

Reliability and validity of various tests critical thinking

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The VARK test has been analyzed and criticized by several people and in several publications, for example:

In August 2009 Walter Leite (Research and Evaluation Methodology program, University of Florida), Marilla Svinicki (University of Texas at Austin) and Yuying Shi also from the University of Florida conducted a test to examine the validity of the scores of the VARK. They mainly focused on the dimensionality of the learning style inventory associated with VARK. From the study it was found that there was preliminary support for the validity of the VARK scores.

There were however concerns about the scoring algorithm and item wording. As a result therefore, it was established that caution needed to be exercised whenever VARK was employed in research. From the study it was determined that the reliability estimates for the scores of the

VARK sub-scales were as follows:

- 0.85 for the visual subscale
- 0.82 for the aural subscale
- 0.84 for the read/write subscale
- 0.77 for the kinesthetic subscale

The most common question concerning the reliability and validity of VARK is usually associated with the absence of a statistical scoring method. Apart from this, VARK has been said to ignore other learning methods that are very vital in the cognitive development of pupils or students. In addition to this, it is said to be an incomplete learning style inventory.

Other tests have shown the VARK reliability coefficient to be 0, 8132 for checklist and 0, 7076 for the multioption variable. Validity tests on the other hand show all VARK to be statistically significant on $p < 0, 05$ (2 tailed).

b) Honey and Mumford

The Honey and Mumford test has always been championed as a viable alternative to Kolb's Learning Style Inventory (LSI). In recent times however, the reliability and validity of the Honey and Mumford test as well as its ability to emerge as a worthy replacement to Kolb's LSI have come under intense scrutiny.

A study conducted at the University of Paisley, Ayr Campus, UK appears to strongly question the reliability and validity of the Honey and Mumford test. It says that confirmatory and exploratory factor analysis failed to lend credence to four learning styles hypothesized by Honey and Mumford. After an item analysis and pruning exercise, the internal consistency reliability remained unsatisfactorily low compared to the required standards, and also there was the lack of an adequate model to fit the data.

A structural equation model revealed that there lacked a consistent relationship between scores on the four learning style scales. Factorial invariance tests do not provide any support for the generalizability or stability of the model. In conclusion, the Honey and Mumford LSQ was found not to be a credible alternative to the LSI-1985 and the LSI. In addition to this, its employment in applied research involving students in higher education was found to be premature.

c) Myers Briggs

In 1991, after reviewing data from MBTI research studies, the National Academy of Sciences committee came to the conclusion that only the I-E scale of the Myers Briggs test has sufficient construct validity. This is in terms of displaying low correlations with instruments meant to evaluate different concepts while at the same time showing high correlations with comparable scales of other instruments. Relatively weaker validity was observed in the T-F and S-N scales.

According to a number of studies, it has been found that between 39% and 76% of respondents usually fall into different categories when retesting is done weeks or even years later. As such, the reliability of the test has been said to be low by a number of researchers. On the other hand, the MBTI dichotomies display good split-half reliability.

d) Belbin Team Role Test

In 1996, Stephen Fisher, W. D. K Macrosson and Gillian Sharp, all of the University of Strathclyde wrote a research paper which was published by MCB UP Ltd and which is available at Emerald Online. In the paper they sought to investigate the internal reliability and validity of the Belbin Team Role Self-perception Inventory. Two tests which were both linked were conducted in light of this, and they revealed the following:

i) The first test showed that the test-retest reliabilities of the Belbin self-perception

inventory were unsatisfactory.

ii) The second test examined the correlations with team roles predicted on the basis of

16PF data, and with the exemption of only one team role, no credible correlations

were found.

The research paper and the two linked tests therefore appear to provide support for the disregardance of the Belbin self-perception inventory data and instead the use of 16PF data as the suitable way for estimating team role preferences.

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