Reliability and validity of brief cognitive tests

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Background:
• Four potentially useful brief tests for cognitive & functional change are: the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS1), Test Your Memory (TYM2), and the AD8 Dementia Screening Interview for both patient and informant reports of functional changes (AD8-P & AD8-I3).
• Singapore has a rapidly ageing population: many elderly individuals do not speak fluent English and levels of formal education vary.
• We investigated test-retest reliability of the tests and convergent validity with MoCA4, Abbreviated Mental Test (AMT5) & MMSE6.
• Age and education effects also examined.

Method:
• 28 cognitively intact NCI participants aged 53 to 78 (M = 63.29, SD = 5.84).
• RBANS, TYM, AD8-P & AD8-I administered at two time points with a 14 day interval.
• Colour Trails Test (CTT) and modified Boston Naming Test (mBNT) added to RBANS composite score to increase sensitivity7.
• AMT, MoCA, MMSE & GDS at time 1 only.
• Analysed Pearson’s r (& ICC) gain scores (t-test, df = 27) and age & education affects.

Results:
Test-retest reliability and gain score mean(SD):
• RBANS: \( r = .85^{**} \), Gain = (35.43), \( p = .06 \).
• TYM: \( r = .81^{**} \), Gain = (2.37), \( p = .12 \).
• AD8-P: \( r = .64^{**} \), Gain = (1.40), \( p = .69 \).
• AD8-I: \( r = .77^{**} \), Gain = (2.84), \( p = .13 \).

Convergent validity:
• The RBANS composite showed convergent validity with TYM, MoCA & MMSE, but not with AMT or AD8.
• Age had no effect but education correlated with RBANS (\( r = .54^{**} \)), TYM (\( r = .76^{**} \)), & MMSE (\( r = .70^{**} \)).
• AD8-P correlated with GDS depression scores (\( r = .67^{**} \)).

Conclusions:
• Test-retest reliabilities are adequate for these tests. There is convergent validity evident in tests of cognition and divergent from tests of function.
• Education effects are noteworthy.
• AD8-P reflects non-cognitive basis of subjective self-reported impairments.
• This study contributes knowledge of reliability and validity of these tests, and addresses the needs of Singapore’s large ageing population.
• The results are sufficiently encouraging to warrant the evaluation of these tests in a cognitively impaired population.

References: