COGSTATE AND NIH TOOLBOX-COGNITIVE COMPUTERIZED TEST BATTERIES: REPEAT ASSESSMENTS AMONG AFRICAN-AMERICAN ELDERS

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Background: Unsupervised web-based cognitive assessment could widen and refine recruitment into clinical trials while reducing costs. However, challenges to reliability exist which are not present in supervised testing. We were interested in establishing: 1) the comparability of web-based testing to supervised testing 2) The development of measures related to participant compliance and engagement. **Methods:** Six hundred participants between 18 and 70 were recruited for online testing, and were matched to 94 participants assessed in a supervised setting on age and gender. Participants completed an adaptive test of episodic memory (Paired Associates Learning - PAL) from Cantab. Demographic and background data (e.g. age, education) were also recorded. Participants in the supervised testing were assessed on iPads, whereas in online testing participants used a variety of systems, including desktop computers, laptops and tablet devices. **Results:** There was no difference in PAL errors between supervised and web-based testing. Within the web-based testing, there was no difference between hardware platforms or browser. However, trial-by-trial timing data showed highly variable and slow reaction times in a number of participants during web-based testing, outside the bounds seen on supervised testing. This was associated with more PAL errors (r=.35), and younger age (r=.-21). Test-retest reliability was increased when participants with speed and variability parameters outside those of supervised testing were excluded. Web browser activity monitoring revealed whether participants tabbed to a different browser window during task performance (n=200). This behaviour was associated with poorer PAL performance (t = -2.09, df = 161.5, p-value = 0.03), greater RT variability (t = -3.48, df = 119.6, p-value < 0.01) and younger age (t = 3.4157, df = 192.9, p-value <0.01). **Conclusions:** Behavioural metrics can be used to reliably identify lack of task engagement in web-based testing. Good task engagement is typically seen in older participants. A combination of detailed task behaviour analysis and monitoring technology is recommended in remote testing. Once these safeguards are in place, online testing is feasible and produces similar results to those obtained in supervised settings, making this technology suitable for remote assessment of cognitive function for recruitment and research purposes.

O3-03-04 COGSTATE AND NIH TOOLBOX-COGNITIVE COMPUTERIZED TEST BATTERIES: REPEAT ASSESSMENTS AMONG AFRICAN-AMERICAN ELDERS

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Background: The extent to which experience with a test influences performance is important in clinical and research settings. CogState and NIH Toolbox-Cognitive computerized batteries have not been studied extensively for practice effects, particularly in African Americans with mild cognitive impairment (MCI). We report here a preliminary study of repeat computerized testing in a community-based sample of African Americans. **Methods:** Participants were 28 African Americans (86% female; age range=65-87, M=73±6.0; MMSE range=25-30) recruited from Wayne State University Institute of Gerontology's Healthier Black Elders Center and co-enrolled at the University of Michigan Alzheimer's Disease Center. All participants received the National Alzheimer's Coordinating Center's Uniform Data Set assessment battery as part of a consensus conference evaluation, yielding a diagnosis of either normal (n=19) or MCI (n=7, Non-amnestic, predominantly multidomain, executive dysfunction; n=2, Amnestic MCI). The prevalence of executive dysfunction may be related to the mixed MCI etiology in African Americans. Repeat computerized assessments with the CogState Brief Battery and NIH Toolbox-Cognitive Battery were administered within four months. There were no significant differences in age or education across groups. Repeated measures analyses examined differences in group performance across time. **Results:** MCIs performed lower than controls across both assessments on two memory measures (Toolbox Picture Sequence Memory, p=.007; CogState One Card Learning, p=.016). Improvement across time, regardless of group, was seen for Toolbox Flanker Inhibitory Control and Attention (p=.004). A group/time interaction was shown for Toolbox Dimensional Change Card Sort (DCCS; p=.033) and List Sorting Working Memory (LSWM; p=.04). On DCCS, groups differed significantly at baseline, but MCIs improved to control levels at retest. On LSWM, there were no baseline differences, but controls improved significantly at retest, while MCIs did not. **Conclusions:** Overall, only the two memory measures consistently differentiated between controls and MCI over this short retest period, which is interesting given the predominance of non-amnestic MCI. Performance changes with prior exposure to a task were only evident on Toolbox, depending in part on the nature of the task (i.e., working memory, executive function) and diagnosis. In general, however, both computerized measures are readily adaptable to community settings and remain relatively consistent over time.

O3-03-05 MEMORY BINDING PHENOTYPES IN OLDER APOE4 CARRIERS WITH DIFFERENT COGNITIVE STATUS

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Background: Alzheimer's disease affects the ability to bind information in memory. Memory binding impairments have been reported in asymptomatic and symptomatic carriers of a PSEN1 mutation which has 100% penetrance (i.e., E280A). E280A asymptomatic carriers showed visual short-term memory binding (VSTMB) deficits which anticipate deficits of associative memory functions such as that assessed by the Selective Reminding Test (SRT). E280A-PSEN1 is a rare genotype whose phenotype is unaffected by factors such as age. VSTMB and SRT have proved differentially sensitive to aging. We investigated the impact of a more common genotype, namely APOE4, on memory binding functions in older adults with different cognitive status. **Methods:** A group of 100 APOE4 carriers (APOE4+ = at least one e4 allele) and 137 non-carriers (APOE4-) were included in this the study. Twelve carriers and nine non-carriers met criteria for Mild Cognitive Impairment (MCI). Of the remaining 216 healthy older adults (HOA), 88 were APOE4+. They all underwent assessment with the VSTMB test and the SRT as part of a comprehensive neuropsychological protocol. **Results:** We