

illustrate the effectiveness of our computational modeling approach was the ACS equivalent of the Rey Auditory Verbal Learning Test, in which participants are tasked with recalling a list of 15 words five times. We formulated a Hierarchical Bayesian Cognitive Model to replace traditional sum scores and disentangle performance into the more theoretically meaningful concepts of 'memory storage' and 'memory retrieval'.

**Results:** A traditional analysis of the sum of trials 1-5 indicated no significant difference between patients and controls ( $t(223)=-0.99$ ,  $p = 0.323$ ), with a small effect size (Cohen's  $d = -0.14$ ).

For the newly isolated cognitive process "memory storage", a non-significant difference was found between patients and controls ( $d=0.10$ , 95% credible interval on Cohen's  $d$ : [-0.25, 0.43]). On the "memory retrieval" process, a medium significant difference was found between patients and controls ( $d = -0.57$ , 95% credible interval on Cohen's  $d$ : [-1.00, -0.19]).

**Conclusions:** The results indicate that the impaired memory processes in cancer patients are not a general impairment across all memory functions, but rather a selective impairment of memory retrieval. Our method of analysis revealed information that would have been left unnoticed had we relied on traditional sum over trials 1-5.

**Categories:** Memory Functions/Amnesia

**Keyword 1:** cancer

**Keyword 2:** cognitive processing

**Keyword 3:** memory complaints

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## 9 Connecting memory and functional brain networks in older adults: a resting state fMRI study

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**Objective:** Nonpathological aging has been linked to decline in both verbal and visuospatial memory abilities in older adults. Disruptions in resting-state functional connectivity within well-characterized, higher-order cognitive brain networks have also been coupled with poorer memory functioning in healthy older adults and in older adults with dementia. However, there is a paucity of research on the association between higher-order functional connectivity and verbal and visuospatial memory performance in the older adult population. The current study examines the association between resting-state functional connectivity within the cingulo-opercular network (CON), frontoparietal control network (FPCN), and default mode network (DMN) and verbal and visuospatial learning and memory in a large sample of healthy older adults. We hypothesized that greater within-network CON and FPCN functional connectivity would be associated with better immediate verbal and visuospatial memory recall. Additionally, we predicted that within-network DMN functional connectivity would be associated with improvements in delayed verbal and visuospatial memory recall. This study helps to glean insight into whether within-network CON, FPCN, or DMN functional

connectivity is associated with verbal and visuospatial memory abilities in later life.

**Participants and Methods:** 330 healthy older adults between 65 and 89 years old (mean age =  $71.6 \pm 5.2$ ) were recruited at the University of Florida ( $n = 222$ ) and the University of Arizona ( $n = 108$ ). Participants underwent resting-state fMRI and completed verbal memory (Hopkins Verbal Learning Test – Revised [HVLTR]) and visuospatial memory (Brief Visuospatial Memory Test – Revised [BVMTR]) measures. Immediate (total) and delayed recall scores on the HVLTR and BVMTR were calculated using each test manual's scoring criteria. Learning ratios on the HVLTR and BVMTR were quantified by dividing the number of stimuli (verbal or visuospatial) learned between the first and third trials by the number of stimuli not recalled after the first learning trial. CONN Toolbox was used to extract average within-network connectivity values for CON, FPCN, and DMN. Hierarchical regressions were conducted, controlling for sex, race, ethnicity, years of education, number of invalid scans, and scanner site.

**Results:** Greater CON connectivity was significantly associated with better HVLTR immediate (total) recall ( $\beta = 0.16$ ,  $p = 0.01$ ), HVLTR learning ratio ( $\beta = 0.16$ ,  $p = 0.01$ ), BVMTR immediate (total) recall ( $\beta = 0.14$ ,  $p = 0.02$ ), and BVMTR delayed recall performance ( $\beta = 0.15$ ,  $p = 0.01$ ). Greater FPCN connectivity was associated with better BVMTR learning ratio ( $\beta = 0.13$ ,  $p = 0.04$ ). HVLTR delayed recall performance was not associated with connectivity in any network, and DMN connectivity was not significantly related to any measure.

**Conclusions:** Connectivity within CON demonstrated a robust relationship with different components of memory function as well across verbal and visuospatial domains. In contrast, FPCN only evidenced a relationship with visuospatial learning, and DMN was not significantly associated with memory measures. These data suggest that CON may be a valuable target in longitudinal studies of age-related memory changes, but also a possible target in future non-invasive interventions to attenuate memory decline in older adults.

**Categories:** Memory Functions/Amnesia

**Keyword 1:** neuroimaging: functional connectivity

**Keyword 2:** memory: normal

**Keyword 3:** learning

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## 10 Subtyping Serial Position Score Profiles to Investigate the Nature of Memory Impairment in Homeless and Precariously Housed Persons

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**Objective:** Cognitive dysfunction is prominent in homeless and precariously housed persons, and memory dysfunction is the most pervasive domain. The presence of multimorbid physical and mental illness suggests that several underlying mechanisms of memory impairment may be at play. The serial position phenomenon describes the tendency to best recall the beginning (primacy effect) and last (recency effect) words on a supra-span wordlist. Recency recall engages executive and working-memory systems, whereas primacy recall depends on long-term memory. This study investigates memory dysfunction in a homeless and precariously housed sample by identifying and characterizing unique subtypes of serial position profiles on a test of verbal memory.

**Participants and Methods:** Data were used from a 20-year study of homeless and precariously housed adults recruited from an impoverished neighbourhood in Vancouver, Canada. Participants were sub-grouped according to their serial position profile on the Hopkins Verbal Learning Test-Revised using a latent profile analysis (LPA;  $n = 411$ ). Paired samples t-tests were conducted to determine differences in percent recall from each word-list region within classes. Linear regression analyses were used to examine between-class differences in mean serial position scores and other cognitive measures (memory, attention,