Subjective memory ability in mild cognitive impairment and subjective cognitive decline and association with hippocampal volume

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Background

- Subjective cognitive decline (SCD) is conceptualized as a preclinical stage of Alzheimer disease (AD) but lacks uniform operationalization (1)
- Subjective frequency of forgetting, as assessed by the Memory Functioning Questionnaire Frequency of Forgetting subscale (MFQ-FF), has been demonstrated to be correlated with amyloid burden on PET imaging (3)
- In the current study, we compared subjective memory ability amongst older adults with SCD, mild cognitive impairment (MCI) and normal cognition (CN) and assessed its association with hippocampal volume, a robust marker of future cognitive decline
- We also explored group differences in specific types of subjective memory; e.g., destination memory (remembering to whom you told information)

Hypothesis

- We hypothesized that overall subjective memory ability as measured by the MFQ-FF would be correlated with hippocampal volume on MRI.

Methods

Participants

Table 1. Demographic and Clinical Characteristics of Sample

Descriptive	CN	SCD	MCI
N	51	46	35
Number of males	19	13	16
Age	71.0 (6.6)	71.5 (6.4)	72.7 (7.4)
Education	16.0 (3.0)	16.5 (3.2)	16.3 (3.3)
MoCA	27 (1.8)	26.7 (2.0)	24.4 (2.4)

- Participants were 132 older adults classified as MCI [n=35 mean age=72.7(7.4)], SCD [n=46, mean age=71.5 (6.4)], or CN [n=51, mean age=71 (6.6)] based on medical, psychiatric, and neuropsychological (NP) assessments
- SCD reported memory change and concern but had normal NP performance
- MCI met NP criteria of scores on at least two memory tests $\geq$ 1.5 standard deviations lower than expected, relative to overall intellect
- All participants were independent in functional abilities, and free of medical/neurological etiologies of cognitive impairment and current or past history of psychiatric illness
- Self-perception of memory was evaluated using the Memory Functioning Questionnaire (MFQ) (2)

Methods Continued

- 3D T1-weighted anatomical scans were acquired using MPRAGE at 3T, and processed using FreeSurfer v6.0
- Correlations were done using Pearson's Correlation

Results

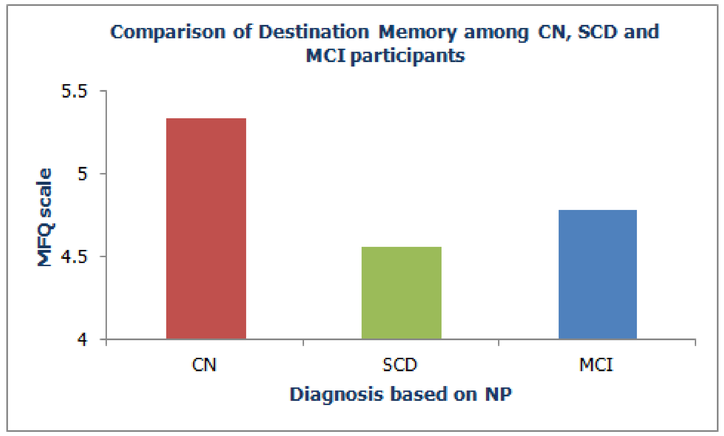

Fig. 1: MCI and SCD groups rated their overall memory ability (MFQ total score) as poorer than CN. However, only SCD participants perceived deficits specifically in destination memory (shown above) and prospective memory, relative to CN

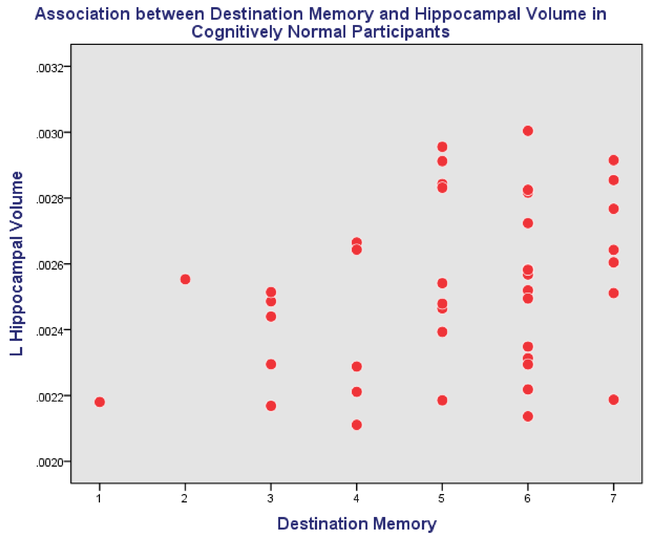

Fig. 2: Left hippocampal volume in SCD and CN participants was correlated with destination memory ability (r_p=0.335, p=0.025). Similar results were found for overall subjective memory ability (r_p=0.355, p=0.017)

Results Continued

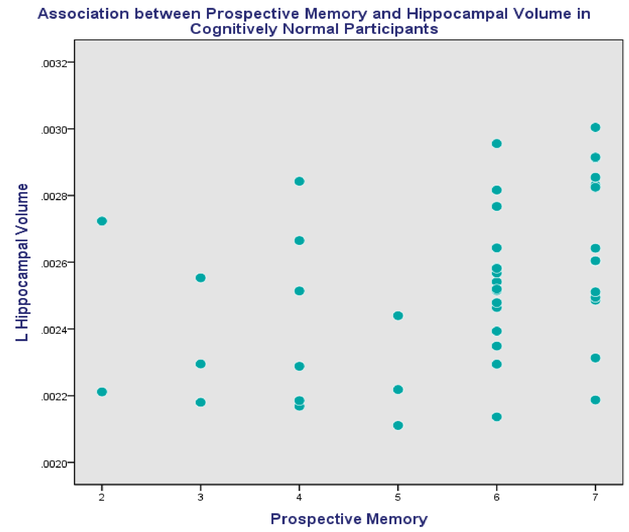

Fig. 3: Left hippocampal volume in SCD and CN participants was also correlated with prospective (r_p=0.370, p=0.012) memory ability

- Similar, but less robust, correlations between subjective memory and right hippocampal volume were also found in SCD and CN participants

Conclusion

- The correlations between hippocampal volume with destination and prospective memory suggest these specific types of subjective memory ability may be one of the earliest memory changes in preclinical AD
- These novel findings support the need for a better understanding of the nature of subjective memory complaints in SCD
- We propose that future studies investigate whether deficits in destination memory and prospective memory may be beneficial in identifying SCD due to Alzheimer's (AD)

References

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