

# Variations in Psychological Attributes

Variability is a fact of nature and individuals are no exception hence within and across the species also, there are individual variations.

This is termed as **Individual differences**.

In **psychology** this term is defined as:

**Individual differences refer to distinctiveness and variation amongst people's characteristics and behaviour patterns.**

1. Many psychologists believe they are influenced by our **Personal Traits**.
2. Some believe that they are based on situational factors, known as **Eg. People of different personal traits behaving alike in front of aggressive boss.**

## **Psychological Attributes:**

These attributes are involved in simple phenomena like 'time taken to react to a stimulus' to 'highly global concept like Happiness'. It is difficult to count and specify psychological attributes which can be assessed.

Hence any attribute will be said to exist in a person if it can be measured/assessed in a scientific way.

## **Assessment of Psychological Attributes:**

**Assessment** is the first step of understanding the attributes. It is the measurement of psychological attributes of individuals and their evaluation, often using multiple methods as standards of comparison. The assessment may be **Formal** or **Informal**:

**Informal**- e.g. If we say Harish is dominant.

Based on our perception and assessment of Dominance, without applying any formal technique to measure. Hence this type of assessment will vary the results from one assessor to another, depending on their opinions and will be open to subjective interpretation and huge variation.

**Formal-** This is when we use a defined technique or measuring standards to assess any attribute without letting our own perception change the assessment. Its objective, standardized and organized.

The formal assessment also involves measurement of an attribute with respect to its application in a situation.

e.g. If Harish is assessed as dominant , some interventions might be needed to effect a change in his behaviour while dealing with his teams at work etc

Main Domains of Psychological Attributes:

Psychological attributes are not linear or unidimensional. They are complex and expressed in dimensions.

If you want to have a complete assessment of a person, you will need to assess how s/he functions in various domains or areas...such as Cognitive, Social, Emotional etc.

**Some of the domains of these attributes are:**

1. **Intelligence-** It is the global **capacity to understand, think rationally and use available resources** effectively in a situation/challenge. It represents general **Cognitive competence/ability**.
2. **Aptitude-** Individual's **underlying potential for acquiring skills**. Aptitude assessment helps predict what an individual will be able to do if given proper environment and training. E.g. training a person with good language aptitude can help him become a good writer.
3. **Interest-** It's individual's interest / preference to engage in a particular activity. Assessment of interest may help in deciding that in which occupation/activity an **individual would be comfortable and happy/satisfied**.
4. **Personality-** Relatively **enduring characteristics** that make a person distinct from others. This test tells us how a person is likely to behave in future- Dominant, submissive, moody withdrawn or emotional.
5. **Values- Enduring Beliefs** about an ideal mode of behaviour. A set of **standard rules, guidelines which a person follows to live his life**. This would help assess what **kind of decisions a person would make** in a specific situation..e.g. political, religious, social & economics.

**Assessment methods-**

## Several methods are used for Psychological assessment.

1. **Psychological Test-** is an objective and standardized test to measure any of the individual's psychological attributes- mental, behavioural, aptitude etc as mentioned above. **g.** Clinical diagnosis, guidance, personnel selection, placement and training.
2. **Interview-** involves seeking information on a one on one basis by a counsellor from the client. **g.** Door to door salesmen surveying about a product, journalists from important political people, employer while selecting employees use this technique to assess.
3. **Case Study-** is a detailed study of a person in terms of his/her psychological attributes by collecting history, wide amount of data using interview, observation, and questionnaire of Psychological tests methods. To assess any of the attributes to draw learnings. eg – case study of an eminent leader to learn about his personality, aptitude and values etc.
4. **Observation-** employing systematic, organized and objective procedure to record behavioural phenomena occurring naturally in real time. Observation methods are useful to study real events, situations however their interpretation can be subjective and in little control of the observer. **g.** studying Mother Child relationship by watching them objectively for a certain duration.
5. **Self-report–** It s a method in which an individual provides factual information about himself or opinions, beliefs etc.

Such information can be obtained by Interviews, questionnaires or tests.

### Intelligence:

**Intelligence is the key attribute employed to know how individuals are different from each other.**

Psychological definition is very different from the common definition of intelligence.

**Common Definition:** Mental alertness, ready wit, quickness to learn and grasp and ability to understand relationships.

**Oxford Definition:** Power of Perceiving, Learning, Understanding and Knowing

## **Psychology definitions:**

**Alfred Binet:** Ability to Judge well, Reason well and Understand well. One similar set of abilities used for solving any or every problem. His theory is called Uni or One factor theory.

**Wechsler:** Ability to think rationally, act purposefully and to deal effectively with your environment.

**Charles Spearman:** 1927, proposed a Two Factor Theory. As per him Intelligence consists of a

General factor (g- factor) are primary and common to all performances.

Specific factors (s- factors) which are responsible for specific abilities- Singing, architects, scientists

**Louis Thurstone:** Intelligence consists of 7 primary abilities, relatively independent. They are:

1. Verbal Comprehension ( meaning, words, concepts, ideas)
2. Numerical Ability ( speed & accuracy in numerical & computation skills)
3. Spatial Relations (Visualising patterns and forms)
4. Perceptual Speed (Speed in Perceiving details)
5. Word Fluency ( Using words fluently n flexibly)
6. Memory (accuracy in recalling information)
7. Inductive reasoning ( Deriving rules from presented facts)

**Arthur Jensen:** Proposed a hierarchical model of intelligence, consisting of 2 levels:

Level1- Associative learning where Output is more or less similar to Input. ( eg Rote learning & memory)

Level2- Cognitive competence. Higher order skills. It transforms the input to produce effective output.

**J.P. Guilford:** 3 dimensions:

1. Operations- are the things that respondent does. Cognition, memory, recording, retention, convergent.
2. Contents- Nature of material or information on which intellectual operations are performed. Visual, auditory, symbolic, semantic ( words) , behavioural.

3. Products- Form in which information is processed by respondent.

His theory has  $6 \times 5 \times 6 = 180$  cells

### **Theory Multiple Intelligence:**

**Howard Gardner:** Intelligence is not a single entity, rather distinct type of intelligences exist. They are independent of each other but do work together at times to find solution to a problem. **(MISLLB) to remember**

Gardner studied extremely talented people and arrived on eight types of intelligences:

**Linguistic (production and use of language skills):** Such people are word-smart, articulate, poets & writers.

**Logical-Mathematical (Scientific thinking & Problem solving):** Think Logically, critically, abstract reasoning, symbols & mathematical problem solving. Scientists, mathematicians who won nobel prize.

**Spatial ( Visual images & Patterns):** Forming, using, transforming mental images. Pilots, sailors, sculptors, painters, architects, interior decorators, surgeons.

**Musical ( Sensitivity to rhythm & sound pattern):** Produce, create and manipulate music patterns.

**Bodily-Kinaesthetic ( using body flexibly & creatively):** Athletes, dancers, sportsmen, gymnasts , surgeons etc.

**Interpersonal ( awareness of one's own feelings, motives & desires):** Using their knowledge about their strengths, limitations and using this awareness effectively to relate to others. Human existence, finer sensibilities regarding their identity, meaning of life.

Philosophers, spiritual leaders.

**Naturalists: ( sensitivity towards the natural world):** Awareness of relationship with the natural world. Beauty of flora, fauna, ecology.

Hunters, farmers, tourists, botanists, environmentalists, animal activists.

### **Triarchic Theory of Intelligence:**

Robert Sternberg (1985): Intelligence is Ability to adapt, to shape and select environment to accomplish one's goals and those of society/culture.

### 3 basic types of intelligence:

1. **Componential-** Analysis of information to solve problems. Such people think analytically and critically. This intelligence has 3 components, each serving different function:
2. **Knowledge acquisition-** Learn, encode, combine & compare information ( Find stage)
3. **Meta component:** Control, evaluate, monitor, plan ( cognitive processing- analyse & solve stage)
4. **Performance components:** Action, actually executing the planned task ( Operational skill- transfer stage)
5. **Experiential Intelligence:** Using past experiences creatively to solve new problems. Such people make new discoveries and inventions. They have the ability to filter crucial information for a given situation.
6. **Contextual Intelligence:** This intelligence involves the ability to deal with environmental demands. The manifestation needed to adjust to the situation. Street smart, Business sense. Such people adapt to the environment or modify environment as per their needs and hence are more successful.

### **PASS Model of intelligence: (Planning, Attention Arousal and Simultaneous- Successive model)- by J.P. Das, Jack Naglieri, Kirby**

**Arousal/Attention:** Arousal helps in paying attention to the stimuli. Too much or too little arousal with interfere with the attention. E.g Teacher informs you about the upcoming test, which stimulates you to attend to the chapters. Arousal helps you in focusing your attention to reading, learning, revising.

**Simultaneous & successive progressing:** Simultaneous processing allows you to perceive the relationship between various concepts and integrate them into meaningful patterns. Relationship among abstract figures..eg. Solving Jigsaw puzzles.

Successive processing takes place when you remember things sequentially. Learning digits, alphabets etc.

**Planning:** It is an essential part of the intelligence. After the information is attended to and processed, planning is activated. It allows us to think of possible courses of action need to be implemented to reach the target and evaluate their effectiveness.

In case the plan doesn't work this part of intelligence also help review the gaps and device alternate plan.

## **Individual Differences in Intelligence:**

The study conducted on Identical/fraternal twins, siblings, brought up together or in different environment helps us establish the fact that the factors that influence intelligence are:

**Nature-** Heredity, genes

**Nurture-** Environment, nutrition

Research showed: Correlation of Intelligence of diff samples as follows:

- Identical Twins reared together correlate almost 0.9
- Identical twins , separated in childhood correlate 0.72
- Fraternal twins reared together correlate 0.6
- Siblings reared together correlate 0.5
- Siblings reared apart correlate about 0.25
- Adopted children display intelligence more similar to biological parents than adoptive ones. However studies also report that as adopted children grow their intelligence moves closer to adoptive parents.

Hence, there is a general consensus amongst psychologists that Intelligence is a product of complex interaction of heredity (Nature) and environment (Nurture).

## **Assessment of Intelligence:**

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

MA- Mental Age- It's a measure of intellectual development relative to people of same age.

CA- Chronological Age- It's the biological age from birth.

If MA is higher than CA, the person is considered bright and more intelligent.

If MA=CA , then it is considered average intelligence.

If MA<CA, The person is called retarded as per Binet and Simon.

**Intelligence Quotient: 1912, William Stern, German Psychologist: IQ**

**IQ= Mental Age divided by Chronological age and Multiplied by 100.**

**IQ= MA/CA X100**

**100 is the multiplier to avoid value in decimals.**

**So if MA=CA, IQ is 100**

For value >100, it means the child's mental age is higher by those points than chronological age. And for values <100, considered low IQ.

Usually distribution over the population follows a bell curve:

| IQ range   | description             | %age population |
|------------|-------------------------|-----------------|
| Above 130- | Very superior           | 2.2             |
| 120-130-   | Superior                | 6.7             |
| 110-119-   | High Average            | 16.1            |
| 90-109-    | Average                 | 50              |
| 80-89-     | Low average             | 16.1            |
| 70-79      | Borderline              | 6.7             |
| Below 70   | Intellectually disabled | 2.2             |

### **Variations of Intelligence:**

#### **Intellectual Deficiency**

*Is defined as significantly sub average general intellectual functioning with deficit in adaptive behaviour and manifested during the development period.*

This impacts 3 features as captured in the definition:

1. Sub- average intellectual functionality.- Slower in grasp than children of same age.
2. Adaptability of adapt and deal with environment effectively. (Independently holding job and family)
3. Manifestation- during developmental period.

Severity of above is dependent on the different levels of IQ deficiency.

Mild- IQ 55-70 , Moderate- IQ 35-55, Severe IQ- 20-35 & Profound IQ < 20

Depending on the range, some people can be trained and educated with special care and those on the other extreme may live a dependent life throughout.

## **Intellectual Giftedness**

*High performance due to outstanding potential with IQ >130.*

Can be assessed from Talent and Giftedness.

Usually these terms are used interchangeably, however there is a difference:

**Giftedness-** 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..). Highly talented people are also called Prodigies.

It is- **combination of high ability, high creativity and high commitment.**

Important characteristics of gifted children:

- Advanced logical thinking, questioning and problem solving.
- High speed in processing information.
- Superior generalization and discrimination ability
- Advance original and creative thinking
- High level intrinsic motivation, self esteem.
- Independent and non-conformist thinking
- Preference for solitary academic activities.

## **Type of Intelligence tests:**

Individual or Group tests:

|   | <b>Individual Tests</b>   | <b>Group Tests</b>                             |
|---|---|--|
| 1 | Administered to one person at a time  | Administered to several persons simultaneously |
| 2 | Administrator to establish rapport with the subject & be sensitive to his/her feelings, moods, expressions. | No opportunity to be familiar with the subject |

- 3      In this tests subjects are allowed to answer **orally/written form/manipulate objects** as per tester's instructions      In this they seek **written answers usually** in a **multiple choice**.

### **Verbal, Non-verbal or performance tests:**

An intelligence test may be **fully verbal, fully written or fully performance based**, or it may consist of a mixture of each category.

Verbal- requires verbal responses either orally or in written form. Can be administered only **to literate people**.

Non- Verbal- Tests use **pictures or illustrations**. In these subjects examine an incomplete pattern and choose from figures to complete the **pattern**.

Can be **administered to any culture group or illiterate people**.

E.g Raven's Progressive Matrices (RPM).

Performance Tests: Require subjects to manipulate objects and other materials to perform a task. Written language is not necessary. So can be administered to persons with low literacy and any culture.

e.g. Koh's block design containing wooden blocks.

### **Intelligence in Indian Tradition:**

Unlike the western view, which particularly focuses on cognitive parameters, following competencies are identified as facets of intelligence in the Indian tradition:

- Cognitive capacity: ( Sensitivity to context, understanding, discrimination, problem solving, effective communication)
- Social competence: ( respect of social order, commitment to elders, the young and the needy , concern about others perspectives)
- Emotional competence: ( Self regulation, self monitoring of emotions, honesty, politeness, good conduct and self-evaluation)
- Entrepreneurial competence: (commitment, persistence, patience, hard work, vigilance, goal-directed )

**Emotional Intelligence:** The notion of emotional intelligence broadens the concept of intelligence as it considers that Intelligence includes **emotions**.

This encompasses- Appraisal, expression and regulation of emotions.

It is the Feeling side of intelligence. A good IQ/Scholastic record is not enough to be successful in life. Even the people who are most successful in academics face problems in managing their personal life. Psychologists refer to this as a lack of emotional intelligence.

It is represented as EQ.

**Salovey & Mayer first defined EQ as-** The **ability to monitor one's own and other's emotions** and discriminate them to use them **to guide one's thinking and actions**.

**Characteristics of the people with high EQ:**

- **Perceive and be sensitive to your feelings and emotions.**
- Sensitive to **observing others' emotions by** noting their **body language, voice, tone & facial expressions**.
- **Use emotions** and thoughts while **solving problems and taking decisions**.
- Understand the **nature and intensity of emotions** and their powerful influence.
- **Control on emotions/feelings** while dealing with others **to achieve peace and harmony**.

**Aptitude:**

Mental ability in a special/particular field is referred as **Aptitude**.

Aptitude is also- Ability to acquire some specific knowledge and skill after training.

People with similar intelligence- IQ differ widely in acquiring certain type of skills.

They can be good in different areas/subjects.

This means people can have aptitude of different fields with similar measure of intelligence.

**Difference between Aptitude & Interest:**

**Aptitude** is the potential to perform any activity/task

**Interest** is the preference for performing certain activity.

To excel in any field, a person needs to have both Aptitude and Interest.

### **Measuring Aptitude:**

There are several types of Aptitude tests largely available in two forms:

1. **Independent (specialised) aptitude tests.** – Mechanical, clerical, numerical, tests for specialized fields.
2. **Multiple (generalized) aptitude tests.** - Exist in the form of test batteries. Differential Aptitude test ( DAT), General aptitude test battery (GATB), Armed services vocational aptitude battery (ASVAB) are well known.

DAT is commonly used in educational settings, consisting eight specialized subtests- **Verbal, Numerical, Abstract, Clerical speed and accuracy, Mechanical, Space, Spellings and Language tests.** ( common test )

### **Creativity and Intelligence:**

**Creativity** is a phenomenon whereby something new and somehow valuable is formed. The created item may be intangible (such as an idea, a scientific theory, a musical composition or a joke) or a physical object (such as an invention, a literary work or a painting).

There are differences in the potential for creativity across individuals and the manner in which Creativity is expressed.

Creativity can be expressed in writing, dance, poetry, science and so on.

Manifestation of creativity can be seen in a poem, painting, new chemical process, an innovation of law, a breakthrough in science in preventing a disease.

Names of some highly creative persons in the history: Tagore, Einstein, C.V.Raman, Ramanujan etc. for their outstanding contribution.

The definition of creativity has broadened and it includes ordinary people in creative occupations like Pottery, carpentry, cooking etc.

### **Variation in potential for creativity:**

Creativity is determined both by **Heredity and Environment**.

Limit of the creative potential are set by heredity and Environmental factors help stimulate the development of creativity. Environmental factors such as motivation, commitment, family support, peer influence, training n opportunities to polish skills really help enhance the realisation of true creative potential.

### **Creativity and Intelligence:**

Intelligence is the overall ability to understand, analyse and adapt in different situations. It is a brain function which helps individuals to perform and excel in multiple domains. Creativity is the ability to use intelligence in order to churn out something unique and novel in a specific field.

Thus a person who has the ability to learn faster, reproduce accurately is considered intelligent more than creative until he /she devices new ways of learning and doing.

Terman in 1920 found that Person with high IQ were not necessarily creative.( He s just a faster computer/processor).

And creative ideas can come from persons who did not have very high IQ. Ability to think differently.

The relationship between Intelligence and creativity is positive. All creative abilities require a minimum level of intelligence to acquire knowledge, capacity to comprehend, retain and retrieve.

e.g. to express creativity in writing, one must possess adequate language skills and to express creativity in creating new laws of science, one must have to intelligence to acquire basic knowledge of the subject.

Creativity test are open ended and involve making a person think of different answers to the questions and problems. They give freedom to individuals to go in different direction and freedom to use their imagination and express in original ways.