

## LESSON 15

### UNDERSTANDING INDIVIDUAL DIFFERENCES: THE CASE OF INTELLIGENCE

#### SUMMARY

In our everyday experience we find that people differ in their motivation, approach to problems, interest and ability to learn. The study of these individual differences forms an important field of psychology. Assessing intelligence, personality, interest, creativity and other attributes with the help of psychological tests has become an established practice. In selecting people for jobs, diagnosing of mental handicap and monitoring psychological development have provided impetus to develop a variety of tests to suit different groups of people (e.g., children, adults, educated, illiterate). The term IQ has now become a common word and people often want to know their IQ and personality.

#### Nature of Psychological assessment

Psychological assessment refers to the use of specific procedures employed in evaluating the personal qualities, behaviours and abilities of individuals. Scientific psychology tries to systematize the procedure of judgement so that assessment can be made with a minimum error and maximum accuracy. A **psychological test** is a structured technique used to

generate a carefully selected sample of behaviour.

In order to be useful for the purpose of drawing inferences about the person being tested or examined it is necessary that the test should be reliable, valid and standardized.

#### Reliability

- The degree to which a test or other measurement instrument is free of random error, yielding the same results across multiple applications to the same sample.
- A test is reliable if it measures something consistently.

#### Validity

- The validity of a test is the degree to which it measures what it intends to measure.

#### Standardization

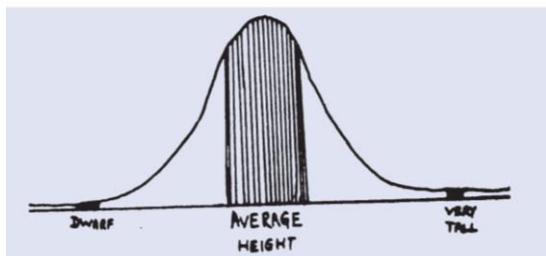
- It involves establishing the procedure of administration, norms of a test to all persons in the same way under the same condition.
- Norms involve comparison of a score of a person with those of others in a defined group.
- Standardization ensures uniformity and objectivity.

Psychologists have developed a variety of tests to measure different human characteristics. Psychologists frequently use tests of ability and personality. The tests of ability to tell what an individual can do when they are at his/her best. These tests measure capacity as potential rather than achievement. Tests of intelligence and aptitude come under this

category. Aptitude refers to the ability of a person to learn a particular kind of skill required in a specific situation. Personality tests measure the characteristic ways of thinking, feeling and behaving.

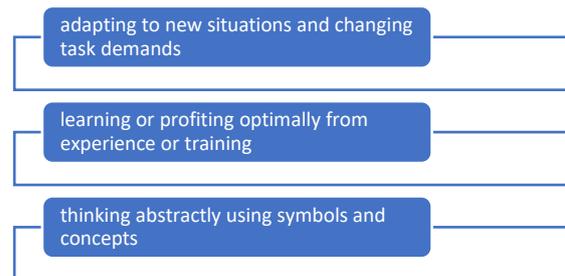
## The Concept of Intelligence

There are very few things which are so obvious and illusive as 'intelligence.' The differences in intellectual achievement are expressed in performance. If we collect information about people's intelligence from a large sample and examine the pattern of distribution, a large majority of the people fall in the middle range while a small proportion lies in extreme categories. Observe the graph given below. Similarly, very few people have extraordinary level of intelligence. Similarly, very few people come in the categories of profound and severe retardation.



Intelligence is abstract in nature. Binet and Simon in 1905 were asked by the French Minister of Public Instruction to help in teaching mentally retarded children. These psychologists considered it necessary to measure intelligence for identifying these mentally retarded children. They tested children with the help of a

test and compared their scores with the average score obtained by normal children at each age level. Children who were two mental-age years behind their chronological age were considered as "retarded." Most researchers relate intelligence to the following broad classes of abilities:



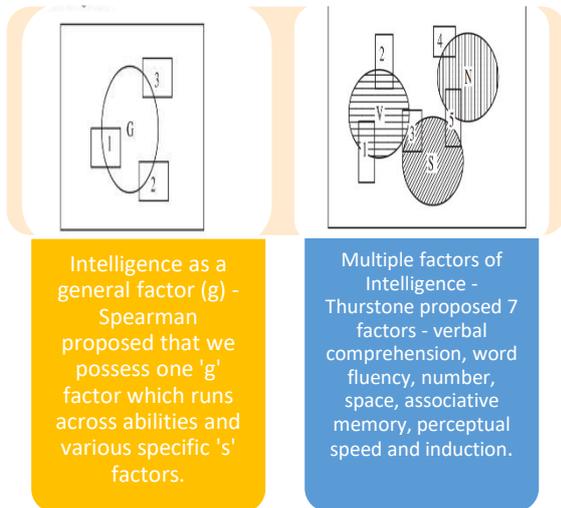
The various view points about intelligence may be put into two broad categories namely psychometric or factor theories and process-oriented views. Factor theories try to identify the factor (s) constituting intelligence, and process theories describe intelligence in terms of the specific tasks, processes or operations involved in intellectual functioning.

Thurstone proposed that intelligence consists of 7 factors namely, verbal comprehension, word fluency, number, space, associative memory, perceptual speed and induction (or general reasoning).

## Factorial Viewpoint in Intelligence

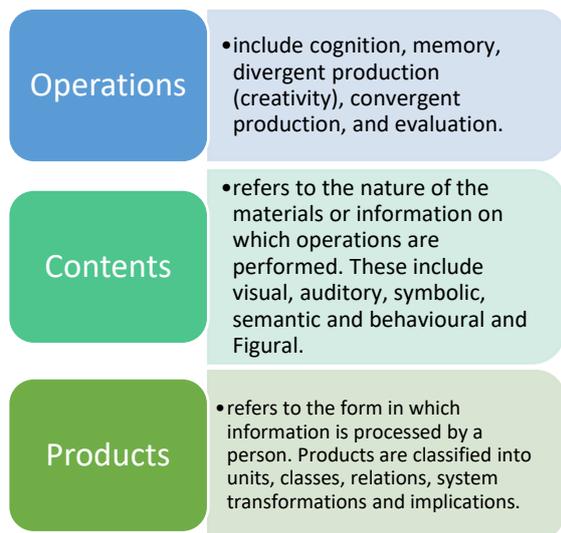
Here Factor analysis is used to uncover the structure of Intelligence. Thurstone developed a test of perceptual speed and

induction (or general reasoning). He developed a test of Primary Mental Abilities (PMA) to measure these factors.



### The Structure of Intellect

Guilford gave the structure of Intellect (SI) model. This model classifies intellectual traits along main three dimensions. The traits are briefly described in the diagram below:



The factorial viewpoint presents a view of intelligence in terms of trait organisation.

Using factor analysis, Anastasi has rightly concluded that human

intelligence consists of “that combination of cognitive skills and knowledge demanded, fostered, and rewarded by the experiential context within which the individual functions.”

### Intelligence as a process

Triarchic Theory

Robert Sternberg analysed intelligence in three aspects i.e. componential, experiential and contextual.

**componential** includes - meta component or higher order control processes, performance component, acquisition component and transfer component

**experiential** one refers to the way people’s mental world and the outer or external world are related to each other

**contextual** (practical intelligence) refers to the way individuals share their environments, adapt to them and try to get maximum from the available resources.

Theory of Multiple intelligence

Haward gardner says that intelligence is not a single entity, rather there are multiple intelligences each distinct from others. He has so far identified eight types of intelligence: linguistic, logical, mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal and natural .

### Intelligence in the non-cognitive domains

Wisdom - It comprises a unique blend of cognitive, interpersonal, social and personality attributes. It is achieved as a result of successfully negotiating the conflict between integrity and

despair or as a result of transcendence of preoccupation with one's self. It is knowledge that effectively integrates emotional and cognitive components.

Practical wisdom - It emphasizes on the practical achievement of personal goals, plans and intentions. It is characterized by a flexible and applied concern for the practical contingencies, especially in the face of uncertainty.

Social Intelligence - It represents the efforts of an individual to solve the problems of daily life and work toward the desired goals.

Emotional Intelligence - It is defined as the ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and action. People high on emotional intelligence show greater degree of emotional self-awareness, manage emotions well, harness emotions productively, have empathy and handle relationships effectively.

### **Intelligence test**

Intelligence test can be classified into verbal and non-verbal (performance) and individual and group tests. The performance tests are used for the assessment in case of illiterates and people with certain types of physical handicap. Individual tests are those which can be administered on one person at a time and group tests can be administered simultaneously on several persons.

### **Stanford-Binet Intelligence Test**

- In 1916, Terman and his associates revised the Binet-Simon Test at Stanford University.
- Currently it is in its 4<sup>th</sup> Edition - S-B IV.
- 15 tests selected to represent four major cognitive areas: verbal reasoning, abstract/visual reasoning, quantitative reasoning, and short-term memory.
- The age range covered is 2 Years to 18+.
- The basal age and ceiling age are calculated.
- Currently, Standard Age scores (SAS) are given for all 15 tests.

### **The Wechsler Scales**

Developed by David Wechsler for adult and children.

used as measures of general intelligence as well as a possible aid in psychiatric diagnosis.

Current version for adult WAIS-R covers age 16 to 74 years

Current version for children WISC-III covers age 6 to 16 years 11 months

Wechsler Pre-school and Primary Scale of Intelligence-Revised (WPPSI) which covers the range of 3 years to 7 years and 3 months

#### **Draw-A-Man Test**

Developed initially by Goodenough, this nonverbal test requires the test taker to draw or make a picture of a man. Credit is given for the inclusion of individual body parts, clothing details, proportion, perspective, and similar features. Moderate reliability and validity have been reported for this test. In India Pramila Phatak has developed norms for this test.

### Raven's Progressive Matrices

- It measures general intelligence or 'g' factor.
- It consists of a set of matrices, or arrangement of design elements into rows and columns from each of which a part has been removed.
- The easier items require accuracy of discrimination; the more difficult items involve analogies, permutations and alternations of patterns, and other logical relations.
- It is available in three forms differing in the level of difficulty –
- Standard Progressive Matrices (SPM) for age 6 and 80 years
- The Coloured Progressive Matrices (CPM) for younger children and for special groups
- The Advanced Progressive Matrices (APM) is for adolescents and adults,

### Uses of Intelligence Test

Intelligence tests are used in many settings to help in a number of activities such as-

**Selection of people for various jobs** - in most of the procedures of personnel selection assessment of intelligence constitutes an important component. With the help of intelligence tests applicants' intelligence level is assessed and the results are used by the employer in the process of decision making about the applicants.

**Diagnosis of mental handicap** - in most of the procedures of personnel selection assessment of intelligence constitutes an important component. With the help of intelligence tests applicants' intelligence level is assessed and the results are used by the employer in the process of decision making about the applicants.

**Guidance and counselling, and research in the area of intellectual development** - Career of vocational guidance is assuming an important role in the context of education. In this context, psychologists use intelligence tests to assess the capability of the people and use this information in deciding about the choice of career options.

### Explaining differences in human

Studies indicate that the scores of more closely related people are quite similar. In particular the evidence from the studies of adopted children and of identical twins separated early in life and raised in different homes show this trend. The studies of environmental deprivation and enrichment have indicated the effects of environmental factors on IQ. Interestingly females are found to score higher than males with respect to verbal abilities while males tend to score higher in visual-spatial abilities. Such differences may reflect the evolutionary history of human species.

Another issue about the group differences relates to the cultural bias of intelligence tests. It has been argued that many of the tests have been developed in western cultural context. As a result, children familiar with western cultural context score higher than those who are not

familiar with it. This is why some efforts have been made to develop culture fair test like Cattell's Culture Fair Test of Intelligence.

### **Evaluate yourself**

1. What is the difference between factor and process theory of intelligence?
2. Describe the different test of intelligence.
3. Discuss the different use of intelligence test.