

2.2 Intelligence

Success of the individual depends on the two set of abilities. Physical & Intellectual abilities.

Nature of Intelligence: In general, intelligence is understood as the cognitive process of reasoning and understanding. Specifically, intelligence is defined as an ability to adapt to a variety of situations both old and new; an ability to learn; and an ability to employ abstract concepts; and to use a wide range of symbols and concepts.

Essentially, intelligence is a property of the mind that contains several capacities to reason, to plan, to solve problems, to think abstract, to comprehend ideas, to use a language, and to learn. The intelligence of an individual comprises both general capabilities to solve many types of problems and several specific abilities. General or specific intelligence always refers to the property of mind.

Types of Intelligence: Three major types of intelligence are there: cognitive, practical and emotional.

Cognitive Intelligence: Cognitive intelligence, as stated above, refers to the ability of the mind to understand complex issues, to adapt to the environment, to learn from experience, to reason out, and to overcome adverse circumstances by careful thought. Specifically, cognitive abilities include verbal comprehension and reasoning, word fluency, numerical ability and reasoning, space visualization and symbolic reasoning.

Different professions need different cognitive abilities to achieve success. A writer needs Words fluency where numerical proficiency is a must for engineers and scientists. Pilots, astronauts, artists and navigators need visual/spatial abilities. (See Table below). Cognitive abilities are used extensively while hiring people.

Gardener 9 Intelligences		
Verbal/Linguistic	Ability to use language	Writers, speakers
Logical & Mathematical	Ability to compose and /or perform music musical notes but can perform and	Musicians, even those who do not read compose
Visual/Spatial	Ability to think logically and to solve mathematical problems	Scientists, engineers
Movement	Ability to understand how objects are oriented in space	Pilots, astronauts, artists, navigators
Movement	Ability to control one's body motions	Dancers, athletes
Interpersonal	Sensitivity to others and understanding motivation of others	Psychologists, managers
Intrapersonal	Understanding of one's emotions and how they guide actions	Various people-oriented careers
Naturalist	Ability to recognize the patterns found in nature	Farmers, landscapers, biologists, botanists
Existentialist	Ability to see the "big picture" of the human world by asking questions about life, death, and the ultimate reality of human existence	Various careers, philosophical thinkers

Practical Intelligence: Cognitive abilities by themselves may not guarantee success in an individual's career. For his/her success, practical intelligence is what is needed. Practical intelligence refers to the ability to device effective ways of getting things done "know-how".

Cognitive abilities make a person strong in theory. Practical abilities make the individual convert cognitive abilities to practical use. Cognitive intelligence comes from reading and listening; practical intelligence is learned through observation of other's behaviours.

Emotional Intelligence: Emotional Intelligence (EI) refers to the set of skills that underline the accurate assessment, evaluation, expression, and regulation of emotions. It emphasizes the ability to get along well with others. EI provides us with the understanding of what other people are feeling and experiencing, and permits us to respond appropriately to others' needs. EI is the basis of empathy for others', self-awareness, and social skills.

The spirit of EI is revealed when we recollect the words of Goleman. He identified the key characteristics of EI as: Abilities such as being able to motivate oneself and persist in the face of frustrations; to control impulse and delay gratification; to regulate one's moods and keep distress from swamping the ability to think; to empathize and to hope".

Earlier emotions were considered as impediments to decision making and effective workplace behaviour. This view has now given to the understanding that emotions are a part of one's life in or out of organisations. Stretching further, it may be stated that recent research has revealed the centrality of emotions to all areas of human functioning. Our decisions are impacted human values which are themselves based on our emotions. Reasoning and emotion are intertwined.

1. EI has its own share of criticisms. They are on the following lines
2. EI cannot be measured and hence cannot be validated
3. EI is another name for personality.
4. No unanimity on the usage of concepts associated with EI. There is vagueness.

EI goes well with leadership effectiveness. In challenging jobs associated with people with a high intelligence, the possession of an extra dimension in the form of EI gives leaders a competitive edge. Obviously, firms are evaluating the leadership qualities they need and are increasingly placing emphasis on the emotional dimension

EI need not be associated with only leadership effectiveness. In general, EI underlines the ability to get along well with others. It provides us with the understanding of what other people are feeling and experiencing, and permits us to respond appropriately to other's needs. EI is the basis of empathy for others, self-awareness and social skills.

Abilities in EI might help explain why people only with moderate intelligence score can be quite successful. High EI might enable an individual to turn into other's feelings, permitting a high degree of responsiveness to others.

EI is positively related to performance. People who score high on EI tend to perform better than those whose score is low on social intelligence.

EI has intuitive appeal. It stresses the fact that individuals who can detect emotions in others, control their own emotions better. They can handle social interactions better and prove to be better employees.

EI can be an effective tool in filling managerial positions. Managers are expected to make decisions on various issues. EI is one trait that helps leaders arrives at optimal decisions. Better decisions guarantee success of the organisation.

EI is highly useful in resolving inter-personal conflict, stress reduction, improving communication, diversity management, and promoting harmony at workplace.

Managing EI

Goleman offers the following tips for better handling of EI:

1. Increased ability to analyze and understand relationships
2. Better at resolving conflicts and negotiating disagreements
3. Better at solving problems in relationships.
4. More assertive and skilled at communicating
5. More popular and outgoing, friendly and involved with peers
6. More sought out by peers
7. More concerned and considerate
8. More "Pro-social" and harmonious in groups
9. More sharing, cooperation, and helpfulness
10. More democratic in dealing with others.

Models of Intelligence

Below illustration is a typical model that presents four dimensions of EI, representing the recognition emotions in ourselves and in others, as well as the regulation of emotions in ourselves and in others. Each quadrant is explained in brief

Dimension of EI

	Self (personal competence)	Other(social competence)
Regulation of emotions	Self awareness <ul style="list-style-type: none"> ✓ Self-awareness ✓ Emotional self-awareness ✓ Accurate self assessment ✓ Self-confidence 	Social Awareness <ul style="list-style-type: none"> ✓ Empathy ✓ Organisational awareness ✓ Service
Regulation of emotions	Self-management <ul style="list-style-type: none"> ✓ Emotional self control ✓ Transparency ✓ Achievement ✓ Initiative ✓ Optimism 	Relationship management <ul style="list-style-type: none"> ✓ Inspirational leadership ✓ Influence ✓ Developing others ✓ Change catalyst ✓ Conflict management ✓ Building trends ✓ Team work and Collaboration

Self-awareness: Self-awareness is the ability to understand the meaning of one's own emotions. The person becomes more sensitive to emotional responses to events and understands their message. Self-aware people are better able to eavesdrop on their emotional responses to specific situations and to use their awareness as conscious information.

Self-management: Ability to manage one's own emotions is called self-management. Self management is highly significant as it helps us keep disruptive emotions under check. When we tend to flare up against adverse situations, self-management cools us and keeps us under control. Self-management goes beyond controlling emotions. It includes generating or suppressing emotions. A stage artist needs high degree of self-management component of EI.

Social awareness: The ability to understand the feelings and emotions of others is called social awareness. It includes understanding another person's situation, emotions, and knowing his or her needs, even though unspecified. Social awareness stretches beyond empathy to include being organizationally aware of social networks and politics.

Relationship management: If the first three components of EI refer to one's own emotions, relationship management involves managing other people's emotions. It includes consoling people when they are sad, emotionally enthusing others to get going on their work, making strangers to feel comfortable working with you and managing dysfunctional consequences of conflict faced by peers or subordinates. Often, relationship management is equated with interpersonal activities, which may not be correct. To clear the misconception, it may be stated that relationship management purely deals with emotions of others whereas interpersonal activities include other abilities too.

Theories of Intelligence: We propose to discuss three theories of intelligence, viz., Spearman's g factor theory Gardner's Multiple Intelligence theory, and Sternberg's Triarchic theory. Differences among them lie in their emphasis on the number of abilities and their nature.

Spearman's g Factor; An individual's intelligence comprises unitary and multiple capabilities. The psychologist who came out with this view is Spearman (1904). He saw intelligence as two different abilities, both measurable by intelligence tests. The ability to reason and solve problems was labeled g factor for general intelligence, whereas a person's ability to excel in certain areas such as music, business or arts was labeled s factor for specific intelligence. A traditional IQ test would most likely measure g factor, but Spearman believed that superiority in one type of intelligence predicts superiority overall.

Gardner's Multiple Intelligences; Gardner proposed that intelligence comprises several kinds. Although many people use the terms reason, logic, and knowledge as though they constitute the same ability, Gardner believes that they represent different aspects of intelligence, along with several other abilities. He lists nine types of intelligence.

Sternberg's Triarchic Theory; Triarchic refers to three. Accordingly, *analytical intelligence* refers to the ability to break problems into component parts, or analysis, for solving them. This is the type of intelligence that can be measured by intelligence tests. *Creative intelligence* refers to the ability to deal with new and different concepts and to come up with new ways of solving problems. *Practical intelligence* can be described as the ability to use information to get along in life. Practical intelligence enables people to be tactful, to manipulate situations to their advantage and to use inside information to increase their chances of success.

Measurement of intelligence: Psychologists have devised tests to measure general intellectual abilities of people. These tests are called intelligence tests. The widely used tests are: () Binet and Simon Test, (ii) Stanford Binet Intelligence Scale, (ii) Wechsler Intelligence Scale, and (iv) Group Tests.

Before we describe the above modern tests of intelligence, we propose to explain the forerunner of modern IQ test. The first person to come out with the idea of measuring intelligence was Sir Francis Galton (1822-1911), an English scientist. For him, the best indication of a person's IQ is the size and shape of his or her head. According to him, intelligence was inherited. He hypothesized that head configuration was related to brain size, and hence related to intelligence.

Galton's approach to correlate size and shape of head to intelligence was not acceptable to psychologists. Size and shape of head were not related to intellectual

performance. However, Galton's work did have one desirable effect. He was the first person to suggest that intelligence could be quantified and measured in an objective manner.

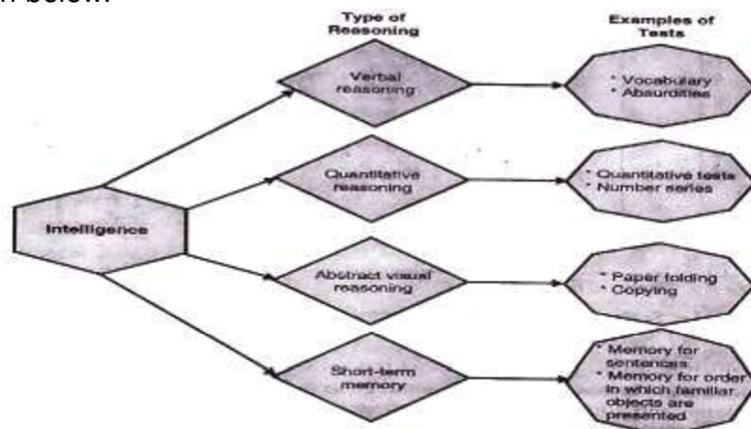
Binet and Simon Test. It was in 1904, when psychology was just emerging as an independent field, the French Government requested Alfred Binet to design a test to identify school children who were mentally retarded, so they could be removed from the regular classroom and given special education. Binet agreed and took the help of his colleague, Theodore Simon

Binet and Simon felt that intelligence should be measured by tasks that required reasoning and problem-solving abilities, rather than perceptual-motor skills. Their test required the children to execute the following tasks:

- ✓ Follow simple commands or initiate simple gestures
- ✓ Name objects shown in pictures
- ✓ Repeat a sentence of fifteen words
- ✓ Tell how two common objects are different
- ✓ Complete sentences begun by the examiner

The first version of Binet and Simon's test items. It was published in 1905 and contained thirty items. The test proved to be successful in identifying children in need of special assistance. Encouraged by this success, Binet and Simon broadened the scope of their test to measure varied intelligence among children of normal intelligence. The revised version, published in 1908, grouped items by age, with six items at each level between three and thirteen years. Items were placed at a particular age level if about 75 per cent of children at that age could pass them correctly.

Stanford-Binet Scale: Binet and Simon's tests became widely accepted, revised and adopted for use in the US by Lewis Terman, a Psychologist at Stanford University. The Stanford-Binet test, as it came to be known, gained rapid popularity and was soon put to use in many settings. Over the years, it has been revised several times and the latest version is shown below.



The standard Binet Test

As shown in the illustration above, the test measures intelligence of an individual with a composite score made up of four scores for broad types of mental activity: verbal reasoning, quantitative reasoning, abstract visual reasoning, and short-term memory. Each of the scores is obtained through a series of sub-tests that measure specific mental abilities.

The Stanford-Binet test became widely accepted because it yielded a single score assumed to reflect an individual's level of intelligence. The single score is popularly known as IQ.

IQ stands for intelligence quotient as a quotient is what such scores represent. IQ represents a numerical value that reflects the extent to which an individual's score on an intelligence test departs from the average for other people of the same age. To obtain an IQ, an examiner divides a student's mental age by his or her chronological age, and then multiplies by 100. Mental age is based on the number of items a person passes correctly on the test. For each correct item the individual is awarded two marks. If the individual's mental age and chronological age are equal, his or her IQ is 100.

An IQ between 90 and 110 is considered to be normal, but above 130, it is considered to be very superior. The person with an IQ below 70 is judged to be retarded. As with many differences between individuals, the distribution of IQs in the population approximates the bell-shaped normal distribution curve. Most cases would fall into the mid-value of the curve with just a few cases at the left and the right extreme positions on the curve.

The Wechsler Scales: Though widely accepted, Stanford-Binet Scale had a few gaps, and the major one is the test's inability to include non-verbal activities. The test, by focusing on verbal content, failed to realize that intelligence can be assessed in non-verbal activities also. The other criticism against the Stanford-Binet test is that it did not cater to the needs of adults.

To overcome the limitations of the Stanford-Binet test, David Wechsler devised a set of tests for both children and adults that include non-verbal, or performance items as well as verbal ones, that yield separate scores for these two components of intelligence and an overall IQ score. The test for adults is called the Wechsler Adult Intelligence Scale (WAIS) (See Table, and the one for children is called the Wechsler Intelligence Scale for Children (WISC).

Group Tests of Intelligence: The tests described earlier are designed for use with one person at a time. There is a need for tests designed to administer to a large number of people at once. This need was felt in the US at the start of World War 1, when the armed forces suddenly faced the task of screening several million recruits. In response to this challenge, psychologists such as Arthur Otis developed two tests: Army Alpha for persons who could read and Army Beta for persons who could not read or who did not speak English. These early group tests proved highly useful. For example, they were used to select candidates for officer's training school.

As days went by, several other group tests were designed. For example, there are *Otis Tests*, the *Herman-Nelson Tests*, and the *Cognitive Abilities Test*. All are available in versions that can be administered to large number of persons.

Sub Tests of the Wechsler Adult Intelligence Test	
Test	Description
Verbal Tests	
Information	Examinees are asked to answer general information questions, increasing in difficulty
Digit span	Examinees are asked to repeat series of digits read out loud by the examiner
Vocabulary	Examinees are asked to define thirty-five words
Arithmetic	Examinees are asked to solve arithmetic problems
Comprehension	Examinees are asked to answer questions requiring detailed answers; answers indicate their comprehension of the questions.
Similarities	Examinees indicate in what way two items are alike.
Performance Tests	
Picture completion	Examinees indicate what part of each picture is missing
Picture arrangement	Examinees arrange pictures to make a sensible story
Block design	Examinees attempt to duplicate designs made with red and white blocks
Object assembly	Examinees attempt to solve picture puzzles.
Digit symbol	Examinees fill in small boxes with coded symbols corresponding to a number above each box

Successful Manager – Emotional Intelligence matters

1. Intelligence shapes the behaviour of an individual while adapting to the environment. It is also a key aspect of how individuals differ from one another in the way they learn about and understand the world.
2. Individuals differ in their intelligence - some are more and others are less intelligent.
3. From success point of view, emotional intelligence is more important than being mere intelligent. Emotional intelligence is a person's ability to: (1) to be self-aware, (2) detect emotions in others, and (3) manage emotional cues and information. People who know their own emotions and are good at reading emotional cues tend to be more effective

Factors Influencing Intelligence

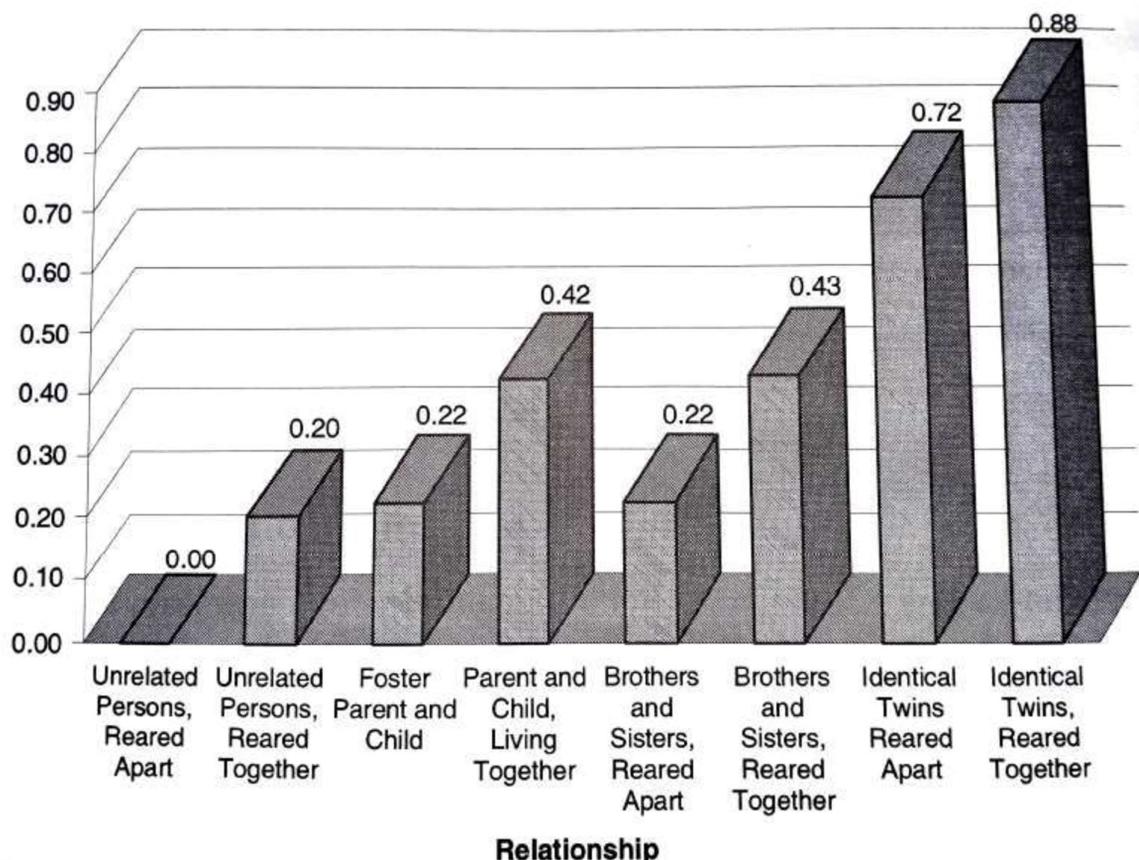
Generally people differ in intellectual ability, whose difference stems from two sources; heredity and environment.

Environment: The environmental conditions likely to determine how an individual's intellectual potential will develop include nutrition, health, and quality of stimulation, emotional mate at home, educational opportunities, and appropriate rewards for accomplishments. It's been proved that family environmental factors have significant effect upon childhood intelligence. Further, studies on environmental deprivation have proved that intelligence can be reduced by the absence of certain forms of environmental stimulation early in life. Another, evidence in support of the impact of environment on IQ is provided by the type of kinship. For given degree of kinship, or family relationship, individuals raised in the same environment have more similar IQs than persons raised apart, in different environments. Finally, correlation between IQ and birth order is a strong evidence to demonstrate the impact of environment on intelligence. Studies have proved that first-borns tend to have higher IQs than second-borns who tend to have higher IQs than third-borns and so on. This phenomenon occurs because of the **confluence theory**. According to the confluence theory, each individual's intellectual growth depends to an important degree on the intellectual environment in which he or she develops

While detailing the impact of environment on intelligence, one is reminded of the 'nature versus nurture' debate. In the final reckoning, it is said that the 'nature' (heredity)

component appears to be much more important than the 'nurture' (environment) element in explaining IQ variance in the people in general.

Heredity: Several evidences have been identified to prove the impact of heredity on intelligence. It has been found that closer the biological relationship of two individuals; the more similar are their IQ scores. The IQs of identical twins reared together correlate almost +0.90, and those of brothers and sisters reared together about +0.50. It may be stated that higher correlations indicate stronger relationships between the variables, see illustration below:



Other biological factors correlating with 1Q include ratio of brain weight to body weight and the volume and location of gray matter tissue in the brain. Since intelligence appears to partly depend on brain structures and the genes shaping brain development, it has been proposed that genetic engineering could be used to enhance 1Qs, particularly among animal experiments on mice have demonstrated superior ability in learning and memory in various behavioral tasks. **Age** is another biological factor having its impact on intelligence. A decline in performance over time can be attributable to a number of factors. There may be a general deterioration health, or growing deficiencies of hearing and eyesight.

Besides, as people grow older, they may become more cautious and fearful of making mistakes and this may undermine their test performance. It is said that giving extra time to older people to do the test, or allowing them more time to familiarize themselves with the test procedures, tend to lead to higher scores. In the final analysis, it would be defective wise to

distinguish between those with a mental capacity because of an age-related infirmity and those who are not disadvantaged in that way.

Intelligence & OB; Intelligence is an important input in determining behaviour of an individual. It seeks to explain how people are able to adapt their behaviour to the environment in which they live. More intelligent people are better able to use the resources of their environment than less intelligent people.

Intelligence also explains how individuals differ from one another and how they learn about and understand the world. Intelligence tests are extensively used while hiring people. Google, for instance, is obsessed with the tests. Most other organisations also subject their prospective employees to series of tests and those who survive the tests are finally hired.

Key Terms

1. **Intelligence:** Intelligence refers to a property of the mind that contains several capacities to reason, to plan, to solve problems, to think abstract, to comprehend ideas, to use a language, and to learn. Three major types of intelligence are distinguished: cognitive, practical and emotional. Cognitive intelligence is what we have told above. In other words, cognitive intelligence involves the ability to understand complex ideas, to adapt effectively to the environment, to learn from experience and to overcome obstacles by careful thought.
Practical intelligence refers to the ability to devise effective ways of getting things done. People with high amounts of practical intelligence are very proficient at solving a wide range of business problems
2. **Environmental Deprivation:** Intelligence can be reduced by the absence of certain environmental factors early in life. A child who is denied of a "good start in life" is disadvantaged when compared to another child who enjoys a favorable environment.
3. **Nature vs. Nurture Debate:** Which is the deciding factor in determining intelligence of an individual? Nature (heredity) or nurture (environment)? The debate ends with an assertion that the heredity component is more significant than environment in determining the intelligence of any person. Narayana Murthy, Steve Jobs or Bill Gates hailed from humble beginnings but became icons in their respective areas. Obviously, heredity factor is more significant in determining one's intelligence.
4. **Intelligence Quotient:** Intelligence Quotient (IQ) represents a numerical value that reflects the extent to which an individual score on an intelligence test departs from the average for other people of the same age.
5. **Confluence Theory:** According to the confluence theory, each individual's intellectual growth depends on the intellectual environment in which he or she develops