technology. We summed across 11 questionnaire items to derive a single variable capturing technology-use experience, with higher scores indicating more experience.
Results: Almost all participants (93.33%) indicated that NeuroScreen was easy to use. A similar number (90.00%) indicated they would be comfortable completing NeuroScreen at routine doctor's visits. Only 6.67% reported feeling uncomfortable using a tablet, despite about three-quarters (76.67%) reporting never having used a tablet with a touchscreen before. Almost one in five participants (18.33%) reported owning a computer, 10.00% a tablet, and 70.00% a smartphone. Correlations between test performance and technology-use experience were statistically significant (or strongly tended toward significance) for most NeuroScreen subtests that assessed higher-order cognitive functioning and that required the participant to manipulate the tablet themselves: Trail Making 2 (a measure of cognitive switching ability), r = .24, p = .05; Visual Discrimination A (complex processing speed [number-symbol matching]), r = .38, p = .002; Visual Discrimination B (pattern recognition), r = .37, p = .004; Number Speed (simple information processing speed), r = .36, p = .004. For the most part, there were no such significant associations when the NeuroScreen subtest required only verbal input from the participant (i.e., on the list learning and number span tasks).
Conclusions: NeuroScreen, a tablet-based neurocognitive screening tool, appears feasible for use among older South Africans, even if they are cognitively impaired and have limited technological familiarity. However, test performance might be influenced by amount of technology-use experience; clinicians using the battery must consider this in their interpretations.

Categories:
Assessment/Psychometrics/Methods (Adult)
Keyword 1: cross-cultural issues
Keyword 2: cognitive screening
Keyword 3: technology
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33 A serious game in an immersive virtual environment for inhibition and selective attention evaluation

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Objective: Executive functions (EFs) refer to a set of top-down cognitive processes that are fundamental for the control of goal directed behaviours (Lezak et al., 2004). Inhibition (the capacity to ignore irrelevant information) and selective attention (the capacity to selectively focus on relevant information) are considered as the core components of EFs (Barkley, 2001; Veer et al., 2017). EFs can be impaired following brain damage (Chung et al., 2013) and they are traditionally assessed individually, using paper-and-pencil tests that have long been criticized for their ecological and sensitivity limitations (Dugbartey et al., 1999; Miyake et al., 2000). Here we developed a serious game in immersive virtual reality to measure inhibition and selective attention based on the go/no-go paradigm and the D2 Test.
Participants and Methods: Sixty healthy participants were asked to perform a series of tasks, where in each task, the target was a mole wearing a coloured helmet. In task A, either the target or a distractor bomb was presented. The participants had to respond to the target and inhibit a response to the bomb. In task B, the target was presented with distractor moles wearing different coloured helmets. The two tasks could also be combined, task AB, where the target was presented with distractors (as in task B) versus the bomb was presented with distractor moles. All the stimuli appeared from four molehills aligned to sagittal axis (near to far from the participant). Responses were made with the dominant hand in task A and with both tasks in tasks B and AB. The participants were instructed to hit the target with a virtual hammer.
Results: Response time analysis showed that in tasks A, B and AB, participants were slower to respond to the far compared to near targets. In task B and AB, participants were additionally slower to respond to the left compared right

https://doi.org/10.1017/S1355617723008913 Published online by Cambridge University Press

targets. Significant interactions between laterality and proximity for tasks B and AB showed that the participants were significantly slower to response to left vs right target in both far and near conditions. All participants were able to inhibit responses to the bomb and distractor stimuli.
Conclusions: In conclusion, we have developed a novel serious game in immersive virtual reality for the assessment of inhibition and selective attention, both as individual tests and as a combined test. Future studies will test patients with executive dysfunction to test the validity of this new serious game.

Categories:
Assessment/Psychometrics/Methods (Adult)
Keyword 1: attention
Keyword 2: computerized neuropsychological testing
Keyword 3: psychometrics
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34 Variability in RBANS Performance and Neurocognitive Impairment in Older Adults with Cognitive Concerns

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Objective: Risk factors that contribute to brain pathology and cognitive decline among older adults include demographic factors (e.g., age, educational attainment), genetic factors, health factors, and depression (Plassman et al., 2010). Variability within an individual's performance across cognitive tasks is referred to as dispersion (Hultsch et al., 2002), which appears sensitive to subtle cognitive impairments associated with neurodegenerative pathology in older adults (Bangen et al., 2019; Kälin et al., 2014). Thaler and colleagues (2015) found that dispersion across domains of the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) was a useful indicator of cognitive changes associated with cardiovascular disease and mortality. Also, research by Manning and colleagues (2021) found that elevated ratings of depression and anxiety in older adults was associated with greater dispersion across neuropsychological testing. The present study aimed to replicate findings that greater dispersion in neuropsychological performance is associated with impaired neurocognitive performance and greater self-reported depression among older adults who present for neuropsychological evaluation with cognitive concerns.
Participants and Methods: Neuropsychological testing data was obtained from a university hospital. Chart reviews were conducted on 369 participants who met initial criteria (60 years or older with testing data from the RBANS Form A, Wechsler Test of Adult Reading, and Geriatric Depression Scale [GDS]). Retrospective analyses were conducted on a final sample of 293 participants from 60 to 94 years old (M_{age} = 74.41, SD_{age} = 7.43; 179 females, 114 males). Diagnoses were used for group comparisons between cognitively intact individuals with subjective cognitive complaints (SCC, n = 49), persons with Mild Neurocognitive Disorder (mND, n =137), and persons with Major Neurocognitive Disorder (MND, n = 107).
Results: As expected, results indicated that higher dispersion was related to lower Total RBANS Scores (r = -0.54, p < .001) and significant differences across diagnostic groupings (F(2, 289) = 29.19, p < 0.001; SCC, mND, MND) indicated that variability in performance was an indicator of greater neurocognitive impairment. Contrary to expectations, greater dispersion was very weakly associated with lower reported depressive symptomatology (r = -0.13, p = 0.03). A three-stage hierarchical linear regression was conducted with the RBANS Coefficient of Variation (CoV) as the dependent variable and three predictor variables (Age, Total RBANS, Total GDS). The regression analysis results indicated that age was not a significant predictor, but both Total RBANS and GDS Scores were. The most important predictor was Total RBANS Scores which uniquely explained 21% of the variation in dispersion.
Conclusions: This study adds to the current literature regarding the clinical utility of dispersion in neuropsychological performance as an indicator of early and subtle neurocognitive impairment. Depressive symptom reporting was expected to help predict the degree of variability, but this factor was only weakly associated with the RBANS CoV.

https://doi.org/10.1017/S1355617723008913 Published online by Cambridge University Press