

Results: Significant education by cognitive activity effects were observed for Digit Span Backward and Size Judgment Span, but not for Digit Span Forward. The interactions reflected a positive association between cognitive activity and cognitive functioning in people with at least a high school education, but not in people with less than a high school education.

Conclusions: Our results support previous findings that education level and engagement in cognitive activity may serve as protective factors against cognitive decline in later life. The finding that cognitive activity was not associated with better cognitive functioning at lower levels of education suggest that earlier life experiences may moderate the benefit of lifestyle interventions later in life. Future studies should examine whether other lifestyle interventions, such as exercise, are more beneficial for people with less cognitive reserve from earlier life experiences.

Categories: Aging

Keyword 1: cognitive functioning

Keyword 2: diversity

Keyword 3: working memory

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3 Does External Locus of Control Moderate the Intergenerational Transmission of Dementia Risk Among Non-Latinx Black and Non-Latinx White Middle-Aged Adults?

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Objective: People whose parents had dementia or memory impairment are at higher risk for later-life cognitive impairment themselves. One goal of our research is to identify factors that either increase the risk of or protect against family history of dementia over the life course. External locus of control has been associated with lower cognitive function in middle-aged and older adults. Previous findings have shown that adults racialized as Black have relatively high

levels of external locus of control due to inequity and racism. We hypothesized that lower parental memory would be associated with lower offspring memory among Non-Latinx Black and Non-Latinx White (hereafter Black and White, respectively) adults; and associations would be stronger among participants with higher levels of external locus of control.

Participants and Methods: Participants comprised 594 adults racialized as Black or White (60.3% Black; 62% women; aged 56.1 ± 10.4 ; 15.3 ± 2.7 years of education) from the Offspring Study who are the adult children of participants in the Washington Heights Inwood Columbia Aging Project (WHICAP). Parental memory was residualized for age (74.3 ± 6.0) and education (13.7 ± 3.1). Self-reported external locus of control was assessed using 8 items from the the perceived control questionnaire. Memory was assessed with the Selective Reminding Test, and a composite of total and delayed recall scores were computed. Linear regression quantified the interaction between parental memory and external locus of control on memory in models stratified by race, and adjusted for age, sex/gender, and number of chronic health diseases.

Results: Among Black participants ($n=358$), there were no main effects of parental memory or locus of control on offspring memory. However, lower parental memory was associated with lower offspring memory among Black participants with high levels of external locus of control (standardized estimate=0.36, $p=0.02$, 95%CI [0.05, 0.67]). Associations were attenuated and non-significant at lower levels of control. Among White participants ($n=236$), there was a main effect of parental memory on offspring memory, and this association did not vary by levels of external locus of control.

Conclusions: Poor parental memory, which reflects risk for later-life cognitive impairment and dementia, was associated with lower memory performance among White middle-aged participants. Among Black participants, this association was observed among those with high levels of external locus of control only. Economic and social constraints shape levels of external locus of control and are disproportionately experienced by Black adults. In the face of greater external locus of control, a cascade of psychological and biological stress-related processes may be triggered and make Black adults' memory function more vulnerable to the detrimental impact of parent-related dementia risk. Longitudinal analyses are needed

to clarify temporal associations. Nonetheless, these findings suggest that reducing social and economic inequities disproportionately experienced by Black adults may dampen the effect of intergenerational transmission of dementia risk on cognition.

Categories: Aging

Keyword 1: multiculturalism

Keyword 2: aging (normal)

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4 Interactions of Inflammation and Psychosocial Stress on White Matter Integrity Over Time in Older Black Adults

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Objective: Higher levels of inflammation are associated with risk factors for Alzheimer's disease and related dementias (ADRD) in older Black adults including psychosocial stressors (e.g., discrimination and early life adversity) and white matter alterations. Yet, limited work has investigated these risk factors together in a longitudinal neuroimaging study, despite the well-known ADRD disparity in older Black adults. Using data from the Minority Aging Research Study and African American Clinical Core of the Rush Alzheimer's Disease Center, we examined interactions of psychosocial stressors and change in inflammation on changes in white matter integrity as measured via diffusion tensor imaging (DTI).

Participants and Methods: Older Black adults (n=102) without known dementia at baseline (age=75.8±6.1 years; 87.3% female; education=15.4±2.7 years) completed blood draws at two time points (follow-up=2.4±0.7 years), neuroimaging at two or more time points (follow-up=3.7±1.8 years), and psychosocial questionnaires at one time point coinciding with the first blood draw/neuroimaging. Blood serum

was assayed using highly-sensitive multiplexed sandwich ELISA for interleukin-6, c-reactive protein (CRP), and tumor necrosis factor-alpha (TNF- α) and a change score was calculated for each inflammatory marker (T2 – T1). The Williams Everyday Discrimination Scale quantified experiences of discrimination in all participants and a 16-item questionnaire of emotional and physical trauma from age 0-18 assessed early life adversity in a participant subset (n=63). DTI-derived tract-based spatial statistics (TBSS) slope change measures for trace of the diffusion tensor, fractional anisotropy (FA), axial diffusivity (AD), and radial diffusivity (RD) were calculated, with the first two scans matched in time to blood assays. Linear regression models investigated interactions of each inflammatory marker change score (separately) and either discrimination or early life adversity (separately) on trace, FA, AD, and RD slopes as individual outcomes adjusting for age, sex, education, white matter hyperintensities (total volume and voxelwise), cardiovascular risk factors, statin and analgesic medications, thyroid conditions, and depression. Statistical significance was determined at p<0.05 using family wise error correction and threshold free cluster enhancement.

Results: Discrimination moderated the relationship between TNF- α and AD whereby those with increasing TNF- α and higher levels of discrimination had increasing levels of AD over time in white matter tracts connecting the left and right cerebellum, the left pallidum and medulla, and the left superior frontal gyrus and left thalamus. Both discrimination and early life adversity moderated associations between CRP and AD, where increases in CRP and higher psychosocial stressors (of either type) resulted in decreasing AD over time in tracts involving cingulate, frontal, and parietal regions. Discrimination and early life adversity also moderated associations between CRP and RD, where increasing CRP combined with greater psychosocial stressors resulted in decreasing RD in right hemisphere association and projection tracts connecting frontal, parietal, central, and subcortical regions.

Conclusions: TNF- α and CRP interacted with measures of psychosocial stress to associate with DTI-derived TBSS slope change measures of AD and RD in differential, and at times, paradoxical ways. Findings suggest that both risk and resilience as related to brain connectivity may be co-occurring in the