

1. Details of Module and its structure

Module Detail	
Subject Name	Psychology
Course Name	Psychology 03 (Class XII, Semester - 1)
Module Name/Title	Variations in Psychological Attributes - Part 3
Module Id	lepy_10103
Pre-requisites	Knowledge of individual differences, assessment
Objectives	<p>After going through this lesson, the learners will be able to understand the following:</p> <ul style="list-style-type: none">• To understand psychological attributes on which people differ• To learn how psychologists assess intelligence to identify intellectually disabled and gifted individuals• Understand how intelligence has different meaning in different cultures• Understand the concept & significance of emotional intelligence
Keywords	Nature, Nurture, Intellectually Disabled, Intellectual Giftedness, Types of Tests, Culture and Intelligence, Emotional Intelligence, Emotional Quotient

2. Development Team

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Individual Differences in Intelligence

Have you often wondered as to why some people are more intelligent than others? Do these differences stem from heredity- genes and codes we inherit from parents? Or is it because of environmental factors- the different conditions around us that affect our intelligence.

Heredity (nature) and the environment (nurture) are so connected in their impact on intelligence that it remains difficult to conclude which, if either is most responsible for deciding an individual's intelligence.

Intelligence: Interplay of Nature and Nurture

The evidence for hereditary influences on Intelligence comes mainly from studies on twins and adopted children. The intelligence of identical twins reared together correlate almost 0.90. Twins separated early in childhood also show considerable similarity in their intellectual, personality and behavioural characteristics. The intelligence of identical twins reared in different environment correlate 0.72, those of fraternal twins reared together correlate almost 0.60, and those of brothers and sisters reared together correlate almost 0.50, while siblings reared apart correlate about 0.25.

Another line of evidence comes from the studies of adopted children, which show that children's intelligence is more similar to their biological rather than adoptive parents.

With respect to the role of environment, studies have reported that as children grow in age; their intelligence level tends to move closer to that of their adoptive parents. Children from disadvantaged homes adopted into families with higher socio-economic status exhibit a large increase in their intelligence scores. There is evidence that environmental deprivation lowers

intelligence while rich nutrition, good family background, and quality schooling increases intelligence.

There is a general consensus among psychologists that intelligence is a product of complex interaction of heredity (nature) and environment (nurture). Heredity can best be viewed as something that sets a range within which an individual's development is actually shaped by the support and opportunities of the environment.

Correlations found in different studies of intelligence

Studies	Correlation
Identical twins reared together	0.90
Identical twins reared in different environments	0.72
Fraternal twins reared together	0.60
Siblings reared together	0.50
Siblings reared apart	0.25



Note: 1st image can be drawn in CIET

Source: <http://www.publicdomainpictures.net/pictures/60000/nahled/twins-playing-dolls.jpg>

Source: https://cdn.pixabay.com/photo/2016/06/08/09/19/boy-1443458_960_720.png

Assessment of Intelligence

In the early 1900s, the French psychologist Alfred Binet (1857–1914) and his colleague Theodore Simon (1872–1961) began working in Paris to develop a measure that would separate students who were expected to be superior learners from students who were expected to be slower learners. The aim was to help teachers better educate these two different groups of students.



Source:https://en.wikipedia.org/wiki/Lewis_Terman#/media/File:Lewis_Madison_Terman.jpg

- In 1905, Alfred Binet and Theodore Simon made the first successful attempt to measure intelligence.
- In 1908, the scale was revised and the concept of Mental Age (MA) which is a measure of a person's intellectual development relative to people of her/his age group. Chronological Age (CA) is the biological age from birth.
- Retardation was defined by Binet and Simon as being two mental age years below the chronological age.
- The concept of IQ was devised by a German psychologist, William Stern in 1912.
- IQ means Intelligence Quotient (IQ) which refers to mental age divided by chronological age, and multiplied by 100.
- Formula of $IQ = MA/CA \times 100$ (the number 100 is used as a multiplier to avoid the decimal point)
- When $MA = CA$ then $IQ = 100$ When $MA > CA$ then $IQ > 100$ When $MA < CA$ then $IQ < 100$
- For example- 1) Ram is a 10 year old child with a mental age of 12 years. According to the formula used, his IQ would be 120 (higher than 100 as his mental age is higher than chronological age)
- 2) Rashi is a 10 year old child with mental age of 7 years. According to the formula used, her IQ would be 70 ($7/10 * 100$).
- The average IQ in the population is 100, irrespective of age.
- IQ scores are distributed in the population in such a way that the scores of most people tend to fall in the middle range of the distribution. Only a few people have either very

high or very low scores. The frequency distribution for the IQ scores tends to approximate a bell-shaped curve, called the normal curve. This type of distribution is symmetrical around the central value, called the mean.

- The mean IQ score in a population is 100.
- People with IQ scores in the range of 90-110 have normal intelligence. Those with IQ below 70 are suspected to have 'intellectual disability', while persons with IQ above 130 are considered to have exceptional talents.

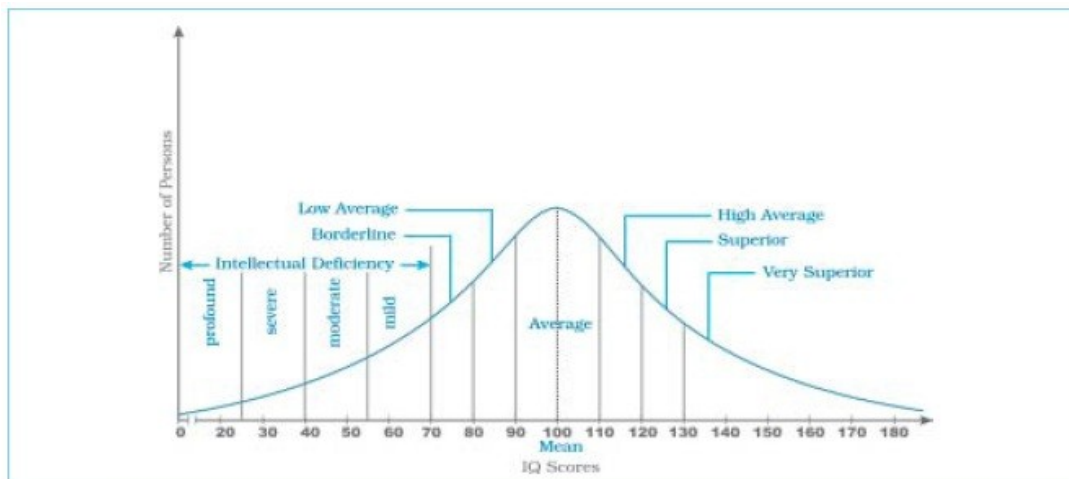


Fig.1.2 : Normal Curve Pattern Showing Distribution of IQ Scores in the Population

Source: NCERT textbook Class XII psychology chapter 1 page 11

Table: Classification of People on the Basis of IQ

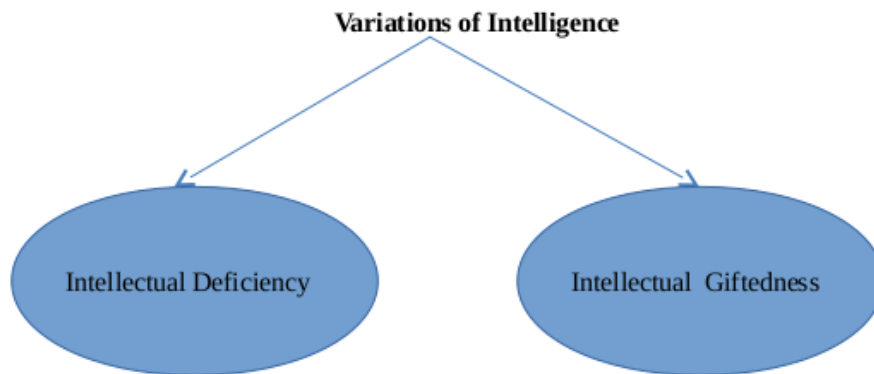
Iq Range	Descriptive Label	Per Cent in the Population
Above 130	Very superior	2.2
120-130	Superior	6.7
110-119	High average	16.1
90-109	Average	50.0
80-89	Low average	16.1
70-79	Borderline	6.7
Below 70	Intellectually disabled	2.2

Source: <https://schools.aglasem.com/23597>

All persons do not have the same intellectual capacity; some are exceptionally bright and some are below average. One use of intelligence assessment is to identify persons at these extremes of intellectual functioning.

Persons falling in these extremes could be put in two different groups. The persons in the first group are called intellectually gifted; those in the second group are termed intellectually

disabled or mentally challenged or mentally retarded. These two groups deviate considerably from the normal population in respect of their cognitive, emotional, and motivational characteristics.



Intellectual Deficiency:

The children who face enormous difficulty in learning even very simple skills are called to have intellectual deficiency and are termed as ‘intellectually disabled’ (‘mentally challenged’ or ‘mentally retarded’). As a group, there is wide variation among intellectually disabled.

The American Association on Mental Deficiency (AAMD) views intellectual disability as “significantly sub-average general intellectual functioning existing concurrently with deficits in adaptive behaviour and manifested during the developmental period”. This definition points to three basic features.

- First, in order to be judged as intellectually disabled, a person must show **significantly sub-average intellectual functioning**. Persons having IQs below 70 are judged to have sub-average intelligence.
- The second relates to **deficits in adaptive behaviour**. Adaptive behaviour refers to a person’s capacity to be independent and deal effectively with one’s environment.
- The third feature is that the deficits must be observed during the **developmental period**, that is between 0 and 18 years of age.

Individuals who are categorised as having intellectual disability show significant variation in their abilities, ranging from those who can be taught to work and function with special attention, to those who cannot be trained and require institutional care throughout their lives.

The different levels of intellectual disability are:

Category	Iq Range
MILD	IQs 55 to approximately 70
MODERATE	IQs 35-40 to approximately 50-55
SEVERE	IQs 20-25 to approximately 35-40
PROFOUND	IQs below 20-25

Although the development of people with mild disability is typically slower than that of their peers, they can function quite independently, hold jobs and families. As the level of disability increases, the difficulties are strongly marked. The people with moderate disability lag behind their peers in language and motor skills. They can be trained in self-care skills, and simple social and communication skills. They need to have moderate degree of supervision in everyday tasks. Individuals with profound and severe disability are incapable of managing life and need constant care for their entire lives.

Intellectual Giftedness

Intellectually gifted individuals show higher performance because of their outstanding potentialities. The study of gifted individuals began in 1925, when Lewis Terman followed the lives of about 1500 children with IQs of 130 and above to examine how intelligence was related to occupational success and life adjustment.

Although the terms ‘talent’ and ‘giftedness’ are often used interchangeably, they mean different things.

Giftedness is exceptional general ability shown in superior performance in a wide variety of areas.

Talent is a narrower term and refers to remarkable ability in a specific field (e.g., spiritual, social, aesthetic, etc.).

The highly talented are sometimes called ‘prodigies’.

It has been suggested by psychologists that giftedness from the teachers’ point of view depends on a combination of high ability, high creativity, and high commitment.

Gifted children show early signs of intellectual superiority. Even during infancy and early childhood, they show larger attention span, good recognition memory, preference for novelty, sensitivity to environmental changes, and early appearance of language skills.

To equate giftedness with brilliant academic performance is not correct. Athletes who show superior psychomotor ability are also gifted. Each gifted student possesses different strengths, personalities and characteristics.

Some Important Characteristics of Gifted Children are



Source: https://cdn.pixabay.com/photo/2016/06/25/13/32/poster-1478892_960_720.jpg

- Advanced logical thinking, questioning and problem solving behaviour.



Note: similar image can be drawn in CIET

- High speed in processing information.
- Superior generalisation and discrimination ability.
- Advanced level of original and creative thinking.



Source: <https://static.pexels.com/photos/326586/pexels-photo-326586.jpeg>

- High level of intrinsic motivation and self-esteem.
- Independent and non-conformist thinking.
- Preference for solitary academic activities for long periods.

Performance on intelligence tests is not the only measure for identifying the gifted. Many other sources of information, such as teachers' judgment, school achievement record, parents' interviews, peer and self-ratings, etc. can be used in combination with intellectual assessment. To reach their full potential, gifted children require special attention and different educational programmes beyond those provided to normal children in regular classrooms. These may include life enrichment programmes that can sharpen children's skills in productive thinking, planning, decision making and communication.

Types of Intelligence Tests

- i. Individual or Group tests
- ii. Verbal, Non- Verbal, or Performance tests
- iii. Culture- Fair or Culture-Biased tests

Individual or Group Tests

- i. An individual intelligence test is one which can be administered to one person at a time. A group intelligence test can be administered to several persons simultaneously.
- ii. Individual tests require the test administrator to establish a rapport with the subject and be sensitive to her/his feelings, moods and expressions during the testing session. Group tests, however, do not allow an opportunity to be familiar with the subjects' feelings.
- iii. Individual tests allow people to answer orally or in a written form or manipulate objects as per the tester's instructions. Eg. Koh's Block Design Test

Verbal, Non-Verbal, or Performance Tests

- An intelligence test may be fully verbal, fully non-verbal or fully performance- based, or it may consist of a mixture of items from each category.
- Verbal tests require subjects to give verbal responses either orally or in a written form. Therefore, verbal tests can be administered only to literate people. Eg. Group Test of Intelligence by Prayag Mehta
- The non-verbal tests use pictures or illustrations as test items. Raven's Progressive Matrices (RPM) Test is an example of a non-verbal test. In this test, the subject examines an incomplete pattern and chooses a figure from the alternatives that will complete the pattern.

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- Performance tests require subjects to manipulate objects and other materials to perform a task. Written language is not necessary for answering the items. For example, Kohs' Block Design Test contains a number of wooden blocks. The subject is asked to arrange the blocks within a time period to produce a given design. A major advantage of performance tests is that they can be easily administered to persons from different cultures.

Culture-Fair or Culture-Biased Tests

Intelligence tests can be culture-fair or culture-biased. Many intelligence tests show a bias to the culture in which they are developed. Tests developed in America and Europe represent an urban and middle class cultural ethos. Hence, educated middle class white subjects generally perform well on those tests. The items do not respect the cultural perspectives of Asia and Africa. The norms for these tests are also drawn from western cultural groups. It is nearly impossible to design a test that can be applied equally meaningfully in all cultures. Psychologists have tried to develop tests that are culture-fair or culturally appropriate, i.e. one that does not discriminate against individuals belonging to different cultures. In such tests, items are constructed in a manner that they assess experiences common to all cultures or have questions in which language usage is not required. Non-verbal and performance tests help reduce the cultural bias usually associated with verbal tests.

Misuses of Intelligence Tests

Intelligence tests serve many useful purposes such as selection, counselling, guidance, self-analysis, and diagnosis. Unless used by a trained investigator, they may be misused either intentionally or unintentionally. Some of the ill-effects of intelligence testing by naive testers are:

- Poor performance on a test may attach a stigma to children and thereby adversely affect their performance and self-respect.
- The tests may invite discriminating practices from parents, teachers and elders in the society.
- Administering a test biased in favour of the middle class and higher class populations may underestimate the IQ of children coming from disadvantaged sections of the society.

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- Intelligence tests do not capture creative potentialities and practical side of intelligence, and they also do not relate much to success in life. Intelligence can be a potential factor for achievement in various spheres of life.

Keeping in mind all the misuses of intelligence tests that happen, we should guard against erroneous practices associated with intelligence tests and take the help of trained psychologists to analyse an individual's strengths and weaknesses.

Intelligence Testing in India

- S.M. Mohsin made a pioneering attempt in constructing an intelligence test in Hindi in the 1930s.
- C.H. Rice attempted to standardise Binet's test in Urdu and Punjabi.
- At about the same time, Mahalanobis attempted to standardise Binet's test in Bengali.
- Attempts were also made by Indian researchers to develop Indian norms for some western tests including RPM, WAIS, Alexanders's Passalong, Cube Construction, and Kohs' Block Design.
- Long and Mehta prepared a Mental Measurement Handbook listing out 103 tests of intelligence in India that were available in various languages.
- Since then, a number of tests have either been developed or adapted from western cultures.
- The National Library of Educational and Psychological Tests (NLEPT) at the National Council of Educational Research and Training (NCERT) have documented Indian tests.
- Critical reviews of Indian tests are published in the form of handbooks. NLEPT has brought out the handbooks in the area of- intelligence, aptitude, personality, attitudes, and interests.

Some of the tests developed in India are listed below-

Verbal

- CIE Verbal Group Test of Intelligence by Uday Shankar
- Group Test of General Mental Ability by S. Jalota
- Group Test of Intelligence by Prayag Mehta
- The Bihar Test of Intelligence by S.M. Mohsin

- Group Test of Intelligence by Bureau of Psychology, Allahabad
- Indian Adaptation of Stanford-Binet Test (Third Edition) by S.K. Kulshrestha
- Test of General Mental Ability (Hindi) by M.C. Joshi.

Performance

- CIE Non-verbal Group Test of Intelligence
- Bhatia’s Battery of Performance Tests
- Draw-a-Man Test by Pramila Pathak
- Adaptation of Wechsler Adult Performance Intelligence Scale by R. Ramalingaswamy

Culture and Intelligence

A major characteristic of intelligence is that it helps individuals to adapt to their environment. The cultural environment provides a context for intelligence to develop. Vygotsky, a Russian psychologist, has argued that culture provides a social context in which people live, grow, and understand the world around them.

For example- (refer to the table below)

Technologically less developed societies	Technologically developed societies
Social and emotional skills in relating to people are valued and are considered to represent intelligence.	Personal achievement founded on abilities of reasoning and judgment is considered to represent intelligence.

Culture is a collective system of customs, beliefs, attitudes, and achievements in art and literature.

A person’s intelligence is likely to be tuned by these cultural parameters.

Many theorists have regarded intelligence as attributes specific to the person without regard to their cultural background. The unique features of culture now find some representation in theories of intelligence. Sternberg’s notion of contextual or practical intelligence implies that intelligence is a product of culture.

Vygotsky also believed that cultures, like individuals, have a life of their own; they grow and change, and in the process specify what will be the end-product of successful intellectual development. According to him, while elementary mental functions (e.g., crying, attending to mother’s voice, sensitivity to smells, walking, and running) are universal, the manner in which

higher mental functions such as problem solving and thinking operate are largely culture-produced.

Technologically advanced societies adopt child rearing practices that foster skills of generalisation and abstraction, speed, minimal moves, and mental manipulation among children. These societies promote a type of behaviour, which can be called technological intelligence. In these societies, persons are well-versed in skills of attention, observation, analysis, performance, speed, and achievement orientation. Intelligence tests developed in western cultures look precisely for these skills in an individual.

Technological intelligence is not so valued in many Asian and African societies. The qualities and skills regarded as intelligent actions in non-western cultures are sharply different, though the boundaries are gradually vanishing under the influence of western cultures. In addition to cognitive competence that is very specific to the individual, the non-western cultures look for skills to relate to others in the society.

Some non-western societies value self-reflection and collectivistic orientation as opposed to personal achievement and individualistic orientation.

Intelligence in the Indian Tradition

Contrary to technological intelligence, intelligence in the Indian tradition can be termed as **Integral Intelligence**, which gives emphasis on connectivity with the social and world environment. Indian thinkers view intelligence from a holistic perspective where equal attention is paid to cognitive and non-cognitive processes as well as their integration.

The Sanskrit word **'buddhi'** which is often used to represent intelligence is far more pervasive in scope than the western concept of intelligence.

Buddhi, according to J.P.Das, includes skills as mental effort, determined action, feelings, and opinions along with cognitive competence such as knowledge, discrimination, and understanding. Among other things, buddhi is the knowledge of one's own self based on conscience, will and desire. Thus, the notion of buddhi has affective and motivational components besides a strong cognitive component. Unlike the western views, which primarily focus on cognitive parameters, the following competencies are identified as facets of intelligence in the Indian tradition:

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- i. Cognitive capacity (sensitivity to context, understanding, discrimination, problem solving, and effective communication).
 - ii. Social competence (respect for social order, commitment to elders, the young and the needy, concern about others, recognising others' perspectives).
 - iii. Emotional competence (self-regulation and self-monitoring of emotions, honesty, politeness, good conduct, and self-evaluation).
 - iv. Entrepreneurial competence (commitment, persistence, patience, hard work, vigilance, and goal directed behaviours).

Emotional Intelligence

The notion of emotional intelligence broadens the concept of intelligence beyond the intellectual sphere/domain and considers that intelligence includes emotions. It builds on the concept of intelligence in the Indian tradition.

Emotional intelligence is a set of skills that underlie accurate appraisal, expression, and regulation of emotions. It is the feeling side of intelligence.

A good IQ and scholastic record is not enough to be successful in life. Many people are academically talented, but are unsuccessful in their own life. They experience problems in family, workplace and interpersonal relationships. As some psychologists believe that the source of their difficulty may be a lack of emotional intelligence.

This concept was first introduced by **Salovey and Mayer** who considered emotional intelligence as “the ability to monitor one’s own and other’s emotions, to discriminate among them, and to use the information to guide one’s thinking and actions”.

Emotional Quotient (EQ) is used to express emotional intelligence in the same way as IQ is used to express intelligence.

In simple terms, emotional intelligence refers to the ability to process emotional information accurately and efficiently.

Emotional intelligence is receiving increasing attention of educators for dealing with students who are affected by stress and challenges of the outside world. Programmes aimed to improve emotional intelligence have beneficial effects on academic achievement, encouraging cooperative behaviour and reducing anti-social activities. These programmes are very useful in preparing students to face the challenges of life outside the classroom.

Characteristics of Emotionally Intelligent Persons

1. Perceive and be sensitive to your feelings and emotions.
2. Perceive and be sensitive to various types of emotions in others by noting their body language, voice and tone, and facial expressions.
3. Relate your emotions to your thoughts so that you take them into account while solving problems and taking decisions.
4. Understand the powerful influence of the nature and intensity of your emotions.
5. Control and regulate your emotions and their expressions while dealing with self and others to achieve harmony and peace.