Remote cognitive evaluation in aging adults: a new software implementation during COVID-19

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Abstract

Remote cognitive testing is a convenient and efficient method to evaluate older adults especially because of the sanitary restrictions due to COVID 19. Our aim was to test the psychometric properties of newly developed versions of two visuospatial attention subtests, Hidden Patterns and Identical Pictures, administered by remote cognitive evaluation platform developed by Neurobehavioral Systems, Inc. We conducted testing and analysis in a sample of healthy aging adults.

Methods

Participants were recruited in East-Bay, California; 184 aging adults completed the computerized hidden patterns test, and 160 older adults answered the identical picture test. The mean age was 70.11 years old with a range of 60 to 85 years old. Most of the participants were female (59.60%), and dementia symptoms were not reported. Participants were evaluated twice in one year at home, the software created by Neurobehavioral Systems, Inc allowed a synchronous interaction with the remote evaluator, which helped to monitor and answer any question before, during or after the evaluation.

Data Analysis

Difficulty and discrimination analysis (classical test theory) was performed in R (version 4.1.0),. We estimated a Bayesian 1PL Item Response Model (IRT) for each test along with DIF testing by gender. The IRT models were calculated with the package *rstan* (Stan Development Team, 2020)

Results

The IRT models showed group differences at the items' difficulty. The estimated reliability showed to be adequate ($\alpha > .75$), and test – retest correlations were medium to high ($r > .50$). Correlations with age ranged from $r = -.33$ to $r = .25$.

References:

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