

## **Assessment of iADL functioning in individuals with subjective cognitive complaints using the Virtual Reality Functional Capacity Assessment Tool (VRFCAT)**

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### *Methodological Issue*

Improving functional assessment in Alzheimer's disease prevention trials

### *Background*

Reliable evaluation of cognition and functioning is critical to the effective assessment of mental health in aging individuals. Increasing interest in clinical trials for Alzheimer's disease prevention and early intervention highlights the need for tools that are performance-based and sensitive to subtle deficits in instrumental activities in daily living (iADL) in healthy, non-demented individuals.

The Virtual Reality Functional Capacity Assessment Tool (VRFCAT) is a performance-based assessment of iADL functioning that assesses a participant's ability to complete instrumental activities (called objectives) associated with a shopping trip. In previous studies, the VRFCAT has demonstrated strong psychometric properties and shown sensitivity to declines in healthy aging and deficits in schizophrenia (Atkins et al., 2015; Keefe et al., 2016). Key outcome measures for the VRFCAT include total time to complete all 12 objectives (Adjusted Total Time) as well as individual objective times and error rates.

We present findings from an ongoing study to collect census-matched normative data in 650 healthy individuals and 60 individuals with subjective cognitive complaints.

### *Methods*

Data collection is ongoing. The data presented includes 434 participants, including 200 healthy young adults (YA, <55 years), 208 healthy older adults (hOA, ≥55 years), and 26 older adults with subjective cognitive complaints (scOAs, ≥55 years). Older adults with cognitive complaints were classified as such based on total scores of ≥ 4 on the self-reported Mail-In Cognitive Function Screening Instrument and MCFSI.

In addition to the VRFCAT, all participants were evaluated with standard cognitive assessments including the Montreal Cognitive Assessment (MoCA), Trail Making Part B, and Logical Memory I and II subtests of the Wechsler Memory Scale. Participants aged ≥ 55 years of age completed the MCFSI. Those with cognitive complaints were asked to provide an informant to complete the ADCS Activities of Daily Living-Prevention Instrument (ADCS-ADL-PI).

### *Results*

Participants with subjective cognitive complaints performed significantly lower than hOAs without subjective decline on all standard neurocognitive measures, suggesting subjective decline was associated with objective deficits. VRFCAT total completion time, error rate and number of forced progressions all demonstrated strong sensitivity to differences between the two groups ( $p \leq .001$ ).

In the subjective cognitive decline group, VRFCAT errors were positively correlated with ADCS-ADL-PI scores ( $p=.49$ ,  $p<.05$ ), indicating that increased VRFCAT errors were associated with greater informant-reported iADL decline on this standard interview-based instrument.

VRFCAT error and total time endpoints were significantly correlated with performance on the MoCA in hOAs ( $r=-.36$ ,  $p<.001$  for VRFCAT time,  $r=-.22$ ,  $p<.001$  for VRFCAT errors). VRFCAT time was strongly positively correlated with TMT-B performance in both hOAs ( $r=.58$ ,  $p<.001$ ) and individuals with cognitive complaints ( $r=.81$ ,  $p<.001$ )

### *Conclusion*

Results suggest the VRFCAT is sensitive to differences between healthy OAs and those with subjective cognitive complaints, and demonstrate convergence between VRFCAT findings, objective cognitive testing, and informant reports of functional decline.