

INTRODUCTION TO PSYCHOLOGICAL TESTING

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- Definition of A Psychological Test:

- a) A Psychological test is a standardized procedure to measure qualitatively one or more than one aspect of a trait by means of a sample of verbal or non verbal behaviour.
- b) Bean (1951-11) : A psychological test is an organised succession of stimuli designed to measure quantitatively or to evaluate qualitatively some mental problem, trait or characteristic.
- c) Anastasi and Urbina (1997) : "Essentially an objective and standardized measure of sample of behaviour."

- History OF PSYCHOLOGICAL TESTING

- Measurement is the root of both biological and behavioural sciences. The history of both psychological and educational measurement dates back to around 2200 BC when Chinese officials were examined every third year to determine their fitness for office.
- By 206 BC to 220 BC, the use of test batteries became very common tests had become an established and accepted instrument for diverse topics like civil law, military affairs, revenue, agriculture.
- The western countries learnt about their testing programmes through the Chinese efforts. The British Government encouraged East India Company in 1832.

to follow the Chinese system as a method of selecting employees for overseas duty. Even the British Government adopted a similar system of testing to civil services in 1855. After this, French and German governments established the American Civil Service Commission that conducted various competitive examinations for certain government jobs.

- Most historians today seriously agree that the beginning of psychological testing relates to the experimental investigation of individual differences that flourished in Germany and Great Britain after 1850.

- Prior to 1850, psychology was not considered to be an independent science, but only a branch of philosophy.

- Any attempt to measure human behaviour through experiments was ridiculed. Beginning of 1850, psychology began to shake off the old relation with philosophy and started forming new alliances with biological sciences like physics, chemistry and biology which proved to be helpful in measuring human characteristics.

- The history of psychological (educational) measurement during the period of 1850-1900 was nourished by psychophysics, Darwin biology and clinical properties.

- The 19th century witnessed the development of a number of scientific tools and innovations in physics and chemistry and scientists were of the opinion that those physical methods could also be successfully tried in measuring psychological properties. As a result, psychophysics was born and experimental psychologists began to study the relationship

between physical stimuli and the experiences or sensations produced by them.

- The beginning of the 20th century was marked by a tremendous growth of psychological and educational tests.
- The first psychological test to appear was the Binet-simon intelligence scale. It proved to be one of the most promising verbal scales for measuring the intelligence of children.

During World War I and II, two well known tests 'Army Alpha and Army Beta' were developed. During the last 30 years or 60, a different trend has become evident. Much emphasis is now being put upon the methodology of development and use of measurement in almost all branches of psychology.

CHARACTERISTICS OF A GOOD TEST

- 1) **OBJECTIVITY** :- A Test must have the trait of objectivity. i.e. it must be free from the subjective element so that there is a complete interpersonal agreement among experts regarding the meaning of the item and scoring the test. Objectivity here relates to two aspects - objectivity of the test items and of the scoring system. By objectivity of items it is meant that all the items should be phrased in such a manner that they are interpreted in exactly the same way by all those who take the test. For ensuring objectivity of the item, items must have uniformity of order of presentation i.e. ascending or descending order. By objectivity of scoring is meant that the scoring method of the test should be a standard

one so that the complete uniformity can be maintained when the test is scored by different experts at different times.

2) **RELIABILITY** :- A Test must also be reliable. Reliability here refers to self correlation of the test. It shows the extent to which the results obtained are consistent when the test is administered one or more than once on the same sample with a reasonable time gap. Consistency in results obtained in a single administration is the index of internal consistency of the test and consistency in results obtained upon testing and retesting is an index of temporal consistency. Reliability, thus indicates both internal and temporal consistency. Types of reliability :-

- **Test-Retest Reliability** :- In test retest reliability the single form of the test is administered twice on the same sample with a reasonable time gap. Two administrations of the same test yield two independent sets of scores.
- **Internal consistency Reliability** :- Indicates the homogeneity of the test. The most common method of estimating internal consistency reliability is the split-half method in which test is divided into two equal or nearly equal halves.
- **Alternate Form Reliability** :- When reliability is calculated on the basis of data collected immediately on the basis of two administrations of the test.
- **Scorer Reliability** :- can be estimated by having a sample of test independently scored

by two or more examiners.

For a test to be called sound it must be reliable because reliability indicates the extent to which the scores obtained in the test are free from internal defects of standardization which are likely to produce errors of measurement.

3] **VALIDITY** :- Validity is another pre-requisite for a test. Validity indicates the extent to which the test measures what it intends to measure, when compared with some outside independent criterion. In other words, it is the correlation of the test with some outside criterion. The criterion should be an independent one and should be regarded as the best index of trait or ability of being measured by the test. Generally, validity of the test is dependent on the reliability because a test which yields in consistent results in ordinarily not expected to correlate with some outside independent criterion. Types of Validity :-

- **Construct Validity** :- Investigator decides to compute construct validity only when he is fully satisfied that neither any valid or reliable criterion is available to him nor any universe of content entirely satisfactory and adequate to define quality of the test.
- **Content Validity** :- when a test is constructed so that its content of term measures what the whole test claims to measure.
- **Criterion-related Validity** :- Is the one which is obtained by comparing the test scores with scores obtained on a criterion available at present or to

be available in the future.

- 4) Norms :- A test must also be guarded by certain norms. Norms refer to the average performance of representative sample on a given test. There are 4 common types of norms :-
- i) Age - Defined as average performance of representative sample of a certain age level on the measure of a certain trait or ability.
 - ii) Grade - Average performance of representative sample of a certain grades or class.
 - iii) Percentile Norms - Popular and common type of norm in psychological and educational test.
 - iv) Standard score - A norm which is based upon a standard score is known as standard score norm. Depending upon the purpose and use, a test constructor prepares any of these norms for his test. Norms help in interpretation of the scores. In absence of norms no meaning can be added to the score obtained on the test.

- 5) PRACTICABILITY :- A test must also be practicable from the point of view of the time taken in its completion, length, scoring etc. In other words, the test should not be lengthy and the scoring method must not be difficult nor one which can only be done by high specialized person.

- CLASSIFICATION OF A PSYCHOLOGICAL TEST :-

Psychologists have taken immense efforts in order to classify the psychological test from the point of view of different criteria which are :

a) Administrative conditions.

i) Individual tests are the ones that are administered to only one person at a time. They are often used by school psychologists and counsellors. Some individually administered tests are given orally and they require constant attention of the examiner. These tests are time-consuming and require the services of trained and experienced examiners. Eg → Kohs Block Design Test is an example of an individual test.

ii) Group tests are the ones that can be used among more than one person or in a group at a time. Besides adjustment, group tests are adequate for measuring cognitive skills to survey the achievements, strengths and weakness of the students in the classroom. Eg → Bell adjustment Inventory is an example of group test.

b) Scoring.

Scoring is one of the most vital part of a test.

i) Objective tests are those whose items are scored by competent examiners or observers in a way that there is no scope for subjective judgement or opinion, which leads to unambiguous scoring. Eg → multiple choice questions, true false etc.

Eg → Minnesota Multiphasic Personality Inventory (MMPI)

ii) Subjective tests are the tests whose items are scored by competent examiners or observers in a way in which there is existence of some scope for subjective judgement and opinion. Consequently, some elements

of vagueness and ambiguity is present in their scoring. These tests are also called essay test and are intended to answer an examiner's ability to organize a comprehensive answer, recall and select important information and present the same logically and effectively. Since in these test the examinee is free to write and organize the answer, they are also called on free answer tests.

c) Time Limit

Another manner of classifying tests is whether they emphasize time limit or not.

i) Power Tests are the ones with generous time limit and have items which are generally arranged in increasing order of difficulty. Eg. Aptitude tests like Numerical reasoning tests and Intelligence tests like Visual spatial processing or Raven's progressive matrices.

ii) Speed tests are the ones with severe time limit. but the items are comparatively easy. Very few examinees are supposed to make errors.

Eg. → clerical speed and Accuracy (CASA)

d) Nature/content of Items.

Psychological test can be categorized based on the nature of items, the content used there in; which are.

i) Verbal test is the one with items that stress upon reading, writing and oral expression as the primary means of communication. Instructions are printed or are in written format. These are read by the examiners and accordingly the items are answered.

Eg. → Numerical Reasoning test.

ii) A non verbal test is the one that uses symbolic

materials like figures, pictures etc. These tests make use in language in instruction, but the items do not use language. These tests are used with children as an attempt to measure the non verbal aspects of intelligence. Eg → Abstract reasoning.

iii) Performance tests are those which require the examinee to perform a task instead of answering some questions, where use of language is prohibited. Occasionally, oral language is used to give instruction or they may also be given through gesture or pantomime. Various kinds of performance test are available which are usually administered individually. Eg. → stem test.

iv) Non language test are the ones that do not rely upon any form of written, reading or spoken means of communication and remain entirely independent of the ability to use language in any way. Mode of instructions is usually either gestures or pantomime. These tests are usually administered to those individual who are unable to communicate in any form of ordinary language.

e) Purpose/objective.

In this criteria tests are usually classified into intelligence tests, personality tests, neuropsychological tests, aptitude tests and achievement tests.

f) standardization

Based on standardization tests are categorized into-
i) standardized tests are the ones that have been subjected to the procedures of standardization. However the meaning of the term 'standardization' due to

its controversial nature includes at least the condition given below.

→ There must be a standard manner of giving instructions in order to maintain the uniformity in the evaluation of all those who take the test.

→ There must be uniformity of scoring and an index of fairness of correct answer through the procedure of item analysis should be available.

→ Reliability and validity of the test must be established and the individuals for whom the test is intended should be explicitly mentioned.

ii) Teacher made tests are the ones which are constructed by teachers for use largely within their classrooms. The effectiveness of such tests depends upon the skill of teachers and his knowledge of test construction.

→ A standardized test should have norms.

iii) The items may come from any area of curriculum and maybe modified according to the will of the teacher. The rules for administration, scoring, norms are determined by the teachers. Psychological tests are classified in terms of various criteria and are used for wide variety of purposes.

- USES OF PSYCHOLOGICAL TESTING

Psychological tests are used for many purposes. It is very convenient to distinguish the following five uses of the test →

i) In classification

Psychological tests are used for many purposes. It is very are popularly used in making classification of

persons, that is for assigning the persons to one category rather than to another.

There are different types of classification, each an giving emphasis on particular purpose in assigning persons to categories. Important types of categories are placement, screening, certification and selection where psychological tests play a significant role in each of these types:

Placement refers to the sorting of persons into appropriate programmes according to their needs or skills. With the help of appropriate psychological tests, teacher often enroll in class some of the students into science faculty, some into social science, some into mathematics etc. Without the help of psychological tests, it is not possible to do such placements.

Screening refers to the procedures of identification of person with special characteristics or needs. With the help of psychological test psychometrician often screen persons into creative persons and persons having exceptional talent in abstract reasoning. They administer tests and on the basis of the score obtained are able to screen them in desired categories.

Certification and selection are done with the help of psychological tests. Certification implies that an individual has at least a minimum proficiency in some discipline or activity. When a person passes an certification examination it automatically confers some privileges. For example - when a driver passes driving exam, he gets a licence. This illustrates the process of certification. Selection is very similar to certificate, because it also confers some privileges on the part of the person who have been selected.

on the basis of test scores are for example, get admission into certain course or gain employment in the organization.

2] In Diagnosis and planning for Treatment.

Psychologists play a significant role in making diagnosis and in planning for treatment. Diagnosis means determining the nature of persons abnormal behaviour and classifying the behaviour pattern within an accepted system. Intelligence tests are considered important for diagnosis of mentally retarded children. Likewise, through some psychological tests, a diagnosis of learning disability can easily be done with the help of MMPI, a clinical psychologist readily diagnose persons with pathological traits. A proper diagnostic programme not only provide assignment of a label but also the choice for treatment. When a child is diagnosed as mentally retarded or having learning disability, a planning for his treatment is accordingly done so that the maximum help can be rendered.

3] In self knowledge.

Psychological tests are also useful in providing self knowledge to the test takers to the extent that such knowledge tends to change their career path. Every administration of psychological test given a feedback to the test takers regarding the level of trait or ability being assessed. As a consequence, they bring a change in their desire direction and mold their path for betterment.

4] In Evaluation of Programme.

Psychological tests are often used in evaluation of various types of educational and social programmes. In schools and colleges, different type of programme for betterment of academic achievement are carried out and the person to know about its impact. Such impacts are easily assessed with the help of various types of achievements and intelligence tests. Likewise, people in general and political parties in perforce wants to assess the outcome of a social programme carried out for a purpose of say, verifying the IQ levels of disadvantaged group. This is also done with the help of various types of a psychological test.

5] In Theoretical And Applied Branches of Behaviour Research.

Psychological tests are very successful in research. They are often used in both theoretical and applied branches of research. With the help of such tests, ~~we~~ psychologists frequently investigate theoretical matters. That we have no immediate obvious practical applications. Here, we can take example of ~~Witk~~ Wilkin (1949) who for analyzing perceptual field dependence, developed the tilting room tilting chair test (TRTC). In fact TRTC encourage a good deal of research, on personality development but was seldom applied to any practical problem of testing. Take example of a applied field, suppose neuropsychologists wish to hypothesis that low level of lead absorption produces behavioural deficit in children. This hypothesis can be easily tested by examining lead. Burdened children and normal children with

help of psychological test, it has been reported that low level lead absorption in children produces decreasment in IQ, impairment in reactive time and increase in undesirable classroom behaviours. This automatically shows that psychological tests are useful in applied arean too and there should not be any debate about the validity of testing based research findings. Thus, we see that psychological tests are useful in varieties of the field. often, students remain curious to know from where to obtain information about such tests. In particular, here it can be said that information about psychologists tests. Reference books, journals, data-base and test manuals.

The best single reference source of information is mental measurements Year Book (MMY) which is reviewed time and again to incorporate the new tests. Information can also be had from the catalogue of major test publishers. Appendix C provides the names of foreign and Indian test publishers. Information about test can be had from various journals. Appendix D provides the list of important journals in the field of behavioural researchers.

- ETHICAL ISSUES IN PSYCHOLOGICAL TESTING:

Psychological testing refers to all the possible users, applications and underlying important concepts of psychological tests. To maintain its proper uses and applications, the American Psychological Association has officially adopted a set standard and rules in 1953. The current version, called ethical principles of psychologists and code of conduct (APA, 1992), consists of a preamble and six general principles which guide psychologists and code towards the highest ideas in their profession. The major ethical or moral issues relating to psychological testing can be described as follows:

1] Issues of Human Rights :-

Today the field of psychological testing has been nearly influenced by recognition of various types of human rights. Among these rights is the right to not be tested. In fact, persons who don't want to subject themselves to testing should not and ethically can't be forced to accept this. Moreover, individuals who finally decide to subject themselves to testing, have right to know their test score their interpretations as well as the basis of any decisions that affect their lives. In the name of guarding the security of tests, tests interpretation cannot deprive the test taker from the right to know the basis of detrimental or adverse decisions. Test interpreters have an ethical obligation to provide protection to these human rights whereas potential test takers are responsible for demanding their rights. Such awareness of human rights today is casting a very important influence

on psychological testing and also shaping its future.

2) Issue of Labelling :-

on the basis of psychological testing, a person is given a certain label or diagnosed as having a certain psychiatric disorder. This labelling has many harmful effects.

Eg. → Suppose a person has been diagnosed with chronic schizophrenia which in fact has a little chance of being cured. Labelling someone as chronic schizophrenic may be a self-fulfilling prophecy. Since disorder is incurable the person remains a chronic case. Thus, labelling can stigmatize a person for life and it also affects one's access to help. Labelling will not only stigmatize person but it will also lower tolerance for stress and make treatment difficult. In this view, a person should have right to not to be labelled.

3) Issue of Invasion of Privacy :-

When people respond to items of psychological tests, they have little idea of what is being revealed by their responses but somehow, they feel that their privacy has been invaded. Such a feeling is definitely detrimental for people. Dahlstrom (1969) investigated this issue in detail and pointed out two related aspects of this issue. He has pointed out that this issue of invasion of privacy is based on serious misunderstanding. In fact, psychological tests have very limited and pinpointed aim and they can't

invade the privacy of person. Another aspect of this issued point by Dahlstorm (1969) is the ambiguous nature of the notion of invasion of privacy itself. Psychologists are ethically and even legally bound to maintain confidentiality. In fact the ethical code of APA (1992) has included, confidentiality, which obviously dictates that personal information obtained by psychologists from any source is communicated to other only with the person's consent.

4] Issue of Divided Loyalties :-

This is one of the vital issues of psychological testing and was first pointed out by Jackson and Mesiek (1967) and still today remains a central problem in the field of psychological testing. In fact divided loyalties today is a major dilemma for psychologists who use the test in different fields such as industry.

- LIMITATIONS OF PSYCHOLOGICAL TEST:

Psychological tests are not without limitations, there are some of the important limitations, they are as follows :

1] Psychological tests represents an invasion of privacy :-

Psychological tests maybe invasion of privacy if they are used without the permission of the tests to obtain personal and sensitive information.

2] Psychological tests permanently categorize the persons :-

on basis of performance of psychological tests, the

testees or examinees are given certain categories like mentally retarded, gifted, brain damaged etc. and the authority behaves accordingly disregarding evidence of any future change. The examinee can change and greater care should be taken in the interpretation and use of the test results.

3) Psychological tests measure only limitations and beneficial aspects of behaviour :-

It is said that the psychological tests cannot measure the most important human traits. They force the examinees to take decisions based on superficial and relatively unimportant criteria.

4) Psychological tests create anxiety :-

It has been reported that when the assessment is to be done through psychological tests, the examinees feel anxious and their anxiety affects their performances, whereas the examinees who are familiar with specific types of tests are less anxious than those who are unfamiliar with the test contents.

5) Psychological tests penalize bright and creative examinees :-

Psychological tests are insensitive to a typical and creative response. Such responses are not given much credit thus providing a discrimination against the talented examinees; School, clinics, govt. military etc. A psychologist has to face conflict which arises when the individual welfare is put at odds on the one hand and that of the institution that employs the psychologist on the other hand.

Eg- Suppose a psychologist working for an industrial firm to identify individuals who are accident prone, has the responsibility towards the institution to identify such person's as well as the responsibility to protect the rights and welfare of the person's seeking employment. Here, the psychologist's loyalty stands divided.

g) Responsibility of test constructors and test users :- Ethical issues also put some responsibility on test constructors and test users. The test constructor is responsible for providing all necessary information. Latest standards for test use state that test constructors must provide test manual which may clearly state the appropriate use of test, including data relating to reliability validity and norms, clearly specify about the scoring and administration standard.

- REFERENCES.

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