PSYCHOMETRIC TESTS – HOW DO THEY WORK?

A brief demystification of psychometric testing

Love them or hate them, psychometric tests are here to stay. Hardly anyone applying for a senior management job these days can escape the psychometric test. Such tests are designed to make it easier for the selectors to reach a decision and they are as popular in the private and the public organisations. But what are psychometric tests? – how do they work and how reliable are they?

What are Psychometric tests?

A psychometric test means that it has been evaluated for validity and reliability. There are many 'tests' which have not been through this process, and they should not be referred to as 'psychometric'. The type of tests found in popular magazines have no known psychometric properties. They are devised by journalists, and not psychologists and statisticians. Their aim is to amuse and not measure.

Psychometric tests are also broadly divided into tests of ability and tests of preference. The ability tests have right and wrong answers, and these tests can measure analytical thinking, verbal reasoning, numerical reasoning and so on, and are usually timed. There are also a range of tests which can measure spatial perception, inspection skills, clerical skills, computer aptitude and so on.

The preference tests do not evaluate in theory, in that they are used to describe personality or values. However, it is clearly better to be stable than neurotic, and organised rather than disorganised, but it is debatable whether it is necessarily better to be an extrovert rather than an introvert, as long as neither is too extreme.

How are these tests constructed?

Personality test construction should start with a theory. The theory should then start to specify how people behave in different ways. Thus extroverts choose work and leisure pursuits to achieve excitement, variety and novelty. The theory says that extroverts like people-oriented activities and trade off accuracy for speed. Under the broad super-factor category of extroversion, we then have what are called primary factors like sociability, impulsiveness, assertiveness, positive imaging, etc.

Once the primary factors have been identified, individual items can be written. So to measure sociability the test might aim to identify five or so behaviours of those high and those low on sociability. These in turn then become the individual questions. If there are five primary factors associated with extroversion, the test may need ten times five questions to obtain a reliable score. Some of these questions will also be reversed, and the best questions will not be transparent in meaning. Inevitably, there will appear to be a certain amount of repetition, and, inevitably, there will be a relative amount of conceptual overlap in the questions when the test aims to cover all aspects of a behavioural area.

Lie Detector Questions

Test authors do not include the same question to check for inconsistency in answers. However, 'lie scales' or 'social desirability scales may be introduced to check the honesty of the responses. These are types of question to which only one answer is usually possible, and if you are asked 12 or so 'lie detector' questions, you would be expected to have the majority in the right direction. Such examples of lie detector questions would be: -

> "I have never been late for an appointment."

> "I have never told a lie."

> "I have never been unkind to a work colleague or member of my family."

How reliable are tests?

Once you have a draft questionnaire and a scoring system, test reliability is usually calculated by the 'test-retest method. If a test is completed on different occasions, it is reliable if similar scores are produced.

How valid are the tests?

There are many different types of validity (e.g. content, construct, concurrent), but the one that really matters is predictive validity – do the scores predict behaviour and have predictive validity? Does the test measure what it purports to measure? However, the big problem of establishing predictive validity in a work situation is that organisations do not keep accurate reliable measures of work performance that may be used as the predicted criteria.