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The Virtual Memory Ecological Battery (V-MEB): Preliminary Psychometric Validation of a VR-Based Memory Assessment Tool

Thursday, September 11, 2025 2:10 PM (20 minutes)

This study introduces the Virtual Memory Ecological Battery (V-MEB), an innovative virtual reality-based assessment tool designed to evaluate memory functioning within ecologically valid environments for early detection of cognitive decline. Traditional neuropsychological assessments often lack ecological validity—the extent to which they reflect real-world cognitive demands. The V-MEB addresses this limitation through seven interconnected subtests that simultaneously assess multiple memory domains (spatial, episodic, procedural, semantic, prospective, and executive functioning) within naturalistic contexts. Using an Oculus Meta Quest 3 headset, participants engage in immersive everyday scenarios including navigation, shopping, and cooking tasks. The battery generates 29 distinct performance metrics that collectively create a comprehensive memory profile. In our ongoing validation study including both cognitively normal older adults and individuals with Mild Cognitive Impairment, the V-MEB is being compared with standardized assessments including the Addenbrooke's Cognitive Examination III, Frontal Assessment Battery, and Rivermead Behavioural Memory Test. Key methodological innovations include task interdependence, concurrent assessment of multiple memory domains, contextual memory cues, and meaningful environmental embedding. The poster presentation will focus on preliminary psychometric validation results, including reliability, factor structure, and convergent validity with traditional measures. This ecologically grounded approach may provide more functionally relevant insights into memory capacities than conventional approaches, potentially offering enhanced sensitivity for detecting subtle cognitive alterations associated with early stages of cognitive decline.

If you're submitting a symposium talk, what's the symposium title?

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

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