

● CBSE

Class 12 Psychology

Variations in Psychological Attributes

Chapter-1 (13 Marks)

Peace Classes



Learning Outcomes

By the end of this chapter, you'll see how uniquely intelligence exists in everyone.



1. Understanding Individual Differences

Recognize psychological attributes that make each person unique.



2. Methods of Assessment

Explore tools used to measure psychological traits.



3. What is Intelligence?

Understand the meaning and features of intelligent behaviour.



4. Assessing Intelligence

Learn how psychologists identify gifted & mentally challenged individuals.



5. Intelligence Across Cultures

Appreciate how intelligence varies in different cultural contexts.



6. Intelligence vs Aptitude

Differentiate between intelligence and aptitude clearly.

INDIVIDUAL DIFFERENCES IN HUMAN FUNCTIONING

- Individual differences exist in all species
- Variations make the world diverse and meaningful
- A uniform world would be dull and uninteresting
- People have unique combinations of traits
- Variability is a natural and universal phenomenon
- People differ in physical and psychological traits
- Traits exist in varying degrees in each individual
- Each person has a unique combination of characteristics

INDIVIDUAL DIFFERENCES IN HUMAN FUNCTIONING

Variability

Physical

Psychological

Individual differences refer to distinctiveness and variations among people's characteristics and behaviour patterns.
(Internal factors)

INDIVIDUAL DIFFERENCES IN HUMAN FUNCTIONING

- Situationism, which states that situations and circumstances in which one is placed influence one's behaviour. (Situational or external factors)
- Sometimes, the situational influences are so powerful that individuals with differing personality traits respond to them in almost the same ways.

ASSESSMENT OF PSYCHOLOGICAL ATTRIBUTES

- **Assessment** is the first step in understanding a psychological attribute.
- Assessment refers to the **measurement of psychological attributes** of individuals and their evaluation, often using multiple methods in terms of certain standards of comparison.
- Any attribute will be said to exist in a person only if it can be measured by using scientific procedures.

Assessment of Psychological Attributes



Formal Assessment



Objective & Systematic



Standardized & Organized



Less Personal Bias



Trained Psychologists



Informal Assessment



Subjective & Flexible



Varies Case to Case



Open to Interpretation



Teachers, Parents, etc.



Goals of Assessment

Psychological assessment uses systematic testing procedures to evaluate abilities, behaviours, and personal qualities of individuals.



Predict Behavior



Intervene & Change



Understand Traits



Guide & Improve

Based on Purpose, We Assess:



Intelligence

For Academic Success



Personality

For Social Adjustment



Interests

For Motivation & Goals

To Understand a Person Fully, We Assess:



A Complete Understanding Requires Multiple Aspects

Some Domains of Psychological Attributes

- Psychological attributes are complex and multidimensional
- They cannot be understood on a single (linear) scale
- Like a box has length, width, height, behaviour has multiple dimensions

Assessment Methods

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graph TD; A[Assessment Methods] --> B[Psychological Test]; A --> C[Self-Report]; A --> D[Observation]; A --> E[Case-Study]; A --> F[Interview];
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Psychological Test

Self-Report

Observation

Case-Study

Interview

Assessment Methods

- **Psychological Test** is an objective and standardised measure of an individual's mental and/or behavioural characteristics. It is used for the purposes of clinical diagnosis, guidance, personnel selection, placement, and training. Besides objective tests, psychologists have also developed certain projective tests, especially for the assessment of personality.

Assessment Methods

- **Interview involves** seeking information from a person on a one-to-one basis.
- **Case Study** is an in-depth study of the individual in terms of her/his psychological attributes, psychological history in the context of her/his psychosocial and physical environment. Case studies are widely used by clinical psychologists. Uses different methods, e.g. interview, observation, questionnaire, psychological tests, etc.

Assessment Methods

- **Observation** involves employing systematic, organised, and objective procedures to record behavioural phenomena occurring naturally in real time. The observer has little control over the situation and the reports may suffer from **subjective interpretations of the observer.**

Assessment Methods

- **Self-Report** is a method in which a person provides factual information about herself/himself and/or opinions, beliefs, etc. that s/he holds. Such information may be obtained by using an interview schedule or a questionnaire, a psychological test, or a personal diary

INTELLIGENCE

- Key construct employed to know how **individuals differ** from one another.
- It also provides an understanding of how people **adapt** their behaviour according to the environment they live in.
- Oxford Dictionary explains intelligence as the
 - power of perceiving,
 - learning,
 - understanding, and
 - knowing.

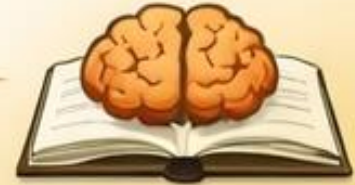
Alfred Binet



Core Idea:

- ✓ Judging Well
- ✓ Understanding Well
- ✓ Reasoning Well

FOCUS: Basic Thinking Skills



David Wechsler



Core Idea:

- ✓ Think Rationally
- ✓ Act Purposefully
- ✓ Deal Effectively with Environment

FOCUS: Practical Adaptation



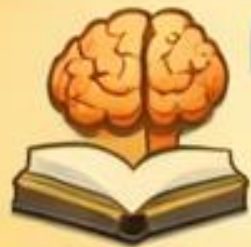
Gardner & Sternberg



Core Idea:

- ✓ Adapt to Environment
- ✓ Modify Environment
- ✓ Shape Environment

FOCUS: Shaping & Changing Environment



Binet

Basic
Thinking
Skills



Wechsler

Effective
Adaptation



**Gardner &
Sternberg**

Adapt & Shape
Environment

CLASSIFICATION OF INTELLIGENCE THEORIES

Not just how much you score, but how you think.



Psychometric / Structural Approach

- **Focus:**
 - ✓ Structure of intelligence
 - ✓ Measurement (IQ)
 - ✓ Quantifying abilities
- **Key Idea:** *Intelligence = Measurable factors*
- **Psychologists:**
 - ✓ Spearman (g-factor)
 - ✓ Thurstone
 - ✓ Cattell



Information-Processing Approach

- **Focus:**
 - ✓ Mental processes
 - ✓ Thinking & reasoning
 - ✓ Problem-solving
- **Key Idea:** *Intelligence = How mind processes*
- **Psychologists:**
 - ✓ Sternberg
 - ✓ Cognitive Theorists

Psychometric Approach

(What intelligence is)

Information Processing Approach

(How intelligence works)

Theories of INTELLIGENCE

ALFERD BINET: UNI OR ONE FACTOR THEORY

- Was the first psychologist who tried to formalise the concept of intelligence in terms of mental operations.
- Earlier notion of intelligence described in general ways in various philosophical treatises available in different cultural traditions.
- Simple as it arose from his interest in differentiating more intelligent from less intelligent individuals.

Theories of INTELLIGENCE

ALFERD BINET: UNI OR ONE FACTOR THEORY

- Conceptualised intelligence as consisting of **one similar set of abilities** which can be used for solving any or every problem in an individual's environment.
- This theory came to be **disputed** when psychologists started analysing data of individuals, which was collected using Binet's test.

Theories of INTELLIGENCE

CHARLES SPEARMAN: TWO-FACTOR THEORY (1927)

- Statistical method called factor analysis.
- General factor
- Specific factor

CHARLES SPEARMAN: TWO-FACTOR THEORY OF INTELLIGENCE



1927: Proposed a **TWO-FACTOR THEORY**
of **INTELLIGENCE** using **FACTOR ANALYSIS**



THE TWO-FACTOR THEORY



g-factor + s-factors = TOTAL INTELLIGENCE



Overall Mental
Ability (g-factor)



Specific Abilities
(s-factors)



Total Intelligence

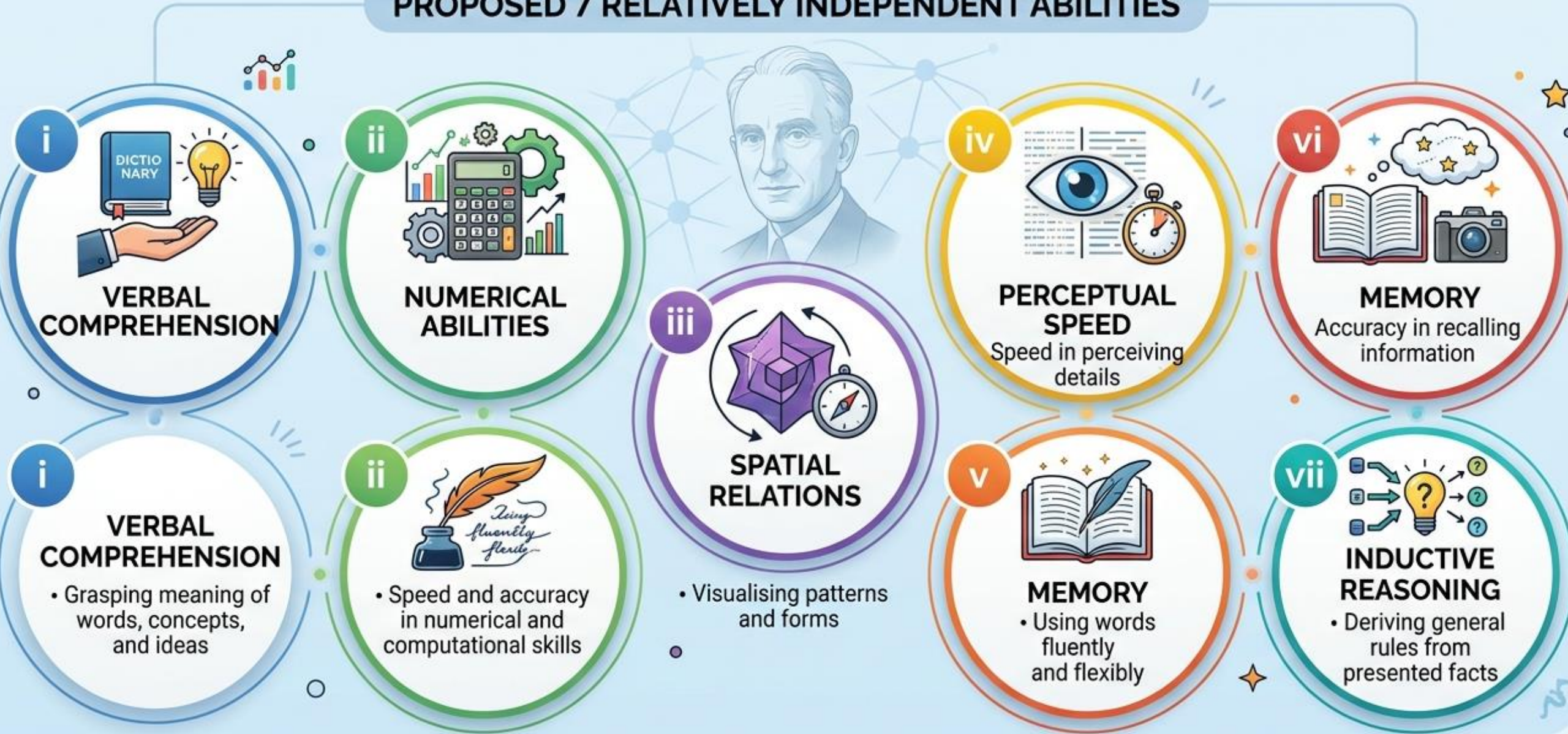
Theories of INTELLIGENCE

LOUIS THURSTONE'S THEORY: the theory of primary mental abilities

- It states that intelligence consists of **seven primary abilities**, each of which is relatively independent of the others.

THURSTONE'S THEORY OF PRIMARY MENTAL ABILITIES

PROPOSED 7 RELATIVELY INDEPENDENT ABILITIES



Theories of INTELLIGENCE

ARTHUR JENSEN PROPOSED A HIERARCHICAL MODEL OF INTELLIGENCE

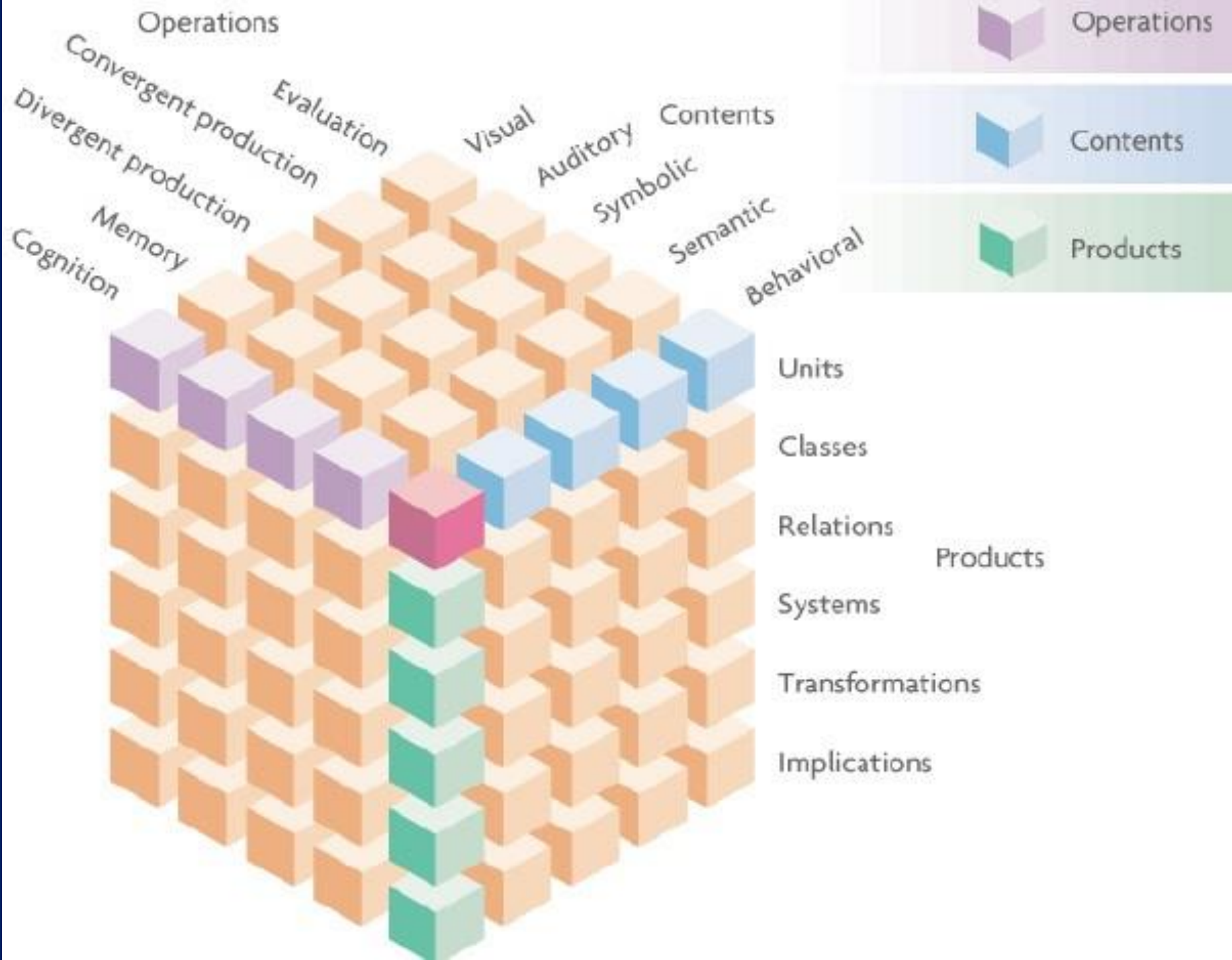
- Abilities operating at two levels, called Level I and Level II.
- **Level I** is the **associative learning** in which output is more or less similar to the input (e.g., rote learning and memory).
- **Level II**, called **cognitive competence**, involves higher-order skills as they transform the input to produce an effective output.

Theories of INTELLIGENCE

J.P. GUILFORD: THE STRUCTURE OF-INTELLECT MODEL

- Classifies intellectual traits among three dimensions:
 - **Operations:** are what the respondent does.
 - **Contents:** nature of materials or information on which intellectual operations are performed.
 - **Products:** the form in which information is processed by the respondent.

Intelligence = Operations (6) × Contents (5) × Products (6) ≈ 180



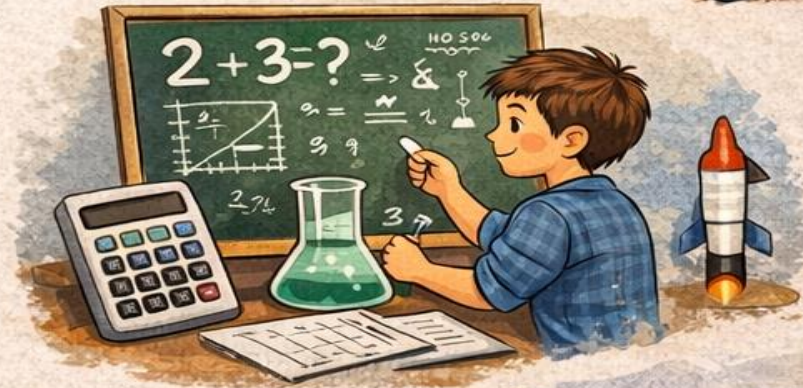
Theories of INTELLIGENCE

THEORY OF MULTIPLE INTELLIGENCES: HOWARD GARDNER

- Intelligence is not a single entity; rather distinct types of intelligences exist.
- Different types of intelligences interact and work together to find a solution to a problem.
- Gardner studied **extremely talented persons**, who had shown exceptional abilities in their respective areas, and described eight types of intelligence.

The 8 Types of Intelligence

1. **Linguistic** (an ability to produce and use language)
2. **Logical-Mathematical** (an ability to think logically and critically, and solve problems)
3. **Spatial** (an ability to form visual images and patterns)
4. **Musical** (an ability to produce and manipulate musical rhythms and patterns)
5. **Bodily-Kinaesthetic** (an ability to use whole or portions of the body flexibly and creatively)
6. **Interpersonal** (an ability to understand to subtle aspects of others' behaviours)
7. **Intrapersonal** (an ability to understand of one's own feelings, motives, and desires)
8. **Naturalistic** (an ability to identify the features of the natural world)



Triarchic Theory of Intelligence

Robert Sternberg (1985) proposed the triarchic theory of intelligence.

Sternberg views intelligence as “the ability to adapt, to shape and select environment to accomplish one’s goals and those of one’s society and culture”.

According to this theory, there are three basic types of intelligence: Componential, Experiential, and Contextual.

Componential

Analysis of information to solve problems.
Persons high on this ability think **analytically and critically** and succeed in schools.

This intelligence has **three components**, each serving a different function.

First is the **knowledge acquisition component**, which is responsible for learning and acquisition of the ways of doing things.

The second is **the meta or a higher order component**, which involves planning concerning what to do and how to do.

The third is the **performance component**, which involves actually doing things

Experiential Intelligence

Involved in using **past experiences** creatively to solve novel problems.

It is reflected in creative performance.

Persons high on this aspect integrate different experiences in an original way to make new discoveries and inventions.

They quickly find out which information is crucial in a given situation

Contextual Intelligence

The ability to deal with environmental demands encountered on a daily basis.

It may be called 'street smartness' or 'business sense'.

Persons high on this aspect easily adapt to their present environment or select a more favourable environment than the existing one, or modify the environment to fit their needs. Therefore, they turn out to be successful in life.

PASS Model of Intelligence

This model has been developed by J.P. Das, Jack Naglieri, and Kirby (1994).

According to this model, intellectual activity involves the interdependent functioning of three neurological systems, called the functional units of brain.

These units are responsible for

- arousal/attention,
- coding or processing, and
- planning respectively.

Arousal/Attention

State of arousal is basic to any behaviour as it helps us in attending to stimuli.

Arousal and attention enable a person to process information.

An optimal level of arousal focuses our attention to the relevant aspects of a problem.

Too much or too little arousal would interfere with attention.

Simultaneous and Successive Processing

Simultaneous processing takes place when you perceive the relations among various concepts and integrate them into a meaningful pattern for comprehension.

Raven's Progressive Matrices (RPM) Test, a design is presented from which a part has been removed. You are required to choose one of the six options that best completes the design.

Simultaneous processing helps you in grasping the meaning and relationship between the given abstract figures.

Successive processing takes place when you remember all the information serially so that the recall of one leads to the recall of another.

Learning of digits, alphabets, multiplication tables, etc. are examples of successive processing.

Planning

This is an essential feature of intelligence.

After the information is attended to and processed, planning is activated. It allows us to think of the possible courses of action, implement them to reach a target, and evaluate their effectiveness.

These PASS processes operate on a knowledge base developed either formally (by reading, writing, and experimenting) or informally from the environment.

These processes are interactive and dynamic in nature; yet each has its own distinctive functions.

Das and Naglieri have also developed a battery of tests, known as the Cognitive Assessment System (CAS).

It consists of verbal as well as non-verbal tasks that measure basic cognitive functions presumed to be independent of schooling. The battery of tests is meant for individuals between 5 and 18 years of age.

The results of assessment can be used to remedy cognitive deficits of children with learning problems.

INDIVIDUAL DIFFERENCES IN INTELLIGENCE

Intelligence: Interplay of Nature and Nurture

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 environments correlate 0.72, those of fraternal twins reared together correlate almost 0.60, and

those of brothers and sisters reared together correlate about 0.50,

While siblings reared apart correlate about 0.25.

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.

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

Assessment of Intelligence

In **1905, Alfred Binet and Theodore Simon**, made the **first successful** attempt to formally measure intelligence.

In **1908, when the scale was revised**, they gave 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.

In **1912, William Stern**, a German psychologist, devised the concept of Intelligence Quotient.

IQ refers to mental age divided by chronological age, and multiplied by 100.

Intelligence Quotient (IQ)

$$IQ = (MA / CA) \times 100$$

The number 100 is used as a multiplier to avoid the decimal point.

When the MA equals the CA, the IQ equals 100.

If MA is more than the CA, IQ is more than 100.

IQ becomes less than 100 when the MA is less than the CA.

The average IQ in the population is 100, irrespective of age.

Normal curve

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**.

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.

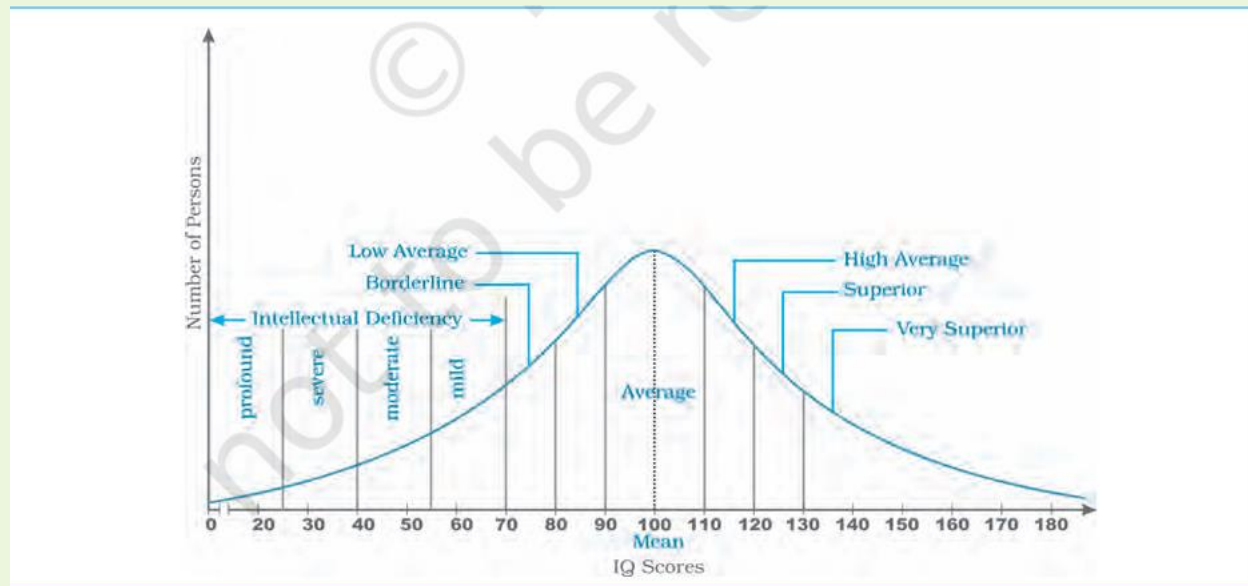


Fig.1.2 : Normal Curve Pattern Showing Distribution of IQ Scores in the Population

Classification of People on the Basis of IQ

<i>IQ Range</i>	<i>Descriptive Label</i>	<i>Per cent in the Population</i>
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

All persons do not have the same intellectual capacity;

Some are exceptionally bright and some are below average.

One practical use of intelligence test is to identify persons at the extremes of intellectual functioning.

The persons in the first group are called intellectually gifted;

Those in the second group are termed intellectually disabled.

These two groups deviate considerably from the normal population in respect of their cognitive, emotional, and motivational characteristics

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Variations of Intelligence

Intellectual Deficiency

Face enormous difficulty in learning even very simple skills.

Those children who **show intellectual deficiency** are termed as ‘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”.

Three basic features (ID)

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.

The different levels of intellectual disability are:

Mild

- (IQs 55 to approximately 70),

Moderate

- (IQs 35–40 to approximately 50–55),

Severe

- (IQs 20–25 to approximately 35–40), and

Profound

- (IQs below 20–25).

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.

The highly talented are sometimes called 'prodigies'.

Giftedness	Talent
Exceptional general ability	Remarkable ability in a specific field
Wide variety of areas	Narrower term

Giftedness from the teachers' point of view depends on a combination of

High ability,

High creativity, and

High commitment.

CHARACTERISTICS OF GIFTED CHILDREN

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.

- Advanced **logical thinking**, questioning and problem solving behaviour.
- **High speed** in processing information.
- Superior **generalisation and discrimination** ability.
- Advanced level of **original and creative thinking**.
- 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

On the basis of Administration

- Individual
- Group

On the basis of nature of items

- Verbal
- Non-Verbal
- Performance

Extent to which test favors culture

- Culture Fair
- Culture-Biased

Purpose of Tests

- Selection
- Counselling
- Guidance
- Self-analysis
- Diagnosis

Some Misuses of Intelligence Tests

- 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.
- 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.

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, Alexander'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.
- The National Library of Educational and Psychological Tests (NLEPT) at the National Council of Educational Research and Training.
- (NCERT) has 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.
- Bhatia's Battery of Performance Tests is quite popular.

Table 1.2 : Some Tests Developed in India

<i>Verbal</i>	<i>Performance</i>
• 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.	• 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

- 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, in **less technologically developed societies**, social and emotional skills in relating to people are valued, while in **technologically advanced societies**, personal achievement founded on abilities of reasoning and judgment is considered to represent intelligence.

In Less Technologically
Developed Societies



Social and emotional
skills are valued

versus

In Technologically
Advanced Societies



Achievement and
reasoning abilities
are valued

- **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.**
- **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.

Technological Intelligence

- Child rearing practices that foster skills of
 - *Generalisation and abstraction*
 - *Speed minimal moves*
 - *Mental manipulation among children.*
- Persons are well-versed in skills of
 - *Attention*
 - *Observation analysis*
 - *Performance speed*
 - *Achievement orientation*
- Intelligence tests developed in western cultures look precisely for these skills in an individual.

Western vs. Non-Western Views of Intelligence

Western Societies



Personal Achievement

- Individualistic Orientation
- Cognitive Competence
- Personal Goals

versus

Non-Western Societies



Collective Well-Being

- Collectivistic Orientation
- Interpersonal Skills
- Self-Reflection

Western cultures emphasize personal achievement and individualism, while non-Western cultures value self-reflection and collectivism. The influence of Western cultures is gradually eroding these boundaries, though differences remain significant.

Intelligence in the Indian Tradition

Intelligence