

# Psychological Measurement: Critical Analysis of Psychological Testing in Personnel Selection

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## Abstract

This paper examines the importance of psychological testing in personnel selection. Selection is a process of hiring the job applicant who will be most successful in meeting job demands. Poor hiring can be costly to an organisation, thus, they rely on different techniques of selection, testing is the most commonly used. An attempt is made to understand the history of testing, use of testing in selection procedure, and various kinds of test used with main emphasis on the cognitive ability and personality testing. It also attempts to critically analyse some of the issues associated with testing, with emphasis on the validity and utility of tests. The issue of cultural fairness, biases and discrimination has also been explored.

**Keywords:** Job, Psychological, Personnel, Selection, Test

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## 1. Introduction

In today's era of globalisation and competition, developing new strategies, proposing creative and innovative ideas have become important for the organisation to out-beat their competitors. Not only this but there is also continuous pressure of recognising potential talent, attracting best talent and managing organisations human resources. Hiring the right person has become one of the major concerns for the organisations. Correct recruit can not only help utilise the scarce resources judiciously and produce excellent results in line with the expectations of internal as well as external groups but also reduces the rate of turnover which can otherwise be very costly. Human resources management is defined as "a strategic process that involves attracting, developing, and maintaining a talented and energetic workforce to support the organisation's mission, objective and strategies"<sup>43</sup>.

Selection is the process of gathering information for the purpose of evaluating and deciding who should be employed in particular jobs<sup>12</sup>. An organisation can use various methods for selection process, from traditional methods such as interviews, reference, letter of recommendation, psychological testing to more contemporary methods like assessment centres. Often the method is adopted according to the work requirement. Regardless of the strategy adopted the selection process must allow organisation to accurately identify aptitude, ability, and other characteristics in applicants that are recognized as contributing to organizational effectiveness. Psychological test-

ing is generally regarded as an integral part of best practices for selection<sup>20,49</sup>. Some of the reasons that lead to an increase in the use of psychological testing for the selection process are:- properly used psychological tests are excellent in predicting future employee performance<sup>45</sup>; availability of psychological test online have reduced the cost of testing<sup>8</sup>; psychological testing is objective and fair in comparison to other methods. Thus, it reduces the possibility of legal challenges<sup>53</sup>. It overcome many limitation of the other selection practices such as resume fraud, interviewers' biases and prejudice. Thus all these factors have contributes to an increase in the use of psychological tests for selection purposes in recent years<sup>4,6,47</sup>.

However psychological testing itself is not free of criticism. Many personnel professionals have criticised the usefulness of test in selection process, while some researcher believes that psychological testing could lead to discrimination against minority and females<sup>10</sup>.

It is becomes important for the HR manager to understand potential and limitation of psychological testing in selection. This paper reviews some of the concerns associated with development and use of psychological testing, especially focusing on cognitive and personality tests.

## 2. Background

A psychological test is essentially an objective and standardised measure of a sample of behaviour<sup>3</sup>. According to <sup>7</sup>, a test is an

organised succession of stimuli designed to measure quantitatively, or to evaluate qualitatively, some mental process, traits or characteristics. Major development in psychological testing occurred in 20<sup>th</sup> century mainly in America, however origin of testing could be traced back to Chinese Civil Services as early as 4,000 years ago, where after every three year an oral examination was conducted for making decision about employees promotion (DuBois 1970, 1972 as cited in (Kaplan & Saccuzzo, 2005))<sup>28</sup> However some scholars<sup>14</sup> argue that Greeks may have been the first one to use testing for educational or military purpose. Sir Francis Galton is one of the most important names associated with testing. Inspired by Charles Darwin's book "The Origin of Species (1859)" Galton began applying Darwin's ideas for understanding human abilities and carried out series of experimental studies to validate his observation<sup>11</sup>. Modern testing movement began, when French psychologist Alferd Binet developed first intelligence test. Curiosity among researcher for understanding the individual difference has led to development of not only intelligence but also traits and abilities test.

The enthusiasm for individual measurement led to the development of tests for traits and abilities other than intelligence. However use of psychological test within the field of Organisation was non-existent before 20<sup>th</sup> century. The field of industrial psychology flourished by the end of 19<sup>th</sup> century, by the contribution of individuals such as Walter Dill Scott and Hugo Munsterberg, who applied the principles of psychology in education and business for the first time<sup>29</sup>. The role of psychological testing received importance in 1916 when National Academy of Sciences created the National Research Council, which consisted of group of psychologist whose major task was to develop tests and measures to select troop during World War I<sup>13</sup>.

At the same time, Frederick Winslow Taylor in 1911 advanced the concept of scientific management, which used time and motion studies for identifying not only ways to design manual labour, but also emphasised on, carefully selecting and training people to perform them. Thus validating the role of psychological testing in organizations<sup>52</sup>.

### 3. Selection in India

Melting boundaries between nations has led to adoption of global selection processes by many of the Indian firms. However it is important for the HR managers to pay attention to legal requirements and cultural values of the country; if not taken into consideration it can even lead to break down of system. Culture of a particular nation has significant effect on its business policies. According to<sup>24</sup> cultural dimension, India is high on uncertainty avoidance, and hence Indian organisation tend to use more types of selection tests, monitors their recruitment processes in more detail and collects objective data for making selection decisions<sup>40</sup>.

## 4. Different types of Selection Test

Different types of test may be administered on the candidate depending upon the job and company requirement. Some of the test used are<sup>46</sup>:

(a) **Ability tests:** they are used to determine how well individual can perform on job related task. Most of the ability test can be classified as cognitive and psychomotor ability test. Cognitive ability test includes verbal (grammar, vocabulary, and spelling), numerical, logical learning and perceptual abilities. One of the most widely used cognitive ability test is Wonderlic Personnel Test (Thomas & Scroggins, 2006). Psychomotor test assess individuals motor coordination, finger dexterity, and manual dexterity abilities;

(b) **Aptitude test:** its measures an applicant's capacity or ability to learn a given job if provided training. These test are excellent in predicting future employee performance. Some of the aptitude commonly used are; General Aptitude Test Battery, Career Ability Placement Survey, Differential Aptitude Tests;

(c) **Interest test:** this taps into vocational interests i.e. to find out likes and dislikes towards occupations, hobbies, etc. The most commonly used interest inventory is Strong Interest Inventory;

(d) **Personality test:** these test are used to measure the traits exhibited by individual in everyday life, which are required to perform certain kind of jobs. Some of the tests used in employee selection include the Hogan Personality Inventory, Employee Personality Inventory, NEO, and 16-PF. Personality tests are designed to measure such characteristics as an individual's emotional states, self-confidence, interpersonal relations, motivation, interests and attitudes<sup>2</sup>.

(e) **Job knowledge test:** this is used to measure how much a person knows about a job, and are mostly used in public sector;

(f) **Graphology test:** It is designed to analyze the handwriting of individual. The idea behind handwriting testing is that the way people write reveals their personality, which in turn should indicate their work performance;

(g) **Medical and drug test:** It reveals physical fitness of a candidate and also to detect the presence of drugs in body.

### 4.1 Cognitive Tests

Cognitive test are most widely and frequently used psychological test for selection purpose. These tests are designed to measure individual's mental abilities such as reasoning, numerical, verbal abilities. Numerous researches have shown cognitive ability test are related to job performance<sup>17,25</sup>; (Robertson & Smith, 2001). These tests are good predictor of job performance because most jobs require a baseline of intelligence<sup>35,37,44,48</sup>. Not only these tests are good predictor of future job performance but also are one the easiest and cheaper method of selection. Many studies have

found that scores of individuals on cognitive tests are also good predictor of economic gains of a company<sup>16,22</sup> and turnover rate<sup>18</sup>.

## 4.2 Personality Tests

While cognitive tests are more widely used, personality test in selection process is relatively a new phenomenon. These tests are used to assess individual personality. There has been sudden increase in use of personality test for many reasons. Firstly certain personality traits are good predictor of job performance<sup>5,15,34,42,41</sup>. Secondly, it is useful to avoid negligent hiring. Theft, drug abuse, poor attendance could not only prove to be a costly affair for an organisation but can have severe adverse impact on the organisation's image. Thus a personality test could help to assess the candidate honesty or will predict individual's likelihood in indulging in such activities, helping the organization to avoid negative hiring. Similarly these tests are used to determine whether the candidate has any emotional disorder or other harassing behaviour. Finally, due to fear of lawsuits usefulness of references has become limited and no organisation is willing to supply evaluative information of any kind about former employers.

## 5. Critical Evaluation

Psychological tests are used as tool of hiring in many organisation, however there are some issues associated with testing which are often neglected. This paper tries to critically evaluate them.

### 5.1 Are Psychological Attributes Measurable?

One of the important concern is whether the psychological attributes are even quantified? Since its conception, psychology has been driven to prove itself as a science which is objective and measurable. However, it remains a question whether human behaviour and abilities can be quantified or not. In the 19<sup>th</sup> century, the practitioner devised ways to measure mental phenomena to prove that psychology is like science. Since then psychometricians believe that abilities, personality traits and social attitudes can be measured and have used without any critical evaluation and continues to use psychological tests as measurement, as if no other form of discourse was available. Since then psychological tests used in military, education and industry was wrapped in the rhetoric of measurement because this packaging was thought to secure the place of psychology among science<sup>32</sup>.

(Michell, 2008)<sup>33</sup> wrote in an article, psychometrics is actually a pathological science because firstly psychometrics is based on assumption that abilities, personality traits and social attitudes are measurable but these assumptions lack attempts and adequate evidence. It is described as pathological because it prevents rather than promotes acquisition of relevant knowledge. Just as

prejudice in which people base their beliefs not on relevant evidence but on false assumptions for some secondary gains.

Scientific methods of testing, for example change in temperature, rise in platelets, internal level of inflammation, white cell counts etc., are accepted by everyone and considered valid measures because such measures are based on detailed and widely accepted models. However within the field of psychology there is no one single theory of psychological attributes which is accepted nor, therefore, of the true nature of individual differences. Psychological concepts may differ from one school of thought to another, for instance what is considered abnormal according to Freudian concept may be considered normal according to Humanistic approach. Hence, psychology fails to produce cumulative knowledge. In fact (Meehl P. E., 1978)<sup>31</sup> said "*theories rise and decline, come and go, more as a function of baffled boredom than anything else; and the enterprise shows a disturbing absence of that cumulative character that is so impressive in disciplines like astronomy, molecular biology and genetics*".

### 5.2 Validity

Other important issue concerned with testing is based on its validity. Assuming test are able to assess individuals abilities, are they measuring what they claim to measure? Here validity is concerned with whether test score provides information about employee's future performance. The success of any test depends on its ability to predict the future performance of the individual. This kind of validity is called as criterion validity. A test with good predictive validity can be fruitful for organisation and can lead to successful selection. However Professional psychologist have continuously cautioned the test users<sup>50</sup> because the field of testing has not been exempted from abortive tools. Thus Validity is a fundamental concern in testing.

A test could be considered good only if it is able to identify the future performance, but does the abilities assessed on basis of which hiring is based get translated into actual performance? There are few studies to report a relationship between tests scores and long term performance. Even if the test scores have reported some relationship with job performance there are other factors which accounts for majority of variance. (Alexander, 2007) indicates importance of these other factors in one's performance. For instance taking the classical Hawthorne study in consideration, in which the researcher believed change in physical condition can result in increase in productivity, however workers continued to perform well even when the conditions were withdrawn, demonstrating that social factors also plays an important role in determining ones performance. Important point to note in Hawthorne study is that focus of the researcher should not be only on social or physical factors as performance of individual is attributable to a range of factors. Researcher need to understand that human behaviour is complex and there are factors like physi-

cal, emotional, personal etc. those affect their performance. Also the use of test based on assumption that high scorer will continue to perform well in future and hence treating Intelligence and personality as static is a mistake, when actually they are dynamic (Hough & Oswald, 2000); (Robertson & Smith, 2001). This sort of validity also possess another problem that is lack of agreement about what is considered as good performance. (Robertson & Smith, 2001)<sup>39</sup> in their study reported that often validating criteria is chosen on basis of convenience, hence underestimating the true relationship between important performance criteria and tests scores.

### 5.3 Biases and Discrimination

For a long period of time, psychological test have been recognized to discriminate certain job applicants which have adverse effect on them. Numerous studies have reported that cognitive and personality tests tend to discriminate certain minority groups and women which have adverse effect on them<sup>9,21</sup>, where as some argue that these tests are biased towards white middle class male<sup>1</sup>. This brings us to next issue in psychological testing which is concerned with biases. Biases or discrimination are the most researched topic.

Biases occur when the test is not able to predict the performance of the individual. Biases in test exist because of two reasons lack of validity (here concerned with differential validity) and unequal representation of population in normative data. Differential validity refers to the computed validity which is different for different groups. Implication of differential ability that computed job performance for a same test will depend on the demographic characteristic of the applicant. Biases in test because of normative data are easy to understand because most of the tests norms are established on white middle class male population, and therefore one group will perform better than the other (Source). (Henrich, Heine, & Norenzayan, 2010)<sup>23</sup> in their article "The Weirdest People in the World" have critically analysed the extent to which the researches in psychological and behavioural science can be generalised, since most of the sample comprise of American undergraduate and there is large amount variation among members of different society in world. Not just there is variation among Americans and rest of the world but also variations have been reported among the sub population of America. For instance although Americans are most individualistic than any other country, educated Americans are found to be more individualistic in comparison to non-educated Americans. So if there is so much variation among population can the research finding or to be more specific norms established on certain section of population generalised? Despite such variations many theories and models are universally applied and hence can be viewed as uncritical export of west.

*Unfairness of test is related to the fact that "even if there is equal validity existed, tests might still be unfair if minority applicants made systematically lower scores than their abilities warranted, because of a number of culturally biased test items"*<sup>26</sup>

When any test underestimates the ability of any particular ethnic or religious group those tests are said to be culturally bias. For instance Scholars for long have argued that white Americans perform far better than another minority group on Wechsler Intelligence test, underestimating minorities Intelligence and therefore is considered to be culturally biases test<sup>27</sup>. Biases in test could be mainly because of three reasons<sup>51</sup>, **construct bias**: when there is overlap of definition across culture or different behaviours are associated with that particular culture; **method bias**: this refers to biases pertaining to factors associated with administration; **item bias**: these are the problem linked to every individual item on assessment. They may occur because of poor item translation, low familiarity, choice of cultural phases, nuisance associated with item wording. Another such example is of culturally bias test is MMPI (The Minnesota Multiphasic Personality Inventory) which is used to assess individual personality, the test at many religious and minority group has pathological. This is because the normative data is established upon middle class white males living in Minnesota. Because of this concern MMPI is has been replaced by MMPI-2 and also new more heterogeneous norms has been established, still it is believed that certain section of society remained un-represented.<sup>19,38</sup>

The following issues are mainly pertaining to personality testing:

### 5.4 Self Report

Most of the psychological tests used for assessment are self-rating method, in which the candidate chooses the most suitable option that defines him/her. These self-rating are accepted as the best source of information. But are these ratings even reliable?

It can be assumed that candidate giving test is aware of the job profile and hence have knowledge about the traits and characteristics required to perform those job. In such case the question of honesty is raised, whether the responses provided by the candidate even correct? There is a tendency of people to provide themselves in a more positive light<sup>36</sup>. Another concern regarding self-report method is no matter how objective and structured a questionnaire is there are always subjective elements involved in interpreting the stimuli. For instance, MMPI which is used for assessing pathology, is not free of subjective interpretation. For example in research article by (Meehl P. E., 1945)<sup>30</sup>, gives an example ,of one of the item for scale detecting psychopathic personality, "much of the time i feel i have something wrong or evil". It immediately raises a question, whether a psychopath actually interpret these question as a normal person do. Ideally a psychopath must answer true but they not tend to.

## 5.5 Invasion of Privacy

Final issue with respect to testing is of invasion of privacy. Many of test involve disclosing intimate and personal information. (Schultz & Schultz, 1986)pointed that sometimes personal question which have no relevance to job is included which leads to invasion of privacy and should be avoided. Information provided by candidates about their age, sex, disability, race or ethnicity, marital status etc. sometimes even becomes the base for discrimination.

## 6. Conclusion

This paper does not attempt to devalue the use of testing as method for selection, rather it attempts to highlight some of the major issue with respect to testing which are often overlooked. Testing can be a powerful tool in decision making process in personnel selection, if the test is chosen adequately and administered properly. The test developers should carefully establish the relation between the job performance and test scores. When using already established test its usefulness as a technique for a particular job and specific culture needs to be examined. Test selectors should be cautious about the possible biases associated with a test selected and its impact on the candidates. Confidentiality of the data should be maintained, and even when the candidate is not selected their results on the test should be communicated.

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