complaints include specific memory and non-memory concerns. Future work is needed to determine if these complaints predict future cognitive decline or conversion to Mild Cognitive Impairment.

**Categories:** Cognitive Neuroscience
**Keyword 1:** cognitive functioning
**Keyword 2:** memory complaints
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## 19 Auditory and Cognitive Function in Adults Living With and Without HIV

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**Objective:** Hearing consists of peripheral components (outer and middle ear, cochlea) and the central auditory system (cochlear nuclei to the auditory cortex). Speech perception relies on peripheral hearing abilities (i.e., pure-tone thresholds) and central auditory processing (CAP) and cognitive functioning. Specifically, working memory, executive function, attention, and verbal functioning allow for speech understanding. As a result, CAP deficits are also influenced by peripheral hearing sensitivity and cognitive functioning. Assessing CAP deficits can be difficult because of these complex interactions. Prior work has shown persons living with HIV (PWH) are at higher risk for sensorineural hearing loss compared to persons living without HIV (PWOH) after adjusting for age, sex, and noise exposure. Further, HIV is a risk factor for cognitive impairment, one example being Alzheimer's disease (AD) and its precursor, Mild Cognitive Impairment (MCI), with auditory dysfunction occurring in earlier stages of AD. Therefore, the purpose of this study was to evaluate: 1) the peripheral hearing sensitivity and CAP in PWH and PWOH; and 2) the association between cognitive function measures and CAP in PWH and PWOH.

**Participants and Methods:** Participants included 59 PWH (39 men and 20 women, mean age=66.7 years [SD=4.4 years]) and 27 PWOH (13 men and 14 women, mean age=71.9 years [SD=7.1 years]). Participants completed a standard neuropsychological battery assessing the domains of learning, recall, executive function, working memory, verbal fluency, processing speed and motor. Raw scores were transformed to demographically corrected, domain T-scores. Cognitive function was normal for 39 (66.1%) PWH and 16 (59.3%) PWOH while 43 (72.9%) PWH and 17 (63.0%) PWOH were determined to have MCI. Participants with dementia were excluded. Participants also completed a hearing assessment, a portion of which consisted of pure-tone thresholds, peripheral hearing measure, and dichotic digits testing (DDT), a CAP measure. Pure-tone air-conduction thresholds were obtained at octave frequencies from 0.25 through 8 kHz, including 3 and 6 kHz. A pure-tone average (PTA) was calculated from 0.5, 1, 2, and 4 kHz thresholds for each ear. The DDT involves the presentation of numbers from 1 to 10, excluding 7, in which two different digits are presented to one ear while two other digits are simultaneously presented to the opposite ear. The outcome of DDT is percent correct.

**Results:** PWH had slightly lower (i.e., better) mean PTAs in both ears compared to PWOH, but this was not statistically significant. Conversely, PWH had lower percent correct DDT results compared to PWOH, but this difference was also not statistically significant. Participants with impairment in verbal fluency, executive functioning, and working memory had significantly worse DDT results by approximately 10%, but only for right ear data.

**Conclusions:** PWH in our sample had better hearing than PWOH, which can be explained by PWH having a lower mean age. PWH had poorer DDT results, however, indicative of CAP deficits rather than peripheral hearing problems. Poor right ear DDT was associated with impairments specifically in frontal-based cognitive processes with an executive component.

**Categories:** Cognitive Neuroscience
**Keyword 1:** cognitive processing
**Keyword 2:** auditory processing (normal)

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## 20 Congenital Left Temporal Lobe Cyst: A Case Study of rs-fMRI and Cognitive Performance

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**Objective:** Behavior is the product of interconnected brain regions that work together as networks. This case study examines whether there are differences between a participant with a large congenital left temporal lobe cyst, which impacted the volume of structures in the region, and control subjects of similar age on cognitive tasks and network connectivity as measured by resting-state functional magnetic resonance imaging (rs-fMRI).
**Participants and Methods:** The case participant (CP; 71 year old female) and controls (CON; n = 25; 48% female) were recruited as part of a larger aging study. CON were chosen from the larger study population by age (+/- 10 years from CP; Range = 68-86 years). Cognitive tasks included: Shopping list memory task, Montreal Cognitive Assessment, WAIS-IV subtests: Digit Span, Digit-Symbol, Symbol Span, and Letter-Number Sequencing. For rs-fMRI, we administered four blood-oxygen level dependent (BOLD) functional connectivity (rs-fMRI) scans at 6 minutes each. Image processing was conducted using the CONN toolbox. Independent sample t-tests evaluated differences between CP and CON. Segregation was evaluated in the Auditory (Au), Cerebellar-basal ganglia (CBBG), Cingulo-Opercular Task Control (COTC), Dorsal Attention (DA), Default Mode (DMN), Fronto-Parietal Task Control (FPTC), Salience (Sa), Sensory Somatomotor Hand (SSH), Sensory Somatomotor Mouth (SSM), Visual (Vi), and Ventral Attention (VA) networks to assess CP's functional segregation by network throughout the brain. Bonferroni correction was applied to account for multiple comparisons in cognitive testing (.05/7 for significance at $p \leq 0.007$) and network segregation (.05/11 for significance at $p \leq .005$).
**Results:** Independent samples t-tests did not reveal significant differences across cognitive tasks ($t(24) < 1.04$, $p > .05$). Network segregation did not reveal significant differences between CP and CON across networks examined ($t(24) \leq 1.269$ , $p > .005$). However, DMN and DA segregation trended toward significance ($t(24) = -2.724$, $p = .006$ and $t(24) = -2.006$, $p = .028$), respectively) with CP demonstrating lower segregation as compared to CON.
**Conclusions:** CP performed similarly on cognitive testing to CON, indicating that the congenital presence of a large temporal lobe cyst did not impact global cognition, list learning and memory, working memory, or processing speed. CP did not demonstrate significantly different segregation across networks of interest after Bonferroni correction. Our cognitive performance results are consistent with a similar case-study examining language, which revealed intact linguistic abilities (Tuckete et al., 2022). The lack of differences in cognitive performance and segregation highlight the capacity for plasticity in the human brain, even in the presence of a large structural abnormality. This also suggests that the processes of aging in this case are not markedly different from controls. In future research we intend to expand on this case study by evaluating right temporal to hippocampal seeds and language network seeds to delve deeper into memory and language functioning.

**Categories:** Cognitive Neuroscience
**Keyword 1:** neuroimaging: functional connectivity
**Keyword 2:** temporal lobes
**Keyword 3:** congenital disorders
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## 21 Toxic Wounds are Associated with Cognitive Decrements in Women Veterans of the 1991 Gulf War

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