prior research suggesting that cognitive aging effects may be more subtle in real-world contexts.

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39 Relationships among Cardiovascular Risk Factors, White Matter Hyperintensities, and Depressive Symptoms in Black and White Older Adults

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Objective: The vascular depression hypothesis posits that there is a relationship between vascular disease and geriatric depressive symptoms. Black Americans are at higher risk for cardiovascular disease (CVD) than their White counterparts. However, it is not fully understood whether risk for CVD or potentially related neurovascular changes have a differential relationship in Black and White Americans. We investigated differences in the relationships between white matter hyperintensities, risk for CVD, and depressive symptoms in Black and White older adults.
Participants and Methods: Participants were derived from the National Alzheimer Coordinating Center database. Black (N = 120) and White (N = 120) participants were matched on age, sex, and education. White matter hyperintensity (WMH) and CVD burden data (sum of vascular conditions) on 320 individuals were analyzed (mean age = 75.9; 69.4% female). Age, sex, race, and education were included as covariates in separate regression models in which WMH and CVD burden predicted scores on the 15-item Geriatric Depression Scale (GDS-15). Follow-up stratified analyses were conducted to explore the relationship between WMH and CVD burden on GDS scores in the Black and White samples.
Results: Lower WMH volume and higher CVD burden were associated with higher GDS scores in the total sample. Analyses stratified by race showed a positive effect of CVD burden on GDS scores only for the Black sample and a trend effect of WMH on GDS scores only for the White sample, with higher WMH volume associated with lower rather than higher GDS scores.
Conclusions: These findings are consistent with previous research showing that WMH and CVD burden are related to depression in older adults. Contrary to expectation, WMH had a negative trend association with GDS scores in the White sample. Findings also suggest that different etiologies may play a role in the clinical presentation of depression in Black and White Americans. Additional research is needed to further explore the relationships among CVD, its neural correlates, and depressive symptoms in diverse samples.

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40 Associations Between Cardiovascular Risk, White Matter, and Medication Predictors on Longitudinal Cognitive Change in the National Alzheimer's Coordinating Center (NACC) Cohort

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Objective: Drawing on the National Alzheimer's Coordinating Center (NACC) Uniform Data Set (UDS), this study aimed to investigate the direct and indirect associations between vascular risk factors/cardiovascular disease (CVD), pharmacological treatment (of CVD), and white matter hyperintensity (WMH) burden on overall cognition and decline trajectories in a cognitively diverse sample of older adults.
Participants and Methods: Participants were 1,049 cognitively diverse older adults drawn from a larger NACC data repository of 22,684 participants whose data was frozen as of December 2019. The subsample included only

participants who were aged 60-97 (56.7% women) who completed at least one post-baseline neuropsychological evaluation, had medication data, and both T1 and FLAIR neuroimaging scans. Cognitive composites (Memory, Attention, Executive Function, Language) were derived factor analytically using harmonized data. Baseline WMH volumes were quantified using UBO Detector. Baseline health screening and medication data was used to determine overall CVD burden and total medication. Longitudinal latent growth curve models were estimated adjusting for demographics.

Results: More CVD medication was associated with greater CVD burden; however, no direct effects of medication were found on any of the cognitive composites or WMH volume. While no direct effects of CVD burden on cognition (overall or rate of decline) were observed, instead we found that greater CVD burden had small, but significant, negative indirect effects on Memory, Attention, Executive Functioning and Language (all p's < .01) after controlling for CVD medication use. Whole brain WMH volume served as the mediator of this relationship, as it did for an indirect effect of baseline CVD on 6-year rate of decline in Memory and Executive function.

Conclusions: Findings from this study were generally consistent with previous literature and extend extant knowledge regarding the direct and indirect associations between CVD burden, pharmacological treatment, and neuropathology of presumed vascular origin on cognitive decline trajectories in an older adult sample. Results reveal the subtle importance of CVD risk factors on late life cognition even after accounting for treatment and WHM volume and highlight the need for additional research to determine sensitive windows of opportunity for intervention.

Categories: Aging
Keyword 1: vascular cognitive impairment
Keyword 2: aging (normal)
Keyword 3: neuroimaging: structural
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41 The Role of Physical Activity, Social Support and Genetic Risk in Age-Related

Cognitive Decline Over Time: A UK Biobank Study

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Objective: This study aimed to determine how modifiable risk factors, such as physical exercise and social support, and non-modifiable risk factors, such as genetic risk may affect cognitive function over time in older adults. As well, the study explored how changes in modifiable risk factors (i.e., increase in exercise) may affect cognitive function over time. This research question was shaped with the help of a patient partner team.

Participants and Methods: The study used UK Biobank data, and patient partners were involved in shaping research questions/goals. The UK Biobank study had participants complete comprehensive baseline assessments (2006-2010), with subgroups also completing repeat assessments (2012-2013), imaging assessments (2014-ongoing) and/or repeat imaging assessments (2019-ongoing; i.e., 2-4 data points per participant). Age, sex, education, ethnicity, and apolipoprotein E (APOE) e4 status (at least one e4 allele present) data were collected at baseline. Employment, physical activity, social support, and recent depressive symptom data were collected across timepoints. A Fluid intelligence score was obtained at each timepoint via a series of thirteen 1-pt. reasoning tasks (range: 0-13). Participants who did not complete cognitive testing at baseline and at least one other time point, and those with neurological conditions or events (e.g., stroke, epilepsy, dementia) were excluded (final N=17,409).

Multi-Level Modeling (with Maximum Likelihood) was utilized, with fluid intelligence as the primary outcome measure. We ran Model 1: fully unconditioned, Model 2: with time predictor in years (baseline= 0), and Model 3: with baseline physical activity, social support and APOE e-4 predictors and covariates (mean-centered as appropriate), time-varying physical activity and social support predictors, and interaction terms. Nonsignificant interaction terms were trimmed from Model 3 to facilitate interpretation.

Results: Model 1 was significant (p<.001) with an intraclass correlation (ICC) of 0.64,