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POSTER PRESENTATION

NEUROPSYCHOLOGY

Remote and unsupervised monitoring of episodic memory decline in patients with prodromal Alzheimer's disease

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Abstract

Background: Traditional pen-and-paper neuropsychological assessments are not sensitive to subtle cognitive changes in the earliest stages of Alzheimer's disease (AD), limiting their use for monitoring of cognitive performance over shorter timeframes. Here, we show that frequently administered remote and unsupervised digital cognitive assessments are better suited to capture short-term cognitive decline in early AD.

Method: We investigated episodic memory trajectories using self-administered remote digital testing in 202 participants (52–85 years) who completed unsupervised tests for at least 30 weeks. Linear mixed modeling was used to investigate main effects of cognitive status, $n = 152$ cognitively unimpaired (CU), $n = 50$ with mild cognitive impairment (MCI), and interaction effects of cognitive status by time spent in the study. Analyses were repeated, stratifying the MCI group by amyloid-β (Aβ) burden ($n_{A\beta-} = 21$, $n_{A\beta+} = 24$). Baseline and change-change associations with in-person neuropsychological assessments were also examined using Pearson correlations.

Result: At baseline, MCI performed worse than CU on an associative memory task (Object-in-Room Recall, ORR), memory precision tasks for objects and scenes (Mnemonic Discrimination Task for Objects and Scenes, MDT-OS), and a familiarity-based memory task (Complex Scene Recognition, CSR). A short-term decline in the familiarity-dependent task was observed in all patients with an MCI diagnosis, while both the familiarity-dependent memory task and memory precision for objects task were sensitive to decline in the MCI Aβ+ group specifically. Change in the remotely assessed familiarity-dependent memory was correlated with multi-year change on

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annual in-person neuropsychological assessments. Finally, in-person tests were not sensitive to short-term cognitive changes in MCI.

Conclusion: Altogether, these findings show that frequent remote cognitive testing is a promising tool to feasibly capture subtle and short-term cognitive decline.

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