Validity of Lucid Exact

Please note that the validation of a test is not the same thing as the psychometric standardisation of a test. Lucid Exact has undergone separate studies with different samples for the validation studies and the standardisation study. Lucid Exact is a normative test that has been (psychometrically) standardised with over 1,000 students. The 'norms' are provided in 3-month age bands from 11:0 to 18:11 and in 12-month age bands from 19:0 to 24:11. Age equivalents have been calculated for the age range 6:0 to 18:11 (over this age, age equivalents become meaningless). The standardisation samples and procedures for Exact compare favourably to other well-used comparative tests.

Validation studies of Lucid Exact were carried out in 2010-11 in four different schools and involved a total of 103 students. The results showed that all the tests in Lucid Exact correlate significantly with equivalent conventional (pen and paper or individually administered) tests that are in regular use for exam access assessments, evidencing the validity of the tests in Exact. (Note that WRAT-4 and TOWRE have US norms, but nevertheless are widely used in assessments for exam access in the UK.) The results are shown in the table below (all correlations are significant at the $p<0.01$ level).

Exact Test	Comparison test(s) and correlation values			
Word recognition	TOWRE Single Word Reading Efficiency **r=0.80**	TOWRE Phonemic Decoding Efficiency **r=0.84**	WRAT-4 Reading **r=0.70**	Edinburgh Reading Test **r=0.74**
Reading Comprehension	Edinburgh Reading Test **r=0.73**	WRAT-4 Reading **r=0.56**	TOWRE Single Word Reading Efficiency **r=0.51**	TOWRE Phonemic Decoding Efficiency **r=0.52**
Reading speed	Edinburgh Reading Test **r=0.70**	Exact Reading Comprehension **r=0.54**	TOWRE Single Word Reading Efficiency **r=0.57**	TOWRE Phonemic Decoding Efficiency **r=0.51**
Spelling	WRAT-4 Spelling **r=0.91**	WRAT-4 Reading **r=0.70**	TOWRE Single Word Reading Efficiency **r=0.76**	TOWRE Phonemic Decoding Efficiency **r=0.87**
Handwriting speed	Hedderly Sentence Completion Test **r=0.54**	Exact Typing speed **r=0.48**		

To give some idea of expected levels of correlation, the correlation values between WRAT-4 Reading and the other comparison tests were as follows: TOWRE SWE 0.64; TOWRE PDE 0.77; Edinburgh RT 0.67. These values are, in fact, lower than the corresponding values for Exact Word Recognition, suggesting that Exact Word Recognition has somewhat better concurrent validity than WRAT-4 Reading.

It should be noted that the differential correlations shown in the table follow a logical pattern. The Exact Word Recognition test correlated more highly with the TOWRE tests than with WRAT-4 Reading. This is because the TOWRE tests are speeded tests (like Exact Word Recognition) while WRAT-4 Reading is an untimed test. Exact Reading Comprehension (a timed test) correlates more highly with the Edinburgh Reading Test (a test of comprehension) than it does with the measures of phonic skills and individual word recognition.

Correspondingly, the Exact Reading Speed measure also correlates more highly with the Edinburgh Reading Test (a timed test) than with the Exact Reading Comprehension score, showing that reading speed and reading comprehension have been separated out more in Exact, whereas the Edinburgh Reading Test conflates the two measures.

Exact Spelling shows a very high correlation with WRAT-4 Spelling – higher than with the various reading measures. (Note that, as might be expected, reading and spelling skills tend to be significantly related: the correlation between WRAT-4 Reading and WRAT-4 Spelling, for example, was found to be 0.70, the same value as between Exact Spelling and WRAT-4 Reading).

Exact Handwriting Speed is significantly correlated with the Hedderly Sentence Completion Test (a commonly used measure of writing speed). Since there are no comparable tests of typing speed, no validation figures are given for this component of Exact. However, an independent study of the writing and typing to dictation tests in Lucid Exact has been published, which provides support for the validity of this test. The abstract of this paper is reproduced below.

These results clearly demonstrate the overall validity of the tests in Exact.

Abstract

This paper reports on two studies using computer-based dictation tasks for measuring speed of typing and handwriting. In the first study 952 students aged 11-17 years attending 19 different secondary schools hand wrote and typed passages dictated by a computer. For both handwriting and typing, a very high correlation was found between speed calculated by the computer and that calculated by a human assessor, establishing that computerised calculation is a reliable as well as convenient and time-saving method of establishing writing speed. There were greater age-related gains in speed of typing compared with handwriting and greater variation in typing skill than handwriting skill. However, almost half of students with slow handwriting (below standard score 85) were found to have average or better typing speeds.

In the second study, 55 students aged 13-14 were administered these tasks together with the Hedderley Sentence Completion Test of handwriting speed. Despite the clear differences between the two test formats, a reasonable level of agreement was found between them. Almost one-third of students with slow handwriting in the computer-based task had not previously been identified as having support needs but would potentially be disadvantaged in written examinations. By eliminating the 'thinking' time involved in free writing, computerised dictation tasks give 'purer' measures which can reveal physical handwriting and/or typing problems. They also simulate examination requirement more closely than mechanical repetitive tests of writing speed, and should be particularly helpful in establishing whether students need access arrangements in examinations.

For more information about Lucid or the developments or research please visit the Lucid web site www.lucid-research.com. The Lucid staff can be contacted by email info@lucid-research.com, telephone +44 (0)1482 882121 or fax +44 (0)1482 882911.

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