (IBCPREAVG)	2.327 (0.171)	2.395 (0.130)	2.276 (0.028)	0.748	0.772	0.368
Depressive Symptoms (CESDTOTAL)	26.569 (4.896)	25.000 (2.755)	21.644 (0.866)	0.780	0.325	0.245
State Anxiety (PreSTAI)	48.457 (4.624)	44.429 (2.337)	43.586 (0.978)	0.437	0.306	0.739
Trait Anxiety (TRANXTOT)	53.227 (4.447)	48.857 (4.326)	48.659 (0.875)	0.481	0.317	0.964

EXAMINING THE RECIPROCAL RELATIONSHIPS BETWEEN PHYSICAL ACTIVITY AND STRESS IN CANADIAN AND AMERICAN ADULTS

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Background: Frequent or prolonged psychological stress increases the risk for poor physical and mental health. Physical activity (PA) is well-evidenced to reduce stress and health risks; however, high stress may also impair PA engagement.

Objective: To longitudinally explore the bidirectional relationships between PA and psychological stress.

Methods: Eight hundred adults (41 [±14] years, 50% female) were administered questionnaires at baseline, as well as one- and two-month follow-ups. Surveys collected data on PA, psychological stress, affect, and self-efficacy. A random-intercept cross-lagged panel model was fit to explore the bidirectional, month-to-month associations between PA and psychological stress. Unstandardized estimates (b) are reported and represent the omnibus, month-to-month effects, where month over month effects were constrained to be equal. Standardized estimates (ß[1→2] and ß[2→3]) are interpreted as effect sizes of cross-lagged effects, and while the estimates are constrained, they differ due to month-to-month variance. Additional models were fit to adjust separately for self-efficacy, positive affect, and negative affect.

Results: In total, 528 (66%) respondents completed all three surveys, 46% reported high stress (Perceived Stress Scale ≥27), and 43% were physically active (≥ 150 minutes of moderate to vigorous PA per week). Random intercepts indicated a statistically significant but small negative correlation between PA and stress (r = −0.209, 95%CI = [−0.307, −0.110]). Within people, PA was not statistically associated with subsequent psychological stress (b = −0.069, 95%CI = [−0.162, 0.024]). However, the effects were medium-to-large in magnitude (ß[1→2] = −0.114, ß[2→3] = −0.111). The cross-lagged association between psychological stress and subsequent PA was also non-significant (b = −0.094, 95%CI = [−0.301, 0.115]) but had a small-medium effect, (ß[1→2] = −0.065, ß[2→3] = −0.057). Results were consistent when adjusting for self-efficacy and affect.

Conclusion: Our findings demonstrate that at higher PA levels, respondents reported lower stress at baseline. The discrepancy between the non-significant cross-lagged effects and the magnitude of effect sizes may be due to large interindividual differences in the associations between stress and PA.

EARLY LIFE SOCIAL RELATIONSHIPS AND TRAJECTORIES IN DEPRESSION ACROSS CHILDHOOD DEVELOPMENT: EXAMINING THE ROLE OF RELATIONSHIP PROPERTIES ACROSS THE FAMILY, PEER, NEIGHBOURHOOD, AND EDUCATIONAL DOMAINS

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Background: As a sensitive period of socioemotional development, early life social relationships may influence life-course mental health outcomes. However, few studies have utilised longitudinal data to investigate the significance of social relationship domain (family, peer, educational, and neighbourhood) and type (structure and function) on mental health across childhood development. This study aimed to characterise associations with trajectories in symptoms of depression from mid-childhood to emerging adulthood.

Methods: Using secondary data from 5,928 participants of the UK Avon Longitudinal Study of Parents and Children (ALSPAC), trajectories of depression symptoms, measured via the Short Moods and Feelings Questionnaire (SMFQ), were modelled using multilevel growth curves between ages 10-23. 14 indicators of social relationships within the family, peer, educational and neighbourhood domains were measured at ages 2-4. Latent constructs for parent-child interaction quality were identified via Exploratory Factor Analysis. Longitudinal associations with social relationship indicators were investigated via the inclusion of two-way interactions with age.

Results: Indicators of low relationship quality, such as low engagement, low warmth, and high conflict predicted higher SMFQ scores across development. For example, the SMFQ score of participants exposed to a high level of maternal discipline at baseline was 0.383 [95%CI: 0.342 0.424] higher at age 10 compared to participants in the low maternal discipline category. Effect size varied by indicator and relationship studied. Stronger effects were observed for family and peer constructs, indicating a greater importance of proximal relationships to mental health. Significance and effect size also varied across time, with evidence of a persistent impact of parent, sibling, and peer-child interaction quality into adulthood. The comparison of functional and structural indicators suggested a stronger role of interaction quality compared to engagement, indicated by slightly larger effect sizes over time.

Conclusion: These findings highlight the importance of childhood social relationships to psychological functioning across development. High-quality relationships characterised by frequent engagement, warmth and low conflict may be protective against depression in childhood, adolescence, and young adulthood.

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Abstract 1102

FEASIBILITY, ACCEPTABILITY, AND PRELIMINARY EFFICACY OF A TEXT MESSAGE-BASED PHYSICAL ACTIVITY PROGRAM FOR MIDLIFE ADULTS

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Midlife (45-64 years) is a critical time period during which many individuals develop cardiac risk conditions, such as type 2 diabetes, hypertension, and hyperlipidemia. Despite the cardiovascular benefits of physical activity, most midlife adults do not adhere to recommended physical activity guidelines, potentially due to low levels of well-being and the presence of midlife-specific stressors. Accordingly, we developed MASTERY, a 12-week, text message-based program to promote well-being, reduce stress, and promote physical activity in midlife adults. In this pilot trial, we evaluated the intervention's feasibility, acceptability, and preliminary efficacy in 80 midlife adults with low physical activity (<150 minutes/week of moderate to vigorous physical activity). Participants were randomized to receive the MASTERY program or an attentional control program. In MASTERY, participants completed weekly, interactive text message sessions that focused on cultivating well-being, reducing midlife-specific stress, and setting physical activity goals, and they worked towards physical activity goals between sessions. Individuals in the attentional control group received weekly, static text messages focused on physical activity. Outcomes were assessed at baseline, 6 weeks, and 12 weeks (post-intervention). The primary outcomes were feasibility (% of message sessions initiated) and acceptability (utility of the intervention components on a 0-10 scale); however, we also measured the impact of the program on accelerometer-measured physical activity and psychological, quality of life, and medical outcomes using mixed effects regression. Overall, 436 of 437 text message sessions (99.8%) were initiated successfully, and participants responded to 76.2% of these, above our thresholds for feasibility. Similarly, all text message components received mean utility scores > 7.0/10, surpassing our acceptability thresholds. The adaptive text messages led to significantly greater improvements in self-efficacy for exercise (6 weeks: B=11.0, 95% CI 1.8-20.2; 12 weeks: B=10.9, 95% CI 1.6-20.2) but did not lead to significantly greater improvements in other outcomes compared to the non-adaptive text messages. In sum, MASTERY was feasible, well-accepted, and associated with significant improvements in self-efficacy; these results should be confirmed in a well-powered efficacy trial.

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Abstract 1348

HOW TRAIT MINDFULNESS IS ASSOCIATED WITH INDIVIDUAL DIFFERENCES IN THE ACUTE AND LONG-TERM RECOVERY OF SOMATIC AND COGNITIVE SYMPTOMS AFTER PERCUTANEOUS CORONARY INTERVENTION FOR HEART DISEASE

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Background: After percutaneous coronary intervention (PCI) for acute or chronic coronary syndrome, patients often report a host of cognitive and somatic complaints. While it is widely known that psychological risk factors may worsen these complaints, less is known about the impact of positive psychological predispositions.

Therefore, the current study examined the association between dispositional mindfulness and acute (1-month), and long-term (2-year) recovery of somatic and cognitive complaints after (PCI).

Methods: Data from the ongoing observational cohort study THORESCI were used (n=1529; 21% women; M age 64.7±10; 96% White, European ethnicity; acute coronary syndrome: 64%; representative of the Dutch ACS patient population). Surveys were administered at 0-5 days, 1 month, 1 year, and 2 years post-PCI. The Health Complaints Scale (HCS) was used to assess symptoms, while the FFMQ-15 was used to determine dispositional mindfulness. Generalized linear mixed modeling assessed three hierarchical models. In the acute analysis, FFMQ was time-varying, testing within and between-subject effects, while in the long-term recovery analysis, mindfulness was only assessed once (T:1 month).

Results: All symptoms significantly recovered over the first month (B=1.7, p<.001; B=-2.8, p<.001). Higher levels of dispositional mindfulness were associated with a lower level of symptoms (B=-.56/-.40, p<.001), and the recovery of symptoms was steeper when mindfulness increased over the 1-month follow-up (B=-.19, p<.001/B=-.09, p=.004), independent of demographic and medical covariates. During the subsequent 2 years, complaints remained stable for the first year and then further reduced from 1 to 2 years of follow-up (B=-.48, p=.028; B=-.39, p=.033). Patients with higher levels of dispositional mindfulness reported lower levels of complaints across the 2-year follow-up (B=-.57, p<.001 / -.39, p<.001). Covariates did not influence this relationship.

Conclusion – Higher and improving levels of dispositional mindfulness were beneficial for patients recovering from PCI in the short term. Higher levels of mindfulness remained associated with further reduced experience of somatic and cognitive symptoms in the long run. As dispositional mindfulness is a teachable trait, interventions to boost mindfulness may improve recovery in patients with heart disease.

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Abstract 1177

INFLAMMATORY MARKERS IN THE EMERGENCY DEPARTMENT AND RISK FOR POSTTRAUMATIC STRESS DISORDER SYMPTOMS ACROSS SIX MONTHS IN THE AURORA STUDY

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Background: Elevated inflammatory activity is a potential mechanism by which trauma exposure elicits posttraumatic stress disorder (PTSD). However, only a few small studies have examined inflammation in the acute aftermath of trauma as a predictor of PTSD symptoms over time. In this study, we determined whether inflammation assessed an average of two days following a trauma-related emergency department (ED) admission predicted PTSD symptom burden over the following six months in 742 people.

Methods: Data came from AURORA, a study of individuals assessed in 29 EDs across the US after a traumatic event and followed up to six months post-trauma. Participants included individuals with ED inflammation data and at least one measure of PTSD symptoms across six months of follow-up. Plasma inflammatory biomarkers in the ED included pro-inflammatory (i.e., interleukin [IL]-6, IL-8, tumor necrosis factor alpha [TNFα], interferon gamma [IFN-γ]) and anti-inflammatory (i.e., IL-10) cytokines. A pro-inflammatory index was defined as the standardized sum of log-transformed IL-6, IL-8, TNFα, and IFN-γ. PTSD symptoms were assessed with the self-reported PCL-5 at two weeks, eight weeks, three months, and six months post-ED.

Results: The sample included 742 individuals who experienced a potentially traumatic event and presented to the ED (m=40.0 [SD=13.7] years; 479 [64.6%] women). PTSD symptoms were elevated following trauma and modestly decreased over six months. Higher ED inflammation predicted higher PTSD symptoms over follow-up (pro-inflammatory index β=0.04, 95%CI 0.01, 0.08), adjusting for potential confounders. Sex differences indicated stronger inflammation-PTSD symptom associations among males versus females, indexed by stronger positive associations between the pro-inflammatory index as well as IL-6, IL-8, and TNF-α levels and PTSD symptoms in males. A similar pattern of findings was identified when considering a clinical cutoff for probable PTSD and for each PTSD symptom cluster (i.e., re-experiencing, avoidance, negative alterations in mood and cognitions, and hyperarousal symptoms) as outcomes.

Conclusions and Relevance: Elevated inflammation shortly after trauma is associated with heightened PTSD symptoms over six months, particularly among males. Thus, markers of inflammation may prove useful as additions to models for predicting PTSD risk following trauma.

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Abstract 1331

INFLAMMATION, SEXUALITY, AND AGING

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Ageism, or prejudice, stereotyping, and discrimination on the basis of age, presents a serious concern for the aging population as it has been shown to undermine health and well-being (Kang & Kim, 2022; Jackson et al., 2019). One precursor toward the progression of poor health is inflammation as it is associated with a host of chronic diseases (Furman et al., 2019). Other forms of discrimination are associated with inflammation (Cuevas et al., 2020). However, it is unclear whether ageism has similar effects though poorer self-perceptions of aging and older subjective age have been associated with increased C-reactive protein (CRP), a marker of chronic inflammation (Skoblow & Proulx, 2022). Equally important is the need to examine the association between ageism and CRP among sexual minorities as they face unique experiences regarding age

conflated with homophobia (Feinstein et al., 2022). Therefore, the purpose of this study was to test the association between ageism and CRP, and whether sexuality moderated this relationship. We hypothesized that participants who reported ageism would show elevated levels of CRP compared to those who did not report ageism, and that this relationship would be stronger for sexual minorities. In a pre-registered analysis, data from older adults (M = 65 years of age, N = 4998) in the English Longitudinal Study of Ageing were analyzed. Attributions of everyday discrimination were recorded in 2010/11, and CRP was collected in 2012/13 and 2016/17. Age, sex, ethnicity, education, income, and CRP collected in 2008/09 were included as covariates in the analysis. A multilevel model was estimated, and missing data imputed using BLIMP. Over half of the sample (59.6%) attributed everyday discrimination to their age. No main effects of reported ageism at baseline or sexuality were observed, nor was their interaction significant in predicting longitudinal changes in CRP. However, the interaction between reported ageism at baseline and time was significant. Whereas participants who did not report ageism at baseline demonstrated decreasing CRP levels (B = -0.043, 95% CI = [-0.055, -0.031]), participants who reported ageism at baseline demonstrated significantly flatter decreases in CRP levels (B = -0.030, 95% CI = [-0.041, -0.018]) over six-year follow up. Ageism may have potential consequences for inflammatory biology.

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Abstract 1209

STRESS REGULARITY PREDICTS COGNITIVE FLEXIBILITY

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Introduction. Executive cognitive functions are intricately related to stress and sleep systems. Evidence suggests that increases in psychophysiological stress, e.g., perceived stress and related blood pressure (BP), can impair executive abilities. Dysregulated BP and higher perceived stress can also interfere with sleep and circadian processes further impeding cognition. Perceived stress and BP are regulated by circadian influences and ideally follow cyclical patterns. While higher levels and variability in BP have been linked to worse cognition, minimal evidence has determined if consistency in perceived stress interacts with daily BP to impact executive function. The current project examined the impact of stress regularity and sleep on executive function in an ecological momentary assessment study.

Methods. 2591 participants (Female = 775; M_{age} = 48.29±12.29) completed three consecutive days of assessments using a mobile phone app that prompted them to complete blood pressure measurements, sleep surveys, stress assessments, and cognitive tasks three times throughout the day. Inhibition was evaluated via a Stroop task, the Trail Making Test was used to measure cognitive flexibility, and a backwards digit span task assessed working memory. Participants were prompted to report stress intensity ratings each morning. We then calculated the sum of the difference scores across each of the three mornings and took the root mean square of the differences to create a regularity score, which was representative of consistency or inconsistency in perceived stress intensity across each morning.

Results. Less stress regularity was associated with decreases in systolic (r = -.10) and diastolic BP (r = -.08). Longer total sleep time and lower sleep quality predicted less cognitive flexibility (R^2 = 0.29, p<.001). Morning BP and stress regularity interacted where for those with more consistent morning stress levels, higher morning diastolic BP (sr^2 = .05) predicted lower flexibility but higher systolic BP in the morning (sr^2 = .06) predicted better flexibility.

Conclusion. We found evidence for individual and combined effects of stress regularity, blood pressure, and sleep on cognitive flexibility. Results indicate that more consistent morning stress levels may protect individuals from negative impacts of high morning systolic blood pressure on cognition

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Abstract 1126

LIFETIME LOSS BURDEN RELATES TO ACCELERATED EPIGENETIC AGE

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The present study relates loss burden—experiencing losses of loved ones "too soon" (prematurely) and "too much" (cumulatively) over the life course—to accelerated epigenetic aging profiles that estimate a person's biological age relative to their chronological age across DNA methylation sites. Our prior work proposed the Bereaved-dependent Life Stage (BLS) index and the Deceased-dependent Life Stage (DLS) index as the first indices to simultaneously measure two typically unmeasured dimensions of loss—prematurity and quantity, and we found that Black and Native American older adults experienced earlier and more kin losses over the lifetime than white Americans. These disparities are concerning because higher loss burden at study entry related to higher odds of mortality during the study period. However, mechanisms whereby lifetime loss exposure maintain increased mortality risk in people of color remain understudied.

We leveraged the longitudinal Health and Retirement Study (HRS) across 73 datasets to construct an estimate of kin loss over 28 years among U.S. adults over 50 years old (n = 3,568). DNA methylation patterns from participant venous blood samples were used to calculate GrimAge and PhenoAge epigenetic clocks. Firstly, hierarchical linear models accounting for participants nested within households showed that higher loss burden predicted accelerated epigenetic aging in the subsequent wave. Depending on prematurity of when the bereaved experienced loss (BLS index), each additional lifetime loss predicted 0.12 (95% CI [0.05, 0.20]) older GrimAge years, even after controlling for covariates such as chronic health. Losses are scored by occurrence in childhood (4) or emerging (3), middle (2), or late (1) adulthood, so a participant's loss during childhood predicted 0.48 older GrimAge years. Depending on prematurity of when the deceased died (DLS index), each additional lifetime loss incurred by participants predicted 0.91 (95% CI [0.68, 1.13]) to 3.64 older GrimAge years and 0.97 (95% CI [0.70, 1.23]) to 3.88 older PhenoAge years. This effect disappeared after controlling

for covariates. Secondly, race-stratified analyses showed that findings remained for both white (*n* = 2,414) and Black (*n* = 578) participants. Our work has implications for characterizing racial disparities in cycles of premature loss and premature death as products of structural racism.

Table 1. Multilevel linear models, with loss index score (2014) predicting GrimAge (2016).

Variable	Decreased-dependent Life Stage (DLS)		Perceived-dependent Life Stage (PLS)	
	Adjusted	Unadjusted	Adjusted	Unadjusted
Total sample	-0.12 [-0.28, 0.03]	0.16*** [0.08, 1.13]	0.13** [0.02, 0.20]	0.10 [-0.10, 0.20]
Race-stratified				
White	-0.08 [-0.28, 0.12]	0.60*** [0.19, 1.01]	0.14** [0.02, 0.24]	0.13 [-0.10, 0.25]
Black	-0.34 [-0.69, 0.01]	0.15** [0.20, 1.20]	0.05 [-0.18, 0.22]	-0.02 [-0.32, 0.21]

Table 2. Multilevel linear models, with loss index score (2014) predicting PhenoAge (2016).

Variable	Decreased-dependent Life Stage (DLS)		Perceived-dependent Life Stage (PLS)	
	Adjusted	Unadjusted	Adjusted	Unadjusted
Total sample	-0.15 [-0.34, 0.04]	0.61*** [0.10, 1.13]	0.08 [-0.05, 0.22]	0.08 [-0.11, 0.21]
Race-stratified				
White	-0.08 [-0.32, 0.15]	0.60*** [0.20, 1.30]	0.14 [-0.05, 0.31]	0.12 [-0.13, 0.35]
Black	-0.22 [-0.60, 0.16]	0.63** [0.26, 1.49]	0.01 [-0.34, 0.36]	-0.02 [-0.21, 0.14]

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Abstract 1363

EXAMINING SOMATIC FEELINGS, PHYSIOLOGICAL AROUSAL, AND EMOTIONAL INTENSITY FOR A RELIVED EMOTION TASK AMONG FUNCTIONAL SEIZURE INDIVIDUALS AND TRAUMA CONTROLS

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Functional seizures (FS) is a clinical condition where patients experience seizure-like episodes without brain-based (electrocortical) seizure activity. Participants with FS (N=11) and trauma controls with posttraumatic stress symptoms (TC; N=49) described memories evoking neutral, angry, happy, and shame feelings (latter 3 counterbalanced) then described any bodily sensations ("somatic feelings") and rated the intensity they felt the target emotion. Measures of autonomic nervous system (ANS) arousal were recorded continuously. Since those with FS often struggle with emotional processing and tend to focus on somatic symptoms, we hypothesized that 1) FS would report more somatic feelings than TC, particularly for negative emotion conditions; 2) somatic feelings would relate to physiological arousal more strongly for FS than TC; and 3) somatic feelings would be unrelated to intensity of the target emotion for FS, whereas greater somatic feelings would relate to greater emotional intensity for TC.

We operationalized somatic feelings as number of discrete bodily sensations reported. Contrary to H1, in a mixed ANOVA, there was no group nor interaction effect, but there was an effect of emotion condition, p<.001 (more somatic feelings for emotions vs neutral). Using moderation for H2, more somatic feelings related to shorter cardiac interbeat interval (change from pre-task baseline), indicating greater ANS arousal (p=.022), for only neutral. Group did not moderate this relationship. For shame, group moderated the relationship between somatic feelings and respiratory sinus arrhythmia (RSA, a parasympathetic indicator; change from baseline), p=.034. With more somatic feelings, FS showed RSA decreases, whereas TC showed increases. For H3, across participants more somatic feelings related to greater reported intensity for neutral, p=.003, and shame , p=.007, but there was no group nor interaction effect. While FS and TC may be comparable in their reports of somatic feelings and emotional intensity, FS may exhibit greater physiological arousal with increased somatic feelings when experiencing shame. Under difficult emotional circumstances, FS individuals may not benefit from parasympathetic engagement as somatic experiences increase, and consequently may find such experiences difficult to endure.

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Abstract 1549

FROM LIFE STRESS TO PAIN: THE MEDIATING ROLE OF PTSD SYMPTOMS IN THE RELATIONSHIP BETWEEN LIFE STRESSORS AND CENTRALIZED PAIN SYMPTOMS AMONG BLACK ADULTS

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Introduction: One in five U.S. adults experiences chronic pain, with a prevalence of 19.3% among Black adults. Black adults living with chronic pain often face life stressors. Due to central sensitization, a condition characterized by alterations in the central nervous system that affect pain processing, these stressful life events may increase vulnerability to pain-related outcomes. Here, we examined how stressful life events relate to centralized pain, with PTSD symptoms as a mediator and John Henryism, a coping strategy used by Black adults to persevere against adversity, as a moderator.

Methods: Black adults (*N*=259) with chronic pain (≥3 months) were recruited via Prolific. Participants completed surveys, including the Stressful Life Events Questionnaire-Revised (SLESQ), the Short Form Posttraumatic Stress Disorder Checklist-5 (PCL-5), the Central Sensitization Inventory: Part A (CSI), and the John Henryism Active Coping Scale (JHAC12). A simple mediation analysis using R tested PTSD symptoms as a mediator of the relationship between stressful life events and centralized pain. Moderation analysis examined whether John Henryism moderated these relationships.

Results: Participants' mean age was 30 years (*SD*=7.91), with 58% identifying as female, 38% male, and 4% as other genders. Stressful life events were not significantly associated with centralized pain (*β*=0.35, *p*=.07), but PTSD symptoms significantly and partially mediated the association (*β*=0.86, *p*<.001,95*CI*[0.59, 1.18]). Stressful life events were significantly associated with greater PTSD symptoms (*β*=2.10, *p*<.001), and PTSD symptoms were significantly linked with higher centralized pain symptoms (*β*=0.41, *p*<.001). The total effect of stressful life events on centralized pain was significant (*β*=1.20, *p*<.001). Together, stressful life events and PTSD symptoms explained 39% of the variance in centralized pain. John Henryism did not moderate these relationships (*β*=-0.02 to *β*=-0.05, *p*>.85) and was not significantly associated with PTSD symptoms or centralized pain (*β*=-0.38 to *β*=-0.35, *p*>.29).

Discussion: These findings highlight the importance of evaluating trauma exposure and symptoms in chronic pain management, given their role in elevated polysomatic complaints among Black adults. Future research should explore additional contextual factors that may act as risks or protective elements for this population.

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RACE AND RURALITY IN UPPER MIDWESTERN PREGNANCY LOSS

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Pregnancy loss is understudied, and not consistently documented, contributing to limited knowledge, misrepresentation in national data and erroneous estimates in regions of the country. Racial disparities in pregnancy loss may be further exacerbated by disproportionate risk of adverse pregnancy outcomes experienced by rural and frontier communities. In order to better regionally describe the incidence of pregnancy loss, we leveraged medical records data from our largest medical provider to examine the relationship between race, level of rurality, and pregnancy loss using a retrospective cohort design. Data were collected on patients who gave birth between 2018 - 2023 at any Sanford Health facility in the upper Midwest region of the United States. A total of 56,869 patients were included in the analysis, of whom 17,551 were in Frontier and 12,408 were in Rural areas. Mean age at conception was 28.3 (SD = 5.4) and mean BMI was 32.3 (SD = 6.9). Results indicated a statistically significant relationship between pregnancy loss, rurality, and race $(18, n = 56,869) = 4599.1, p < .001$. Indigenous American (IA) patients having the highest concentration in Frontier areas (17%) and white patients more concentrated in Rural areas (82%). Additionally, pregnancy loss was observed in 7% of Frontier patients, whereas Urban and Rural patients experienced less pregnancy loss (5.9% $p < .001$ and 6.2% $p = .006$, respectively). When location was held constant, the odds of pregnancy loss occurring increased by 2% for IA patients when compared with White patients; when similarly compared, the odds of pregnancy loss increased by 1% for Frontier compared to Urban patients ($p < .001$). The interaction between race and rurality revealed higher odds of pregnancy loss by 4% ($p = .028$) among patients whose race was unknown/not disclosed and were living in either Frontier areas, however, the same patients living in Rural areas had lower odds of pregnancy loss by 3% ($p = .016$) over their Urban counterparts. Additionally, Black patients who live in Frontier areas had 3% ($p = .026$) higher odds of pregnancy loss than their Urban counterparts. The intersection of race and rurality suggests different risk profiles than either category alone, and merits further consideration in research, interventions and health policy focused on reducing pregnancy loss.

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DEVELOPMENT OF THE TRAIT RESPONSE TO EMOTION DIMENSIONAL MEASURE FOR USE IN MINORITIZED POPULATIONS

Anita Adams, University of Kentucky; Suzanne Segerstrom, PhD, MPH, Oregon State University; Gregory Smith, PhD, University of Kentucky

Trait responses to emotion (TREs) are personality traits that develop from how one consistently responds to and copes with emotions. TRE development is influenced by demographic factors, such as age, gender, and early life adversity, and TREs can influence how one copes with a variety of stressors. TRE theory and measurement is relatively new, and although TREs have been validated in majority race samples, TRE theory and measurement have not been validated in minority race samples, particularly in African American populations. This study took the first preliminary step for the development of a cross-cultural trait response to emotion dimensional measure. The primary aim was to determine if the empirical relationships among latent trait response to emotion dimensions (e.g., approach-avoidance, control-dyscontrol, engagement-disengagement) observed in majority European American samples (N=543) existed within a majority African American sample (N=245). Participants were recruited from CloudResearch between February 2020 to October 2023 and completed a battery of online demographic and TRE questionnaires. Data were analyzed using multidimensional scaling and nonparametric correlations to determine similarities and differences between each group's latent TRE dimensional structure. Results suggested that at both the scale and item-level, the TRE latent dimensional structure replicated in both African American and European American samples; however, there were nuances in how the latent TRE dimensions were characterized between groups. Consideration of multiple perspectives, principally minoritized ones, when creating personality measures is crucial for creating cross-cultural measures. Most importantly, this study's investigation and consideration of minoritized viewpoints is paramount for continuing to push TRE and personality theory and measurement into a more equitable and diverse space.

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REMOTE MINDFULNESS TRAINING FOR HEALTH FOLLOWING EARLY LIFE ADVERSITY: A RANDOMIZED CONTROLLED FEASIBILITY TRIAL

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Background: Early life adversity is associated with lifelong health risk. Interventions to mitigate this health risk in adulthood are needed. Mindfulness-based interventions (MBIs) have shown promise for improving mental health among adults exposed to childhood trauma, but whether scalable MBIs can offset physical health risk is unknown. This trial evaluated the feasibility and acceptability of remote mindfulness and coping interventions among emerging adults who recalled a history of childhood trauma.

Methods: 81 healthy adults (18-29 years; 85% female; 48% white, 28% Asian, 17% Black, 5% multi-racial) who reported a history of moderate-to-severe physical, emotional, or sexual abuse in childhood were enrolled. Participants were randomly assigned to a two-week remote mindfulness or coping comparison intervention. They completed lab-based and ambulatory assessments at pre-intervention, post-intervention, and one-month follow-up. Primary

outcomes included measures of feasibility and acceptability. Global psychosocial changes were examined as secondary outcomes.

Results: Feasibility of recruitment and enrollment was demonstrated; 891 were recruited and 81 screened eligible and enrolled in the trial. 89% of participants were retained at post-intervention and 88% at follow-up. Among the 72 participants retained through the intervention, 95% of intervention lessons and 59% of daily life practice prompts were completed, and 90% of participants reported positive treatment expectancies. Two mindfulness participants showed substantial increases in mental health symptoms. 79% of ambulatory assessments were completed in the full sample and 87% among study completers. No serious adverse events were reported, but 53% of participants reported having challenging, difficult, or distressing experiences resulting from the training. Feasibility and acceptability outcomes were equivalent across groups. Participants in both groups showed small to medium improvements on secondary psychosocial and mental health questionnaires. Group differences on ambulatory stress assessments are reported separately and provide a more complex pattern of results.

Conclusions: Two-week remote mindfulness and control interventions were feasible and acceptable among emerging adults with a history of childhood trauma. Further work is warranted to evaluate whether MBIs can offset health risk.

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Abstract 1047

DAILY, BUT NOT MOMENTARY, STRESSOR OCCURRENCE PREDICTS POORER WORKING MEMORY PERFORMANCE IN OLDER ADULTS
Nicole Stuart; Nathan A. Lewis, PhD; Nancy Sin, PhD, University of British Columbia; Jonathan Rush, PhD, University of Victoria

Background: Stress is a risk factor for a variety of physical and cognitive health outcomes in older adults, such as cardiovascular disease, Mild Cognitive Impairment, and dementia. However, less is known about how this relationship between stress and cognitive function may fluctuate *within* day, particularly in healthy older adults. This pre-registered study evaluated the momentary-, daily-, and between-person dynamics of stressor occurrence and momentary visual working memory.

Method: Ecological momentary assessment data were collected from adults aged 65 and older (M = 70.75, SD = 3.45) in British Columbia, Canada. For 14 days, participants (N = 58; 74% Female) reported stressors in the past several hours, and completed a brief smartphone-based Color Dot Location task at 4 quasi-random times per day. Working memory was measured as the Euclidean distance between the actual and recalled location of a presented color dot (larger distances indicated lower working memory performance). A three-level multilevel model was run to evaluate stressor occurrence predicting momentary working memory, controlling for sociodemographic factors.

Results: On average, participants reported experiencing stressors on 54% (SD = 28%) of days, and had 0.83 stressors per day (SD = 0.57).

Within-persons, on days when an individual experienced more stressors than their usual, they performed more poorly on the working memory task (Est = 2.73, SE = 1.07, p = .011). Stressor occurrence was not related to momentary working memory performance, and participants with more stressors did not differ in performance from participants with relatively fewer stressors.

Conclusion: Daily stressors were related to poorer working memory performance on the same days, but not in the same moments nor at the between-person level. It is possible that multiple stressful experiences throughout the day may hinder cognitive performance; however, this decline in performance may be attributable to other daily characteristics, such as having a busy or cognitively-demanding day. Future work may evaluate this relationship in a larger sample, and attempt to identify the components of the stress process which are particularly consequential for daily cognitive functioning.

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Abstract 1095

DEVELOPMENT OF A PERCEIVED RESEARCH APPLICABILITY SCALE
Amy Wang; Antonio Freitas, PhD, Stony Brook University

Introduction: Marginalized populations are consistently underrepresented in health research, causing scientists to question whether published results generalize to members of these groups. However, it is unknown whether lay consumers of health information question if research results generalize to themselves. This phenomenon may help explain why members of marginalized groups can be less likely to follow health research recommendations, contributing to health disparities. We developed a novel concept called "perceived research applicability" (PRA), defined as the extent to which people view research findings as applying to themselves personally. Drawing on concepts from public health and social psychology, we developed and validated a questionnaire to measure PRA. We assessed the relationships between PRA, participant race, and intentions to follow a recommended health behavior. We predicted that White participants would report both higher PRA and higher intentions compared to non-White participants, and PRA would mediate the relationship between race and intentions.

Method: We presented eight health research recommendations to 253 undergraduate participants. For each health recommendation, participants were asked to rate the frequency they did the recommended behavior, their intentions to change their behavior, and PRA, as measured on a 28-item scale.

Results: We found that higher PRA was associated with higher intentions (r = 0.32, p < 0.05), but race was not associated with either PRA or intentions, nor was there an effect of mediation (all p's > 0.05). Next, we performed exploratory factory analysis to determine the factor structure of PRA and reduce the number of items in the measure. The reduced measure had 10 items split across two factors: *applicability*, which reflects whether people perceived the recommendation as implementable, and *transferability*, which reflects whether people perceived the recommendation as likely being effective for themselves. The

reduced measure had high reliability (full 10-item scale α = 0.87, applicability subscale α = 0.84, transferability subscale α = 0.85).

Discussion: PRA is a promising new concept that predicts intentions to follow recommended health behaviors. Future research will replicate the pilot findings using a broader participant population and investigate the relationship between PRA and socioeconomic status.

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Abstract 1135

EXAMINING WHETHER ANXIETY MODERATES RELATIONSHIPS BETWEEN DEPRESSION, RUMINATION, AND BLOOD PRESSURE

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Introduction: Mental health has been shown to affect physiological traits such as blood pressure (BP). Robust evidence links anxiety to increased risk for elevated BP, whereas findings regarding relationships between depression and BP remain mixed. Many studies have compared effects of anxiety versus depression on BP. Limited work, however, has explored multiplicative influences of anxiety and depression on BP via shared symptoms such as rumination. The current study aimed to test if rumination mediates associations between depressive symptoms and higher BP, and to examine whether anxiety moderates such relationships.

Methods: A diverse sample of 300 community adults from the North Texas Heart Study was used (M_{age}=46.10 years, SD_{age}=12.68 years; 60% non-Hispanic White, 19% Hispanic/Latino, 15% non-Hispanic Black). Validated measures of anxiety, depression, and ruminative thinking were administered via one-time survey. Within-person average daytime BP (systolic BP [SBP], diastolic BP [DBP]) was derived from ambulatory measurements over a 2-day period. Analyses included partial correlations and adjusted linear models to assess moderated mediation. Covariates included sex, age, body mass index, baseline BP, race/ethnicity, and income.

Results: As expected, anxiety and depression were positively correlated with each other (r=.71, p<.001) and with rumination (r's=.49, p's<.001). Anxiety, depression, and rumination were not correlated with BP. Across both models, depression was directly related to increased BP (B's>21.00, SE's>7.10, p's<.05). Anxiety moderated the direct association between depression and DBP (B=-8.62, SE=3.21, p<.01) such that depression-DBP associations weakened at higher levels of anxiety. Both models also demonstrated the expected direct effect of depression on rumination (B=1.63, SE=0.43, p<.001), with similar moderation by anxiety (B=-0.55, SE=0.20, p=.005). There were no direct or mediating effects of rumination on BP.

Conclusions: Overall, results demonstrate depressive symptoms were associated with elevated BP, but such relationships may differ for individuals also experiencing anxiety symptoms. Rumination was not an apparent mediator of such effects, therefore future research should continue to examine mechanisms through which depression and anxiety interact in relation to CVD health.

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Abstract 1282

REVISITING THE RELATIONSHIP BETWEEN SELF-CONTROL AND SLEEP QUALITY: DISCREPANCY BETWEEN OBJECTIVE AND SUBJECTIVE MEASURES OR MORE?

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Background. Sleep quality in children is a critical public health concern with far-reaching implications, including but not limited to physical health, mental well-being, and academic performance. Trait self-control appears to be a strong predictor of sleep quality. Yet little attention has been paid to the measurement heterogeneity of sleep quality which could lead to inconsistent findings. This study aimed to address this research gap.

Method. Primary students aged 6 - 12 (M = 9.21, SD = 1.21) were recruited directly from a local school as part of a larger health psychology study. Self-control was measured by the Self-Control Scale. Subjective sleep quality was measured by the the Pittsburgh Sleep Quality Index, while objective sleep quality was measured by the Fitbit Charge 5.

Results. Upon eligibility screening, data from 570 participants were analysed (46% were female). Multiple linear regressions controlled for sociodemographics and anthropometric factors suggested that subjective sleep quality indexed by bedtime, sleep latency, daytime functioning, and overall sleep quality was positively predicted by self-control (Bs ≥ 0.25, ps ≤ .019), while objective sleep quality indices were not (Bs ≤ 21.99, ps ≥ .104). Moreover, auxiliary analyses further corroborated the above results by showing that the while subjective and objective sleep indices did not converge with each other while, the objective sleep quality indices were valid and reliable as they a) demonstrated internal consistency, b) were associated with other predictors (e.g., age) in the expected directions, and critically, c) were unlikely to be biassed by self-control induced differences in appropriately and per-request wearing the Fitbit Charge 5.

Conclusion. Current findings unveiled a critical discrepancy between subjective and objective sleep quality indices, which consequently posed a challenge to the seemingly robust association between self-control and sleep quality. Both methodological and theoretical implications were discussed.

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Abstract 1307

EXPLORING WHETHER OBJECTIVE AND SUBJECTIVE STRESS ARE DIFFERENTIALLY RELATED TO BLOOD PRESSURE

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Introduction: Although both perceived stress and objective stress exposure are associated with health outcomes, little research has made direct comparisons. The aim of this study is to compare the impact of these two risk factors on resting blood pressure in a community sample.

Methods: A racially/ethnically diverse sample of 300 community adults (50% women) from the North Texas Heart Study was used. Objective stress exposure was measured as crime exposure geocoded from residential addresses at 1-, 5-, and 10-mile radii. The Perceived Stress Scale (PSS) was administered as part of a baseline survey. Systolic BP (SBP) and diastolic BP (DBP) were measured at baseline. Analyses included partial correlations and adjusted multiple linear regression models with standardized effect sizes for comparison. Covariates included sex, age, body mass index, race/ethnicity, and income.

Results: Crime exposure at 5- and 10-mile radii were not related to perceived stress, but there was a significant negative correlation between 1-mile crime exposure and perceived stress (r=-.15, p<.05). Contrary to expectations, higher crime exposure within 1 mile was related to lower perceived stress. Partial correlation analyses indicated neither perceived stress nor crime exposure were associated with BP (p's=ns). Similarly, all linear models demonstrated there were no significant relationships between perceived stress or crime exposure and BP. No other significant relationships were observed.

Conclusions: Overall, the results indicated that neither perceived stress nor objective stressors were significantly associated with variance in resting BP. We discuss possible sources of confounding influences and measurement considerations. Future research should examine these comparative stress measurement approaches in relation to other aspects of cardiovascular reactivity, such as indicators of autonomic regulation (e.g., heart rate variability).

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Abstract 1412

THE ASSOCIATION BETWEEN YOUTH PERCEIVED SOCIAL SUPPORT AND SUBJECTIVE SOCIAL STATUS ACROSS 25 COUNTRIES: THE MODERATING ROLE OF FAMILY AFFLUENCE

Eloïse Fairbank; Jennifer McGrath, PhD, MPH, Concordia University

BACKGROUND: Social support and subjective social status (SSS) are key indicators of child health and well-being. However, less is known about the association between these indicators. Some studies suggest that social contexts, such as socioeconomic status and sociocultural factors, may influence the link between support and status. This paper examined the association between social support and SSS across countries, testing individual and country-level effect modifiers.

METHODS: Participants were children aged 11, 13 and 15 from 25 countries in the 2013/14 cross-sectional Health Behavior in School-aged Children survey (N=97,956). Children reported their age, gender, immigration status, family structure, family affluence, social support (family, friends, teachers, classmates and total sum) and SSS ("how well-off is your family?"). Country-level data were collected for income inequality, generalized trust, social mobility and (Hofstede's) power distance. Multilevel models tested associations between social support and SSS. Family affluence, age and country-level measures were tested as effect modifiers. Individual-level variables were cluster-mean centered by country, while country-level variables were grand-mean centered.

RESULTS: All support scores were positively associated to subjective social status (B: family=0.011; friends=0.008; teachers=0.037; classmates=0.044; total=0.008; ps<.001). When examined separately, social support was associated to SSS in almost all countries. The associations were strongest in children with lower relative family affluence (except for friend support). The association between family support and SSS was stronger in older children, while the associations between teacher and classmate support with SSS were stronger in younger children. Country-level income inequality, generalized trust, social mobility and power distance were not significant effect modifiers.

CONCLUSIONS: Higher social support is related to higher SSS. The magnitude of this association is modest and varies across family affluence and age. Future research should study social support and SSS's combined effects on child health to elucidate the simultaneous effects of social influences on health, accounting for socioeconomic and developmental contexts. This would inform research and policy aiming to reduce health inequalities among youth.

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Abstract 1447

SOCIAL NETWORK STRUCTURE AND CARDIO-KIDNEY METABOLIC HEALTH IN MEXICAN-ORIGIN IMMIGRANTS: A PERSON-CENTERED ANALYSIS

Melissa Flores; Adriana Maldonado, Ph.D.; Diego Leal, Ph.D.; Mariella Rodriguez, BS.; Victoria Rueda, BA in progress; Estefania Ochoa Mora, MD.; Edgar Villavicencio, MPH.; David O. Garcia, Ph.D., FACSM, The University of Arizona

Objective. Social network structure (SNS) plays a key role in immigrant health, providing access to tangible resources and emotional support. An interconnected social network is associated with reduced cardiovascular inflammation in Latino/é adults, however it is unclear whether SNS has an impact on broader cardiometabolic health. The American Heart Association has recently expanded metabolic syndrome to include kidney function- terming it cardio-kidney metabolic (CKM) syndrome. In response, we assessed whether SNS was associated with CKM health in Mexican-origin

immigrants using a person-centered analysis (latent class analysis; LCA). As LCAs are data-driven, we did not hypothesize the number of latent classes. However, we hypothesized that individuals with favorable CKM health metrics would be associated with interconnected networks with bridging ability. **Methods.** An age-diverse sample of N=200 Mexican-origin immigrants were collected in a city with proximity to the Arizona-Mexico border. Patterns of network density, size, proportion of kin, marital status, and having at least one bridge (Table 1) were modeled using LCA. Demographic and socioeconomic covariates were estimated along with 9 metrics of CKM health. **Results**. Model fit indices supported a three-class solution (Figure 1) to which we gave the following names: Class 1: "*Married, Restricted Network*", 2: "*Large Interconnected Network with a Bridge*", and 3: "*Large Interconnected, Restricted Network*". Individuals with a high estimated glomerular filtration rate had greater odds of being in the *Large Interconnected Network with a Bridge* class versus the *Large Interconnected, Restricted Network* class, OR=1.04, 95%CI(1.002, 1.065), *p*=0.04. Those with high BMI (OR=1.19, 95%CI(1.03, 1.37), *p*=0.016), and systolic blood pressure (BP; OR=1.07, 95%CI(1.001, 1.13), *p*=0.045), had greater odds of being in the *Large Interconnected Network with a Bridge* class versus the *Married, Restricted Network.* Lastly, those with high diastolic BP had greater odds of being in the *Married, Restricted Network* class versus the *Large Interconnected Network with a Bridge* class (OR=1.02, 95%CI(1.03, 1.23), *p*=0.013). **Conclusion.** Our hypothesis was mostly unsupported as individuals in the *Large Interconnected Network with a Bridge* class were most likely to have less favorable CKM metrics, except for diastolic BP.

Table 1.
Descriptive statistics for substantive variables in analysis of *N* = 200 Mexican-origin immigrants.
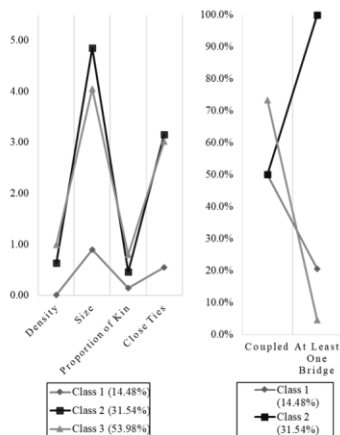
Figure 1. 3-class solution plotted across 6 indicators of social network structure in a sample of Mexican-origin immigrants.
Class 1 = "*Married, Restricted Network*"
Class 2 = "*Large Interconnected Network with a Bridge*"
Class 3 = "*Large Interconnected, Restricted Network*"

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Abstract 1457

UNDERSTANDING BIOPSYCHOSOCIAL FACTORS IN PEDIATRIC PATIENTS WITH AUTISM AND CO-OCCURRING CHRONIC PAIN AND FUNCTIONAL NEUROLOGICAL SYMPTOM DISORDER: A CASE SERIES ANALYSIS

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There is growing awareness of high rates of chronic pain and functional somatic symptoms in youth with autism spectrum disorder (hereafter, "autism"). Biopsychosocial factors specific to autism may contribute to the emergence and experience of chronic pain and neurological symptoms indicative of functional neurological symptom disorder (FNSD) in patients presenting to pediatric chronic pain clinics. There is a gap in understanding how to tailor assessment and intervention of these symptoms in youth with autism. This case series aims to explore the biopsychosocial factors observed in pediatric patients presenting an outpatient pediatric pain clinic with autism, chronic pain, and FNSD, identifying common themes that may inform multidisciplinary treatment approaches. We conducted a retrospective review of three pediatric patients diagnosed with or identified in the clinic as having autism, chronic pain, and FNSD. Data were collected from clinical records, including demographic information, psychosocial stressors, pain characteristics, and neurological assessments. Qualitative analysis was performed to identify recurring biopsychosocial themes. The case series revealed several key biopsychosocial factors impacting these patients. Biologically, common pain syndromes included widespread pain, developmental history of pain impacting motor development and developmental milestones, and co-occurring medical conditions linked to nervous system dysregulation. Functional neurological symptoms were varied and included abnormal movement/gait and difficulty walking, nonepileptic seizures or apparent loss of consciousness, and weakness or paralysis. Psychologically, anxiety, cognitive inflexibility, and sensory sensitivities were prevalent, often exacerbating pain symptoms, functional limitations, and treatment participation and adherence. Socially, family dynamics, peer relationships, gender identity, and educational support played significant roles in the patients' experiences. These factors collectively contributed to a complex interplay that influenced the severity and management of symptoms.

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Abstract 1332

A NEED FOR INTERSECTIONALITY METHODS IN PSYCHOENDOCRINOLOGY: A SYSTEMATIC REVIEW

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Background: As an interdisciplinary field focusing on how emotions, thoughts, behaviors influence hormonal activity and psychological states, psychoendocrinology is a key area for examining health disparities. Simultaneously, intersectionality has also gained substantial attention as a theoretical framework to help researchers understand experiences and health inequities. Intersectionality highlights how multiple identities such as race, gender identity, and class interact with power structures to shape individual experiences. While public health and other research fields recognize the importance of an intersectionality framework, scientists face several challenges in integrating this framework.

Objective: To better understand how researchers integrate intersectionality, we conducted a systematic review on how this framework is currently utilized in psychoendocrinology research. We aim to (1) summarize current psychoendocrinology intersectionality research, (2) identify how intersectionality is applied within quantitative studies, (3) highlight how researchers can utilize intersectionality methods in future research.

Methods: Following the PRISMA review process, terminology regarding intersectionality and psychoendocrinology were identified before searching several databases (Pubmed, APAPsychNEt, CINAHL, Web of Science, Scopus, and Google Scholar). Results were uploaded to Covidence, duplicates removed, and articles reviewed by at least two reviewers at the screening, full text review, and data extraction stage.

Results: A total of 14,376 articles were uploaded to Covidence and 4,518 duplicates were removed. Three lab members screened 9,858 initial articles. Only 228 included intersectionality related words in either the abstract or title and were included in the full text review. We extracted 26 articles for full text review, almost half of which used additive approaches in their data analysis and collection.

Conclusion: Two main research priorities were identified within psychoendocrinology research. First there is a need for a comprehensive intersectionality analytical strategy, from hypothesis question to discussion and conclusion. Second, researchers need to both test and integrate different statistical analysis strategies beyond subgroup analysis to better understand the compounding and unique experiences of those with intersecting identities.

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Abstract 1221

A 24-MONTH LONGITUDINAL STUDY ON COVID-19 SYMPTOM PERSISTENCE AND RESOLUTION

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Background

Following the acute phase of SARS-CoV-2 infection, a significant number of individuals continue to experience symptoms that persist for long periods of time, impair daily functioning and reduce quality of life. While short-term post-COVID symptoms have been well-documented, there is less known about how these symptoms may change or resolve over time. This study aims to: (1) assess the prevalence and trajectory of post-COVID symptoms in individuals over a 24-month period; and (2) determine which symptoms are more likely to persist or resolve over time.

Methods

A cohort of 323 adults, all at least 28 days post-infection with confirmed SARS-CoV-2, were initially enrolled in a prospective, longitudinal observational study. These participants were infected between March 2020 and July 2022. From the cohort, we selected participants who had complete symptom assessments at three time points: initial enrollment, 12-month follow-up, and 24-month follow-up.

Results

A total of 138 participants (age: 55±13; 51% male), representing 43% of the cohort were included. The most prevalent symptoms at the initial visit were fatigue (18%), memory loss (17%), loss of smell/taste (12%), shortness of breath (11%), and rash/blue toes/unusual skin findings (10%). There was a statistically significant decline in symptom prevalence between the initial and 12-month visits for loss of smell and taste (-6%; p<0.05), unusual skin findings (-5%; p<0.05), and fatigue (-4%; p<0.05). However, there were no statistically significant declines in memory loss (-1%; p>0.05) or shortness of breath (-3%; p > 0.05) during the same time period (Figure). There were no statistically significant declines in symptoms from 12 months to 24 months. Notably, the prevalence of fatigue and memory loss remained above 10% at 24 months.

Conclusion

This study demonstrates that certain post-COVID symptoms significantly decline in prevalence over time while key symptoms (memory loss and fatigue) continued to persist at high levels. As the greatest reductions in symptom prevalence occurred in the first 12 months of the study, followed by stabilization of symptoms, there may be a critical window for recovery. Additional research is necessary to investigate the underlying mechanisms driving persistent symptoms in order to inform long-term management strategies.
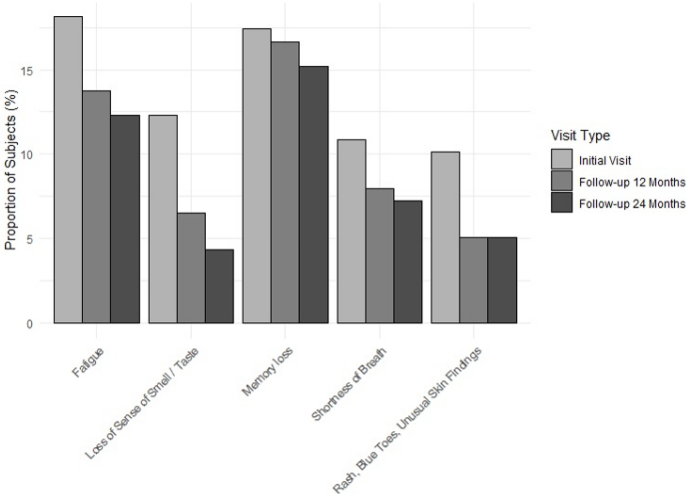
Figure 1: Changes in Symptom Prevalence Over Time

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Abstract 1231

ETHNIC AND SES DIFFERENCES IN LONG COVID-19 PREVALENCE: EVIDENCE FROM A SOUTHERN ARIZONA COMMUNITY SAMPLE

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Background: Robust evidence documents Hispanic/Latino disparities in COVID-19 incidence and mortality compared to non-Hispanic Whites. However, little data is available on the prevalence of Long COVID, or Post-Acute Sequelae of SARS-CoV-2 infection (PASC). PASC has varying definitions from health organizations, ranging from symptoms persisting for 30 days post-infection (JAMA) to conditions lasting at least 2 months and impacting daily functioning (WHO). In addition, some definitions include impairment in ability to work which could disproportionately impact diagnosis among lower SES groups. This study aimed to examine ethnic differences in PASC prevalence with and without employment criteria in a diverse community sample.

Methods: A 2023 cross-sectional observational survey of an ethnically diverse Southern Arizona community sample (N=984; Mage=36.3yrs, SDage=15.8; 78.2% Hispanic/Latino) was conducted to determine the prevalence of PASC using 60-day persistent symptom criteria with and without employment disruption.

Results: Consistent with expectations, chi-square tests found higher PASC prevalence when defined by symptom duration alone (n=175, 17.8%) versus with work impairment (n=46, 4.7%; X^2=223.7, V=.481, p<.001). In contrast to expectations, PASC prevalence with work impairment was more prevalent among those with annual incomes below $30,000 (N=29, 8.7%) compared to those with incomes above $30,000 (n=11, 2.5%) and $75,000 (n=2, 1.2%; X^2=26, V=0.17, p<.001). Non-Hispanics were more likely to report 60-day PASC without consideration of employment impact (n=54, 27.0%) compared to Hispanics/Latinos (n=117, 15.4%; X^2=13.141, V=.118, p<.001). Non-Hispanics were also more likely to report PASC with work-related compared to Hispanics/Latinos, (non-Hispanics, n=21, 10.5%; Hispanic/Latinos, n=25, 3.3%); X^2=16.699, V=.133 p<.001).

Conclusions: This study found a significant PASC burden in a community sample but with greater odds among non-Hispanics compared to Hispanics/Latinos in contrast to COVID-19 incidence data. The qualifier of work impairment significantly reduced prevalence and was more common amongst persons with lower SES.

Prevalence of PASC

Abstract 1279
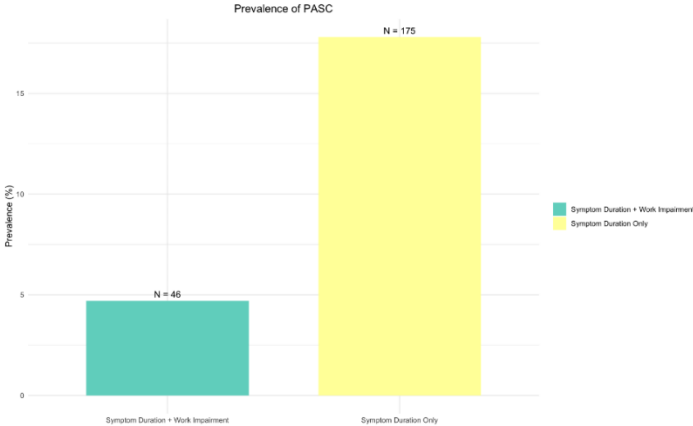
SOCIAL PARTICIPATION IS ASSOCIATED WITH A HABITUATED BLOOD PRESSURE RESPONSE TO RECURRENT STRESS

Tracey M. Keogh, Univeristy of Limerick; Siobhan Howard, PhD, university of limerick

Lower cardiovascular reactivity is a proposed marker of motivational dysregulation and is related to a range of adverse behavioural and health outcomes. Social participation is a form of motivated behaviour and represents the frequency in which an individual engages in social activities. Low social participation has recently been linked to lower cardiovascular responses to acute psychological stress. With recent work emphasizing the importance of assessing adaptation of the cardiovascular response to recurrent stress, the aim of the current study is to build on previous work by examining the relationship between social participation and cardiovascular stress response adaptation. This study utilised data from the Pittsburgh Cold Study 3 (PCS 3). Two hundred and thirteen participants (*M* = 30.13; *SD* = 10.85) completed a social participation measure and had their systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) monitored across two separate standardized stress testing sessions. The testing sessions consisted of a 20-minute baseline and a 15-minute stress task. Results indicated that higher levels of social participation were associated with greater blood pressure habituation to recurrent stress, extending previous work identifying that social participation was associated with higher cardiovascular responses to stress. The present study identifies that those reporting greater levels of social participation may show enhanced stress tolerance when exposed to recurrent stress.

Abstract 1402

ARE THERE PERILS OF PARTIALING CORRELATED RISK AND PROTECTIVE FACTORS? METHODS FOR EVALUATING EFFECTS ON CONSTRUCT VALIDITY

Timothy Smith, PhD; Giovanni Marquez, BS; Steven Carlson, MS; Paula Williams, PhD, University of Utah; Kevin Jordan, PhD, University of Evansville

Inter-correlations among psychosocial risk and protective factors are ubiquitous, leading to the widespread use of statistical adjustments (i.e., partialing) in the evaluation of independent associations with health outcomes. However, it is increasingly clear that partialing can alter the construct validity or meaning of even well-established measures. Three studies illustrate methods to evaluate the extent to which partialing alters construct validity, using the interpersonal circumplex (IPC) and the five-factor model (FFM) of personality to compare the correlates of unadjusted and partialed measures. In a representative sample of 1,300 US adults and using an IPC-based measure of interpersonal problems, social support and social anxiety had expected associations with overall interpersonal distress and interpersonal style. Partialing these factors from each other significantly reduced associations with distress and weakened or eliminated associations with style. In a sample of 560

undergraduates, using another IPC-based measure, perceived stress, resilience, worry, and loneliness all had expected associations with interpersonal style. Partialing pairs of these predictor variables from each other weakened or eliminated these associations. In a sample of 300 middle-aged and older couples, partialing measures of marital adjustment and emotional distress (i.e., depression, anger/hostility) from each other weakened their associations with independent measures of the same constructs (i.e., reduced their convergent validity) and in some cases shifted associations toward different constructs. For example, compared to its unadjusted form, the CESD depression scale adjusted for its association with marital adjustment was associated with a significantly more submissive interpersonal style. Overall, partialing correlated risk and protective factors weakened construct validity and in some cases changed the conceptual meaning of measures. Partialing can create instances of the "jingle fallacy" in which similar labels are used for unadjusted and partialed variables and similar meanings are assumed, even though construct validity is altered. The methods illustrated here can be used to examine the extent of this problem in biopsychosocial science. In the meantime, we outline cautions for reporting and interpreting partialed variables.

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Abstract 1200

AUTONOMIC TESTING IN PEDIATRIC DISORDERS OF GUT-BRAIN INTERFACE: RELATIONSHIP WITH CHILD VS. PARENT PERCEPTIONS OF FUNCTIONAL LIMITATIONS

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Background: Children with disorders of gut-brain interface (DGBI) experience chronic GI symptoms without demonstrable pathology, reduced vagal function, and lower quality of life. No study has quantitatively examined traditional autonomic tests in this population, and their relationship to overall function. Therefore, this study assessed child and parent perceptions of child function and their relationship to autonomic testing results while paying special attention to subtle changes in PNS and SNS assessments.

Methods: Data were collected from 28 youth (M= 16.26 years ±2.26; 11% male) with DBGI. Child function was measured via functional disability inventory (FDI) which was completed by parent and child. Autonomic testing included a Valsalva maneuver, deep breathing, quantitative sweat test, and tilt table test. Measures included the Valsalva ratio and pressure recovery time from phase 3 to phase 4, heart rate (HR) response to deep breathing, blood pressure and HR during tilt test, and sweat output. Bivariate correlations were performed to compare parent and child FDI to autonomic tests.

Results: Child mean FDI was 22.6 ± 12 (range 0-55; max 60), and parent 22 ± 10.8 (range 0 – 46). There was an equal distribution (n=9) of parents with higher and lower FDI compared to child; 10 subjects reported no FDI differences. Of those with parent/ child differences, 11 subjects had a difference of greater than 5 points. All autonomic testing was normal, including Valsalva ratio (2.02 ± 0.43),

pressure recovery time (0.004 ± 0.01 sec), and HR response to deep breathing (25 ± 8 bpm). The mean baseline HR was 70 ± 11 bpm with a mean blood pressure of 108/63 ± 9/6 mmHg. During the tilt test, the mean highest HR was 108 ± 13 bpm with a mean peak diastolic blood pressure of 101 ± 14, and an average increase of 38 ± 10 bpm. Parent FDI was not significantly associated with any autonomic test results but child FDI was significantly positively associated with peak tilt HR ($r(28)$=.38, p = .049).

Discussion: While this is a preliminary study, our findings highlight the importance of children's unique perception of their pain on physiological outcomes. Additionally, the correlation between HR and child FDI supports the idea that sympathetic activation is associated with worse function in children. Future studies may determine if targeting sympathetic activation improves FDI score.

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Abstract 1277

UNDERSTANDING BARRIERS TO COPING WITH GRIEF FOLLOWING THE COVID-19 PANDEMIC

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Rationale:

The COVID-19 pandemic inequitably affected Black and Latinx communities, who experienced higher rates of mortality compared to white counterparts. Losses may exacerbate health inequities as bereaved individuals face greater risk of numerous mental and physical health issues. Universities offer various resources that may help address inequalities and support better community health outcomes, but their utilization is unknown. This study examined a college population to determine (1) the prevalence of losses sustained since the start of the pandemic and (2) utilization of resources for coping with grief.

Design:

Students were randomly emailed a brief survey (6.75% response rate), while staff received the same survey via staff newsletter. The survey sample comprised students and staff (n=220, mean age=29.40, *SD*=13.31) who were predominantly people of color, with 34.8% Asian/Asian American, 15.7% Latinx/Latinx American, 3.0% Black/Black American, 2.5% Arab/Arab American, 13.6% Multiracial, and 30.0% White. A subset of respondents (n=21) was invited for a 50-minute interview to elaborate on their experiences with grief. Interview transcripts were memoed and reflexively analyzed with a team of 4 independent coders using crystallization methodology.

Results:

The survey found that 60.4% of the respondents had experienced at least one loss since the start of the pandemic, having lost a mean of 1.76 loved ones during this period. Of bereaved respondents, 8.7% utilized at least 1 on-campus resource and 6.5% utilized at least 1 off-campus resource.

Interview responses highlighted barriers contributing to low rates of resource use. Inter-coder reliability (Kappa) was 0.80. Key barriers that participants most frequently identified included lack of knowledge of resources (57%), lack of information on navigating resources (52%), and limitations of known resources (52%). Other key themes related to social deterrents of support seeking—pressure to return to normalcy (76%) and family stigma against discussing loss (38%).

Discussion:

Findings highlight the high prevalence of loss and the relatively low utilization of both institutional and interpersonal support systems on a college campus. In sharing their difficulties seeking help while grieving, interviewees highlighted key barriers that can be targeted by interventions, alleviating the effects of loss on communities.

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Abstract 1136

DANCE THE STRESS AWAY: EXPLORING OUTCOMES OF SOMATIC SYMPTOMS, STRESS, AND MINDFULNESS

Joshua Murillo; Jacob Nguyen, BA, California State University, Long Beach; Destiny Gilliland, BA, Pennsylvania State Universisty

Chronic stress has been linked to somatic symptoms—physical complaints without clear medical explanation—yet the underlying mechanisms behind this connection remain unclear. Trait mindfulness (TM), an individual's inherent tendency to maintain present-moment awareness and non-judgmental acceptance, has been shown to reduce stress and improve mental health outcomes, particularly by alleviating depressive symptoms that are strongly associated with somatic complaints. This study aims to understand to what extent TM mediates the impact of stress overload on somatic symptoms and if depressive symptoms influence this mediation process. The current study consisted of 110 diverse participants (66% female, 34% male) from a large public university who completed a mind-body intervention utilizing rhythm games (Pump It Up). Participants identified as Black (27.8%), Latino (20.6%), Asian/Pacific Islander (19.1%), White (16.7%), Multiracial (11.9%), and Middle Eastern (4%). Participants completed self-report measures of basic demographics, stress (Stress Overload Scale), TM (Five Facets of Mindfulness), somatic symptoms (Patient Health Questionnaire), and depressive symptoms (CES-Depression Scale). Results revealed TM loaded with four facets of mindfulness (i.e., acting with awareness, observation, describing, non-reactivity). Furthermore, a significant negative direct effect of TM on depressive symptoms (β = -12.473, p < 0.001), indicating that higher TM (i.e., acting with awareness) is associated with lower levels of depressive symptoms. Depressive symptoms were also a significant predictor of somatic symptoms (β = -0.289, p = 0.018), suggesting that increased depressive symptoms contribute to greater somatic symptoms. The direct effect of mindfulness on somatic symptoms was not significant (β = -2.177, p = 0.269). These findings highlight that specific facets of mindfulness may play a more significant role in mitigating the physical manifestations of stress by alleviating depressive symptoms. Future research should investigate how certain facets of mindfulness

contribute to these outcomes more than others, examining the mechanisms involved, such as HPA axis regulation and inflammation. Longitudinal studies are needed to explore these mechanisms and determine whether mindfulness-based interventions can sustainably improve both psychological and somatic health.

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Abstract 1360

RELIGIOUS AND SPIRITUAL COPING AS PREDICTORS OF CARDIOVASCULAR HEALTH: ASSOCIATIONS WITH HDL AND LDL CHOLESTEROL LEVELS
Mark Meltzer

Background:
Religion and spirituality have been central to many individuals' lives throughout history, yet today
limited research has looked into their associations with objectively measured health outcomes.
This study investigates the relationship between religious/spiritual coping - defined as the use of
religious and spiritual beliefs and practices to cope with life stressors - and cardiovascular health,
specifically cholesterol levels. We hypothesized that higher religious/spiritual coping would be
associated with more favorable cholesterol levels, including higher HDL (high-density lipoprotein)
and lower LDL (low-density lipoprotein) cholesterol concentrations.
Methods:
Using data from 927 participants in the second wave of the Midlife in the United States (MIDUS II)
study (56.4% women; 52.3% with some college or less; 93.1% white), we examined associations
between religious/spiritual coping and cholesterol outcomes. Religious/spiritual coping was selfreported with a multi-item scale such that lower scores indicated greater coping. Fasting blood samples from an overnight clinic visit were used to assess HDL and LDL cholesterol levels.
Multivariate linear regression models controlled for age, gender, race, marital status, education,
income, and lipid-lowering medication use.
Results:
Religious/spiritual coping was positively associated with HDL cholesterol (β = -0.082, p = 0.009),
suggesting that greater engagement in religious or spiritual coping practices is linked to higher HDL
cholesterol levels, which benefit cardiovascular health. The adjusted R^2 for the HDL cholesterol
model was 0.176, indicating that 17.6% of the variance in HDL cholesterol levels was explained by
the model. In contrast, religious/spiritual coping was not related to LDL cholesterol (β = 0.025, p =
.423), although the adjusted R^2 for the LDL cholesterol model was 0.169, explaining 16.9% of the
variance in LDL cholesterol levels.
Conclusions:
These findings suggest that religious and spiritual coping may offer

protective cardiovascular
benefits through associations with HDL cholesterol levels but not LDL cholesterol levels. This study
adds to the growing body of literature on the health advantages of religiosity, particularly in the
context of cardiovascular health

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Abstract 1351

CARDIOVASCULAR STRESS REACTIVITY IN PARENTS OF CHILDREN WITH AND WITHOUT DISABILITIES

Aisling Costello, Trinity University; Adam O'Riordan, PhD, The University of Texas at San Antonio; Jessica Akers, PhD, Baylor University

Background: Parents of children with disabilities report higher levels of stress compared to parents of children without disabilities. Research has demonstrated poor psychological and physiological health outcomes among parent caregivers. The aim of the present study was to compare cardiovascular responses to acute psychological stress in parents of children with and without disabilities.

Method: Four hundred and thirty-eight participants (55.5% women; *mean age* = 58.03, *SD* = 11.22 in years) from the MIDUS II Project (*N* = 38 parents of children with disabilities, *N* = 400 parents of children without disabilities) completed a standardized laboratory stress protocol consisting of a resting baseline and stressor phase (mental arithmetic and Stroop). Systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) were monitored throughout the protocol. Reactivity was computed as the arithmetic difference between baseline scores and stress task scores. Participants indicated whether they had any children with a disability.

Results: A one-way ANOVA revealed significant differences on DBP reactivity between parents of children with and without disabilities, $F(1, 435) = 4.20$, $p < .05$, $\eta p^2 = .01$. Parents of children with disabilities displayed significantly lower DBP reactivity (*M* = 5.34, *SD* = 4.30) compared to parents of children without disabilities (*M* = 6.79, *SD* = 4.22). There were no significant differences between groups on SBP or HR reactivity.

Conclusion: These results suggest that parents of children with disabilities exhibit lower cardiovascular responses to acute psychological stress when compared with parents of children without disabilities. These lower cardiovascular responses may be indicative of blunted cardiovascular reactivity and therefore may signal an increased risk for future adverse health outcomes.

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Abstract 1329

STRENGTH, VULNERABILITY AND NEUROVISCERAL INTEGRATION: EFFECTS OF ANXIETY ON OLDER ADULTS' COGNITIVE AND

PHYSIOLOGICAL REGULATION

David Spalding, King's College London; Louise Nicholls, PhD; Charlotte Russell, PhD; Willow Jiang, BSc; Lauren Blunstone; Jessica Davies; Frances Meeten, PhD

Healthy adult ageing is linearly associated with declines in 'fluid' cognitive abilities such as memory and attention. The flexibility of cardiovascular and respiratory tissue also reduces with age. Older adults who are less physiologically and cognitively flexible at baseline may be less resilient, that is, less able to utilize age-related strengths to maintain wellbeing, particularly those who experience higher levels of anxiety. The present research will assess 1. whether a reliable physiological biomarker of wellbeing (heart rate variability, or HRV) and anxiety interact to associate with older adults' behavioural and subjectively reported cognitive abilities, and 2. whether a short slow-paced breathing exercise to increase HRV will results in changes to state anxiety levels and cognitive performance. Two groups of older adults (*N* per group = 31, aged 65+) without self-reported history of cardiac illness, and who do not demonstrate potential signs of cognitive impairment as measured by the Mini-Cog, will be invited to attend a laboratory session. A baseline HRV measurement will be taken. All participants will be asked to complete a clinically indicative measure of generalised anxiety disorder symptoms (the GAD-7) and an attentionally demanding working memory/metamemory task (visual binding task with confidence judgements). Then, one group will complete a short slow-paced breathing exercise at 5.5 breaths per minute - reliably shown to increase HRV – while the other group completes a control equivalent, breathing at 12 breaths per minute. Participants will complete the behavioural task again following the exercise. HRV will be monitored continuously throughout the session and state mood will be assessed via visual analogue scales before and after the breathing exercises and cognitive tasks. The study has full ethical approval from the Health Faculties Research Ethics Subcommittee at King's College London and will be preregistered with the Open Science Framework. Recruitment will last from October-December 2024. Multilevel mixed-model analyses will take place in January 2025. Results will clarify the contributions of physiological flexibility and trait/state anxiety on cognitive abilities in older adults and provide evidence as to whether state mood and cognitive changes can be instilled via non-invasive measures to increase HRV.

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Abstract 1059

PREFERENCES FOR DISCUSSING SYMPTOMS IN ROUTINE ONCOLOGY APPOINTMENTS AMONG BLACK PATIENTS WITH ADVANCED LUNG CANCER

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Introduction: Black patients with advanced lung cancer (LC) report higher symptom burden than non-Hispanic white patients. Differences in symptom communication may drive

these disparities. Because little is known about Black LC patients' preferences for discussing symptoms, we characterized their (1) symptoms experienced, (2) interest in discussing symptoms, and (3) whether symptoms were discussed during a routine oncology appointment.

Methods: Black patients with advanced LC (N=30) were surveyed shortly after a routine oncology appointment. Patients reported current symptoms (Edmonton Symptom Assessment Scale, ESAS), interest in discussing the symptom (yes/no), and if they discussed the symptom in their appointment (yes/no). Chi-square tests assessed the relationships between symptoms, interest in discussions, and actual discussions. Symptom discussions were defined as "preference-concordant" when patient interest matched the discussion status (interested/discussed; not interested/not discussed).

Results: The most frequently reported symptoms (ESAS ≥1) were fatigue (66%), shortness of breath (SOB; 48%), and pain (41%). We focused on these three symptoms for all subsequent analyses. Most (75%) patients who reported pain wanted to discuss it. Fewer patients experiencing fatigue and SOB wanted to discuss these symptoms (53% and 57%, respectively). Patients who reported pain or fatigue were more likely to want to discuss that symptom in their appointment than those without these symptoms (p's<0.001). Patients who wanted to discuss pain were more likely to have those discussions than those who were not interested (p=0.02); however, interest in discussing fatigue or SOB was not related to symptom discussions (p's>0.12). Most patients who wanted to discuss symptoms did (fatigue=80%; SOB=82%; pain=100%), but many patients who did not want to discuss symptoms also discussed them (fatigue=53%; SOB=47%; pain=60%). Overall, the rate of preference-concordant discussions was 63%.

Conclusions: Black LC patients' preferences for discussing symptoms during oncology appointments vary. Although discussions were not always based on patients' preferences, preferences to discuss symptoms were frequently met. More research is needed to understand Black LC patients' goals for oncology appointments and develop culturally inclusive tools to aid in symptom discussion and management.

Symptoms Reported by Black Patients with Advanced Lung Cancer
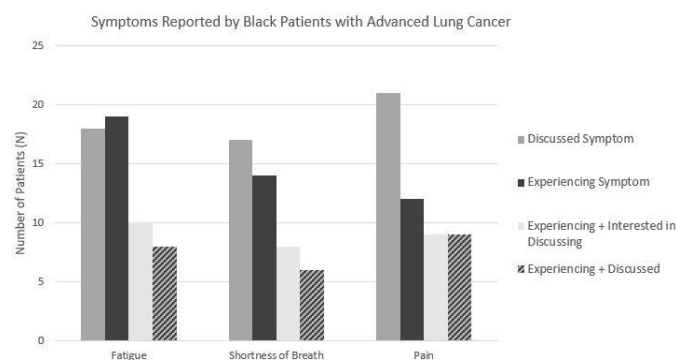
53

Abstract 1384

WE-TALK AMONG COUPLES DURING AN INTERPERSONAL DISAGREEMENT TASK CONNECTING LINGUISTIC EMOTIONAL EXPRESSION TO PHYSIOLOGICAL RESPONSES

Marcel Clark; David Sbarra, Ph.D.; Jessica Andrews-Hanna, Ph.D.; John Allen, Ph.D.

Emotion regulation is believed to be a key mediator of the broad association between close relationship quality and distal health outcomes. The current study investigates heart rate variability (HRV) changes during a real-time relationship disagreement discussion. High levels of HRV are believed to have an inhibitory control of heart rate; thus, HRV decreases over the course of a conflict discussion and may reflect greater tendencies toward fight-or-flight (sympathetic) responding. The primary research question in this study is whether the language participants use to express their psychological states is associated with HRV changes over the conflict task. A large literature indicates that we-talk in the context of relationship discussion tasks reflects greater couple-level interdependence and relationship satisfaction. We hypothesize that individuals using greater we-talk will evidence less of a decrease in HRV across the conflict discussion.

Data collection in the NIMH-funded Connected Lives– Overcoming the Self Through Empathy (CLOSE) is ongoing and will be completed by January 2025 with an anticipated sample size of 74 community-dwelling individuals (38 men; mean age = 33.48 years, SD = 7.27 years) participating with their romantic partners. Participants were asked to discuss an area of disagreement in their relationship, electrocardiograph data were collected over the 5-minute discussion task, and HRV was scored in 30-second intervals. Participants' language use data was transcribed and submitted to the Linguistic Inquiry Word Count (LIWC) system to derive the percentage of 1st-person plural words over the disagreement task.

The HRV will be analyzed using multilevel modeling accounting for occasions nested under time, and couple-level nesting data will be included as a random effect. We will first fit the functional form of HRV over the 10 task occasions and evaluate the Time X We-talk interaction to determine if language is associated with physiological responses in this interpersonal exchange. We will also explore whether other language categories are associated with RSA change.

The study of HRV reactivity plays a key role in understanding emotion regulation, and the results of this study will inform the

understanding of how language may be associated with physiological responses during an emotionally-evocative interpersonal discussion.

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Abstract 1232

MULTIDIMENSIONAL RELIGIOUS INVOLVEMENT AND BIOMARKERS OF CARDIOVASCULAR HEALTH: A LONGITUDINAL STUDY OF THE MIDUS SAMPLE

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Background: Abundant literature suggests links exist between Religiousness/Spirituality (R/S) and health, though questions remain regarding specific conditions and pathways. Cardiovascular disease (CVD) is the leading cause of death worldwide, and the risk has been increasing particularly for women under 55 years of age. R/S is a critical construct to consider in the prevention and management of CVD, and research on R/S as a protective factor suggests there could be gender differences in how R/S is associated with health outcomes. Greater religious involvement, compared to less involvement, may be associated with reduced cardiovascular risk in women, but it is unclear if these patterns exist for men.

Objective: The current study will longitudinally investigate several dimensions of R/S (service attendance, private practices, religious identification, and a religious involvement composite) in relation to cardiovascular biomarkers (insulin resistance and metabolic syndrome [MetS]) to better understand specific physiological pathways through which R/S is associated with cardiovascular health. Further, we will explore the hypothesis that greater religious involvement may be more protective against insulin resistance and MetS for women than for men.

Methods: We are using longitudinal data from two waves (Wave 2, n =1,255; Wave 3, n= 747) of a large, nationally representative study, the Midlife in the United States study (MIDUS). This study began in 1995 to explore behavioral, psychological, and social influences on health and well-being of Americans aged 25-74. We will run regression models to examine the prospective associations between each R/S predictor and cardiovascular biomarkers nine years later (HOMA-IR, an indicator of insulin resistance, and MetS). We will conduct moderation analyses to see the differential effects of gender. We have preregistered this project on OSF prior to analysis of the data and it will be complete in early 2025.

Implications: The current project will extend the literature by examining longitudinal associations between religious identity, involvement, and practice at one time point and cardiovascular biomarkers nine years later. We aim to illuminate the ways in which aspects of both public and personal R/S may be associated with cardiovascular outcomes, and if these effects are stronger among women.

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Abstract 1099

STRESS, SOCIAL SUPPORT, AND LONG COVID: THE OVERLOOKED NARRATIVE IN WOMEN'S HEALTH

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As of April 2024, 5.3% of U.S. adults (13.7 million people) had Long COVID. Women are almost twice as likely as men to experience Long COVID. This disparity maybe be due to a variety of reasons that are still unclear. Stress, a well-documented contributor to various chronic and viral conditions, may play a significant role in women's experiences of Long COVID. This is particularly relevant given that women often face higher levels of certain stressors, such as those related to childcare, compared to men. Social support, known not only for its direct positive effect on health outcomes but also for its buffering effect against stress, is a crucial factor to consider in this context. This in-progress study aims to explore the relationships between stress, social support, as well as other health-related and sociodemographic variables, with Long COVID diagnosis, number and duration of Long COVID symptoms in women. Data are from July 2023 timepoint of an ongoing online observational cohort study of U.S. women begun at the onset of the COVID-19 pandemic. 31 (1.24%) of 2,508 women who reported a COVID-19 infection were later diagnosed with Long COVID and 249 (9.93%) were not diagnosed but believe that they have Long COVID (labeled Perceived Long COVID in our study). Data of interest in this study include three types of stress: past month's general stress, past six months' major stressors, and childcare stress; social support variables; a number of appropriate sociodemographic variables (e.g., insurance, financial status) and health-related variables (e.g., chronic medical conditions). Data collection is complete, and data cleaning is currently in progress. Data analysis has yet to begin. Regression analyses will be conducted using R to examine data with multiple linear regression, multinomial logistic regression as well as missing value analysis. This ongoing study aims to establish a foundation for understanding the role of stress and social support in women experiencing Long COVID. Additionally, it seeks to address the gap in health-related knowledge specific to women and generate insights that are more applicable to their experiences. By focusing on Long COVID in women, this research can inform policy decisions and elevate women's voices and perspectives.

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Abstract 1429

EXAMINING THE EFFECT OF MULTI-SESSION SESSION HEART RATE VARIABILITY BIOFEEDBACK (HRVB) ON SYMPTOMS OF GENERALIZED ANXIETY DISORDER

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Generalised anxiety disorder (GAD) is characterized by both excessive worry as well as unpleasant somatic sensations, such as muscle tension. Anxiety and worry are linked both with impaired control of attention, biases toward negative information, and lower variations in the time interval between heartbeats, or reduced heart

rate variability (HRV). There is evidence that training individuals to control their breathing to increase HRV (via heart rate variability biofeedback, or HRVB) can reduce anxiety and stress, and also improve cognitive abilities. While some previous research suggests that HRVB can improve cognitive abilities in highly anxious individuals, this research has been limited by small sample sizes. There is also, as yet, limited focus on the effects of HRVB on cognition in individuals who meet clinical criteria for GAD, or similarly high levels of worry. We have recruited 89 out of 128 participants, aged 18-40, and reporting clinically indicative scores on the GAD-7 and PSWQ, addressing the question of whether combined multi-session HRVB and home breathing practice can increase resting state HRV and reduce symptoms of GAD and improve cognitive abilities in older adults. Participants attend 4 lab sessions over 3-4 weeks, in which they are gradually introduced to HRVB, beginning with slow-paced breathing and abdominal breathing, and a follow-up session one month later. Participants practice at home for 5-10 minutes twice per day. We predict significant reductions in GAD-7 scores and improvements in measures of cognitive inhibition (colour-word and emotional Stroop tasks) in the HRVB group as compared with a control group who perform sham equivalent training at approximately their mean breathing rate. Data analyses are expected to be conducted in November-December 2024. The presentation will detail the protocol for the delivery of HRVB/slow-paced breathing training in our sample. Results will inform the extent to which HRVB and slow-paced breathing may be a viable and non-invasive measure to help reduce symptoms and alter behavioural processes which impact quality of life in GAD. The study has an associated embargoed preregistration with the OSF (https://osf.io/4p85c).

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Abstract 1072

A PILOT RANDOMIZED CONTROLLED TRIAL OF AN INTEGRATED STEPPED COLLABORATIVE CARE INTERVENTION FOR PATIENTS AWAITING KIDNEY TRANSPLANTATION (CARES-TRANSPLANT)

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Background: Patients awaiting kidney transplant carry a high symptom burden which has been associated with waitlist inactivation and poorer post-transplant outcomes, however few studies have tested the effects of symptom management interventions in this population to improve pre- and post-transplant outcomes. This study aimed to (1) test the preliminary efficacy of an integrated stepped collaborative care intervention (CARES-Transplant) on patient-reported outcomes and unplanned healthcare utilization, and (2) explore treatment effects on family caregiver outcomes.

Methods: The study was a randomized controlled trial designed to test the efficacy of CARES-Transplant versus standard of care (SC). Patients and caregivers completed a battery of questionnaires at baseline and 3-months. Patients' assessments included the Center

for Epidemiological Studies-Depression (CES-D) scale, Brief Pain Inventory, and Functional Assessment of Chronic Illness Therapy-Fatigue, and Rand Short Form-36. Caregivers were administered the CES-D, Perceived Stress Scale, and Pittsburgh Sleep Quality Index. Patient unplanned health care utilization was assessed over the course of one-year post-randomization.

 Results: Nineteen patients (mean age=65±6 years, 74% male, 90% White) and 8 caregivers (mean age= 61.3±8.1 years, 100% female and white) were enrolled. While no statistically significant between groups differences were observed, clinically meaningful reductions were observed for the intervention group on pain (CARES-Transplant -0.45 versus SC= +2.67) and depressive symptoms (CARES-Transplant = -2.0 versus SC= +2.33). Lower rates of surgical complications (CARES-Transplant mean=1 versus SC=3), fewer emergency room visits (CARES-Transplant=1.0 versus SC=2.67), and 90-day readmissions (CARES-Transplant=0% versus SC=28.6%) were also observed. No significant between-group differences were observed on family caregiver reported outcomes.

Conclusions: Clinically meaningful changes in pain and depressive symptoms were observed for patients in the CARES-Transplant group when compared to SC. A Phase III trial to test the efficacy of CARES-Transplant is warranted.

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Abstract 1494

BIOLOGICAL RESPONSES TO A PILOT BEHAVIORAL INTERVENTION FOR YOUNG ADULT LATINO TESTICULAR CANCER SURVIVORS

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Purpose: Young adult Latino testicular cancer survivors experience adverse impacts after treatment. We developed Goal-focused Emotion-regulation Therapy (GET) to improve distress symptoms, goal navigation skills, and emotion regulation. This open pilot trial extended GET to Latino young adult survivors of testicular cancer and assessed changes in inflammatory markers in response to participation in GET. To assess the extent to which results may be conditioned by culturally-relevant processes, the influence of simpatía and machismo on inflammatory markers were also examined.

Methods: Twenty-six eligible young adult (age 18-39 years) survivors treated with chemotherapy were enrolled and assessed pre- (T1) and post-intervention (T2). Measurements of inflammatory markers (IL-1ra, IL-6, IL-8, and TNFαRII) from oral mucosal transcudate (OMT) were obtained at T1 and T2. Simpatía and machismo were measured at T1 with the Simpatía Scale and the Traditional Machismo and Caballerismo Scale, respectively.

Results: As shown in Table 1, t-test analysis suggest a generally favorable pattern of change was observed with decreases in

angiogenic (VEGF), pro-inflammatory (CRP, IL-6), and immune checkpoint inhibitor (PD1) markers; and increases in IL-ra and TNF-aRII, which have anti-inflammatory properties. However, only changes in IL-1ra were statistically meaningful. As displayed in Table 2, individual multiple regression analyses show that machismo was associated with decreases in IL-6 and TNF-aRII, and simpatía was shown to be associated with increases in VEGF, IL-1ra and PD1 and decreased IL-6.

Conclusion: Results of this pilot trial suggest the assessment of change in inflammatory markers in OMT after GET is feasible in this population. Espousing higher levels of machismo and simpatía may be beneficial to biological change after GET. Results should be considered preliminary but suggest change in cancer-relevant biomarkers.

Table 1. Mean differences in T1 and T2 inflammatory markers

	T1 to T2 M change	t	p	95% CI	Hedge's d
Inflammatory Markers					
VEGF	+	-1.90	.072	-.31; .01	-.41
IL-1ra	+	-2.14	.045	-37; -.01	-.45
CRP	-	.75	.232	-.12; .25	.16
IL-6	-	1.35	.097	-.06; .28	.29
TNFaRII	+	-.81	.213	-.28; .12	-.16
PD1	+	-1.48	.077	-.22; .04	-.33

Note. df = 25. VEGF = vascular endothelial growth factor; IL-1ra = interleukin-1 receptor antagonist; CRP = C-reactive protein; IL-6 = interleukin-6; TNFαRII = tumor necrosis factor-α-receptor-2; PD1 = programmed cell death protein 1.

Table 2. Cultural predictors of change in inflammatory markers

	Machismo				Simpatía			
	B	SE	β	p	B	SE	β	p
Inflammatory Markers								
VEGF	.11	.07	.43	.171	.59	.16	.68	.004
IL-1ra	-.06	.13	-.12	.663	.66	.16	.53	.047
CRP	-.02	.08	-.07	.403	.03	.09	.02	.782
IL-6	-.22	.10	-.49	.044	-.53	.24	-.52	.047
TNFaRII	-.21	.08	-.62	.024	-.27	.23	-.27	.270
PD1	-.01	.04	-.05	.883	.33	.11	.51	.043

Note. All analyses controlled for body mass index, time since completion of chemotherapy, and baseline values of the relevant biomarker. VEGF = vascular endothelial growth factor; IL-1ra = interleukin-1 receptor antagonist; CRP = C-reactive protein; IL-6 = interleukin-6; TNFαRII = tumor necrosis factor-α-receptor-2; PD1 = programmed cell death protein 1.

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Abstract 1529

ANGER AND CYNICAL HOSTILITY IN ASSOCIATION WITH DIABETES AND CARDIOVASCULAR DISEASE: RESULTS FROM THE HISPANIC COMMUNITY HEALTH STUDY/ STUDY OF LATINOS (HCHS/SOL)

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Objectives. Studies have found positive associations between anger, hostility, and cardiovascular disease (CVD). Research on how anger and hostility impact diabetes mellitus (DM) has been limited to clinical populations and has produced mixed findings. However, prior studies investigating these associations in Hispanic/Latino adults primarily used cross-sectional designs. Therefore, this study aimed to identify whether distinct aspects of anger and hostility are prospectively associated with CVD and DM risk.

Methods. The HCHS/SOL is a community-based longitudinal study of 16,415 Hispanic/Latino adults enrolled from 2008-2011 in four major 4 US metropolitan areas. Following the baseline visit, the Sociocultural Ancillary Study (SCAS) collected measures of anger and hostility. Participants were re-examined (V2; 2014-2017), including a fasting blood draw and interviewer-administered questionnaires. DM was defined by lab criteria following ADA guidelines, medication use, or self-report. Prevalence of CVD was determined by self-report of heart attack, stroke, or CV-related procedure (angioplasty, stent, bypass). Those with missing data in variables of interest or with CVD/DM at baseline, were excluded from the analyses. This resulted in an analytical sample of 3,477 participants for the CVD and 2,857 for the DM models. Survey logistic regression tested the association between angry temperament, angry reaction, and cynical hostility, and CVD/DM incidence at V2. Models were adjusted for age, income, education, sex, site, and nativity.

Results. Angry temperament (M=6.3, SD=1.6) was significantly associated with DM (OR = 1.09, 95% CI: [1.02, 1.16]) and CVD (OR = 1.14, 95% CI [1.04, 1.24]). Angry reaction (M=7.9, SD=1.7) was significantly associated with DM (OR = 1.08, 95% CI: [1.03, 1.14]), but not with CVD (OR = 1.10, 95% CI [.97, 1.24]). Cynical hostility was not associated with DM or CVD.

Conclusions. The observed associations between anger and CVD, and DM in Hispanic/Latinos is consistent with prior literature in non-Hispanic samples. Cynical hostility was not associated with disease outcomes. Angry temperament, a trait subtype of anger, may be more relevant to CVD risk than angry reaction, which reflects state-based anger. With common risk factors between CVD and DM, future research should identify unique pathways in the association between anger, CVD, and DM.

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Abstract 1532

ASSOCIATIONS BETWEEN POLYSUBSTANCE USE AND MULTIDIMENSIONAL SLEEP HEALTH AMONG PEOPLE WHO USE CANNABIS

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Introduction: Cannabis use has increased in the US due to reduced perceived risk and purported benefits to sleep, including reducing anxiety to promote sleep. This study aimed to investigate how cannabis and substance co-use affect sleep health.

Methods: Data from an online, national survey of 518 adults (35.2±13.4 years old; 65% F) were analyzed. Respondents reported their frequencies of cannabis, cigarette, and alcohol use. Cannabis dependence was assessed using the Cannabis Use Disorder Identification Test – Revised (CUDIT-R). Sleep, insomnia, and daytime

sleepiness were assessed using the Pittsburgh Sleep Quality Index (PSQI), Insomnia Severity Index (ISI), and Epworth Sleepiness Scale (ESS), respectively. Sleep health was assessed using items from the PSQI and ISI regarding sleep quality, satisfaction, trouble staying awake, bedtime, waketime, sleep efficiency, and duration. Linear regression models examined associations of CUDIT-R and substance use with sleep scales and individual items, adjusting for sociodemographic factors.

Results: One-quarter used only cannabis, 45% used alcohol and cannabis, 12% used cigarettes and cannabis, and 19% used all three substances (polysubstance use). Average scores were 10.4±5.7 on the CUDIT-R with 28% having hazardous cannabis use (CUDIT-R ≥8) and 34% indicating possible cannabis use disorder (CUDIT-R ≥12), 8.0±4.1 on the PSQI, 11.3±6.2 on the ISI, and 6.4±4.2 on the ESS. Half had good quality sleep, 28% were satisfied with their sleep, 76% had no difficulty staying awake. Average bedtime was 00:54±04:50, waketime was 07:43±02:31, sleep efficiency was 84±14%, and sleep duration was 6.9±1.5 hours per night. A higher CUDIT-R was associated with higher ESS (β=0.17±0.04, p<0.001). Compared to individuals who only use cannabis, individuals with polysubstance use had higher PSQI (β=0.11±0.58, p=0.04), ISI (β=0.14±0.86, p=0.008), and ESS scores (β=0.15±0.59, p=0.009), reported worse sleep quality (β=0.19±0.11, p<0.001), and less sleep satisfaction (β=0.15±0.16, p=0.006).

Conclusion: Sleep quality and satisfaction were most impaired by polysubstance use, whereas hazardous cannabis use increased sleepiness. The combined use of substances is detrimental to sleep health, and public health messaging is necessary to reduce this growing trend.

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Abstract 1535

SALIVARY MARKERS OF INFLAMMATION AND CARDIOMETABOLIC RISK: A NOVEL FULLY REMOTE APPROACH

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Nearly 40% of U.S. adults have prediabetes, a condition linked with cardiometabolic diseases, yet over 80% are unaware of their status, highlighting the need for early detection. Minimally invasive, low-cost, community-based methods are needed to increase access to screening and reduce health inequities. This study examines inflammation, a mechanism underlying prediabetes, using salivary biomarkers assessed via a novel, fully remote approach. Inflammatory markers' links to three cardiometabolic risk indicators were investigated in a diverse, healthy, adult sample. Participants (N= 50, 64% female, M$_{age}$=33.67) completed a virtual session in which they collected a saliva sample and measured their waist and hip circumferences. Two additional at-home saliva samples and online questionnaires including the World Health Organization (WHO) Oral Health scale and the CDC Prediabetes Risk Test were also completed. Saliva samples were assayed for C-reactive protein (CRP),

interleukin-1β (IL-1β), Immunoglobulin G (IgG), transferrin, matrix metalloproteinase-8 (MMP-8), Secretory IgA (SIgA), uric acid (UA), glucose, and insulin; concentrations were averaged across the three samples. Spearman's rho correlations were assessed between biomarkers and body mass index (BMI), waist/hip (W/H) ratio, and CDC Prediabetes Risk scores. We further evaluated these relations within cardiometabolic risk subgroups (using CDC thresholds as BMI categories; WHO thresholds for W/H ratio risk groups, and a mean split by CDC Prediabetes Risk scores) to assess the utility of the biomarkers among low and high-risk individuals to inform their application to health screening. IL-1β and MMP-8 concentrations were positively associated with all cardiometabolic risk indicators (ρ's=.25-.41, *p*'s=.003-.08). IgG, UA, and CRP levels were positively correlated with W/H ratio and CDC Prediabetes Risk (ρ's=.29-.33, *p*'s<.05). Subgroup analyses suggested nonlinear relations between transferrin, CRP, and glucose/insulin ratio, and cardiometabolic risk. Overall, IL-1β and MMP-8 were more strongly associated with cardiometabolic risk among the higher risk participants. In the context of the COVID-19 pandemic, and rising obesity, telemedicine, and health inequities, our results point to remote methodologies as a viable approach to facilitate detection of biological factors that may increase cardiometabolic risk.

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Abstract 1530

RELATIONSHIPS BETWEEN CHRONIC STRESS AND THE ENERGETIC STRESS MARKER, GDF15

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Background: Chronic stress exposure is associated with accelerated biological aging, but the underlying mechanisms remain unclear. Variation in mitochondrial bioenergetics may mediate this effect, though evidence is limited by the lack of accessible biomarkers. A promising candidate is Growth Differentiation Factor 15 (GDF15)- a circulating protein elevated with aging, mitochondrial disease, chronic illnesses, and is recently shown to be inducible by acute psychological stress. In this study, we investigated the associations between blood GDF15 levels, sociodemographic factors and chronic stress-related measures in two cohorts.

Method: We analyzed data from the Reference Ability Neural Network/Cognitive Reserve Study (RANN/CR, N=430, age=24-84, 54% female) and the Framingham Heart Study (FHS, N=2900, age=18-75, 52% female). Plasma GDF15 levels were quantified by ELISA (RANN/CR) and Cobas e411 analyzer (FHS). Participants completed questionnaires on educational attainment (RANN/CR, FHS), incomes, job strain, and symptoms of depression and anxiety (FHS). Associations between age- and sex-adjusted GDF15 and socioeconomic or psychological variables were analyzed using Spearman's r (continuous) and Wilcoxon or Kruskal-Wallis tests with Bonferroni corrections (categorical). Effect sizes were estimated with Hedge's g.

Results: Plasma GDF15 levels were exponentially associated with age in both cohorts (r=0.60-0.75, p<0.0001). In RANN/CR, age-corrected plasma GDF15 levels were negatively associated with years of education (Baseline r=-0.14, p=0.0031; Follow-up r=-0.18, p=0.0034). In FHS, higher age and sex-adjusted GDF15 levels where associated with lower levels of education (p<0.0001, No Highschool degree vs College grad p_{adj}= 0.00143, g=0.44), lower family income (p=0.0003, Upper vs Lower income class p_{adj}= 0.0053, g=0.20), higher depression (r=0.78, p<0.0001), higher anxiety (p=0.00014, g=0.13) symptoms, and higher job strain (p=0.0066, High vs Low strain p_{adj}= 0.0072, g=0.17).

Discussion: These results demonstrating that plasma GDF15 levels are associated with education attainment, family income, job strain, symptoms of depression and anxiety provide a foundation to use GDF15 as a biomarker to study the role of energetic stress in the stress -> aging relationship.

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Abstract 1492

WITHIN-PERSON ASSOCIATIONS OF MOMENTARY POSITIVE EVENTS AND POSITIVE AFFECT WITH SUBJECTIVE COGNITION IN EVERYDAY LIFE
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Background: Positive experiences (i.e., positive affect and positive events) are linked to better cognitive functioning, such as subjective attention. The Broaden and Build Theory suggests that experiencing positive affect expands individuals' thought-action repertoires, broadening one's scope of attention. Past research has focused on experimentally-induced positive affect rather than naturally occurring positive events and their associated positive affect. Daily positive events, such as a good conversation, occur frequently and are linked to upticks in positive affect. Thus, this pre-registered ecological momentary assessment (EMA) study examined whether momentary positive events and positive affect are associated with concurrent subjective attention at the within-person level. We also tested positive affect as a moderator of the association between positive events and subjective attention, examining whether experiencing greater positive affective responsiveness to positive events is associated with better subjective attention compared to lower positive affective responsiveness.

Methods: 108 adults in British Columbia, Canada (age: *M* = 49.50, *SD* = 17.40; 68.4% women; 32.1% racial minorities) completed 14 days of EMA. Momentary positive events, positive affect, and subjective attention were assessed 3x/day. Positive affect was operationalized as the average of responses to 6 positive emotion items. Data were analyzed using three-level multilevel models (moments nested within days within-persons), controlling for sociodemographic factors and depressive symptoms.

Results: Within-persons, moments with positive events were associated with better subjective attention compared to moments without positive events. Moments with higher-than-usual positive affect were linked to better subjective attention relative to moments with lower-than-usual positive affect. Positive affect did not moderate the link between positive events and attention, suggesting that positive events were associated with better momentary subjective attention regardless of how much positive affect a person derived from that positive event.

Discussion: Results suggest that daily positive events are beneficial for subjective attention, independent of the positive affect associated with positive events. Future research can explore daily positive experiences as targets for fostering cognitive health.

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Abstract 1537

EXPLORING THE MODERATING EFFECTS OF LIPIDS ON SLEEP QUALITY AND CARDIOVASCULAR RISK AMONG OLDER AFRICAN AMERICAN ADULTS
Jasnoor Kaur; Shridula Kotakondla , BS; Elissa Kim, MA; Jacqueline Rodriguez-Stanley, MA; Samuele Zilioli, PhD, Wayne State University

Introduction: Growing evidence suggests that poor sleep can heighten the risk of cardiovascular disease (CVD). Among older African American adults, achieving optimal sleep and decreasing the risk of CVD are prevalent health concerns. Additionally, biomarkers such as low-density lipoprotein (LDL) cholesterol and triglycerides are modifiable risk factors linked to both sleep quality and CVD. Previous studies documented the moderating role of cholesterol in relation to CVD pathways such as cognitive decline, stroke, and inflammation. Therefore, we conducted an exploratory study that hypothesized higher levels of lipids would exacerbate the relationship between poorer sleep quality and increased CVD risk among older African American adults. **Methods:** Data was derived from the Health among Older Adults Living in Detroit study [*N* = 210; M$_{age}$ (SD) = 67.57 (8.45 years)]. Measures included the Pittsburg Sleep Quality Index (PSQI), LDL cholesterol, triglycerides, waist-to-hip ratio, and socioeconomic status. Following the National Heart, Lung, and Blood Institute 2014 guideline, participants' atherosclerotic cardiovascular disease (ASCVD) risk was calculated from a variety of demographic variables, health behaviors, blood pressure variables, HDL and total cholesterol, and glycemic control. Listwise deletion was used for missing data. **Results:** Bivariate correlations revealed weak associations between LDL cholesterol with the PSQI global score (*r* = 0.165, *p* = 0.032) and ASCVD risk (*r* = 0.162, *p* = 0.038). Neither LDL cholesterol nor triglycerides had moderating effects. Only LDL cholesterol (*b* = 0.0006, *SE* = 0.0003, *p* = 0.0326), but not triglycerides or PSQI score, had a significant direct effect on ASCVD risk. **Conclusion.** Our results showed that lipids did not modulate the relationship between sleep and CVD risk in this cross-sectional data. However, longitudinal investigations regarding the role of lipids and sleep quality are needed to better understand CVD risk and healthy aging among older African American adults.

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Abstract 1538

HETEROGENEITY OF THE RESPONSE TO MINDFULNESS INTERVENTIONS FOR CHRONIC PAIN

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About 50 million U.S. adults are affected by chronic pain, and it impacts the quality of life and everyday functioning of about 25 million. According to the American College of Physicians, Mindfulness-based Stress Reduction (MBSR) is recommended as a first-line treatment for Chronic Low Back Pain (cLBP). Efforts have been made in identifying biopsychosocial markers that predict what kind of individuals with cLBP will respond to MBSR, and how well they will respond to the intervention over time. However, patient responses to mindfulness-based interventions are still unpredictable, and not completely understood. Further, there are known healthcare disparities in the efficacy of these interventions, therefore it is important to examine key sociodemographics and incorporate them into the array of biopsychosocial predictors of treatment response to MBSR. To bridge this gap, the present study aims to assess heterogeneity of treatment effects along sociodemographic characteristics including racialized identity, income, and education. As the initial step of this project, moderation analyses were conducted with the dataset from a recent clinical trial, Aging Successfully, where participants either engaged in an 8-week MBSR intervention, or in an active education control where they learned the '10 Keys to Healthy Aging'. Analyses probed the effect of the interaction between MBSR and race on the trajectory of pain over the course of the intervention and follow-up periods for the following outcomes: average chronic pain scores, chronic pain severity scores, current chronic pain scores, Roland & Morris questionnaire scores, and Multidimensional Perceived Social Support scale scores. Further analyses tested the moderating effects of income and education. Preliminary findings reveal that while White patients respond well from the health education active control on its own, Black patients appear to require culturally sensitive MBSR to achieve the same benefit. This elucidates key race-based differences on predicting patients' response to mindfulness-based interventions, which could further improve and bridge sociodemographic gaps in integrative medicine efforts.

Numeric Rating Scale – Average Chronic Pain

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Abstract 1536
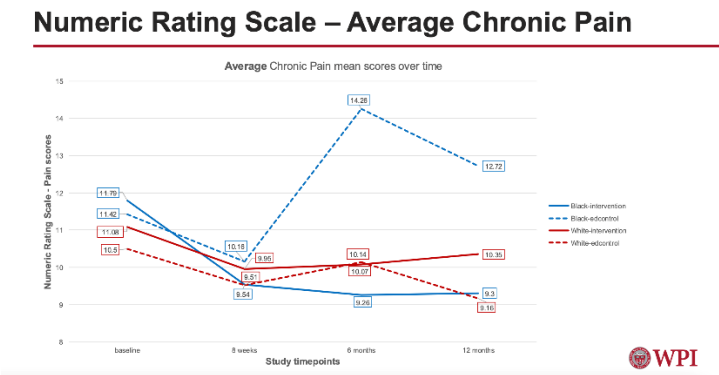
EFFECTS OF ACUTE PSYCHOLOGICAL STRESS ON BLOOD CELL-FREE MITOCHONDRIAL DNA (CF-MTDNA): A CROSSOVER EXPERIMENTAL STUDY

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Introduction: In response to acute socio-evaluative stress, prior studies have shown increases in circulating cell-free mitochondrial DNA (cf-mtDNA) and pro-inflammatory cytokines, highlighting two potential interrelated mechanisms by which stressors can get under the skin. Here, we conducted the first controlled trial to examine concomitant responses of circulating cf-mtDNA and inflammatory cytokines to a socio-evaluative stressor under standardized laboratory conditions.

Methods: In this crossover experimental study, 71 volunteers (ages 20-50, 48% women) were tested twice, counterbalanced, and separated by at least a month. On one occasion, they were exposed to a 5-min socio-evaluative stressor (modified TSST/speech task), and on the other occasion, to a neutral wildlife video. Blood samples were obtained at -5 min and +5, 10, 20, 30, 45, 60, 75, 90, and 120 min relative to stressor onset. Blood neuroendocrine markers (cortisol via ELISA, catecholamines via Liquid chromatography–mass spectrometry (LC-MS/MS)), pro-inflammatory cytokines (IL-6, IL-10, TNF-α via ELISA) and plasma and serum cf-mtDNA (via quantitative polymerase chain reaction (qPCR)) were quantified alongside mood and cardiovascular responses.

Results: Compared to the control visit, the stressor significantly increased anxiety, heart rate, blood pressure, cortisol, and norepinephrine ($p<0.05$-0.0001). Unexpectedly, an increase in IL-6 and plasma cf-mtDNA (time effect $p<0.0001$) was observed <u>in both</u> the stress and control conditions. While no significant effect of time was found for serum cf-mtDNA, plasma cf-mtDNA showed a bi-phasic response with an initial 22-24% increase at 5-10 min, followed by a decrease and another 70-81% increase from 45 to 75 min. There were no significant associations between the pro-inflammatory and cf-mtDNA responses, pointing to their independent regulation.

Discussion: While mood, cardiovascular, and neuroendocrine reactivity were selectively induced by socio-evaluative stress, IL-6 and blood cf-mtDNA increases were observed in response to both stress and control conditions, suggesting that these biomarkers may reflect non-specific responses to the laboratory protocols (e.g., blood draw) rather than stress itself.

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Abstract 1502

LIFETIME TRAUMA EXPOSURE AND ACCELERATED EPIGENETIC AGING AMONG MIDLIFE WOMEN

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Objective. Trauma exposure may be linked to accelerated biological aging. However, studies have largely considered childhood abuse, with limited consideration of lifetime trauma exposure, particularly for women. Further, few studies have considered newer epigenetic clocks, which have enhanced links with health outcomes. Among midlife women, we investigated whether lifetime trauma exposure is associated with older epigenetic age with several generations of clocks. We explored associations between childhood maltreatment and epigenetic age and racial differences in associations between trauma and epigenetic age.

Methods. Two hundred sixteen women (mean age=59 years; 83% non-Hispanic White, 13% Black, 4% other race/ethnicities) underwent physical measures, questionnaires to assess lifetime trauma exposure, and a blood draw. A subset of 123 women completed childhood maltreatment measures. Extrinsic epigenetic age, GrimAge, Principal-Components based PhenoAge, and DunedinPACE were calculated. Clocks were residualized for age and Z-scored for analysis. Associations between trauma and epigenetic age were estimated in linear regression (covariates race, education, body mass index), followed by tests of interactions by race.

Results. Relative to women without trauma exposure, those with two or more lifetime traumas had older epigenetic age [GrimAge: 1: B(SE)=0.13(0.16) p=0.40, 2+: B(SE)=0.34(0.14), p=0.02; DunedinPACE: 1: B(SE)=0.21(0.14), p=0.13, 2+: B(SE)=0.27(0.12), p=0.02]. Childhood sexual abuse was also associated with older epigenetic age [GrimAge: B(SE)=0.63(0.24), p=0.01]. Exploratory models suggested that trauma was related to epigenetic age primarily among Black women.

Conclusions. Among midlife women, greater lifetime trauma and childhood sexual abuse were associated with older epigenetic age, independent of chronologic age. Black women may be particularly affected.

Key Words: Trauma, childhood abuse, epigenetic clocks, epigenetic aging, biological age

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Abstract 1553

INFLAMMATION AND SEX HORMONES: INTERACTIVE RISK AND RESILIENCE FOR MILD COGNITIVE IMPAIRMENT

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Alzheimer's Disease (AD) and related dementias (ADRD) have become a major concern as increasingly larger populations live into later adulthood, in part due to advancements in medicine and the aging of the "Baby Boomer" generation. Early detection of these conditions is critical, as there are no treatments currently capable of halting or reversing cognitive decline stemming from AD. Mild cognitive impairment (MCI) is a prodromal state to clinical dementia and can often be observed years before progression of more serious symptoms. As with various forms of dementia, MCI is associated with higher circulating levels of proinflammatory cytokines. Importantly, sex hormones, such as testosterone (T) and estradiol (E2) have been implicated as both protective and risk factors in the development of neurodegenerative disease. However, to our knowledge, no studies have investigated the role of sex hormones in MCI specifically, nor their interactions with inflammation. Using cross-sectional data from 241 racially diverse adults (70-90 years old), we found sex hormones to interact with inflammatory markers in a protective manner. Specifically, we found a main effect of interleukin-10 (IL-10) increasing risk of MCI (OR = 1.40 for 0.1 pg/ml increase, p < .001), whereas sex hormones interacted with IL-10 in a gender dependent fashion to reduce MCI risk [T was protective for women (OR = 0.71 for 1 ng/ml increase, p = .037), E2 for men (OR = 0.68 for 100 pg/ml increase, p = .003); effects for each hormone were in a similar direction in both men and women]. While IL-10 is an anti-inflammatory agent, it correlates with pro-inflammatory cytokines and may be a sensitive measure of inflamed states across the body. Our results motivate future research to directly test the protective roles of T and E2 in age-related cognitive decline, and to examine underlying mechanisms. Furthermore, these results pose clinical and diagnostic implications for early screening of MCI and ADRD.

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Abstract 1517

THE ASSOCIATION BETWEEN PSYCHOLOGICAL WELL-BEING AND PERCEIVED CONTROL OF DAILY STRESSORS

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Psychological well-being (PWB) and adaptive daily stress responses have been shown to predict better health and reduced risk for chronic disease. Understanding how individuals react to and cope with stressors in daily life and whether daily stress responses are associated with trait-level individual differences such as PWB may advance our understanding of how and why they confer risk for poorer health outcomes. The Midlife Development in the United States (MIDUS) Study was used for the present analysis. The subsample of participants with daily diary and baseline data included 2,022 respondents between the ages of 33 to 84 years old (M = 56.24 years, SD = 12.20 years). Hierarchical linear models (HLM) were used to analyze the data. Data from daily diaries were in ''person-days,'' nesting stress and perceived control of stressors within persons with both varying over days within persons (i.e., level-1). Daily stress (entered as a level-1 predictor), was computed from an average of the severity of stressors reported from the semi-structured Daily Inventory of Stressful Events (DISE; Almeida et al., 2002), which asks whether certain stressors have occurred within the preceding 24 hours. The main outcome of interest, perceived control of daily stress, was also measured at the daily level by a single-question measure asking participants how much control they

had over the stressful situations. Psychological well-being was measured once at the level of the individual using the well-being subscale of the Multidimensional Personality Questionnaire (Lachman & Weaver, 1997) and was added as a level-2 predictor in the HLM. Additional models added individual-level covariates such as childhood history of emotional warmth (Parental Support Scale; Rossi, 2001) and abuse from parents (Childhood Trauma Questionnaire; Bernstein & Fink, 1998), neuroticism (Tellegen, 1985), and age. Results found that higher trait PWB was associated with higher perceived control of daily stress (p < .001), and this association remained significant after including childhood history, neuroticism, and age in the model. Childhood history and neuroticism were not associated with perceived control of daily stressors, whereas age was, such that older participants reported lower perceived control of daily stress ($p < .05$). Future directions include examining additional moderators, such as relational support and social networks.

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Abstract 1518

AGE GROUP DIFFERENCES IN USAGE, MOTIVATION, AND PSYCHOLOGICAL FACTORS AMONG CANNABIS USERS WITH AND WITHOUT CANNABINOID HYPEREMESIS SYNDROME

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While cannabis use has increased worldwide, there remains generational differences in how it is perceived and used. This study looked at age differences in a sample of cannabis users, 25% whom had been diagnosed with Cannabinoid Hyperemesis Syndrome (CHS). Since the only treatment for CHS-which involves life disrupting bouts of nausea and vomiting-is abstinence, understanding age differences in usage, motivation, and psychological factors may be helpful for supporting those with a diagnosis.

Cannabis users who filled out an online survey and provided their age (n=199) were divided into 3 age categories based on previous research regarding developmental life transitions: Emerging adulthood (EA; n=93) consisted of those 18-25 years old, young adulthood (YA; n=56) ages 26-34, and midlife and beyond (MB; n=50) ages 35 and older.

For the overall sample, the MB group reported more frequent usage on a daily basis and using cannabis at their current frequency for longer than their younger counterparts. Age differences were also found for motivation (as measured by the MMQ), anxiety (STAI), and depression (PHQ). EA and YA groups were more likely to use cannabis as a coping tool, a way to conform, and for social reasons than the MB group. The two younger groups also reported more anxiety and depression than older cannabis users. There were no age differences in terms of life satisfaction (SWLS).

No age differences were found for CHS diagnosis. Among those participants with CHS, no age differences were found in cannabis usage. Age differences in social use of cannabis remained, whereas differences in conformity and coping were no longer present. The EA and YA groups saw increases in their PHQ and STAI scores, which

remained higher than older users. Lastly, among those with CHS, satisfaction with life was significantly lower for EA and YA groups when compared to the MB group.

While correlational in nature, this study indicates that the motivations and co-occurring psychological factors among cannabis users of various ages differ significantly. Older participants showed less use of cannabis to cope, conform, and socialize; had lower levels of depression and anxiety, and higher levels of life satisfaction (among those with CHS). Implications of these results for future research and interventions will be discussed.

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Abstract 1509

ASSOCIATION OF ENERGY RESISTANCE AND MENTAL HEALTH SYMPTOMS: PRELIMINARY EVIDENCE FROM THE MISBIE STUDY

Catherine Kelly; Caroline Trumpff, PhD; Qiuhan Huang, MS; Cynthia Liu, BS; Martin Picard, PhD, Columbia University

Background: The link between early-life socioeconomic status (SES) and mental health is well established but the underlying biology for this relationship remains unclear. We hypothesize that the biological embedding of early-life SES occurs through an increase in psychobiological resistance to energy flow – termed energy resistance (éR). While energy resistance is essential to sustain life and health, excessive resistance leads to cellular damage and chronic disease, as reflected in blood biomarkers including growth differential factor 15 (GDF15). As a first test of this hypothesis, we hypothesize that lower educational attainment, a measure of early life SES, is associated with higher éR, which in turn predicts more severe mental health symptoms.

Methods: Data from 65 participants with varying energy transformation capacities from the MiSBIE study were analyzed. éR was operationalized using two approaches: 1) functional energy resistance ($éR^{funct}$) calculated as the ratio of resting energy expenditure to functional capacity (ability to sit-stand over 30 seconds); and 2) using the reductive stress blood biomarker GDF15 ($éR^{GDF15}$). Education level was self-reported, depression was assessed with the Beck Depression Inventory (BDI), and anxiety with the State-Trait Anxiety Inventory (STAI-Y1). Construct validity between $éR^{funct}$ and $éR^{GDF15}$ was assessed using Spearman's rho correlation, and linear regressions adjusted for age and sex explored the associations between éR, education, and mental health.

Results: Our two measures of energy resistance $éR^{funct}$ and $éR^{GDF15}$ were not significantly correlated, suggesting that they capture different facets of the construct. However, both $éR^{funct}$ ($r^2 = 0.15$, p = 0.007) and $éR^{GDF15}$ ($r^2 = 0.24$, p = 0.01) were related to greater anxiety symptoms. A positive trend was also observed for depressive symptoms ($éR^{funct}$: $r^2 = 0.10$, p = 0.03; $éR^{GDF15}$: $r^2 = 0.11$, p = 0.10). Associations between education and energy resistance were not significant.

Discussion: Greater resistance to energy flow was linked to more severe anxiety and depressive symptoms, but not to educational attainment. Further work is required to refine the operationalization

of éR and to test its potential applications in relation to adversity. These findings highlight the role of energy regulation in mental health and call for studies in diverse and larger populations.

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Abstract 1483

ONE SIZE DOES NOT FIT ALL: HEART RATE AND HEART RATE VARIABILITY RESPONSES TO TRANSCUTANEOUS AURICULAR VAGAL NERVE STIMULATION ARE SEX-SPECIFIC

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Background: Transcutaneous auricular vagus nerve stimulation (taVNS) is a non-invasive and well tolerated intervention that is gaining increasing interest for its potential therapeutic applications in an impressive variety of neurological, psychiatric, and somatic (e.g., cardiac) conditions. A concerted effort is being made from both researchers and clinicians to determine physiological readouts of taVNS responsiveness, among which vagally-mediated heart rate variability (vmHRV) is an ideal candidate. Yet, the effects of taVNS on vmHRV remain inconclusive, likely due to the high degree of heterogeneity in stimulation protocols (e.g., taVNS parameters and side of the ear target), and little consideration of contributing factors such as sex differences. *Objective:* To investigate sex differences in heart rate and vmHRV responses to different protocols of taVNS in adult rats. *Method:* Male and female wild-type Groningen rats received sham or active stimulation (6 Hz or 20 Hz, 1 ms, 6 V) on the left or right auricular concha region. ECG signals were recorded before (10 min), during (20 min) and after (10 min) each session in a between-subject design. *Results:* We found differential frequency- and sex-specific cardiac responses to taVNS, whereby heart rate decreased and vmHRV indexes increased at 6 Hz in males and at 20 Hz in females. Also, increases in vmHRV were only observed for right-side taVNS. *Conclusions:* The current findings suggest that biological sex should be considered for fine-tuning regulation of taVNS-induced cardiac responses and provide information regarding the side-specific effects of taVNS on vmHRV. These results will likely guide future research to the choice of the most appropriate stimulation protocol in both sexes, specifically when increases in vmHRV are desirable for the purposes of taVNS-related intervention.

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Abstract 1499

PERINATAL PERCEIVED STRESS AND MATERNAL BLOOD PRESSURE CHANGES: IMPLICATIONS FOR HYPERTENSIVE DISORDERS OF PREGNANCY

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Background: The US maternal mortality rate is the highest among high-income countries at 22.3 deaths per 100,000 live births in 2022, largely due to hypertensive disorders of pregnancy (HDP). Studies have suggested that perinatal stress may increase risk for HDP, yet no study has directly examined its impacts on maternal blood pressure (BP) *changes* across the trimesters.

Hypotheses: **H1**: Higher perinatal perceived stress (PPS) during 2nd and 3rd trimesters will be associated with higher systolic blood pressure (SBP), diastolic blood pressure (DBP), and mean arterial pressure (MAP) during 2nd and 3rd trimesters. **H2**: Higher PPS during 2nd and 3rd trimesters will be associated with greater increases in SBP, DBP, and MAP during the transition from 2nd to 3rd trimester.

Methods: Pregnant persons were recruited through obstetrical offices, clinics, and community postings. Eligibility criteria: 18-40 years old, singleton pregnancy, no involvement with child protective services, no drug use (except marijuana and nicotine), and no serious medical conditions. A total of 414 participants enrolled in the parent study. The analytic sample for the present study was n=80 (M_{age}=26.35). The Perceived Stress Scale-14 (PSS-14), which was administered during 2nd and 3rd trimester study visits, was used to measure PPS. We calculated PSS sum scores based on the PSS-10 scoring schematic due to its stronger psychometric properties. SBP, DBP, and MAP readings from prenatal visits during 2nd and 3rd trimesters were abstracted via medical chart review and averaged by trimester. Bivariate correlations and regression analyses with maternal age as a covariate were conducted.

Results: PPS during the 3rd trimester was negatively correlated with MAP during 3rd trimester (r=-.30, p<.05), positively correlated with greater SBP increase from 2nd to 3rd trimester (r=.50, p<.05), and marginally correlated with DBP during 3rd trimester (r=-.25, p<.10). Higher PPS during 3rd trimester was marginally associated with lower DBP during 3rd trimester (β=-.25, p<.10). Additionally, higher PPS during 3rd trimester was associated with higher SBP during 3rd trimester (β=.67, p<.05), controlling for SBP during 2nd trimester, PPS during 2nd trimester, and maternal age.

Discussion: Future research should explore how stress affects BP during the 3rd trimester specifically and into the postpartum period. Routine screening for PPS, coupled with effective stress-reduction interventions, may mitigate HDP risk.

POSTER SESSION 3

1

Abstract 1322

TESTING A BIOPSYCHOSOCIAL MODEL OF RELIGIOUS ATTENDANCE AND INFLAMMATION IN A COMMUNITY SAMPLE OF OLDER AFRICAN AMERICAN ADULTS

Elissa Kim, Wayne State University; Kristin Davis, PhD; Samuele Zilioli, PhD, Wayne State University

Background. Religiosity is theoretically and empirically linked to reduced cardiovascular disease (CVD) risk through biopsychosocial pathways. Older African Americans (AAs) have a higher burden of CVD than other racial groups despite the potential protective effects of religion. The current study examined positive religious coping, social support, and alcohol use as potential mediators between

religious attendance and inflammation, a mechanism underlying CVD, among older AAs. **Methods**. Data were from The Heart of Detroit Study [N = 523; $M_{age}(SD_{age})$ = 65.61(5.63 years)]. Religious attendance and coping, social support, and alcohol use were assessed via questionnaires. Blood samples were used to assay C-reactive protein (CRP), basal cytokines (composite of IL-6, IL-10, TNFα), and *ex vivo* stimulated cytokines (composite of IL-1β, IL-6, IL-10, TNFα). **Results**. Path analyses showed direct effects of religious attendance on all three mediators and basal cytokines, with and without covariates. No indirect effects on inflammatory markers were found. Only one of the total effects tested was significant, from religious attendance to basal cytokines. **Conclusion**. Results partly support the theorized model. Longitudinal examination of these pathways is needed.

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Abstract 1248

ASSOCIATION OF DEPRESSION REMISSION WITH CARDIOVASCULAR DISEASE RISK BIOMARKERS: EIMPACT RANDOMIZED CONTROLLED TRIAL

JiHee Yoon; Matthew Schuiling, MS; Zachary Jones, BA; Gouri Ambily, N/A; Jesse Stewart, PhD, Department of Psychology, Indiana University Indianapolis

While depression is an independent risk factor for cardiovascular disease (CVD), the effect of successful depression treatment on CVD risk remains unclear. To help fill this knowledge gap, we examined data from the eIMPACT trial (R01HL122245, NCT02458690), which was conducted in a safety net healthcare system. From the 216 primary care patients with depression and elevated CVD risk randomized in that trial, we selected the 201 (93%) patients with post-treatment depression data (M_{age}=59 years, 78% female, 50% Black, 5% Hispanic/Latinx, 46% with income <$10,000/year). Participants were randomized to either 12 months of the eIMPACT intervention (modernized collaborative care involving internet cognitive-behavioral therapy [CBT], telephonic CBT, and/or select antidepressant medications) or usual primary care for depression (primary care providers supported by embedded behavioral health clinicians and psychiatrists). We classified participants as remitters if they achieved a ≥50% reduction in their Patient Health Questionnaire-9 (PHQ-9) score and reported <3 depressive symptoms on the PHQ-9 at post-treatment. Outcomes were changes in depressive symptoms and CVD risk biomarkers over 12 months. Sixty-three participants (31%) met the remission criteria. As shown in Table 1, remitters showed large improvements in depressive symptoms compared to non-remitters (p < 0.001, Hedges' g = 1.30). However, no group differences were observed for the CVD risk biomarkers - i.e., brachial flow-mediated dilation, high-frequency heart rate variability, interleukin-6, high-sensitivity C-reactive protein, β-thromboglobulin, and platelet factor 4 (ps ≥ 0.49, Hedges' gs = 0.04 to 0.14). Our results, which align with those from other clinical trials, suggest that successful depression treatment alone is not sufficient to lower CVD risk. Collectively, these findings underscore the need for more comprehensive treatment strategies – e.g., ones that concurrently address mental health and traditional

CVD risk factors – to improve CVD primary prevention among people with depression.

Table 1. Group Differences in Pre-to-Post Change in Outcome Level: ANCOVA Models Adjusted for Baseline Triglycerides, DBP, LDL-C, and HDL-C (N = 201)

	Remitters (n = 63) M (SD)	Non-remitters (n = 138) M (SD)	p-value (g)
Depressive Symptoms			
Pre-to-Post Change SCL-20 (range: 0-4)	-1.08 (0.64)	-0.26 (0.63)	<0.001 (1.30)
Cardiovascular Disease Risk Biomarkers			
Pre-to-Post Change FMD (% dilation)	-0.33 (2.49)	-0.24 (2.47)	0.82 (0.04)
Pre-to-Post Change HF HRV (ln of ms²/Hz)	0.26 (1.50)	0.12 (1.49)	0.59 (0.09)
Pre-to-Post Change IL-6 (log_{10} of pg/mL)	0.01 (0.18)	0.03 (0.18)	0.64 (0.11)
Pre-to-Post Change hsCRP (log_{10} of mg/L)	-0.02 (0.28)	0.02 (0.28)	0.49 (0.14)
Pre-to-Post Change BTG (ng/mL)	-2.53 (128.10)	-7.68 (126.71)	0.80 (0.04)
Pre-to-Post Change PF4 (ng/mL)	26.56 (2249.02)	-32.15 (2224.56)	0.87 (0.05)

Note. Values are estimated marginal means and corresponding standard deviations. Observed ns for each outcome variable were (post-treatment): SCL-20 (197), FMD (193), HF HRV (179), IL-6 (195), hsCRP (194), BTG (194), and PF4 (194). Because group imbalance was observed for baseline triglycerides, DBP, LDL-C, and HDL-C, they were included as covariates in the ANCOVA models. ANCOVA = analysis of covariance; DBP = diastolic blood pressure; LDL-C = low-density lipoprotein cholesterol; HDL-C = high-density lipoprotein cholesterol; SCL-20 = Hopkins Symptom Checklist-20; FMD = flow-mediated dilation; HF HRV= high-frequency heart rate variability; IL-6= interleukin-6; hsCRP= high-sensitivity C-reactive protein; BTG= β-thromboglobulin; PF4 = platelet factor 4.

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Abstract 1264

EARLY LIFE ADVERSITY, SYSTEMIC INFLAMMATION, AND HIPPOCAMPAL MORPHOLOGY IN MIDLIFE ADULTS

Kennedy Reeves; Chrystal Spencer, M.S.; Tae Kim, PhD; Anna Marsland, PhD; Peter Gianaros, PhD, University of Pittsburgh

Experiences of early life adversity (ELA) have been associated with reduced hippocampal volume in later life; however, the possible mediating biological pathways of this association remain unclear. The present study tested whether systemic inflammation, as reflected by circulating levels of IL-6, statistically explained the association of

retrospective reports of ELA and hippocampal volume in midlife adults. Participants were otherwise healthy men (N = 71) and women (N = 98) who did not have a history of chronic physical conditions (mean age = 44 years; 17.16% identified as non-white). Participants completed the Adverse Childhood Experience (ACE) Questionnaire (avg. score = 1.27, SD = 1.82), underwent a fasting blood-draw to assess circulating IL-6, and were scanned using a 7-Tesla Siemens MRI. Total bilateral hippocampal volume was computed using Freesurfer. Mediation analyses tested total, direct, and indirect effects after controlling for age, time blood-draws and MRI, sex at birth, and intracranial volume. Results showed significant total (c) and direct (c') effects of ACE scores on hippocampal volume (c path effect = -50.73; 95% CI [-91.14, -9.65] p= 0.010; c' path effect = -49.23; 95% CI [–89.54, -7.73], p= 0.014). However, IL-6 did not statistically mediate this relationship, as indicated by a non-significant indirect effect (ab path effect = -1.51; 95% CI [-12.91, 1.92], p= 0.598). These results accord with prior research indicating that higher ACE scores are associated with lower hippocampal volumes, but here using high-resolution 7T imaging outcomes. Although IL-6 was not shown to mediate this relationship within this sample, results may differ in more representative populations with a greater range or different measurement of ELA. It is also possible that pathways other than systemic inflammation link ELA to adult brain morphology.

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Abstract 1260

EXAMINING THE ASSOCIATION BETWEEN HABITUAL EMOTION REGULATION STRATEGIES AND CARDIOVASCULAR STRESS REACTIVITY ACROSS THREE STUDIES

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Background: Emotion regulation involves the observation and management of personal emotional experiences and responses, and is important when encountering psychological stress. Poor emotion regulation is associated with cardiovascular disease risk, with altered cardiovascular responses to psychological stress a possible underlying mechanism. However, prior research has mainly focused on laboratory (instructed) emotion regulation and cardiovascular stress responses; there is limited conclusive research on the relationship between every-day (habitual) emotion regulation strategies and cardiovascular stress responses.

 Aim: Examine associations between habitual use of cognitive reappraisal and expressive suppression and cardiovascular stress responses across three independent laboratory studies that included different acute psychological stress tasks.

 Methods: Participants (Study 1: N = 239, 64.9% female; Study 2: N = 289, 51.9% female, Study 3: N = 169, 50.9% female) had cardiovascular measurements taken during a 10-minute baseline period and subsequent acute psychological stress task (Study 1: mental arithmetic; Study 2 = speech task; Study 3: Multisource interference and Stroop tasks). Participants also completed the

Emotion Regulation Questionnaire and a rating of perceived task stressfulness. Cardiovascular reactivity (stress mean − baseline mean) was calculated for systolic/diastolic blood pressure and heart rate for each study. A series of regression analyses examined the association between reappraisal and suppression (Step 2) and cardiovascular reactivity/perceived stress while adjusting for covariates (age, sex, race, ethnicity, and BMI; Step 1).

 Results: Across all three studies and all cardiovascular variables, there were no statistically significant associations between emotion regulation and cardiovascular reactivity (all ps ≥ .10) or self-reported stress (all ps ≥ .06).

 Conclusion: There may be a more nuanced relationship between emotion regulation and reactivity based on how emotion regulation is assessed (e.g., habitual vs instructed). This investigation contributes to a more comprehensive understanding of the potential impact (or lack thereof) of habitual emotion regulation strategies on cardiovascular stress responses, thereby helping advance our knowledge of the interplay between emotion regulation and long-term cardiovascular health.

5

Abstract 1205

ASSOCIATIONS BETWEEN ADVERSE FAMILY ENVIRONMENTS AND PAIN AMONG BREAST CANCER SURVIVORS ONE YEAR AFTER PRIMARY TREATMENT

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Background: Adverse childhood family environments have been linked to pain in adulthood through shaping emotional and biological processes. Whether this relationship is true for breast cancer survivors (BCS) experiencing post-treatment pain is unknown. Despite its potential relevance, there is little research on childhood adversity and pain in the context of breast cancer. The current study of BCS examines the association between adverse family environments and pain through ambivalence over emotional expression (AEE; the conflict between wanting to express one's emotions and the perceived inability to do so or fear of social consequences) and inflammation. We hypothesize a positive association between adverse family environments and pain, mediated by greater AEE and elevated inflammation.

Methods: 175 women diagnosed with stage 0, I, II, or IIIA breast cancer completed assessments at end of primary treatment and at 6- and 12-months post-treatment. We focus here on the 12-month post-treatment follow-up. Participants completed questionnaires to assess adverse childhood family environments (Risky Family questionnaire), AEE (Ambivalence of Emotional Expressivity questionnaire), and pain (RAND 36-item short-form health survey, bodily pain subscale). Blood samples were collected to measure plasma markers of inflammatory activity (IL-1ra, IL-6, CRP, sTNF-RII). Linear regressions and single mediation analyses using bootstrapping were conducted to test hypotheses.

Results: Adverse family environments had a significant, positive association with pain 1 year after treatment, b = -0.37, p = .007. AEE

significantly mediated the association between adverse family environments and pain, $b = -0.09$, $p = .009$, 95%CI[-0.19, -0.02]. While adverse family environments were significantly associated with IL-6, $b = 0.01$, $p = .01$, and IL-6 was marginally associated with pain, $b = -5.07$, $p = .06$, inflammation did not mediate the link between adverse family environments and pain (all 95%CIs contain 0). IL-1ra, CRP, and sTNF-RII were not associated with pain (all $p > .42$).

Conclusion: Findings highlight the need to consider harmful childhood environments in the development and severity of pain among BCS. The role childhood adversity can have in shaping how people think about their emotions, such as AEE, may be an especially relevant pathway to understand its associations with pain.

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Abstract 1137

INVESTIGATING THE RELATIONSHIP BETWEEN PERSONAL GROWTH AND COGNITIVE FUNCTIONING: A LONGITUDINAL STUDY OF ADULTS IN MIDLIFE

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Background: Aging is commonly associated with cognitive decline, but emerging research suggests that psychological well-being and related constructs may offer protection against deterioration. This study examined the longitudinal association between personal growth— the ongoing process of developing self-awareness, improving one's abilities, and achieving a deeper understanding of oneself and one's potential — and cognitive function in a middle-aged American sample. We hypothesized that higher levels of personal growth would be associated with better cognitive outcomes over 10 and 20 years.

Methods: Data were sourced from three assessment periods in the Midlife in the United States (MIDUS) Study (Mage = 46.91; 54% women; 93% White). Personal growth was assessed with three items from the Psychological Well-Being Scale in 1995-1997 (MIDUS I). In 2004-2006 (MIDUS II) and again in 2013-2015 (MIDUS III), cognitive function was evaluated via the Brief Test of Adult Cognition by Telephone (BTACT). The BTACT yielded measures of an overall BTACT Composite, an Episodic Verbal Memory Composite, and an Executive Function Composite derived from standardized z-scores of relevant subtests. Preregistered linear regression models evaluated the association between personal growth at MIDUS I with each of the three cognitive outcomes at MIDUS II (N=3,720) and MIDUS III (N=2,592), adjusting for relevant covariates.

Results: Age and gender adjusted analyses revealed a significant longitudinal association between personal growth and cognitive function, with higher levels of personal growth predicting better cognitive functioning across all BTACT composites at both 10 and 20 years (ps < .001). Associations persisted when controlling for additional covariates, including marital status, income, race, and education level (ps < .05).

Conclusions: Our findings highlight the potential of personal growth to act as a protective factor against age-related cognitive decline, offering valuable insights into how fostering psychological well-being can support cognitive health throughout adulthood. Future research should explore this relationship in more diverse populations to increase understanding of its generalizability and underlying mechanisms.

7

Abstract 1435

THE CYCLE OF STRESS AND HEALTH: EXPLORING LINKS BETWEEN STRESSFUL EVENTS, CHRONIC CONDITIONS, DEPRESSION AND LONELINESS

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Introduction: Stressful life events (SLE) are linked to depression, loneliness, and the onset of chronic conditions in later adulthood. These events can trigger or exacerbate chronic health issues, which may, in turn, lead to feelings of helplessness and an increased risk of depression. Both chronic illnesses and depression often result in social withdrawal, intensifying feelings of loneliness. While the relationships among these factors are believed to be dynamic and cyclical, the mechanisms connecting them remain poorly understood. This study utilizes data from the Midlife in the United States (MIDUS) waves 2 and 3 datasets to explore the interactions among SLE, chronic syndroms, depression, and loneliness within a serial mediation framework. **Methods:** The sample comprised 511 adults (52.5% female, 8.8% ethnoracial minority), with an average age of 52.3 ± 9.8 years at wave 2. Self-report questionnaires were administered to assess stressful life events, chronic health conditions, and depressive symptoms at wave 2. At wave 3, participants reported their levels of loneliness. To control for potential confounding factors, we accounted for gender, race, age, and BMI, which can influence biopsychosocial health. Indirect effects were analyzed using bootstrapping techniques (5,000 samples) via the PROCESS macro for SPSS, specifically employing Model 6 for serial mediation analysis. It was predicted that experiencing more SLE would lead to a greater number of chronic conditions and subsequent higher levels of depression, which in turn would lead to increased feelings of loneliness. **Results:** The overall model demonstrated significant effects ($F(7,503)=23.27$, p<.001), explaining 24.5% of the variance in loneliness at wave 3. A direct effect of SLE on loneliness was observed ($B=0.36$, $p<.001$), along with an indirect effect mediated by chronic conditions and depression ($B=0.05$, CI[0.03, 0.07]). Notably, neither chronic conditions nor depression acted as standalone mediators within the model. **Conclusions:** Our findings enhance the understanding of the biopsychosocial factors affecting loneliness in later adulthood, underscoring the necessity for targeted interventions that address stressors and foster resilience. By recognizing the interconnectedness of mental and physical health conditions, we can develop more effective strategies for intervention and support.

Abstract 1157

EXPERIENCES WITH DISCRIMINATION, ALCOHOL USE, AND ANXIETY AMONG GAY MEN

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Fifty percent of sexual minority men (SMM) report experiencing discrimination based on their sexual orientation (Bostwick et al., 2014). Many SMM reporting experiencing discrimination meet criteria for alcohol use disorder (Lee et al., 2016). Severe anxiety is associated with discrimination experiences among SMM (Lamontagne et al., 2024). Few studies examine the potential mediating role that alcohol use (AU) plays in explaining the relationship between discrimination and anxiety symptoms among SMM.

This study aims to examine interrelationships among discrimination, AU, and anxiety severity in a sample of SMM. We hypothesize that discrimination experiences will be associated with problematic AU, which will lead to greater anxiety severity.

Participants (N = 310) were recruited in New York State and completed a 30-minute survey; this study focuses on a subset of 293 White, Black, and Latine SMM who reported alcohol use. Experiences with discrimination were measured using the Everyday Discrimination Scale and alcohol use was measured using the Alcohol Use Disorders Identification Test. Anxiety severity was measured using the Generalized Anxiety Disorder-7 screener. Mediation analyses were conducted using the SPSS PROCESS macro, with age, socioeconomic status, and race/ethnicity included as control variables.

Results indicated that discrimination was a significant predictor of anxiety severity (B = .099, SE = .009, 95% CI[.08, .12], p < .001). Results also indicated that discrimination was a significant predictor of AU (B = .03, SE = .01, 95% CI[.01, .05], p = .001) and that AU was a significant predictor of anxiety severity (B = .35, SE = .05, 95% CI[.24, .45], p < .001). Approximately 46% of the variance in anxiety severity was accounted for by the predictors (r2 = .46). The mediation analysis also indicated that AU was statistically significant in mediating the relationship between discrimination and anxiety severity (95% Bootstrap CI: [.003, .02]).

This study contributes to our understanding of how discrimination experiences affect the mental health of SMM. Findings suggest that SMM who experience more discrimination are more likely to use alcohol and experience greater anxiety symptoms than SMM who report lesser instances of discrimination. These findings demonstrate the negative impacts that experiencing discrimination can have on overall health among SMM.

Abstract 1350

ALTRUISM IN ACTION: CAN EMPATHY ENCOURAGE VACCINATION FOR OTHERS' SAKE?

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Promoting vaccine uptake through targeted public health messaging is critical to mitigating the societal impact of infectious diseases, as demonstrated by its central role in public health responses to the COVID-19 pandemic. Developing effective messaging campaigns requires a nuanced understanding of the motivations behind vaccination decisions and the factors that shape these motivations. In this study, we investigated the role of empathy in predicting motivations for receiving the COVID-19 vaccine. Using longitudinal data from 2,219 North American participants, we examined the association of trait empathy assessed in a baseline survey completed between March 2020 and September 2021 on participants' subsequent motivations for receiving the vaccine. Vaccine motivations were assessed in a series of follow-up surveys distributed between May and October 2021 and later dichotomized into two key categories: protecting oneself and protecting others from illness. The mean time between baseline and follow-up surveys was 55.53 (*SD* = 12.80 weeks).The majority of participants were female (78%), resided in Canada (83%), held a bachelor's degree or higher (72%), and had a mean age of 48 years (*SD* = 16). Additionally, 69% of participants reported a liberal political affiliation. Results from logistic regression models indicated that empathy significantly predicted the motivation to protect others but not the motivation to protect oneself. Furthermore, the effects held controlling for a range of demographic factors such as age, gender, political affiliation, and country of residence. Age—the primary risk factor for severe COVID-19 illness—was independently associated with both the motivation to protect oneself and the motivation to protect others. These findings underscore the importance of individual differences in empathy in shaping vaccination decisions, offering valuable insights for tailoring public health campaigns to motivational drivers.

Abstract 1207

RELATIONSHIP BETWEEN DEPRESSIVE SYMPTOMS, INTERPERSONAL SUPPORT AND THE COVID-19 VACCINE IN UNDERGRADUATE STUDENTS

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Introduction: With the recent COVID-19 pandemic, studies have focused on the prevalence of mental health symptoms, specifically depressive symptoms in undergraduate students. Higher depressive symptoms may have several health behavior implications including transmissible disease vulnerability through vaccine hesitancy. Additionally, interpersonal support is a well-known buffer of depressive symptoms on health processes including engagement in health behaviors. This study investigates the relationship between

depressive symptoms and vaccination against COVID-19 in undergraduate students and explore if this association is moderated by interpersonal support.

Methods: Data includes a cross-sectional, self-reported survey (H/L 34%, NHW 28%, Other R/E 38%) involving samples of undergraduate students across four U.S universities (n=2,489, 68.47% women). The study included validated measures for depressive symptoms and interpersonal support. Vaccination behavior was derived from students' self-report of vaccination against COVID-19.

Results: A logistic regression analysis was conducted to examine the relationship between depressive symptoms and vaccination behavior. Additionally, we explored whether this relationship was moderated by interpersonal support. All models were controlled by gender and household income. The main effect of depressive symptoms was significant (β = -0.020, SE = 0.010, p = .044), suggesting that higher depressive symptoms were associated with decreased odds of getting the COVID-19 vaccine. Interpersonal support did not moderate these associations, suggesting a non-significant effect (β = -0.0002, SE = 0.001, p = NS).

Conclusion: Our results support the hypothesis that higher levels of depressive symptoms are associated with student's COVID-19 vaccination. Despite the established role of interpersonal support as a buffer for depressive symptoms in various health-related contexts, our findings indicate that it does not significantly moderate the relationship between depressive symptoms and vaccination behavior in this sample. Future research should explore additional factors that may influence vaccine hesitancy in the context of mental health, as well as consider interventions that may effectively address these health behaviors.

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Abstract 1165

DIFFERENCES IN INCOME LEVELS AND HEALTHCARE PROVIDER SATISFACTION AMONG MIGRAINE SUFFERERS WITH VARIED OPIOID USE STATUS

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Introduction: Migraine is common cause of disability that requires management through healthcare systems. Socioeconomic status may influence accessibility to high quality healthcare for migraine. Prescription opioids represent a commonly administered treatment for migraine. This study examines whether income levels and ratings of healthcare provider satisfaction are predictors for opioid use status (i.e., never used, used in the past, and currently use).

Methods: The 2021 Migraine in America survey was completed by 4,992 adults reporting a diagnosis of migraine. The survey included questions addressing annual household income and use of prescription opioids. We ran two ANOVAS to evaluate if those

identifying with a specific opioid use status differed in socioeconomic status or in satisfaction with healthcare providers.

Results: We found significant differences between the annual household incomes of the opioid use groups ($F_{(2, 4113)}$ = 6.173, p =.002, η^2 = . 003), and satisfaction with healthcare provider between opioid use groups ($F_{(2,4655)}$ = 3.620, p = .027, η^2 = .002). A Tukey post hoc analysis showed that income was significantly greater (p < .001) for those who reported never using opioids (M = 3.35, SD = 1.77) than for those who reported currently using opioids (M =3.07, SD = 1.81, p <.001). Income was not significantly different between participants currently using opioids and those that reported past use without current use (M= 3.23, SD= 1.76). Those reporting current opioid use are more satisfied with their healthcare provider (M= 5.72, SD=1.23 p= .029) than those reporting past opioid use without current use (M=5.58, SD= 1.29, p= .029) with no significant difference for people reporting never using opioids.

Discussion: Opioids are not the most effective treatment for migraines and are associated with several negative health risks, including addiction. These results may indicate that individuals with fewer socioeconomic resources may not have access to optimal healthcare. Individuals with socioeconomic resources may have access to more comprehensive healthcare for their migraine. Those reporting past opioid use may feel less healthcare provider satisfaction due to feeling that their pain isn't being adequately treated, being forced off opioid medication, switching prescribers and being unable to continue opioid use, or other access issues.

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Abstract 1326

BIOPSYCHOLOGICAL STRESS MARKERS AND WORKPLACE CHALLENGES AMONG NURSES: A MULTIMETHOD STUDY

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Numerous studies have demonstrated significant stress burdens on nursing staff in hospitals worldwide. However, most of these studies relied solely on retrospective self-reports through questionnaires, which are susceptible to bias and thus limit their validity. Additionally, little is known about which specific events in the daily clinical routines of nurses are particularly stressful and which serve to relieve stress. Finally, given that stress is a biopsychological phenomenon, omitting its biological aspects in previous studies provides an incomplete picture.

The aim of the ongoing study, from which we are presenting preliminary results, is to investigate which aspects of the daily professional routine are particularly stressful for nurses and which factors alleviate this stress. To achieve this goal, we employ a multimethod approach, combining standardized baseline measures of vagal activity (i.e., heart rate variability) and hypothalamic-pituitary-adrenal (HPA) axis activity (i.e., hair cortisol concentration),

questionnaire-based assessments of chronic stress, exhaustion, and depressive symptoms, ecological momentary assessment (EMA), and observational methods in nurses from a German university hospital. More precisely, we collect 24-hour ECG data during workdays and nights. During work hours, study staff accompany nurses, recording potentially stressful and stress-relieving events, which are then synchronized with the ECG data.

Preliminary multilevel analyses conducted revealed associations between phasic HRV and specific observed events in the nursing workday, as well as modulating effects of biopsychological markers of chronic stress.

The study offers valuable insights into how the daily professional routine of nursing staff can be improved and highlights key considerations for designing effective reintegration measures after periods of incapacity for work.

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Abstract 1195

DIGITAL MINDFULNESS-BASED INTERVENTION IMPROVES SUBJECTIVE HEALTH BUT NOT BIOLOGICAL STRESS MARKERS IN COPD - EVIDENCE FROM A PILOT RCT

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Background: Although current treatment guidelines recommend mindfulness-based interventions (MBIs) for managing dyspnea and mental health symptoms in chronic obstructive pulmonary disease (COPD), scientific evidence in this population is limited and mixed. This pilot study aimed to explore the feasibility of an 8-week digital MBI and its effects on somatic and mental health in COPD.

Methods: Psychologically burdened COPD patients (63±7 years, 61% female, FEV1% 41±19) were randomly assigned to an MBI (n=14; daily 10-15min audio-guided meditation) or control group (n=16). Primary outcomes included feasibility (dropouts, MBI usage rates, interview responses), anxiety, and depressive symptoms (Hospital Anxiety and Depression Scale). Secondary outcomes encompassed physical health impairment, COPD-related quality of life, subjective stress, and biological stress markers (hair cortisol levels as well as heart rate, heart rate variability, and skin conductance level in response to a cognitive stressor). Exploratory outcomes assessed momentary stress, anxiety, and dyspnea post-meditation. Linear mixed models were used to analyze the effects of the intervention.

Results: Findings showed the intervention's feasibility (81% usage rate; 93% and 71% found the MBI enjoyable and helpful, respectively), with 21% drop-out. A statistically significant intervention effect (time x group) was found for anxiety (p=.031, η_p^2=.08) and emotional functioning (p=.004, η_p^2=.14) as one component of COPD-relate quality of life, but not for depression (p=.178, η_p^2=.06) or any other secondary outcome. Momentary

stress (p<.001, η_p^2=.75), anxiety (p=.022, η_p^2=.75), and dyspnea (p<.001, η_p^2=.70) were significantly reduced post-meditation.

Conclusion: The digital MBI was feasible and improved anxiety, emotional functioning, and immediate subjective post-meditation outcomes. Results suggest that digital MBIs may be beneficial as low-threshold add-on treatments to improve subjective health outcomes in everyday life and clinical settings. Future large-scale studies are needed to confirm these findings.

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Abstract 1224

INTERACTIONS BETWEEN SYSTEMIC INFLAMMATION AND THE STRESS RESPONSE AND THEIR ROLE IN EXACERBATING SYMPTOMS IN CHRONIC FATIGUE SYNDROME

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Introduction Chronic Fatigue Syndrome (CFS) is characterized by physical and cognitive fatigue, along with elevated fatigability. Although CFS is considered a multifactorial disorder, research on the interrelationships between different physiological dysfunctions and how they correlate with symptom severity is limited. The aim of this study was to examine the relationships between systemic inflammation, self-reported stress in response to a psychosocial stressor, and self-reported fatigue following a mental and physical challenge.

Methods 96 patients with CFS and 53 healthy participants (HP) completed the Maastricht Acute Stress Test (MAST-stress induction), the Paced Auditory Serial Attention Task (PASAT-mental fatigue induction), and an arm-leg cycling task (physical fatigue induction). Subjective stress and mental and physical fatigue were rated before, during, and after the respective tasks. Additionally, serum samples were collected after testing to measure hs-CRP levels as an indicator of systemic inflammation.

Results Compared to HP, patients experienced higher mental and physical fatigue (main effect of group) and fatigability (group*time interaction effect) during and after the fatigue induction tasks (all p's<0.001) and elevated levels of stress during the MAST (main effect of group; p<0.0001). Additionally, patients' fatigue recovered more slowly up to 24 hours after finishing the cycling task (p=0.0004) and the PASAT (p=0.0192). Patients with increased levels of hs-CRP experienced higher levels of stress, mental, and cognitive fatigue during the MAST, PASAT, and cycling test respectively (main effect of hs-CRP on ratings; all p's < 0.001). Similarly, patients with higher stress levels (quantified as AUCg of stress ratings during the MAST) experienced higher physical (p=0.0011) and cognitive (p=0.0004) fatigue during and after the fatigue tasks.

Conclusion In line with the core symptomatology of CFS, patients recover more slowly from physical and mental exertion compared to HP. Additionally, our results indicate that systemic inflammation and

the stress response interact in CFS patients. Both factors are associated with the severity of symptoms, underscoring their role in exacerbating CFS symptoms. This provides evidence for both interphysiological and psychophysiological links in CFS.
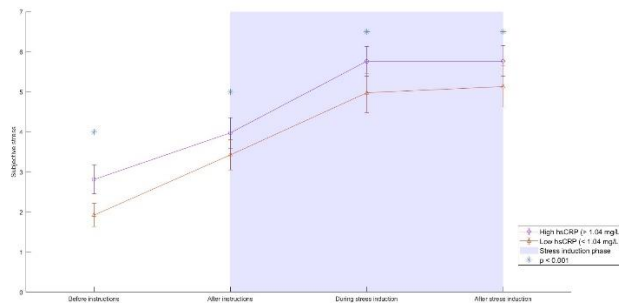
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Abstract 1100

OVERWEIGHT AND OBESITY AS PREDICTORS OF DEPRESSION TRAJECTORIES OVER 16-YEAR FOLLOW-UP: FINDINGS FROM THE ENGLISH LONGITUDINAL STUDY OF AGEING.

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Objectives To investigate the impact of obesity on the course of depression and the impact of weight change on depression burden over time.

Methods Using data from the English Longitudinal Study of Ageing we examined the relationship between body mass index (BMI) at wave 2 (2004/5) with depressive symptoms from wave 2 to wave 10 (2020/1). BMI was defined as healthy weight (18.50-24.99 kg/m^2), overweight (25.00-29.99 kg/m^2) and obesity (>30.00 kg/m^2). Weight change from wave 2 to 4 was defined as <5.00% BMI (weight loss), -5.00% to +4.99% BMI (weight maintenance) and >5.00% BMI (weight gain). Depression burden was the sum of all waves in which participants reported elevated depression symptoms. Depression time courses across waves 2 to 10 were modelled; no depression equated to no elevated depression symptoms at any wave, intermittent depression referred to elevated depression at non-consecutive waves, while chronic depression captured those with ≥3 consecutive waves of elevated depression. Data were analysed using Poisson and multinomial logistic regression models controlling for a range of covariates.

Results Participants were 6790 adults aged 66.03±9.50 years with an average BMI of 27.90±4.88 kg/m^2. Greater BMI at wave 2 was associated with a higher burden of depression across waves 2 to 10 (incidence rate ratio [IRR] = 1.02, 95% confidence interval [CI] 1.01-1.02, p<0.001) in fully adjusted models. Obesity, relative to healthy weight, was associated with both an intermittent course of depression (odds ratio [OR] = 1.18, 95% CI 1.02-1.37, p = 0.027) and a chronic course of depression (OR = 1.73, 95% CI 1.28-2.33, p = <0.001), relative to those who never experienced elevated depressive symptoms. Overweight was not associated with intermittent or chronic depression relative to healthy weight. For

those with healthy baseline weight, weight loss (IRR = 1.53, 95% CI 1.23-1.91, p<0.001) and weight gain (IRR = 1.22, 95% CI 1.02-1.56, p=0.030), relative to weight maintenance, were associated with greater depression burden from wave 4 through 10. Weight change was not associated with depression burden in those with overweight or obesity at baseline, relative to weight maintenance.

Conclusions Higher body weight is associated with a higher burden of depression over time and obesity is associated with both intermittent and chronic time courses.

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Abstract 1315

BRAIN CORRELATES OF LONG-TERM TREATMENT WITH TRANSCUTANEOUS VAGAL NERVE STIMULATION IN POSTTRAUMATIC STRESS DISORDER

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Objective: Posttraumatic Stress Disorder (PTSD) is a highly prevalent condition and current treatments have limitations. Vagal Nerve Stimulation (VNS) is a new approach that potentially has promise for PTSD. Understanding the neurobiology of treatment response is important for developing new treatments. The purpose of this study was to assess neural correlates of long-term transcutaneous cervical VNS (tcVNS) in patients with PTSD. **Methods:** Patients with PTSD underwent randomization to active tcVNS (N=6) or sham stimulation (N=5) twice daily for three months. High-Resolution Positron Emission Tomography scanning with radiolabeled water was used to measure brain blood flow measurements before and after treatment during exposure to personalized traumatic scripts paired with active or sham stimulation. **Results:** Three months of active tcVNS resulted in a blocking of response to traumatic scripts compared to sham stimulation in brain areas mediating the fear response, including posterior cingulate, thalamus, temporal and parietal cortex, and parahippocampal gyrus, with an increase in medial prefrontal gyrus, in patients with PTSD. **Conclusion:** TcVNS affects brain areas mediating fear and emotion which may underlie a therapeutic effect for PTSD.

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Abstract 1449

A LONGITUDINAL ASSOCIATION BETWEEN LEVEL OF LIFETIME EXPOSURE TO AIR POLLUTION AND COGNITIVE DECLINE OVER 5 YEARS AMONG ADULTS FROM THE CZECH REPUBLIC

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Long-term exposure to particulate matter (PM2.5 and PM10) has been associated with an increased risk of cognitive impairment in older age, with evidence suggesting that cognitive decline may begin as early as age 30. However, the relationship between air pollution

and cognitive decline remains inconclusive. This study aims to examine the association between lifetime exposure to PM2.5 and PM10 and cognitive decline over a 5-year period in a Czech aging population. Data were drawn from the Czech Study of Healthy Aging in Industrial Environment (HAIE). Of the 1,314 men and women who participated at baseline (2019–2021), by September 2024, a number of 125 participants (88 men and 37 women; mean age 41.4 years, SE ±0.41) completed the ongoing follow-up phase 2 (2024-2026). Individualized lifetime exposures to PM2.5 and PM10 were estimated for each participant. Cognitive performance was assessed using a global cognitive score, calculated as the sum of standardized z-scores from memory tests, the Flanker task, Set shifting, and n-back tests (n-back 1 and n-back 2). Linear mixed models were employed to analyze the data, with adjustments for age, sex, education, socioeconomic status, and age-related cognitive decline. Preliminary analyses indicated that cognitive changes differed by sex (p for interaction = 0.025), so analyses were stratified accordingly. Among men, global cognitive scores declined by 0.14 SD (95% confidence interval [CI], −0.27 to −0.02) over the 5-year follow-up. Higher lifetime exposure to PM2.5 and PM10 was associated with an additional 0.01 SD decline (95% CI, −0.02 to −0.001 for PM2.5) and 0.01 SD decline (95% CI, −0.02 to −0.001 for PM10) in global cognition over the 5 years follow-up. In contrast, no significant cognitive decline was observed among women (0.06 SD, 95% CI, −0.10 to 0.22), and there was no significant association between PM exposure and cognitive performance (PM2.5 and PM10: 0.01 SD, 95% CI, −0.01 to 0.03). We found that men with higher lifetime exposure to PM2.5 and PM10 experienced faster cognitive decline over the 5-year follow-up period, whereas no significant decline or association with air pollution was observed among women. These findings contribute to the growing body of evidence on the adverse impact of air pollution on cognitive aging and brain health, particularly in men.

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Abstract 1382

ALLOSTATIC LOAD ASSOCIATES WITH MONOCYTE SUBSETS IN AFRICAN AMERICAN WOMEN: DATA FROM THE STEP-IT-UP DIGITAL HEALTH, COMMUNITY-ENGAGED PHYSICAL ACTIVITY INTERVENTION

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Background: Chronic psychological stress can accumulate and contribute to allostatic load [(AL), the "wear and tear" on the body]. AL is linked to increased cardiometabolic disease (CMD) risk. Monocyte subsets (classical, intermediate, and non-classical) are pivotal in CMD development. However, the relationship between AL and monocytes is understudied in diverse racial/ethnic cohorts. We investigated associations between AL and monocyte subsets in African American (AA) women with CMD living in resource-limited Washington, D.C., neighborhoods.

Methods: Participants were enrolled in Step It Up, a digital health physical activity (PA) intervention designed with community engagement. AL was measured as a multidimensional score based on CM health indicators: systolic blood pressure (SBP), diastolic BP, homocysteine, total cholesterol, low-density lipoprotein, high-density lipoprotein, C-reactive protein (CRP), hemoglobin A1C, waist-to-hip ratio, body mass index (BMI), albumin, and pulse, where higher scores indicated higher AL (range 0–10). Baseline PA was measured by daily step count using a Fitbit device. Flow cytometry of fasting blood samples provided monocyte subset measures. Associations between allostatic load score (ALS) and monocytes, as well as the components of ALS, were analyzed using multivariable linear regression, adjusting for age, neighborhood deprivation index (NDI), and baseline PA.

Results: The study cohort included 152 AA women (mean age=57.4±11.7 years, mean ALS=4.3±2.1, BMI=36.2±6.7 kg/m², ASCVD=9.8±9.0). ALS was positively associated with intermediate monocytes, but not with overall monocyte presence or other subsets (Table). Examining the ALS components, SBP and CRP were negatively associated with classical monocytes, while CRP was positively associated with intermediate monocytes. The remaining ALS components did not show significant associations.

Conclusion: Higher AL associated with increased intermediate monocytes in this AA cohort. SBP had a negative association with classical monocytes. CRP differentially associated with classical and intermediate monocytes. Our findings suggest a potential mechanism by which AL, as a chronic stressor, may contribute to atherogenesis. Future studies should investigate the impact of AL and psychosocial stressors on monocyte changes to identify potential targets for interventions in minoritized groups.

Table: Associations between Allostatic Load Score (ALS), ALS Components, and Monocytes for Overall Population: Data from the Step It Up Digital Health, Community-Engaged Physical Activity Intervention

	Model 1: Overall ALS, Adjusted for age, NDI, Fitbit Baseline Steps per Day (n=152)	Model 2: ALS Component: Systolic BP (n=152)[1]	Model 3: ALS Component: CRP (n=152)[1]
All Monocytes	0.072 (0.508)	0.014 (0.332)	-0.010 (0.748)
Classical monocytes	-0.284 (0.166)	**-0.062 (0.024)***	**-0.205 (0.001)**
Intermediate monocytes	**0.250 (0.033)***	0.029 (0.069)	**0.145 (<0.001)**
Non-classical monocytes	0.035 (0.786)	0.032 (0.061)	0.061 (0.109)

All data are shown as regression coefficients followed by the p-value in parenthesis. Significance is indicated with asterisk (*) and highlighted in bold font.
[1]Model 2 & 3: adjusted for age, NDI, and Fitbit Baseline Steps per Day
NDI = Neighborhood Deprivation Index
BP = Blood Pressure
CRP = C-reactive Protein

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Abstract 1206

SOCIOECONOMIC STATUS AND ACCELERATED MOLECULAR AGING: DIFFERENCES BETWEEN MEN AND WOMEN

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Background: A health gradient exists in relation to socioeconomic status (SES), with better health at higher SES. Research suggests an epigenetic mechanism for this gradient, with lower SES associating with summary epigenetic clocks known to accelerate biological aging. Men and women differ in several aspects of this SES-health gradient, with women having lower income and less prestigious occupations despite similar educational attainment as men. And, although women typically live longer, they often have more chronic health conditions and suffer relatively reduced functional ability compared with men. While some studies have documented gender differences in SES association with health, few have investigated whether aspects of SES associate to epigenetic age in the same way for men and women. **Methods:** Using data from the Midlife in the United States Study (men N = 398, women N = 436), the present analyses tested the hypotheses that lower SES measured by area-based poverty, personal income, education attainment, marital status, and employment status would be associated with accelerated epigenetic age assessed on the Hannum, Horvath, PhenoAge, and GrimAge clocks, particularly for women. **Results:** Results suggested several gender differences in SES-epigenetic age links. Greater area-based poverty, lower personal income, and being married or employed accelerated epigenetic aging among women on all four clocks. Among men, however, area-based poverty was either not significantly associated with these clocks or was associated with decelerated epigenetic age. Higher personal income was consistently associated with accelerated epigenetic age, and being married was consistently associated with decelerated epigenetic age among men. Being employed was either not significantly associated with these clocks or was associated with accelerated epigenetic age among men. The only similarity between men and women was with education, where more education was associated with decelerated epigenetic age. **Conclusions:** Findings suggest nuanced associations between SES and epigenetic age and highlight notable differences between men and women. The gender differences observed in the present findings inform targeted interventions that should consider resources available at individual and neighborhood levels that offset gender-specific demands in the employment and marital domains.

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Abstract 1244

DIFFICULTY AFFORDING COLLEGE EXPENSES IS ASSOCIATED WITH DEPRESSIVE SYMPTOMS AND INCREASES IN INFLAMMATION ACROSS THE FIRST YEAR OF COLLEGE

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College can be an important steppingstone to upward mobility for young adults from lower socioeconomic backgrounds. However, these students can also face substantial financial, academic, and psychosocial challenges during the transition to college that may exacerbate disparities in health and wellbeing (Chen et al., 2021). Socioeconomic links with college student health—particularly physical health—have not been well-studied. The present study addressed this gap by evaluating whether components of students' socioeconomic background (i.e., college generational status and financial stress over college expenses) influenced changes in depressive symptoms and markers of inflammation across the first year of college.

A total of 198 first-year college students (Mage=18.1 years) were followed longitudinally over the academic year. At the beginning and end of the year, participants completed the Center for Epidemiologic Studies Depression (CESD) scale to measure depressive symptoms, and provided dried blood spot samples to estimate concentrations (in $\log_2$ mg/L) of six pro-inflammatory markers: interleukin (IL)-1 receptor agonist, IL-6, IL-8, C-reactive protein (CRP), tumor necrosis factor (TNF)-α and TNF receptor type II. Separate linear regression models evaluated associations of financial stress and college generational status with 1) depressive symptoms and inflammation markers at study onset, and 2) changes in depression and inflammation across the year adjusted for baseline differences. Models controlled for participants' gender and ethnicity. Inflammation-related models additionally covaried for reports of illness and relied on a Bonferroni-adjusted p-value (.05/6) to determine statistical significance.

Students with greater financial stress and those who were first-generation college students had greater depressive symptoms at the start of the academic year (b=5.67, p=.011; b=7.36, p <.001). Students with greater financial stress also showed a significant increase in CRP from study onset to the end of the academic year (b=0.73, p<.001). Findings from the present study highlight financial difficulty affording college expenses as a potential driver of health disparities in college students. Intervention efforts may look to institutional financial support and counseling as targets for reducing disparities in health and adjustment to college.

Figure 1. Depressive symptoms at the beginning of the academic year among continuing- and first- generation students
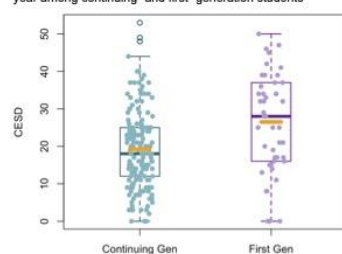
Fig 1 Caption: Scores on the CES-D for continuing-generation students versus first-generation students at study onset are visualized above in box-and-whisker plots. Each dot represents a participant and group means are denoted with orange lines.

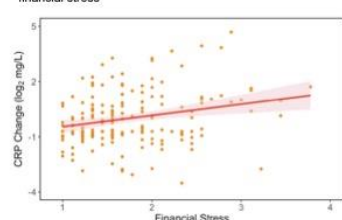Figure 2. Longitudinal change in CRP as a function of financial stress

Fig 2 Caption: The significant association of financial stress over college expenses with longitudinal change in CRP concentration ($\log_2$ mg/L) is visualized above. Each dot represents a residual change score adjusted for variance in participants' baseline CRP, gender, ethnicity, and recent illness. The red line and shaded region represent the 95% confidence interval around the line of best fit.

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Abstract 1075

NEW METHODS, NEW RESULTS? AMBULATORY ASSESSMENT OF RACIAL DISCRIMINATION AND ITS HEALTH IMPLICATIONS FOR BLACK AMERICANS

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Objective: Black people in the United States are at higher risk for all-cause mortality than their White peers due to disparities in mental and physical health outcomes and decreased access to care. One potential explanation for this disparity is racial discrimination. While racial discrimination has been identified as a potential contributor to these disparities, most studies have relied on retrospective survey data, limiting their ability to capture real-time experiences and health impacts. This meta-analysis aimed to 1) examine if previously reported effect sizes for the association between racial discrimination and health persist using ambulatory assessment and 2) determine if type of health assessed, assessment type, study quality, and demographic characteristics moderate this relationship.

Methods: A literature search was conducted using *PsycINFO, Web of Science,* and *PubMed* search engines. All studies measuring racial discrimination and mental and physical health among Black people in the United States using ambulatory assessment were eligible for inclusion. Study quality was assessed using the Joanna Briggs Institute checklist. Random effects meta-analysis was conducted using Pearson's *r,* and meta-regressions were utilized to examinepotential moderators.

Results: This meta-analysis included twelve studies that utilized ambulatory assessment to assess the association between racial discrimination and health for Black adults. Heterogeneity was observed and there was some evidence of publication bias. As hypothesized, racial discrimination was associated with increased adverse mental and physical health ($r = 0.184$, 95% CI [0.064, 0.298], $Z= 2.997$, $p=.003$). The association between racial discrimination and health was stronger for mental than physical health ($Qbetween=8.83$, $p=0.003$). Additionally, age moderated the relationship between racial discrimination and health ($b = -0.006$, 95%CI [−0.010, -0.000], $p = .026$) such that as age increased, the relationship weakened.

Conclusions: The findings from this meta-analysis suggest that racial discrimination is associated with adverse mental and physical health outcomes, with the strongest effects seen for mental health. Future research should expand the range of mental and physical health outcomes assessed and clarify best practice for measurement of racial discrimination. Simultaneously, researchers must continue developing collaborations to implement community-based assessment and interventions for Black people experiencing racism

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Abstract 1254

A BIOBEHAVIORAL INTERVENTION FOLLOWING HEMATOPOIETIC CELL TRANSPLANTATION: A FEASIBILITY AND ACCEPTABILITY RANDOMIZED CONTROL TRIAL

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This study evaluated the feasibility and acceptability of a novel, brief intervention, *Restoring Sleep and Energy after Transplant* (ReSET), designed to alleviate sleep disruption, fatigue, and depression in adults recovering from hematopoietic cell transplant (HCT) for hematologic cancers. Restoration of normal circadian rest-activity patterns has been proposed to be a promising intervention strategy for these co-occurring symptoms. ReSET combined behavioral strategies to enhance sleep quality (stimulus control, sleep hygiene, cognitive restructuring) and increase engagement in daytime activity (energy conservation, activity pacing, self-monitoring). The intervention was delivered in three individual 45-60 minute face-to-face sessions at approximately 3-4, 8, and 12 weeks post-HCT with follow-up coaching phone calls scheduled at the midpoint between sessions. HCT patients (N=38) were randomized 2:1 to ReSET (n=26) or usual care (n=12). Participants completed actigraphy assessments of 24-hour rest-activity patterns and self-report measures of sleep, fatigue, and depression pre-HCT, intervention midpoint, and 18 weeks post-HCT. Participants also completed a semi-structured interview to determine satisfaction and acceptability. A majority of participants were retained in the study through 18 weeks post-HCT (92%) and completed assessments (79-92% completion rate). Of

those randomized to ReSET, 85% completed all three in-person sessions. Post-intervention interviews suggested overall high participant satisfaction with ReSET. Calculations of preliminary effect sizes showed that participants randomized to ReSET had more robust 24-hour rest-activity patterns on actigraphy indices, including more consistent rhythms (Cohen's d = 0.85), greater distinction between daytime activity and nighttime rest (d = 0.78), and greater overall activity (d = 0.85) at the post-intervention assessment, providing proof-of-concept for modulating intervention targets. Those randomized to ReSET also reported less fatigue (d = 0.46), sleep disturbance (d = 0.65), and depression (d = 0.41) post-intervention, indicating promise for efficacy. In conclusion, data suggest that ReSET was feasible, acceptable, and demonstrated promise for improving sleep, fatigue, and depression after HCT, laying the groundwork for a larger RCT to confirm efficacy.

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Abstract 1138

THE CONTRIBUTIONS OF RUMINATION, CATASTROPHIZING AND DEPRESSION IN THE ASSOCIATIONS BETWEEN ADVERSE CHILDHOOD EVENTS AND GASTROINTESTINAL SYMPTOMS IN A PREDOMINANTLY HISPANIC/LATINE SAMPLE

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Adverse Childhood Experiences (ACEs) have been linked to gastrointestinal (GI) symptoms, with mental health being one identified pathway. Similarly, there is evidence to suggest that in addition to depression, maladaptive coping strategies such as rumination and catastrophizing contribute to somatic symptoms. This study extends previous research by examining if rumination and catastrophizing account for the relationship between ACEs and GI symptoms beyond the effects of depression. Additionally, a higher prevalence of GI symptoms has been reported in Hispanic/Latine individuals. Therefore, this research adds to our understanding of potential pathways through which ACEs may relate to GI symptoms in a predominantly Hispanic/Latine sample at an age when GI symptoms start to develop.

The sample included 196 students from a minority-serving institution (mean age = 19.92, 71% female, 86% Hispanic/Latine). Participants completed an online survey of stressful life events, Patient Health Questionnaire-15, Patient Health Questionnaire-4, and the Cognitive Emotion Regulation Questionnaire.

A greater number of ACEs was correlated with more GI symptoms (r = 0.21, p < 0.05). However, rumination and catastrophizing did not account for this relationship. Catastrophizing (β = 0.10, p < 0.01) but not rumination (β = 0.07, p = 0.07) was related to GI symptoms. When including depression as a covariate, the direct effect of ACE and GI was no longer significant (ADE = 0.08, p = 0.37).

These findings conflict with previous literature that suggests rumination and catastrophizing are factors in the relationship between ACEs and GI symptoms. Possible factors contributing to our difference in findings may be our measure of ACEs or our recruitment of a predominantly Hispanic/Latine sample. Key findings

include an association between catastrophizing and GI symptoms, as well as the role of depression in accounting for the ACE and GI symptoms relationship. Interventions addressing catastrophizing and/or depression may improve GI symptoms among Hispanic/Latine adults. Further, addressing depressive symptoms could be more impactful in mitigating the adverse health outcomes associated with ACEs.

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Abstract 1109

EXAMINING NEIGHBORHOOD AND PERSON-LEVEL FACTORS TO ILLUMINATE ROOT CAUSES FOR SLEEP LOSS IN BLACK AMERICAN ADULTS

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Introduction. Black Americans experience a disproportionate burden of insufficient sleep, including shorter than recommended sleep durations, lower sleep efficiencies, and stark differences in sleep architecture when compared to non-Black peers. Correlational studies suggest racial sleep disparities are related to the exposure and intensity of stressful experiences. Factors that reinforce structural racism, including the lived environment of Black Americans may additionally exacerbate stress and sleep problems, yet this remains underexamined. This study assessed prospective links between daily stress exposures and nighttime sleep architecture and the influence of structural neighborhood factors in a sample of mid-life Black Americans.

Methods. Twenty-eight out of 60 participants (M_{age}=43.5 years, SD=10.4; 82% female at birth) have completed this study. To assess sleep, participants completed 2 weeks of at-home sleep monitoring with sleep diaries, actigraphy, and ambulatory polysomnography. Participants provided home addresses which were linked to the Structural Racism Effect Index (SREI), a geospatial tool assessing structural racism on neighborhood-level risk factors (e.g., housing, policing), where higher scores indicate poorer conditions. Daily stress exposures and intensity ratings were gathered via daily diaries.

Results. Participants received 5.38hrs of sleep per night (SD=1.54), which is significantly less than recommended for adults. Participants spent 0.39hrs (SD=0.38) in Stage1, 2.52hrs (SD=1.16) in Stage2, 1.42 hours (SD=0.90) in Stage3, and 1.06 hours (SD=0.65) in REM. Out of 201 daily stress entries, participants reported 86 acute stress events with an average intensity of 62.8/100 (SD=20.3). On days when participants did not report an acute stressor, average stress intensities were 36.3/100 (SD=26.9). The average SREI score for this sample was 56.1/100(SD=22.2; range 27-96). Preliminary analyses suggest that higher stress intensities were associated with more Stage3 sleep (r=0.18,p=.04). Additionally, living in neighborhoods with higher SREI was associated with shorter sleep durations (r=-0.28,p<.001), less time in Stage2(r=-0.29,p<.001) and lower stress intensities (r=-0.19,p=.04).

Discussion. Planned analyses include linear mixed effects models to estimate daily sleep from neighborhood and daily stress factors.

Abstract 1129

A SYSTEMIC REVIEW OF EMPLOYER-SPONSORED HEALTH INTERVENTIONS FOR EMPLOYEES AT RISK FOR CARDIOVASCULAR DISEASE

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Background

Over 40% of the US population has cardiovascular disease (CVD), including high blood pressure, coronary heart disease, stroke, atrial fibrillation, and other heart diseases. Not only is CVD a leading cause of mortality, but it also impacts quality of life, increases healthcare costs, and decreases workforce productivity. Workplace wellness programs (WWP) offer a strategic setting for interventions by facilitating prolonged access to a large group of individuals in a shared environment. This systematic review examined changes in CVD risk factors from WWP targeting employees at-risk for CVD.

Methods

A health sciences librarian conducted literature searches in PubMed, CINAHL, PsycINFO, ABI/INFORM, and Web of Science with keywords related to 1) the workplace; 2) health or wellness; 3) programs or interventions; and 4) cardiovascular or metabolic disease. Articles that remained after two rounds of title/abstract screening had their full-texts and reference sections reviewed for eligibility. To be eligible, articles had to present original research involving primary data collection, report quantitative findings on CVD risk factors, and compare results from an employer-sponsored health intervention to a control/comparison group.

Results

An initial 2,513 articles were identified. Following title/abstract screens, 94 articles remained for full-text and reference section review. Of these, 14 articles met eligibility criteria and an additional 4 eligible articles were identified from references, so the final analytic sample was 18 articles (including 7 randomized controlled trials). The median number of participants in each intervention was 113. Interventions ranged from 2 visits to 1 year (median: 16 weeks). Systolic and diastolic blood pressure were the most commonly studied outcomes. The majority of studies reported non-statistically significant results (Table). However, nearly half of the interventions found significant improvements in systolic blood pressure.

Conclusion

WWP are well-suited for reducing CVD by promoting healthy lifestyle changes and providing ongoing support in an accessible setting. However, this systematic review found mixed evidence on the effectiveness of WWP to improve CVD risk factors. Future studies should consider longer interventions and a randomized approach to augment the rigor and interpretability of intervention findings.

Table. Summarized Intervention Outcomes

Outcome	Total	Significant Improvements		Significant Worsening		Non-significant Results	
Systolic blood pressure	17	8	47.1%	1	5.9%	8	47.1%
Diastolic blood pressure	16	5	31.3%	1	6.3%	10	62.5%
Total cholesterol	13	2	15.4%	1	7.7%	10	76.9%
HDL cholesterol	11	2	18.2%	1	9.1%	8	72.7%
LDL cholesterol	10	2	20.0%	0	0.0%	8	80.0%
Triglycerides	9	1	11.1%	0	0.0%	8	88.9%
Glucose	11	4	36.4%	2	18.2%	5	45.5%
Hemoglobin A1C	8	3	37.5%	0	0.0%	5	62.5%
Insulin or insulin resistance	2	0	0.0%	0	0.0%	2	100.0%

Notes. Results are reported from eighteen articles. When an article's results were reported at multiple follow-up points, only results for the follow-up point closest to the intervention are reported in this Table. Results from the three intervention arms reported in the single article by Cheon et al. (2020) are treated in the Table as three separate study populations.

Abstract 1164

PERCEIVED STRESS AND THE LINK BETWEEN FAMILIAL SUPPORT AND BLOOD PRESSURE AMONG HISTORICALLY EXCLUDED OLDER ADULTS

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Introduction: Family support amongst older adults is associated with cardiovascular health through stress mitigation pathways. However, these relationships are largely understudied in the context of blood pressure amongst historically excluded older adults, who tend to prioritize family over themselves (familism). In this study, we examined the relationship between familial support (reliance on family and network size of close relatives), and 5-year blood pressure and whether perceived stress mediated this relationship.

Methods: Data from Waves 1 (W1) and 2 (W2) of the National Social Life, Health, and Aging Project were used. Individuals who reported being from a historically excluded group and those not using antihypertensive medications at baseline were included in this sample of (N = 783). To test hypotheses, we used a series of multivariable, linear regressions with blood pressure (BP; systolic and diastolic values) at W2 regressed each on familial support variables, BP at W1, and relevant covariates measured at W1, including age, gender, marital status, depressive symptoms, smoking, as well as hypertensive medication use reported at W2. Mediation of family support on BP through perceived support was estimated using a two-equation solution where we assessed whether the *ab* path was not equal to zero. Bias corrected and accelerated confidence intervals were calculated with 10,000 bootstraps.

Results: Neither reliance on family nor the number of close relatives were associated with blood pressure five years later, and perceived stress did not mediate these relationships. Mediation analyses revealed that the number of close relatives was associated with perceived stress (*a* path) at W2. This association remained significant after adjusting for baseline perceived stress and other covariates, $F(4,369)=2.27$, $p=0.047$. Specifically, individuals with 10-20 close relatives (b=-0.56, 95%CI [-1.07, -0.04], p=0.03) or 20 or more (b=-0.58, 95%CI [-1.09, -0.07], p=0.03) reported lower perceived stress compared to those with no close relatives.

Conclusion: Having a larger network of close relatives may reduce stress long-term in older adults from historically excluded groups, however, this may not confer lower blood pressure. Results from our study can inform interventions aiming to identify individuals who may be more vulnerable to stress.
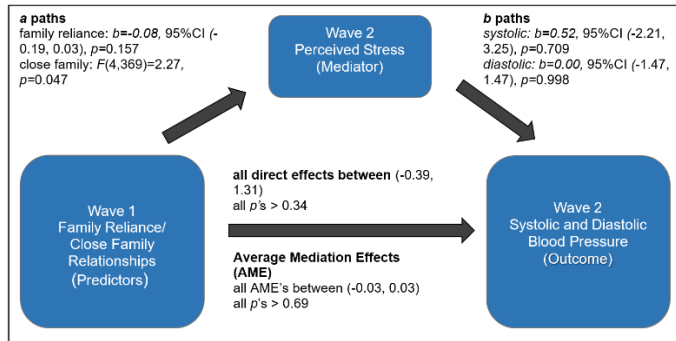
Figure 1. Mediation model where the effect of family support goes through the mediator of perceived stress to blood pressure. No mediation or direct effect was found. The *a* path was significant where the number of close family relationships were associated with Wave 2 perceived stress. Individuals with 10-20 close relatives (b=-0.56, 95% CI [-1.07, -0.04], p=0.03) or 20 or more (b=-0.58, 95% CI [-1.09, -0.07], p=0.03) reported lower perceived stress compared to those with no close relatives. All models were adjusted for age, gender, marital status, depressive symptoms, smoking, as well as hypertensive medication use reported at Wave 2.

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Abstract 1305

BRIEF MINDFULNESS TRAINING INFLUENCES DAILY LIFE STRESS AMONG EMERGING ADULTS EXPOSED TO CHILDHOOD TRAUMA: A RANDOMIZED CONTROLLED FEASIBILITY TRIAL

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Background: Early life adversity is thought to program biological adaptations to ongoing stress that confer lifelong health risk. Interventions to mitigate this health risk in adulthood are needed. Mindfulness-based interventions (MBIs) have shown promise for improving mental health among adults exposed to childhood trauma, but whether MBIs can offset physical health risk is unknown. This trial evaluated the effects of remote mindfulness and coping interventions on daily life stress processes among emerging adults who recalled a history of childhood trauma.

Methods: 81 healthy adults (ages 18-29 years; 85% female; 48% white, 28% Asian, 17% Black, 5% multi-racial) who reported a history of moderate-to-severe physical, emotional, or sexual abuse in childhood were randomly assigned to a two-week remote mindfulness or coping comparison intervention. They provided daily life stress (momentary and day-level perceived stress and stressful events) and heart rate data for one week at pre-intervention, post-intervention, and one-month follow-up. Mixed linear models tested for time (pre, post, follow-up) x condition (mindfulness vs. coping) effects.

Results: Across conditions, participants reported fewer stressful events over time (d=.36, p=.001), an effect driven by decreases in stressful events in the mindfulness condition from pre-intervention to follow-up (within-group d=.53, p=.0001). However, mindfulness participants reported *higher* daily perceived stress from pre- to post-intervention relative to coping participants (d=.63, p=.005), effects that were no longer observed at follow-up; participants across

conditions reported lower daily stress perceptions from pre-intervention to follow-up (d=.21, p=.009). Similarly, mindfulness participants reported higher momentary stress perceptions from pre- to post-intervention (d=.69, p=.002) and follow-up (d=.57, p=.011) relative to coping participants. No changes in heart rate during moments of stress were observed.

Conclusions: Results suggest that, despite reducing the occurrence of stressors, two-week remote mindfulness training can initially increase awareness and intensity of stressful experiences among emerging adults exposed to childhood trauma. More intensive mindfulness training may be needed in trauma-exposed populations to solidify mindfulness skills in ways that extend to stress-related health outcomes.

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Abstract 1385

THE HONG KONG PARADOX: WHEN ECONOMIC PROSPERITY AND LONG LIFE EXPECTANCY DO NOT ALWAYS TRANSLATE TO GREATER WELL-BEING OF THE POPULATION

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Objectives: Hong Kong people not only live the longest life, but they also have one of the lowest rates of cardiovascular mortality in the world. Yet, prior global comparison studies have ranked Hong Kong the lowest in subjective happiness and purpose in life. This study systematically investigated this paradox by comparing well-being across similarly developed societies, time, and age groups. We also examined how trends in satisfaction with freedom, perceptions of social mobility, and intention to immigrate to a different country are linked with well-being.

Method: Our study pulled data (N = 2,591,054 individuals from 168 countries) from the Gallup World Poll (GWP; annual survey with probability-based nationally-representative samples) and the World Bank. Two indicators of wellbeing, current life satisfaction and optimism for the future, were assessed using the Cantril Ladder on a 0 to 10 scale. Additional analyses used questions on perceived social mobility, satisfaction with freedom, and desire to move permanently to another country. Stochastic frontier analysis (SFA) modeled and compared the efficiency of different countries in "producing" life satisfaction and life expectancy based on GDP per capita.

Results: Among similarly developed nations, the people of Hong Kong have a significantly lower life satisfaction and optimism. Older adults are among the least happy and least optimistic. Based on SFA results, Hong Kong's low levels of life satisfaction demonstrated one of the lowest efficiencies in the world of translating GDP into happiness. This inefficiency is increasing over time as life satisfaction and optimism continue to decline in Hong Kong, particularly among young adults. Over half of young adults expressed a desire to move, a rate comparable to that of other countries facing extreme political disruptions and wars.

Conclusion: While the people of Hong Kong enjoy the longest life expectancy and world-leading economic success, their exceptionally low life satisfaction raises the question: Is a long and prosperous but dissatisfying life a good one? This paradox is evidence that economic prosperity and long life expectancy do not always translate to greater well-being of the population, posing implications for how societies prioritize different social indicators when making and evaluating public policies.

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Abstract 1050

EVALUATING COGNITIVE FLEXIBILITY AS A LINK BETWEEN INSOMNIA AND FUTURE DEPRESSION: A SYSTEMATIC REVIEW

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Background: Insomnia is a causal risk factor for depression, but the underlying mechanisms are unclear. Cognitive flexibility, a core component of executive function, is linked to both insomnia and depression and is a candidate mediator in their relationship. This systematic review assessed the current state of the science on this mediation model by examining studies which report associations between insomnia, cognitive flexibility, and depression.

Methods: A comprehensive search identified 28 studies reporting associations between insomnia and cognitive flexibility (*a* path) and 10 studies examining cognitive flexibility as a predictor of future depression (*b* path). No eligible studies were identified which formally tested cognitive flexibility as a mediator of the insomnia-depression relationship (*ab* path). Studies were first assessed for quality and methodological capacity for causal inference. Then, findings were synthesized to evaluate the evidence supporting cognitive flexibility as a mediator in the insomnia-depression pathway.

Results: Along the *a* path, 28 studies reported 100 eligible associations. Longitudinal cohort studies consistently reported null associations between insomnia and future cognitive flexibility. Cross-sectional studies were predominantly null, although a few trends emerged across study populations and measurement methods. Significant associations often did not withstand covariate adjustment or were observed only in the presence of moderators, such as old age and benzodiazepine use. Along the *b* path, 10 longitudinal cohort studies reported 29 eligible associations. Associations were predominantly null. Significant associations were observed in participants who were not depressed at baseline, suggesting cognitive flexibility impairments may be more consistently associated with depression risk than prognosis. Trends across cognitive flexibility measures suggest tests that more precisely isolate cognitive flexibility may have greater predictive utility.

Conclusions: The state of the science does not support cognitive flexibility as a mediator on the insomnia-depression pathway. It may be that cognitive flexibility increases risk for both insomnia and depression or that other aspects of executive function may mediate this pathway. Future research is needed to evaluate these possibilities.

Abstract 1234

ASSOCIATION BETWEEN HEART RATE VARIABILITY AND INFLAMMATION AMONG A RACIALLY DIVERSE SAMPLE OF OLDER ADULTS: RESULTS FROM THE EINSTEIN AGING STUDY.

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Inflammation is known to be regulated by the vagus nerve via a cholinergic anti-inflammatory pathway. This is supported by findings of negative associations between heart rate variability (a marker of cardiac vagal activity) and inflammation. Despite the rise of low-grade systemic inflammation and reduction in heart rate variability (HRV) with age, this relationship has rarely been accessed in older adults nor have racial differences been explored. The present study sought to address these gaps. As part of the Einstein Aging Study, 74 adults (Mean age= 78.3, 82.4% Female, 54.1% White, 45.9% Black, 14.8% Hispanic) had HRV continuously monitored with an ambulatory ECG device over 7 days and blood drawn to assess interleukin (IL)-6, IL-8, tumor necrosis factor (TNF)-α, and C-reactive protein levels. High frequency (HF)-HRV was used as an index of parasympathetic activity due to this study's focus. HF-HRV was determined in 5-minute epochs from power spectral analysis and averaged across recordings. Multiple regression models progressively adjusted for covariates (age, gender, body mass index, education (yrs.), hypertension status, relevant medications) were used to examine associations between HRV with inflammation markers in the full sample and after stratifying by racial identity. Groups were not further split by ethnicity due to the sample size. Only age, education, hypertension status, and lipid-modifying drug use appreciably changed estimates and were subsequently adjusted for. HF-HRV was negatively associated with TNF-α (b= -0.323, SE= 0.04, p= 0.005). When split by racial identity, this association was only significant for Black individuals (b= -0.469, SE= 0.07, p= 0.008), and not among White individuals (b= -0.061, SE= 0.06, p= 0.69). HF-HRV was not significantly associated with other inflammation markers. These results provide some support for the continued presence of this anti-inflammatory pathway into older age and suggest that it may be more pronounced among individuals that identify as Black. Considering the established relationships of both lower HF-HRV and higher inflammation with poorer health outcomes and the known racial disparities in cardiovascular disease, these findings may have important implications for health in later life particularly among Black individuals. These results would first need to be confirmed within larger samples.

Abstract 1273

THE IMPACT OF POTENTIALLY TRAUMATIC COMPLICATIONS DURING PREGNANCY ON MATERNAL PTSD AND DEPRESSION: IMPLICATIONS FOR WOMEN'S HEART HEALTH

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Heart disease is the leading cause of death in women, highlighting a critical need to understand women-specific risk factors. Pregnancy is a unique life event that can act as a window into future cardiovascular risk. Up to 20% of women experience pregnancy or delivery complications that can increase the risk for subsequent cardiovascular, inflammatory, and metabolic diseases. Such complications can also be life-threatening and result in traumatic childbirth, with psychological impacts that may influence maternal cardiovascular disease (CVD) risk. However, research on maternal psychiatric morbidity in the context of maternal morbidity is limited. This is especially pertinent for marginalized women who experience disparities in perinatal and cardiovascular health. The current study aimed to characterize potentially traumatic complications during pregnancy and delivery and explore their associations with subsequent depressive symptoms and PTSD symptom severity in a sample of postpartum women in the Community Child Health Network.

Medical chart reviews were conducted for 2,947 women (70% of households below the federal poverty line) of diverse racial and ethnic backgrounds. About 33% of women had a preterm birth, while 14% experienced other serious complications (e.g., infections, hemorrhages, cardiometabolic conditions, fetal complications at delivery). At 6 months postpartum, a subsample of women (n=1,783) completed assessments for PTSD and perinatal depressive symptoms. About 16% of women met criteria for elevated PTSD symptom severity. Additionally, about 9% of women met criteria for possible depression, while another 9% met criteria for probable depression. Preliminary results indicate that compared to women without potentially traumatic complications, women with complications had greater PTSD symptom severity, specifically within the underlying symptom dimension of anxious arousal [M=3.31 vs. M=3.47; t(1778)=-1.78, p=.07]. Additionally, women with vs. without complications had higher postnatal depression symptom levels [M=5.25 vs. M=4.87; t(1780)=-1.68, p=.09].

Results address key gaps in our understanding of biopsychosocial processes relevant to women's health during and after pregnancy. These findings can help inform CVD risk and prevention strategies during the perinatal period, a critical window of opportunity for improving women's heart health.

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Abstract 1280

EXAMINING LONELINESS AS A MECHANISM LINKING EARLY LIFE ADVERSITY TO SYMPTOMS OF DAYTIME AND NOCTURNAL PANIC.

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Empirical evidence suggests that early life adversity (ELA), ranging from family dysfunction to overt abuse and neglect may be associated with the development of anxiety disorders, including daytime and nocturnal panic attacks. Nocturnal panic attacks (NPAs) are panic attacks that occur during sleep. Theoretical perspectives linking ELA to nocturnal panic suggest that traumatic experiences may lead to a fear of loss of vigilance, especially during vulnerable states such as sleep. Loneliness is also associated with ELA and increases vigilance to social threats, making it a potential mechanism linking ELA to nocturnal panic. To better understand associations among ELA, loneliness and symptoms of panic we examined the influence that ELA exerts on the odds of experiencing symptoms of daytime and nocturnal panic in relation to not experiencing symptoms of panic. We also tested loneliness as a mediator linking ELA to symptoms of daytime and nocturnal panic in separate models. Emerging adults (N=569; Age=18.87±2.27; Female=87.00%; 78.20% White/Caucasian) completed demographic measures, along with the UCLA Loneliness Scale and validated symptom measures of both daytime and nocturnal panic. The Risky Families Questionnaire (RFQ) and the Childhood Trauma Questionnaire (CTQ) were used to assess ELA. Multinomial logistic regression analyses revealed that growing up in a risky family environment and severe childhood trauma both increased the odds of experiencing symptoms of daytime and nocturnal panic in relation to not experiencing symptoms of panic. Follow up meditation analyses suggested that, among individuals who experienced symptoms of nocturnal panic, growing up in a risky family environment (b=0.066, SE=0.037, 95% CI=[0.003, 0.149]) and severe childhood trauma (b=0.041, SE=0.023, 95% CI=[0.003, 0.093]) were significantly indirectly associated with symptoms of nocturnal panic via loneliness. Loneliness was not a significant mediator in the relationship between either risky families (b=0.026, SE=0.032, 95% CI=[-0.028, 0.100]) or severe childhood trauma (b=0.0137, SE=0.024, 95% CI=[-0.031, 0.064]), and symptoms of daytime panic among individuals who only experienced symptoms of daytime panic. In line with the fear of loss of vigilance hypothesis, these results suggest that ELA may indirectly affect symptoms of nocturnal panic via mechanisms that enhance vigilance.

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Abstract 1284

RELIGIOSITY, SPIRITUALITY, AND CARDIOVASCULAR REACTIVITY TO ACUTE PSYCHOLOGICAL STRESS: A SYSTEMATIC REVIEW

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Background: Previous research has found that people scoring higher on both religiosity and spirituality have better cardiovascular health. Cardiovascular reactivity to acute psychological stress is a likely mechanism underlying this association. However, studies examining religiosity, spirituality and cardiovascular reactivity are inconsistent, findings either showing exaggerated or lower responses. This may be attributed to the lack of consensus on the definitions of religiosity and spirituality, as well as methodological issues in measurement. Consequently, a systematic review of the existing literature is warranted. Methods: This systematic review was undertaken following the recommended guidelines set out by Preferred Reporting Items for Systematic Reviews and Meta-Analysis. In April 2024, the following databases were electronically searched for relevant publications; PubMed, PsycArticles, PsycInfo, CINAHL, Medline and Web of Science. Results: After removal of duplicates, screening title and abstract, ten peer-reviewed studies

were included in this review. Overall, the majority of studies found religiosity and/or spirituality were associated with attenuated cardiovascular reactivity. However, two of the studies included in this review showed exaggerated cardiovascular responses, importantly these two studies examined religious/spiritual struggles, indicating how religious/spiritual struggles can impact one's health negatively. There was no evidence of sex differences, although age appears to play an important role, as ones religious and spiritual beliefs differ across the lifespan. Conclusions: This review highlights religiosity, spirituality and the potential health benefits for cardiovascular reactivity, however religious/spiritual struggles can reduce these salutary effects. We conclude by proposing future research directions that address the gaps in understanding the relationship among religiosity, spirituality and cardiovascular reactivity.

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Abstract 1181

SLEEP QUALITY, BIOLOGICAL SEX, AND CARDIOVASCULAR REACTIVITY TO ACUTE PSYCHOLOGICAL STRESS

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Background: Research has linked poor sleep to increased risk for cardiovascular disease. It has been hypothesized that a potential mechanism may be associations between sleep and cardiovascular reactivity to acute psychological stress. Results are mixed, with poor sleep being associated with both exaggerated and/or blunted cardiovascular reactivity. However, scant research on sleep and reactivity has considered biological sex. Given biological sex differences in poor sleep, cardiovascular reactivity, and CVD, it is important to untangle how their interactions may differentially impact men and women. **Aim:** Examine the effects of sleep quality and biological sex on cardiovascular reactivity to acute psychological stress. **Methods:** During a single laboratory visit, participants (N = 239, mean age= 19.13 years, 65% Female, 56% White, 16.3 % Hispanic) completed a 10-minute resting baseline period followed by a 4-minute acute psychological stressor (i.e., mental arithmetic). Systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) were taken discontinuously during the baseline and acute psychological stressor. Reactivity for each cardiovascular variable was calculated as: stress average – baseline average. Participants completed the Pittsburgh Sleep Quality Index (PSQI) to assess their sleep quality. **Results:** A formal moderation analysis was conducted, with sleep quality as the predictor and cardiovascular reactivity variables as the dependents, and biological sex as the moderator. There was a significant interaction of biological sex on sleep quality and HR reactivity (B = -1.34, p = .014), such that worse sleep quality was associated with lower HR reactivity for women, but not men. No significant moderation effects were observed for SBP (B = -1.01, p = .059) or DBP (B = -0.21, p = .569) reactivity. Analyses survived adjustment for baseline cardiovascular activity, age, body mass index, and stress task performance. **Conclusion:** Worse sleep quality is related to lower HR reactivity in women, but there is no relationship between sleep quality and reactivity in men. The findings indicate associations between sleep quality and

cardiovascular reactivity may possibly differ in men versus women. Future research should seek to further understand how biological sex is related to other measures of sleep and cardiovascular reactivity.

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Abstract 1312

SLEEP DISTURBANCE IN ADULTS WITH CANCER: INVESTIGATION OF HISPANIC ETHNICITY AND US-BORN STATUS

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Sleep disturbance is highly prevalent in those with cancer, evidence of which mainly comes from non-Hispanic Whites. Hispanic adults in the US in general have poor sleep efficiency, shorter sleep duration, and higher habitual snoring, compared with non-Hispanic Whites. We compared sleep characteristics in Hispanics with cancer with those of non-Hispanic counterparts. Furthermore, we compared Hispanics who were born in the US with Hispanics who were born outside the US as a proxy for acculturation and sociocultural factors among adults with cancer.

Individuals with colorectal cancer (n=149, 56.9 years old, 32% female, 64% Hispanic, 6.5 months post-diagnosis) completed retrospective sleep-related questionnaires at baseline (PROMIS sleep disturbance, PSQI-sleep quality, ISI-insomnia, ESS-sleepiness, and Ullanlinna Narcolepsy Scale-UNS) and a prospective sleep diary daily for 14 consecutive days (time in bed, sleep duration, sleep onset latency, wake after sleep onset, sleep efficiency). Patients self-reported their age, ethnicity, height and weight (BMI), US born status, and if not born in the US, the duration living in the US. Age, gender, and BMI served as covariates.

Participants on average reported normal levels of sleep disturbance (PROMIS=51.77), sleep quality (PSQI=6.71), insomnia (ISI=7.37), daytime sleepiness (ESS=6.23), narcoleptic symptoms (UNS=6.35), and sleep duration (7.4 hr), but they also reported slightly extended duration of sleep onset latency (25.3 min) and wake after sleep onset (22 min) as well as poor sleep efficiency (82.3%). Hispanic individuals had higher BMI (p=.008) yet slightly shorter wake after sleep onset (p=.056) than non-Hispanics. In addition, US born individuals reported slightly higher narcoleptic symptoms than non-US born (p=.08). However, among Hispanic subgroup, non-US born Hispanics reported greater narcoleptic symptoms (p=.042) and slightly longer time in bed (p =.069) than US born Hispanics.

Findings suggest individuals recently diagnosed with cancer have disturbed sleep, which is more likely to be the case in non-US born Hispanics. Future studies to investigate the social determinants of health and psychobiobehavioral factors that are attributable to poor sleep health in non-US born Hispanic adults with cancer with a larger sample and to examine the impact of the sleep disturbance on their sleep-partners are warranted.

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Abstract 1361

NAVIGATING RACISM ACROSS IDENTITIES: FOCUS GROUP FINDINGS ON ANTICIPATORY RACISM THREAT IN LATINAS

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Anticipatory Racism Threat (ART) is a validated construct describing psychological stress from expecting racism. Initially examined in African American women, ART was found to contribute to physiological aging through mechanisms like elevated allostatic load (AL) and shortened telomere length (TL). ART focuses on the **anticipation** of discriminatory events, which activates the body's stress response, contributing to adverse health outcomes. Brosschot's **Perseverative Cognition Hypothesis** explains how chronic anticipation of stressors prolongs activation of the stress response system, even without direct threats.

This project applies the ART framework to Latinas in the U.S., focusing on their intersectional experiences of race, ethnicity, and gender. Through qualitative focus groups, we explored how Latinas navigate environments where their identities expose them to specific racial and gendered threats. Thematic analysis revealed several ART dimensions:

- **Vigilance in Professional and Social Settings**: Latinas described constant self-monitoring and impression management to avoid confirming stereotypes.

- **Intersection of Immigrant Identity and Racism**: Many experienced heightened scrutiny as immigrants and women of color.

- **Cognitive and Emotional Labor**: Participants expressed continuous alertness, worry, and concerns about how they and their families are perceived.

- **Familial and Cultural Obligations**: Traditional gender roles and family expectations further compounded their emotional burdens.

These findings will inform the development of a psychometric scale to measure ART in Latinas, reflecting the cognitive and emotional labor involved in anticipating racism. This scale is crucial for future research on the biopsychosocial impacts of racism and developing interventions to improve the health and well-being of Latinas across the lifespan.

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Abstract 1354

BI-DIRECTIONAL PREDICTION BETWEEN SELF-REGULATION AND ADHD/ASD: FINDINGS FROM A UK NATIONALLY REPRESENTATIVE BIRTH COHORT

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Background. Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) are two of the most common mental disorders affecting children with early onset in childhood and mulfacet life-long impacts. Though self-regulation deficit is often observed for those diagnosed with ADHD/ASD, these are heterogeneous albeit somewhat overlapping psychological processes. This study amied to examine the bi-directional influences between ADHD/ASD and self-regulation which could shed light upon the etiology, treatment, and intervention of ADHD/ASD.

Method. Longitudinal data (*n* = 5147) was adopted from 2006 (Sweep 3 (age 5)) to 2008 (Sweep 4 (age 7)) from the Millenium Cohort Study. In each Sweep, parents reported children's self-regulation levels via the 15-item Strength and Difficulties Questionnaire Dysregulation Profile, as well as children's ADHD and ASD diagnosis. Parental education level, childhood poverty, number of siblings, and children's gender and birthweight were included as control variables (see Table 1).

Results. Two series of cross-lagged panel models (see Figure 1)were conducted to examine the bi-directional predictions of self-regulation on ADHD/ASD diagnosis, and vice versa. For ADHD, cross-lagged effects suggested that both age-5 ADHD diagnosis and self-regulation could predict age-7 self-regulation and ADHD diagnosis, while controlling for the auto-regressive effects. Similar effects were found between ASD and self-regulation as well.

Conclusion. Though smaller in magnitude, self-regulation still predicted ADHD/ASD after controlling for the reversed prediction, which corroborated a bi-directional impact between self-regulation and ADHD/ASD diagnosis. Exploratory analysis also revealed that self-regulation predicted the comorbidity of ADHD and ASD, but not the other way around. Findings suggested that though ADHD/ASD exhibited core symptoms of impaired execute function, inhibition processes, emotion regulation, and social function, a more general and integrated view of overall self-regulation (and its development) should be taken into consideration. Discussions on how self-regulation beyond the above-mentioned perspectives could be utilized in treatment and intervention designs for ADHD/ASD will be discussed.
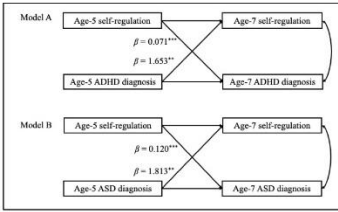
Figure 1. Cross-lagged panel models of the bi-directional prediction between self-regulation and ADHD diagnosis (Model A)/ASD diagnosis (Model B).
Note. Auto-regressive and correlational coefficients were omitted for simplicity. *** $p < .001$ and ** $p < .01$.

Table 1. Self-regulation distribution in Sweep 3 and 4 across sociodemographics, and ADHD/ASD diagnosis and comorbidity.

		Sweep 3 Self-regulation			Sweep 4 Self-regulation		
		M	SD	n	M	SD	n
		5.31	3.74	5036	5.38	4.04	5147
Gender	Female	4.90	3.48	2637	4.82	3.67	2703
	Male	5.77	3.95	2399	5.99	4.32	2444
Childhood poverty	False	4.94	3.50	4091	5.06	3.80	4163
	True	6.77	4.34	938	6.73	4.71	977
Parental education level	Lower	4.62	3.39	1999	4.67	3.60	2009
	Higher	5.59	3.80	2664	5.66	4.13	2748
Sweep 3 ADHD diagnosis	False	5.25	3.65	5003	5.32	3.98	2109
	True	14.27	5.37	30	13.72	4.81	32
Sweep 4 ADHD diagnosis	False	5.25	3.65	4934	5.29	3.93	5040
	True	12.65	5.28	40	14.71	4.81	41
Sweep 3 ASD diagnosis	False	5.27	3.69	5004	5.34	4.01	5114
	True	11.59	5.33	32	11.60	4.98	30
Sweep 4 ASD diagnosis	False	5.26	3.68	4927	5.32	3.97	5036
	True	10.29	4.79	51	11.55	5.17	49
Sweep 3 ADHD/ASD comorbidity	ADHD only	14.90	4.92	20	14.05	5.05	22
	ASD only	10.95	4.88	22	10.90	5.21	20
	Commorbid	13.00	6.25	10	13.00	0.40	10
	Neither	5.22	3.62	4981	5.30	3.96	5089
Sweep 4 ADHD/ASD comorbidity	ADHD only	13.16	5.17	32	14.88	4.86	33
	ASD only	5.21	3.61	4891	5.25	3.88	4999
	Commorbid	10.62	5.58	8	14.00	4.84	8
	Neither	10.00	4.69	41	10.82	5.13	39

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CHANGES IN PERINATAL SLEEP QUALITY ARE ASSOCIATED WITH A ATYPICAL CORTISOL AWAKENING RESPONSE AND INCREASED MOOD SYMPTOMS

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Objective: Pregnancy is often typified with a decrease in sleep quality and often progressively worsens across gestation and into the postpartum. Dysregulation of the HPA axis resulting in atypically elevated cortisol production links poor sleep with outcomes. While total cortisol output normally increases across pregnancy, the cortisol awakening response (CAR), a response to waking up, is influenced by factors such as stress and mood and attenuates as pregnancy progresses, with normalization in the first couple of weeks after delivery. The goals of the present study were to (1) assess the temporal relationship between sleep quality and cortisol indices across the perinatal period; (2) evaluate whether sleep quality was associated with postpartum mood; and (3) assess whether cortisol mediated these associations.

Method: Data were collected as part of the Healthy Babies Before Birth (HB3) study. Sleep quality, depressive and anxiety symptoms, and cortisol were assessed at four time-points (8-16 weeks, 30-36 weeks, 6 months postpartum, and 1-year postpartum). Participants (N = 223) who had sleep and cortisol data from at least 1 of 4 time-points were included in analyses. Multi-level models predicted cortisol relative to time since waking (levels, awakening response (CAR), diurnal slope; Level 1) and the relationship of these parameters to within-person deviations at each wave (Level 2) and individual differences (Level 3) in sleep quality.

Results: Multilevel (time, wave, and person) modeling indicated that sleep quality was not associated with any of the cortisol indices, and none significantly varied across time. However, when PSQI scores were higher than the woman's own mean, the CAR slope was steeper (+1 point in PSQI, slope g=0.18), and when scores were lower than mean, the CAR slope was flatter (-1 point, slope g=0.11). Poorer sleep quality was associated with greater depression severity ($\gamma = 0.367$) and anxiety symptoms ($\gamma = 0.120$). Cortisol did not mediate the relationship between sleep quality and depression symptoms.

Discussion: Increases in poor sleep quality, but not higher mean poor sleep quality, were associated with a larger CAR. There was no association between sleep quality and the diurnal slope or AUC. These data suggest that variability in sleep quality is significantly associated with the amount of cortisol secreted upon awakening.

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CHALLENGES FACED BY HEALTH PSYCHOLOGY AND BEHAVIORAL MEDICINE TRAINEES IN CANADA

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There is evidence of poor integration among the health psychology and behavioral medicine (HPBM) profession in Canada that adversely impacts growth within the field, collaboration, knowledge dissemination and advocacy. Reasons for the lack of an integrated network are unclear. As emerging professionals, trainees are particularly affected by the absence of a professional organization within the Canadian HPBM landscape, and addressing their needs should be a priority in its development. The purpose of this study is to understand the most commonly reported professional challenges faced by health psychology trainees in Canada.

Methods: A cross-sectional study surveyed both English- and French-speaking HPBM faculty and trainees affiliated with universities across Canada from November 2023 to June 2024. A total of 36 graduate and post-doctoral trainees responded. Information was collected on

sociodemographic and professional background, along with an open-ended question about the unique challenges faced by HPBM trainees in Canada. Qualitative, inductive thematic analysis was used to identify major themes.

Results: Participants were primarily graduate trainees (86%), 25-34 years old (72%), female (62%) White (72%), English-speaking (92%), and representing 8 out of 10 provinces. Preliminary analyses identified three major trainee challenges. The first is common to most trainees: (1) Trainee fatigue or lack of work-life balance (e.g., "difficulties of juggling multiple responsibilities between life and internship is a challenge"). The second was (2) Difficulty in distinctly defining or differentiating health psychology from other areas of psychology or related other health sciences (e.g., "distinctiveness of field is being lost as methods are being incorporated by other fields"). The third is unique to Canadian HPBM trainees: (3) Insufficient awareness of health psychology-specific training opportunities (e.g., "Lack of programs that offer a specific specialization in health psychology").

Conclusion: Canadian HPBM trainees report a range of professional challenges, some unique to the Canadian context and some unique to the field of Health Psychology. These challenges could be useful targets for HPBM professional organizations and networks within and outside Canada.

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Abstract 1082

THE LONGITUDINAL ASSOCIATION BETWEEN PSYCHOLOGICAL WELL-BEING AND PHYSICAL ACTIVITY: DOES THE DIMENSION OF PSYCHOLOGICAL WELL-BEING MATTER?

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A robust body of epidemiological studies indicates that higher psychological well-being (PWB) is associated with reduced mortality and lower cardiovascular disease incidence. Physical activity (PA) consistently emerged as the mechanism by which PWB enhances physical health. However, it remains unclear which specific dimension of PWB (e.g., optimism, mastery) most strongly influences participation in PA and in which subpopulations these effects vary.

We investigated the longitudinal association between PWB and PA. We hypothesized that higher PWB enhances PA participation, with varying effects based on sociodemographic background.

We used data from the Health and Retirement Study (n=6,840, mean age = 64.21 ± SD 8.87 years, 61% females). To ensure temporality for causal interpretation, we used PWBs from 2006/2008 and PA measured biennially between 2006 and 2018. The dimensions of PWB included life satisfaction, optimism, purpose in life, perceived mastery, finance, and health, with a combined score constituting PWB. The major outcome was 'frequency of light intensity PA per week' quantified by summing weekly frequencies of light, moderate, and vigorous activities, applying weightings (moderate = 2×light;

vigorous = 2×moderate). The association between standardized PWB (both individual and cumulative) and PA was assessed using multivariate linear regression, adjusting for age, sex, education, race, income, and wealth. We also examined sociodemographic factors as effect modifiers by using interaction terms with cumulative PWB.

Adjusting for covariates, one standard deviation increase in PWB dimensions and cumulative PWB were associated with a higher frequency of participating in light-intensity PA per week (p < .05): life satisfaction (β = 0.73), optimism (β = 0.60), purpose in life (β = 0.92), perceived mastery (β = 0.90), finance (β = 0.43), health (β = 0.88), and cumulative PWB (β = 0.79). The association between cumulative PWB and PA was moderated only by age (p-interaction = 0.01), with the association being twice as strong in individuals under 55 years (β = 1.097, p < .01) compared to over 55 years (β = 0.52, p= .04).

The strongest predictor of PA was purpose in life, which may be a target for PA promotion intervention. PWB's effect on PA did not differ by sociodemographic factors, except age, with effects present in both younger and older participants.
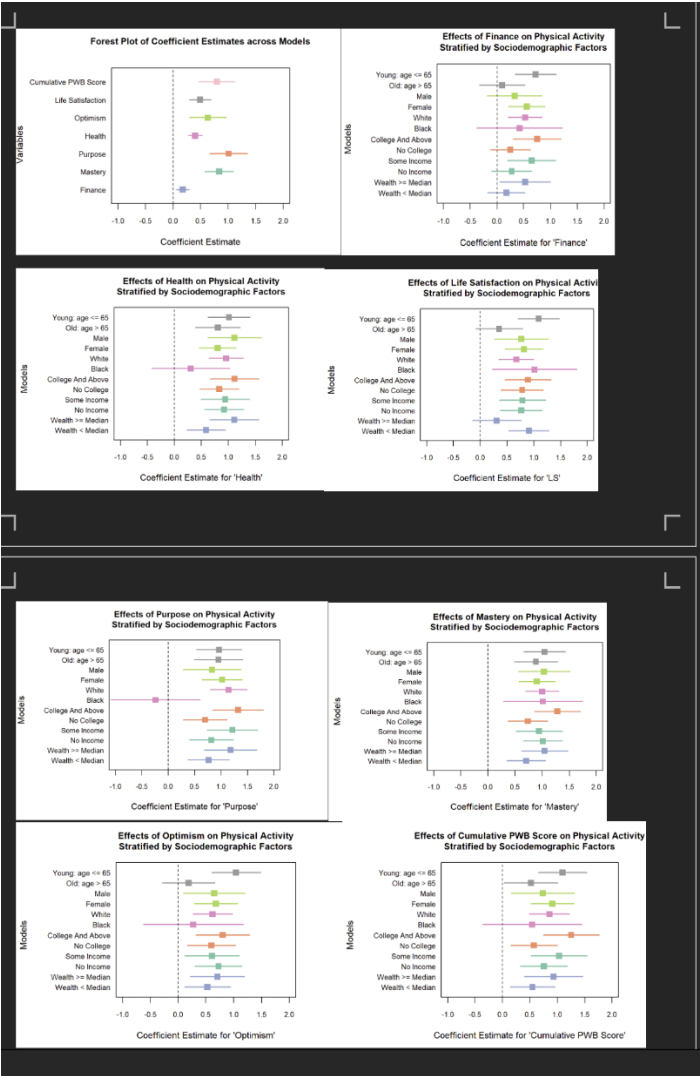
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Abstract 1522

EXPLORING SENSE OF SAFETY AS A PREDICTOR OF MENTAL AND PHYSICAL HEALTH AMONG US YOUNG ADULTS

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Mental health problems – especially anxiety and depression – have been steadily increasing among young adults in the US, with current estimates suggesting that over one-third carry a diagnosis of anxiety or depression. One possible, and largely unexplored, contributor to this recent rise in mental health challenges is an increasing threat to young adults' *sense of safety*: the cognitive-affective perception that one is protected from harms, both proximal and distal. Here, we used data from the fourth wave of the COVID-19 Adult Resilience Experiences Study (CARES; N=1904, ages 19-32 years), to examine sense of safety, as well as contributing factors (i.e., sources of safety and unsafety). We then used regression models to explore associations between sense of safety and self-reported mental and physical health, adjusting for race/ethnicity, gender, sexuality, immigration status, health insurance status, and existing diagnoses. Among this cohort of young adults (71.9% female, 22.9% White), over 75% endorsed feeling that the world was unsafe. When asked about factors contributing to this sense of unsafety, respondents most commonly endorsed more distal factors (e.g., climate change, political polarization, gun violence), rather than more proximal factors (e.g., problems at home, problems in my neighborhood). Increased sense of safety was associated with better mental health functioning, with internal sense of safety (e.g., "I feel safe and secure") more strongly linked to mental health than external sense of safety (e.g., "The world is safe"). Sense of safety remained associated with mental health functioning even after adjusting for symptoms of anxiety (e.g., hypervigilance). Similarly, greater sense of safety was associated with better physical health functioning, though effect sizes were smaller in magnitude than those for mental health functioning. Findings suggest sense of safety is low for young adults in the US, with many attributing their sense of unsafety to societal, rather than individual, factors. Links between sense of safety and health – both mental and physical health – suggest that understanding sense of safety (including potential contributors at the societal and systemic levels) may be critical to understanding and intervening on the rise in mental health problems among young adults.

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Abstract 1528

PRELIMINARY ASSOCIATIONS BETWEEN IMMUNE CELLS MITOCHONDRIAL RESPIRATORY CAPACITY, DEPRESSION, ANXIETY, AND ADVERSITY

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Background: Despite their prevalence, the pathophysiology of psychiatric disorders such as anxiety and depression are not fully understood. Accumulating evidence, however, implicates altered mitochondrial bioenergetics. Mitochondrial biology is also sensitive to chronic psychosocial stress and trauma, key risk factors for psychiatric disorders, highlighting a potential pathway for transducing stressor exposure into psychiatric symptoms. Here, we examined the associations between immune cell mitochondrial respiratory capacity (MRC) with depression and anxiety symptoms, exploring the moderating role of adversity.

Methods: To compute MRC, we profiled mitochondrial content and enzyme activities in isolated monocytes, lymphocytes, neutrophils, platelets, and mixed peripheral blood mononuclear cells (PBMCs) from the MiSBIE study (n=110, age 18-60, 68% female, 64% healthy controls, 36% individuals with mitochondrial diseases). Participants completed questionnaires on depression (Beck's Depression Inventory-II, BDI) and anxiety symptoms (State and Trait Anxiety Inventory, STAI-Y) as well as adversity (Childhood Trauma Questionnaire (CTQ), Stress and Adversity Inventory for Adults (STRAIN). Associations between MRC, psychiatric symptoms and adversity exposure were assessed with Spearman's rank correlation.

Results: In white blood cells, depression and anxiety symptoms were negatively associated with MRC (e.g., lymphocyte MRC and state anxiety, r=-0.22, p=0.035; PBMC MRC and depression, r=-0.26, p=0.02). In contrast, in platelets, greater trait anxiety was associated with greater MRC (r=0.30, p=0.04). Stronger associations between psychiatric symptoms and MRC were found in individuals who experienced greater-than-average adversity, where depression and anxiety scores were positively associated with platelets MRC (r's=0.35 to 0.47, p's=0.042 to 0.097) and negatively associated with lymphocytes MRC (r's=-0.43 to -0.37, p's=0.004 to 0.015).

Discussion: Psychiatric symptoms are related to mitochondrial bioenergetics, particularly in individuals exposed to adversity. These initial cell type-specific findings converge with recent studies supporting a potential pathway linking mitochondrial bioenergetics and the psychopathophysiology of psychological stressor exposure and psychiatric symptoms.

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Abstract 1085

TO STREAM OR NOT TO STREAM? WATCHING TV WHILE EATING PROMOTES INCREASED CALORIE CONSUMPTION, BUT SMARTPHONE USE DOES NOT

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The integration of technology throughout daily life has wide-ranging implications, including on how we eat. Previous research demonstrates that simultaneously eating and watching television (TV) leads to increased calorie intake. However, the effects of smartphone use are still uncertain as the limited existing research has yielded conflicting findings. Under the guise of being a study about multitasking, this research experimentally tested the influence of either watching TV or using a smartphone on concurrent snacking

behavior among college students (N = 114). Participants ate significantly more calories while watching TV versus while not. However, this difference was not observed among those using a smartphone. These findings suggest that TV viewing likely continues to promote overeating, but smartphone use may not be associated with concurrent increased consumption. Nonetheless, future research is needed to understand effects on subsequent eating as well as interactive effects between smartphone use and TV viewing. This work continues to underscore the importance of understanding and mitigating environmental influences on eating behavior in light of the known lifelong consequences of adverse eating habits.

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Abstract 1276

CONCURRENT AND PROSPECTIVE ASSOCIATIONS BETWEEN SLEEP DURATION AND TIMING AND POSTPARTUM ANXIETY SYMPTOMS

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Objectives: Postpartum anxiety is understudied and underdiagnosed. Given associations between postpartum anxiety and adverse maternal and infant outcomes, it is crucial to identify patterns and predictors of postpartum anxiety. We examined the associations between sleep duration and timing and postpartum anxiety over 6 months following delivery.

Methods: A convenience sample of pregnant women with a history of depression (n=162; 30-39 weeks) completed self-report measures of sleep, anxiety, and depression in the third trimester and once/month for 6 months following delivery. Concurrent and prospective associations between sleep duration, sleep timing, and postpartum anxiety symptoms were tested via 2-level multilevel models. Depression symptoms and insomnia status were included as covariates. Results: Clinically significant anxiety symptoms were more common than clinically significant depression symptoms at 4 out of 6 postpartum months (p's<.05). Anxiety symptoms increased over time (p<.001). Shorter month-level sleep duration was associated with higher concurrent anxiety symptoms, particularly in early postpartum months. Sleep timing was not significantly associated with concurrent anxiety symptoms (p>.05). Neither prior month sleep duration nor timing significantly predicted subsequent month anxiety symptoms (p's>.05).

Conclusions: Acute reduction in sleep duration may signal the presence of elevated postpartum anxiety, particularly in the early postpartum months, but may not provide predictive utility for prospective increases in anxiety from month to month. Treatments for postpartum anxiety may benefit from targeting sleep duration. Future research should replicate these findings with objective sleep measures.

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Abstract 1349

MENTAL HEALTH OF HEALTHCARE PROFESSIONALS AFTER A COMPLEX INTERVENTION IN HOSPITAL: A MULTI-CENTER CLUSTER-

RANDOMIZED CONTROLLED TRIAL ("SEEGEN")

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Background: Hospital employees frequently experience high levels of psychological distress in their daily work, with negative consequences for both individuals (e.g., reduced job satisfaction) and organizations (e.g., increased intention to leave). These problems have long been recognized, particularly in nursing, and are exacerbated by shortage of skilled workers, economic pressures, role conflicts and work intensification. The German multi-center research project "Mental health in the hospital workplace" (SEEGEN) sought to investigate how to effectively and sustainably promote employees' mental health through developing, implementing and evaluating a complex intervention for healthcare professionals.

Methods: During the pilot phase, five stress-specific interventions combining behavioral and structural preventive measures for different target groups were developed and tested at five hospitals. At the second phase, these components were integrated into a complex intervention whose effectiveness was evaluated in a cluster-RCT across three hospitals, employing an integrated mixed-methods process evaluation.

Results: Five interventions were developed in a participatory manner and successfully piloted with 208 participants: 1) top management training, 2) dilemma competency, 3) stress-preventive relational leadership competence, 4) reconciling work and family life and 5) staying healthy at work. While no significant treatment effects were observed for the primary (irritation) or main secondary outcomes (well-being and psychosocial safety climate), participants reported positive changes in qualitative interviews (n=23). Barriers to participation included employee turnover, increased workload due to the pandemic and insufficient managerial support. The round table approach as a tool for structural prevention facilitated solution development, particularly at the organizational level.

Discussion: SEEGEN did not improve primary or main secondary outcomes. Possible reasons include pandemic-related burdens, insufficient intervention intensity, and high intervention complexity. A mixed-methods process evaluation will shed more light on the reasons for ineffectiveness and effect moderators. In our view, fostering attractive and health-conducive hospital work settings demands both top-down health policy measures and bottom-up, hospital-specific participatory approaches.

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Abstract 1362

PSYCHOSOCIAL CORRELATES OF ALCOHOL USE IN A ZAMBIAN SAMPLE: A NEEDS ASSESSMENT

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Alcohol abuse (AA) bears harmful implications for risk of cardiovascular disease, cancer, and liver disease. The World Health Organization has enacted the Global Action Plan to prevent and treat alcohol abuse through intervention, advocacy, and awareness. The needs of communities in countries that face increasing levels of AA - like Zambia- remain understudied. We explored the psychosocial correlates of AA in the Chawama and Kabwata regions of Zambia. Zambian individuals completed demographic and psychological interviews (N=150;Female=29.3%;M_{age}=23.16) including the Alcohol Use Disorders Identification Test (AUDIT), the Adverse Childhood Experiences Questionnaire (ACE), the Brief Resilience Scale (BRFS), Beck Depression Inventory (BDI), the Perceived Stress Scale (PSS), and the Alcohol Abstinence Self-Efficacy Scale (AASS). Using AUDIT clinical cut-offs, individuals with *hazardous alcohol use, alcohol dependence*, and *nondrinkers* were stratified. Relationships between AA and psychosocial variables of interest were assessed using one-way ANOVA for continuous variables and Fisher's χ^2 tests for categorical variables of interest. Age was positively associated with alcohol dependence and hazardous drinking ($Age_{Dependence}$=26.37;$Age_{Hazardous}$=24.39;$Age_{Nondrinkers}$=21.16, p<0.05). Alcohol dependent individuals and hazardous drinkers were more likely to be male than their non-drinking peers (79.5%,91.3%, and 60.2%, respectively, p<0.05). Those with alcohol dependence and hazardous drinking obtained lower scores on the AASS, relative to their non-drinking peers ($AASS_{Dependent}$=46.26;$AASS_{Hazardous}$=54.91;$AASS_{Nondrinkers}$=83.65, p<0.05

). Individuals with alcohol dependence and hazardous drinking also endorsed symptoms of depression ($BDI_{Dependent}$=14.95;$BDI_{Hazardous}$=12.91;$BDI_{Nondrinkers}$=6.73, p < 0.05) and stress ($PSS_{Dependent}$ =20.16;$PSS_{Hazardous}$=16.61;$PSS_{Nondrinkers}$=15.86, p < 0.05) that were higher than their non-drinking counterparts. We found dose response relationships between AA, stress and depression in a Zambian sample, with depression and stress proportionately increasing with AA. Individuals who endorsed higher levels of AA also endorsed lower self-efficacy in abstaining from drinking. These findings elucidate a need for tailored psychotherapeutic treatment for alcohol-related morbidity that addresses self-efficacy, stress, and depressive symptomatology in Zambia.

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Abstract 1295

PRELIMINARY RESULTS FROM THE I-CHAT STUDY: AN RCT EXAMINING THE EFFECTS OF A HEALTH BEHAVIOR INTERVENTION AS AN ADJUNCT TO TRAUMA THERAPY FOR ADULTS WITH PTSD

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Research has indicated strong associations between posttraumatic stress and cardiovascular disease (CVD) risk. Individuals with posttraumatic stress disorder (PTSD) tend to show patterns of elevated CVD risk earlier in life than the general population. The need for developing effective interventions for CVD risk-reduction in PTSD is increasingly evident.

This presentation will highlight preliminary CVD risk outcomes (projected to include data on physical activity, blood pressure, lipids, and body mass) for this funded longitudinal study of a health behavior intervention as an adjunct to standard trauma therapy in PTSD. The health behavior intervention addresses CVD-related heath behaviors (physical activity, nutrition, sleep, and stress). Participants are randomized to the health behavior intervention plus standard trauma therapy condition or a standard trauma therapy control group.

The project began data collection in April 2023, with 60 participants enrolled thus far. It is anticipated that approximately 80 participants will be included in the proposed analyses. This presentation will illustrate correlational analysis at baseline, relating PTSD severity to CVD risk variables, and examine associations among risk variable outcomes. In addition, we will present preliminary pre-post outcome data.

The study findings will provide valuable data about the effectiveness of the health behavior intervention in producing predicted changes in the target CVD-related risk factors.

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Abstract 1112

EXPERIMENTAL EVIDENCE FOR THE IMPACT OF CROSS-RACE SOCIAL EVALUATIVE STRESS ON THE IMMUNE SYSTEM IN BLACK AMERICANS

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AIMS: Research has found that even subtlely negative or ambiguous interactions with White individuals may be enough to elicit perceptions of discrimination and related physiological reactions among Black individuals. Thus, negative/ambiguous cross-race interactions may be useful in investigating how intergroup stress impacts physiological mechanisms underlying health inequities. The immune system is a critical pathway connecting the social world to health outcomes. As such, this study used the Trier Social Stress Task (TSST) with a sample of Black individuals to experimentally test the effect of cross-race (vs. same-race) social evaluation on immune reactivity. We also examine whether perceiving the cross-race evaluation as discriminatory moderates immune reactivity.

DESIGN: 105 Black/African American young adults between the ages of 18-25 were recruited from a large, southeastern university and surrounding community (75% female, 4% nonbinary, M_{age}=20.14, SD=2.14). Participants were randomized to cross-race (n=53) or same-race (n=52) social evaluative stress using the TSST. Immune reactivity was measured via change pre-to-post TSST in 1) levels of the inflammatory cytokine, IL-6, in blood and 2) skin reactivity to a common allergen, histamine. Participants also provided appraisals of the TSST, including the extent to which they perceived their treatment was due to discrimination.

ANALYTIC PLAN: MLM will be used to examine main effects of condition, time, and condition_x_time on each outcome (i.e., IL-6, histamine reaction). Condition (same-race v. cross-race) and timepoint (pre-/post TSST) will be modeled as fixed effects and a random intercept will be included to account for individual differences in each outcome. To explore the effect of perceiving discrimination in the cross-race condition, we will run a mixed effect ANOVA with participants' ratings of perceived discrimination entered into the model along with time, ratings_x_time, and random intercept. Post-hoc analyses will be run for significant interactions. Data collection is complete. Data cleaning, assays, and pre-registration for analyses are in progress. We anticipate analyses to be complete by Dec. 2024.

SIGNIFICANCE: Findings will offer causal evidence of the impact of intergroup stressful experiences on immune functioning among Black Americans.

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Abstract 1346

CHILDHOOD COMMUNITY QUALITY AND ADULT WHITE MATTER HYPERINTENSITIES

Maya Martinko, University of Pittsburgh; Anna Marsland, PhD; Tae Kim, Ph.D.; Peter Gianaros, PhD

White matter lesions (WMLs) appearing as white matter hyperintensities (WMH) on T2-weighted MRI are presumptive markers of neurovascular pathology that appear in midlife, strongly associate with CVD risk factors, and presage later life risk for AD and dementia. Little is known, however, about the psychosocial and environmental factors that may contribute to WMH burden prior to late life. Both individual-level (IL) and community-level (CL) indicators of socioeconomic disadvantage have been associated with greater WMH burden. Converging evidence suggests that exposures during childhood have an impact on lifelong trajectories of neurocognitive health. Here, we examine for the first time whether CL socioeconomic status (SES) in childhood correlates with adult WMH development.

This study aims to assess whether retrospective appraisals of childhood neighborhood quality relate to WMH burden in early-mid adulthood. It is expected that reports of poorer neighborhood quality across childhood will associate with greater WMH burden independently of IL childhood SES and CL and IL adult SES.

Data for this project will be derived from the NOAH Project (February 2019 – March 2022) at University of Pittsburgh. 366 healthy adult participants ages 28-56 (82% White, 62% Female) retrospectively rated characteristics of their neighborhoods at ages 5, 10, and 15. Responses at each age will be summed, and summed scores will then be averaged to form an aggregate score for each participant; higher scores indicate poorer cumulative neighborhood quality across childhood. WMH regions will be automatically segmented from FLAIR and T_1w images using a deep learning algorithm and will be transformed to the Montreal Neurological Institute (MNI) anatomical space for WMH volume (mm^3). Childhood IL SES will be represented by parental years of education, and adult IL and CL SES will be measured by household income and area deprivation index (ADI) score, respectively.

Linear regression analyses will be conducted to examine the relationship between adult WMH burden and childhood neighborhood quality, with and without adjusting IL SES and childhood and IL and CL measures of adult SES, age and sex at birth.

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Abstract 1353

COMPARING PSYCHOSOCIAL AND TRAUMATIC STRESS IN LAB BASED PARADIGMS: PRELIMINARY RESULTS

Yvette Szabo, Ph.D., California State University, Los Angeles; Lauren Perez, MA; Mei Ku, BA; Ivan Cobian, BA; Caitlyn Donart, BA; Jordy Ocampo, BA in progress

Stress increases vulnerability or mental and physical health problems. While social evaluative stress can trigger emotional, cognitive, and physiological responses, traumatic stress can evoke similar acute symptoms with more enduring psychological effects. Laboratory paradigms for both types of stress have revealed links to emotional, biological, and social

outcomes, though no previous research has compared them. Previous research comparing psychosocial and physical stress found greater cortisol responses and greater negative affective responses, illuminating pathways through which stress "gets under the skin." The present study compares psychosocial and traumatic stress paradigms on biobehavioral outcomes. Adults aged 18-40 who were free from psychiatric or physical health conditions were recruited from a minority serving institution campus community. Data collection is ongoing, with 82 participants completed to date and an anticipated 110 by the annual meeting. Participants were randomized to complete a modified version of the Trier Social Stress Test (psychosocial stress) or watch a film depicting sexual violence (i.e., trauma film).

Preliminary findings suggest that both stressors resulted in increases in negative mood but little to no change in positive mood. For negative mood, there was a significant time x condition interaction, $F(1, 58) = 34.97$, $p < .001$, indicating greater increases in negative emotion in the trauma film condition compared to the psychosocial condition (Figure 1). Both systolic and diastolic blood pressure increased similarly in response to both stressors, suggesting comparable acute physiological arousal. Participants also completed a daily diary for intrusions for 7 days after the session, which are being coded and will be shared as part of this presentation. Although both conditions induce acute arousal, early evidence indicates a larger emotional response to the traumatic stressor. With a larger sample size, we anticipate detecting additional differences between conditions. By comparing the ways that psychosocial and traumatic stress affects physiological and emotional reactions, the study seeks to understand the mechanisms of stress vulnerability. Ultimately, this research may inform interventions aimed at reducing stress-related health risks and advancing our theoretical understanding of stress and its impacts.

Average PANAS Negative Scores by Condition and Time Point
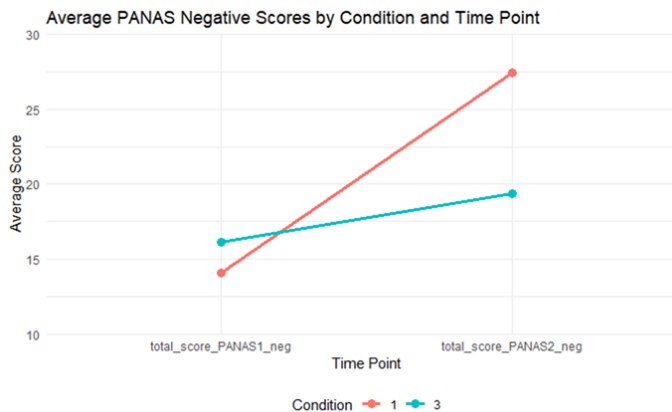
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Abstract 1356

WHERE IS MY SISTER? THE EXPERIENCE OF AMBIGUOUS LOSS IN NATIVE AMERICAN COMMUNITIES.

Yvette Pino, University of Arizona; Mary-Frances O'Connor, PhD

Health disparities affect Indigenous populations[1], including higher cancer rates among Native Americans compared to White populations.[2] Almost all leading causes of death, including heart disease and diabetes, are higher in urban Native Americans than in White populations[3]. One hypothesis for these health disparities is the stress of Indigenous historical trauma due to colonization[4], in addition to present-day forms of oppression (i.e., acute stressors), such as frequent losses. In 2016 alone, 5712 Native American women went missing[5], a low estimate due to complex issues that surround missing persons databases and jurisdiction issues. Bereavement research calculates at least 9 grieving family members are left when a loved one dies[6], suggesting a similar number for each missing relative. Often these communities are left with *ambiguous loss,* or uncertainty of whether a loved one will return, and closure remains unobtainable[7]. This prevents traditional burial ceremonies from occurring, which may heighten distress. For this reason, Native Americans who are more acculturated to their heritage may have higher grief severity.

The present study is an ongoing national online survey distributed to a wide sample of Native Americans to reflect the diversity of the many tribes and cultures that exist. OSF Preregistration occurred on 5/16/24. The survey includes questionnaires about ambiguous loss using the Ambiguous Loss Inventory Plus (ALI+)[8], grief, depressive and trauma symptoms, as well as the strength of acculturation as a Native person using the Native American Acculturation Survey[9]. **Hypothesis 1:** Native Americans with ambiguous loss will have elevated grief severity compared to those who have a death-related loss. **Hypothesis 2:** Native Americans with ambiguous loss will have higher depressive and trauma symptoms than Native Americans who have a death-related loss, or a control group with no loss. **Hypothesis 3:** Acculturation to either the dominant culture, or to their heritage will moderate grief severity for those with ambiguous loss. Analyses will be conducted in R. Using G-Power 3.1, for ANCOVA a sample size of at least 174 will be needed.

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Abstract 1171

MINDFULNESS FOR BLOOD PRESSURE REDUCTION IN OLDER LONELY ADULTS

Eli Rice; Tom Kamarck, PhD; Emily Lindsay, PhD; Anna Marsland, PhD; Kirk Brown, PhD; Janine Dutcher, PhD; Carol Greco, PhD; David Creswell, PhD

Hypertension is the leading modifiable risk factor for death globally. Although hypertension can be managed through pharmacologic and lifestyle modifications, there remains suboptimal treatment adherence with only one in four adults in the US having their hypertension under control. In light of this, non-pharmacologic alternatives to hypertension management are becoming increasingly important. Mindfulness-Based Stress Reduction (MBSR) has been shown to be effective in blood pressure reduction. However, much of the literature to date has only included small sample sizes and it remains unclear how additional putative psychosocial risk factors for hypertension, such as trait loneliness, impact this effect. The proposed analysis will assess the effect of MBSR on blood pressure

reduction in older, lonely adults, with loneliness as a potential mediator of this effect. Our planned analysis will make use of data from a previously conducted NIH-funded study (R01AT008685), a randomized controlled trial involving older lonely adults (ages 65-80, n=190), in which half of the participants underwent an 8-week MBSR program and the other half were in a control Health Enhancement Program. Participants were eligible if they were healthy, not taking cardiovascular or immune medication, and not currently practicing any mind-body therapies. Loneliness (UCLA-R Loneliness Scale) and clinic blood pressure were assessed at baseline, post-intervention, and 3-month follow-up. Multilevel models will be used to examine these effects. We anticipate a group-by-time interaction, such that participants in the MBSR condition will show larger reductions in blood pressure from pre-treatment to post-treatment compared to those in the active control condition. We further anticipate that this reduction will persist at the 3-month follow-up. We expect that trait loneliness will be a significant mediator. If findings are consistent with our expectations, then our analysis will underscore the importance of MBSR on resting blood pressure reduction in a psychosocial at-risk group. Even though loneliness has been associated with hypertension, and MBSR has been associated with decreases in trait loneliness, no literature to date has assessed the impact of MBSR on blood pressure reduction in older lonely adults. Results may have implications for treatment options in older lonely adults with hypertension.

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Abstract 1188

ARE HAIR CORTISOL CONCENTRATIONS ASSOCIATED WITH HIPPOCAMPAL VOLUME IN OLDER ADULTS?

Abigail Shell, The University of Pittsburgh; Kim Tae, PhD; Anna Marsland, PhD, RN; Peter Gianaros, PhD

Stress is associated with higher risk for dementias. Stress may influence risk for dementias through many biological pathways. One biological pathway is the hypothalamic-pituitary-adrenal axis (HPA axis). The end output of this pathway is cortisol. Cortisol may directly influence risk for dementias via its actions on the hippocampus, a brain region that subserves a number of cognitive abilities. In the animal literature, higher levels of corticosterone induce hippocampal shrinkage and neuronal loss, indicating neurotoxic effects. In the human literature, evidence is mixed, with most studies not finding an association between cortisol levels and hippocampal volume (HCV). However, existing studies use measures of cortisol from blood or saliva, which reflect cortisol at the moment of sampling. As a result, such measures are influenced by acute contemporaneous factors and are not reflective of long-term HPA activity and presumptive effects on the brain. Hair cortisol concentrations (HCC) reflect HPA activation over longer periods of time, with one cm of hair approximating cortisol levels across one month. To our knowledge, we are the first study to investigate if HCC over the past three months is cross-sectionally related to HCV. This study is preregistered on the Open Science Framework (OSF). The sample was drawn from the Adult Health and Behavior Study (AHAB). Participants (N = 291, 55.5% female, 86.2% white, mean age 60 years) had hair samples taken and underwent a 7T MRI scan. All data

have been collected. 7T MRI data is being preprocessed in FreeSurfer 6.0 to compute HCV and intracranial volume (ICV). HCC have been determined utilizing Salimetrics Enzyme-linked immunosorbent assay (ELISA). Normality assumptions will be tested, and data will be transformed as necessary. Only biologically plausible values will be retained. Linear regressions will be used to investigate the association between HCC and HCV. HCV will be regressed onto HCC, along with the covariates age, sex, and ICV. Globally, populations are aging, and prevalence of dementia is expected to almost triple by 2050. Researching the biological pathways between stress and dementias might help identify modifiable risk factors, such as HPA activity, or identify people who are at higher risk for dementias.

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Abstract 1172

HEALTH CONSEQUENCES OF UPWARD MOBILITY IN MEDICAL INTERNS

Katherine Ross, MS; Srijan Sen, MD, PhD

Background: Upward mobility is often linked to positive mental health but can have paradoxical effects on physical health, a phenomenon called "skin-deep resilience." One proposed mechanism is that stressors faced by upwardly mobile individuals interfere with restorative behaviors like sleep and exercise (Chen et al., 2022). The current study explores whether upwardly mobile physicians demonstrate "skin-deep resilience" and whether sleep and physical activity during internship mediate the relationship between upward mobility and chronic health conditions.

Study Design: The study involves 777 participants from the Intern Health Study, a cohort study tracking medical residents since 2007. Participants reported their parents' education, chronic health conditions diagnosed before and during internship, and current depressive symptoms. Wearable devices recorded sleep and physical activity from 2017 onward.

Analysis Plan: Regressions will assess whether upward mobility predicts chronic health conditions diagnosed before and after internship, and depressive symptoms during and after internship. Mediation analyses will explore mechanisms of sleep and physical activity as potential pathways through which upwardly mobile individuals may experience later chronic health conditions. The analysis will explore whether upwardly mobile interns have similar mood patterns but increased chronic health conditions compared to socioeconomically stable peers, and if this relationship is mediated by restorative health behaviors.

Data Collection and Timeline: Survey data was completed in August and is being prepared for analysis. Findings are expected by February 2025.

Anticipated Significance: The results will provide evidence for or against "skin-deep resilience" in medical trainees and investigate restorative health behaviors as a potential mechanism. This research could inform policies addressing the unique health challenges faced by upwardly mobile residents, particularly strategies for improving

sleep and physical activity, while advancing health equity efforts in clinical training environments.

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Abstract 1300

ASSOCIATIONS BETWEEN SOCIAL LOSS AND BLOOD PRESSURE IN MIDLIFE ADULTS

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Social loss, defined as the loss of a close relationship due to death or individual differences, can have marked effects on cardiovascular health. For example, bereavement is associated with increased systolic blood pressure (BP), a well-studied marker of CVD risk, in the first six months following loss. Prior studies on BP and adverse social experiences, particularly social loss, often do not examine multiple types of social loss nor whether they exhibit an additive or cumulative association with BP, especially among otherwise healthy adults without clinical CVD. This study therefore will examine multiple types of social loss, including marital, non-marital romantic, and non-romantic breakups, in relation to BP (primary outcome) and heart rate (HR; secondary outcome). In 328 adults aged 28-56 years (M = 42.45 years, 202 identifying as female) tested between 2019 and 2021, BP and HR were measured over 3 different study visits. A Life Events Checklist was administered to measure experiences of marital separation, engagement cancellations, as well as romantic and friendship breakups within the past year. Additionally, participants rated the positive and negative valence of these experiences on a six-point scale. To reduce measurement error in BP and HR measurements, we will first z-score each measurement, and then average across visits to obtain a single value for systolic BP, diastolic BP, and HR. Multiple regression models will then be executed using BP and HR values as outcomes (Ys) and social loss count variables as predictors (Xs). Covariates will include age, sex at birth, and adiposity owing to their possible influence on social and cardiovascular variables. We hypothesize that those who experienced a greater number of social losses will have greater BP and HR. Exploratory analyses will test the influence of self-reported valence of social losses, expecting that those who rate their social losses more negatively will have greater BP and HR than those who rated their social losses positively. These results will help to advance our understanding of BP, a CVD risk factor, and social loss. Social losses beyond divorce and bereavement are infrequently studied in relation to CVD risk, and this study may therefore help to address this gap.

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Abstract 1420

THE RELATIONSHIP BETWEEN SELF-COMPASSION, PERCEIVED STRESS, TRAIT MINDFULNESS AND MORNING CORTISOL RELEASE

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Background.

In recent years use of the term 'compassion fatigue' has increased in healthcare literature and less concern for others and self have been shown to predict greater burnout (Richardson et al., 2016). Treating oneself and others with compassion has also been shown to improve mental health (e.g. Cosley et al., 2010; Feldman & Kuyken 2011) and is one of the six core values in the NHS constitution (Department of Health; DoH, 2013). This study aimed to investigate psychological and physiological factors which predict self-compassion in a University student population as well as whether these were impacted by an 8 week mindfulness programme.

Method

64 University students (age range 18-35, mean 21.5 years) were asked to complete self-report measures of self compassion (SCS-SF), perceived stress (PSS-10) and trait mindfulness (MAAS) as part of their involvement in a randomised controlled trial to evaluate an 8 week mindfulness programme. Salivary samples were also collected for cortisol analysis (0, 15, 30 and 45 minutes after waking) as well as heart rate variability at rest and during cognitive load. The data presented here are from this baseline cross-sectional data (n=34 subset for salivary cortisol) but for SBMS 2025 will also include the analysis of the RCT and the heart rate variability data.

Results

Greater cortisol levels at baseline and morning cortisol release was seen in individuals without experience of mindfulness. A regression model including PSS10, MAAS, baseline cortisol, AUCi was significant (p=0.015). Significant factors were PSS10 (Beta = -4.83, p=.010), MAAS (Beta =.354, p=.037) and baseline cortisol (Beta -.324, p=.047).

Conclusions

The results from this study so far support wider research suggesting that higher stress levels and lower dispositional mindfulness may negatively impact an individuals capacity for self-compassion. Understanding factors influencing levels of compassion may help target training in this area for those in medical and educational professions and help improve mental health more generally. Analysis of the impact of the 8 week mindfulness programme on self-compassion levels as well as cortisol release and other measures of stress physiology will show whether this could be used as a tool to enhance self-compassion and reduce stress through group based mindfulness practice.

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Abstract 1437

EXAMINING THE RELATIONSHIP BETWEEN PERCEIVED DISCRIMINATION AND CARDIOVASCULAR HEALTH RISK IN YOUNG ADULTS

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In 2022, the American Heart Association found that those with poor cardiovascular health (CVH) on average having nearly 9 years less of life at age 50 compared to healthier individuals. These findings underscore the importance of understanding early life predictors of CVH. Ample literature exists on the association between psychosocial stressors and CVH risk, such as obesity and blood pressure. However, a lesser body of work exists showing that specific stressors, such as perceived discrimination, may be associated with CVH risk among younger populations. The present study aims to bridge this gap by examining the role discrimination on abdominal adiposity and blood pressure (BP) among a sample of Los Angeles area young adults, while accounting for age, sex, and ethnicity. Cross-sectional data come from a larger longitudinal study focused on social stress and stress physiology (Allostatic Load in Los Angeles Youth) Study. The timeline for this secondary study is from July 1, 2023, to January 31, 2025. The target sample for the current study is n = 60, with a current sample of 42 participants, ages 18-24, identify as either Latinx or European-American, live in the greater Los Angeles area, and have no chronic health conditions. Via an online survey, participants self-reported sociodemographic information (age, sex, ethnicity) and experiences of discrimination using the Everyday Discrimination Scale (EDS; α = 0.902). During in-person sessions, objective measures of CVH risk were assessed. Trained research assistants measured participant's waist circumference (WC) in centimeters in triplicate and used an automated BP monitor to take three separate readings of systolic and diastolic BP with one minute rest in between. Once data collection is complete, logistic regressions will be conducted to assess the relations between EDS scores and 1) WC, 2) systolic BP and 3) diastolic BP, controlling for age, sex, and ethnicity. We anticipate that our findings will aid in understanding if discriminatory stressors, may have a potential effect on CVH risk in young adults. Ultimately, work in this field may aid the identification of salient, psychosocial predictors of CVH. Furthermore, the results may also inform as to any potential sociodemographic confounders of these relationships.

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Abstract 1541

CULTURAL WEALTH: THE MEDIATING ROLE OF EMOTION REGULATION ON PERCEIVED STRESS

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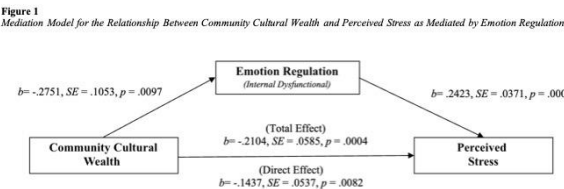
First-time college students often face numerous challenges as they navigate economic, social, and cultural adjustments during their transition into higher education (Tan et. al., 2019). This study serves as a novel exploration of the relationship between community cultural wealth (CCW) – defined as the unique strengths students inherit from their families and communities (e.g., aspirational, familial, linguistic, navigational capital), emotion regulation and perceptions of stress during Latinx students transition to a four-year university (Philips & Power, 2007; Yosso, 2005).

We hypothesized that (H1) CCW will be negatively associated with perceived stress, (H2) functional emotional regulation strategies will be negatively associated with perceived stress, (H3) dysfunctional emotion regulation strategies will be positively associated with perceived stress, and (H4) emotion regulation strategies will fully mediate H1.

First-year college students (N = 188; Mage = 18.2, 68.1% female) from Latinx backgrounds completed an online survey towards the end of their first semester/quarter at university. The survey assessed CCW (Sablan, 2019), perceived stress (Cohen et al., 1983), and internal emotion regulation strategies (functional, dysfunctional; Philips & Power, 2007).

Hypotheses were tested using Hayes PROCESS v4.2 for SPSS, controlling for education context (teaching-centered vs. research-centered four-year institution), biological sex, and socioeconomic status. In line with H1, higher CCW predicted lower perceived stress (b = -.14, SE = .05, p = .008). Interestingly, (H3) higher internal dysfunctional strategies predicted higher levels of perceived stress (b = -.24, SE = .04, p = .001), yet (H2) internal functional strategies were not associated perceived stress. Finally, H4 was partially supported: lower engagement with dysfunctional emotional regulation strategies partially mediated H1 (95% CI [-.14, -.01]).

Findings highlight the need to expand resources for Latinx freshmen during their transition to four-year institutions. Specifically, leveraging the cultural strengths of Latinx students, can support effective stress navigation. Future research should explore the use of salivary biomarkers, such as diurnal cortisol, to build a biopsychosocial model examining the role of CCW in Latinx college students' emotion regulation and stress management during college.

Figure 1
Mediation Model for the Relationship Between Community Cultural Wealth and Perceived Stress as Mediated by Emotion Regulation

Emotion Regulation *(Internal Dysfunctional)*

b= -.2751, SE = .1053, p = .0097 b= .2423, SE = .0371, p = .0000

(Total Effect)
b= -.2104, SE = .0585, p = .0004

Community Cultural Wealth → **Perceived Stress**

(Direct Effect)
b= -.1437, SE = .0537, p = .0082

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Abstract 1506

IMPACT OF INFORMAL CAREGIVING ON SLEEP QUALITY AND MENTAL HEALTH OF YOUNG ADULTS

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Background

Young adult informal caregivers, especially college students, experience unique challenges balancing caring responsibility, academic performance, and personal life, but there are limited studies on their health and quality of life. In this study, we examine the differences in mental health, sleep quality, and social support among university student caregivers and non-caregivers to identify their potential needs.

Method

A cross-sectional comparative study was conducted with informal caregivers (n=91) and non-caregivers (n=86) enrolled in a four-year academic program. Eligibility included being 18 to 39 years old, fluency in English, and providing at least one hour of informal care to individuals with chronic medical or mental health conditions weekly on a regular basis. Participants completed the Pittsburgh Sleep Quality Index, the Hospital Anxiety and Depression Scale, the Perceived Stress Scale, and the 2-Way Social Support Scale. Demographic information was self-reported. Independent t-tests and chi-square tests have been used to examine group differences.

Results

The mean age of caregivers is 22.12 (SD=4.02), which is significantly older than that of non-caregivers (M=21.15, SD=2.33). The majority of caregivers were identified as Latino (40.66%) followed by Asian (27.47%). Caregivers reported significantly worse sleep quality (M=7.70, SD=3.23) than non-caregivers (M=6.55, SD=3.16). Although depression (M=7.15, SD=3.61) and anxiety (M=10.89, SD=3.82) scores are also higher among caregivers than non-caregivers (M *depression*=6.08, SD=3.71; M *anxiety*=9.78, SD=4.50), these differences are not statistically significant. No significant differences were observed between the two groups in terms of social support and perceived stress.

Conclusion

Providing informal care may be impacting some aspects of mental and physical health, particularly sleep problems. Lack of sleep may hinder the effectiveness of caregiving and further research is needed to see the effect of sleep on anxiety and depression among young adult caregivers. Student informal caregivers come from a wide range of diverse racial/ethnic backgrounds, suggesting the necessity of exploring the interactions between cultural norms, socioeconomic status, and caregiving experiences.

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Abstract 1521

SOCIAL ISOLATION AND TUMOR CORTISOL ARE ASSOCIATED WITH METABOLIC TRENDS IN THE OVARIAN TUMOR MICROENVIRONMENT

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Social isolation is known to be associated with poorer clinical outcomes in patients with ovarian cancer. Several biological pathways related to social isolation have been identified as supporting tumor growth. Altered lipid metabolism is characteristic of aggressive tumors, and sphingolipids such as ceramides and their variants are related to ovarian cancer progression, yet an understanding of metabolic differences in the tumor microenvironment linked to biobehavioral influences is lacking. We applied desorption electrospray ionization mass spectrometry (DESI-MS) imaging to examine spatially resolved metabolic profiles of ovarian tumor samples (n=71) annotated with associated social isolation scores (Social Provisions Attachment Subscale, < 15 vs. ≥15), chemoresistance (progression free survival [PFS] < 6 months vs > 1-year post-chemotherapy), and tumor cortisol. Fresh frozen samples were stored at -80°C and sectioned at 8µm prior to DESI-MS imaging. Tissues unfavorable for cryosectioning, or tissue types other than ovary or omentum were excluded (N=20). DESI-MS analysis (n=51) yielded metabolic profiles with the detection of small metabolites, fatty acids (FA), and several classes of glycerophospholipids (GP) such as cardiolipins (CL), glycerophosphoethanolamines (PE), glycerophosphoglycerols (PG), glycerophosphoserines (PS), and glycerophosphoinositols (PI) and sphingolipids (SP) such as ceramide phosphates (CerP), hexosyl ceramides (HexCer) and sphingomyelins (SM). Significance Analysis of Microarrays (SAM) was employed to determine significantly altered metabolites ($|d| > 5.0$) in tumor tissue among patients above and below cutoffs for social isolation, cortisol, and PFS. Chemoresistant samples showed a greater abundance of PE, PG, PI, PS, CL, CerP, HexCer, and small metabolites such as ascorbic acid and N-acetyl aspartic acid (NAA). NAA in particular presented a 2.99 fold-change value in tumor samples of patients with rapid disease progression. Paralleling the PFS findings, a greater abundance of PA, PE, PG, PI, and HexCer was also measured in samples of patients with greater social isolation. Tumor samples with high levels of cortisol had a greater abundance of SP (CerP, HexCer, and SM). Ongoing efforts include the identification of biological pathways implicated in these metabolic analyses for their potential involvement in disease progression.

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Abstract 1490

NEGATIVE RELIGIOUS COPING IS ASSOCIATED WITH BLUNTED CARDIOVASCULAR REACTIVITY AND HIGHER SELF-REPORTED STRESS IN RESPONSE TO ACUTE PSYCHOLOGICAL STRESS

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Background: Negative religious coping has been associated with adverse outcomes such as poorer mental health and lower well-being. However, the pathways linking religion to cardiovascular health are still being elucidated. The current study aimed to examine if negative religious coping was associated with cardiovascular reactivity, a well-established pathway linking stress to cardiovascular disease. Methods: Young adults (N = 81, 65.4% female, 18% Hispanic, 64.2% white) completed a

standardized acute psychological stress protocol, consisting of a baseline period, followed by a mental arithmetic task. Systolic blood pressure (SBP), diastolic blood pressure (DBP), heart rate (HR) and mean arterial pressure
(MAP) were measured throughout. Cardiovascular reactivity was calculated as: stress minus baseline averages. Negative religious coping was assessed using the Brief Religious Coping Scale subscale, depressive symptomology was measured using the Hospital Anxiety and Depression scale (HADS) and general levels of religiosity was captured using two single-item measures assessing church attendance and private religious practices. Participants also self-reported their stressor-evoked stress intensity. Results: Unadjusted linear regressions demonstrated an association between higher levels of negative religious coping and lower SBP, DBP, β =-.301, p =.010 and MAP reactivity β = -.315, p = .008. Moreover, negative religious coping was associated with greater higher self-reported stress intensity. However, in models, controlling for baseline measures, religiosity, gender, and depressive symptomology, higher negative religious coping was associated with lower DBP, MAP reactivity, and greater self-reported stress. This pattern was not evident for SBP and HR reactivity. Discussion: Higher levels of negative religious coping were associated with blunted DBP and MAP reactivity responses and higher stress appraisals. These findings suggest negative religious coping is associated with increased feelings of stress, and atypical cardiovascular responses to stress, and may offer insight into how religion is associated with health outcomes.

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Abstract 1516

SELF-COMPASSION AND STRESS RESPONSES AMONG ADOLESCENTS
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Introduction: Self-compassion is an adaptive means of relating to oneself that encompasses elements of self-kindness, common humanity, and mindfulness. Self-compassion has positive associations with health that may dampen biological and psychological stress responses, and which may be particularly beneficial for those with a history of early life adversity. The purpose of this study was to determine i) effects of self-compassion on cortisol and affective responses to an acute psychosocial stressor among early adolescents, and ii) whether this association differed according to exposure levels of early life adversity.

Methods: Eighty-three early adolescents (12.86 $\pm$ 0.40 years, 52% F) self-reported trait self-compassion, underwent a structured interview-based assessment to assess threat- and deprivation-related exposures to early life adversity, and were exposed to a psychosocial laboratory stressor (the Trier Social Stress Test). Salivary cortisol and self-reported positive and negative state affect were measured before, during, and for 30 minutes after the stressor. Trajectories and total levels of cortisol and positive and negative

affect were tested using hierarchical linear models and linear regressions. Covariates included age, sex, pubertal stage, psychiatric diagnosis, psychiatric and non-psychiatric medication, and time of day of the first saliva sample.

Results: Self-compassion was not associated with total cortisol or trajectories of cortisol, positive affect, or negative affect (all $p > 0.05$). However, self-compassion was associated with higher baseline (B=1.815, $t(71)$=2.84, p=0.006) and total (B=109.223, $t(62)$=3.90, $p <0.001$) positive affect and lower baseline (B=-1.260, $t(72)$=-2.35, p=0.022) and total negative affect (B=-84.667, $t(76)$=-2.46, p=0.016). Additionally, the association between self-compassion and positive affect was stronger for those with greater threat-related exposure to early life adversity (B=2.883, $t(36)$=3.26, p=0.002).

Conclusion: Among adolescents, self-compassion may impart more general, diffuse effects on affect rather than buffering cortisol or affective responses to an acute stressor. Additionally, self-compassion may be a promising intrapersonal mental health target for individuals with adverse threat-related early life exposures, such as physical or sexual abuse.

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Abstract 1511

SCREEN TIME AND ALLOSTATIC LOAD IN YOUTH: EXAMINING SOCIODEMOGRAPHIC AND BEHAVIORAL FACTORS AS MODERATORS
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Background: Screen time (ST), a prevalent sedentary behavior in youth, disrupts the individual biological systems involved in the physiological stress response, including cardiovascular, immune, metabolic, and neuroendocrine systems. Allostatic load (AL), a measure of cumulative physiological stress across these systems, provides a comprehensive assessment of stress-induced dysregulation. While ST is a modifiable behavior, its relationship with AL in youth is understudied. Additionally, sociodemographic and behavioral factors, such as age, sex, income, race/ethnicity, and physical activity, may influence these associations, yet they remain insufficiently explored. This study examines associations between ST and AL while exploring potential moderators to identify high-risk subgroups in U.S. youth.

Methods: Data were from the 2015-18 National Health and Nutrition Examination Survey (NHANES), a nationally representative, cross-sectional sample of U.S. youth aged 12-17 years
(analytic n=1,053; Mage=14.20 years; 54% male; 21% Hispanic). ST was assessed as self-reported hours/day spent watching TV/videos and using a computer/playing computer games. AL was measured using 7 biomarkers across 3 systems: cardiovascular (systolic and diastolic blood pressure, heart rate), immune (C-reactive protein), and metabolic (body mass index, glycohemoglobin, high-density lipoprotein). AL was operationalized as a composite and subsystem-specific score. Weighted multivariable regression models assessed associations between ST and AL, adjusting for covariates. We

investigated age, sex, income, race/ethnicity, and physical activity as potential moderators.

Results: Watching TV/videos was positively associated with AL composite score (IRR=1.040; 95% CI=1.008-1.073; *p*=0.015), but not with an AL subsystem (p's>0.05). Computer use/gaming was not significantly associated with AL composite or subsystem scores (p's>0.05). Age moderated the association between watching TV/videos and AL cardiovascular score (*p*=0.009), with older youth having higher AL cardiovascular scores.

Conclusion: Reducing TV/video viewing may help lower cumulative physiological stress in youth, particularly for older youth at risk for cardiovascular dysregulation. Longitudinal studies are needed to examine potential mechanisms linking ST with the physiological consequences of stress.

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Abstract 1515

PATTERNS OF DAILY ALCOHOL USE ASSOCIATED WITH SUBJECTIVE AND REACTION TIME MEASURES OF THREAT SENSITIVITY

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Background: Threat-related attention bias modification (ABM) is an intervention that purports to reduce attention bias for threat. However, no studies have examined the effects of threat-related ABM on alcohol consumption. Given that alcohol use disorder and PTSD are highly comorbid and that regular alcohol consumption increases the severity of PTSD symptoms and impacts PTSD treatment outcomes, it is critical to consider how ABM relates to patterns of drinking in individuals with PTSD.

Methods: This study collected data from 687 participants over the course of a 15-day mobile app-based ABM protocol. Participants were trained using threat-related ABM or neutral placebo attention paradigms (days 2-7, 9-14) and tested with a threat-related dot probe task on days 1, 8, and 15. We examined the role of ABM on alcohol consumption and the link between alcohol consumption and two threat sensitivity measures: self-report threat sensitivity scores (TSS) and threat-related avoidance and vigilance using a response-based attention-bias computation. Reports of the number of alcoholic drinks consumed in the past 24 hours were collected every training day.

Results: Study condition was a marginally significant predictor of the average number of drinks participants consumed (t = -1.91, p = .056), such that those receiving personalized ABM had lower amounts of alcohol consumption during the study compared to placebo. Additionally, TSS was significantly predicted by the number of alcoholic drinks consumed (t = 2.96, p = .007) and stress experienced over the past 24 hours (t = 14.38, p < .001), as well as the interaction of these variables (t = -2.16, p = .031). TSS scores were higher for participants with the highest stress ratings who had

consumed 6 or more alcoholic beverages, independent of study condition. Finally, avoidance and vigilance measures from the first 2 dot probe tasks significantly interacted to predict the average number of drinks consumed over the next 6 training days (t = 2.06, p = .039). A lower level of both measures was associated with a higher average number of drinks.

Conclusion: While these results don't indicate causality, they emphasize the relationship between threat-related attention biases and drinking behaviors. Overall, our findings link threat sensitivity and alcohol consumption and support further research on threat-related ABM as an intervention approach for heavy alcohol use in PTSD.

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Abstract 1477

DIFFERENCES BETWEEN DEMORALIZATION AND CORE FEATURES OF ANXIETY AND DEPRESSIVE DISORDER IN THE GENERAL POPULATION: RESULTS OF A NETWORK ANALYSIS OF DEMORALIZATION SCALE – II AND PATIENT HEALTH QUESTIONNAIRE 4 DATA

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Background: Demoralization describes a maladaptive form of coping that is associated with discouragement, hopelessness, helplessness and loss of meaning in life. It is a prevalent comorbidity in patients with severe somatic illnesses, e.g. cancer. The aim of the study was to investigate whether the construct of demoralization can be reliably distinguished from key depressive and anxiety symptoms in the general population, and particularly within the older adulthood.

Methods: A network psychometrics approach (exploratory graph analysis) was applied to data from the Demoralization Scale 2 (DS-II) and the ultra-short screening for depression and anxiety of the Patient Health Questionnaire (PHQ-4) assessed in a representative population study (N = 2434). The number of underlying dimensions and symptom groupings were identified. Stability was evaluated using bootstrap procedures.

Results: The network analysis of DS-II and PHQ-4 showed unidimensionality in 87% of bootstrap iterations for young and middle-aged adults, while for older adults a 4-factorial solution was found in 65% of bootstrap iterations, in which PHQ-4 items could be reliably distinguished from DS-II items. Worthlessness proved to be the central symptom of the network.

Discussion: Demoralization is a psychological entity that can be distinguished from core features of depressive and anxiety disorder and can be detected not only in patients with severe somatic illnesses, but also in the general population, at least in older people.

Clinically significant symptoms of demoralization could easily be overseen in screenings for depression and anxiety.

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Abstract 1484

EVALUATING THE PSYCHOMETRIC PROPERTIES OF STATISTICS CANADA'S SINGLE-ITEM STRESS MEASURE

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Background: Given its effects on adverse health outcomes, chronic stress is widely assessed using single-item measures in health surveillance surveys and intervention research to minimize participant burden. Although Statistics Canada's Single-Item Stress Measure (SIM) is often used, there is a pressing need to investigate its psychometric properties, such as test-retest reliability, which ensures SIMs' score repeatability, and convergent and discriminant evidence in support of construct validity for inferences drawn from the SIM.

Methods: The SIM instructs respondents to think about the amount of stress in their lives and respond using a 5-point response scale, whether they would say that most days are "1=not at all stressful" to "5=extremely stressful." We examined the psychometric properties of the SIM in a sample of North American adults (N = 755) across three waves, each one month apart, and compared its performance to the 10-item Perceived Stress Scale (PSS). Reliability was assessed using intraclass correlations (ICCs) over the three waves. The first wave of data was used to evaluate convergent and discriminant evidence by examining the pattern of correlations of the SIM and PSS scores with convergent and discriminant measures.

Results: For the SIM scores ICC = .80, 95% CI [.79, 0.81], and ICC = .82, 95% CI [.81, .83] for the PSS scores. The SIM and PSS scores were significantly correlated (r = .85, 95% CI [.82, .88]). Both the SIM and PSS scores were positively associated with chronic burden, depressive symptoms, anxiety, and negative affect scores (r range = .76–.81 for SIM; r range = .86–.94 for PSS), and they were negatively associated with positive affect, self-efficacy, life satisfaction, and flourishing scores (r range = −.50 to −.43 for SIM; r range = −.72 to −.63 for PSS).

Discussion: Similar to the PSS, scores from the SIM demonstrate acceptable reliability. Consistent with strong convergent and discriminant evidence of construct validity for inferences drawn from the SIM, as expected, PSS and SIM scores positively correlate with ill-being measures linked to adverse health outcomes (e.g., chronic burden, depressive symptoms) and negatively with well-being measures (e.g., life satisfaction, flourishing). Moreover, correlations with convergent measures of poor mental health are larger than those with discriminant measures of well-being.

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Abstract 1554

CHARACTERIZING INTEREST IN PSILOCYBIN FOR CHRONIC PAIN: PSYCHOSOCIAL, MEDICAL, & DEMOGRAPHIC FACTORS

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Psilocybin, the psychedelic compound in "*magic mushrooms*", has garnered extensive attention for its therapeutic potential in conditions such as depression, and has recently been proposed as a potential treatment for chronic pain, a condition that affects 20% of the general population. Rising interest in psilocybin follows a preceding surge of interest in cannabis, another psychoactive substance that serves as an alternative treatment for pain. However, public perceptions of cannabis and psilocybin differ due to discrepancies in stigma and government regulation; cannabis is now legal in parts of North America, but psilocybin remains a scheduled substance. This study aimed to evaluate current interest levels in psilocybin among people living with chronic pain (PLCP), and compare factors associated with interest in psilocybin versus cannabis. Data for this study were derived from a cross-sectional survey of patient support needs in a pain specialty clinic in Western Canada (n= 951). The survey assessed interest in education topics related to pain, including cannabis and psilocybin; mental and physical wellbeing; and demographic factors. 33% of participants indicated an interest in learning about psilocybin and pain. Higher levels of depression (r= .17), anxiety (r= .10), and loneliness (r= .16) were linked to interest in psilocybin education. Younger age (r= -.25) and lower financial status (r = -.20) were also associated with interest in learning about psilocybin. Correlations between psilocybin interest and loneliness, depression, age, and financial status differed significantly from correlations between these factors and cannabis interest. This work suggests that a significant number of PLCP are interested in learning about psilocybin for pain. PLCP who were interested in psilocybin generally were younger, had poorer psychosocial wellbeing, and had lower financial status than those who were not interested. Relative to interest in cannabis education, psilocybin interest was more strongly associated with depression, loneliness, younger age, and lower financial wellbeing. As mainstream and academic interest in psychedelics continues to rise, these results help anticipate populations of PLCP who may benefit most from education about the risks and benefits of psilocybin, a treatment that may serve as a safer alternative to current analgesics such as opioids.

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Abstract 1547

LEISURE MODERATES THE ASSOCIATION BETWEEN DISCRIMINATION AND DEPRESSIVE SYMPTOMS IN A DIVERSE SAMPLE OF OLDER ADULTS

Sarah Lipitz, Penn State University; Caesar Liu, BA; Alp Aytuglu, PhD; Christopher Engeland, PhD; Jennifer Graham-Engeland, PhD, The Pennsylvania State University

Discrimination (and stress associated with experiences of discrimination) is linked with negative mental and physical health

outcomes. Older adults, especially those who identify with underrepresented and minoritized groups, may be particularly vulnerable to poor health outcomes associated with discrimination. Leisure activity can reduce stress and improve health outcomes across the lifespan, but the role of leisure on the relationship between discrimination and depressive symptoms in older adults is not known. The present study examined whether leisure buffered a positive association between discrimination and depressive symptoms in a racially and socioeconomically diverse sample of 321 older adults recruited as part of the ongoing Einstein Aging Study (66.98% women; 43.41% non-Hispanic White, 41.85% non-Hispanic Black; M_{age} = 77.01 ± 4.86 years). In a baseline wave of the study, discrimination was measured by the Everyday Discrimination Scale, depressive symptoms by the Geriatric Depression Scale, and leisure activity by the Activity Characteristics Questionnaire. Stepwise hierarchical regression analysis revealed a significant association between discrimination and depressive symptoms (β = .09, p < .001), controlling for age, gender, and race. This association was moderated by leisure (β = .01, p = .047), but not in the expected direction. Specifically, discrimination was significantly associated with greater depressive symptoms in participants who engaged in leisure activity at high frequency ($M_{leisure}$ + 1 SD: β = 0.28, p < 0.001) and at mean frequency ($M_{leisure}$: β = 0.16, p < .001), but not at low frequency ($M_{leisure}$ - 1 SD: β = 0.04, p = 0.54). Similar patterns were observed when participants were stratified by whether they identified as Black or Hispanic versus non-Hispanic White. This unexpected pattern of findings highlights the nuanced role of lifestyle factors, such as leisure, in the association between discrimination and psychosocial health in older adults. For example, leisure may function as a coping mechanism, as opposed to a buffer of discrimination in older adults. Future research will investigate these associations longitudinally, compare specific kinds of discriminatory experiences, such as racial or age discrimination, and assess subtypes of leisure activity, such as physical activity or leisure-time social support.

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Abstract 1555

EMPIRICAL EVIDENCE OF THE STRESS THERMOMETER THEORY OF BUSINESS RISK

Lydia Roos; Reeva Misra, MA; Marion Chomse, BA; Gabriella Bergin-Cartwright, MS, Walking on Earth

Background: Work-related stress is a well-documented contributor to poor mental and physical health outcomes. Research demonstrates disparate effects on work-related outcomes (e.g., absenteeism, performance), however theoretical frameworks linking stress severity to business outcomes are lacking. To motivate businesses to prioritize employee well-being beyond surface-level initiatives, we must connect stress science with business impacts that affect a company's bottom line. We propose the "Stress Thermometer Theory of Business Risk", a novel framework connecting stress science to risks that businesses care about mitigating. Here, we present initial empirical evidence supporting the theory.

Method: As a first test of our framework, we examined the relationship between stress severity and business risk using survey data collected from 502 adults between aged 18-65 (50.7% women, 1.6% Genderqueer; 28.5% BIPOC), who reported working full-time. Participants reported on 17 business risks spanning Talent, Financial, and Operational and Legal categories and work-related perceived stress.

Results: Analyses revealed consistent linear relationships between stress severity and all 17 measured business risks. Linear regressions showed perceived stress significantly predicted aggregate risk scores for financial (β=.44, p<.001), operational and legal (β=.40, p<.001), and talent risks (β=.46, p < .001), explaining 16-21% of the variance in risk outcomes. This pattern was also found for each risk individually. When compared to the low/mild-stress group (n=215), the moderate- (n=220) and high-stress groups (n=67) showed increasingly higher chance of contributing to business financial risk (moderate OR=2.16, 95% CI [1.38, 3.39]; high OR=5.07, 95% CI [2.80, 9.17]), operational and legal risk (moderate OR=10.31, 95% CI [3.08, 34.44]; high OR=13.88 95% CI [3.75, 51.45], and talent risk (moderate OR=5.55, 95% CI [3.14, 9.82]; high OR=10.03, 95% CI [5.03, 19.99].

Discussion: These findings provide initial evidence of the Stress Thermometer Theory of Business Risk, showing strong associations and demonstrating business risk stratification by stress severity. This framework provides organizations with compelling evidence to invest in initiatives that support individual resilience development, reduce environmental sources of stress, and improve overall employee health and well-being.

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Abstract 1556

THE COST OF FINANCIAL ANXIETY: PERCEIVED VERSUS METABOLIC HEALTH OUTCOMES AMONG LATINX FIRST-GENERATION COLLEGE STUDENTS

Evelyn Arrieta, California State University, Northridge

Research has demonstrated that financial anxiety (FA) – the chronic worry about money availability – is prevalent among first-generation college students (FGCS) (Archuleta et al., 2013; House et al., 2019). FGCS often experience financial worries alongside reconciling the competing demands of academic and familial obligations, leading to negative health outcomes (Vasquez-Salgado et al., 2015; Haidar, S. A. et al., 2018). Navigational capital (NC), the unique strengths and resources students bring from their families and communities to navigate social institutions, may help mitigate these challenges (Yosso, 2005). However, less research has assessed whether FA is a stronger predictor to perceived health (e.g., perceived stress) or metabolic health (e.g., waist circumference) in Latinx FGCS during their transition to college, and whether NC moderates these relationships. The purpose of this study was to assess the relationship of FA to both perceived health (depression, anxiety, perceived stress, physical health ratings, physical health complaints) and metabolic health (waist circumference, body mass index, body fat percentage), while also exploring if NC moderates these

relationships. We hypothesized that among Latinx FGCS transitioning to college (N = 129; Mage = 18.12, SD = .39), (H1) higher FA would be associated with poorer perceived and metabolic health, with the relationship between FA and perceived health being more strongly affected, and (H2) NC would moderate these relationships. Using structural equation modeling (SEM), results revealed good model fit indices ($\chi 2(31) = 37.78$, p = .187; CFI = .99 and RMSEA = .041. Moreover, FA significantly predicted an increase in poorer perceived health ($\beta=0.259$, p < 0.001), and NC was not a significant moderator. A possible explanation as to why NC was not impacting the investigated pathways could be because the outcomes in this study are traditionally seen as specific to the individual, while NC is historically an external factor that is more community driven. These findings highlight the association between financial anxiety and perceived health outcomes, emphasizing the need to further investigate and tailor culturally-strength based prevention strategies to sociocultural barriers prevalent in the Latinx and first-generation college community.

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Abstract 1510

TRAJECTORIES OF SYMPTOM BURDEN IN PSYCHOSOMATIC PATIENTS PRACTICING SLOW-PACED BREATHING PRIOR TO CLINICAL TREATMENT: INITIAL FINDINGS FROM THE VAST STUDY
Jan Curtius; Harald Gündel, MD; Stephan Frisch, MD; Carla Retzbach, MD student; Eva Rothermund, MD; Katja Weimer, Dr.; Marc N. Jarczok, Dr., Dept. of Psychosomatic Medicine and Psychotherapy, Ulm University Medical Center

Background: The increase in psychosomatic illnesses leads to long waiting times for admission to psychosomatic partial/inpatient treatment. Depressive disorders, anxiety disorders and somatoform disorders lead to a high symptom burden and are among the most common diagnoses in patients who are admitted to the clinic. They often occur together. Previous clinical studies show effects of vagus nerve stimulation (VNS) for symptom relief. VNS by slow paced breathing (SBP) could be an inexpensive and easy way to treat symptoms during the waiting list and prepare patients for hospitalization. Therefore, we aim to analyze the intervention and adherence for an effect on symptom relief.

Methods: This ongoing monocentric, pre-registered (DRKS00032629) RCT tested a VNS by SPB intervention utilizing patients on a waiting list for psychosomatic clinical treatment. Intervention group practiced an app-based SPB (at least 10 minutes, 2x/day) for 4 weeks. Based on adherence (defined as the proportion of reported vs. expected practice) we divided the IG into adherent and nonadherent subgroups. Online questionnaires including PHQ-9, GAD-7 and PHQ-15 were completed at beginning and end of the 4 weeks. A combined symptom score was calculated including mild to severe symptom severity. Mixed linear model for group, time and adherence were used to analyzed the pre and post changes in the symptom scores.

Results: From a total of 39 patients (51% female), 3 were excluded due to incomplete data. 12(43%) of IG patients had adherence of

over 75%. High adherence did not correlate significantly with a reduction in symptom score (p>0.05). However, all groups showed a reduction in symptom score over the 4 weeks (p<0.001).

Conclusion: At the current status, SPB showed no effect on symptom burden in the first 4-week period. However, we found a decrease in symptom burden over the period, and further analysis of the data is needed to identify possible reasons. Physicians working with participating patients reported better self-regulation from patients in the intervention group, which could be due to an improvement in the primary outcome of the study, emotion regulation. In this study, patients were monitored for an average of 7 months, and further research is needed to evaluate the potential long-term effects of breathing exercises on symptom relief.
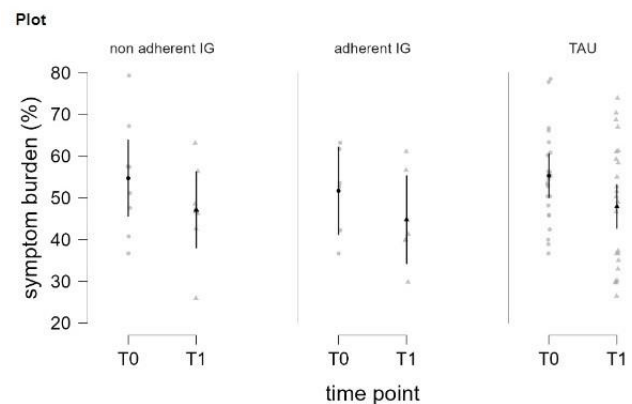
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Abstract 1476

POSTTRAUMATIC STRESS DISORDER AND ADVERSE CARDIOVASCULAR DISEASE OUTCOMES
Jeffrey Scherrer, Family and Community Medicine, Saint Louis University School of Medicine; Beth Cohen, MD, San Francisco VA Med Ctr; Joanne Salas, MPH, Family and Community Medicine, Saint Louis University School of Medicine; Kenneth Freedland, PhD, Washington University School of Medicine; Paula Schnurr, PhD, Dartmouth; Patrick Lustman, PhD, Washington University School of Medicine

Background: Posttraumatic stress disorder (PTSD) is a risk factor for cardiovascular disease (CVD). Large decreases in PTSD severity are associated with better physical health, but it is not known if PTSD improvement is followed by better CVD outcomes in patients with comorbid PTSD and CVD. **Methods:** De-identified medical record data from 10/01/2011 to 9/30/2022 was used to create a cohort of 7,120 Veterans Health Administration patients with PTSD and comorbid CVD. We measured clinically meaningful PTSD improvement defined as ≥20-point PTSD Checklist (PCL) decrease between the first eligible PCL ≥ 33 and a second PCL at least 8 weeks later and within 12 months of the first PCL. Confounding controlled using entropy balance. Cox proportional hazard models estimated the association between clinically meaningful PCL decrease and the following CVD outcomes: myocardial infarction or revascularization procedure, all-cause mortality, and stroke. A priori interactions with race, age and depression were modeled. **Results:** About half (52.2%)

of the sample was 65-80 years of age, 95.5% male gender, 17.3% Black and 79.2% White race. Clinically meaningful PTSD improvement occurred for 20.4% of patients. After control for confounding, those with vs. without clinically meaningful PTSD improvement did not significantly differ on risk for myocardial infarction or revascularization procedure (HR=1.07; 95%CI:0.94-1.20), all-cause mortality (HR=1.02; 95%CI:0.89-1.17), and stroke (HR=1.10; 95%CI:0.96-1.26). Race, age and depression did not significantly modify the association of PTSD improvement and risk for adverse CVD outcomes. **Conclusions:** Large reductions in PTSD severity are not associated with better or worse CVD outcomes. Research is needed to determine if this lack of association is explained by improved health behaviors and adherence to post-CVD rehabilitation and treatment.

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Abstract 1524

SOFTWARE TOOLS TO ADVANCE OPEN AND REPRODUCIBLE SCIENCE IN BIOPSYCHOSOCIAL RESEARCH

Robert Richer; Luca Abel, M.Sc.; Miriam Kurz, M.Sc.; Arne Küderle, M.Sc.; Bjoern Eskofier, PhD, FAU Erlangen-Nürnberg; Nicolas Rohleder, PhD, FAU Erlangen Nürnberg

The investigation of biopsychosocial processes has advanced considerably over the past decades, driven by laboratory experiments, field studies, and interdisciplinary collaborations. However, a critical challenge remains: the availability, accessibility, and reproducibility of current methodologies. Traditional approaches often rely on complex, time-intensive procedures that demand significant effort from researchers and participants alike. To address these limitations, open-source software tools – including web and mobile applications, as well as frameworks for analyzing data from novel contactless sensors – offer transformative potential. These digital tools not only standardize data collection protocols and minimize human error but also promote transparency and collaboration by enabling data sharing and reanalysis. Such innovations empower researchers across disciplines to replicate studies and explore previously inaccessible modalities, advancing the robustness and reliability of biopsychosocial research.

In this poster, we present our research on open-source software that can help overcome methodological challenges in biopsychosocial science, showcasing examples from interdisciplinary collaborations between psychologists, computer scientists, and engineers. These examples highlight how such tools enhance data quality, reproducibility, and integration across biological, psychological, and social domains. We illustrate how these tools can enable innovative research designs and facilitate the collection of novel data types, opening a new frontier for biopsychosocial research. Our poster is targeted to researchers interested in leveraging digital tools to advance their work, and to open a dialogue on the future of biopsychosocial science in the digital age.

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Abstract 1533

PHYSIOLOGICAL AND RELATIONSHIP OUTCOMES FOLLOWING A CAPITALIZATION DISCUSSION

Samuel Molli; Stephanie J. Wilson, PhD, University of Alabama at Birmingham

Decades of research have pointed to social support as a key factor contributing to long-term health outcomes. Indeed, prior work has highlighted social support as a potential stress buffer, mitigating the effects of stress on physiological reactivity. Yet, social support is a complex construct, and the associations between social support and health-related variables becomes less clear as you break this construct down. Some research points to perceived social support as an important predictor of health, rather than the actual receipt of support. Others report that giving support is beneficial, but, paradoxically, receiving support may be detrimental. Additionally, researchers have separated social support across responses to positive (i.e., capitalization) and negative events (i.e., social support). Currently, there is limited evidence on the physiological outcomes related to capitalization support. The current study examined blood pressure and heart rate reactivity after a capitalization discussion for both support givers and receivers, in a sample of 204 adult couples. Given previous evidence linking social support to reduced physiological reactivity, the preregistered hypothesis was that those who received greater capitalization support would demonstrate reduced reactivity and those who gave greater support would demonstrate similar outcomes. Contrary to the hypotheses, those who received more capitalization support in their discussion did not report significantly different physiological reactivity, compared to those who received less capitalization support, b_{sbp} = -0.23, SE = 0.30, p = .44; b_{dbp} = 0.07, SE = 0.21, p = .75; b_{hr} = -0.12, SE = 0.18, p = .51. Similarly, those who gave more capitalization support did not demonstrate significantly different physiological reactivity compared to those who provided less, b_{sbp} = -0.14, SE = 0.29, p = .64; b_{dbp} = -0.13, SE = 0.21, p = .52; b_{hr} = -0.06, SE = 0.20, p = .77. These findings may suggest that while capitalization support yields short-term relational benefits, it does not confer physiological changes. However, this may also point to capitalization as a lower risk form of support, given poorer capitalization was not related to poorer physiological outcomes. Meanwhile, the positive relationship outcomes associated with capitalization are related to positive long-term health outcomes.

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Abstract 1557

THE STRESS OF FINANCIAL WORRIES: HOW UNIVERSITY BELONGING MODERATES THE LINK BETWEEN C-REACTIVE PROTEIN AND FINANCIAL WORRIES

Angel Morales, California State Univeristy, Northridge; Yolanda Vasquez-Salgado, PhD., California State University Northridge

National statistics suggest that 60% of all students agree that they worry about having enough money to pay for school (National Student Financial Wellness Study, 2015). Previous literature has also demonstrated the negative impact that financial worries can have on college students' mental health and academic performance.

However, there is limited research that investigates the unique interplay between biomarkers of health and financial worries.

A biomarker central to the present study is c-reactive protein (CRP) – an acute inflammatory plasma protein that is produced by the liver and is a key indicator of disease risk, including cardiovascular disease and certain kinds of cancers (Ali et al., 2023). This study aims to fill the research gaps by examining the relationship between CRP and financial worries, as well as the moderating role of university belonging – a student's sense of connection to the campus community – in this relationship. We hypothesized that (H1) high levels of CRP will be associated with increased financial worries and that (H2) high levels of university belonging will moderate the strength of this relationship.

A sample of 180 historically marginalized freshmen (M_{age}= 18.00, SD = .42; 67.2% female) completed an online survey during their first semester at a four-year university. The survey included a 1-item measure of financial worries (e.g., *How worried are you about your ability to pay for your college expenses?*) and a 7-item measure of university belonging (Tyler & Degoey, 1995). Participants then collected a salivary sample by depositing saliva into a cryovial. Hypotheses were tested using hierarchical linear regression and Hayes PROCESS v4.2 in SPSS. Contrary to expectations, (H1) higher levels of CRP did not significantly predict greater financial worries (b = .18, SE = .09, p = .053). However, further analyses revealed that university belonging moderated this relationship (b = .19, SE = .09, p = .04). Specifically, when university belonging was average (p = .033) or high (p = .005), elevated CRP levels predicted increased financial worries. There was no significant association when university belonging was low (p = .923). These findings suggest the link between inflammation and financial worries is completely dependent on the student's level of connection to their university. Implications for higher education will be discussed.

Figure 1.

The Relationship Between C-reactive protein and Financial Worry among Historically Marginalized Students with Low, Average, and High University Belonging
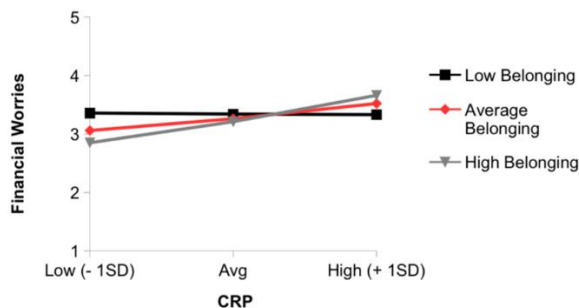
Thursday, March 20, 2025

SYMPOSIUM

HEALTH INEQUITY FOR AMERICAN INDIAN AND ALASKA NATIVE COMMUNITIES: TAKING ACTION TO PROMOTE A HEALTHIER FUTURE

Kamilla Venner, PhD; Elizabeth D'Amico, PhD; Stacy Rasmus, PhD

Despite significant community-based strengths, American Indian/Alaska Native (AI/AN) people experience marked health disparities, including high rates of substance use, pain, and suicide. These disparities are linked to historical trauma, including forced relocation from tribal homelands and cultural genocide, persisting across generations. AI/AN people have also been historically under-represented in research. Studies are therefore needed to understand factors that contribute to both disparities and resilience in this population. This symposium (a) focuses on structural and systemic determinants of biopsychosocial health driving disparities among AI/AN people and (b) details best practices for collaborating with these communities to utilize culturally responsive and strengths-based approaches to increase health equity. The first presentation discusses a two-eyed seeing approach. Here, strengths of Indigenous and Western science in community-engaged research will be explored for increasing ethics and applicability in a mutually beneficial power-sharing relationship. The second presentation focuses on development and outcomes from a large randomized controlled trial of TACUNA (Traditions and Connections for Urban Native Americans). The project tested two culturally grounded virtual interventions for substance use in 541 urban AI/AN emerging adults in 37 states. TACUNA reduced daily drinks per day, cannabis use quantity, and depression. This highlights the key role of bringing urban AIAN emerging adults together to discuss ways to reduce use and socially connect with their Tribal communities in the urban environment. The third presentation focuses on two culturally grounded and strengths-based interventions for Alaska Native young people. Qungasvik (Tools for Life) addresses ways to enhance protective factors with young people in their communities and has been effective for suicide and alcohol misuse. BeWeL (Because We Love You) uses the Qungasvik model and provides a virtual way for AN young people to nurture Indigenous identity, build healthy social networks, and increase intergenerational interconnectedness to reduce risk for suicide and alcohol misuse. Lastly, a moderated discussion will cover how to work closely with communities in developing culturally appropriate and strengths-based interventions to increase resilience among AI/AN people.

INDIVIDUAL ABSTRACT NUMBER 1202

CORRECTING NEGATIVE STEREOTYPES AND PROMOTING CULTURAL STRENGTHS IN INDIGENOUS RESEARCH

Kamilla Venner, PhD

While awareness of high rates of substance use disorder among American Indian/Alaska Native (AI/AN) people is common, knowledge of high rates of abstaining from alcohol among AI/AN remains uncommon. In this talk, research refuting negative, erroneous substance related stereotypes about AI/AN people will be

presented along with ways research can leverage cultural strengths to empower AI/AN people and help reduce the disproportionate substance related health inequities. Internalization of these erroneous stereotypes has been shown to be deleterious to AI/AN substance use and outcomes. Utilizing a two-eyed seeing approach, which aims to focus on the strengths of Indigenous and Western science is necessary to improve our science and the health and wellbeing of Indigenous communities. In our Clinical Trials Network (#0096) implementation science project, we partner with four Tribal clinics in urban and rural settings to culturally center the delivery of medication treatment for opioid use disorders. From the beginning, we instituted a collaborative board of American Indian directors, Tribal leaders, botanists, clinical providers and people with lived experience of substance use disorder and recovery. The collaborative board provided guidance for qualitative and quantitative measurement, implementation intervention development, traditional practices, and publications. Community engaged research is considered best research practice to increase ethics, accuracy, and applicability in a mutually beneficial relationship of power sharing. These AI/AN specific cultural adaptations may be applicable to other racial/ethnic groups including non-Hispanic White populations.

INDIVIDUAL ABSTRACT NUMBER 1203

A NATIONAL RANDOMIZED CONTROLLED TRIAL COMPARING TWO VIRTUAL CULTURALLY GROUNDED SUBSTANCE USE INTERVENTIONS FOR URBAN NATIVE AMERICAN EMERGING ADULTS

Elizabeth D'Amico, PhD

Background. Although American Indian and Alaska Native (AIAN) people are resilient, they experience numerous health disparities, including high rates of alcohol and other drug (AOD) use and mental health concerns. Much work has shown that historical trauma, including forced relocation from tribal homelands, has contributed to these disparities, partly through cultural disconnection. Yet, there are few evidence-based culturally grounded programs that address alcohol or other drug (AOD) use and mental health for AIAN people living in urban areas, particularly among urban AIAN emerging adults.

Methods. We tested two culturally grounded virtual interventions for urban AIAN emerging adults on AOD use and consequences and cultural connection. Participants (N=541) were recruited across the U.S. for a randomized controlled trial from 2020 to 2023. Participants (N=541; 83% female; mean age 22.1) completed an online screener, and eligible participants were contacted by staff and consented. Eligibility criteria included: 1) ages 18 to 25; 2) living in an urban area in any state in the United States (not on a rancheria or a reservation); 3) self-identification as AIAN; 4) no opioid use disorder; and 5) English speaking. Participants completed baseline surveys and were randomized to two culturally grounded interventions and completed 3-month surveys. Participants completed all surveys and interventions virtually. Everyone received either three TACUNA (Traditions and Connections for Urban Native Americans) workshops and a wellness circle, or an AOD education health and wellness workshop. Surveys focused on opioid, alcohol, and cannabis use and consequences; cultural connection, and peer influence.

Results. At 3 months, TACUNA participants reported fewer drinks per drinking day (p=.02; ES=.24), lower quantity of cannabis use when using (p=.003; ES= .41), and lower likelihood of depression (p= .02; ES = .26) compared to health and wellness participants.

Conclusions and relevance. Findings highlight how an intervention that integrates motivational interviewing with culture can have protective effects for this population. Virtual recruitment and intervention are a successful way to reach urban AIAN emerging adults who often experience decreased access to resources. Creativity in study designs is necessary to engage this hard to reach and underserved population.

INDIVIDUAL ABSTRACT NUMBER 1204

QUNGASVIK (TOOLS FOR LIFE): CREATING CULTURAL AND STRENGTHS-BASED MODELS TO REDUCE SUICIDE/ALCOHOL RISK FOR INDIGENOUS YOUTH IN RURAL ALASKA BOTH IN COMMUNITIES AND VIRTUALLY

Stacy Rasmus, PhD

Suicide in Alaska is a public health crisis that inequitably impacts Alaska Native (AN) young people. Our team has been working in partnership with Yup'ik AN communities for over 20 years to develop and test culturally-grounded and strengths-based strategies to reduce risk for suicide and alcohol misuse. This presentation discusses findings from a prevention trial examining the effectiveness of a community intervention, Qungasvik (Tools for Life). Qungasvik addresses ways to enhance multi-level protective factors with young people in their communities. It focuses on strengths and reasons for life in young people through immersion into ancestral ways of living and knowing. Four communities were assigned to immediate intervention or dynamic wait list (N = 239; 49% female, 51% male, age mean 14.92) over two years. Outcomes were reasons for life and reflective processes about alcohol use, which are protective factors buffering suicide and alcohol risk. Dose dependent intervention effects promoted growth in these protective factors, buffering suicide and alcohol risk, with strongest effects for young people highly involved in intervention activities. Outcomes highlight the importance of strength based approaches focused on connection to community and cultural resources. Based on the critical need for reaching more young people across the state, we worked closely with AN communities to develop a brief virtual intervention based on Qungasvik that we are currently testing in a large randomized controlled trial. BeWel (Because We Love You) provides a virtual way for AN young people to nurture Indigenous identity, build a healthy social network, and increase intergenerational interconnectedness to reduce risk for suicide and alcohol misuse. This brief, 45 minute virtual intervention addresses suicide prevention by focusing on protective factors delivered through stories by Alaska Native Elders, and draws from teachings based on ancestral strengths and survival skills. To date, we have reached 140 participants. Participants in BeWeL are 18 years old on average. About 40% report clinically significant levels of depression and anxiety and about 50% report lifetime alcohol or cannabis use. However, most (83%) said their Elders teach them about cultural values, highlighting the important role of traditions in this population.

SYMPOSIUM

IMMIGRATION, STRESS AND CARDIOMETABOLIC HEALTH OF ASIAN AND HISPANIC POPULATIONS IN THE U.S.

The demographic landscape of the U.S. population has been dramatically changed, with the racial and ethnic minority populations, including Asian and Hispanic immigrants, being the fastest-increasing population. Current research on biopsychosocial determinants of cardiometabolic health, however, remains a lack of representation of Asian and Hispanic immigrant populations. These immigrant populations face unique challenges, such as acculturative stressors, which may put them at high risk of experiencing poor cardiometabolic health. Thus, this invited symposium aimed to advance our understanding of how social determinants of health, including specific immigrant stressors, affect cardiometabolic health among U.S. Asian and Hispanic populations. Fang and Tseng investigate the effect of immigration stressors on makers of cardiometabolic health using a prospective design among Chinese immigrants. Kandula and colleagues examine the cardiovascular health disparities and their related structural, social, and cultural risk and resilience factors among the three largest South Asian origin groups, including Bangladesh, India, and Pakistan, who participated in the ongoing MSALA study (Mediators of Atherosclerosis in South Asians Living in America). Isasi uses a life course perspective and examines how childhood and adulthood socioeconomic status affects cardiovascular health using data from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL). Ruiz and colleagues examine the potential differences in the moderating effect of social integration among Hispanic/Latino individuals and non-Hispanic White individuals to provide a better understanding of the Hispanic Health Paradox and its implication on the health of Hispanic/Latino populations. The novel and important findings from this symposium will facilitate a better understanding of cardiometabolic health and its associated risk and protective factors among Asian and Hispanic populations in the U.S.

INDIVIDUAL ABSTRACT NUMBER 1167

BIOPSYCHOSOCIAL FACTORS ASSOCIATED WITH CARDIOMETABOLIC HEALTH AMONG CHINESE IMMIGRANTS

Carolyn Fang, PhD; Marilyn Tseng, PhD

Asian Americans are the fastest-growing racial group in the United States (US), and Asians of Chinese origin represent the largest single US Asian subgroup. Among Chinese Americans, the majority is foreign-born, and it is now well-documented that immigration to the US leads to increased risk of weight gain, cardiovascular disease and type 2 diabetes. This downward trajectory in health has been mainly attributed to changes in lifestyle behaviors following immigration. But the immigration experience also encompasses extensive stress, including social isolation due to language barriers, separation from family and other support networks, and new experiences with racial discrimination. Despite considerable data on the effects of social isolation and stress on physical health, few studies have considered

the psychosocial impact of immigration on chronic disease risk. Findings from our prior cross-sectional studies with Chinese immigrants indicate that higher levels of stress are associated with greater waist circumference and higher levels of inflammatory markers, which can contribute to poorer health. Building upon this work, we conducted a longitudinal study to examine whether migration-related stress and social isolation predicted changes in markers of cardiometabolic health in a sample of US Chinese immigrants. We enrolled 614 participants (56.7% female; mean age = 51 years) who completed surveys on perceived stress, migration-related stress, and social isolation. Participant weight, height and waist circumference was measured during an in-person exam, and fasting blood samples were obtained to measure blood glucose, inflammatory markers, and insulin resistance using the homeostatic model assessment of insulin resistance (HOMA-IR). Follow-up assessments were obtained annually for 2 years. Results revealed that increases in migration-related stress, perceived stress and social isolation were associated with significant increases in fasting glucose (all p-values < 0.05) at follow-up time points independent of age, body mass index (BMI), length of US residence, and other potential covariates. Our findings suggest that the unique experiences of immigration (e.g., migration-related stress) are associated with physiologic changes indicative of poorer cardiometabolic health in US Chinese immigrants, despite the relatively lower rates of obesity in this population.

INDIVIDUAL ABSTRACT NUMBER 1189

UNDERSTANDING HEALTH DISPARITIES IN PAKISTANI, BANGLADESHI AND ASIAN INDIAN IMMIGRANTS IN THE UNITED STATES

Namratha R. Kandula, MD, MPH; Nadia Islam, PhD; Belinda L. Needham, PhD; Naheed Ahmed, PhD, MPH; Lorna Thorpe, PhD, MPH; Kiarri N. Kershaw, PhD; Neil A. Zakai, MD, MSc.; Alka M. Kanaya, MD

The US South Asian population grew from 2.1 to 6.1 million between 2000 and 2021, largely fueled by immigration. US South Asians have significantly more diabetes, hypertension, and shoulder a disproportionate burden of cardiovascular disease (CVD), as evidenced by higher hospitalization and higher CVD death rates compared to other Asian American populations and non-Hispanic Whites. However, the pan-ethnic classification of "South Asian" is a broad label that encompasses diverse populations of South Asia and masks structural and social determinants that drive cardiovascular health inequalities between South Asian groups. A lack of comprehensive and disaggregated data on US South Asians poses a major challenge to understanding important differences in their CVD risk. To address major data gaps, our team established the MASALA study (Mediators of Atherosclerosis in South Asians Living in America), a longitudinal epidemiologic cohort study that has begun to shed light on US South Asians' health The MASALA study includes participants from the three largest South Asian origin groups in the US- Bangladesh, India, and Pakistan, between the ages of 40-84 years at the baseline examination and 99% first generation immigrants. Participants are recruited from Chicago, IL, New York, NY and San Francisco, CA. Data collection is ongoing (90% complete),

and preliminary results among 598 Bangladeshi, 512 Pakistani and 965 Indian men and women show variation in social, cultural, and health risk and protective factors between the three South Asian-origin groups in MASALA (See Table). For example, Bangladeshi and Pakistani participants immigrated to the US more recently compared to immigrants from India, and the reasons for immigration differ between the three groups. These factors influence access to work and economic opportunities in the US with consequences for psychological and physical health. Preliminary results also show higher CVD risk among Pakistani men than Indian and Bangladeshi men, and higher CVD risk among Pakistani and Bangladeshi women than Indian women. Our future analyses will focus on how structural, social, and cultural risk and resilience factors can help explain cardiovascular disparities between disaggregated South Asian subgroups.

Sociodemographic Characteristics and Cardiovascular Risk Factors among South Asians in the MASALA Study Cohort*

Characteristics†	Men			Women		
	Indian n=509	Bangladeshi n=283	Pakistani n=228	Indian n=456	Bangladeshi n=308	Pakistani n=258
Mean (SD) Age, years	57.7 (10.0)	55.6 (9.7)	58.2 (11.2)	55.9 (8.7)	55.9 (9.4)	55.6 (9.1)
Main reason that you came to live in the United States - no (%)*						
1: Education or training	148 (44.8)	8 (3.1)	40 (22.2)	53 (19.1)	2 (0.7)	13 (6.2)
2: Employment	98 (29.8)	100 (40.9)	64 (35.6)	54 (19.4)	7 (2.3)	21 (10.0)
3: Family reasons	68 (20.5)	108 (35.8)	66 (36.7)	127 (45.7)	231 (77.5)	171 (81.0)
4: Forced displacement	2 (0.6)	26 (6.7)	5 (2.8)	1 (0.4)	16 (5.4)	2 (0.9)
5: Other reason	15 (4.5)	38 (13.5)	5 (2.8)	43 (15.5)	42 (14.1)	4 (1.9)
Education ≥Bachelors, no. (%)	470 (92.3)	122 (43.1)	135 (59.2)	386 (84.6)	100 (32.5)	107 (41.5)
Years in the US, mean	28.5	14.3	18.4	28.5	12.6	18.1
How well do you speak English? - no. (%) Well/Very well	454 (89.2)	66 (33.5)	50 (37.0)	360 (78.9)	34 (14.2)	61 (27.1)
Current smoking - no. (%)	24 (4.7)	38 (13.3)	32 (13.5)	4 (0.9)	2 (0.6)	2 (0.7)
Median Exercise–Metabolic Equivalent of Task (MET) Minutes	1,102.5	315.0	630.0	840.0	412.5	288.8
Hypertension, n (%)	251 (49.3)	191 (66.8)	124 (52.3)	178 (39.0)	183 (59.3)	130 (47.3)
Prediabetes, n (%)	239 (47.0)	63 (24.3)	51 (24.6)	236 (52.0)	79 (27.1)	66 (26.9)
Diabetes, n (%)	147 (28.9)	169 (61.4)	107 (51.7)	83 (18.3)	163 (55.8)	112 (46.7)
HIGH 10-YR RISK of Cardiovascular Disease (>=7.5%) - no. (%)	281 (55.4)	132 (55.5)	128 (64.0)	80 (17.7)	76 (27.3)	65 (27.3)

*n is not complete because data collection is ongoing among Bangladeshi and Pakistani participants
† Preliminary estimates are not age-adjusted

INDIVIDUAL ABSTRACT NUMBER 1190

CHILDHOOD AND LIFECOURSE SOCIO-ECONOMIC POSITION AND HEALTH IN THE HISPANIC COMMUNITY HEALTH STUDY/STUDY OF LATINOS (HCHS/SOL)

Carmen R. Isasi, MD, PhD

Socio-economic position (SEP) is a well-established social determinant of health. However, the influence of socio-economic position on health in immigrant populations is less studied. The Hispanic/Latino population experiences socioeconomic disadvantages across the lifespan that may result in adverse health outcomes. Using data from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) we will discuss the effects of childhood socio-economic position on cardiovascular and brain health, and mortality. HCHS/SOL is a community-based cohort of Hispanic/Latino adults (N=16,000; 18-74 years old at baseline) that were enrolled from four urban cities in the US: Bronx, NY, Chicago, IL, Miami, FL, and San Diego, CA. Financial difficulties have been reported as the leading stressor in this population. Childhood SEP was determined using parental educational attainment. Adult SEP was determined through an index combining participants' education, occupation, income, and assets at baseline. We classified participants into four socioeconomic mobility categories (e.g., stable

low or high SEP, upward or downward mobility). Ideal cardiovascular health (CVH) was assessed by the four health factors of the American Heart Association "Life's Essential 8", at baseline and the 6-year follow-up. Brain health included measured of cognitive function and brain imaging. Higher childhood SEP was associated with higher ideal CVH at baseline. Socioeconomic mobility was also associated with higher ideal CVH. Similarly, the higher childhood SEP and socio-economic mobility was also associated with better brain health. Downward socio-economic mobility was associated with increased mortality hazard. Given that low SEP and limited opportunities for socio-economic mobility are a result of structural and societal factors, these results highlight the need to focus on the structural barriers that limit socio-economic advancement for improving the health of Hispanic/Latino adults.

INDIVIDUAL ABSTRACT NUMBER 1372

STRESS EXPOSURE VS. STRESS EXPERIENCE: AN INITIAL TEST OF A SOCIOCULTURAL STRESS BUFFERING HYPOTHESIS

John M. Ruiz, PhD; Amelia Ibarra-Mevans, B.A.; Daniel Hernandez, B.A.

Introduction: Robust evidence documents Hispanic/Latino (H/L) health advantages including lower age-adjusted mortality compared to non-Hispanic Whites despite relatively greater risk, a phenomenon commonly referred to as the Hispanic Health Paradox. One potential explanation is that sociocultural advantages including social integration may buffer stress exposure. The aim of this talk is to test this hypothesis in two unique samples. **Methods:** Data from two, cross-sectional studies are described. Study 1 included 1,237 H/L and 1,076 NHW college students. Participants completed demographic measures as well as measures of perceived stress, social vigilance, and social support. Study 2 included a community sample of 937 (760 H/L, 79.2%) adults from southern Arizona. Participants completed measures of social vigilance, social support, and provided address for geocoding of crime exposure. **Results:** In Study 1, H/L and NHW participants reported comparable levels of stress exposure. However, H/L reported lower social vigilance and this effect was mediated by stress experience. Moderated mediation analysis further demonstrated that social support moderated stress experience with impact on social vigilance. No similar path was observed for NHW participants. Similarly, social support moderated stress experience in the community sample for H/L only. **Conclusions:** These data provide a first test of the sociocultural stress buffering hypothesis and suggest that H/L social integration may uniquely mitigate the experience of stress exposure on individual-level experience. The role of acculturation and nativity status as well as health implications will be discussed.

SYMPOSIUM

INNOVATIVE MINDFULNESS TRAINING APPROACHES TO PULMONARY AND CARDIOVASCULAR HEALTH: EXPLORING MECHANISMS AND OUTCOMES

David Creswell, Carnegie Mellon University; Melissa Rosenkranz, Ph.D.; Eric Loucks, Ph.D.

There continues to be significant growth in the scientific study of mindfulness interventions in behavioral medicine and health psychology. This symposium explores recent advances in the application of mindfulness interventions to pulmonary and cardiovascular health mechanisms and outcomes. Presenter 1 will describe findings of a randomized controlled trial (RCT) comparing a 4-week digital mindfulness intervention to a psychoeducation and treatment as usual control groups in depressed asthmatic patients (N=182). Primary outcomes consist of clinically-relevant markers of asthma control, psychosocial stress, and depressive symptomatology. Presenter 2 will extend the pulmonary outcomes by examining whether and how digital mindfulness training alters respiratory mechanisms during audio-guided mindfulness practices. Distressed young adults completed guided mindfulness meditation while respiration was tracked using Hexoskin lifeshirts and smartphone-based accelerometry. This presentation will describe new machine learning analyses linking alterations in respiratory dynamics with improvements in self-reported mindfulness skills, and how respiration feedback improves user engagement. Presenter 3 will describe a RCT of participants with elevated blood pressure who either completed an 8-week mindfulness-based program for blood pressure reduction or an enhanced usual care comparison group. Post treatment and 6-month follow up data will be presented on this trial on treatment improvements in systolic blood pressure, body mass index, DASH diet adherence, physical activity, smoking status, and sleep duration. These presentations help advance our clinical treatment science of mindfulness interventions and discussion will focus on important leading questions for our next wave of mindfulness interventions in pulmonary and cardiovascular behavioral medicine.

INDIVIDUAL ABSTRACT NUMBER 1293

EFFICACY OF A MOBILE MEDITATION INTERVENTION IN DEPRESSED PARTICIPANTS WITH ASTHMA

Melissa Rosenkranz, Ph.D.; Wendy Lau, Ph.D.; Simon Goldberg, Ph.D.

Background. Asthma is a highly prevalent chronic disease of the airways. Despite advances in treatment, it results in an average of 10 deaths/day, and psychological distress is one contributor to its ineffective management. Rates of depression and anxiety are more than twice as high in asthma and are associated with reduced efficacy of pharmacological asthma treatments, more severe asthma, and more emergency room visits. We've previously shown that in-person meditation training led to better asthma control and reduced airway inflammation. Though effective, in-person interventions have limited accessibility. Mobile interventions, by contrast, are popular and easily accessed. Here, we present evidence for the efficacy of 4 weeks of app-based meditation training with the Healthy Minds Program (HMP).

Methods. We compared changes in asthma control and psychological distress in a sample of 182 depressed participants with asthma, randomized to HMP, psychoeducation, or TAU. Asthma control was measured at baseline, post-training and at a 3-month follow-up using the Asthma Control Questionnaire (n = 45), which assesses the impact of asthma on daily activities sleep and need for

rescue medication. Psychological distress, assessed at the same 3 times, was indexed by symptoms of depression (PHQ), anxiety (GAD7), and perceived stress (PSS).

Results. Meditation training was associated with better asthma control post-training ($b = 0.62$, 95% CI [$0.03 − 1.22$], $p < .05$) and at 3-month follow-up ($b = 0.48$, 95% CI [$-0.05 − 1.02$], $p < .1$) relative to TAU. PHQ and PSS scores were also reduced, relative to both comparison groups at 3 months post (all p's $< .05$). At baseline, asthma control and PSS were strongly correlated in all groups, but following the intervention, this relationship was no longer present in either intervention group (group x time x PSS; $b = 1.35$, $p < .05$, 95% CI [$0.02, 2.68$]). Further, this effect was only significant in those who received HMP.

Conclusions. These results suggest that the contents of the mind are an effective target for optimizing asthma control, together with pharmaceutical approaches. They also emphasize the need for a full-scale trial of mobile meditation-based training in asthma, given the modest sample size here, to establish this as an innovative approach for addressing unmet treatment needs and to characterize those most likely to benefit.

INDIVIDUAL ABSTRACT NUMBER 1294

EXPLORING THE ROLE OF RESPIRATORY DYNAMICS DURING MINDFULNESS MEDITATION TRAINING

David Creswell, Ph.D.; Bashima Islam, Ph.D.; Mohammad Nur Hossain Khan, B.S.; Jordan Albert, B.S.; Patrick O'Connell, BSE; Orson Xu, Ph.D.; Shawn Fallon, MIT; Mat Polowitz, MBA

Background: Initial studies suggest mindfulness meditation programs may alter resting respiration rate. However, little research has examined respiratory dynamics during guided mindfulness practices and whether they predict improvements in mindfulness skills.

Purpose: A series of studies explored whether (1) audio-guided mindfulness meditation alters respiratory patterns in the lab; (2) whether deep learning models of respiratory features predict improvements in self-reported mindfulness skills; and (3) whether respiratory feedback after each mindfulness meditation training session improves user satisfaction and engagement in the wild.

Method: Young adults completed guided mindfulness meditation practices while their respiratory patterns were tracked with Hexoskin lifeshirts and phone-based chest-accelerometry. Participants completed audio-guided mindfulness meditation exercises in the lab using the 14-day Equa mindfulness smartphone application, and provided in the moment self-report ratings of mindfulness skills (concentration, sensory clarity, and equanimity) immediately before and after each guided training session. A new respiration research user feedback interface was developed and deep learning models were fit to evaluate whether respiratory dynamics during the guided mindfulness meditation practices could predict whether users improved their self-reported mindfulness skills during that training session. A field study then tested whether users randomized to digital mindfulness training with respiratory rate feedback after each

session would have higher user satisfaction and greater app engagement, relative to users doing the same digital mindfulness training without respiration rate feedback.

Results: Participants significantly lowered their respiration rate during guided mindfulness meditation (on average, 6 breaths per minute). Deep learning models performed well, showing that respiratory features during guided mindfulness meditation predicted whether a participant's mindfulness skills improved or not with 82-86% accuracy. The field study showed that respiration rate feedback significantly increased user satisfaction and app engagement relative to participants who did not get respiration rate feedback.

Conclusions: Respiration is a promising mechanism for predicting mindfulness skills and engagement with meditation.

INDIVIDUAL ABSTRACT NUMBER 1296

EVALUATING THE IMPACT OF THE MINDFULNESS-BASED BLOOD PRESSURE REDUCTION PROGRAM ON CARDIOVASCULAR HEALTH: A RANDOMIZED CLINICAL TRIAL USING COMPONENTS OF LIFE'S ESSENTIAL 8

Eric Loucks, Ph.D.; Fan Wu, BS; Matthew Scarpaci, MPH

Background: Cardiovascular disease (CVD) remains the leading cause of death worldwide. Greater emphasis has been placed on promoting cardiovascular (CV) health, but the role of mindfulness in fostering CV health is not well understood. The effects of adapted mindfulness interventions targeting CV health have been minimally evaluated.

Purpose: This study aimed to evaluate the effects of the Mindfulness-Based Blood Pressure Reduction (MB-BP) program on CV health, assessed through the American Heart Association's Life's Essential 8 (LE8), with key components including physical activity (PA), diet, BMI, smoking, sleep, blood lipids, blood glucose, and blood pressure.

Methods: This is a secondary analysis of a parallel-group, phase 2, pre-registered randomized clinical trial conducted in the U.S. from June 2017 to November 2020, with 6-month follow-up. Outcome assessors and data analysts were blinded to group allocation. Participants (n=201) with elevated unattended office blood pressure (≥120/80 mmHg) were randomized to either MB-BP (n=101) or control (n=100). MB-BP is an 8-week mindfulness-based program adapted for elevated BP, including personalized feedback, education on hypertension risk factors, mindfulness training, and behavior change support. Both MB-BP and the enhanced usual care control group received home BP monitoring devices with instruction, and options for referral to primary care physicians. The control group received educational brochures on controlling high BP. The primary outcomes were six LE8 components available in the dataset, referred to as LE6: systolic BP, body mass index, DASH diet adherence, PA, smoking status, and sleep duration.

Results: Participants were 58.7% female, 81.1% non-Hispanic White, with a mean age of 59.5 years. Regression analyses showed MB-BP increased the LE6 score by 0.123 Z-score (95% CI:0.058, 0.236; Cohen's d=0.475; between-group p=0.03; Figure 1) compared to

control at 6 months. While most LE6 components improved in healthier directions, the strongest effects were observed for systolic BP (0.30 Z-score; 95% CI:-0.007, 0.610; Cohen's d=0.320; p=0.06) and DASH diet adherence (0.23 Z-score; 95% CI:-0.026, 0.481; Cohen's d=0.465; p=0.07).

Conclusions: In this study, the MB-BP program improved CV health. MB-BP has potential to be an effective intervention to support CV health in adults with elevated BP.

Figure 1. Effects of MB-BP vs. control on LE6 scores over 6 months follow-up.
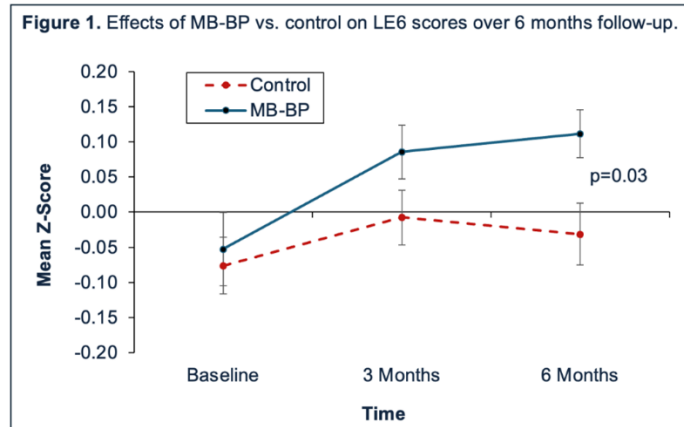
SYMPOSIUM

ADVANCES IN AFFECTIVE IMMUNOLOGY ACROSS THE ADULT LIFESPAN

Rebecca G. Reed, University of Pittsburgh

There is a rich history within psychoneuroimmunology research of investigating links between affective processes (e.g., mood, emotions, emotion regulation) and health-relevant immune outcomes – a subfield recently termed "affective immunology". This symposium will showcase new findings in affective immunology that highlight the dynamic aspects of affect and inflammation, the role of emotion regulation, and affective-immunological links to aging-related health outcomes, including cognition. Symposium talks use a range of methodological approaches – from laboratory experiments to large survey and biomarker studies– to address questions of how affect and affect-related processes are associated with inflammation and health across the adult lifespan. The **first presentation** employs a dyadic experimental design in middle-aged and older couples to provide novel evidence that adults' inflammatory reactivity to emotional stressors predicts future levels of inflammation two years later. The **second presentation** highlights the moderating role of emotion regulation on the prospective association between stress and inflammation: Older adults with higher perceived stress but who also use multiple emotion regulation strategies more frequently, and have better emotion processing skills, have lower levels of inflammation. The **third presentation** investigates affective-immunological links to aspects of executive function (an important aspect of cognitive health) in a large sample of midlife and older

adults. Both negative affect and inflammation were found to predict poorer executive function, particularly for adults aged 50+. The **discussant**, a scientist with expertise in affective immunology, will share her insights and highlight future directions for the field, including methodological and measurement considerations and substantive areas for future attention. Together, the presentations will stimulate discussion of interest to attendees, fostering collaborations and new ideas to advance affective immunology and health across the lifespan.

INDIVIDUAL ABSTRACT NUMBER 1145

INFLAMMATORY RESPONSES TO EMOTIONAL STRESSORS PREDICT HEIGHTENED INFLAMMATION TWO YEARS LATER

Stephanie J. Wilson, PhD; Rebecca Andridge, PhD; Annelise A. Madison, PhD; M. Rosie Shrout, PhD; Megan E. Renna, PhD; Juan Peng, MS; Janice K. Kiecolt-Glaser, PhD

Background: Through a well-known cascade, psychosocial stressors trigger inflammatory responses. According to theories of reactivity and allostatic load, these repeated hits can contribute to allostasis over time —resulting in an upward drift in baseline inflammation. However, this theoretical assumption has gone largely untested. Using longitudinal data from middle-aged and older couples, this study assessed inflammatory responses to emotional stressors— marital conflict and partner distress— and their ties to baseline inflammation two years later. It also examined marital behavior and emotional responses as explanatory factors.

Method: In a laboratory visit, married or cohabiting adults ages 40-80 (N=184) took turns listening to their partner relive an upsetting personal memory aloud for 8 minutes, and later engaged in a marital problem discussion for 20 minutes—providing blood samples and mood ratings in the morning and after each task. Two years later, they provided baseline blood samples again, which offered data on serum interleukin (IL)-6 and tumor necrosis factor (TNF)-a along with lipopolysaccharide (LPS)-stimulated cytokines, IL-6, TNF-a, and IL-1b. After z-scoring, serum and stimulated cytokines were separately averaged. Residualized change scores captured inflammatory responses. Multilevel models adjusted for baseline inflammation at the first wave, as well as sex, age, physical comorbidities, and body mass index at the second wave.

Results: Those with larger inflammatory responses to their own and their partner's upsetting disclosures had elevated baseline serum inflammation two years later (B = 0.285, SE = 0.117, p = .016). Mirroring this pattern, larger inflammatory responses to marital conflict predicted later heightened levels of stimulated cytokines (B = 0.305, SE = 0.129, p = .019). However, neither mood reactivity nor observed emotional behavior shared these predictive associations.

Conclusions: Findings provide novel evidence for the theorized association between inflammatory reactivity to stress and heightened inflammation over time. Mood reactivity and observed behavior did not explain the associations. These data affirm the need to capture inflammatory dynamics with multitemporal longitudinal designs to determine the long-term course of inflammation across adulthood and its implications for healthy aging.

INDIVIDUAL ABSTRACT NUMBER 1237

STRESS AND INFLAMMATION IN OLDER ADULTS: PROTECTIVE EFFECTS OF EMOTION REGULATION?

Rebecca G. Reed, PhD

Background: Stress is associated with higher levels of inflammation, but emotion regulation (ER), or the ways in which people monitor, evaluate, and respond to emotional experiences, may be a protective factor that attenuates this link. The current study tested three ER frameworks: (1) individual ER strategies, (2) ER diversity (an index of the relative frequency of use across multiple ER strategies), and (3) a global measure of ER difficulties including aspects of emotion processing and regulation, to determine congruency across ER moderators of the prospective association between perceived stress and inflammation in older adults.

Method: Community-dwelling older adults (N=167) aged 60+ completed baseline measures of perceived stress, six ER strategies (situation selection, situation modification, reappraisal, emotional acceptance, nonjudging of emotions, nonreactivity to emotions), tested individually and combined to calculate an ER diversity index, and a global measure of ER difficulties, tested using the total scale score, with its 6 subscales tested secondarily. Participants provided dried blood spots for inflammatory markers (CRP, IL-6, TNF-α) at baseline and 6 months later. Analyses tested the moderating role of ER measures on the prospective association between stress and inflammation, adjusting for baseline inflammation and demographic and health covariates.

Results: No one emotion regulation strategy moderated the association between perceived stress and inflammation (adjusted *p*s correcting for multiple comparisons > .25). Greater ER diversity played a protective role and lessened the association between stress and IL-6 (B= -0.13, 95% CI [-.23, -.025], *p*=.016). More ER difficulties exacerbated stress effects on CRP (B=.14, 95% CI [.039, .24], *p*=.007), particularly driven by lack of emotional awareness (subscale *p*=.014) and emotional clarity (subscale *p*=.019).

Conclusion: Older adults with higher ER diversity (frequently use multiple ER strategies), and who pay attention to and have greater clarity in their emotions, have lower levels of inflammation even when stressed. Aspects of emotion regulation other than individual strategies may be fruitful when investigating approaches to promote healthy immune aging in the context of stress.

INDIVIDUAL ABSTRACT NUMBER 1235

AFFECTIVE AND IMMUNOLOGICAL PREDICTORS OF EXECUTIVE FUNCTION IN MIDLIFE AND OLDER ADULTHOOD

Julie A. Kircher, PhD; Christopher G. Engeland, PhD; Susan T. Charles, PhD; Jennifer E. Graham-Engeland, PhD

Background: Poorer performance on laboratory measures of executive function (EF) – a key component of overall cognitive function – is related to higher retrospective negative affect (NA), lower positive affect (PA), and elevated levels of circulating inflammation. However, the role of inflammation in the relationship between affect and EF is unclear.

Method: Using data from the Midlife in the United States study we cross-sectionally examined at each of two time points, 10 years apart (MIDUS 2 and 3): **a)** whether there were direct relationships between affect, inflammation and EF; **b)** if the relationship between affect and EF was moderated by inflammatory biomarkers. We stratified by age due to known links between age, inflammation, and affective wellbeing. Only individuals who completed both MIDUS 2 and 3 were included in analyses (N = 576). PA and NA in the last 30 days were captured through self-report. All available inflammatory markers were used: IL-6, IL-8, IL-10, fibrinogen, TNF-α, CRP, E-selectin, and ICAM-1. Participants had an average age of 52 years (*SD* = 9.81; range: 34-81) in MIDUS 2 and 61 years (*SD* = 9.75; range: 43-90) in MIDUS 3, were relatively well-educated, and 93.5% White. Models tested four separate EF measures as outcomes: number series, digits backward, backward counting, and the stop-go switch task. Covariates were gender, education, and BMI (and age in non-stratified models).

Results: In MIDUS 2, there were no significant main effects of NA or inflammation predicting EF. However, when stratifying by age, higher NA (*b* = -.34, *p* = .02) and CRP (*b* = -.13, *p* = .04) both predicted poorer scores on the number series task (a measure of sustained attention) for adults aged 50+. In MIDUS 3, higher NA and IL-6 each predicted poorer performance on the number series task (NA: *b* = -.22, *p* = .01; IL-6: *b* = -.09, *p* = .04, respectively); stratifying by age did not modify these findings.

Conclusions: The present study suggests that the relationships between NA, inflammation, and components of EF varies with age. Data analyses leveraging longitudinal data – predicting change across the 10-year period between MIDUS 2 and 3 – are ongoing. These analyses, as well as findings using PA, will be discussed to provide additional insights and guide future directions in understanding how affective-immunological processes interact to predict cognitive function.

SYMPOSIUM

SOCIAL (DIS)CONNECTION AND HEALTHY AGING: TRACING THE LONGITUDINAL RISKS ACROSS ADULTHOOD

Stephanie Wilson, PhD; Rachel Koffer, Arizona State University

Social connections, and lack thereof, can pose risks to healthy aging. Although research has traditionally emphasized the health benefits of high-quality relationships and the health risks of relationship strain and social disconnection, the studies in this symposium take novel approaches to understanding risky associations both within meaningful social ties, and with social disconnection, across adulthood. Three longitudinal studies draw from samples that span the adult years to examine prospective links with biological and functional aging.

Among middle-aged and older couples, the first study investigated associations between marital quality and biological aging as a function of the couple's health behaviors, both concurrently and prospectively over 2 years. In accordance with symptom-system fit theory, this work highlights the adverse association between a happy marriage and accelerated biological aging in the context of a couple's disrupted sleep, poor diet quality, and low activity levels.

The second study examined biological aging in an understudied caregiving context: that of colorectal cancer. This work investigated spousal caregivers' stress and their changes in telomere length over 3 years. It also tested differences across the age-diverse sample: stronger adverse associations among younger spouses mirror the premature timing of the caregiving role at this developmental stage.

Expanding on the well-established connections between loneliness and aging, the third study considered bidirectional associations between perceived social disconnection and biological and functional aging outcomes across 10 years. Using structural equation modeling, this work tied perceived social disconnection from individual relationships and community to elevated subsequent inflammation. Reciprocally, greater difficulties with instrumental activities of daily living predicted heightened future loneliness, implying a vicious cycle.

This diverse collection of studies will stimulate discussion about how healthy aging intersects with social connection and disconnection—in the context of unhealthy behaviors, colorectal cancer caregiving, and in the positive feedback loop between loneliness and aging. The discussant will place these studies within the broader literature about social influences on healthy aging and highlight key future directions for the field.

INDIVIDUAL ABSTRACT NUMBER 1395

A DOUBLE-EDGED SWORD: MARITAL QUALITY, BIOLOGICAL AGING, AND THE CRITICAL ROLE OF HEALTH BEHAVIORS

Stephanie J. Wilson, PhD; Rosie Shrout, PhD; Megan Renna, PhD; Annelise Madison, PhD; Juan Peng, MS; Rebecca Andridge, PhD; Lisa Christian, PhD; Janice Kiecolt-Glaser, PhD

Background: On average, happily married people live longer, healthier lives. However, the size of this effect is modest, with large variation across studies—suggesting the presence of moderators. Indeed, symptom-system fit theory posits that a happy marriage can also reinforce unhealthy behaviors, like smoking and poor diets, thus amplifying health risks. Among middle-aged and older couples, the current study examined how couples' health behaviors qualified links between marital quality and biological aging, concurrently and over two years.

Method: Couples ages 40-80 (N=214 adults) engaged in a series of videorecorded discussions and gave blood samples on two occasions, two years apart. Self-rated marital satisfaction and coded marital behavior indexed marital quality. Dyadic health behavior scores averaged both partners' reported physical activity, sleep

quality, and diet quality. Biological aging assays included telomere length, $p16^{INK4a}$, and DNA methylation (DNAm) aging clocks, PhenoAge, GrimAge, and DunedinPACE (z-scored and averaged). Multilevel models controlled for sex, body mass index, and comorbidities in all models, and age in models with telomere length and $p16^{INK4a}$.

Results: Concurrently, those with better marital quality had longer telomeres and lower $p16^{INK4a}$, on average ($ps < .03$). Further, links between marital quality and slower aging (lower $p16^{INK4a}$, younger DNAm aging) only emerged in couples with more activity, fewer sleep problems, and higher-quality diets. After accounting for the favorable baseline association between marital quality and aging, prospective associations were mixed: better marital quality predicted lower $p16^{INK4a}$ over time ($p = .009$), but shorter telomeres ($p = .007$) and advanced DNAm aging in a nonsignificant trend ($p = .053$). However, adverse associations were driven by those with poorer diets and sleep quality.

Conclusions: These data highlight the importance of health behaviors for determining the health risks and benefits of a happy marriage. In the context of healthy routines, marital quality supports healthy aging, but in the presence of unhealthy routines, it leads to poorer biological aging, perhaps reinforcing poor sleep, diet, and activity. Findings help to explain the varying effect sizes discovered in prior work (Robles et al. 2014) and shed new light on marital quality as a double-edged sword for health.

INDIVIDUAL ABSTRACT NUMBER 1396

TOO YOUNG TO BE SPOUSAL CAREGIVERS OF PATIENTS WITH COLORECTAL CANCER: INVESTIGATION OF CAREGIVING STRESS AND AGE ON CELLULAR AGING

Youngmee Kim, PhD; Charles S. Carver, PhD; Jue Lin, PhD; Elissa S. Epel, PhD; David Spiegel, MD

Spouses are typically the primary caregivers of adult patients with cancer and the mental health consequences of caregiving to family members with chronic illness have been well documented. However, comparable knowledge on physical health, particularly cellular aging and in oncology, has yet to be clearly understood. This study examined the associations of earlier caregiving stress with leukocyte cellular aging indexed by telomere length and caregivers' age as a moderator over two years.

Spousal caregivers ($n = 148$, 55.48 years old, ranging $31 – 86$ years old; 68% female; 60% Hispanic) of patients who were recently diagnosed with colorectal cancer (56.83 years old; 72% diagnosed with advanced cancer; 7 months post-diagnosis) self-reported their demographic characteristics and caregiving stress (Caregiving Overload subscale of the Pearlin Stress Scale) at enrollment (T1). Caregivers also provided blood samples at T1 and in two subsequent years annually (T2 and T3, respectively) from which telomere length (TL) was assayed. Caregivers' gender, Hispanic ethnicity, BMI, and TL levels at T1 as well as patients' age were covariates.

Caregivers reported mild-to-moderate levels of caregiving stress. Controlling for TL at T1 and other covariates, caregiving stress and

age alone were not significantly associated with TL at T2 and T3. However, caregiving stress was related to TL differentially by caregivers' age: greater caregiving stress was associated with shorter TL at T2 or T3 for younger caregivers, whereas greater caregiving stress was associated with longer TL at T2 or T3 for older caregivers (t = 2.813 and 1.975, p = .009 and .059 at T2 and T3, respectively).

Findings highlight the differential roles of caregiving stress on cellular aging, which differed by the caregivers' age. Findings also hint at the need for stress management interventions that are tailored to different chronological age groups of family caregivers of patients with cancer. Further studies are warranted to investigate psychobehavioral pathways perceived caregiving stress linking to cellular aging of middle-aged caregivers, sociocultural factors contributing to the differential effects of caregiving stress by different age cohorts on the caregivers' physical health, and longer-term health outcomes for family caregivers of adult patients with cancer.

INDIVIDUAL ABSTRACT NUMBER 1444

BIDIRECTIONAL LINKS BETWEEN SOCIAL DISCONNECTION AND BIOLOGICAL AND FUNCTIONAL AGING

Rachel E. Koffer, PhD; Stephanie J. Wilson, PhD

Background: The Surgeon General's 2023 advisory declared loneliness a medical epidemic, highlighting the importance of social connection and sense of community for health and well-being. Social isolation was estimated to increase Medicare costs by $6.7 billion for older adults. While the links from loneliness to healthy aging are well established, it is important to examine potential bidirectionality of such associations to promote healthy and resilient aging. In addition, the work has largely relied on a narrow selection of loneliness scales; ensuring that findings replicate with robust latent measures is a valuable next step.

Methods: The present study examines bidirectional associations among perceived social disconnection and functional and biological outcomes related to healthy aging in a national sample from the Midlife in the United States Study (up to N = 2,844; Mean age =55 years; Age range = 30-83 years; 57% female; 85% white). At two waves 10 years apart, participants rated their perceived social connection, depression, and functional limitations in instrumental activities of daily living (IADLs). Blood samples were assayed for systemic inflammatory markers including CRP and IL-6. Cross-lagged panel models were fit, with a latent social disconnection factor that included low quality personal relationships, lack of community belonging, and self-rated loneliness from the CES-D.

Results: Higher social disconnection predicted higher CRP 10 years later (β = 0.16, SE = 0.07, p = .035), whereas higher CRP did not predict future social disconnection (β = 0.01, SE = 0.01, p = .287); links were null for IL-6 (ps>.05). Reciprocally, greater difficulties with IADLs predicted more social disconnection 10 years later (β = 0.02, SE = 0.01, p = .04), whereas the reverse was not true (β = 0.04, SE = 0.03, p = .182).

Conclusions: Findings highlight the importance of examining bidirectional associations between social disconnection and healthy aging. While social disconnection can predispose adults to poorer health over time via heightened inflammation, functional aging difficulties may, in turn, lead to further social disconnection, fueling a vicious cycle. Results also underscore the value of latent-variable approaches to the measurement of perceived social disconnection.

SYMPOSIUM

BRAIN-IMMUNE CONNECTIONS AND CLINICAL IMPLICATIONS
Iris Ka-Yi Chat, Temple University; University of Pittsburgh Medical Center; Gabriella Alvarez, PhD; Lauren Alloy, PhD; Keely Muscatell, PhD

The brain and immune systems once were thought to influence health outcomes independently. However, recent advances in psychoneuroimmunology research have revealed critical signaling between the two systems, underscoring the importance of considering their interaction in shaping health outcomes. This symposium brings together early-career researchers to present their work highlighting the nuanced connections between inflammatory processes and brain function, with a focus on the circuits underlying reward, threat, and executive functioning. It also offers insight into the impact of interventions that involve neuroimmune mechanisms.

The first talk will present novel findings on the association between inflammation-related gene expression and neural activity during inhibitory control in adolescent girls. The second speaker addresses the synergistic role of reward-related corticostriatal functional connectivity and inflammatory proteins in anhedonia. The third presentation examines the effects of psychotherapy, specifically mindfulness, on neural sensitivity to threat and inflammation. The fourth presentation uses a pharmacological intervention, specifically levodopa administration, to illustrate the dynamics between reward- and threat-related neural function in reducing depressive and anxiety symptoms among depressed patients with higher inflammation.

The discussant, a distinguished psychoneuroimmunology scientist, brings her notable multi-disciplinary expertise to highlight the promise of these insights for understanding complex brain-immune communication and for guiding potential avenues for future research and clinical applications.

INDIVIDUAL ABSTRACT NUMBER 1038

NEURAL ACTIVITY DURING COGNITIVE CONTROL IS ASSOCIATED WITH PRO-INFLAMMATORY GENE EXPRESSION IN ADOLESCENT GIRLS

Gabriella Alvarez, PhD; Adam Miller, PhD; Steve Cole, PhD; Anais Rodriguez-Thompson, PhD; Kinjal Patel, MS; Sophia Martin, BS; Adrienne Bonar, MA; George Slavich, PhD; Karen Rudolph, PhD; Matthew Nock, PhD; Paul Hastings, PhD; Matteo Giletta, PhD; Mitchell Prinstein, PhD; Margaret Sheridan, PhD

Cognitive control, the ability to orchestrate thought and action in alignment with internal goals, is critical to managing daily life and adapting to changing circumstances. Furthermore, the ability to engage in effective cognitive control is supported by reward processing. One physiological process that is known to disrupt reward processing and may alter the link between reward processing and cognitive control is inflammation. The present study aimed to characterize the association between individual differences in neural activity during a reward-related cognitive control task and pro-inflammatory gene transcription. This analysis involved 113 adolescent girls who attended a baseline visit for blood collection to assess basal pro-inflammatory gene expression, which was combined into a composite score. On a subsequent visit, participants completed the MRI-based Conditioned Appetitive Response Inhibition Task (CARIT), in which they were instructed to respond when they saw a 'go' cue and withhold a response when they saw a 'no-go' cue, which were either neutral (PN) or previously rewarded (PR) cues. The PR trials required inhibiting responses to cues that were previously associated with rewards. Whole-brain fMRI data were analyzed using AFNI's 3dLME to perform a voxel-wide mixed model analysis focused on two interactions (a) inflammation x reward history and (b) inflammation x trial type, controlling for body mass index, puberty, and current illness. Multiple comparisons were corrected using the 3dClustSim function for non-parametric thresholding at p=0.005. Among no-go trials, no significant clusters varied with inflammation as a function of reward history. However, we did find clusters that varied by inflammation for no-go versus go trials. Specifically, greater pro-inflammatory gene expression was associated with increased activity in regions implicated in salience detection and attention (i.e., anterior insula, dorsal anterior cingulate, visual cortex) and decreased activity in motor regions (e.g., sensorimotor cortex, secondary somatosensory cortex, posterior cerebellum). Follow-up analyses will probe behavioral performance to assess whether patterns of activity reflect impaired or compensatory mechanisms among participants. Altogether, our findings underscore the need to consider the brain-immune connection as a factor influencing cognitive control.

INDIVIDUAL ABSTRACT NUMBER 1039

HEIGHTENED INFLAMMATION STRENGTHENS THE ASSOCIATION BETWEEN REWARD-RELATED FUNCTIONAL CONNECTIVITY AND ANHEDONIA IN ADOLESCENTS

Iris Ka-Yi Chat, MA; Nina Kougan, A.B.; Zachary Anderson, MA; Lauren Ellman, PhD; Thomas Olino, PhD; Gregory Miller, PhD; Robin Nusslock, PhD; Lauren Alloy, PhD

Background: Anhedonia, the inability to experience interest or pleasure, often emerges in adolescence. This psychiatric symptom is challenging to treat, suggesting its mechanisms are not fully understood and inadequately targeted by existing treatments. Given that anhedonia is characterized by distinct reward-related brain function and more severe forms are seen in individuals with higher inflammation levels, inflammation may amplify the connection between reward-related brain function and anhedonia. This study tested this possibility, as most anhedonia research examines reward and inflammation separately. **Method**: This study involved 152 adolescents (ages 13-16, 60% female, 52% People of Color). Anhedonia and its components were assessed using the Positive Valence Systems Scale (PVSS), Card Arranging Reward Responsivity Objective Test (reward sensitivity), and Delay Discounting Task (temporal discounting of value). Serum from a blood draw was assayed for IL-6, IL-8, TNF-a, IL-10, CRP, and suPAR, which formed an inflammatory composite score (ICS). Functional connectivity (FC) between the nucleus accumbens (NAc; seed) and prefrontal cortex (PFC) subregions (orbitofrontal cortex [OFC], ventromedial PFC [vmPFC], and ventrolateral PFC [vlPFC]) during reward anticipation and outcome was assessed in the fMRI Monetary Incentive Delay task using psychophysiological interaction. **Results**: There were main effects for lower NAc-vlPFC FC during reward outcome on lower PVSS initial reward responsiveness (p=.008, ΔR²=.06), and for lower NAc-vlPFC FC and lower NAc-OFC FC during reward anticipation on less delay discounting (p=.013, ΔR²=.05; p=.032, ΔR²=.04). Interaction effects showed lower NAc-vlPFC FC during reward outcome was more strongly associated with lower PVSS reward anticipation at higher ICS (p=.026, ΔR²=.04). At higher ICS, lower NAc-vlPFC FC during reward anticipation and outcome was linked to lower PVSS reward anticipation and total scores (p=.036, ΔR²=.04; p=.008, ΔR²=.06), while higher NAc-vmPFC FC during reward outcome was linked to lower reward sensitivity (p=.018, ΔR²=.05).**Conclusions**: Inflammation may strengthen the connection between reward-related brain function and anhedonia in adolescence. These findings support the need to jointly consider reward and inflammatory processes in anhedonia, potentially informing more targeted treatments for this symptom.

INDIVIDUAL ABSTRACT NUMBER 1040

NEURAL MECHANISMS OF MINDFULNESS: REDUCED NEURAL REACTIVITY TO SOCIAL-EVALUATIVE THREAT ACCOUNTS FOR MINDFULNESS INTERVENTION EFFECTS ON A GENOMIC MARKER OF INFLAMMATION

Robin Blades, MA; Naomi Eisenberger, PhD; Steve Cole, PhD; Chloe Boyle, PhD; Tyrus Korecki, MA; Julienne Bower, Ph.D.

Mindfulness interventions have demonstrated beneficial effects on both mental and physical health, but the neuroimmune mechanisms through which they confer these benefits remain unclear. Mindful awareness redirects attention toward the present moment, which may reduce threat-related neural activity and downstream inflammation in response to stress. Social-evaluative threat, where the self is negatively judged by others, is a stressor with potent inflammatory consequences. As part of a randomized controlled trial (NCT05304052), the current study tested whether a mindfulness intervention reduced neural reactivity to social-evaluative threat and reduced downstream pro-inflammatory signaling. Healthy young adults were randomly assigned to a waitlist control group (n = 23) or a 6-week mindfulness intervention (Mindful Awareness Practices; n =

26) that has been shown to reduce stress and inflammation. Before and after the intervention, we collected blood samples and BOLD neuroimaging data during a social-evaluative threat task (revised Montreal Imaging Stress Task; MIST), focusing on activity in three threat-related neural regions: the bilateral amygdala, the dorsal anterior cingulate cortex (dACC), and the bilateral anterior insula (AI). Leukocyte genome-wide RNA profiles were analyzed using promoter-based bioinformatic analyses to infer NF-κB transcription factor activity, a canonical pro-inflammatory signaling pathway. Relative to waitlist control, mindfulness led to reductions in amygdala activity (p=.03), dACC activity (p=.07), and AI activity (p=.04) in response to the MIST from pre- to post-intervention. Mindfulness also resulted in reductions in NF-κB activity (p=.01) pre- to post-intervention compared to the control condition. Further, the effect of mindfulness on NF-κB activity was no longer significant when changes in neural threat reactivity were included in the model (p=.80), suggesting that reduced responsiveness to threat in these structures may account for the impact of the mindfulness intervention on downstream inflammation. Overall, results indicate that mindfulness reduces neural reactivity to social-evaluative threat, which may contribute to beneficial changes in stress-inflammatory biology.

INDIVIDUAL ABSTRACT NUMBER 1041

LEVODOPA EFFECTS ON FUNCTIONAL CONNECTIVITY IN REWARD AND THREAT-RELATED CIRCUITS AND SYMPTOMS OF ANXIETY IN DEPRESSED PATIENTS WITH HIGHER INFLAMMATION

Genevieve Craig, B.S.; Mandakh Bekhbat, PhD; Zhihao Li, PhD; Ebrahim Haroon, MD; Andrew Miller, MD; Jennifer Felger, PhD, MS

Background. Inflammatory biomarkers like cytokines and C-reactive protein (CRP) are reliably elevated in association with functional alterations in reward and threat-related circuits and transdiagnostic symptoms in patients with depression and anxiety-related disorders. Translational evidence that these associations are due in part to inflammation's effects on neurotransmitters like dopamine are supported by our findings that acute levodopa (L-DOPA) increased functional connectivity (FC) in a ventral striatum (VS) to ventromedial prefrontal cortex (vmPFC) reward circuit in depressed patients with higher CRP. **Methods**. To determine whether L-DOPA causes sustained effects on FC, and whether they extend beyond reward to threat and anxiety-related circuits and symptoms, medically-stable depressed patients with CRP >2 mg/L (n=18) received increasing doses of levodopa (L-DOPA) compared to placebo in a 6-week trial and underwent resting-state fMRI and anxiety assessments. **Results**. Increased VS-vmPFC FC was seen after one week at 150 and 450 mg/day L-DOPA (optimal doses in 85% of patients, p<0.050) but not placebo, and maximal FC responses were predicted by state anxiety at baseline in females (n=13, rs=0.58, p<0.050). Amygdala-vmPFC FC was similarly increased versus placebo by the optimal L-DOPA dose (t(12)=-3.127, p<0.010), and this response was also predicted by baseline state anxiety in females (rs=0.64, p<0.050). LDOPA versus placebo reduced anxiety symptoms experienced during the week of the optimal dose (n=18; e.g., Beck Anxiety Inventory: t(17)=2.575, p<0.050), but not state anxiety (p=0.055). However, females with the largest amygdala-vmPFC FC

response to the optimal LDOPA dose reported the greatest decrease in state anxiety experienced on the day of the scan (r=-0.61, p<0.050). **Conclusions**. These preliminary results suggest that sustained effects of L-DOPA extend beyond reward to threat and anxiety-related circuits, and that state anxiety may be used in combination with CRP to identify depressed patients indicated for therapies to reverse the effects of inflammation on neurotransmitters like dopamine.

SYMPOSIUM

FOUNDATIONS, INNOVATIONS, AND GROWTH IN THE BIOPSYCHOSOCIAL STUDY OF HEALTH: A FESTSCHRIFT TO HONOR THE CAREER OF CHRISTINE DUNKEL-SCHETTER

Marci Lobel, PhD, Stony Brook University; Christine Rini, PhD; Belinda Campos, PhD; Isabel Almeida, PhD; Marci Lobel, PhD

This is a Festschrift honoring Christine Dunkel-Schetter's stellar 40-year career. Chris's pioneering research on biopsychosocial processes in reproductive health transformed this field of study and sparked an explosion of research expanding our understanding of biopsychosocial science in multiple areas of health. Her research on pregnancy, birth, and the postpartum has had vital societal significance, substantiating that factors like stress and socioeconomic disadvantage contribute to poor mental and physical health. Chris's impact is also reflected in the research of former trainees who will be presenters in this symposium. Although they study diverse topics, each demonstrates that the concepts and methods that Chris innovated undergird their investigations of interactive biological, psychological, social, and cultural processes that affect health. The first presenter (1995-2001 predoctoral) will describe how her role in Chris's projects documenting the impact of stress in pregnant women sparked a longstanding interest in social support interactions with stress and inspired the Social Support Effectiveness Framework that has characterized the presenter's research career. She will discuss how well-intentioned social support attempts are not always beneficial, and how this knowledge informs coping interventions. The second presenter (2003-2005 postdoctoral) will highlight Chris's key role in encouraging her to study aspects of Latino culture that affect health. She will present a sample of her research showing that Latino values are associated with better relationship quality and health, challenging historical notions that these values are deficits to be overcome with U.S. acculturation. The third presenter (2014-2020 predoctoral) will provide an overview of her research on pregnancy anxiety and its adverse effects, including biological mechanisms linking pregnancy anxiety to birth timing. This research also examines Latina mental health during pregnancy, including culturally-based sources of anxiety. The Discussant (1983-1989 predoctoral) will highlight parallels among the work of the presenters, how their scholarship showcases the conceptual and methodological excellence that they learned from Chris, as well as her commitment to using biopsychosocial science to understand and alleviate critical public health problems, especially in underserved communities.

INDIVIDUAL ABSTRACT NUMBER 1106

SOCIAL SUPPORT EFFECTIVENESS: UNDERSTANDING AND IMPROVING CANCER OUTCOMES BY ADVANCING UNDERSTANDING OF SOCIAL SUPPORT AS A RESOURCE FOR CANCER SURVIVORS

Christine Rini, PhD

As a doctoral student working with Christine Dunkel Schetter, I developed the Social Support Effectiveness (SSE) framework and measures to advance research on the complexities of social support transactions in close relationships. SSE refers to the extent to which relationship partners' support attempts provide social support that matches recipients' needs in terms of its type (emotional, informational, instrumental), quality, and quantity, in turn promoting more effective coping as well as better health and well-being. My dissertation research yielded supporting evidence in pregnant women and motivated my subsequent research on SSE in blood cancer survivors treated with stem cell transplant, which I have continued since. One such study found an interaction between the quantity of support received from a partner (i.e., enacted support) and the effectiveness of that support: Among survivors who received relatively ineffective partner support, receiving a greater quantity of partner support was associated with increased distress. In contrast, among survivors who received more effective partner support, the quantity of received partner support was not associated with distress. Findings suggest that even small amounts of partner support could be beneficial, as long as it is effective support. My research team has also studied how the effectiveness of cancer caregivers' support may buffer or mitigate adverse effects of negative life events in transplant survivors. Receiving more effective caregiver support buffered adverse effects of recent stressful life events on distress, but only among survivors whose caregiver was a romantic partner. This beneficial effect was not found in survivors who had a family or friend caregiver, although partner caregivers and non-partner caregivers provided support that did not differ in its effectiveness. We are now conducting additional research to understand these findings, with the goal of informing resources and interventions for cancer caregivers. After describing evidence from these and related studies, this talk will also describe translation of findings into interventions capable of improving outcomes of cancer survivors as well as implications for understanding the complexities of social support as a resource for people facing cancer and other health-related challenges.

INDIVIDUAL ABSTRACT NUMBER 1213

THE ROAD TO INSIGHTS FOR RELATIONSHIPS AND HEALTH FROM LATINO CULTURE

Belinda Campos, PhD

This talk highlights Christine Dunkel Schetter's key role in creating and providing space for me to study questions related to Latino culture and health, a focus that continues to be a central piece of my research program 20 years later. As a new Ph.D., I arrived to Chris with an overarching theoretical interest in the correlates and consequences of prioritizing others before the self – human social life requires balancing self-interest with other-interest, and Latino cultural values emphasize other-interest. Chris' prescient datasets sampled the participants and contained the measures I needed to study Latino culture and its links with relationships and health. I will describe our studies examining association of the cultural value of familism with Latina pregnancy outcomes (Study 1), the role of U.S. acculturation on Latina pregnancy outcomes (Study 2), the links of familism with qualities that characterize high quality close relationships and psychological health (Study 3), and most recently, the role of socioeconomic resources for having familism values (Study 4). Altogether, the findings of these studies provide compelling empirical evidence that a sociocultural emphasis on prioritizing others before the self can be beneficial for relationships and protective of health. This research has been among the first to provide empirical evidence of the strengths of Latino culture for relationships and health, challenging historical views that considered Latino cultural values as deficits to be overcome with U.S. acculturation. Today, my research is recognized for generating novel insights that advance scientific understanding of relationships and the link of relationships with health. More specifically, it is recognized for advancing understanding of the strengths and benefits of Latino culture for emotions, relationships, and health. This was all made possible by those key postdoctoral years early in my career with Christine Dunkel Schetter.

INDIVIDUAL ABSTRACT NUMBER 1214

ANXIETY IN PREGNANCY: HEALTH EFFECTS, BIOLOGICAL MECHANISMS, AND CULTURAL PROCESSES

Isabel Almeida, PhD

This talk features the program of research I developed under the close mentorship of Professor Christine Dunkel Schetter, my doctoral advisor from 2014 to 2020. I arrived at UCLA as a doctoral candidate with vague aspirations to study Latina mental health during pregnancy. Together, we studied how psychological, biological, and cultural factors interact to influence maternal reproductive health, with an emphasis on perinatal processes from preconception through the postpartum period among Latinas living in the U.S. Under Prof. Dunkel Schetter's guidance, I contributed to work finding that strong negative affect during pregnancy, particularly elevated anxiety concerning a current pregnancy, increases risk of adverse outcomes for mothers and offspring. Our work focused on understanding *pregnancy anxiety*, which has been measured globally by various instruments, all of which include ratings of specific worries about baby, birth, and parenting. This talk will summarize my research on pregnancy anxiety and discuss the latest evidence from my lab on neuroendocrine mechanisms linking pregnancy anxiety to birth outcomes, along with psychosocial and cultural moderators of these effects. In particular, Latinas living in the U.S. have been studied by our team to determine if they are more likely to be anxious in pregnancy than non-Hispanic White women controlling for confounding variables, and what the sources of anxiety are. This work identifies the cultural factors that are important to consider in the context of Latina mental health during pregnancy.

SYMPOSIUM

BODILY CONTRIBUTIONS TO PSYCHOLOGICAL EXPERIENCES: FROM NEURONS TO SOCIAL NETWORKS

Megan Cardenas, MA; Keely Muscatell, PhD

Biopsychosocial scientists have long appreciated that psychological experiences can influence bodily processes. Of course, bodily processes can also feed back to the brain to influence psychological experiences. And yet, this "bottom up" pathway often receives less attention in biopsychosocial science. The presentations in this symposium will highlight new work that sheds light on how a diversity of bodily process (exercise, inflammation, touch) contribute to varied psychological experiences (brain aging, social perception, social connection, social media use). The first presentation will present findings that a year-long cardiovascular aerobic fitness intervention significantly decreases measures of brain age in midlife adults, relative to a control group. The second presentation will showcase research using the influenza vaccine as a mild inflammatory challenge to investigate links between low-grade inflammation and heightened threat sensitivity. Results suggest links between inflammation and threat depend on individual-differences in beliefs about intergroup inequality. The third presentation will explore the causal influence of two components of physical touch, warmth and pressure, in increasing feelings of social connection and associated neural activity toward close others. The final presentation will investigate how low levels of endogenous inflammation are related to different types of social interaction. Specifically, associations between inflammation and social media use vs. in-person social interactions will be presented. The session will close with a discussion of next steps for this area of research examining bodily contributions to psychological experience.

INDIVIDUAL ABSTRACT NUMBER 1392

EFFECTS OF A 1-YEAR PHYSICAL ACTIVITY INTERVENTION ON BRAIN AGE AND CARDIOVASCULAR, AUTONOMIC, AND STRESS-PHYSIOLOGY IN MIDLIFE ADULTS

Peter Gianaros, PhD; Lu Wan, PhD; George Grove, MS; Thomas Kamarck, PhD; Regina Leckie, PhD; Mark Scudder, PhD; Anna Marsland, PhD; Timothy Verstynen, PhD; Matthew Muldoon, MD; Chae RyonKang, PhD; Javier Rasero, PhD; Thomas Kraynak, PhD; Mia DeCataldo, BS; Cristina Molina Hidalgo, PhD; Kirk Erickson, PhD

Background: Physical activity (PA) reduces cardiovascular disease risk, and emerging evidence suggests that it may also slow brain aging in midlife. The pathways by which PA may confer these health benefits could encompass its influence on autonomic, cardiometabolic, and stress-related physiology.

Methods: The present pre-registered clinical trial (NCT03841669) was comprised of a 12-month intervention in which 130 otherwise healthy midlife adults aged 26 to 58 years (mean age = 41.3 ± 9.9 years; 67.7% identifying as female) were randomized to: (1) 150 minutes per week of moderate-intensity aerobic physical activity or

(2) a health-information control group. A total of 24 and 26 participants were lost to follow-up (attrited) in the intervention and control groups over the 1-year period, respectively. Intervention-related changes in the following were tested: cardiorespiratory fitness (VO$_2$peak); resting heart rate and blood pressure; resting heart rate variability; pulse wave velocity as a measure of arterial stiffness; reactive hyperemia of the brachial artery as a measure of endothelial function; fasting lipid and glucose levels; acute stress-related blood pressure reactivity; and a neuroimaging-derived biomarker of brain age. Generalized linear mixed models tested intervention effects on study outcomes, controlling for chronological age, sex at birth, educational attainment, and for certain outcomes, neuroimage data quality and body mass index (BMI).

Results: As revealed by a group-by-time interaction, those who randomized to the 12-month PA intervention showed a significant average increase from baseline in cardiorespiratory fitness (VO$_2$peak) relative to those in the control group (mean difference = 2.4 ml/kg/min; 95% CI: 0.5 to 4.3, p = 0.02). The intervention group also showed a significant average reduction in brain age compared to the control group (-0.94 year greater average reduction; 95% CI: -1.1 to -0.2, p=0.02). However, none of the other study outcomes showed statistically significant group-by-time interactions, indicating an absence of intervention effects.

Discussion: Engaging in 12 months of moderate-to-vigorous PA may improve or maintain brain health in midlife, as reflected by brain age, but such effects do not appear attributable to autonomic, cardiometabolic, and stress-related physiology.

INDIVIDUAL ABSTRACT NUMBER 1400

THE EFFECTS OF MILD INFLAMMATORY CHALLENGE ON THREAT SENSITIVITY: A STUDY USING THE INFLUENZA VACCINE MODEL

Megan Cardenas, MA; Mallory Feldman, MA; Gabriella Alvarez, PhD; Tatum Jolink, PhD; Taylor West, PhD; Keely Muscatell, PhD

Research demonstrates a robust link between inflammation and threat sensitivity, such that heightened levels of inflammation are associated with heightened threat detection. Simultaneously, a previously disparate literature has investigated the role of social dominance orientation (SDO) in shaping threat sensitivity. SDO is a personality trait that indexes a person's preference for social hierarchy and intergroup inequality. Research has shown that greater SDO is associated with negative social characteristics, such as greater prejudice toward marginalized social groups. However, no known studies have examined the association between inflammation and preferences for intergroup inequality, nor has past research examined how the well-established relationship between inflammation and threat detection may differ based on such preferences for inequality. To address this, 48 participants (M$_{age}$ = 20) received the influenza vaccine to elicit a low-grade inflammatory response. Participants provided blood samples before and 24 hours after the vaccine and completed the SDO scale to assess preferences for intergroup inequality. They also completed a threat sensitivity face morph task, in which they saw a series of face morphs ranging from 100% smiling to neutral to 100% scowling and were asked to

indicate whether the target face was "angry" or "not angry." Results show that SDO significantly moderated the relationship between inflammatory reactivity to the vaccine and threat sensitivity; β = -0.80, $t(41)$ = -2.48, p = .017. Specifically, greater increases in the inflammatory cytokine interleukin-6 (IL-6) were associated with a greater bias to perceive faces as angry, but only among participants with greater preferences for intergroup inequality. These findings suggest that inflammation might not unequivocally yield a heightened sensitivity to threat, but rather that this inflammation-induced perceptual process might be shaped by preferences for a social hierarchy. More broadly, these findings demonstrate the utility of combining theory and methods from social psychology (i.e., on SDO) together with experimental research in PNI to further our understanding of links between the social world and inflammation.

INDIVIDUAL ABSTRACT NUMBER 1289

EFFECT OF WARM PRESSURE ON SOCIAL CONNECTION WITH CLOSE OTHERS

Tristen Inagaki, PhD

Social connection is important for health. Therefore, it is important to understand the mechanisms by which we remain connected to one another. Social touch, such as hugging and hand-holding, aids in the maintenance of social connection, especially close bonds. However, social touch has many physical components, including temperature, pressure, speed, duration, and texture – leaving open questions as to which inputs matter most for social connection. Based on animal models of the contribution of warmth and huddling to social connection and theories highlighting bodily feedback as drivers of psychological experience, the current research seeks to establish the causal influence of two components of social touch on social connection with close others: warmth and pressure. In two within-subject experimental studies, participants were exposed to repeated trials of warm or room temperature objects, combined with deeper or lighter pressure from weighted blankets, while they viewed images of their close others in the lab (Study 1 N = 75, M age = 19.89, 77.3% women) or in the MRI scanner (Study 2 N = 66, M age = 21.33, 78.8% women). To assess feelings of social connection, participants rated their feelings of connection and disconnection towards the people in the photographs. Results of Studies 1 and 2 showed that warm deep pressure increased feelings of social connection compared to warm light pressure and room temperature deep pressure. Effects were stronger for those higher in interoceptive sensibility (Study 1). Further, activity in regions previously related to social connection (e.g., ventral striatum, mid-insula, ventromedial prefrontal cortex) were higher in response to warm deep pressure compared to control conditions (Study 2). The combination of warmth and pressure, therefore, uniquely increases feelings of social connection and associated neural activity toward close others. Results are the first to implicate a role of pressure in the maintenance of close relationships and suggests that warm pressure could be health promoting.

INDIVIDUAL ABSTRACT NUMBER 1290

SOCIAL EFFECTS OF INFLAMMATION: INVESTIGATING HOW INFLAMMATION RELATES TO SOCIAL MEDIA USE AND FACE-TO-FACE INTERACTIONS

Baldwin Way, PhD; Tao Jiang, PhD; David Lee, PhD

Initial studies of inflammation's effect on social behavior focused on social distancing, yet an emerging body of work suggests that the nature of inflammation's effects on social approach or avoidance are dependent on context. Accordingly, we have begun examining the role of inflammation in an online context because interacting through social media has lower pathogen risk and requires less energy than face-to-face interactions and therefore may be related to inflammatory processes. In a cross- sectional analysis of a nationally representative sample, Study 1 (N = 863) found a positive association between C-reactive protein (CRP), a biomarker of systemic inflammation, and the amount of social media use by middle-aged adults. Study 2 (N = 228) showed that among college students CRP was prospectively associated with more self-reported social media use 6 weeks later. Providing stronger evidence of the directionality of this effect, Study 3 (N = 171) showed that in college students CRP predicted increased social media use (objectively measured) in the subsequent week even after controlling for current week's use. Additionally, in exploratory analyses of CRP and different types of social media use in the same week, CRP was only associated with using social media for social interaction and not for other purposes (e.g., entertainment). Furthermore, there was a significant interaction effect between CRP and interaction mode such that CRP was associated with amount of social media use, but not face-to-face social interaction frequency. Taken together, these results suggest that low-levels of endogenous inflammation exert effects on social behavior, particularly in an online context. Future work in the lab will be exploring the psychological factors underlying these affiliative effects to better understand how psychological state and context influence the ways in which inflammation alters social behavior.

SYMPOSIUM

STRESS IN ACTION AND CARDIOVASCULAR DISEASE
Annelieke Roest; Peter de Jonge, PhD

This symposium presents results obtained by researchers within the Stress in Action (SiA) consortium as well as contributions by international experts. Goals of this symposium are two-fold. 1. Attendees will learn the state-of-the-art in research regarding stress and cardiovascular diseases, and 2. Attendees will get acquainted with the SiA consortium including five universities and their University Medical Centers in the Netherlands that received funding for 10 years of research. One of the aims of SiA is to assess how stress responses drive the onset and course of stress-related disease.
The first presenter of the proposed symposium will show the results of an umbrella review of systematic reviews and meta-analyses. This umbrella review covers the entire field of stressors and the association with cardiometabolic disease and its physiological risk factors, including for example, high blood pressure, high cholesterol,

and heart rate variability. This umbrella review will show for which stressors and outcomes the evidence bases is the strongest as well as discover current research gaps. The second presenter will present results of the Lifelines cohort study in which the associations between experienced stressors and health behaviors (predictors) and high blood pressure (outcome) was examined, and whether these predictors exacerbate genetic predisposition towards higher blood pressure. Finally, the third presenter created the Social Determinants of Health Patient Interview Form (SDOH-PIF) to assess stressful conditions together under a single construct, the "social determinants of health". This interview was carried out in patients with heart failure, showing that most patients with heart failure have been exposed to multiple SDOH, and that these patients have to cope not only with their illness but also with extremely stressful conditions, such as financial stress, and histories of adverse childhood experiences.

Finally, the moderator of the session will integrate the symposium contributions in the model developed within the SiA consortium and the audience will be invited to provide feedback on this model. In addition, a database will be presented covering all published research on ecological momentary assessment studies examining daily stress, results of which are used to inform future SiA studies.

INDIVIDUAL ABSTRACT NUMBER 1193

STRESS AND CARDIOMETABOLIC DISEASE: AN UMBRELLA REVIEW

*Nan Zhao, MSc; Peter de Jonge, PhD; Annelieke Roest, PhD*

Introduction- The relationship between psychosocial stress and cardiometabolic disease (CMD) has been extensively studied for decades across various disciplines. Given the substantial amount of empirical studies and reviews on this topic, it is important to provide an overview of the current state of knowledge and identify the remaining gaps. The aim of this umbrella review was to summarize and evaluate the existing evidence between stress and CMD and its risk factors, while also providing further research directions.

Method- We searched records from PubMed, Embase, PsycINFO, CINAHL and Web of Science databases up to April, 2024. We included systematic reviews and/or meta-analyses that examined psychosocial stress measures in relation to either a CMD outcome or their physiological risk factors. (PROSPERO pre-registration number: CRD42024539455)

Results- After title-abstract, full-text and overlap screening, 155 systematic reviews and meta-analyses including approximately 2500 individual studies were identified. Key stress predictors were adverse childhood experiences, domestic violence, PTSD, job strain, and noise. The primary outcomes associated with these predictors were cardiovascular disease, obesity, diabetes and risk factors such as blood pressure, metabolic syndromes, and heart rate variability. The effect sizes ranged from (HR) 1.01 to 1.79, depending on the types of predictors and outcomes.

Conclusion- Stress in general is positively related to CMD outcomes and its risk factors. The magnitude of the effects varied depending on the types of the stressors, CMD outcomes, subsamples, and the quality of the meta-analyses.

Note: The narrative results of this umbrella review were finished. Quality assessment and a potential quantitative classification of the evidence are still ongoing. We are planning to present these results at the SBSM annual conference in March 2025.
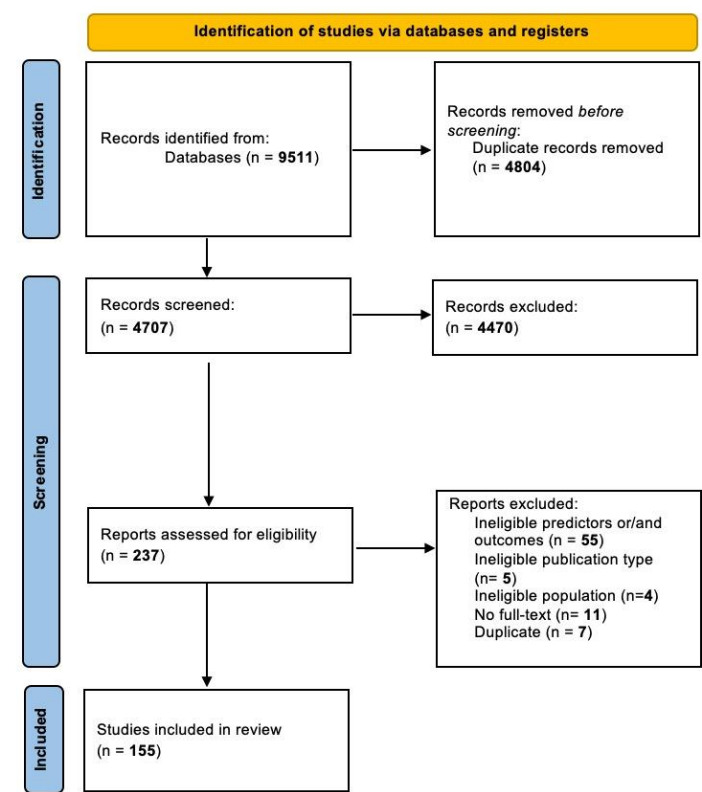
INDIVIDUAL ABSTRACT NUMBER 1262

SEDENTARY LIFESTYLE AND EXPOSURE TO STRESS EXACERBATE POLYGENIC RISK IN HYPERTENSION: INSIGHTS FROM THE LIFELINES COHORT STUDY

Anna Argoty-Pantoja, MSc; Zekai Chen, MSc; Felix Reichelt, MSc; Chris Thio, PhD; Harold Snieder, PhD

Background: Hypertension is an incompletely understood complex disorder, affected by genetics and environment. We examined the extent to which genetic influences can be modified by lifestyle, by testing interactions between lifestyle and polygenic risk scores (PRSs).

Methods: We included 73,658 adults from the population based Lifelines Cohort Study with available blood pressure (BP), lifestyle factors (obesity, sedentary time, physical activity, stressful life events, chronic stress), and genetic data. Lifestyle factors were categorized according to clinical or data-driven cut-offs (i.e. tertiles) where appropriate. PRSs for each participant were calculated using the *SBayesRC* optimization algorithm. We regressed hypertension on PRS, lifestyle, and a PRS x lifestyle interaction term, adjusting for age, age^2, sex, educational level, genotyping chip and genetic principal components. We assessed interaction on the additive scale calculating the Relative Excess Risk of Interaction (RERI). The significance threshold was $p < 0.001$.

Results: We found that one standard deviation higher PRS was associated (OR [95% CI]) with 74% higher odds of hypertension (1.74 [1.70, 1.77]). All unhealthy lifestyle factors showed a positive association of hypertension: obesity (4.04 [3.82, 4.27], high TV watching time (1.70 [1.52, 1.90]), low physical activity (1.24 [1.19, 1.30]), high stressful life events (1.12 [1.07, 1.17]), high chronic stress (1.08 [1.02, 1.14]). We found significant interaction effects between the PRS and all lifestyle factors on the risk of hypertension with obesity showing the largest interaction effect. That is, we observed significant additive interaction (RERI [95% CI] of PRS with obesity (2.57 [2.31, 2.82]), high TV watching time (0.33 [0.12, 0.53]), low physical activity (0.13 [0.0.7, 0.20]), high stressful life events (0.15 [0.09, 0.21]), high chronic stress (0.08 [0.02, 0.15]).

Conclusion: Our findings suggest that an unhealthy lifestyle, to a modest extent, exacerbates genetic predisposition towards higher blood pressure, with potential implications for hypertension risk mitigation.

INDIVIDUAL ABSTRACT NUMBER 1263

SOCIAL DETERMINANTS OF HEALTH IN HEART FAILURE

Kenneth Freedland, PhD

The roles of stressful social, economic, and environmental conditions have been important topics in biopsychosocial science and medicine for many decades. In 2005, a World Health Organization commission brought these stressful conditions together under a single construct, the "social determinants of health" (SDOH). Research on SDOH has grown rapidly since then, and the roles of SDOH in cardiovascular diseases have been a particularly active area of research. Our group recently conducted a study of a wide variety of patient-reported SDOH in 367 patients with heart failure (HF). Since no well-tested, widely-used SDOH interviews were available at the inception of the study, we created the Social Determinants of Health Patient Interview Form (SDOH-PIF) for the study. The interview demonstrated excellent inter-rater reliability and concurrent validity, as shown by a "dose-response" relationship between SDOH scores and total scores on the Perceived Stress Scale. SDOH scores were higher in African Americans than in white patients, and they were associated with low incomes and relatively high body mass indexes. Factor analysis revealed two different sets of items that contribute to relatively high SDOH scores in patients with HF. The first originates with various forms of abuse in childhood and continues into adulthood in the form of severe socioeconomic deprivation. The second often originates with the loss of a family member and includes occupational and financial stress and difficulty affording medical care. The effects of relatively high burdens of patient-reported SDOH on health care utilization and survival will be examined when the follow-up phase of the study has been completed. The present findings show that most patients with HF have been exposed to multiple SDOH, and that the patients with the highest exposures have to cope not only with their illness but with extremely stressful social, economic, and environmental conditions as well.

BIOBEHAVIORAL RISK AND PROTECTIVE FACTORS FOR BIOLOGICAL AND BRAIN AGING

Swathi Gujral, University of Pittsburgh; Thomas Kraynak, PhD; Matthew Lehrer, PhD; Alina Lesnovskaya, M.S.

Physical health, mental health, and a healthy lifestyle are interconnected pillars of healthy aging, encompassing both biological and brain aging. Physical health factors most relevant for aging include cardiovascular, metabolic, and pulmonary health; as well as systemic inflammation. Mental health factors most consistently linked to poor aging include depression and anxiety. Lifestyle factors capable of *slowing* the biological aging process include sleep health and fitness. Here, you will hear from four presenters offering distinct and valuable perspectives on the role of physical and mental health; and lifestyle in promoting healthy aging.

Presenter 1 will discuss the role of several physical health factors (cardiovascular, metabolic, inflammatory) in relating to a machine learning-derived estimate of brain age in a large cohort of community-dwelling older adults. They found markers of systemic inflammation were most consistently linked to higher estimates of brain age.

Presenter 2 will discuss the role of physical and mental health factors in relating to several neuroimaging markers of brain aging in those with remitted late-life depression. They found that a higher level of depressive symptoms was a *risk* factor and higher levels of circulating brain derived neurotrophic factor was a *protective* factor for brain aging.

Presenter 3 will discuss the role of depression and sleep health in relating to cellular senescence, a marker of accelerated biological aging, among middle-aged and older adults. They found that a diagnosis of sleep apnea and a history of depression may relate to accelerated biological aging.

Presenter 4 will discuss factors that may influence the association between white matter hyperintensities (WMHs), which are hallmarks of cerebrovascular aging, and cognition among community-dwelling older adults. They found fitness may moderate the relationship between WMHs and executive/attentional control but this did not survive removal of outliers.

Through these presentations, we will gain exposure to cutting-edge methods for the assessment of biological and brain aging processes and expand our understanding of the multitude of biological, psychological, and lifestyle factors that critically contribute healthy aging.

INDIVIDUAL ABSTRACT NUMBER 1411

BIOLOGICAL AND PSYCHOLOGICAL RISK FACTORS FOR BRAIN AGING IN OLDER ADULTS WITH REMITTED LATE-LIFE DEPRESSION: PRELIMINARY FINDINGS

Swathi Gujral, PhD; Sumer Ziady, MS; Ellie Rapp, BS; Helmet Karim, PhD; Amrita Sahu, PhD; Adam Sterczala, PhD; George Grove, MS

Introduction: Late-life depression (LLD) is linked to accelerated brain aging, evidenced by markers of cerebrovascular disease and neurodegeneration. Yet, we poorly understand biobehavioral factors that may influence the adverse brain health effects of LLD. We examined biological (medical morbidity, cardiorespiratory fitness (CRF), circulating brain-derived neurotrophic factor (BDNF)) and psychological factors (depression, anxiety symptoms) in relation to neuroimaging markers of brain aging: 1) hippocampal (HC) volume and 2) peak-width of skeletonized mean diffusivity (PSMD), and 3) a machine learning-derived estimate of brain age.

Methods: 31 adults aged 60+ years (mean(SD) age: 67.7(5.6); education: 16.7(1.7); 68% female, 16% Black) having a remitted Major Depressive Episode after age 55 years, underwent structural MR scans on a 7T scanner. HC volume was derived from the T1 MPRAGE. PSMD was estimated using diffusion tensor scans and processed using an automated pipeline (https://www.psmd-marker.com/). Brain Age was estimated by computing gray matter volume using SPM12 and DARTEL pipelines. A pre-trained, validated machine learning model estimated brain age. Medical morbidity was assessed using the Cumulative Illness Rating Scale, Geriatric Version. VO_2 max testing assessed CRF. Circulating BDNF was evaluated using the Milliplex Human Myokine Magnetic Bead Panel. Depression and anxiety symptoms were assessed using the Patient Health Questionnaire, 9-item (PHQ-9) and Geriatric Anxiety Scale, 10-item, respectively. Linear regression models, adjusted for age, sex, and education, were used to predict markers of brain aging with biological and psychological factors.

Results: Predictions of brain age were modest (predicted-observed correlations<.30, mean absolute errors>4.9 years). Medical morbidity, CRF, and anxiety were not related to brain aging markers assessed. Higher circulating BDNF was associated with lower estimated brain age (B= -0.02, SE=0.006, t=-2.66, p=0.024; R^2 change=0.22). Higher depressive symptoms related to lower HC volume (Right: B= -107.39, SE=42.5, t=-2.53, p=0.027, R^2 change= 0.30; Left: B= -80.89, SE=35.6, t=-2.27, p=0.04, R^2 change=0.24). **Conclusions:** Higher circulating BDNF levels were related to lower estimated brain age and higher depressive symptoms (within mild range) was related lower HC volume in those with remitted LLD.

INDIVIDUAL ABSTRACT NUMBER 1415

DO CARDIOVASCULAR, METABOLIC, OR INFLAMMATORY RISK FACTORS RELATE TO BRAIN AGE IN LATE LIFE?

Thomas Kraynak, PhD; Helmet Karim, PhD; Carmen Andreescu, MD; Caterina Rosano, MD

An individual's 'brain age' can be estimated using patterns of brain morphology derived from structural magnetic resonance imaging (MRI) and used in cross-validated machine learning models to predict their chronological age. Having a predicted brain age that is significantly greater (i.e., older) than one's chronological age is associated with Alzheimer's Disease and age-related dementias.

Greater brain age is also associated with various known midlife risk factors for dementia, including elevated cardiovascular, metabolic, and inflammatory risk, yet the importance of these risk factors in the context of brain aging in late life not as well understood. We tested associations of cardiovascular, metabolic, and inflammatory risk factors (blood pressure, dyslipidemia, adiposity, insulin resistance, systemic inflammation) with two published MRI models of brain age in a cohort of community-dwelling older adults, the Healthy Brain Project of the Health Aging and Body Composition study (N = 268, age 79 to 92, 58% women, 40% black). In this cohort, predictions of brain age were modest (predicted-observed correlations < .30, mean absolute errors > 4.9 years). Adjusting for chronological age, sex, race, education, and MRI quality, there were significant sex and race differences in predicted brain age, with men and whites having older-looking brains than women and blacks (β's > .23 and .55, respectively). Of the above risk factors, circulating interleukin-6(IL-6), a marker of systemic inflammation, was cross-sectionally associated with greater brain age in both models (β's > .11, p's < .05). Markers of dyslipidemia (triglycerides, high-density lipoprotein) were associated with brain age in one of the two models (β = .12, p = .04 and β = -.22, p = .001, respectively). These findings extend prior research on midlife brain aging and suggest that systemic inflammation may relate to accelerated brain aging in late life, but associations with other risk factors are not as consistent.

INDIVIDUAL ABSTRACT NUMBER 1417

ASSOCIATIONS OF MAJOR DEPRESSIVE DISORDER AND MULTIDIMENSIONAL SLEEP HEALTH WITH CELLULAR SENESCENCE IN MID-LIFE AND OLDER ADULTS

Matthew Lehrer, PhD; Gehui Zhang, MS; Robert Krafty, PhD; Breno Diniz, MD, PhD; Meryl Butters, PhD

Introduction: Accelerated biological aging, including cellular senescence, is a critical pathway through which exposure to major depressive disorder (MDD) may exert its pernicious effects on health. Identifying modifiable risk factors of senescence-associated accelerated aging in MDD is critical for developing interventions to reduce the burden of MDD-related diseases of aging. Disturbed sleep, specifically poor multidimensional sleep health (MSH), may amplify the effects of MDD on senescence-related biological processes. This study examined the interplay between MDD history, MSH, and the senescence-associated secretory phenotype (SASP) in middle-age and older adults.

Methods: Participants were 97 adults (mean age: 60.4 +/- 9.3 years, 63% females) with (n = 53) and without (n = 44) a lifetime history of recurrent MDD. MSH was quantified using measures of sleep efficiency, timing, duration, and regularity (wrist actigraphy); sleep satisfaction (sleep diary); daytime alertness (Epworth Sleepiness Scale), and % time in non-REM stage 3 sleep (polysomnography). Each component was dichotomized and summed into a composite score (0-7). Plasma samples were assayed for 22 SASP proteins and combined into a single SASP index. We tested associations of MDD history, MSH, and their interaction with the SASP index. Given sleep apnea induces intermittent hypoxia that may confound associations

of MDD, MSH, and SASP, we tested all models in participants with (n = 13) and without (n = 84) sleep apnea (apnea-hypopnea index $\geq$ 20).

Results: Participants with sleep apnea had a higher SASP index (r = .20, p = .047). Among participants without sleep apnea, the SASP index was marginally higher in participants with MDD history (β = .21, p = .092) after adjusting for age, sex, and medical comorbidities. In participants with and without sleep apnea, neither MSH nor individual sleep components were associated with the SASP index (ps > .01). MSH did not moderate the association of MDD history with the SASP index (p > .01).

Conclusions: Lifetime depression history may be associated with cellular senescence among adults without sleep apnea. Given null findings with MSH, future research should examine whether other sleep-related patterns aberrant in MDD (e.g., circadian and 24hr rest-activity rhythms) exacerbate associations of MDD with cellular senescence.

INDIVIDUAL ABSTRACT NUMBER 1439

REGIONAL WHITE MATTER HYPERINTENSITIES, CARDIORESPIRATORY FITNESS, AND COGNITION IN LATE ADULTHOOD

Alina Lesnovskaya, MS; Shivangi Jain, PhD; Lu Wan, PhD; Cristina Molina-Hidalgo, PhD; Chaeryon Kang, PhD; Thomas Kamarck, PhD; Rebecca G. Reed; Anna Marsland, PhD; Hayley Ripperger; Haiqing Huang, PhD; George Grove, MS; John J , Jakicic; Arthur Kramer, PhD; Charles Hillman, Phd; Edward McCauley, PhD; Jeffrey Burns, MD; Eric Vidoni, PhD; Brad Sutton, PhD; Kirk Erickson, PhD

White matter hyperintensities (WMHs) represent areas of damage to brain tissue and are associated with poorer cognitive function. However, it is unclear whether differences in the anatomical location of WMHs correspond to distinct patterns of cognitive deficits and if any health factors mitigate their impact on cognition. Moreover, cardiorespiratory fitness (CRF) has been shown to promote neurocognitive outcomes but has not yet been examined as a protective factor in the relationship between WMHs and cognition. Here, we: (1) examined the relationship between WMH volume, quantified globally and locally within specific white matter tracts, and performance across 5 cognitive domains, and (2) tested whether CRF moderates these associations. We hypothesized that greater WMH volume in tracts connecting temporal/parietal brain regions would associate with poorer episodic memory, whereas greater WMH volume in frontal tracts would associate with poorer executive/attentional control, and that these associations would be strongest among older adults with lower CRF. Baseline data from 625 sedentary older adults (*M*age = 69.70 ± 3.74; 71.8% female; 76% White) enrolled in a randomized clinical trial of aerobic exercise were analyzed. Participants completed structural brain imaging, a graded exercise test, and cognitive testing. A confirmatory factor analysis generated five latent factors of episodic memory, executive/attentional control, processing speed, visuospatial ability, and working memory. Analyses consisted of separate linear regressions. Contrary to expectations, we found a nonspecific pattern of associations between higher WMH volume

(globally/across multiple tracts), and poorer performance across all tested cognitive domains (βs = -0.04 to -0.06; ps = .001 to .047) apart from episodic memory. As predicted, the association between higher WMH volume and poorer executive/attentional control was significant only for older adults with lower CRF ($\leq$ VO2peak of ~17 ml/kg/min); however, these results were not significant after removal of several extreme WMH values. In conclusion, we revealed that WMHs, regardless of whether they are examined globally or across tracts, are broadly but weakly associated with cognitive performance, and further research is needed on the possible protective relation of CRF on this marker of brain health.

SYMPOSIUM

BRAIN-BODY CONNECTIONS IN OLDER AGE: IMPLICATIONS FOR COGNITION AND WELL-BEING
Stephanie J. Wilson, PhD, University of Alabama at Birmingham; Thomas Ritz, PhD; Julian F. Thayer, PhD

The dynamic, bidirectional connections between the brain and the periphery are now well-established, although many questions remain about how these connections impact functioning in older adulthood. Indeed, aging is complex and multidirectional: on the one hand, some findings and theories suggest that older adults shift social-emotional goals, with benefits for emotional well-being. On the other, physiological resilience declines. The current symposium examines these connections among older adults in varying health and disease contexts—normative health, neurodegenerative disease, and asthma.

The first study presents preregistered data from healthy community older adults to probe the positivity effect—the tendency for older adults to focus on and remember positive information over negative. Grounded in theories of cognitive control, prior work has linked autonomic nervous system (ANS) activity to older adults' positivity biases in attention. This study expands our understanding of the positivity effect's connections to the ANS by examining heart rate (HR), high-frequency HR variability (HF-HRV), and their links to emotional memory.

The second presentation examines the psychophysiological and social-emotional correlates of frontotemporal lobar degeneration (FTLD). FTLD is a leading cause of early-onset dementia, particularly in middle age. This work compares older adults with and without FTLD in their physiological responses prior to an emotional film. In turn, these patterns are linked to functional connectivity in key brain regions and family caregiver well-being.

The third presentation investigates inflammation and cognition in aging and respiratory disease. Asthma is a chronic inflammatory disease of the airways for which emerging research suggests an influence of peripheral inflammation on the brain and cognition. As a potentially life-long disease, these influences may be particularly visible in middle to older age. This study examined key domains of cognitive function in those suffering from asthma and lung-healthy controls and their association with age, blood-based inflammation markers, and anti-inflammatory medication.

The discussant, whose expertise features central-peripheral dynamics in aging, will highlight how the work expands our understanding of autonomic and immune activity and their links to functioning in older age.

INDIVIDUAL ABSTRACT NUMBER 1374

TESTING LINKS BETWEEN THE AUTONOMIC NERVOUS SYSTEM AND EMOTIONAL MEMORY IN OLDER ADULTS

Sarah M. Cline, MS; Sumaiyah U. Syed, MA; Julie Q. Pham, BA, BS; Iris S. Yang, MA; Samuel H. Molli, MA; Stephanie J. Wilson, PhD; Holly J. Bowen, PhD

Background: According to aging theories, a positivity bias develops in older age, shifting attention and memory away from negative information, toward positive. Cognitive control appears central to the positivity effect, and theories linking central and peripheral mechanisms suggest that the autonomic nervous system (ANS) plays a key role. Indeed, those with higher heart rate variability (HRV) show better inhibitory control and greater attention to positive compared to negative stimuli. No prior studies have assessed whether links between autonomic activity and the positivity bias extend to emotional memory among older adults.

Method: Healthy adults ages 60-80 (N=54, M=68 yrs) provided measures of resting autonomic activity via ECG in a 3-minute baseline using a standardized protocol. After correcting artifacts, resting average HR, RMSSD, and HF-HRV were calculated. Participants also completed two emotional memory tasks. In the Directed Forgetting task, participants saw positive, negative, and neutral words, followed by a cue indicating whether the word was To-Be-Remembered (TBR) or To-Be-Forgotten (TBF) for the recognition test. In the Working Memory Distraction task, participants kept abstract shapes in mind, while positive, negative and neutral images were presented as distractors before shape recognition.

Results: HF-HRV significantly moderated directed forgetting performance (Estimate = -0.00024, SE = 0.00012, p = .0473): those with higher HF-HRV remembered significantly more TBR than TBF words compared to those with lower HF-HRV. This suggests greater cognitive control over memory encoding processes. The effect was robust to many covariates, including age, sex, race-ethnicity, diabetes, hypertension, alcohol and tobacco use, depression, and resting HR. Those with lower resting HR had better overall working memory performance (Estimate = -0.005, SE = 0.002, p = .035), but this effect was attenuated by covariates (p = .284). No effects of valence emerged.

Conclusions: Among older adults, those with higher HRV and lower HR performed better on two memory tasks, supporting the link between the ANS and cognitive control over emotional memory. There was no link between ANS activity and a positivity bias. These findings raise questions about the ANS's ties to the positivity bias in memory and its implications for emotional well-being among older adults.

INDIVIDUAL ABSTRACT NUMBER 1376

DIMINISHED PREPARATORY PHYSIOLOGICAL RESPONSES IN FRONTOTEMPORAL LOBAR DEGENERATION: DIAGNOSTIC DIFFERENCES, NEURAL CONNECTIVITY CORRELATES, AND IMPACT ON FAMILY CAREGIVERS

Kuan-Hua Chen, PhD; Gianina Toller, PhD; Jennifer Merrilees, RN, PHD; Katherine Rankin, PhD; Howard J. Rosen, MD; Bruce L. Miller, MD; Robert W. Levenson, PhD

Background. Increased physiological activity often occurs when something significant is about to happen, sometimes even before we determine the emotional valence of the upcoming stimulus. Such physiological responses may reflect a general preparation for action, facilitating subsequent behavioral changes (e.g., approach or withdrawal). The generation of these "preparatory physiological responses" may require interactions between the brain and body. Impairment in these brain-body interactions may result in diminished preparatory physiological responses, which can be challenging not only for the affected individuals but also for their family members (appearing apathetic). **Methods**. In three studies, we studied preparatory physiological responses in persons with frontotemporal lobar degeneration (FTLD)—a neurodegenerative disease characterized by profound behavioral symptoms, including apathy and disinhibition. **Results**. In Study 1, persons with FTLD ($N = 214$) exhibited lower preparatory physiological responses (smaller increases in heart rate when told to watch an upcoming emotional film without being told its valence) compared to persons with other neurodegenerative diseases ($N = 62$; $p < 0.001$) and healthy controls ($N = 38$; $p = 0.002$). In Study 2, resting-state functional connectivity analyses ($N=117$) revealed that lower preparatory physiological responses were associated with lower connectivity within a network consisting of the thalamus, anterior insula, ventromedial prefrontal cortex, anterior cingulate cortex, and subcortical regions including the amygdala, hypothalamus, and periaqueductal gray (brain regions that support perceiving and evaluating current body status, predicting future bodily needs, and triggering physiological responses; $p = 0.001$). In Study 3, a trending effect ($p =.06$) suggested that lower preparatory physiological responses in persons with FTLD ($N = 158$) was associated with lower emotional well-being in their family caregivers. **Conclusion**. Together, these findings reveal an impairment in brain-body interactions in FTLD, resulting in diminished preparatory physiological responses before emotional events. This may be contributed by lower resting state connectivity in a brain network associated with emotional functioning. In addition, these diminished preparatory responses are linked with lower emotional well-being in family caregivers.

INDIVIDUAL ABSTRACT NUMBER 1378

THE ROLE OF AGE, ASTHMA, AND INFLAMMATION IN KEY DOMAINS OF COGNITIVE FUNCTION

Windsor G. Hall, B.S.; Margot L. Salsman, M.A.; Mikaela Lopez, M.S.; David A. Khan, M.D.; Denise C. Park, Ph.D.; E. Sherwood Brown, Ph.D.; Thomas Ritz, Ph.D.

Background. Inflamm-aging is the chronic, low-grade inflammation that occurs with aging and has been shown to contribute to

cognitive decline and neurodegeneration. Asthma, a chronic inflammatory disease, is commonly treated with inhaled corticosteroids (ICS) to reduce airway inflammation. Both inflamm-aging and asthma have been linked to cognitive decline, possibly due to increased neuroinflammation. We aimed to investigate the associations between age, asthma, and cognition while considering blood-based inflammatory markers and ICS use. **Methods.** Community adults aged 40-69 with and without asthma were recruited to complete a cross-sectional study (N=139). A cognitive battery was administered to assess cognition across three domains: processing speed, working memory, and episodic memory. Multiple linear regression models tested the association between age, asthma, and their interaction on cognitive assessments scores. The models included covariates of sex, race/ethnicity, and years of education. Further models explored the role of ICS use, systemic inflammation (blood neutrophils, platelets, and lymphocytes) and blood eosinophils. **Results.** Tests within the processing speed domain showed a significant decline with older age. One task within this domain showed an Age by Asthma interaction, indicating that older patients with asthma performed better than older patients in the control group. In the episodic memory domain, older age and not having asthma was associated with lower scores. On the Woodcock-Johnson naming task, elevated systemic inflammation predicted worse performance. Within the asthma sample, ICS predicted better performance on episodic memory tasks. Within the working memory domain, older age was associated with worse performance, and a trend of higher systemic inflammation being associated with lower scores. **Conclusions.** Age, asthma status, systemic inflammation, and ICS use play a role in predicting performance on cognitive assessments. Beyond age as the most common predictor of a decline in cognitive performance, the presence of asthma changed that relationship in that those with asthma and older age unexpectedly performed better than controls. For asthma alone, ICS use indicated better performance. These results indicate that the treatment of asthma may play a protective role in cognitive function in middle to older adults.

SYMPOSIUM

CURRENT DIRECTIONS IN EARLY LIFE ADVERSITY AND CARDIOMETABOLIC DISEASE RISK RESEARCH: KEY BIOLOGICAL, PSYCHOSOCIAL, AND DEMOGRAPHIC FACTORS.

Matthew Cribbet, University of Alabama; Neha John-Henderson, PhD; Annie T. Ginty, Ph.D.; Jenalee Doom, PhD; LillyBelle Deer, PhD

There are robust associations between early life adversity and poor cardiometabolic health. The objective of this symposium is to highlight key factors, such as social participation, biological sex, race/ethnicity, and positive childhood experiences, that may help us better understand the association between early life adversity and cardiometabolic risk. This symposium will not only bring together data from different developmental periods across the lifespan (e.g. adolescence, emerging adulthood, and adulthood) and cultural backgrounds, but it will also include state of the science measurement and analytic methods. One study shows that a culturally based measure of social participation moderated the association between early life adversity and cardiometabolic disease risk in a sample of Blackfeet American Indians. In another study, multigroup structural equation modeling demonstrated that there were statistically significant indirect effects between greater early life adversity and diminished systolic blood pressure and heart rate through poor impulse control, but only in women. A third study will examine the role of recent stress (past year) in predicting cardiovascular risk profiles by sex in a sample of adolescents. The fourth and final study will demonstrate the utility of using a large nationally representative longitudinal study of adolescents for examining the role of positive childhood experiences and childhood maltreatment on cardiovascular disease risk in adulthood, including significant differences in the patterning of the results by race/ethnicity as well as biological sex. Findings add to our current understanding of factors that may either mediate or moderate the association between early life adversity and cardiometabolic health, while highlighting the importance of both racial/ethnic diversity and women's health.

INDIVIDUAL ABSTRACT NUMBER 1377

CHILDHOOD TRAUMA, SOCIAL PARTICIPATION AND CARDIOMETABOLIC DISEASE RISK IN BLACKFEET AMERICAN INDIAN ADULTS

Neha John-Henderson, PhD; Betty Henderson-Matthews, MA; Megan Gordon, Degree in progress ; Reece Kothe, B.A.

American Indians have disproportionately high incidence of childhood trauma and cardiometabolic disease. These inequities are in large part due to historical trauma and loss associated with European colonization. Prior work indicates that social participation is health-protective, however knowledge on the relationship between social participation and health in American Indian adults is relatively limited. In the current study, 276 Blackfeet American Indian adults residing in the Blackfeet Nation in Northwest Montana, participated in the *Aa Koo Moo Waap* ("People Coming Together") study. We investigated whether social participation (as measured by the frequency of participation in 16 social events), moderates the relationship between childhood trauma and cardiometabolic disease risk. Using a similar approach to calculation of allostatic load, we used 75% cutoffs to classify high risk for the following outcomes: diastolic and systolic blood pressure, pulse rate, total cholesterol, triglycerides, fasting glucose, waist circumference, HbA1c and LDL cholesterol, and a 25% cutoff for HDL cholesterol. High risk scores were assigned a value of 1, and values for each outcome were summed to create a total risk score for cardiometabolic disease. Using a linear regression covarying for age, biological sex, and education level, we found that level of social participation was a statistically significant moderator of the relationship between childhood trauma and cardiometabolic disease risk (ß=-0.19; 95% CI = -0.52 to -0.13; *p*=.001). Simple slopes analyses further indicated that participants with high levels of childhood trauma and low levels of social participation had significantly greater cardiometabolic disease risk compared to those participants with low levels of childhood trauma and low social participation (effect=.63, t(266)= 4.07, *p*<.001) while there was no statistically significant difference in cardiometabolic disease risk related to childhood trauma at high

levels of social participation (effect=-.01,t(266)=-0.065, p=.94 . These findings suggest that social participation may act as a protective factor, reducing risk for poor cardiometabolic health for American Indian adults from the Blackfeet nation, and particularly for those who endured high levels of childhood trauma.

INDIVIDUAL ABSTRACT NUMBER 1375

EMOTION REGULATION DIFFICULTIES MEDIATE THE ASSOCIATION BETWEEN EARLY LIFE ADVERSITY AND CARDIOVASCULAR STRESS REACTIVITY IN WOMEN.

Annie T. Ginty, Ph.D.; Alexandra T. Tyra, Ph.D.

Background: Recent meta-analytic evidence suggests that early life adversity (ELA) is associated with altered cardiovascular reactivity to acute stress. Difficulties in regulating emotions have been associated with both ELA and cardiovascular reactions to acute stress. However, work examining ELA, emotion regulation difficulties, and cardiovascular reactions to stress is scarce and does not consider if there is a differential impact based on gender.

Aim: The present study aimed to use structural equation modelling to examine the relationship between ELA, difficulties in emotion regulation, and cardiovascular stress reactivity in men and women.

Method: Participants (N = 454; Mean [SD] age = 19.48 [1.26] years; 61.9% female, 66.3% White, 17.8% Hispanic) attended an in-person laboratory session where they engaged in a standardized acute psychological stress paradigm (10-minute formal baseline period, 4-minute acute psychological mental arithmetic task). Blood pressure and heart rate were measured throughout. Participants also completed questionnaires related to ELA (Childhood Trauma Questionnaire) and emotion regulation difficulties (Difficulties in Emotion Regulation Scale; DERS). Cardiovascular reactivity was calculated as: average stress – average baseline for each of the cardiovascular variables (systolic blood pressure [SBP], diastolic blood pressure [DBP], heart rate [HR]).

Results: Multigroup structural equation modelling demonstrated statistically significant indirect effects between higher ELA and diminished SBP (ß = -0.07, p = .013), DBP (ß = -0.07, p = .007), and HR (ß = -0.07, p = .013) reactivity through higher scores on only one of the DERS subscales (i.e., impulse control difficulties) in women, but not men. Findings suggest that in women, higher levels of ELA are associated with lower levels of cardiovascular stress reactivity, and that this relationship operates through greater difficulties remaining in control of impulsive behaviors when experiencing negative emotions.

Conclusion: The present study demonstrates that ELA may differentially impact women and men. These findings add to a growing body of work which proposes ELA alters both emotional and biological regulatory systems, particularly in women, and thus impacts the way women cope with stressful and/or negative events.

INDIVIDUAL ABSTRACT NUMBER 1373

SEX DIFFERENCES IN THE ASSOCIATION BETWEEN PSYCHOSOCIAL STRESS AND CARDIOVASCULAR HEALTH IN ADOLESCENCE

Jenalee Doom, PhD; Kenia Rivera, MA; Samantha Scott, BA; Hany Khattab, MD; Corby Martin, PhD; George Slavich, PhD

The association between greater childhood psychosocial stress and elevated adult cardiovascular risk is well-established. However, few studies have examined sex-specific associations between psychosocial stress and cardiovascular risk during adolescence. Adolescence is a critical developmental period where psychobiological changes and greater independence in health behaviors can affect adult health. As a result, studies that evaluate psychosocial stress, psychobiological processes, health behaviors, and cardiovascular health in adolescence are needed. Further, studies are needed that identify sex-specific associations between stress and health. The aim of the present analyses was to test: 1) whether there are sex-specific associations between stress and cardiovascular risk in adolescents, and 2) what factors may explain these sex differences. Methods: Adolescents aged 13-15 years (N = 151) were recruited. Adolescents completed the Stress and Adversity Inventory (STRAIN; Slavich et al., 2019) to assess their psychosocial stressor history. They completed a cardiovascular health assessment, including waist circumference, body fat percentage, and resting blood pressure. Stress reactivity was measured using salivary cortisol and blood pressure responses to the Trier Social Stress Test. Stress regulation at home was measured with salivary diurnal cortisol collected three times per day for three days. Sleep and physical activity were measured using seven days of actigraphy. Diet was measured for three days using the Remote Food Photography Method (Martin et al., 2012). Results: Adolescents' recent (past 12 months) stress predicted differing cardiovascular risk profiles by sex. For females, greater recent stress was associated with *higher* waist circumference (r = .35, p < .01), body fat percentage (r = .28, p < .05), and resting blood pressure (r = .38, p < .01). For males, greater recent stress was associated with *lower* waist circumference (r = -.23, p < .05) and body fat (r = -.25, p < .05). Analyses of potential mediators, including sleep, physical activity, diet, and stress regulation are ongoing. Conclusions: Adolescent cardiovascular risk following recent psychosocial stress differs by sex. Results will be reported that may explain the observed sex differences and will describe how these results may inform interventions to improve cardiovascular health.

INDIVIDUAL ABSTRACT NUMBER 1379

THE UTILITY OF LARGE REPRESENTATIVE DATASETS IN ASSESSING EARLY LIFE INFLUENCES ON CARDIOVASCULAR DISEASE RISK

LillyBelle Deer, PhD; Deborah Han, BS; Jenalee Doom, PhD

Childhood psychosocial factors are increasingly implicated in the development of cardiovascular disease (CVD). Identifying both risk and protective factors that can be intervened on early in development is important for improving lifelong cardiovascular health. Large, representative datasets allow for robust hypothesis testing of these risk and protective factors in diverse populations, which is particularly important given disparities in CVD by sex and race/ethnicity. However, many of these datasets were not formed to specifically test associations between childhood factors and adult CVD risk. As a result, they may lack specific scales widely accepted by

researchers in this area. In this presentation, we demonstrate methods for developing composites of psychosocial factors like child maltreatment and positive childhood experiences as well as cardiovascular health in large datasets. Additionally, we demonstrate how these large datasets might be used to explore associations between early psychosocial factors and CVD within demographic groups, as smaller studies may not have the diversity or statistical power to do so. Participants in the current study were drawn from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a longitudinal, nationally representative study of adolescents in the United States. An index of positive childhood experiences (PCEs) was computed by identifying items asked in adolescence that mirror items in the Benevolent Childhood Experiences-Revised Scale. A maltreatment index was computed by identifying items asked retrospectively in adulthood about the frequency of abuse and neglect experiences during childhood. Finally, items were identified later in adulthood that were used to compute the American Heart Association's Life's Essential 8 cardiovascular health measure. Fewer positive childhood experiences (β = .13, p < .001) and greater maltreatment (β = -.12, p < .001) were associated with poorer adult cardiovascular health. There were significant differences in the pattern of results by biological sex as well as race/ethnicity that will be presented in the symposium. The current study demonstrates the utility of large datasets in assessing the role of early experiences in the development of CVD.

SYMPOSIUM

RACISM AND HEALTH: IDENTIFYING BIOLOGICAL MECHANISMS FOR CHRONIC DISEASE DISPARITIES ACROSS THE LIFESPAN

Rationale: Racism is a complex system that operates across multiple levels of time, space and influence, causing racial health inequities by limiting access to opportunities, power, and well-being disproportionately across and within marginalized racial groups. Interpersonal racial discrimination refers to individual-level prejudices and actions based on perceived race or ethnicity. It is a significant psychosocial stressor that can impede a wide array of physical (i.e., obesity and hypertension) and mental health (i.e., depression and anxiety) outcomes. Structural racism in the U.S. captures macro-level conditions like residential segregation and redlining, which are associated with racial disparities in wealth, morbidity, and mortality. However, the biological mechanisms linking interpersonal and structural racism to health outcomes are poorly understood. From a prevention perspective, a better understanding of these clinical biomarkers is critical to develop effective interventions, policies, and treatment plans prior to disease manifestation, while simultaneously working to eliminate all forms of racism in society. Moreover, essentially no prior studies have explored the interactive effects of various forms of racism on chronic disease risk and etiology; but such knowledge is crucial for improving health among marginalized populations worldwide. As the scientific community's attention on measuring racism as a determinant of health continues

expanding, it is essential to develop interdisciplinary consensus on appropriate measurement techniques for exposures, outcomes, and risk factors while understanding the potential differences across the lifespan.

This symposium will start by outlining the current gold standards for conceptualizing and operationalizing various forms of racism and their biological impacts. Speakers will then present their novel epidemiologic research on emerging biomarkers linking interpersonal and structural racism to various chronic health disparities across different life stages. The symposium will conclude with critical new findings on the combined effects of interpersonal and structural racism on youth cardiometabolic health disparities, highlighting the remaining knowledge gaps to spark future research.

Moderator: Danielle Krobath, PhD

Measuring Racism's Impact on Health – Frameworks and Insights
Authors: **Mike Stanton**
This presentation will provide an overview of evidence-based practices for measuring how racism manifests through internalized, interpersonal, institutional, and structural pathways, affecting health across the lifespan. Drawing from research on the impact of discrimination among people with sickle cell disease, I will discuss how discrimination "gets under the skin" via biopsychosocial mechanisms. I will also share insights from work on the impact of racism on the health of older adults, concluding with practical strategies for mitigating these impacts and fostering health equity.

Effects of Structural Racism during Childhood and Health Implications Later in Life
Authors: Taylor Hargove, Alena Sorenson D'Alessio, **Chantel L. Martin**
While educational attainment is a salient predictor of later life cognition and mediator of Black-white disparities in AD/ADRD, accumulating evidence suggests quality of schooling may be a more robust predictor. However, research on the types of environments that shape quality of education and, subsequently educational attainment, is limited. Historical and contemporary processes of structural racism may differentiate the educational contexts of Black and white students, creating unequal educational pathways to AD/ADRD risk. The goal of this work is to examine the relationship between adolescent educational contexts and biological risk factors for AD/ADRD among Black and white early midlife adults. Using data from the National Longitudinal Study of Adolescent to Adult Health, we are constructing a latent measure of educational context during adolescence using confirmatory factor analysis using indicators, such as school district-level measures of proportion of students eligible for free/reduced lunch, dropout rates, grade retention rates, attendance level, and racial segregation. Outcomes (in adulthood) of interest include hypertension, A1C, cystatin C, and C-reactive protein (CRP). We will run multivariable regression models to estimate associations between the latent measure of educational context and the outcomes, and an interaction between educational context and respondent race. Results are forthcoming and will be presented during they symposium.

Discrimination and the Immune System among Adults

Presenter: **Adolfo Cuevas**
Individuals exposed to discrimination are at increased risk for a variety of health problems, including premature death, heart disease, high blood pressure, and diabetes. To understand the biological reasons for this, researchers have turned their attention to the immune system. Evidence suggests that discrimination can weaken the immune system through inflammation. This suggests underlying biological mechanisms at the cellular level. By studying specific immune cells, such as monocytes, lymphocytes, and natural killer cells, researchers can better understand the pathways linking discrimination to inflammation and ultimately disease. This presentation will provide an overview of the relationship between discrimination and immune function. It will also present preliminary findings from a study of older adults, examining the association between discrimination and white blood cell counts. Last, this presentation will highlight opportunities and challenges inherent in this field of study.

The effects of interpersonal racial discrimination and implications for health in older adulthood
Presenter: **Jourdyn A. Lawrence, PhD, MSPH** – Dornsife School of Public Health, Drexel University
This presentation examines the impact of interpersonal racial discrimination on health among middle-aged and older adults. It begins with an understanding of the varying ways in which interpersonal racial discrimination has been operationalized and examines how it is adversely associated with preclinical indicators (i.e., biomarkers) associated with adverse health outcomes. This presentation will also explore how racial discrimination has been associated with cardiovascular, mental, and cognitive health. Implications for future research, public health interventions, and policies aimed at mitigating the inequitable health effects of racial discrimination will be discussed.

Saturday, March 22, 2025

SYMPOSIUM

RISK AND RESILIENCE IN DEMENTIA SPOUSAL CAREGIVER HEALTH AND WELL-BEING
Christopher Fagundes, Ph.D.; Daniel Argueta, B.A. ; Kelly Brice, Ph.D.; Jensine Paoletti-Hatcher, Ph.D.; Vincent Lai, B.A.; Bryan Denny, Ph.D.; Charles Green, Ph.D.; Samantha Henry, Ph.D. ; Luis Medina, Ph.D.; Paul Schulz, M.D.; Jennifer Stinson, Ph.D.; Lydia Wu-Chung, Ph.D.; Cobi Heijnen, Ph.D.

Multiple investigative teams, including ours, have shown that stressful life events, such as dementia spousal caregiving, exacerbate the risk of depression and most diseases of older adulthood. Yet, there is considerable unexplained variability in Dementia spousal caregivers' mental and physical health patterns. This symposium presents research that examines how various experiences and psychological processes across the lifespan are associated with the well-being of dementia spousal caregivers. Identifying biological and psychosocial risk factors associated with adverse health outcomes is essential for guiding efforts to prevent disease and promote well-being in this chronically stressed group. The first presenter will explore the association between alterations in mitochondrial biology and depressive symptom increase among spousal caregivers of individuals with dementia. Findings indicate that mitochondrial spare respiratory capacity in peripheral blood mononuclear cells is associated with increased depressive symptoms across seven months, but only in caregivers with high levels of attachment anxiety compared to those with low or mean levels of attachment anxiety. The second presenter will discuss the relationships between loneliness, childhood trauma, inflammation, and depressive symptoms among dementia spousal caregivers. Results show that loneliness is positively associated with proinflammatory cytokine production and depressive symptoms, and these associations are stronger in caregivers who report higher levels of childhood trauma compared to those who report lower levels. The third presenter will examine how adult attachment orientation and marital satisfaction are related to well-being in dementia spousal caregivers. Results suggest that caregivers with higher attachment avoidance report more severe depressive symptoms and greater stimulated cytokine production; however, these associations are not significant at high levels of marital satisfaction compared to those with low levels. The final presenter will discuss the relationships between psychological needs, sleep quality, and inflammation, showing that caregivers who report greater psychological needs satisfaction within their marriage tend to experience better sleep quality and lower levels of stimulated cytokine production compared to those with lower satisfaction of psychological needs.
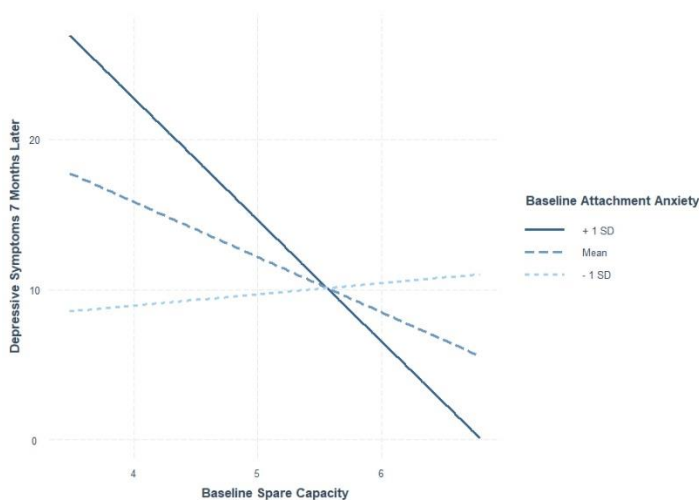
INDIVIDUAL ABSTRACT NUMBER 1154

ALTERED MITOCHONDRIAL BIOLOGY IS ASSOCIATED WITH DEPRESSIVE SYMPTOM INCREASE FOR DEMENTIA SPOUSAL CAREGIVERS HIGH ON ATTACHMENT ANXIETY

Daniel Argueta, B.A.; Kelly Brice, Ph.D.; Bryan Denny, Ph.D.; Charles Green, Ph.D. ; Samantha Henry, Ph.D.; Vincent Lai, B.A.; Luis Medina, Ph.D.; Jensine Paoletti-Hatcher, Ph.D.; Paul Schulz, M.D.; Jennifer Stinson, Ph.D. ; Lydia Wu-Chung, Ph.D.; Cobi Heijnen, Ph.D.; Christopher Fagundes, Ph.D.

Dementia spousal caregivers are at risk for adverse mental and emotional health outcomes. Mitochondrial dysfunction may contribute to depressive symptoms. People who display attachment anxiety are at increased risk for depression and other adverse health outcomes. This study aimed to assess whether the negative relationship between mitochondrial respiration in peripheral blood mononuclear cells (PBMCs) and depressive symptom increase across seven months in dementia spousal caregivers is strongest for caregivers high on attachment anxiety. A sample of 167 dementia spousal caregivers (72% Female) self-reported demographics and health information at baseline, and depressive symptoms at baseline and 7 months later. We also determined mitochondrial respiration (basal oxygen consumption rating (OCR), maximum OCR, and spare respiratory capacity) in PBMCs at baseline using the Agilent Seahorse XF Cell Mito Stress Test. We conducted multiple linear regressions,

adjusting for demographic and health-related covariates and depressive symptoms at baseline. The interaction between basal OCR and attachment anxiety was not associated with depressive symptom increase (b = -0.18, p = .25). The interaction between maximum OCR and attachment anxiety was also not associated with depressive symptom increase (b = -0.22, p = .13). However, the negative association between spare respiratory capacity and depressive symptom increase was moderated by attachment anxiety (b = -1.07, p = .03), such that the negative association between spare respiratory capacity and depressive symptom increase was stronger for those reporting high or mean levels of attachment anxiety compared to those reporting low levels. Attachment anxiety moderated the negative association between mitochondrial spare capacity and depressive symptom increase. Identifying individual differences in attachment orientations may be useful for understanding the conditions under which biological processes contribute to depressive symptom pathogenesis.

INDIVIDUAL ABSTRACT NUMBER 1433

IMPACT OF LONELINESS AND CHILDHOOD TRAUMA ON PROINFLAMMATORY CYTOKINE PRODUCTION AND DEPRESSIVE SYMPTOMS IN DEMENTIA SPOUSAL CAREGIVERS

Kelly Brice, Ph.D.; Jensine Paoletti-Hatcher, Ph.D.; Lydia Wu-Chung, Ph.D.; Vincent Lai, B.A.; Daniel Argueta, B.A.; Bryan Denny, Ph.D.; Charles Green, Ph.D.; Luis Medina, Ph.D.; Paul Schulz, M.D.; Jennifer Stinson, Ph.D.; Julian Thayer, Ph.D.; Samantha Henry, Ph.D.; Cobi Heijnen, Ph.D. ; Christopher Fagundes, Ph.D.

Dementia spousal caregivers are at a disproportionate risk for adverse mental and physical health outcomes compared to age-matched non-caregivers. Despite this risk, not all caregivers experience detriments to their mental and physical health. Thus, the current research aimed to identify individual differences that may predict enhanced risk for adverse health outcomes in dementia spousal caregivers. Caregiving for a spouse with dementia is associated with diminished social connectedness and more frequent loneliness, or the experience of missing a desired amount of social connection. Loneliness has been linked with greater perceived stress, more depressive symptoms, and elevated proinflammatory cytokines in adults. Furthermore, childhood trauma is associated with a chronic inflammatory state and enhanced stress reactivity in adulthood. We investigated whether loneliness is associated with proinflammatory cytokine production and depressive symptoms in caregivers, and whether these relationships would be stronger among caregivers who report high levels of childhood trauma compared with those who report lower levels of childhood trauma. One hundred eleven dementia spousal caregivers provided blood samples and completed self-report measures of loneliness, childhood trauma, and depression. We measured the ex vivo immune cell proinflammatory cytokine response to whole-blood LPS stimulation. Caregivers who reported greater loneliness exhibited elevated LPS-stimulated proinflammatory cytokine production and more depressive symptoms than dementia spousal caregivers who reported less loneliness. The relationship between loneliness and proinflammatory cytokine production was strengthened in caregivers who reported more childhood trauma compared to those who reported less childhood trauma. Likewise, the association between loneliness and depressive symptoms was stronger among caregivers who reported more childhood trauma compared to those who reported less childhood trauma. These results contend that loneliness could have more robust effects on adverse health outcomes for caregivers who have experienced more childhood trauma. This research contributes to the existing literature investigating the mechanisms that underlie individual differences in health outcomes among dementia spousal caregivers.

INDIVIDUAL ABSTRACT NUMBER 1434

MARITAL SATISFACTION BUFFERS THE ASSOCIATIONS BETWEEN ATTACHMENT AVOIDANCE AND WELL-BEING AMONG DEMENTIA SPOUSAL CAREGIVERS

Vincent Lai, B.A.; Daniel Argueta, B.A.; Kelly Brice, Ph.D.; Bryan Denny, Ph.D.; Charles Green, Ph.D.; Samantha Henry, Ph.D.; Luis Medina, Ph.D.; Jensine Paoletti-Hatcher, Ph.D.; Paul Schulz, M.D.; Jennifer Stinson, Ph.D.; Lydia Wu-Chung, Ph.D.; Cobi Heijnen, Ph.D.; Christopher Fagundes, Ph.D.

Caregivers for spouses with Alzheimer's disease and related dementias (ADRD) who exhibit insecure attachment orientations (i.e., attachment anxiety and/or avoidance) may be at risk for adverse physical and mental health outcomes. Marital satisfaction, or caregivers' general evaluations of their relationship with their spouses, may influence the associations between attachment orientation and well-being. In this study, we examined the role of marital satisfaction as a potential moderator of the associations between attachment orientation and well-being in ADRD spousal caregivers. A sample of 276 caregivers completed self-report assessments of adult attachment orientation, marital satisfaction, depressive symptoms and provided blood samples. Inflammatory cytokine production by in vitro lipopolysaccharide (LPS)-stimulated peripheral blood leukocytes, including interleukin-6 (IL-6), tumor necrosis factor-α (TNF-α), IL-1β, and IL-10, were measured and combined to form a composite index of systemic inflammation. We conducted multiple regression models to assess the associations between adult attachment orientation, marital satisfaction, and outcomes of depressive symptoms and LPS-stimulated inflammatory cytokine production. We found that marital satisfaction moderated

the association between attachment avoidance and depressive symptoms (b = -0.03, SE = 0.01, p = .049). Caregivers higher on attachment avoidance reported more severe depressive symptoms at low (b = 0.36, SE = 0.10, p < .001) and mean (b = 0.24, SE = 0.07, p = .001) levels, but not high (p = .21) levels of marital satisfaction. We also found that marital satisfaction moderated the association between avoidant attachment and LPS-stimulated inflammatory cytokine production (b = -0.00, SE = 0.00, p = .012). Caregivers higher on attachment avoidance exhibited greater LPS-stimulated inflammatory cytokine production at low (b = 0.03, SE = 0.01, p = .002) and mean (b = 0.01, SE = 0.01, p = .024) levels, but not high (p = .91) levels of marital satisfaction. Finally, we found that marital satisfaction did not moderate the associations between attachment anxiety and outcomes of depressive symptoms (p = .11) or LPS-stimulated inflammatory cytokine production (p = .93). Our work contributes to the body of research examining psychosocial factors that shape well-being among caregivers.

INDIVIDUAL ABSTRACT NUMBER 1438

HIGHER COMPETENCE NEEDS SATISFACTION ASSOCIATED WITH LOWER CYTOKINE PRODUCTION AMONG DEMENTIA SPOUSAL CAREGIVERS

Jensine Paoletti-Hatcher, Ph.D.; Daniel Argueta, B.A.; Kelly Brice, Ph.D.; Bryan Denny, Ph.D.; Charles Green, Ph.D.; Samantha Henry, Ph.D.; Vincent Lai, B.A.; Luis Medina, Ph.D.; Paul Schulz, M.D.; Jennifer Stinson, Ph.D.; Lydia Wu-Chung, Ph.D.; Cobi Heijnen, Ph.D.; Christopher Fagundes, Ph.D.

Informal caregiving for a spouse with dementia is a chronic stressor that can increase the risk of adverse health outcomes, partially through elevated systemic inflammation. Individual and relational factors may affect which caregivers are at the greatest risk. Spousal caregivers' marriages may lose a sense of reciprocity and feel less psychologically satisfying after diagnosis. Caregivers who report lower psychological needs satisfaction in their spousal relationship may have fewer positive psychological experiences to buffer the effect of caregiving stress. We examined the effect of psychological needs satisfaction on sleep quality and chronic inflammation cross-sectionally in 91 caregivers (M = 71.74, SD = 7.43; 72.52% women; 52.74% advanced degree holders). Participants reported demographics and health information, sleep quality (PSQI), and psychological needs satisfaction with their care recipient (modified Needs Satisfaction Scale from Barry et al., 2021; α = .86). Participants completed blood draws during in-person lab visits; we measured LPS-stimulated cytokines (IL-6, IL-10, TNF-α, and IL-1β), which were combined in a linear composite (α = .85). An a priori power analysis indicated that we have over 80% power to detect a medium effect size. Regression results indicated that caregivers who felt a greater total psychological needs satisfaction in their marriage had higher quality sleep and lower stimulated cytokine production (Table 1). We explored the components of psychological needs satisfaction. Higher competence needs satisfaction was associated with better sleep and with lower stimulated cytokine production (Table 1); higher autonomy satisfaction and relatedness satisfaction were associated with better sleep (both p < .001) but not associated with cytokine production. People are motivated to meet their psychological needs:

autonomy, relatedness, and competence. Higher psychological needs satisfaction, especially competence, may buffer the stress associated with being a dementia spousal caregiver. We will discuss the changing spousal relationship after diagnosis and a possible mediation through sleep quality. Dementia is degenerative and requires caregivers to adapt regularly to meet changing demands; longitudinal research is needed to capture the evolving role of psychological needs satisfaction as a caregiver resilience factor.

Table 1

Psychological Needs Satisfaction on Sleep Quality and Composite Cytokine Production

Predictors	Sleep Quality[1] B (SE B)	B (SE B)	Cytokine Production B (SE B)	B (SE B)
(Intercept)	17.16** (5.13)	15.12** (5.15)	-1.13 (1.01)	-1.21 (0.99)
Age	0.04 (0.05)	0.04 (0.05)	0.02* (0.01)	0.02* (0.01)
Sex[2]	1.88* (0.83)	2.18* (0.84)	0.03 (0.16)	0.05 (0.16)
Education	-0.52 (0.33)	-0.53 (0.34)	0.01 (0.06)	0.01 (0.06)
Body mass index	-0.03 (0.06)	-0.04 (0.06)	0.03* (0.01)	0.02* (0.01)
Comorbidities	0.43 (0.32)	0.41 (0.33)	-0.03 (0.06)	-0.03 (0.07)
Medications	-0.42 (1.17)	-0.60 (1.20)	-0.07 (0.23)	-0.08 (0.23)
Care recipient dementia severity[3]	0.43 (0.48)	0.14 (0.49)	-0.01 (0.10)	-0.04 (0.10)
Needs satisfaction: total	-2.23*** (0.45)	–	-0.21* (0.09)	–
Needs satisfaction: competence	–	-1.67*** (0.38)	–	-0.18* (0.08)
Observations	91	91	85	85
R[2]	.39	.36	.16	.17
Adjusted R[2]	.33	.30	.08	.08

Note. [1]Higher sleep quality scores are associated with poorer sleep quality. [2]Sex is coded so 1 = male and 2 = female. [3]Care recipient dementia severity is coded from physician diagnoses and scores on scores on the Telephone Interview for Cognitive Status (TICS), Mini-Mental State Examination (MMSE), or Montreal Cognitive Assessment (MoCA) so that *1 = mild, 2 = mild to moderate, 3 = moderate, 4 = moderate to severe,* and *5 = severe.* * indicates p = 0.05; ** indicates p < .01 *** indicates p < .001

SYMPOSIUM

STRESS AND THREAT PROCESSING: NEURAL AND PHYSIOLOGICAL PATHWAYS FROM EARLY ADVERSITY AND TRAUMA TO PSYCHOPATHOLOGY
Layla Banihashemi, University of Pittsburgh, Dept. of Psychiatry; Camelia Hostinar, Ph.D.; Jennifer Blackford, Ph.D.

Childhood adversity has been posited to be "Psychiatry's greatest public health challenge," as it prospectively accounts for 30% of all psychiatric disorders. Childhood adversity shapes perceptions of stress and threat-related stimuli, often elevating ambiguous stimuli to threats, and dysregulates neural and physiological reactivity. Thus, childhood adversity creates a framework of reactivity to daily events that critically shapes lifespan mental health trajectories. Elucidating the pathways from childhood adversity and later-life trauma to psychopathology will guide multiple levels of intervention (e.g., behavioral/family, central, and peripheral). The goal of our symposium is to present an updated view on childhood adversity and related risks for and resilience against psychopathology as it relates to stress and threat processing. We share new data in: 1) a diverse community adolescent sample showing that childhood adversity and minority status predict differential patterns of depression and post-stress neuroendocrine, immune, and inflammatory markers, with a potential mediating effect of childhood

adversity on the relationship between minority status and depression, 2) a transdiagnostic, abuse-enriched sample of young adults examining maltreatment and stressor-evoked activity within understudied, proximal stress-control regions, including the paraventricular nucleus of the hypothalamus, dorsal and ventral bed nucleus of the stria terminalis, and brainstem nucleus of the solitary tract (NST) using high-resolution 7 Tesla acquisitions, and 3) a combat-exposed control and PTSD sample of adults examining relationships with childhood trauma and its interactions with PTSD on BNST and amygdala activity and connectivity in response to predictable and unpredictable threat. Thus, our collective work demonstrates novel psychoneuroimmune and neural links between childhood adversity, trauma-related disorders, and further psychopathology.

INDIVIDUAL ABSTRACT NUMBER 1313

ADVERSE CHILDHOOD EXPERIENCES, RACE, AND PROINFLAMMATORY PROFILES IN ADOLESCENTS

Rebekka Twine, B.S. ; Rose McLaughlin, B.A. ; Kelsey Sennett, B.S. ; Camelia Hostinar, Ph.D.

The neuroimmune network hypothesis (Nusslock & Miller, 2016) posits that childhood adversity shapes lifelong emotional and physical health in part by altering immune functioning and stress physiology. Further, the minority stress model (Meyer, 2003) proposes that minority status can foster excess social stress, thereby negatively impacting mental health. However, few studies have examined childhood adversity and racial-ethnic minority status jointly to understand their unique and additive effects on mental health, inflammation markers, and stress physiology. This study addresses this gap.

We examined a racially and socioeconomically diverse sample of 148 adolescents (46.3% White and 53.7% racial-ethnic minority, including 22.8% multiracial, 15.4% Hispanic, 8.1% Asian, 2.7% Black, 4.7% other) who were aged 11-15 years old (expected N = 250; M = 13.47 years, SD = 1.21; 59.1% girls, 40.9% boys). Adolescents completed the Trier Social Stress Test (TSST) in the laboratory, providing two blood samples pre- and post-TSST (which were analyzed for six inflammatory markers, CRP, suPAR, IL6, IL10, IL8, and TNFa, and a complete blood count-5-part differential), four salivary cortisol samples, and 3-cm hair samples for estimating cortisol output. Depressive symptoms were assessed with the Short Mood and Feelings Questionnaire, and adverse childhood experiences (ACEs) with the Behavioral Risk Factor Surveillance System ACE module.

Overall, 45.6% of adolescents reported at least one ACE such as physical abuse, emotional abuse, sexual abuse, etc. Multiple linear regression models adjusting for age and sex revealed that experiencing more ACEs was associated with elevated depression symptoms ($β$ = .26, p < .001), as well as a greater pre- to post-stress increase in the number of lymphocytes ($β$ = .28, p = .026) and in the inflammation marker suPAR ($β$ = .39, p = .02), but not associated with cortisol reactivity or hair cortisol ($p's$ > .19). Adolescents belonging to a racial-ethnic minority group reported heightened depression symptoms ($β$ = .15, p = .045) and had higher 3-month

hair cortisol output compared to White adolescents ($β$ = .19, p = .03). The association between minority status and depression was diminished and no longer significant (p = .15) when ACEs were covaried, suggesting that unequal exposure to ACEs may partially explain racial-ethnic disparities in depression.

INDIVIDUAL ABSTRACT NUMBER 1270

CHILDHOOD MALTREATMENT IS ASSOCIATED WITH NEURAL STRESS REACTIVITY WITHIN SPECIFIC HYPOTHALAMIC, BED NUCLEUS AND BRAINSTEM SUBREGIONS: A 7-TESLA STUDY

Layla Banihashemi, Ph.D.; Brandon Sibbach, B.S.; Helmet Karim, Ph.D.; Sara Albert, M.A.; Tamer Ibrahim, Ph.D.

Childhood adversity dysregulates stress reactivity and predicts psychopathology, however, underlying neural mechanisms are unclear. The paraventricular nucleus of the hypothalamus (PVN) is uniquely proximal in its control over autonomic and neuroendocrine stress responses. The bed nucleus of the stria terminalis is also a proximal stress-control structure with heterogenous subregions; the ventral (v) BNST directly modulates PVN function and is predominantly viscerosensory, while the dorsal (d) BNST modulates vBNST function. Each structure is preautonomic, innervating the brainstem nucleus of the solitary tract (NST) to control autonomic reactivity. Thus, distinguishing circuit subregions is important in investigating childhood adversity-related outcomes. Given the small size and ventral location of these regions, our goal was to use 7-Tesla (7T) imaging to identify stressor-evoked activity within these specific subregions and examine their relationships with childhood adversity. Participants were young adults (n=155; mean age=26.30) from a transdiagnostic, abuse-enriched sample. A performance-titrated Multisource Interference Task was used to elicit stress; parameter estimates were extracted from inverse normalized 20% probabilistic atlases (Sibbach BSF 2023). Hierarchical regression analyses were performed covarying for age, sex, and race, and examining effects of childhood maltreatment (MACE multiplicity score) and socioeconomic deprivation (childhood parental education level reverse coded) above and beyond adulthood variables (traumatic events, socioeconomic status, negative life events). Regression analyses revealed significant relationships between MACE and PVN ($β$=0.240, p=0.015; reported $β$s are standardized) and dBNST ($β$=0.322, p<0.001) stressor-evoked activity. Further, there was a significant curvilinear relationship between MACE and NST stressor-evoked activity ($β$=0.575, p=0.008). Results revealed that childhood maltreatment, not deprivation, was associated with greater PVN, dBNST (not vBNST), and NST stressor-evoked activity. These findings may indicate that childhood maltreatment predominantly shapes preautonomic circuitry with perhaps secondary effects on more modulatory viscerosensory pathways. These findings may provide novel neural insights into childhood maltreatment-related risks for affective disorders and guide novel treatment approaches.

INDIVIDUAL ABSTRACT NUMBER 1247

THE IMPACT OF CHILDHOOD TRAUMA DURING THREAT ANTICIPATION ON STRESS NETWORKS IN PTSD

Jennifer Urbano Blackford, Ph.D.; Brandee Feola, Ph.D.; Elizabeth Flook, M.D., Ph.D.; Bunmi Olatunji, Ph.D.; Harry Gwirtsman, M.D.; Hannah Rogers, MSN

Childhood trauma is thought to confer risk for developing PTSD. Combat Veterans are at especially high risk for developing PTSD and also have higher rates of childhood trauma. Alterations during the anticipation of threat have been suggested as a novel mechanism contributing to stress, anxiety and PTSD. However, much remains unknown about the relationships among threat anticipation, childhood trauma, and PTSD.

Participants were combat Veterans (23 PTSD; 13 combat-exposed controls; 95% male). A fMRI task was used to measure activation and connectivity during threat anticipation (unpredictable and predictable threat). The amygdala and BNST were the main nodes of the stress network. The other network ROIs included the hippocampus, insula, hypothalamus, and ventromedial prefrontal cortex (vmPFC). Childhood trauma was measured with the CTQ and correlations were performed across the entire sample. In addition, subgroup analyses were performed within the PTSD group.

Across the whole sample, higher childhood trauma scores were correlated with stronger amygdala activation during both unpredictable and predictable threat and stronger BNST activation during unpredictable threat. For the subgroup analysis, those with PTSD and high childhood trauma, relative to PTSD and low trauma, had significantly stronger amygdala and BNST activation during unpredictable threat. The PTSD/high childhood trauma group also showed weaker BNST connectivity with both the hippocampus and hypothalamus during predictable threat anticipation.

These findings provide novel evidence that childhood trauma has specific impacts on stress networks during threat anticipation and that brain networks may be differentially altered in Veterans with PTSD and childhood trauma.

Adversity and Inflammation Session

1

Abstract 1337

CHILDHOOD FAMILY ADVERSITY AND SYSTEMIC INFLAMMATION IN ADULTHOOD: CONTRIBUTIONS OF PUBERTAL TIMING AND WAIST CIRCUMFERENCE IN ADOLESCENCE

Brianna Natale; Daniel Shaw, PhD; Anna Marsland, PhD, RN, University of Pittsburgh; Kate Keenan, PhD, University of Chicago; Alison Hipwell, PhD, University of Pittsburgh

Multiple aspects of the childhood family environment have been linked with adult health trajectories, such as cardiometabolic disease and mortality. Systemic inflammation is one important preclinical marker of cardiometabolic risk, and prior studies have shown that childhood experiences, including family relationship quality, are related to circulating levels of inflammatory markers.

The current study utilized data from the Pittsburgh Girls Study to investigate longitudinal links between repeated measures of childhood family adversity across ages 5-9 and inflammation in early adulthood (N=1,362; M age=23.57). Childhood family adversity was estimated as a second-order latent variable, with three first-order latent variable components (harsh punishment, caregiver-partner conflict, and caregiver depression) that were measured at ages 5, 6, 7, 8, and 9. Household receipt of public assistance (e.g., Medicaid insurance) between ages 5-9 was included as a binary covariate. Adolescent pubertal timing (onset of menarche) and waist circumference (averaged across ages 10-17) served as mediators in multivariate structural equation models.

Greater childhood family adversity was prospectively associated with higher levels of interleukin (IL)-6 in early adulthood (β=0.12, p=0.001). This association was independent of receipt of public assistance (β=0.10, p=0.011), which also emerged as a predictor of adult IL-6 (β=0.10, p=0.001). Next, mediation analyses found indirect effects from childhood family adversity to adult IL-6 via pubertal timing (β=0.02, CI=[0.001, 0.007]) and waist circumference (β=0.05, CI=[0.002, 0.018]), such that both mediational pathways individually attenuated the direct effect and were independent of receipt of public assistance. Furthermore, the indirect effect via waist circumference was robust to the inclusion of both receipt of public assistance and pubertal timing in a multiple mediation model (β=0.05, CI=[0.002, 0.018]; Figure 1).

Together, these results suggest that childhood family adversity contributes to long-term systemic inflammation, both directly and indirectly through pubertal timing and waist circumference, independently of childhood socioeconomic context. The current prospective study offers developmentally informed insights into potential pathways underlying links between childhood stressors and inflammatory profiles in early adulthood.
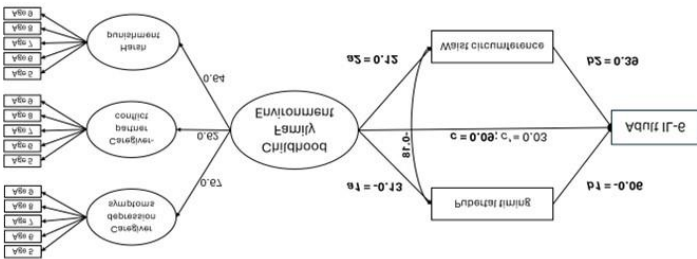
2

Abstract 1089

DISCRIMINATION, LONELINESS, AND INFLAMMATION: LONGITUDINAL ASSOCIATIONS AMONG BLACK ADOLESCENTS WITH LOW SOCIOECONOMIC STATUS

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Objective: This longitudinal study examined how experiences of discrimination and loneliness among Black youths with low socioeconomic status related to low-grade inflammation, a key biological pathway to chronic health conditions. Specifically, this study investigated (1) whether discrimination and loneliness predicted low-grade inflammation one year later, and (2) whether loneliness served as a pathway connecting discrimination to later low-grade inflammation.

Method: Participants were 353 Black adolescents aged 14 to 19 years from low-income households. At baseline (Time 1), discrimination and loneliness were assessed using self-reported measures, and venous blood samples were collected to assess low-grade inflammation markers (C-reactive protein, Interleukin [IL]-6, IL-8, IL-10, tumor necrosis factor-alpha, and soluble urokinase plasminogen activator receptor). One year later (Time 2), the same set of inflammation markers were reassessed. Standardized values of inflammation markers were averaged separately for Time 1 and Time 2 to create composites such that higher values indicated a higher level of low-grade inflammation.

Results: Black adolescents who experienced greater discrimination and higher levels of loneliness exhibited higher levels of low-grade inflammation one year later (discrimination b = .20, SE = .10, p < .05; loneliness b = .05, SE = .02, p < .01) as well as prospective increases in low-grade inflammation across the one-year span (discrimination b = .24, SE = .08, p < .01; loneliness b = .04, SE = .02, p < .05). Moreover, as depicted in Figure 1, there was a significant longitudinal indirect association linking discrimination to low-grade inflammation one year later via higher levels of loneliness (b = .05, SE = .03, CI95 [.002, .108]). However, such indirect association via loneliness was not observed in terms of prospective change in low-grade inflammation (indirect effect b = .03, SE = .02, CI95 [-.006, .081]).

Conclusion: This study suggests that discrimination may predict future levels of, and prospective increases in, low-grade inflammation among Black adolescents with socioeconomic disadvantage, and that loneliness may serve as a pathway for this longitudinal association.
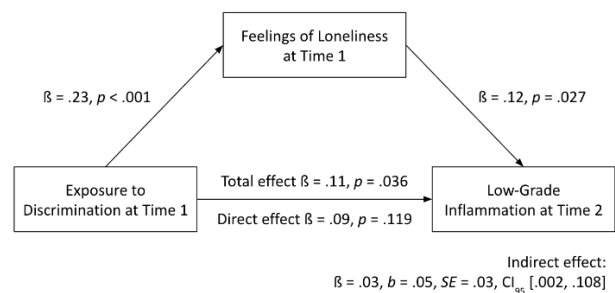
Fig. 1. Indirect effect model wherein exposure to discrimination was associated with greater feelings of loneliness, which in turn was associated with low-grade inflammation longitudinally. Coefficients were adjusted for age, sex at birth, and pubertal status.

3

Abstract 1107

HIGH SELF-CONTROL AND PERSEVERANCE ASSOCIATED WITH A PRO-INFLAMMATORY PHENOTYPE AMONG AFRICAN AMERICAN YOUTH FROM FAMILIES WITH LOW FINANCIAL RESOURCES

Tao Jiang; Michelle Chen, Ph.D; Lauren Wang, BA; Alexis Boe, BA; Edith Chen, Ph.D; Gregory Miller, Ph.D, Northwestern University

Growing evidence has indicated that high-striving youth of color from economically disadvantaged families have better educational outcomes and healthier behaviors compared with their similarly disadvantaged peers, but worse physical health in adulthood (e.g., higher likelihood of developing type 2 diabetes). Given little is known about the biological underpinning of the links between striving and physical health, we examined whether higher self-control and perseverance are associated with a pro-inflammatory phenotype among 400 Black youths (63.5% female; mean age = 16.39, SD = 1.56). Parents of youth reported family financial resources (i.e., income and savings), and youths completed measures of self-control, perseverance, substance use, and delinquent behavior. Youths' grade point average (GPA) was obtained from report cards. Fasting antecubital blood was drawn from youths to measure four indicators of the pro-inflammatory phenotype, including 1) levels of stimulated cytokine production by immune cells incubated with immune challenges (e.g., LPS) in vitro; 2) sensitivity of immune cells to inhibitory signals (e.g., cortisol) in vitro; 3) levels of inflammatory biomarkers in blood; and 4) counts of classical monocytes in blood. The results showed that as hypothesized, higher self-control was associated with higher GPA, less substance use, and fewer delinquent behaviors; these associations were not moderated by family resources. In contrast, family resources moderated the associations of self-control and perseverance with indicators of the pro-inflammatory phenotype. Specifically, higher self-control and perseverance were associated with a more pro-inflammatory phenotype among youths with lower resources, but the associations were reversed (or not significant) among those with higher resources. Results held after controlling for

youths' age, sex, BMI, and pubertal status. These findings suggest that Black youth from households with fewer material resources who also exert high self-control and perseverance may experience heightened chronic stress that is then associated with a profile of exaggerated responses to threats and reduced sensitivity to inhibitory signals in immune cells, and as well with sustained inflammatory activity systemically. This type of pro-inflammatory phenotype may have implications for youth's long-term health across the lifespan.

4

Abstract 1184

BEHAVIOURAL AND INFLAMMATORY MEDIATORS OF THE ASSOCIATION BETWEEN PSYCHOLOGICAL DISTRESS AND MORTALITY IN PEOPLE LIVING WITH AND BEYOND CANCER

Natalie Miller; Andrew Steptoe, DSc, University College London; Phillippa Lally, PhD, University of Surrey; Mika Kivimaki, PhD; Abigail Fisher, PhD; Philipp Frank, PhD, University College London

Background

A large body of evidence suggests that greater psychological distress is associated with poorer survival in people living with and beyond cancer (LWBC). However, the behavioural and biological mediators of this association are unknown. This study therefore aimed to examine the behavioural and inflammatory mediators of the association between distress and mortality in people LWBC.

Methods

Participants from the UK Biobank who were diagnosed with cancer within ≤four years prior to baseline assessments were included. Psychological distress was indexed by a score of 6 or more on the 4-item Patient Health Questionnaire. Behavioural mediators included fruit, vegetable, red meat, processed meat and alcohol consumption assessed using a 24-hour recall questionnaire; physical activity assessed using an adapted version of the International Physical Activity Questionnaire; and self-reported body mass index (BMI), smoking status, sleep duration and sleep quality. Inflammation was indexed by C-reactive protein. Mortality data were obtained from national registries. Cancer diagnosis was ascertained from linkage to national health records. Cox regression analysis was used to assess the association between distress and mortality, adjusting for sociodemographic and health-related factors. To assess the involvement of each potential mediator, each mediator was added separately to the fully adjusted model, and the percentage of attenuation of the association calculated.

Results

A total of 13,349 participants were included in the main analysis (mean age = 60 years; SD = 7.1; 48.8% male). Over the 15 year follow-up period, 2421 participants died. Psychological distress was associated with a 1.43 times higher risk of all-cause mortality after adjustment for sociodemographic and health-related covariates (95% CI: 1.22-1.67). Inflammation contributed for 5.6% of this association, smoking 4.9%, sleep duration 2.8%, physical activity

2.1%, and sleep quality 1.4%. Diet, alcohol and BMI did not contribute to the association.

Conclusions

These findings suggest that the higher mortality in individuals LWBC experiencing psychological distress is partially attributable to systemic inflammation, higher smoking prevalence, lower physical activity and poorer sleep quality. Interventions to reduce distress may benefit from also addressing also these factors.

Biopsychosocial Health and Dyadic Relationships Session

1

Abstract 1321

ATTACHMENT SECURITY AND GRIEF AMONG BEREAVED SPOUSES

Ryan Brown, PhD; Angie LeRoy, PhD; Michelle Chen, PhD; Lydia Wu-Chung, MA; Kyle Murdock, PhD; Cobi Heijnen, PhD; Christopher Fagundes, Ph.D.

The role of adult attachment in grief processes has received much theoretical and empirical attention in recent decades. Insecure attachment is identified as a risk factor for more persistent grieving in many theories of prolonged grief (e.g., Dual Process Model). However, most empirical results draw from self-report measures of adult attachment with less of a knowledge base regarding the more time and resource intensive Adult Attachment Interview (AAI). In this study, we explored associations between attachment security (operationalized as narrative coherence), grief symptoms, sleep quality, and inflammation in a sample of recent widow(er)s. Participants (*N*= 51 bereaved spouses) completed the AAI, a semi-structured interview aiming to determine a person's state of mind regarding their childhood experiences with caregivers. Briefly, participants were interviewed and audio recorded with interviews transcribed for a trained coder who determined the participant to be: secure, dismissing, or preoccupied. Transcripts were also rated on a global scale evaluating the coherence of the participant's mind during the AAI with coherent narratives reflecting secure attachment states of mind. Because most participants were categorized as secure, we did not complete group-based analyses and focus instead on the continuous measure of attachment security (operationalized as narrative coherence). Participants completed the AAI approximately nine months after the death of their spouse. Outcome variables included grief symptoms (ICG), sleep quality (PSQI), and inflammation (IL-6, TNF-α in serum) at twelve months post-loss. Widow(er)s with greater attachment security had higher grief symptoms at the follow-up compared to those with less attachment security (covarying for age, gender, days since passing, and grief symptom severity at 3-months post-loss; *b*=2.09, 95% CI [0.46, 3.73], *p*=.013); reflecting that attachment security was associated with the residual change in grief symptoms from 3- to 12- months post-loss. There were no significant differences in sleep quality or inflammation based on attachment security. These results provide contrasting results to many theories of grief, align with more recent empirical findings related to attachment avoidance, and provide evidence that attachment security is not necessarily protective in the context of spousal bereavement.

Biopsychosocial Health in Gender and Sexual Diverse Populations Session

1

Abstract 1092

DISPARITIES IN MULTIDIMENSIONAL PSYCHOSOCIAL STRESSORS AMONG SEXUAL MINORITY CANCER SURVIVORS FROM THE ALL OF US (AOU) RESEARCH PROGRAM

Angel Arizpe; Stephanie Navarro, PhD, Keck School of Medicine of USC; Carol Y Ochoa-Dominguez, PhD, MPH, University of California, San Diego; Sue E Kim, PhD, MPH; Albert J Farias, PhD, MPH, Keck School of Medicine of USC

Purpose: Sexual minority (SM) individuals may experience discrimination and psychosocial stressors that can hinder cancer care and outcomes. Therefore, we examined whether there are disparities in psychosocial stressors among SM cancer survivors and explored whether the disparities differ by the 2020 presidential election results for each state.

Methods: Perceived stressors and SM status data from 2018-2022 were obtained from AoU adult cancer survivors. SM identification was self-reported from a single question (heterosexual vs gay, lesbian, or bisexual). Using the Discrimination in Medical Settings [DMS], Perceived Stress [PSS], and Neighborhood Social Cohesion [NSC]) scales, single binary indicators were created from continuous values of DMS (experienced vs never), PSS (high/medium vs low), and NSC (high/medium vs low) to assess for stressor outcomes. Multivariable logistic regression and stratified models if interactions were statistically significant, adjusting for state 2020 dominant political party, race/ethnicity, SES, age, marital status, nativity, active treatment status, sex, and PSS, NSC, or DMS stress variables were used.

Results: In our cohort (N=14,806), 6.3% of survivors reported being a SM. In adjusted models, compared to non-SM survivors, those who identified as SM were 36% (OR=1.36, 95%CI: 1.15-1.63) and 47% (1.47, 1.26-1.72) more likely to have experienced DMS and high/medium PSS, respectively, and were also 29% (0.71, 0.61-0.83) less likely to have experienced high/medium NSC. We also found that SM survivors who resided in Democrat states were 27% (1.27, 1.05-1.53) more likely to have experienced DMS compared to non-SM survivors. However, SM survivors in Republican states were over twice (2.07, 1.30-3.46) as likely to have experienced DMS compared to non-SM survivors.

Conclusion: SM cancer survivors experience significant disparities in multidimensional stress measures regardless of the political party majority in their state of residence that may impact their cancer

survivorship. However, those in Republican-majority states are more likely to have DMS experiences, potentially affecting their access to care and overall health. Future studies should explore longitudinal effects among SM survivors, given their ongoing interaction with the medical system.

2

Abstract 1253

THE IMPACTS OF DISCRIMINATION AND SOCIAL COHESION ON SLEEP AND DAILY WELL-BEING AMONG YOUNG SEXUAL AND GENDER MINORITIES

Mariana Rodrigues, MA; Erica Wood, PhD, MPH, New York University School of Global Public Health; Stephanie Cook, DrPH, MPH, New York University

Young sexual and gender minorities (YSGM; 18-29) are at an increased risk for poor sleep, a critical determinant of health, compared to cisgender, heterosexuals. While this risk is driven by socio-structural factors, such as discrimination and social cohesion, traditional methods fail to capture the complexities of how such factors, particularly related to place and identity, influence sleep and well-being such as stress, mood, and physical activity.

This exploratory study used a novel Geographically-Explicit Ecological Momentary Assessment method to investigate how discrimination and social cohesion influence sleep quality, as well as health behaviors and the complex interplay between context, identity, and well-being among YSGM (n = 32).

Participants engaged in a 7-day protocol, receiving 8 Ecological Momentary Assessment (EMA) messages/day combined with Actigraphy to measure sleep and physical activity. The EMA data included self-reported stress, mood, and discrimination experiences. Perceived social cohesion was measured at baseline. Multi-level models examined the outcomes of perceived sleep quality, daily perceived mood and stress, and daily number of lightly active minutes. Intercepts were allowed to vary, and time-varying covariates were centered at individual-level means.

Those who experienced more discrimination than their average experienced lower subjective sleep quality (b=-.53, p=.03), poorer mood (b=-.19, p<.01), and higher stress (b=.28, p<.001) that day. Social cohesion was marginally associated with daily sleep quality such that individuals who reported higher social cohesion at baseline reported higher subjective sleep quality than those who reported lower social cohesion (b=.22, p=.09). Those who reported higher levels of social cohesion at baseline experienced more daily lightly active minutes (b=40.47, p=.04) and higher daily mood (b=.20, p=.04) compared to those who reported lower levels of social cohesion.

Results highlight the significant impact of discrimination on daily sleep quality and well-being among YSGM. Importantly, results underscore the potential protective role of social cohesion in promoting better sleep and enhancing daily mood. These insights could inform targeted interventions to mitigate the negative effects of discrimination and strengthen social connectedness to improve sleep and health among YSGM.

3

Abstract 1268

WHICH COMES FIRST, PUBERTY OR IDENTITY? THE LONGITUDINAL INTER-RELATIONS BETWEEN PUBERTAL TIMING AND SEXUAL MINORITY SELF-IDENTIFICATION AMONG EARLY ADOLESCENTS

Juan Del Toro; Victoria Papke, MA; Andrea Wiglesworth, MA; Bonnie Klimes-Dougan, PhD, University of Minnesota-Twin Cities

Background: Sexual minority youth experience puberty earlier than heterosexual youth (Bogaert et al., 2002; Savin-Williams & Ream, 2006). Early puberty is an indicator of premature aging and can be partly driven by discrimination (Deardorff et al., 2019; Frost & Meyer, 2023). Nonetheless, the development linked to puberty enables adolescents to explore and understand their sexual identities (Choudhury et al., 2023). For sexual minority youth, does the stress from identity-based discrimination make them more likely to experience advanced pubertal timing, or is early pubertal timing the impetus for their self-identification with a sexual minority identity?

We leveraged four yearly waves as part of the Adolescent Brain Cognitive Development (ABCD) study. The study tracked youth's pubertal timing each year, making this study uniquely able to answer questions about the potential relations between youth's identities and pubertal timing. Also, we used two sub-samples of the study (i.e., a sample of unrelated youth, or singletons, and a sample of siblings) to enhance our internal validity (McGue et al., 2010).

Methods: The samples of 7,818 singletons and 4,050 siblings were racially/ethnically diverse, equally represented girls and boys, and came from economically affluent families. At each wave, both samples completed the *Pubertal Development Scale* (Petersen et al., 1988) and reported their sexual minority self-identification (Calzo & Blashill, 2018). For each sample, a bivariate auto-regressive latent trajectory model was estimated and adjusted for theoretically relevant covariates in *Mplus v. 8.11*.

Results: In both samples, youth who self-identified as sexual minorities experienced more advanced pubertal timing one year later, and which was mediated by identity-based discrimination. In addition, youth who experienced more advanced pubertal timing were more likely to identify as sexual minorities one year later.

Discussion: While the longitudinal link between pubertal timing and later sexual minority self-identification may be a normal developmental process, the longitudinal link between sexual minority self-identification and subsequent advanced pubertal timing may be attributed to heterosexist stigma. The present findings underscore the need to mitigate prejudice so that all youth have the freedom to explore their identities without risks to their development.

1

Abstract 1458

"COGNOTOXEMIA": ENDOTOXEMIA AND GENDER PREDICT PROSPECTIVE AND COUPLED CHANGES IN WORKING MEMORY PERFORMANCE IN HEALTHY ADULTS

Sally McDonnell, BS, University of Colorado Boulder; Jennifer Graham-Engeland, PhD; Martin J. Sliwinski, PhD, Pennsylvania State University; Christopher G. Engeland, PhD, The Pennsylvania State University; Erik Knight, University of Colorado Boulder

Background: Examining the contribution of peripheral systems to cognitive function under healthy circumstances may improve our understanding of the systems that confer risk or resilience in diseased states. Endotoxemia – a pro-inflammatory response to the translocation of bacteria from that reside in the gut and on other sources (e.g., respiratory tract; infection) into the blood – was hypothesized to relate to worsened cognitive functioning. Gender was explored as a moderator.

Methods: A sample of 162 healthy adults (25-65 years old; 67% women; 70% Black; 22% Hispanic) provided plasma, from which a measure of endotoxemia was determined [i.e., the ratio of lipopolysaccharide binding protein (LBP) to soluble cluster of differentiation 14 receptors (sCD14)]. Participants performed an array of laboratory and ambulatory cognitive tasks at three timepoints, each separated by 9 months. Two sets of multilevel models were used: Prospective models, linking endotoxemia at baseline with changes in cognition across time, and coupling models, which examine correlations of endotoxemia with cognition across time.

Results: The prospective model indicated lower levels of endotoxemia at baseline predicted improvements in working memory across the three timepoints; higher levels were associated with a lack of improvement in cognitive performance. Gender was not found to modulate this prospective finding. The coupling analysis of endotoxemia and working memory across time showed that in men, those with higher endotoxemia performed better at the working memory task overall; in women, working memory performance was unrelated to endotoxemia level.

Discussion: This work provides initial evidence that endotoxemia may be associated with a dampening of improvement in working memory, improvement (or practice effects) which should be expected in a sample of healthy adults. The findings also provide preliminary evidence that, at least for men, higher degrees of endotoxemia are not inherently negative, and may actually link with short term positive outcomes for working memory. Further research is needed to fully understand the interactions of the gut and immune system, and how they impact cognitive health across time.
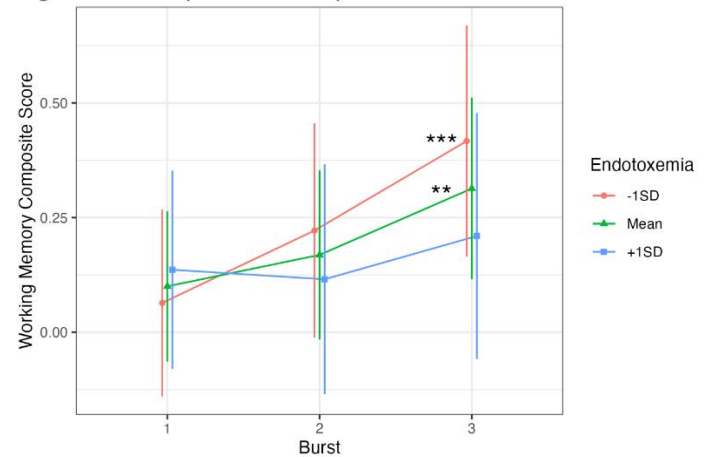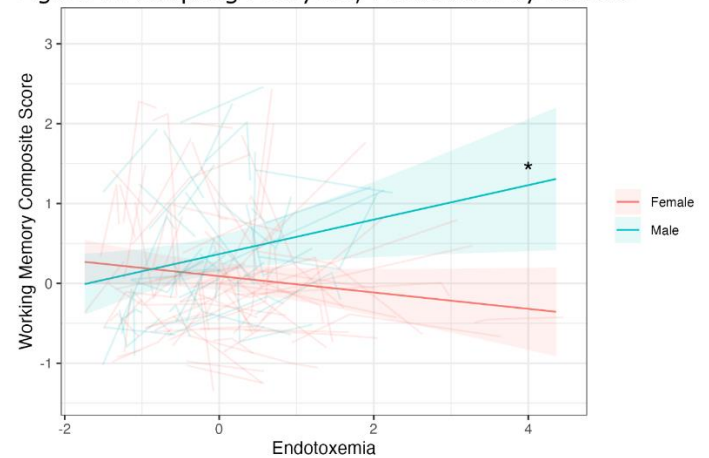
Figure 1. Prospective Analyses

Figure 2. Coupling Analyses, Moderated by Gender

2

Abstract 1426

PSYCHOLOGICAL DISTRESS AND COGNITIVE FUNCTION: THE MODERATING ROLE OF INFLAMMATION AND CORTICAL GREY MATTER

Lydia Wu-Chung, Rice University; Kristen Kennedy, PhD, University of Texas at Dallas; Luis Medina, PhD, University of Houston; Paul Schulz, MD, University of Texas Health Science Center at Houston; Frederick Oswald, PhD; Cobi Heijnen, PhD, Rice University; Stephanie Leal, PhD, University of California at Los Angeles; Bryan Denny, PhD; Christopher Fagundes, Ph.D., Rice University

Stressful life events significantly increase the risk of dementia. However, even among individuals experiencing the same stressor, health outcomes vary considerably; the mechanisms underlying cognitive health differences remain relatively unexplored. Chronic stress is associated with higher levels of peripheral low-grade inflammation and depressive symptom severity; notably, these biopsychosocial factors independently associate with poorer cognitive function and compromised brain macrostructure, such as thinning of cortical grey matter. We examined whether the relationship between depressive symptoms and cognitive function depended on one's biological profile (i.e., low-grade inflammation, cortical grey matter) among subjects who recently experienced spousal bereavement – one of life's most profound stressors. In a

sample of 64 bereaved spouses, depressive symptom severity, cortical thickness in 8 a priori regions, serum proinflammatory biomarkers (TNF-α, TNFRI, and TNFRII), global cognitive function (MoCA), and cognitive inhibition (Stroop) were evaluated at 6 months post-loss. Using multiple linear regression to test hypotheses, we observed a significant depressive symptoms × cortical signature composite effect on MoCA total scores (b = .10, p = .032): Depressive symptoms were negatively associated with global cognitive function, only for widow(er)s with average (b = -.10, p = .010) and less than average (b = -.18, p = .001) cortical grey matter. Similar patterns were observed with the Stroop. There was also a depressive symptoms × inflammation effect on cognitive inhibition (p's < .05): Depressive symptoms were negatively associated with Stroop performance only for those with average (p's < .05) and higher than average levels (p's < .01) of TNFRI and TNFRII. Findings suggest that widow(er)s experiencing higher levels of depressive symptoms were more likely to have poorer cognitive function if they also presented with a more adverse physiological profile (i.e., higher cytokine levels and less cortical grey matter than average); in contrast, widow(er)s with less adverse physiological profiles showed no association between depressive symptoms and cognitive function. This study highlights potential mechanisms underlying the link between stress and dementia risk and may help identify those at risk of abnormal cognitive aging following chronic stress exposure.

2

Abstract 1389

EXPLORING THE CUMULATIVE EFFECT OF CARDIOVASCULAR DISEASE RISK FACTORS ON COGNITIVE PERFORMANCE

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Both high and low levels of blood pressure (BP), body mass index, (BMI), and fasting plasma glucose (FPG) have been related to poorer cognitive function, although findings vary by age. These CVD risk factors aggregate but are less frequently examined simultaneously for cumulative effect on cognition. We examined interactive relations of linear and nonlinear cumulative CVD risk and age to cognitive function in mid-to-late life adults. Participants were 188 community-dwelling adults [M (SD) age = 66.3 (6.9), 44% female, 89% White] with no major medical or neurologic comorbidities other than hypertension or obesity. Systolic and diastolic BP were obtained by standard clinical assessment. BMI was computed as measured weight (in kg) divided by height (m^2). FPG levels were determined enzymatically. Risk factors were z-scored and summed to yield a cumulative risk score (zCVD). Cognitive tests of attention, memory, motor, and visuospatial skills were administered. Multivariable regression analyses, adjusted for age, education, sex, race, and antihypertensives, examined interactions of linear and nonlinear zCVD and age to raw test scores. Significant main effects of quadratic zCVD were noted for motor function (b = .18, p =.02) and delayed visual memory (b = -.18, p =.002); performance was worse at both high and low levels of zCVD. A significant two-way interaction of

quadratic zCVD and age with immediate verbal memory (b = -.02, p =.04) showed high and low zCVD associations with poorer function at older ages. A significant two-way interaction of linear zCVD and age with simple attention (b = .02, t(173) = 2.42 , p=.02) showed lower zCVD related to worse performance at older ages. These findings showed that, in older adults, both high and low cumulative CVD risk related to poorer performance on select tests of visual memory, motor function, and (for the oldest adults only) verbal memory. Further, lower zCVD related to poorer attention among the oldest adults. Though much is known about biological processes underlying relations of high CVD risk to lower cognitive function, less is understood about mechanisms operating at lower CVD risk levels. Some have posited emerging frailty and selective survival as relevant influences. Findings may offer potential clinical implications for the treatment of CVD risk factors in the context of cognitive function at older ages.

Depression and Biopsychosocial Processes Session

1

Abstract 1246

THE INTERPLAY BETWEEN POLYGENIC SUSCEPTIBILITY AND DISCRIMINATION ON DEPRESSIVE SYMPTOMS: A PROSPECTIVE COHORT STUDY

Toslima Khatun, PhD; Sam Norton, PhD; Catherine Lewis, PhD; Ruth Hackett, King's College London

Background: Perceived discrimination is associated with depressive symptoms. However, not everyone who perceives discrimination develops such symptoms. It is possible that discrimination is linked to depressive symptoms when it coincides with genetic predisposition to depressive symptoms. This study investigated the interplay between perceived discrimination and polygenic propensity to depressive symptoms (indexed by a polygenic score; PGS) on later depressive symptoms.

Methods: Data was from 4950 participants from the English Longitudinal Study of Aging (aged >50 years). Perceived discrimination was reported in 2010-11. Depressive symptoms were assessed using the Centre for Epidemiological Studies scale (2010-2017). The depressive symptoms PGS was calculated using summary statistics from the Social Science Genetic Association Consortium. Linear mixed models explored the interaction between perceived discrimination and PGS depression on depressive symptoms controlling for age, sex, and principal components.

Results: A total of 1869 (37.5%) participants perceived discrimination. Perceived discrimination predicted increased depressive symptoms over time (B=0.248; 95% Confidence Intervals (CI) 0.142-0.354). Similarly, those with a higher polygenic propensity to depression had increased depressive symptoms over the follow-up period (B=0.050; 95% CI 0.000-0.100). No significant interaction

between perceived discrimination and the PGS on later depressive symptoms was observed (B=0.68; 95% CI -0.035-0.171).

Conclusions: Perceived discrimination and a PGS for depression separately predicted increased depressive symptoms over the 6-year follow up period. However, there was no interaction between perceived discrimination and the PGS on later depressive symptoms. This suggests that perceived discrimination and genetic risk (as indexed by a PGS) operate independently to influence depressive symptoms over time.

2

Abstract 1225

BRAIN AND CARDIOVASCULAR RESPONSES TO ACUTE STRESS IN REMITTED AND RECURRENT LATE-LIFE DEPRESSION

Thomas Kraynak, PhD; Helmet Karim, PhD; Layla Banihashemi, PhD; Meryl Butters, PhD, University of Pittsburgh; Robert Krafty, PhD, Emory University; Olusola Ajilore, MD PhD, University of Illinois Chicago; Warren Taylor, MD MHSc, Vanderbilt University Medical Center; Carmen Andreescu, MD; Thomas Kraynak, PhD, University of Pittsburgh

In individuals with remitted late-life depression (LLD), stress exposure can increase the likelihood of a new, recurrent depressive episode. Variability in the effect of stress on recurrence risk may reflect underlying brain and physiological processes mediating the stress response. We examined how subjective, physiological, and brain responses to an experimental stressor differs in older adults with and without remitted depression, and how these stress responses relate to future relapse. Participants were recruited through 3 sites and included 76 older adults with remitted LLD and 36 age-matched healthy comparison (HC) adults. Participants completed an acute stressor task during functional brain imaging with behavioral and cardiovascular monitoring. Remitted LLD participants were followed longitudinally to evaluate depression recurrence. Compared to HC, the remitted LLD group exhibited reduced stressor-evoked systolic blood pressure and heart rate responses, as well as reduced stressor-evoked posterior insula activity. This blunted stress response phenotype appeared more specific to the stable remitter group than the relapsing LLD group. Survival analyses demonstrated that greater stressor-evoked bed nucleus of the stria terminalis (BNST) activity was associated with faster time to recurrence. These findings add to a growing literature reporting so-called "blunted" stressor-evoked cardiovascular and brain reactivity in remitted depression. Moreover, they link the stress response in visceral interoceptive brain circuits comprising the posterior insula and BNST with relapse vulnerability. Future work involving longer follow-up periods may reveal additional stress-related brain and behavioral predictors of recurrence in remitted LLD.

3

Abstract 1117

EFFECTS OF MALADAPTIVE EMOTION REGULATION ON BRAIN-BEHAVIOR MARKERS OF ANHEDONIA IN DEPRESSION

VULNERABILITY

Cristina Ottaviani, PhD; Martino Schettino, PhD; Arianna Mastrocesare; Daniele Bomarsi; Ilenia Ceccarelli; Diego Pizzagalli, PhD; Sabrina Fagioli, PhD

Anhedonia and perseverative cognition—a maladaptive form of emotion regulation—are hallmarks of the depressive phenotype. Both symptoms have been linked to adverse outcomes in the management of depression, including a poor disease course and worse response to treatments. While their potential interaction in maintaining depression has been hypothesized, the underlying mechanisms remain unexplored. In a within-subjects design, electrophysiological measures of reward responsiveness were assessed during performance on the Probabilistic Reward Task (PRT) before and after an experimental induction of perseverative cognition or an active control condition in 62 individuals (n=38 females) with varying severity of depressive symptoms. Visual-analog scales (VAS) were administered before and after each experimental manipulation to evaluate momentary levels of state perseverative cognition. Electroencephalography was recorded continuously throughout the protocol to derive event-related potentials following reward feedback. Our results revealed a significantly blunted response bias toward the most frequently rewarded stimulus when participants performed the PRT following the perseverative cognition induction compared to the control condition, indicating anhedonia-like effects (p<.001). This effect was most pronounced in individuals with more severe depressive symptoms. Electrophysiological analyses showed a larger feedback-related negativity (FRN) to reward feedback during the perseverative condition, especially among those with more severe depressive symptoms (p=.011). Notably, we observed significant negative correlations between FRN amplitude and both behavioral changes in response bias and subjective changes in VAS ratings following perseverative cognition induction (ps<.038). These findings suggest that state levels of perseverative cognition, such as rumination, can acutely impair reward responsiveness, particularly in those most vulnerable to depression. This underscores the crucial role of perseverative cognition in exacerbating reward processing deficits and highlights how maladaptive emotion regulation can significantly impact the severity of anhedonia. Understanding these state-like aspects offers advanced insights into the development of targeted therapeutic strategies to improve emotion regulation in individuals with vulnerability to depression.

Diabetes and Depression Session

1

Abstract 1121

MODERNIZED COLLABORATIVE CARE FOR DEPRESSION: IMPACT ON PSYCHOLOGICAL RISK AND PROTECTIVE FACTORS FOR DIABETES AMONG SOCIODEMOGRAPHICALLY DIVERSE PRIMARY CARE PATIENTS

Michelle Williams; Christopher A. Crawford, M.S., Indiana University

Indianapolis; Matthew D. Schuiling, M.S., Indiana University Indianapolis (IUI); Aubrey L. Shell, Ph.D., Indiana University Health; Krysha L. MacDonald, M.A., Eskenazi Health; Daniel R. Bateman, M.D., Northwestern Medicine Regional Medical Group; India R. Johnson, Ph.D., Indiana University Indianapolis; Samir K. Gupta, M.D., Indiana University School of Medicine; Adam T. Hirsh, Ph.D.; Jesse Stewart, Ph.D., Indiana University Indianapolis

Depression, a risk factor for type 2 diabetes, often co-occurs with other psychological risk (anxiety) and protective (positive affect and life satisfaction) factors for diabetes. Initial research suggests that depression treatment may also improve these co-occurring factors. To evaluate the effect of modernized collaborative care for depression on multiple psychological risk and protective factors for diabetes, we examined data from the eIMPACT-DM pilot trial (R21DK123582; NCT04437485). Forty-six primary care patients with depression and prediabetes from a safety net healthcare system (Mage = 50 years, 78% women, 72% Black, 9% Hispanic/Latinx, Meducation = 13 years, 33% with income <$10,000/year) were randomized to 6 months of the eIMPACT-DM intervention (our modernized collaborative care intervention for depression involving internet cognitive-behavioral therapy [CBT], telephonic CBT, and/or select antidepressants; n=24) or active control (depression education, depressive symptom monitoring, and usual primary care for depression; n=22). Depressive symptoms (Patient Health Questionnaire-9 [PHQ-9], anxiety symptoms (Generalized Anxiety Disorder-7 [GAD-7]), trait positive affect (Positive and Negative Affect Schedule- Positive Affect Subscale [PANAS-PA]), and life satisfaction (Satisfaction With Life Scale [SWLS]) were measured across the treatment period. Effect sizes (standardized regression coefficients; β_Y), representing the standardized change in the dependent variable for a 1-point change from active control to intervention group, were computed to identify clinically meaningful improvements (predefined as $\beta_Y \geq 0.50$) under lower statistical power. Compared to active control, the intervention group demonstrated medium-to-large and clinically meaningful improvements in depressive symptoms (PHQ-9 β_Y= -0.69, p=.02), anxiety symptoms (GAD-7 β_Y= -0.76, p=.004), and trait positive affect (PANAS-PA β_Y= 0.61, p=.03) as well as small-to-medium improvements in life satisfaction (β_Y=0.43, p=.15). Our findings highlight the potential of modernized collaborative care for depression to improve multiple psychological risk and protective factors for diabetes in a sociodemographically diverse primary care population. Ultimately, such an intervention could bolster future diabetes prevention efforts in diverse groups, helping to reduce diabetes-related health disparities.

2

Abstract 1398

PREDICTORS OF DIABETES AND DEPRESSIVE SYMPTOMS AMONG HISPANIC/LATINE ADULTS: DISCRIMINATION, ETHNIC ENCLAVES, AND IMMIGRANT DENSITY

Kenia Rivera; Jenalee Doom, PhD, University of Denver

Hispanic/Latine adults in the United States experience heightened risk of diabetes and depression compared to non-Hispanic/Latine adults. It is essential to investigate risk and protective factors for both diabetes and depression at the individual and neighborhood level. Participants who identified as Hispanic/Latine (n=1481) in the National Longitudinal Study of Adolescent to Adult Health was used to examine whether discrimination, Hispanic/Latine ethnic enclaves (composition of Hispanic/Latine individuals in an area), and immigrant density (number of immigrants residing in an area) when participants were 24-32 years old (Wave IV) predicted diabetes and depressive symptoms when participants were 33-43 years old (Wave V). Depressive symptoms were assessed with the Center for Epidemiologic Studies Depression Scale at Wave V. Diabetes was assessed using hemoglobin A1c (HbA1c), non-fasting glucose, and self-reported diabetes diagnosis at Wave V. Discrimination was assessed using one question from the Everyday Discrimination Scale at Wave IV. Ethnic enclave and immigrant density were assessed using the American Community Survey for the proportion of Hispanic/Latine and foreign-born individuals at the county level at Wave IV. Covariates included family history of diabetes, age, household income, depressive symptoms, and diabetes at Wave IV. Linear regressions were used to test whether the predictors predicted depressive symptoms at Wave V and diabetes at Wave V. Higher discrimination predicted higher depressive symptoms after including covariates (B=0.20, p=.01). Higher discrimination predicted lower HbA1c (B=-0.21, p=.01) and diabetes diagnosis (B=-0.06, p=.03). Living in a Hispanic/Latine ethnic enclave predicted higher HbA1c (B=1.07, p=.002), glucose (B=53.23, p<.001), and diabetes diagnosis (B=0.36, p=.001). Higher immigrant density predicted higher HbA1c (B=1.00, p=.04), glucose (B=49.58, p=.03), and diabetes diagnosis (B=0.37, p=.01). Findings showed discrimination is a risk factor for depressive symptoms, while living in an ethnic enclave or an area with higher immigrant density is a risk factor for diabetes. Ethnic enclave and immigrant density could be a proxy for social determinants of health. For example, living in a neighborhood with high Hispanic/Latine or high immigrant density could also be in a food desert which has been associated with diabetes.

3

Abstract 1308

EFFECT OF MODERNIZED COLLABORATIVE CARE FOR DEPRESSION ON DEPRESSIVE SYMPTOMS AND DIABETES RISK BIOMARKERS: PRIMARY RESULTS OF EIMPACT-DM PILOT TRIAL

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Although depression is an independent risk factor for type 2 diabetes (T2D), it is unknown if depression treatment reduces diabetes risk. We conducted a pilot randomized controlled trial to evaluate our hypothesis that treating depression before T2D onset reduces diabetes risk. Primary care patients with depression and prediabetes from a safety net healthcare system (N = 46, M_{age} = 50

years, 78% female, 72% Black, 9% Hispanic/Latinx, 33% with income <$10,000/year, M_{A1c} = 5.91%) were randomized to 6 months of the eIMPACT-DM intervention (modernized collaborative care for depression offering internet cognitive-behavioral therapy [CBT], telephonic CBT, and/or select antidepressants) or active control (depression education, depressive symptom monitoring, and usual primary care for depression). Outcomes were depressive symptoms and diabetes risk biomarkers at 6 months. Thirty-nine (85%) participants completed the post-treatment visit. Intervention participants, versus active control participants, exhibited large improvements in depressive symptoms at post-treatment (p = 0.01; Hedges' g = -0.89). Moreover, this group difference was clinically meaningful – 40% of intervention participants, versus 11% of active control participants, showed a ≥50% reduction in depressive symptoms (X^2 [1, N = 38] = 4.08, p = 0.04, OR = 5.33, 95% CI: 0.95-29.81). Contrary to our hypothesis, intervention participants did not differ from active control participants on any diabetes risk biomarker at post-treatment (see Table 1). Our modernized collaborative care intervention – which harnessed technology to maximize patient access and minimize needed resources – improved depressive symptoms. This finding underscores the utility of integrating digital health into collaborative care in safety net settings. However, successful depression treatment did not lower diabetes risk biomarkers. These findings suggest that depression treatment alone is not sufficient to reduce the excess diabetes risk of people with depression and that alternative approaches (e.g., interventions concurrently targeting depression and candidate biobehavioral mechanisms) are needed.

Table 1. Treatment Group Differences in Post-Treatment Outcome Level: ANCOVA Models Adjusted for Baseline Somatic Depressive Symptoms Group and Baseline Outcome Level (N = 46)

	eIMPACT-DM (n = 24) M (SD)	Active Control (n = 22) M (SD)	p-value (g)
Depressive Symptoms			
Post-Treatment SCL-20	1.07 (0.61)	1.61 (0.61)	0.01 (-0.89)
Diabetes Risk Markers			
Post-Treatment A1c, %	5.91 (0.22)	5.93 (0.22)	0.79 (-0.09)
Post-Treatment HOMA-IR	3.14 (1.21)	2.78 (1.22)	0.38 (0.30)
Post-Treatment Fasting Glucose, mg/dl	105.91 (11.31)	109.59 (11.37)	0.34 (-0.32)
Post-Treatment Fasting Insulin, uIU/ml	24.24 (9.61)	21.13 (9.65)	0.33 (0.32)
Post-Treatment Adiponectin, ug/ml	13.24 (2.38)	13.26 (2.38)	0.97 (-0.01)
Post-Treatment BMI, kg/m²	36.30 (1.71)	36.38 (1.71)	0.88 (-0.05)

Note. Funding R21DK123582. ClinicalTrials.gov Identifier: NCT04437485. Values are estimated marginal means and corresponding standard deviations. Observed *ns* for each outcome variable were (post-treatment): SCL-20 (38), A1c (39), HOMA-IR (39), fasting glucose (39), fasting insulin (39), adiponectin (38), and BMI (39). ANCOVA = analysis of covariance. SCL-20 = Hopkins Symptom Checklist-20 (possible range: 0.00-4.00); A1c = hemoglobin A1c; HOMA-IR = homeostasis model assessment-insulin resistance; BMI = body mass index.

Extreme/Traumatic Stress and Health Session

1

Abstract 1068

PERIPHERAL PHYSIOLOGIC RESPONSES TO ACUTE PSYCHOLOGICAL STRESS IN PATIENTS WITH TAKOTSUBO SYNDROME: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Takotsubo syndrome (TTS) can be triggered by emotional stress, particularly in postmenopausal women, who constitute the majority of patients. The psychobiological mechanisms are elusive. This review synthesizes literature on

peripheral physiological responses to acute psychological stress in TTS patients compared to controls. **Methods:** The review followed PRISMA guidelines and was registered on PROSPERO (CRD42023393222). PubMed, Embase, APA PsycInfo, Cochrane CENTRAL, ClinicalTrials.gov, and WHO ICTRP were searched from inception to February 2023, with PubMed re-searched in May 2024. Eligible studies involved adult TTS patients, included a control group, used standardized acute psychological stress induction, and measured at least one peripheral physiological marker pre- and post-stress. Risk of bias was assessed with the BIOCROSS tool. Meta-analysis was conducted with the R package *metafor*. **Results:** Of 5,752 records screened, 13 studies (k=13) comprising 176 TTS patients and 197 controls were included. In the meta-analysis, TTS patients had higher post-stress plasma norepinephrine levels [Hedges' g=0.50, 95% CI (0.17, 0.84), p=0.003, k=5] and a marginally significant increase in stress-induced norepinephrine [g=0.28, 95% CI (-0.05, 0.61), p=0.09, k=5] compared to controls without established cardiovascular disease. They also showed a smaller change in left ventricular ejection fraction [g=-0.44, 95% CI (-0.87, -0.02), p=.043, k=3]. The systematic review additionally supported endothelial/vasomotor dysfunction (k=3), wall motion abnormalities (k=2), and impaired myocardial perfusion (k=2) in TTS patients. **Discussion:** TTS patients may exhibit distinct physiological responses to psychological stress, particularly in catecholamine levels and cardiac function. Evidence is limited by the few available studies and unclear risk of bias overall.

2

Abstract 1155

NEIGHBORHOOD VIOLENT CRIME IS ASSOCIATED WITH GREATER LIKELIHOOD OF HYPERTENSION-RELATED EMERGENCIES

Michelle A. Chen, Northwestern University; Alexa A. Freedman, PhD, Northwestern University Feinberg School of Medicine; Tao Jiang, PhD, Stanford University; Xiaoning Huang, PhD; Sadiya S. Khan, MD, MSc, Northwestern University Feinberg School of Medicine; Gregory E. Miller, PhD, Northwestern University

It has long been known that direct personal exposure to violence is associated with increased cardiovascular disease (CVD) risk. However, recent studies hint that living in areas with a greater burden of violence may indirectly be associated with higher CVD risk, even if not directed at the individual. Nonetheless, the interpretation of these place-based exposures is impeded by methodological challenges, e.g., the tendency of adverse neighborhood exposures to cluster spatially. To address these challenges, we utilized a case-crossover design to capitalize on the fact that neighborhoods show considerable temporal variation in violent crime, whereas other correlated exposures like poverty and segregation remain stable. In a large sample of patients (n = 23,863) who presented to an urban tertiary-care emergency department (ED) with a primary diagnosis of hypertension from 2016-2019 *(M/SD)* age = 68.1(16.2); 52.5% female; 40.7% White, 35.1% Black, 12.2% Hispanic, 4.1% Asian, 0.3% American Indian/Alaska Native. Using the City of Chicago's Data Portal, we quantified monthly rates of violent crime in each patient's neighborhood. About half (49.2%) of patients lived in Census block groups where a violent crime occurred in the month prior to their ED

visit. We examined whether patients were more likely to have experienced a violent crime in their block group during the month prior to their ED visit compared with two month-long control periods, one year before and after that visit. Violent crime was modeled both as a dichotomous predictor (no violent crime in the case period vs at least one violent crime in the case period) and a continuous predictor (the monthly count of violent crimes in each block group, z-scored within person). Neighborhood violent crime was associated with greater likelihood of a hypertension-related ED visit both when observing violent crime dichotomously (*OR* = 1.052; CI = 1.018 to 1.097; *p* = .010) and continuously (*M/SD*) of violent crime counts = 1.150(1.763); *OR* = 1.029; CI = 1.014 to 1.045; *p* < .001). This research is the first to observe a relationship between neighborhood-level burden of violent crime and hypertension-related ED visits in a large urban city, using a within-patient design that eliminates the influence of stable neighborhood conditions (e.g., poverty, segregation) that pose serious confounding risks in this literature.

3

Abstract 1217

EFFICACY OF INTERVENTIONS FOR POSTTRAUMATIC STRESS DISORDER SYMPTOMS IN RESPONSE TO A TRAUMATIC MEDICAL EVENT: A SYSTEMATIC REVIEW

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Introduction: Serious medical events can be potentially traumatic experiences that may trigger posttraumatic stress disorder (PTSD). Research on medically induced PTSD and its health consequences has grown, highlighting this unique patient population with mental and physical health comorbidities. However, treatment recommendations for these manifestations of PTSD remain limited—particularly compared to PTSD due to other traumas. This systematic review evaluated the efficacy of various interventions for PTSD symptoms induced by traumatic medical events.

Methods: A systematic search was conducted across nine electronic databases from their inception until December 2023. Inclusion criteria were: 1) randomized controlled trials (RCTs); 2) adult participants diagnosed with PTSD or exhibiting elevated PTSD symptoms related to a life-threatening medical event.

Results: The search yielded 15,119 results, of which 12 studies met the inclusion criteria. Sample sizes ranged from 17 to 89 patients, with PTSD predominantly due to cardiovascular events or cancer. The PTSD treatments evaluated included Eye Movement Desensitization and Reprocessing (EMDR), Cognitive Behavioral Therapy (CBT), Prolonged Exposure (PE), Written Exposure Therapy (WET), Imaginal Exposure, repetitive transcranial magnetic stimulation (rTMS), and supportive therapy. Most studies reported

significantly lower posttreatment PTSD symptoms in the intervention groups relative to the comparison groups (Cohen's d = -0.21 to 4.11, favoring the intervention), with EMDR and WET demonstrating particularly strong efficacy. Limitations included a lack of blinding and reliance on self-reported outcomes, increasing the risk of bias of the included studies. Additionally, there were notably high dropout rates (0%-52%) in treatment groups, especially for interventions which required a substantial time commitment, such as CBT and PE (17%-52%).

Conclusion: This systematic review identified a growing number of RCTs of interventions for medically induced PTSD symptoms. While the findings suggest the efficacy of several treatment approaches, including gold-standard trauma-focused psychotherapies (i.e., EMDR, CBT) and some emerging interventions (i.e., WET, rTMS), study limitations underscore the need for larger trials and further research to determine the most appropriate treatments for this unique patient population.

Pain in Biopsychosocial Science Session

1

Abstract 1278

AD LIBITUM TOBACCO USE, BUT NOT WITHDRAWAL, IS ASSOCIATED WITH ELEVATED ENDOGENOUS OPIOID INHIBITION OF PAIN AND CARDIOVASCULAR STRESS RESPONSES

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Research suggests that nicotine plays a role in inhibiting pain and that withdrawal is associated with increased pain sensitivity, a pattern that reinforces nicotine use. The role of endogenous opioid system changes in these effects, has yet to be examined. We investigated effects of opioid blockade on pain perception and cardiovascular stress responses to index endogenous opioid function 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 two sessions during which a placebo or 50 mg of naltrexone (opioid antagonist) was administered in a double-blind, counterbalanced design. Participants underwent two laboratory mental stressors. They then rated pain experienced during and after a 90-sec cold pressor test (CPT), followed by completion of the McGill Pain Questionnaire. Systolic blood pressure (SBP), diastolic blood pressure (DBP), and heart rate (HR) were collected throughout the sessions. Results showed that compared to the placebo condition, opioid blockade increased HR stress reactivity only in ad lib smokers (p=.005). Consistent with these opioid-mediated inhibitory effects, opioid blockade increased pain ratings immediately following the CPT relative to placebo in the ad lib group but not the withdrawal group. In contrast, opioid blockade led to paradoxically *decreased* pain perception *during* the CPT task via non-opioid mechanisms among both non-smokers and ad lib nicotine users, with this paradoxical analgesia absent among those in withdrawal (p=0.05). These results suggest enhanced endogenous opioid inhibition of pain and stress responses during ad libitum nicotine use but not during withdrawal. This suggests a possible role for opioid-related nicotine reward effects during stress and exposure to pain.

2

Abstract 1186

THE VIETNAMESE ADULT STRAIN: PSYCHOMETRIC PROPERTIES AND PREDICTIVE UTILITY

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Background: Cumulative lifetime stressor exposure is an important social determinant that robustly predicts health. It is particularly relevant for groups facing health disparities, such as Vietnamese Americans with limited English proficiency. Nevertheless, few have examined the cumulative life stress of Vietnamese Americans, partly due to a lack of language-concordant measures. This community-based participatory research study implemented forward-backward translation and piloted the STRAIN, a NIMH-recommended instrument for measuring lifetime stressor exposure.

Method: 44 Vietnamese American adults with limited English proficiency were recruited through public flyers and community engagement. In addition to the STRAIN, participants answered questions on demographics (e.g., age, sex, acculturation), doctor-diagnosed medical conditions, somatic symptom burden (SSS-8), psychological distress (K6), perceived stress (4-item PSS), childhood adversity (Risky Families questionnaire), and personality traits (TIPI).

Results: 68% were female and 56.59 years old, on average (*SD*=14.78); 95% had low U.S. acculturation and 64% were eligible for Covered California programs. 93% completed the follow-up, with STRAIN lifetime stressor count demonstrating excellent 2-week test-retest reliability (*ICC*=.92). Participants reported an average of 23.00 stressors (*SD*=14.38), which marginally related to refugee status (F(1,28)=3.95, *p*=.06). Lifetime stressor count significantly correlated with acculturative stress (*r*=.58, *p*<.001), medical comorbidities (*r*=.55, *p*<.001), SSS-8 (*r*=.36, *p*=.02), and conscientiousness (*r*=.34, *p*=.03). Adjusting for age, sex, and income, lifetime stressor count remained significantly linked with somatic symptom burden (*b*=.15, *p*=.02) and doctor-diagnosed medical comorbidities (*IRR*=1.03, *p*<.001).

Conclusion: The Vietnamese Adult STRAIN was feasible in this population with low U.S. acculturation and limited English and technological proficiency; it demonstrated excellent psychometric properties and test-retest reliability. Participants suggested cultural considerations for the STRAIN, including addressing the digital gap

experienced by those with lower SES. Overall, cumulative life stress is important for Vietnamese Americans' physical health, and further research should investigate which forms of life stress are most predictive of mental and physical health.

Positive Psychological and Social Processes Session

1

Abstract 1183

SOCIALLY PATTERNED FACETS OF PSYCHOLOGICAL WELL-BEING AND LINKS WITH CARDIOVASCULAR HEALTH: A MIXED METHODS INVESTIGATION IN U.S. ADULTS

Julia Boehm, Chapman University; Jennifer Morozink Boylan, PhD, University of Colorado Denver

Background: Social disadvantages (e.g., racial minority status, low levels of education) are linked with poor health outcomes in part due to greater exposure to stress. Stress may deplete facets of psychological well-being (PWB; positive emotions, satisfaction, purpose, and optimism) and limit opportunities to develop such assets, leading to worse health. Using a mixed methods approach, we investigated whether qualitatively assessed PWB facets were: 1) patterned by race and education; and 2) associated with cardiovascular health (CVH) concurrently and longitudinally. **Methods:** Participants were from the second wave and refresher biomarker cohorts of the Midlife in the United States Study (55% women; 23% ≤high school diploma, 30% some college; 75% White, 19% Black). Participants wrote open-ended responses about what contributes to well-lived lives. Judges evaluated responses to determine if PWB facets were endorsed (yes, no). Eight objective components of CVH were also assessed (blood pressure, cholesterol, glucose, body mass index, diet, physical activity, sleep, and nicotine) concurrently (N=2,036) and 12 years later (N=650). Preregistered analyses included chi square tests to examine patterns of each PWB facet by education and race; linear regressions examined associations between PWB facets and CVH in unadjusted models and models adjusted for age, sex, race, education, and word count. **Results:** In line with preregistered hypotheses, White adults were more likely to endorse satisfaction, purpose, and optimism. College educated adults were also more likely to endorse satisfaction. Endorsement of positive emotions did not differ by race or education. Contrary to hypotheses, endorsement of optimism and purpose did not differ by education. Optimism was associated with better CVH concurrently (B(SE)=3.0(1.4), p=.03) but findings did not hold when adding covariates or testing longitudinally. **Conclusions:** As expected, positive emotions were not patterned by social structural factors, but other PWB facets differed by race. Only optimism was weakly tied with CVH concurrently and no associations were evident longitudinally, perhaps because of reduced statistical power. Although cell sizes were too small to consider the interaction between differential endorsement of PWB facets and social disadvantage when predicting CVH, this would be a key direction for future work.

2

Abstract 1198

SOCIAL SUPPORT AND COMT HAPLOTYPE MODERATE THE ASSOCIATION BETWEEN GRATITUDE AND PAIN

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Although gratitude is associated with positive pain outcomes, less is known about factors that impact this relationship. One factor important to consider is social support. Not only is support associated with pain, it also interacts with gratitude to enhance psychological outcomes. Research has also linked genetic variations in the *COMT* gene to differences in pain sensitivity as well as gratitude. Thus, the purpose of this study was to examine if the link between gratitude and pain is moderated by social support and *COMT* haplotypes. Participants were 134 patients recruited from local physical therapy clinics with an average age of 61.93 (SD=18.4), were mostly female (69.4%), and white (97.3%). Questionnaires assessing gratitude, social support, and pain outcomes were completed following an appointment. Cell samples were collected via cheek swab and DNA was extracted and genotyped on four single nucleotide polymorphisms: *rs6269, rs4633, rs4818, rs4680*. PHASE 2.1.1 software was used to infer haplotypes. Of the 134 participants, 13 were homozygous for the low pain sensitivity (LPS) haplotype and 36 were homozygous for the average pain sensitivity (APS) haplotype. No participants were homozygous for the high pain sensitivity (HPS) haplotype. Of the 82 individuals with heterozygous haplotype combinations, 63 had LPS_APS haplotypes, 12 had APS_HPS, and 7 had LPS_HPS haplotypes. We found that gratitude was negatively correlated with pain severity and interference and positively associated with the amount of relief from pain treatments. Importantly, several associations were moderated by social support and *COMT* haplotypes. Specifically, results show gratitude was associated with relief from pain treatments but only for individuals high in support. In addition, *COMT* haplotype moderated the link between gratitude and pain interference, such that LPS_LPS individuals showed the strongest negative association between gratitude and pain interference. Our results suggest that while gratitude promotes positive pain outcomes, these effects are influenced by psychosocial and genetic factors. These results are important as they may aid the development of precision pain management approaches by identifying individuals most likely to benefit from nonpharmacological, behavioral interventions for pain. Funded in part by National Institutes of Health (P20GM103443).

3

Abstract 1098

RESTORING HEALTH AND HOPE: THE MODERATING ROLE OF SLEEP IN THE ASSOCIATION OF OPTIMISM WITH UPPER RESPIRATORY INFECTIONS AMONG AFRICAN AMERICANS

Cameron Wiley, Harvard T.H. Chan School of Public Health; Grace

Fishback, BS; Vida Pourmand, MS, MA, University of California, Irvine; Laura Kubzansky, PhD, Harvard T.H. Chan School of Public Health; Sarah Pressman, PhD, University of California, Irvine

Optimism is a beneficial psychological attribute that can positively impact immune functioning via health-promoting behaviors, with sleep representing a vital restorative process that influences this health connection. However, the interplay between optimism, sleep, and susceptibility to infectious disease remains underexplored, particularly among African Americans (AAs), who disproportionately suffer from adverse sleep and infectious disease outcomes. Therefore, the current investigation examined if optimism and measures of sleep independently predicted upper respiratory infection (URI) likelihood and explored if sleep moderated the association of optimism with URI likelihood in an aggregated cohort of AA individuals from the Pittsburgh Common Cold Project. Participants (n = 271, 48% female, M_{age} = 33.4) self-reported dispositional optimism and sleep habits during a baseline assessment. Participants also completed daily interviews for 13 days prior to viral exposure, which were used to obtain ecological momentary assessments of sleep duration and efficiency. Participants were then quarantined, experimentally exposed to an upper respiratory virus, and monitored for infection and symptoms. Covariates included age, sex, body mass index, education level, pre-challenge antibody titer, season of the year, and type of virus administered. Adjusting for covariates, regression analyses revealed significant main effects for daily interview measures of sleep duration (b = -.40, p = .02) and efficiency (b = -.09, p = .01) on URI likelihood, such that longer sleep duration and better sleep efficiency predicted a lower likelihood of URI. However, there was not a significant main effect of optimism on URI likelihood (b = .02, p = .59). Moderation analyses revealed significant interaction effects of optimism and PSQI sleep efficiency (b = -.01, p = .02) as well as PSQI sleep quality (b = -.15, p = .02) on URI likelihood, such that higher optimism was only associated with a lower likelihood of URI at high levels of sleep efficiency and quality. Overall, current findings showed that the health benefits of optimism for infectious disease outcomes in AAs only occurred when combined with high sleep efficiency or quality, suggesting that positive psychological functioning alone may not be sufficiently protective against URIs in certain samples.

4

Abstract 1368

MULTIDIMENSIONAL SOCIAL SUPPORT, SUBJECTIVE SOCIAL STATUS AND SELF-REPORTED CHILD HEALTH: A MULTILEVEL MODERATED MEDIATION ANALYSIS WITH SOCIOECONOMIC STATUS AND INCOME INEQUALITY ACROSS 25 COUNTRIES
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BACKGROUND: Social support and subjective social status (SSS) are important predictors of child health and well-being. Prior work has found a modest association between these predictors that is moderated by relative socioeconomic status (SES) across countries. Less is known about the joint influence of support and SSS on child health. This work examined the combined effects of social support and SSS on health and well-being, moderated by country-level income inequality.

METHODS: A subsample from the 2013/14 cross-sectional Health Behaviour in School-aged Children survey was used (N=97,956 children aged 11, 13 and 15 from 25 countries). Measures included age, gender, immigration status, SES (family affluence), multidimensional social support, SSS, well-being (self-rated health, somatic symptoms, life satisfaction) and health behaviours (physical activity, diet, substance use). Scores were cluster-mean centered by country. A multilevel moderated mediation model tested associations between social support (predictor), SSS (mediator) and health and well-being (outcomes), across levels of SES. The moderating effects of country-level income inequality (Gini) were also tested. Interactions between support and SSS were explored.

RESULTS: SSS mediated the association between social support and every health and well-being outcome across SES (except diet in high SES). Income inequality moderated the association between social support and SSS with self-rated health, somatic symptoms, and diet (and between support and life satisfaction); differences across SES levels were observed. When combinations of high, average and low social support and SSS were grouped, a robust gradient was found across each outcome. As expected, those with higher social support and SSS reported better health. Curiously, high support buffered low SSS, but high SSS did not make up for low support.

CONCLUSIONS: Social support is linked to a myriad of health and well-being outcomes, partially mediated by SSS. Further, these results (like others) imply that high social support can be protective from the effect of low SSS on poorer health. SES remains a meaningful contextual factor. Future longitudinal research is needed to test causality and elucidate the complex pathways between individual- and country-level psychosocial factors, and child health.

Reproductive Health Session

1

Abstract 1301

PRENATAL MINDFULNESS INTERVENTION LEADS TO LOWER CHILD PSYCHOPATHOLOGY, MEDIATED BY REDUCTIONS IN PERINATAL MATERNAL DEPRESSION
Alexandra Sullivan; Michael Coccia, Masters in Applied Statistics, UCSF; Danielle Roubinov, PhD, UNC Chapel Hill; Amanda Noroña-Zhou, PhD, UCSF; Barbara Laraia, PhD, MPH, University of California, Berkeley; Cassandra Vieten, PhD, UC San Diego; Elissa Epel, PhD; Nicole Bush, PhD, UCSF

Pregnancy is a sensitive period for child development and, therefore, potentially also for the effects of health-promoting programs. Pregnancy psychosocial interventions may not only lower perinatal maternal depression, but may also exert benefits across generations

to bolster child mental health. However, two-generation evidence is limited and restricted to outcomes assessed in infancy.

Previously published findings from our group indicate that women who participated in an 8-week, controlled trial of a mindfulness-based prenatal intervention (MIND) had lower levels of depressive symptoms during the perinatal period (measured with the Patient Health Questionnaire (PHQ-9) during the 3rd trimester and at 6 months postpartum) compared to those in treatment as usual (TAU). Groups did not differ in depressive symptoms at baseline. The sample was low-income, diverse mother-child dyads (n = 106; 52% girls; maternal age at enrollment: 28.03 years; 89% ethnic or racial minorities: 35% Latina/o, 34% Black, 2% Asian, 2% Middle Eastern or North African, and 16% multiracial).

Using longitudinal serial mediation path analysis with the R package *brms*, we fit models using Hamiltonian Monte Carlo in Stan for Bayesian inference. We found that children whose mothers participated in MIND had lower psychopathology symptoms relative to offspring of the TAU group (b = -10.82, 95% CI [-21.56, -0.21]) (**see Fig. 1**). These differences were meaningfully explained by decreases in levels of perinatal maternal depression, such that the overall indirect effect of maternal depression on child psychopathology (b = -4.1, 95% CI[-8.80, -0.52]) accounted for ~38% of the total intervention effect on child psychopathology.

Findings suggest that a prenatal psychosocial mindfulness intervention starting early in the second trimester of pregnancy can affect offspring psychopathology and that reductions in perinatal maternal depressive symptoms are one mechanism accounting for these effects. These results constitute the first known evidence suggesting that two-generation effects of maternal prenatal psychosocial intervention extend to reductions in school-aged children's psychopathology.

Figure 1: Serial Mediation Paths of the Effect of a Prenatal Mindfulness Intervention on Offspring Psychopathology via Pre and Postnatal Maternal Depressive Symptoms

Indirect effect *(a1*b1 + a2*b2 + a1*d*b2)*:   b = -4.11 [-8.80, -0.52]
Total effect: b = -10.82 [-21.56, -0.21]
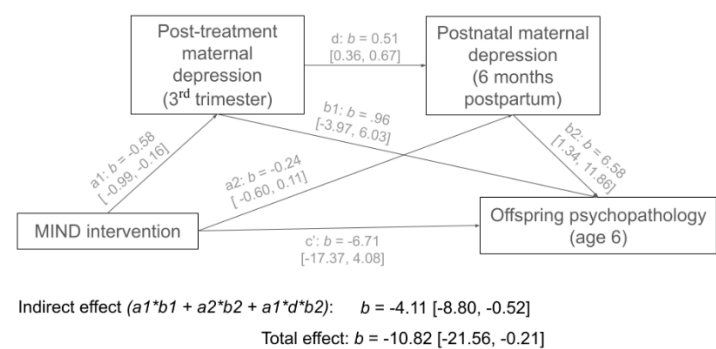
2

Abstract 1196

LINKING STRESS TO PREMENSTRUAL SYMPTOMS: INSIGHTS FROM A COMPREHENSIVE META-ANALYSIS
Celine Bencker; Ulrich Tran, Dr.; Leopold Roth, MSc, University of Vienna; Sibel Nayman, MSc, University of Heidelberg; Urs Markus Nater, Prof., University of Vienna

Premenstrual Syndrome (PMS) and its most severe form, Premenstrual Dysphoric Disorder (PMDD), are characterized by affective, behavioral, and somatic symptoms that are confined to the luteal phase of the menstrual cycle and are associated with significant impairment. Stress has been suggested to play an important role in the development, maintenance, and exacerbation of PMS symptoms. However, a systematic aggregation of the current state of research has been lacking. The present study is the first to systematically examine the association between stress and PMS symptoms by conducting a systematic review and three multilevel meta-analyses. The following aims were addressed: (1) estimate the correlation between PMS symptoms and stress, (2) examine differences in stress levels between women with PMS and controls over the menstrual cycle, and (3) assess the impact of traumatic experiences on the development of PMS. In total, 188 effect sizes from 67 studies were synthesized, including 38,494 regularly menstruating individuals. Meta-analytic results showed (1) a positive correlation between the severity of PMS symptoms and stress (r = .29), (2) higher stress levels in women with PMS compared to controls (d = 0.79), particularly during the luteal phase (d = 1.07), and (3) more than twofold higher odds (OR = 2.45) for women with traumatic history to develop PMS, with particularly high odds related to PTSD (OR = 4.33) and for developing PMDD (OR = 3.47). Heterogeneity was high in all meta-analyses (I^2 from 84.64 to 91.38 %) and only partially explained by the investigated moderators. Overall, the findings suggest a significant role of stress in PMS symptomatology. Future studies should focus on elucidating the psycho-biological dynamics between stress and symptoms across the menstrual cycle.

3

Abstract 1208

NEW ONSET BIPOLAR DISORDER FOLLOWING TOTAL ABDOMINAL HYSTERECTOMY WITH BILATERAL SALPINGO-OOPHORECTOMY
Casey Urban; Vincent Zhang, MPH; Douglas Opler, MD; Zoya Munsar, BS

Hormone fluctuations have been postulated to trigger mood episodes in patients with bipolar disorder. Research has shown that postpartum, peri-, and post-menopausal women are at higher risk of decompensation of bipolar disorder, possibly due to decreases in estrogen. Medications that increase estrogen may also have a mood stabilizing effect. An association has also been found between hysterectomies with bilateral salpingo-oophorectomy and the risk of new onset bipolar disorder; however, there is a paucity of research that eliminates confounders such as endometriosis and includes older adults. We present a case of a 79-year-old woman with a history of bipolar I who presented to the ED with acute chest pain and 3 days of hematemesis. On initial evaluation by the psychiatry service, her chest pain had resolved, her EKG was normal, and she was admitted for a UTI with mild leukocytosis. Psychiatry was consulted to evaluate two weeks of escalating paranoia, pressured speech, flight of ideas, increased energy with little sleep, and delusions of grandiosity indicating an acute episode of mania possibly exacerbated by UTI-related delirium or underlying neurocognitive disorder, as per her low MoCA score (15/30). History

revealed that the patient had received her bipolar diagnosis after her first episode of mania shortly following her prophylactic total abdominal hysterectomy with bilateral salpingo-oophorectomy 23 years ago at age 56. This was performed prophylactically given family history of ovarian cancer. Before her surgery, she was pre-menopausal and had no psychiatric diagnoses or hospitalizations. Since then, she has had frequent manic and depressive episodes with multiple hospitalizations. Following her surgery, she did not take her prescribed estrogen therapy. This case highlights the risk of new onset bipolar disorder in an older demographic and raises the question of whether her surgically-induced menopause contributed to onset and whether estrogen replacement therapy ameliorated her symptoms. Patients should therefore be educated on this possibility when weighing the risks and benefits of hormone-affecting treatments. Further studies should investigate the biological effect of estrogen on mood disorders and assess the risk of new onset bipolar disorder in patients after treatment-induced menopause from chemotherapy or radiation.

Stress and Cardiovascular Disease Risk Session

1

Abstract 1369

HEIGHTENED RISK OF MYOCARDIAL ISCHEMIA WITH MENTAL STRESS AMONG BLACK WOMEN SURVIVORS OF A MYOCARDIAL INFARCTION IN MIDLIFE

Viola Vaccarino; Amit Shah, MD, MSCR; Tené Lewis, PhD; Lisa Elon, MS, MPH; Hua She, PhD; Nancy Murrah, RN; Lucy Shallenberger, MPH; Tatum Roberts, MS; Lewam Stefanos, MPH, Emory Univ / Rollins School of Public Health; J. Douglas Bremner, MD, Emory Univ / School of Medicine; Paolo Raggi, MD, Univ of Alberta, Edmonton, Alberta, Canada; Arshed Quyyumi, MD, Emory Univ / School of Medicine

Background. Mental stress-induced myocardial ischemia (MSIMI) is frequent in survivors of a myocardial infarction (MI), especially young and midlife patients. MSIMI may signal stress-induced coronary microvascular dysfunction and is associated with an adverse prognosis. Black women are the demographic segment in the US with the highest prevalence of cardiovascular disease and the highest mortality after an MI. They also have an elevated burden of psychosocial stressors. Whether Black women experience an increased risk of MSIMI after an MI is unexplored.

Methods. We recruited 602 patients ≤ 61 years of age who were hospitalized for MI in the previous 8 months, balancing the number of men and women. Patients received ^{99m}Tc-sestamibi myocardial perfusion imaging at rest and after mental stress (speech task). A summed difference score (SDS), the difference between stress and rest scores, was used to quantify ischemia. Clinically significant MSIMI was defined as an SDS ≥3.

Results. The mean age was 51 years (range, 25-61), 46% were women and 59% self-identified as Black. Of the non-Black

participants, 82% self-identified as White. Black women had a more adverse psychosocial profile, especially when compared with non-Black patients, including lower income and higher scores of depression, PTSD, perceived discrimination and perceived stress. Black women also had more unfavorable clinical factors, with higher rates of obesity, diabetes, hypertension, and heart failure. The incidence of MSIMI (Figure) was approximately doubled in Black women compared with the other groups (p<.001 for sex by race interaction). Psychosocial and clinical risk factors did not explain these differences. In a fully adjusted model, the risk ratio of MSIMI for Black women was 2.1 compared to Black men, and 1.7 compared to non-Black women (both p<.001). There was no significant difference in MSIMI between non-Black women and men. When people of race other than Black or White where excluded, results remained similar.

Conclusions. Among midlife individuals with a recent MI, Black women have a disproportionate risk of developing myocardial ischemia with mental stress. While the underlying mechanisms for this disparity and its impact on outcomes need further study, these results signal the importance of psychological stress physiology as a driver of cardiovascular risk among Black women post-MI.
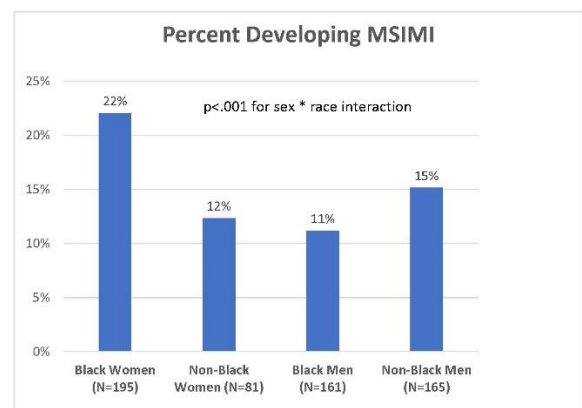
2

Abstract 1118

EMOTION SUPPRESSION DIFFERENTIALLY MODERATES THE LINK BETWEEN STRESS AND CARDIOVASCULAR DISEASE RISK IN JAPANESE AND AMERICANS

Darcianne K. Watanabe; Shinobu Kitayama, PhD; DeWayne P. Williams, PhD; Julian F. Thayer, PhD

Cardiovascular disease (CVD) is the primary cause of mortality in the United States and the second in Japan. Prior work has found that expressive suppression (i.e., emotion inhibition) is linked with adverse outcomes in Western (Americans) but not Eastern populations (Japanese). Existing cultural differences between Eastern and Western individuals in biological stress responses and suppression use suggest these factors may have different implications for CV outcomes. Thus, this study addresses the gap in

the literature on Eastern individuals by examining if suppression differentially moderates the relationship between stress and CVD risk among Japanese and American adults. Participants were from the Midlife in Japan and United States studies with complete biomarker and psychological data (Japanese: N = 315, Mage = 59.22, 149 females; Americans: N = 524, Mage = 51.98, 291 females). Predictors were stress (Perceived Stress Scale) and median split suppression via the Emotion Regulation Questionnaire suppression subscale (ERQ suppression). The outcome was a composite CVD risk score using BMI, C-reactive protein, interleukin-6, systolic blood pressure, and total to high-density lipoprotein cholesterol ratio, per the American Heart Association's CV health index. Among Japanese, the unadjusted association between stress and CVD risk was negative (r = -.08 [-0.19, 0.03]); it was positive among Americans (r = .07 [-0.01, 0.16]). Adjusting for age, sex, education, tobacco, alcohol, and prescription medication use, linear regressions revealed robust cultural differences among those with high ERQ suppression (r = -.10 [-0.19, -0.01]). Higher stress was linked with higher CVD risk in Americans. Interestingly, among Japanese with high ERQ suppression (r = .09 [-0.23, 0.05]), higher stress was associated with lower CVD risk. Consistent with prior work, these findings suggest that adaptive ER moderates the association between stress and CVD risk, and that suppression isn't universally 'maladaptive.' Results emphasize the importance of considering cultural context when assessing the impact of emotion suppression on health, which may help explain differences in CVD outcomes between Eastern and Western populations.

Figure 5
Moderation by Suppression in Japanese

Figure 6
Moderation by Suppression in Americans
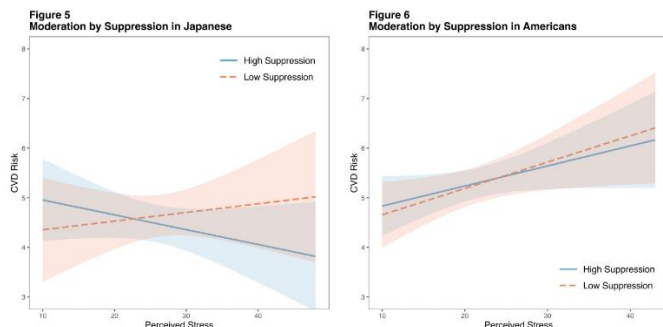
3

Abstract 1391

EXAGGERATED AMBULATORY BLOOD PRESSURE REACTIVITY TO DAILY LIFE STRESS IS ASSOCIATED WITH 2-YEAR INCREASES IN CLINIC BLOOD PRESSURE: THE NOAH STUDY

Thomas Kamarck, PhD; William Eckerle, MS; Mark Scudder, PhD; Peter Gianaros, PhD, University of Pittsburgh

Background. Exaggerated stress-related cardiovascular reactivity (CVR) may be linked with increased risk for hypertension (Chida & Steptoe, 2010). If recurrent episodes of CVR play a causal role in this process, then daily life measures of CVR should be particularly good predictors of risk. We examined the association between daily life CVR and clinic blood pressure (BP) changes in healthy community adults (Neurobiology of Adult Health study: NOAH, ages 30-54) followed over 2 years.

Approach. We collected hourly measures of ambulatory blood pressure (ABP), momentary negative affect (NA, 3-item rating scale), and self-reported posture, activity, and other BP determinants (smartphone app) over 4 days, in midlife adults free of CVD. An average of 70 observations per participant were collected. The mean of 2 clinic BP readings were assessed at baseline, and again, 2 years later by automated BP monitor. Complete data for these measures were available on 224 participants (87 % white, 61 % female, mean age of 43). Ambulatory SBP reactivity to NA was assessed using partial regression coefficients extracted from multilevel models, adjusted for between-person (demographic) and within-person (posture, activity, etc.) covariates. Two-year changes in clinic SBP (Time 2 minus Time 1) were regressed on these reactivity coefficients, after controlling for demographics, baseline BP, mean daily life NA, and body mass index (BMI).

Results. Mean clinic SBP was 115 mm Hg at baseline (range 92-155) and increased by an average of 1 mm Hg over 2 years (range of -27 mm Hg to + 31 mm Hg). Older adults, women, those with less education, and those with higher
BMI showed larger SBP increases (all p's < .04). After adjustment for these covariates, SBP reactivity to NA during daily life at baseline was significantly associated with 2-year clinic SBP change (CVR b =15.5, t =3.26, p =.0013) and effects were maintained among those unmedicated at follow-up (n=215, p=.0024). Daily life NA exposures (mean NA scores over 4 days) were not associated with clinic SBP increases. Results are consistent with the possibility that CVR to daily life stressors in the natural environment may predict, and may possibly even contribute to changes in vascular morphology that lead to higher BP with aging.

4

Abstract 1271

RACISM-RELATED CONCERN FOR CHILDREN AND CENTRAL HEMODYNAMICS IN AFRICAN AMERICAN WOMEN: A LONGITUDINAL STUDY

Zachary Martin, Emory University; Christy Erving, PhD, The University of Texas at Austin; Lori Hoggard, PhD, North Carolina State University; Nicole Fields, PhD, Northwestern University; Shivika Udaipuria, MPH; Jelaina Shipman-Lacewell, PhD; Rachel Parker, MPH; Raphiel Murden, PhD, Emory University; Jordan Parker, MA, University of California, Los Angeles; Bianca Booker, MA; LaKeia Culler, MS, Emory University; Reneé Moore, PhD, Drexel University; Seegar Swanson, HSD, Emory University; Jordan Wilson, MPH, Drexel University; Emma Barinas-Mitchell, PhD, University of Pittsburgh; Arshed Quyyumi, MD; Viola Vaccarino, MD, PhD; Tené Lewis, PhD, Emory University

BACKGROUND: African American women have the highest prevalence of cardiovascular disease and stroke, which are among the leading causes of death in the United States. Altered central

hemodynamics predict cardiovascular morbidity and mortality and are indicative of early vascular aging. For African American mothers, concern about their children's exposure to racism is believed to be a significant psychosocial stressor; however, it is unclear whether it contributes to early vascular aging. We tested the hypothesis that greater concern for children would be associated with deleterious longitudinal changes in central hemodynamics among African American mothers.

METHODS: In African American mothers aged 30-46 years (n=199), we examined central systolic blood pressure (cSBP, mmHg), augmentation index (AIx, %), pulse pressure amplification (PPA, ratio), and pulse wave velocity (PWV, m/s; n=178) at baseline and 4±1 years later. Racism-related Concern for Children (CFC) was assessed as a continuous (range, 0-24) and categorical (high vs. low, median split) variable at baseline. Multiple linear regression was used to model associations between CFC and the between-visit change in central hemodynamics while adjusting for their respective baseline value; follow-up duration; and baseline age, heart rate, height, education, income, BMI, peripheral SBP, smoking, antihypertensives, diabetes, depression, and chronic stress. Logistic regression was used to examine associations between CFC and the odds of newly developed high-risk PPA (PPA<1.3).

RESULTS: In fully adjusted models, CFC was significantly associated with greater increases in AIx (b=0.26, 95% CI [0.07, 0.44]; p=0.006), and the adjusted increase in AIx for mothers with high CFC was 4.1% (95% CI [1.3, 6.9]; p=0.005) greater than in those with low CFC. CFC was negatively associated with PPA changes (b=-0.003, 95% CI [-0.005, -0.001]; p=0.008) and increased odds of newly developed high-risk PPA (adjusted OR=1.14, 95% CI [1.03, 1.26]; p=0.010). Significant associations were not observed between CFC and cSBP or PWV.

CONCLUSION: African American mothers with greater racism-related concern for children exhibit some signs of early vascular aging. Efforts to eliminate racism towards Black children may be critical for reducing psychosocial stress and cardiovascular risk among African American women.

Background: DNA methylation-based epigenetic clocks are novel clinical measures of biological aging that predict various age-related chronic diseases. We examined if epigenetic clocks mediated the association between lower socioeconomic status (SES) and faster declines in kidney function across a decade among Black and white American adults.

Methods: Data were from 274 non-Hispanic (NH) Black (n = 79) and white (n = 195) participants who completed the biomarker assessments in both the Midlife in the United States (MIDUS) wave 2 (2004-2009) and wave 3 (2014-2021). Socioeconomic status (SES) was based on five indicators in MIDUS 2: highest education level, household income to poverty line ratio, adjusted for household size, coverage of health insurance, perception of availability of money to meet needs, and perception of difficulty level paying monthly bills. We included seven measures of DNA methylation age accelerations (DNAmAAs; i.e., each epigenetic clock was regressed on chronological age), Horvath, Horvath blood and skin, Hannum, PhenoAge, GrimAge, GrimAge2, as well as one measure of the pace of aging calculated using the DunedinPACE formula from MIDUS 2. Kidney function was based on the estimated glomerular filtration rate (eGFR), calculated using the CKD-EPI formula without race adjustment, and we calculated absolute declines in eGFR between MIDUS 2 and MIDUS 3. Analyses were adjusted for baseline age, sex, and health-related covariates (smoking, obesity, elevated blood pressure, and insulin resistance status).

Results: Mediation analyses showed that GrimAge and GrimAge2 age accelerations, as well as the DunedinPACE pace of aging, mediated the association between lower SES and faster declines in kidney function across a decade. In the exploratory analysis, we found that the mediation by epigenetic aging was only significant among NH white but not NH Black participants.

Conclusions: Faster biological aging, especially accelerated epigenetic aging, may be one of the biological pathways that contribute to the increased risk of chronic kidney disease (CDK) through faster declines in kidney function.

Friday, March 21, 2025

Adversity and Epigenetic Aging Session

1

Abstract 1387

EPIGENETIC AGING MEDIATES THE ASSOCIATION BETWEEN LOWER SOCIOECONOMIC STATUS AND FASTER DECLINES IN KIDNEY FUNCTION ACROSS A DECADE

Agus Surachman, Ph.D.; Meera Harhay, MD; Rose Ann DiMaria-Ghalili, PhD, Drexel University; Anthony Zannas, MD, PhD, University of North Carolina at Chapel Hill; Christopher Coe, PhD, University of Wisconsin - Madison
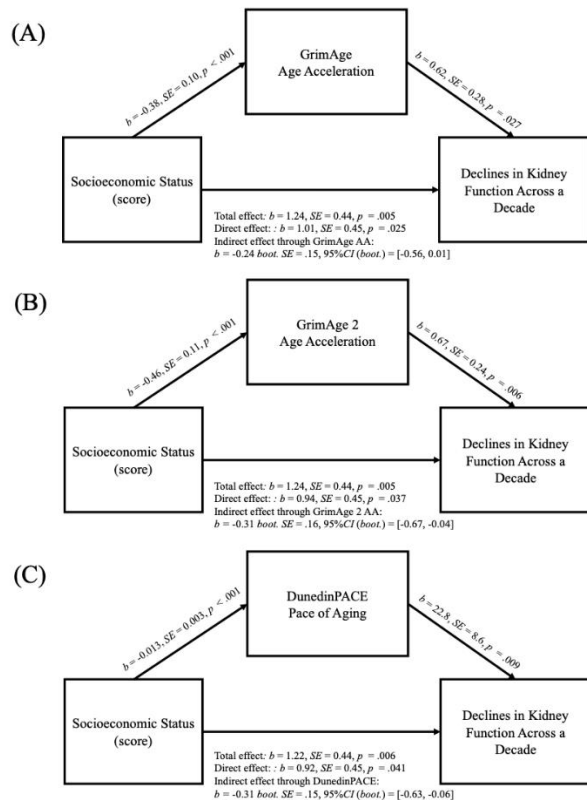
(A)

GrimAge
Age Acceleration

$b = -0.38, SE = 0.10, p < .001$

$b = 0.62, SE = 0.28, p = .027$

Socioeconomic Status
(score)

Declines in Kidney
Function Across a
Decade

Total effect: $b = 1.24, SE = 0.44, p = .005$
Direct effect: : $b = 1.01, SE = 0.45, p = .025$
Indirect effect through GrimAge AA:
$b = -0.24$ $boot. SE = .15, 95\%CI (boot.) = [-0.56, 0.01]$

(B)

GrimAge 2
Age Acceleration

$b = -0.46, SE = 0.11, p < .001$

$b = 0.67, SE = 0.24, p = .006$

Socioeconomic Status
(score)

Declines in Kidney
Function Across a
Decade

Total effect: $b = 1.24, SE = 0.44, p = .005$
Direct effect: : $b = 0.94, SE = 0.45, p = .037$
Indirect effect through GrimAge 2 AA:
$b = -0.31$ $boot. SE = .16, 95\%CI (boot.) = [-0.67, -0.04]$

(C)

DunedinPACE
Pace of Aging

$b = -0.013, SE = 0.003, p < .001$

$b = 22.8, SE = 8.6, p = .009$

Socioeconomic Status
(score)

Declines in Kidney
Function Across a
Decade

Total effect: $b = 1.22, SE = 0.44, p = .006$
Direct effect: : $b = 0.92, SE = 0.45, p = .041$
Indirect effect through DunedinPACE:
$b = -0.31$ $boot. SE = .15, 95\%CI (boot.) = [-0.63, -0.06]$

Figure 1. Results from mediation analyses. GrimAge, GrimAge 2, and DunedinPACE mediated the association between lower SES and faster declines in eGFR across a decade ($N = 274$)

2

Abstract 1065

THE EFFECT OF CHILD MALTREATMENT ON LONGITUDINAL TRAJECTORIES OF EPIGENETIC AGING FROM EARLY ADOLESCENCE TO YOUNG ADULTHOOD

Sonya Negriff; Daniel Hackman, PhD, University of Southern California; Juye Ji, PhD, CSU Fullerton; Joshua Millstein, PhD; Dan Weisenberger, PhD; Julie Cederbaum, PhD, University of Southern California; Rebecca Butler, MS, Kaiser Permanente Southern California; Bill Monro, MSW, University of Southern California; Jennifer Jimenez, MPH, Kaiser Permanente Southern California; Audrey Tyrka, MD, PhD; Audrey Tyrka, MD, PhD, Brown University; Karen Edwards, PhD, UC Irvine; Ferol Mennen, PhD, University of Southern California

Background: Evidence is accumulating that early experiences such as child maltreatment can have significant and lasting effects on epigenetic aging, a measure of biological aging indexed by epigenetic clocks. Prior studies are primarily cross-sectional or use only two timepoints, limiting the ability to capture developmental change in epigenetic aging. Additionally, there are no studies that characterize the role of maltreatment in the rate of epigenetic aging within individuals from adolescence to young adulthood. To fill this gap, the current study examined the relationship between child maltreatment prior to study entry and trajectories of epigenetic aging from 9-23 years old.

Methods: Data were from a 4-wave longitudinal study on child maltreatment and adolescent development (N=454; W1 M_{age}=10.98yrs; W4 M_{age}=18.22yrs; 47% female). Child maltreatment was obtained from child welfare case records. DNA was extracted from frozen saliva samples collected at each wave and assayed for DNA methylation using the Illumina EPIC 850k array. Epigenetic age was calculated for three established epigenetic clocks based on chronologic aging processes (Horvath, Hannum, PedBE) and three clocks based on phenotypes of morbidity (PhenoAge, GrimAge, PACE). Mixed effects models in SAS 9.4 tested trajectories of epigenetic aging and interactions between child maltreatment and age (centered at age 9), adjusting for cell type, batch, sex, genetic ancestry, neighborhood disadvantage.

Results: Of the six clocks, only Hannum and PedBE showed significant maltreatment effects. For Hannum, the quadratic model was a better fit than the linear model and showed significant interaction effects for age*maltreatment (β=.69, p<.05) and age^2*maltreatment (β=-.07, p<.05; Fig 1a), indicating the maltreated group increased more quickly than the comparison group up to age 15, but then accelerated more slowly. For PedBE the linear model was the better fit and also indicated a significant age* maltreatment interaction (β=-.09, p<.05; Fig 1b), such that the maltreated group increased at a slower rate than the comparison group.

Conclusion: The findings suggest that adolescence may be a period of sensitivity in epigenetic change related to early adversity for clocks indexing chronologic epigenetic aging processes. However, different clocks may indicate different epigenetic aging processes.
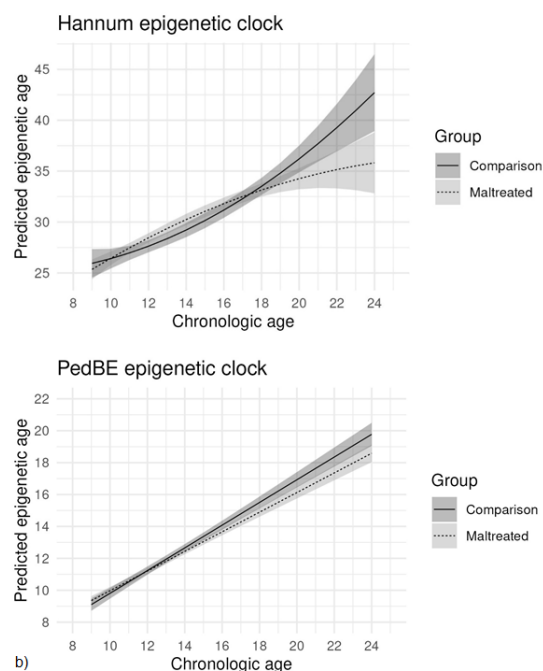

Figure 1. Plots of Hannum (quadratic effect) and PedBE (linear effect) epigenetic clocks and significant interaction effects for time by maltreatment.

Abstract 1394

POTENTIAL BUFFERS FOR THE NEGATIVE IMPACT OF ADVERSE CHILDHOOD EXPERIENCES ON EPIGENETIC AGE ACCELERATION IN HISPANIC COMMUNITY HEALTH STUDY / STUDY OF LATINOS: THE ROLE OF SOCIOCULTURAL FACTORS

Yinxian Chen; Sarina Abrishamcar, MPH; Jasmine Aqua, MPH, Emory University; Christian Dye, PhD, Columbia University; Linda Gallo, PhD, San Diego State University; Maria Llabre, PhD; Frank Penedo, PhD, University of Miami; Carmen Isai, MD, Albert Einstein College of Medicine; Krista Perreira, PhD, The University of North Carolina at Chapel Hill; Bharat Thyagarajan, MD, PhD, University of Minnesota; Martha Daviglus, MD, PhD; Amber Pirzada, MD, University of Illinois at Chicago; Andrea Baccarelli, MD, PhD, Harvard T.H.Chan School of Public Health; Karen Conneely, PhD; Shakira Suglia, ScD, Emory University

Adverse childhood experiences (ACEs) have been found to significantly contribute to chronic health conditions later in life, such as cardiovascular disease. One of the potential pathways could be through accelerating the biological aging process, given existing evidence that ACEs are associated with epigenetic age acceleration (EAA). Among the Hispanic/Latino population, collectivism and familism are two prevalent sociocultural factors that may be protective of multiple adverse health consequences. To examine whether these sociocultural factors could serve as buffers of the impact of ACEs on age acceleration, we analyzed 960 Hispanic/Latino adults with DNA methylation (DNAm) profile data from two visits (approximately six years apart) sampled from Hispanic Community Health Study / Study of Latinos (HCHS/SOL). We used two DNA methylation (DNAm) age measures, GrimAge and DunedinPace, a biomarker for the pace of biological aging, to calculate EAA. Nested linear mixed models were fitted to estimate the effect modification by social support, social networks (network diversity and the number of embedded networks), and familism (family obligation, family support, and family as referent) on the association between having four or more ACEs and repeatedly measured EAA, adjusting for age, sex, parental education, childhood economic hardship, nativity, and cell-type proportions. Among participants with four or more ACES, those with higher levels of social support had a smaller increase in GrimAge acceleration (AgeAccelGrim) (b= -0.73 years; 95%CI: -1.23, -0.24; p=0.003) and DunedinPACE (b= -0.01 year/chronological year; 95%CI: -0.03, 0.00; p=0.07) compared to those with lower levels of social support (Figure). However, insufficient evidence was found that social networks and familism could modify the association between four or more ACEs and EAA (Figure). Sensitivity analyses using a cumulative ACE score show a consistent result that social support downward modified the ACE-related increase in EAA. Our results note that social support may buffer the impact of ACEs on biological age acceleration. Whether these sociocultural factors can further buffer ACEs' subsequent adverse health outcomes is warranted to examine.
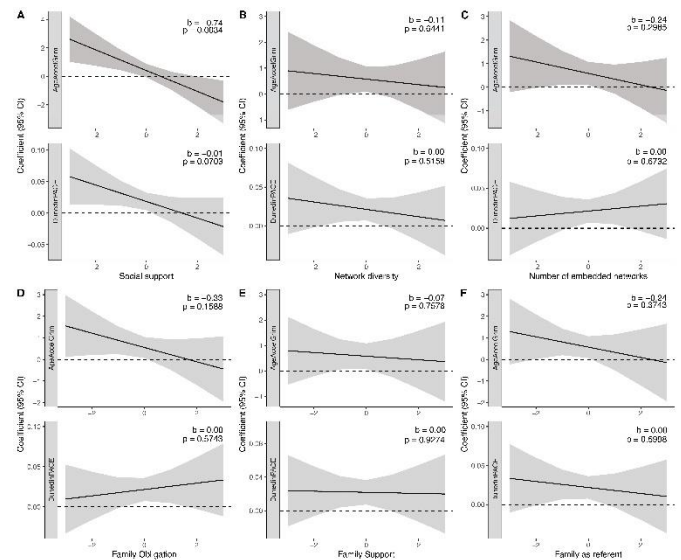
Cardio/Cerebrovascular Risk and Sleep Session

1

Abstract 1338

ASSOCIATIONS BETWEEN BEDTIME PROCRASTINATION AND CARDIOMETABOLIC RISK FACTORS

Steven Carlson; Bradley Appelhans, PhD, Rush University; Helen Burgess, PhD, University of Michigan; Lauretta Quinn, PhD, University of Illinois Chicago; Chelsea Allen, PhD; Paula Williams, PhD; Kelly Baron, PhD, University of Utah

Introduction. Delays in sleep and circadian timing are associated with cardiometabolic health risks, including impaired glycemic control and increased body mass index (BMI). However, the behavioral contributors to delayed circadian-sleep timing, and subsequent cardiometabolic health, are poorly understood. The purpose of the present study was to evaluate whether bedtime procrastination, which refers to delays in bedtime in the absence of external obligations, may serve as a sleep-related behavioral risk to cardiometabolic health over one year.

Method. A sample of 96 overweight adults (BMI between 25 and 35; M_{age} = 35.8, *SD* = 10.1) provided measurements of bedtime procrastination (Bedtime Procrastination Scale) and cardiometabolic health (HbA1c, BMI, body fat %, hip-waist ratio) at baseline, 6 months, and 12 months. High-resolution assessment of metabolic functioning was conducted via fasting serial intravenous glucose tolerance test (FSIVGTT). Participants also completed circadian phase assessment via dim light melatonin onset (DLMO). Multilevel models (MLMs) were constructed, regressing cardiometabolic health outcomes onto bedtime procrastination. Further, regression analyses examined the association between baseline bedtime procrastination and FSIVGTT outcomes, including indices of insulin sensitivity (Si) and resistance (HOMA-IR).

Results. MLM analyses indicated that having higher average bedtime procrastination over the year was associated with higher average HbA1c over the year when adjusting for demographic variables (age, sex, race), chronotype (B = 0.02, p = 0.010), and DLMO time (B = 0.01, p = 0.016). Results from the FSIVGTT analyses indicated that bedtime procrastination was associated with log-transformed HOMA-IR values, remaining significant after adjusting for demographic variables (β = 0.27, p = 0.011), DLMO time (β = 0.32, p = 0.007), and BMI (β = 0.29, p = 0.002).

Conclusion. In this study, individuals with higher bedtime procrastination over a year had poorer metabolic control and higher insulin resistance, suggesting that this sleep-delaying behavior might increase risk of cardiometabolic disease. Future research should investigate whether reduced sleep opportunity, exposure to light near bedtime, and poor diet quality may explain the association between bedtime procrastination and cardiometabolic risk.

2

Abstract 1441

AN OVERLOOKED BURDEN: PERSISTENT SHORTER AND WORSE SLEEP IN STROKE MIMIC COMPARED TO DIAGNOSED STROKE PATIENTS

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Disturbed sleep and posttraumatic stress disorder (PTSD) are each common after stroke/transient ischemic attacks (TIA). Many patients who arrive at the emergency department with stroke-like symptoms are ultimately categorized as "stroke mimics," a heterogenous group without cerebrovascular cause, whose long-term outcomes, including sleep issues, are not well characterized. It is unclear if stroke mimics experience worse sleep than those with diagnosed stroke/TIA, potentially linked to the higher prevalence of PTSD in mimics that we have observed. We therefore hypothesized that stroke mimics may experience shorter and worse sleep long-term than patients with diagnosed stroke/TIA.

We enrolled 1000 patients evaluated for stroke/TIA at an urban emergency department. Patients not ultimately diagnosed with stroke/TIA (68%) were categorized as stroke mimics (27%). 6 and 12 mo post-enrollment, participants reported sleep duration and quality (very good [1] to very poor [4]) using Pittsburgh Sleep Quality Index items and completed the DSM-5 PTSD Checklist (PCL). We used linear regression to compare the sleep outcomes at 6 (n = 459) and 12 months (n = 456) of stroke mimic vs. stroke/TIA patients, adjusting for NIH Stroke Scale, Charlson Comorbidity Index, gender, age, and race/ethnicity. Additional models adjusted for a modified PCL sum score (excluding the two sleep-related items) assessed at the same time as the sleep outcome.

At 6 and 12 mo, respectively, mimics reported 6.22 (SD: 1.68) and 5.99 (SD: 1.73) mean hours of sleep per night. Compared to the diagnosed stroke/TIA group, mimics reported 23 minutes less sleep per night (B = -0.39 hrs, p = .04) and worse quality sleep (B = 0.39, p <.001) at 6 mo. Adjusting for modified PCL only slightly attenuated these differences (duration: B = -0.40, p = .04; quality: B = 0.31, p = .004). At 12 mo, mimics reported 39 minutes less sleep per night (B = -0.66, p <.001) and worse quality sleep (B = 0.46, p <.001) than the stroke/TIA group, with minimal change after adjusting for modified PCL (duration: B = -0.55, p = .004; quality: B = 0.43, p <.001).

These findings suggest that stroke mimic patients may face persistent shorter and worse quality sleep than patients with stroke/TIA diagnoses, independent of PTSD symptoms. More research is needed to explore causes and develop interventions for this overlooked group.

3

Abstract 1453

EARLY SHORT SLEEP DURATION AND LOW SLEEP QUALITY PREDICT INCREASED PTSD SYMPTOMS IN THE YEAR AFTER STROKE

Maia ten Brink, Columbia University Medical Center; Jeffrey L. Birk, PhD; Don E. Edmondson, PhD; Ari Shechter, PhD, Columbia University Irving Medical Center

Up to 800,000 Americans experience strokes annually. Stroke-related posttraumatic stress symptoms (PTSS) are prevalent after strokes and transient ischemic attacks (TIA). Short, fragmented, and low-quality sleep are hallmark symptoms of PTSD. Disturbed sleep early post-stroke/TIA may also be a crucial factor for the development of PTSD.

We enrolled 1000 patients with suspected stroke/TIA in the emergency department of a large urban hospital. One month later, participants reported their sleep duration and quality (4-point responses: *very good* to *very bad*) using items from the Pittsburgh Sleep Quality Index. They answered the DSM-5 Acute Stress Disorder Scale (ASDS) within a week of enrollment and the DSM-5 PTSD Checklist (PCL) after 6 and 12 months, which asked about symptoms during the past month (5-point responses: *not at all* to *extremely*). We used linear regression to predict modified PCL sum score (excluding the 2 sleep-related items; range: 0 to 72) at 6 (n = 419) and 12 mo (n = 370) from 1-mo sleep duration and, separately, sleep quality, with patients who had available data for all predictors and covariates (medical: NIH Stroke Severity Scale, Charlson Comorbidity Index; gender, age, race/ethnicity).

Shorter self-reported sleep duration during the first month post-stroke was prospectively associated with non-sleep PTSS at 6 (unstandardized B = -2.67, p <.0001) and 12 months (B = -2.69, p = .0001), independent of acute distress within a few days of hospitalization, the severity of the stroke, medical comorbidities, and demographics. This corresponds to ~4% increase in non-sleep PTSS for every hour less of sleep. A similar pattern appeared for self-reported sleep quality. Every 25% reduction in sleep quality was prospectively associated with a ~5% increase in non-sleep PTSS at 6 (B = 3.59, p <.0001) and 12 months (B = 3.17, p <.0001).

These findings suggest that sleep one month after a stroke may contribute to the longer-term development and persistence of PTSS, controlling for demographic and medical factors. Future work should investigate *objective* sleep measures early after stroke to determine whether and how much initial sleep contributes to the development and maintenance of PTSS in stroke survivors. Interventions on early sleep may mitigate risk for post-stroke PTSS.

Maltreatment and Biopsychosocial Health Session

1

Abstract 1388

CHILDHOOD MALTREATMENT AND WHOLE PERSON HEALTH: TESTING MODERATION EFFECTS OF PSYCHOLOGICAL AND SOCIAL RESOURCES

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Childhood maltreatment (CM) has been consistently linked to adverse adult health outcomes. However, factors that may protect against the adverse health effects of CM are not well understood. Identifying potential buffering factors is critical to developing effective interventions to promote whole-person health and offset the adverse health impacts of CM. Building upon the stress-buffering hypothesis and in line with a whole-person health framework, this study aimed to examine potential buffering effects of psychological and social resources on the relationship between CM and multiple domains of health. To achieve this aim, we analyzed data from a subsample of 1,255 participants (mean age = 54.5 ± 11.7 years, 56.8% female, 77.2% white) who completed the survey and biological assessments at the second wave of the Midlife in the United States study. CM was measured based on responses to the Child Trauma Questionnaire (CTQ). The latent factor of psychological resources included indicators for sense of control, self-esteem, and optimism, and the latent factor of social resources was comprised of indicators for social integration, social strain, and perceived social support. The holistic health outcomes included mental health (depressive symptoms, anxiety), psychological well-being, physical health (self-reported chronic health conditions), and inflammation (C-reactive protein, interleukin-6). Results of structural equation modeling showed that CM was associated with poorer mental health (β = 0.38, p < .001), poorer psychological well-being (β = -0.25, p < .001), more chronic health conditions (β = 0.24, p < .001), and elevated inflammation (β = 0.07, p = .037), adjusting for key covariates related to health (e.g., age, socioeconomic status). Moreover, higher levels of psychological resources, but not social resources, significantly mitigated negative effects of CM on mental

health and inflammation in adulthood, but not on psychological well-being or chronic health conditions. These results highlight the potential protective effect of psychological resources in reducing the long-term adverse effects of CM on mental health and inflammation, a key pathway through which CM is thought to 'get under the skin'. Meanwhile, our results suggest that the buffering effects of psychological resources may be limited to certain health outcomes.

2

Abstract 1422

RACIAL AND GENDER VARIATIONS IN THE EFFECTS OF ADVERSE CHILDHOOD EXPERIENCES (ACES) ON BIOLOGICAL AGING

Xiaoyan Zhang, New York University; Adolfo Cuevas, PhD, New York University School of Global Public Health

Adverse childhood experiences (ACEs) are known risk factors for accelerated biological aging in older adulthood. However, it remains unclear whether the effects of ACEs on biological aging vary by race, sex, or the adversity type. ACEs often co-occur, and racialized individuals in the U.S. are disproportionately exposed to them. Furthermore, DNA methylation patterns may differ by sex, complicating our understanding of ACEs' effects on aging. To better understand how ACEs uniquely contribute to epigenetic aging, it is crucial to examine how ACEs cluster by race/ethnicity and gender. Using data from the 2016 Venous Blood Study (VBS), a substudy of the Health and Retirement Study (HRS), we examined associations between ACEs and accelerated biological aging in older adults. Epigenetic aging was measured using PCGrimAge, PCPhenoAge, and DunedinPACE. Latent class analysis was used to identify race- and gender-specific ACES patterns using retrospective data on financial, social, and traumatic childhood adversities. Subgroup analyses revealed that the two-class models provided the best fit, yielding substantively meaningful classes for all subgroups, with no evidence of configural differences. However, structural differences were observed between Hispanic individuals and their White and Black counterparts, while no structural differences were found between White and Black participants. Based on these results, we conducted separate multigroup two-class models: one for a combined sample of Whites and Blacks, and another for Hispanics. The 3-step Bock-Croon-Hagenaars (BCH) method was used to estimate ACEs class-specific biological aging, adjusting for chronological age, socioeconomic status, and health behaviors. BCH analyses revealed significant gender and class differences in epigenetic age clocks. For instance, in fully adjusted models, Black women in the Financial Adversity class exhibited significantly greater increases in PhenoAge (χ^2 = 3.96, *p* = 0.05) compared to White men in the same class. Among Hispanic participants, Hispanic women from Parental Low Education class demonstrated significantly greater increase in DunedinPace (χ^2 = 4.03, *p* = 0.04) compared to Hispanic men. Our findings highlight the need for further research to understand the underlying mechanisms.

Perseverative Cognition and Distress Session

1

Abstract 1180

THE ASSOCIATION OF RUMINATION WITH CARDIAC AUTONOMIC REGULATION AND BALANCE: A HEALTH DISPARITIES PERSPECTIVE

Vida Pourmand; Julian F. Thayer, PhD; DeWayne P. Williams, PhD, University of California, Irvine

Trait rumination, a core feature of perseverative cognition, is a tendency to passively focusing on one's negative thoughts about a prior stressor. This maladaptive tendency can prolong physiological activation of stress and is linked with poorer cardiovascular health. The autonomic interplay between the parasympathetic and sympathetic nervous systems can serve as a physiological mechanism through which rumination affects cardiovascular health. However, research has yet to investigate whether trait rumination is associated with important indices of autonomic functioning, namely cardiac autonomic balance (CAB) and regulation (CAR). CAB indexes the relative balance between the parasympathetic (indexed via heart rate variability; root mean square of successive differences [RMSSD]) and sympathetic (indexed via left ventricular ejection time [LVET]) branches of the autonomic nervous system. CAR reflects the total regulatory capacity of both branches. Higher CAB and CAR index better autonomic balance and regulatory capacity, respectively. Given existing health inequities, there stands to reason that there may also be variation in the link between rumination and CAB and/or CAR. The current study examined the association of rumination with CAB (RMSSD-[-LVET]) and CAR (RMSSD+[-LVET]) and explored the role of race in this link. We obtained baseline measures of cardiac activity and trait rumination from an undergraduate sample (N = 155, 67.7% Women, M_{age} = 19.06, 38.1% racially minoritized). Adjusting for covariates, rumination was negatively associated with CAR (R^2 = .04, *b* = -0.02, *SE* = .01, *p* = .03) but not CAB. Exploring race as a moderator, there was a marginally significant interaction with CAB only (R^2 = .05, *b* = -0.03, *SE* = .02, *p* = .07); for racially minoritized individuals, higher rumination was linked with lower CAB (*b* = -0.02, *SE* = .01, *p* = .04), but not for White individuals. Novel results suggest that the continued and unconscious experience of stress (i.e., rumination) is linked to prolonged autonomic *coinhibition (i*.e., lower CAR) but lower autonomic *imbalance* (i.e., lower CAB) among racially minoritized individuals. In sum, the link between rumination and both CAB and CAR may vary between White and racially minoritized individuals. These findings offer a novel psychophysiological pathway in understanding stress-related pathologies.

2

Abstract 1120

AN EXPERIMENTAL INVESTIGATION OF THE EFFECTS OF RESONANCE FREQUENCY BREATHING ON SYMPTOMS OF ANXIETY

Frances Meeten, Dr.; David Spalding, Dr.; Toni Ejoor; Milan Valasek, Dr.; Colette Hirsch, Dr.; Xiaochang Zhao; Hugo Critchley, Dr.; Martina Ciliberti; Daniele Bomarsi; Cristina Ottaviani, PhD

Background: Generalised anxiety disorder (GAD) is characterised by cognitive and physiological symptoms including uncontrollable worry, deficits in inhibitory control, and low heart rate variability (HRV). To date, the literature linking HRV and cognitive processes relevant to GAD is predominantly correlational. We present an experiment designed to examine the causal relationship between increased HRV and inhibitory control.

Methods: Participants (N = 133, 81.3% identifying as female, age range 18 – 37, Mean age = 24.21, SD = 4.54) with high levels of trait anxiety (GAD7 questionnaire ≥ 10) and worry (Penn State Worry Questionnaire ≥62) were randomised to an experimental or active control condition. Participants completed baseline assessments of mood state, respiration rate, HRV, and inhibitory control. The experimental group completed a resonance frequency breathing (RFB) assessment to determine the breathing rate at which HRV is maximised. The active control group underwent a sham breathing assessment and manipulation. The experimental group then completed a period of RFB and the control group breathed at their baseline mean rate. Participants repeated the inhibitory control assessment.

Results: We present preliminary data analyses on the efficacy of the respiration manipulation and its effect on HRV and measures of inhibitory control. The HRV manipulation was successful with the experimental group showing significantly higher low frequency power during RFB than the control group (p = < 0.001). Examining the RMSSD HRV metric, there was a significant time (time 1 baseline vs. time 2 during breathing manipulation) x group (experimental vs. control) interaction (*p* = 0.04) showing HRV to be higher at time 2 during the breathing manipulation in the experimental group as compared to the control condition. There was no significant time x group interaction effect of HRV increase on inhibitory control, *p* = .93.

Discussion: We discuss the application of the experimental design to examine the effect of respiration manipulation on HRV and inhibitory control in the context of anxiety. Future directions for this research will be discussed.

3

Abstract 1160

EXAMINING THE ROLE OF MINDFULNESS AND DISTRESS TOLERANCE ON ANXIETY PERCEPTIONS DURING AN ACUTE PSYCHOLOGICAL STRESS TASK

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Background: Mindfulness, which involves present-moment awareness, has been shown to improve distress tolerance and reduce trait anxiety. Distress tolerance has also been shown to reduce trait anxiety by decreasing anxiety sensitivity (i.e., the perception of anxiety symptoms as threatening). However, the interplay between mindfulness and distress tolerance in shaping interpretations of state anxiety (i.e., whether it is harmful or helpful) during acute psychological stress, and whether this impacts the perceived intensity of anxiety symptoms remains unexplored.

Aim: Investigate how mindfulness and distress tolerance influence trait anxiety as well as perceptions of state anxiety during acute psychological stress.

Method: Participants (N = 239; Mean (SD) age = 19.13 (1.4) years, 65% female, 56% White, 16% Hispanic) completed a 4-minute acute psychological stress task in the laboratory (Paced Auditory Serial Addition Test). Following the task, participants rated the intensity (1 = not at all, 7 = extremely) and interpretation (-3 = debilitative, +3 = facilitative) of cognitive and somatic anxiety experienced during the task. At the end of the visit, participants also completed the Mindful Attention Awareness Scale (MAAS), Distress Tolerance Scale (DTS), and Hospital Anxiety and Depression Scale (HADS).

Results: Higher MAAS and DTS scores were significantly associated with lower HADS trait anxiety scores (r = -.50, p < .001 and r = -.54, p < .001, respectively). Multigroup structural equation modeling showed that, in females only, greater mindfulness indirectly predicted lower cognitive (β = -0.08, p < .001) and somatic (β = -0.07, p = .002) state anxiety intensities via greater distress tolerance and in turn, more facilitative anxiety interpretations. Further analysis of the DTS subscales revealed that these indirect effects in females were primarily driven through the DTS absorption subscale (cognitive: β = -0.10, p = .006; somatic: β = -0.10, p = .001). No significant indirect effects were observed for males (all ps ≥ .08).

Conclusion: These findings highlight the potential significance of mindfulness and distress tolerance in managing both trait and state anxiety, particularly for females during acute stress, and suggest that anxiety interpretations may be a crucial factor in this process.

Translational Biopsychosocial Science Session

1

Abstract 1110

A COMPARATIVE STUDY OF IMMUNE AND NEUROENDOCRINE PROTEIN BIOMARKERS WITH LATENT PROFILES IN ALL-CAUSE HOSPITALISATION: A TIME-TO-EVENT ANALYSIS

Odessa Hamilton, UCL; Olesya Ajnakina, PhD; Philipp Frank, PhD; Shaun Scholes, PhD; Andrew Steptoe, DSc

Background. Early identification of individuals at risk for hospitalisation is important to reduce public health burden. Stress sensitised immune and neuroendocrine biomarkers are robust indicators of disease, but their efficacy in epidemiological studies has not consistently translated to clinical trials. Subgroup identification among the population, with complex patterns of biomarker expression captured through latent profile analysis, may improve this translation compared to individual biomarkers alone. **Method.** Immune-neuroendocrine biomarkers (C-reactive protein; fibrinogen; leukocytes; insulin growth-factor-1) were drawn from the English Longitudinal Study of Ageing (ELSA), and administration data on hospitalisations, linked to ELSA, was from the Hospital Episode Statistics (HES). Hospitalisation for 12 disease classes was monitored from 2008-2018 (M_{age}=66.3±9.4). Analyses were adjusted for genetic, demographic, socioeconomic, lifestyle, and clinical variables selected *a priori*. **Findings.** A three-class latent profile solution offered the most parsimonious data fit (*low-risk* [52.43%]; *moderate-risk* [35.89%]; *high-risk* [11.68%] inflammatory status). Profiles offered greater specificity than individual biomarkers in risk for all-cause hospitalisation, with effect sizes from the *high-risk* profiles being larger for risk of hospitalisation for sleep, blood, infection, and musculoskeletal conditions. A risk gradient was seen in sleep, circulatory, endocrine, and genitourinary disorders, with the magnitude of effects being larger in the *high-risk* group. In one instance, *high-risk* profile membership, but not *moderate-risk*, was associated with a 38% greater hazard of hospitalisation for infectious disorders 10 years later (HR=1.38, 95%CI=1.08-1.78, p=0.011). There were no associations between profiles or individual biomarkers in hospitalisation for digestive, nervous, and skin disorders. **Interpretation.** Immune-neuroendocrine profiles better characterised disease risk to the point of hospitalisation, beyond individual biomarkers. This approach may enable more precise risk-stratification and subgroup-specific analyses, with risk estimates less susceptible to dilution or inflation. By ensuring resources are directed towards those most susceptible to disease, these strategies have the potential to make healthcare systems more efficient and improve patient outcomes.

2

Abstract 1319

THE POTENTIAL OF SCREENING FOR EARLY LIFE UNPREDICTABILITY TO ENHANCE CHILD HEALTH

Laura Glynn, Chapman University; Hal Stern, PhD, University of California, Irvine; Sabrina Liu, PhD, California State University, San Marcos; Charles Golden, MD; Michael Weiss, MD, Children's Hospital of Orange County; Candice Taylor Lucas, MD, University of California, Irvine; Louis Ehwerhemuepha, PhD, Children's Hospital of Orange County; Tallie Z. Baram, MD/PHD, University of California, Irvine

Growing evidence supports exposure to unpredictability as an understudied form of early life adversity affecting lifespan health. Taken together, the evidence from human studies and preclinical animal models provides strong impetus to begin to address unpredictability in the lives of children. Here we describe the first implementation of screening for unpredictability in pediatric primary care with the Questionnaire of Unpredictability in Childhood (QUIC-5). Guided by input from key community stakeholders (parents, allied health care professionals and pediatricians), we implemented screening in 19 clinics affiliated with the Children's Hospital of Orange County (CHOC) and have now administered the QUIC to more than 70,000 child-caregiver dyads. Leveraging existing adverse childhood experiences (ACEs) screening with the Pediatric ACEs and Related Life Events Screener (PEARLS) in CHOC primary care, we address the following questions through analysis of the first 29,861 children screened: 1. When employed in pediatric practice, does ACEs screening identify children at increased risk of health problems? 2. Does screening for unpredictability provide additional predictive power to current ACEs screening recommendations? Binary logistic regressions determined whether QUIC and PEARLS

scores predicted health diagnoses abstracted from medical records. For both ACEs assessed with PEARLS and unpredictability with QUIC-5, increasing exposures were associated with a higher probability of a mental (ADHD, anxiety, depression, externalizing problems, sleep disorder) or physical (abdominal pain, asthma, headache, obesity) health diagnosis. For caregiver report of mental health, the odds ratios for those with 4 or more exposures compared to zero ranged from 2.0 to 5.4 for the PEARLS and 1.7 to 3.6 for the QUIC. Similarly, the odds ratios for the physical health outcomes ranged from 1.4 to 1.9 and 1.5 to 1.9 for PEARLS and QUIC respectively (all p's = .00). The range of odds ratios for the youth self-reports were similar. Importantly, with little exception, across all health diagnoses, both the PEARLS and QUIC provided unique predictive power. These promising findings indicate that screening for unpredictability in primary care is feasible, acceptable and provides unique, actionable information about child psychopathology and physical health.

3

Abstract 1381

STRESS, HEALTH, AND SOCIETY: THE ROLE OF STRUCTURAL PREDICTORS IN A 15 YEAR GLOBAL MONITOR OF STRESS

Elisabetta Canaletti, BSc; Phyllis Lun, PhD; Levi Stutzman, MA, MSc; Felix Cheung, PhD, University of Toronto; Meanne Chan, Lingnan University

Objectives: Mounting evidence has outlined how stress acts as a transdiagnostic factor for health conditions. Multi-level models have documented downstream consequences of social factors at the community or neighborhood level. This study adopted a structural approach with global data to examine worldwide spatiotemporal patterns of stress and the novel structural factor of state fragility, as well as identification of at-risk populations. Examining stress through a global, structural, population-wide lens will be a first step towards understanding social, economic, and political drivers of stress worldwide, and reduce its disease burden at scale.

Method: The Gallup World Poll used a serial cross-sectional design to survey nationally representative samples across the world between 2005/2006-2021. Stress was assessed by asking participants whether they experienced stress during a lot of the previous day. Gross Domestic Product (GDP) expressed in purchasing power converted parity conversion factor was extracted from the World Bank. Developed as a political risk assessment tool, the Fragile State Index (FSI) is a composite score that assesses when states face pressures that exceed their ability to manage, thereby serving as an early indicator for political risk and conflict. Drawing data from 159 countries (N = 2,211,053), generalized linear mixed effect models showed stress levels globally. Moderation analyses revealed how stress trends varied across different world regions and demographic groups, and whether countries that were becoming more fragile face rising levels of stress.

Results: Three key findings emerged: 1) on average, the odds of reporting feeling a lot of stress increased by twofold in 15 years, 2) existing disparities across demographic groups escalated over the

survey years, and 3) the rising tide of stress is particularly evident in countries that are becoming more fragile.

Conclusion: We live in an increasingly stressful world, and we are also increasingly burdened by chronic diseases. We have adopted a macro lens and showed how a structural factor like state fragility plays a role in the rising tide of stress. It is only through a combination of both individual level interventions and structural level solutions that we can reverse this trend. By doing so, not only do we reduce stress, but also the disease burden associated with it.

Percentage Change in Stress Reports (%)
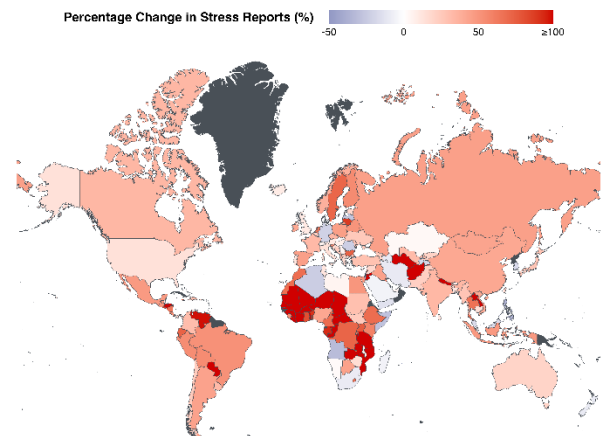
Variations on a Theme: A Stress Medley Session

1

Abstract 1179

THE EFFECT OF CYTOMEGALOVIRUS INFECTION ON DAILY STRESS PROCESSES IN EARLY ADULTHOOD

Elana Gloger, PhD, Penn State University; Aaron Miller, PhD; Thomas McDade, PhD, Northwestern University; Suzanne Segerstrom, PhD, MPH, Oregon State University

Introduction: Cytomegalovirus (CMV), an asymptomatic, latent herpesvirus, may contribute to individual differences in daily stress processes, though mechanisms explaining this relationship are not well-established. In older adults, CMV associates with reduced gray and white matter in neurological regions coordinating self-regulation (e.g., planning, inhibiting, and regulating oneself) which can subsequently affect daily living, including daily stress processes. However, negative effects of CMV may start earlier in life when CMV-related interference may still be preventable or modifiable. The present study examined *how* CMV associates with daily stress processes in young adults and *if* self-regulation plays a role.

Methods: Participants (N = 108, M_{age} = 19.8, 83.3% female, 72% White) completed a lab visit and 14-day daily diary (90.2% response rate; questionnaires: Brief Self Control Scale, Behavioral Inhibition/Behavioral Activation Scale, Difficulties in Emotion Regulation Scale, Daily Inventory of Stressful Events, PROMIS

Emotional Distress – Depression and Anxiety). CMV IgG was assayed from dried blood spots via ELISA. Poisson and linear multilevel models tested effects of CMV serostatus (+/-) and CMV IgG antibodies. Models were adjusted for age, sex assigned at birth, prescription medication use, and race.

Results: CMV seropositivity (CMV+) associated with greater daily stress exposure at lower trait-level goal pursuit (l = -.098, *p* = .047) and with greater daily stress severity at lower trait-level reward sensitivity and lower trait-level goal pursuit (g = -.011, *p* = .011; g = -.018, *p* = .020). Higher CMV IgG antibodies associated with greater daily stress severity at lower trait-level fun seeking (willingness to approach a reward) and trait-level reward sensitivity (g = -.013, *p* = .043; g = -.008, *p* = .024). Self-regulation did not mediate any relationships between CMV and daily stress processes.

Conclusion: CMV may meaningfully interact with self-regulation to affect daily stress processes in young adults, thus playing a larger role in young adulthood than is currently recognized. Findings represent early, vital work in understanding biological factors contributing to healthspan, or years of healthy living, earlier in life. Future research should continue examining CMV latency and its effects on healthspan and daily living in young adulthood and beyond.

2

Abstract 1174

STRESS VARIABILITY, INFLAMMATION, AND HEALTH: A LONGITUDINAL INVESTIGATION OF 20 YEARS OF MIDUS DATA
Elana Gloger, PhD, Penn State University; Julie Parsons, BS, University of Kentucky; Kate Leger, PhD, Univeristy of Kentucky

Introduction: Daily stress theoretically affects future health via systemic inflammation. Greater mean exposure, severity, and negative affective reactivity to daily stress associate with systemic inflammation (i.e., interleukin-6 (IL-6), C-reactive protein (CRP), tumor necrosis factor alpha (TNF-a)), which predicts poor future health. Intraindividual variability (IIV) of daily stress dynamics may impact health differently than mean levels but are often excluded from studies of daily stress and health. The present study tested *how* daily stress dynamics associate with future health and *if* systemic inflammation mediates this relationship.

Methods: Participants (N=166; Mage=44.63; 55.4% Female; 94% White) completed 3 waves of data collection across 20 years of the Midlife in the United States Study (MIDUS). Mean stress exposure and severity are averages per participant across 8 days of diary data and negative affect reactivity is the change in negative affect on stressor days vs. non-stressor days at Wave 1 (MIDUS 1). IIV exposure and severity are person-level average deviation from their own means. Systemic inflammation (IL-6, CRP, TNF-a) was measured via fasted blood draw after an overnight hospital stay at Wave 2 (MIDUS 2; 10 years later). Chronic health is a summed endorsement of 27 chronic conditions; Functional limitations scores came from the Activities/Instrumental Activities of Daily Living scales; Self-rated mental and physical health are one-item scales at Wave 3 (MIDUS 3;

20 years later). Models adjusted for age, gender, race, education, and BMI.

Results: Mean stress exposure associated with chronic health 20 years later (B=.422, p=.017). IIV of stress severity and negative affect reactivity associated with self-rated mental health 20 years later (B = .388, p=.037; B=-.308, p=.006). Negative affect reactivity also associated with self-rated physical health 20 years later (B=-.234, p=.017). Only mean stress severity associated with systemic inflammation 10 years later (IL-6; B=-.086, p=.035), but IL-6 did not mediate the association between mean stress severity and health 20 years later.

Conclusion: Mean and IIV of daily stress dynamics affect future health differently, but systemic inflammation may not explain these relationships. Future work should replicate this work, and test additional biological mediators, in a larger, more diverse sample.

3

Abstract 1432

MACHINE LEARNING-BASED DETECTION OF ACUTE PSYCHOSOCIAL STRESS FROM DIGITAL BIOMARKERS
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Introduction: Despite being well established, traditional stress measurement methods are typically difficult to assess. Video recordings offer a contactless way to observe human behavior by extracting facial expressions, head movements, or heart rate remotely – known as "digital biomarkers". Although initial findings for stress detection are promising, issues like small sample sizes and lack of control conditions highlight the need for more research.

Methods: This work explores the contactless measurement of acute stress using video-based digital biomarkers. Forty-four healthy individuals (57 % women) underwent the Trier Social Stress Test (TSST) and the friendly TSST (f-TSST) in randomized order on two consecutive days while being video recorded. We extracted digital biomarkers like facial expressions, body movements, gaze features, and remote heart rate, and compared both conditions.

Results and Discussion: Individuals showed significantly fewer positive facial expressions (t=5.09, p<.001), reduced head movements (t=-6.50, p<.001), and more static gaze behavior (t=-4.01, p<.001) during the TSST compared to the f-TSST. Training machine learning models on these digital biomarkers yielded an accuracy of 73.3 ± 5.5% to detect whether an individual was exposed to the TSST or f-TSST, respectively. Using Explainable AI algorithms, we identified a mix of facial expressions, body movements, and pupil dynamics as the most important features.

Conclusion: Our study provides an important link between biopsychology and computational analysis, facilitating a deeper understanding of the nuances in human behavior in response to acute stress. These findings can lay the groundwork for establishing digital biomarkers to gain a more holistic picture of the human stress response.

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Abstract 1318

LONELINESS IN DAILY LIFE: DIFFERENCES IN EXPERIENCES BASED ON CHRONICITY AND SOCIAL INTERACTIONS

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Loneliness is a subjective indicator of insufficient social relationships. Acute loneliness can be an adaptive social-motivating response, whereas chronic loneliness is maladaptive and associated with negative mental and physical health outcomes. Much of the existing research has examined cross-sectional measures of loneliness without the consideration of duration or differences in daily experiences based on specific thresholds of loneliness (e.g., acute versus chronic). The aims of the current research were to examine 1) differences in self-reported daily loneliness by loneliness status (chronic, acute, non-lonely) and 2) differences in social interactions associated with variability in daily loneliness by loneliness status. An online sample of 99 adults (23-78 years, 55% women, generally healthy) completed baseline assessments of demographic and psychosocial characteristics, followed by 14 consecutive daily surveys. Participants were categorized into groups based on loneliness status (42 chronically lonely, 27 acutely lonely, and 30 non-lonely). A between-person linear regression analysis revealed that chronically lonely individuals had significantly greater variability in daily loneliness compared to acutely lonely and non-lonely individuals (b=7.05, p=.036; b=17.54, p<.001, respectively). Multilevel models revealed that on days when social interactions occurred, chronically lonely individuals reported significantly lower than typical loneliness compared to acutely lonely individuals (b=-12.28, p=.009). On days when the most memorable social interaction was negative, chronically lonely individuals reported significantly higher than typical loneliness compared to acutely and non-lonely individuals (b=10.12, p =.038). Together, results suggest that daily loneliness dynamics (e.g., variability) may play an important role in the chronicity of long-term loneliness and that daily social interactions (and the types of interactions) are an important factor to consider for chronically lonely individuals. Findings may help to inform theory and future intervention research that aims to better understand how chronically lonely individuals experience social interactions in daily life and how this relates to long-term health.

Saturday, March 22, 2025

Biopsychosocial Factors and Health Behaviors Session

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Abstract 1211

THE EFFECT OF A BRIEF SOCIAL BELONGING INTERVENTION ON SLEEP QUALITY, BINGE DRINKING, AND PHYSICAL ACTIVITY IN COLLEGE STUDENTS

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Introduction: As social creatures, maintaining positive social connection is integral to wellbeing. Observational work has found that greater sense of community belonging is linked with improved sleep, physical activity, and substance use behaviors in young adults; Links may be most pronounced for those with a history of psychosocial risk. It is yet unknown whether exposure to an intervention designed to increase social belonging leads to improved health behaviors.

The present study leverages a brief intervention designed to facilitate lasting perceptions of social belonging in college students by restructuring the occurrence of adverse experiences as common and non-threatening. While intervention impacts on health behaviors are previously untested, similar interventions have robust impacts on academic and social outcomes up to 11 years later.

Methods: Participants enrolled in two introductory courses at the University of Pittsburgh (Macroeconomics or Genetics, Ns=598 & 453) were randomized to either a multimodal social belonging intervention or control activity, delivered during class time. Between 6 months (Genetics students, n=148) and 18 months (Macroeconomics students, n=126) later, students completed an online survey assessing their sleep quality (Pittsburgh Sleep Quality Index), physical activity (Paffenbarger), and binge drinking (Youth Risk Behavior Surveillance System).

Results: We utilized multilevel models to test condition effects (intervention vs. control) on sleep, physical activity, and binge drinking, and examined moderation by psychosocial risk (race/ethnicity, low parent education, childhood trauma). All models included random intercepts for classrooms. Compared to controls (M=6.29, SD=3.04), students randomized to the intervention showed improved sleep quality (M=5.67, SD=2.89; g=-0.75, SE=0.36, p=0.037). There were no condition differences in physical activity and binge drinking. A significant interaction emerged for binge drinking (OR=0.10, 95% CI [0.01,0.97], p=.047), whereby randomization to the intervention condition was linked with less binge drinking for BIPOC students only.

Conclusion: Exposure to a social belonging intervention was linked with better sleep quality and lower binge drinking for BIPOC students 6-8 months later. These findings expand our existing knowledge to suggest that social factors may enhance key health behaviors.

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Abstract 1108

MECHANISMS LINKING GENDERED RACIAL MICROAGGRESSIONS AND DISORDERED EATING IN BLACK WOMEN

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Background: Gendered racial microaggressions are defined as the everyday, nuanced expressions of oppression that Black women encounter at the intersection of their racial and gender identities. It has not been established whether gendered racial microaggressions are associated with disordered eating or the mechanisms through which this may occur. Theoretical frameworks suggest that self-silencing, or the tendency to suppress one's emotional needs, may be a candidate mediator. In response to gendered racial microaggressions, Black women may feel pressured to refrain from burdening others, leading to interoceptive deficits and emotional dysregulation that subsequently predicts disordered eating. Thus, although self-silencing may be a mechanism linking gendered racial microaggressions and disordered eating in Black women, to date, no study has tested these associations. **Method:** Using Bayesian model-based imputation and mediation models, we tested the hypothesis that greater frequency of gendered racial microaggressions will predict higher body dissatisfaction, drive for thinness, and binge eating symptoms overall and indirectly, via self-silencing (N = 570 Black women). **Results:** Greater frequency of gendered racial microaggressions was associated with greater binge eating, body dissatisfaction, and drive for thinness, controlling for age, income, and education. This effect was also significant indirectly, wherein greater frequency of gendered racial microaggressions was positively associated with self-silencing, and self-silencing was positively associated with disordered eating. **Conclusion:** The results of the study not only highlight associations between gendered racial microaggressions and disordered eating, but additionally elucidate a potential mechanism through which this occurs, offering a promising avenue for future research oriented toward intervention among Black women, a population at elevated risk for disordered eating. Although societal efforts to combat oppression are limited by the slow nature of structural change, self-silencing may be a modifiable behavioral practice that can be targeted to mitigate the negative effects of gendered racial microaggressions on disordered eating cognitions and behaviors.

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Abstract 1151

FEASIBILITY STUDY OF A SMARTPHONE APPLICATION WITH REINFORCEMENT LEARNING FOR OBESITY AND PREDICTORS OF DAILY BEHAVIORS RELATED TO WEIGHT LOSS

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Background: Behavioral intervention remains an evidence-based treatment for obesity. However, structured cognitive behavioral therapy requires long durations and frequent sessions, which burden the therapists and participants. We hypothesized that a smartphone application with reinforcement learning could effectively support the treatment.

Objective: The present study aimed to develop and evaluate the feasibility of such an application for individuals with obesity disease.

Methods: We developed a smartphone application to assist in setting and reviewing daily behaviors related to weight loss. On the screen where daily behaviors are shown, the order of presentation was optimized using Thompson sampling, a multi-armed bandit algorithm. Twenty individuals with obesity disease used the application for four weeks, and the daily app usage rates were quantified. Body weight and mood status were measured daily during the study, and the brief-type self-administered diet history questionnaire and the international physical activity questionnaire were measured at the beginning and end of the study. We evaluated the statistical significance of the changes in these measures using the Wilcoxon signed-rank sum test. Furthermore, the longitudinal data collected during this study was analyzed to examine factors related to the number of behaviors performed daily using a linear mixed-effects model.

Results: All 20 recruited individuals with obesity disease completed the four-week study schedule. The median application usage rate was 98.3%. Significant improvements were observed in body mass index (median at start: 34.9 kg/m^2, median at end: 34.1 kg/m^2, P = 0.011), as well as daily energy intake and weekend sitting time. The linear mixed-effect model showed a significant association between higher preceding depression levels and a smaller number of behaviors performed.

Conclusion: The feasibility of the smartphone application with reinforcement learning for obesity was sufficient, and the potential effectiveness in treatment was also suggested. Preceding depression may influence daily behaviors related to weight loss.