

Saturday

Reliability and Validity of the ALLFTD Mobile App Cognitive Tests

Adam Staffaroni, Jack Taylor, Annie Clark, Hilary Heuer, Amy Wise, Masood Manoochehri, Leah Forsberg, Carly Mester, Meghana Rao, Danielle Brushaber, Julio Rojas, Joel Kramer, Bradley Boeve, Howard Rosen, Adam Boxer

State of the art: Remote digital assessments could democratize access to observational research and clinical trials for frontotemporal dementia (FTD) patients and enhance early symptom detection. The ALLFTD Mobile App includes smartphone assessments of cognition, speech/language, and motor functioning. We evaluated the reliability and validity of the cognitive measures.

Methodology: Data from a diagnostically mixed sample of 207 participants (CDR@+NACC-FTLD=0 [n=91]; CDR@+NACC-FTLD=0.5 [n=39]; CDR@+NACC-FTLD \geq 1 [n=39]; unknown [n=38]) were analyzed. Participants were asked to remotely complete the smartphone measures three times over two weeks, including executive functioning (EF) tests and a memory test. We evaluated split-half and test-retest reliability. To assess construct validity, linear models tested the association of the smartphone tests with gold-standard neuropsychological outcomes (UDS3-EF composite & CVLT-SF Immediate Recall), CDR@+NACC-FTLD Box Scores, and regional gray matter volumes.

Results: Split-half reliability was excellent for the EF tests (r 's=0.93-0.99) and good for the memory test (r =0.78). Test-retest reliabilities ranged from acceptable to excellent (intraclass correlations: 0.70–0.96). Smartphone EF measures were strongly associated with the UDS3-EF composite (β 's=0.6–0.8, all p <.001), and the memory test was strongly correlated with the CVLT-SF (β =0.7, p <.001). Performance on all tests declined with increasing disease severity (β 's=0.5–0.7, all p <.001). Worse app-based EF performance was associated with lower frontoparietal/subcortical volume (β 's=0.4–0.6, all p <.015) and worse memory scores with lower hippocampal volume (β =0.5, p <.001).

Conclusion: These results indicate that remote digital data collection in FTD is feasible and provide support for the reliability and validity of the ALLFTD Mobile App cognitive tests.

Conflicts of interest

No relevant disclosures.