of demographic and vascular factors to impairment could help to identify patients at risk for future cognitive decline and/or the development of LOE itself, as well as interventions aimed at reducing the risk of further decline.

Categories: Epilepsy/Seizures
Keyword 1: aging disorders
Keyword 2: cognitive functioning
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6 The Moderating Role of Physical Activity on Hippocampal Iron Deposition and Memory Outcomes in Typically Aging Older Adults

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Objective: Quantitative Susceptibility Mapping (QSM) is an MRI-based technique that sensitively measures *in-vivo* iron deposition via relaxation and magnetic susceptibility of brain tissue. Iron is essential for brain homeostasis, including oxidative metabolism, formation and maintenance of neural networks, and myelin synthesis. While increased levels of iron deposition occur during normal aging, high levels may have detrimental effects. Previous work has linked excessive brain iron accumulation to oxidative stress, beta-amyloid and tau toxicity, neurodegeneration, and cognitive dysfunction, particularly memory loss. Physical activity, on the other hand, correlates with higher synaptic integrity and memory performance, even in the presence of neuropathology. To date, it is unknown how physical activity may affect iron deposition-related cognition changes. We examined the moderating role of physical activity on the relationship between QSM hippocampal iron deposition and verbal memory in typically aging adults.
Participants and Methods: 62 cognitively unimpaired older adults from the UCSF Memory and Aging Center (age mean(SD) = 78.34(7.28) years; 56% women; education mean(SD) = 17.94(1.72) years; 85% non-Hispanic White) completed neuropsychological testing and brain MRI during annual research visits, followed by Fitbit™ physical activity monitoring for 30 days. Average total daily steps were aggregated. Participants completed 3T Prisma neuroimaging with QSM, and regional iron deposition levels were quantified. All subjects also underwent diffusion tensor imaging (fractional anisotropy). Verbal memory was assessed via long delay free recall scores from the California Verbal Learning Test II (CVLT-II). Linear regression examined verbal memory as a function of hippocampal QSM (bilateral), physical activity, and their interaction. Models covaried for age, sex, and education. Additional models separately examined left and right hippocampal QSM, as well as subcortical QSM to determine lateralization and specificity of verbal memory effects to hippocampal iron deposition, respectively.
Results: Univariably, higher bilateral hippocampal QSM correlated with worse verbal memory (r= 0.35; p= 0.015). Adjusting for demographics, physical activity moderated the relationship between bilateral hippocampal QSM and verbal memory (β= 0.41, p= 0.011), such that at higher levels of physical activity, the negative relationship between hippocampal QSM and verbal memory was significantly attenuated. Results persisted when adjusting for DTI integrity of the uncinate fasciculus and fornix white matter tracts. Lateralization models were both significant, suggesting that results were not dominantly driven by either left (β= 0.34, p= 0.048), or right (β=0.31, p= 0.035) hippocampal QSM. In contrast, subcortical QSM did not correlate with memory performance (r= 0.13, p > 0.05) or interact with physical activity on verbal memory outcomes (p > 0.05).
Conclusions: Physical activity significantly moderated the negative relationship between hippocampal QSM and verbal memory performance. Higher exercise engagement may buffer the adverse effect of hippocampal iron deposition on memory, potentially through its role in maintenance of myelin and synaptic integrity and/or protecting against other neurotoxic events (e.g., oxidative stress, neuronal cell death). Our results support that physical activity continues to be a modifiable risk factor that may offer a protective role in neurobiological pathways of memory and cognitive decline.

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Keyword 1: neuroimaging: structural
Keyword 2: neuropsychological assessment
Keyword 3: memory: normal
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Poster Session 09: Psychiatric Disorders | Mood & Anxiety Disorders | Addiction | Social Cognition | Cognitive Neuroscience | Emotional and Social Processing

9:00 - 10:15am
Saturday, 4th February, 2023
Town & Country Foyer

1 Associations Between Alcohol-Related Problems, Neuropsychological Measures, and Financial Exploitation Vulnerability in a Low-Drinking Sample of Cognitively Unimpaired Older Adults

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Objective: In recent years, rates of alcohol consumption and alcohol use disorder have steadily increased among adults age 60 and older. Large studies have demonstrated that moderate-to-heavy alcohol consumption (>7 drinks per week) is a risk factor for developing various types of dementias. The effects of alcohol-related problems on cognition are less clear, and are particularly understudied in older adults. Similarly, while there is an established link between worse cognition and financial exploitation vulnerability in older adults, no studies have examined relationships between alcohol-related problems and financial exploitation in this population. The current study therefore explores whether alcohol-related problems are associated with neuropsychological performance and financial exploitation vulnerability in a sample of older adults.
Participants and Methods: Participants were a community sample of cognitively unimpaired adults over the age of 50 (N = 55, Age M(SD) = 69.1(6.2), 74.5% female, Years of education M(SD) = 16.8(2.3)). Interested individuals were excluded if they reported current or past substance use disorders. Participants completed a laboratory visit that included a neuropsychological assessment. Measures included the NIH Cognition toolbox, CVLT-II, Digit Span, Trails A/B, Benson Complex Figure Recall, and Verbal Fluency: Phonemic and Semantic, from the Alzheimer's Disease Centers' Uniform Data Set (UDS) version 3. Participants completed the CAGE Alcohol Abuse Screening Tool and the Short Michigan Alcohol Screener Test – Geriatric Version (SMAST) to assess alcohol-related problems. Both measures are used as clinical screening tools to measure likelihood of a substance use disorder and produce a summary score (0-4 for CAGE, 0-10 for SMAST) tabulating symptoms of alcohol-related problems. Participants also completed the Perceived Financial Vulnerability Scale (PFVS) to assess financial exploitation vulnerability. As a significant number of participants reported no drinking and therefore no alcohol-related problems, negative binomial regressions were used to test associations between neuropsychological measures, financial exploitation vulnerability, and alcohol-related problems.
Results: After covarying for age and sex, SMAST was negatively associated with NIH toolbox total cognition (B(SE) = -.14(.07), p<.05) and marginally negatively associated with fluid cognition (B(SE) = -.07(.04), p=.06). Neither SMAST nor CAGE scores were significantly associated with performance on any other neuropsychological test (ps = .13-.99). SMAST was positively associated with financial exploitation vulnerability (B(SE) = .31(.16), p = .05); this effect remained significant after covarying for NIH total composite score in a secondary analysis.
Conclusions: In a community sample of cognitively unimpaired, low-drinking adults over the age of 50, more alcohol-related problems were associated with worse NIH toolbox cognition scores. Similarly, more alcohol-related

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