1. Intelligence
   1. Spearman’s two factor theory
   2. Thursetone’s theory
   3. Guilford’s structure of intellect
   4. Gardner’s theory
   5. Measurement of intelligence – IQ and deviation IQ, Tests of intelligence – Stanford Binet
   6. Types of intelligence – Social, abstract, concrete, emotional, artificial, spiritual
   7. Gifted and mentally challenged children

While intelligence is one of the most talked about subjects in psychology, there is no standard definition of what exactly constitutes "intelligence." Some researchers have suggested that intelligence is a single, general ability while others believe that intelligence encompasses a range of aptitudes, skills, and talents.

At various points throughout recent history, researchers have proposed some different definitions of intelligence. While these definitions can vary considerably from one theorist to the next, current conceptualizations tend to suggest that intelligence involves the ability to:

1. **Learn:**The acquisition, retention, and use of knowledge is an important component of intelligence.
2. **Recognize problems:**To put knowledge to use, people must first be able to identify possible problems in the environment that need to be addressed.
3. **Solve problems:**People must then be able to take what they have learned to come up with a useful solution to a problem they have noticed in the world around them.

Intelligence involves some different mental abilities including logic, reasoning, problem-solving, and planning. While the subject of intelligence is one of the largest and most heavily researched, it is also one of the topics that generates the greatest controversy.

The term "intelligence quotient," or IQ, was first coined in the early 20th century by a German psychologist named **William Stern**. Psychologist **Alfred Binet** developed the very first intelligence tests and was the first to introduce the concept of mental age or a set of abilities that children of a certain age possess.

Since that time, intelligence testing has emerged as a widely used tool that has led to developing many other tests of skill and aptitude. It, however, continues to spur debate and controversy over the use of intelligence tests, cultural biases, influences on intelligence, and even the very way we define intelligence.

Theories of Intelligence

Different researchers have proposed a variety of theories to explain the nature of intelligence. The following are some of the major theories of intelligence that have emerged during the last 100 years.

Charles Spearman: General Intelligence

Spearman originally came up with the term General Intelligence, or as he called it, ‘g’ and Specific Intelligent or ‘s’ to measure intelligence in his Two Factor Theory on Intelligence.

Spearman proposed that his two-factor theory has two components. The general intelligence, *g*, **influences the performance on all mental tasks, while another component influences abilities on a particular task**. To explain the differences in performance on different tasks, Spearman hypothesized that this other component was specific to a certain aspect of intelligence. This second factor he named *s*, for specific ability. Regarding *g*, Spearman saw individuals as having more or less general intelligence, while *s* varied from person to person on a task. In 1999, behavior geneticist  described *g* as:

"*g* is one of the most reliable and valid measures in the behavioral domain... and it predicts important social outcomes such as educational and occupational levels far better than any other trait."

Louis L. **Thurstone**: Primary Mental Abilities

Psychologist Louis L. Thurstone (1887–1955) offered a differing theory of intelligence. Instead of viewing intelligence as a single, general ability, Thurstone's theory focused on seven different "primary mental abilities." The abilities that he described were:

* Verbal comprehension
* Reasoning
* Perceptual speed
* Numerical ability
* Word fluency
* Associative memory
* Spatial visualization

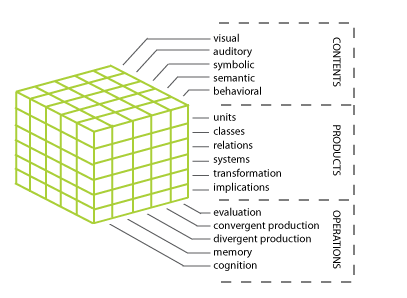
Howard Gardner: Multiple Intelligences

One of the more recent ideas to emerge is Howard Gardner's theory of multiple intelligence. Instead of focusing on the analysis of test scores**, Gardner proposed that numerical expressions of human intelligence are not a full and accurate depiction of people's abilities**. His theory describes eight distinct intelligences based on skills and abilities that are valued in different cultures.

The eight intelligences Gardner described are:

* Visual-spatial Intelligence
* Verbal-linguistic Intelligence
* Bodily-kinesthetic Intelligence
* Logical-mathematical Intelligence
* Interpersonal Intelligence
* Musical Intelligence
* Intrapersonal Intelligence
* Naturalistic Intelligence

GUILFORD’S MODEL OF STRUCTURE OF INTELLECT Guilford (1967, 1985, 1988) proposed a three dimensional structure of intellect model. According to Guilford every intellectual task can be classified according to it’s (1) content, (2) the mental operation involved and (3) the product resulting from the operation. He further classified content into five categories, namely, Visual, Auditory, Symbolic, Semantic and Behavioral. He classified operations into five categories, namely, Cognition, Memory retention, Memory recording, Divergent production, Convergent production and evaluation. He classified products into six categories, namely, Units, Classes, Relations, Systems, Transformations and Implications. Since each of these dimensions is independent, there are theoretically 150 different components of intelligence.



PRINCIPLES

1. Reasoning and problem-solving skills (convergent and divergent operations) can be subdivided into 30 distinct abilities (6 products x 5 contents).
2. Memory operations can be subdivided into 30 different skills (6 products x 5 contents).
3. Decision-making skills (evaluation operations) can be subdivided into 30 distinct abilities (6 products x 5 contents).
4. Language-related skills (cognitive operations) can be subdivided into 30 distinct abilities (6 products x 5 contents).

## Measuring Intelligence: Standardization and the Intelligence Quotient

IQ = mental age ÷ chronological age × 100.

## Stanford–Binet Intelligence Scale: Fifth Edition

The **Stanford-Binet Intelligence Scale** has a rich history. It is a descendant of the Binet-Simon scale which was developed in 1905 and became the first intelligence test. The Stanford-Binet Intelligence Scale was developed in 1916 and was revised in 1937, 1960, and 1986.

Administration of the Stanford-Binet Intelligence Scale typically takes between 45 to 90 minutes, but can take as long as two hours, 30 minutes. The older the child and the more subtests administered, the longer the test generally takes to complete. The Stanford-Binet Intelligence Scale is comprised of four cognitive area scores which together determine the composite score and factor scores. These area scores include: **Verbal Reasoning, Abstract/Visual Reasoning, Quantitative Reasoning, and Short-Term Memory**. The composite score is considered to be what the authors call the best estimate of "g" or "general reasoning ability" and is the sum of all of subtest scores. General reasoning ability or "g" is considered to represent a person's ability to solve novel problems. The composite score is a global estimate of a person's intellectual functioning. The test consists of 15 subtests, which are grouped into the four area scores. Not all subtests are administered to each age group; but six subtests are administered to all age levels. These subtests are: Vocabulary, Comprehension, Pattern Analysis, Quantitative, Bead Memory, and Memory for Sentences.

***2* If you rearrange the letters "BARBIT", you would have the name of a:**

 Ocean   
 Country   
 State   
 City   
 Animal



***11* Which one of the five choices makes the best comparison?  
LIVE is to EVIL as 5232 is to:**

 2523   
 3252   
 2325   
 3225   
 5223



***12* "If some Smaugs are Thors and some Thors are Thrains, then some Smaugs are definitely Thrains." This statement is:**

 True   
 False   
 Neither



***52* Mary was both 13th highest and 13th lowest in a spelling contest. How many people were in the contest?**

 13   
 25   
 26   
 27   
 28



***60* "A fish has a head 9" long. The tail is equal to the size of the head plus one-half the size of the body. The body is the size of the head plus the tail." How long is the fish?**

 27"   
 54"   
 63"   
 72"   
 81"



Score classification

The test publisher includes suggested score classifications in the test manual.

|  |  |
| --- | --- |
| **Stanford–Binet Fifth Edition (SB5) classification**[[2]](https://en.wikipedia.org/wiki/Stanford%E2%80%93Binet_Intelligence_Scales#cite_note-2) | |
| **IQ Range ("deviation IQ")** | **IQ Classification** |
| **145–160** | Very gifted or highly advanced |
| **130–144** | Gifted or very advanced |
| **120–129** | Superior |
| **110–119** | High average |
| **90–109** | Average |
| **80–89** | Low average |
| **70–79** | Borderline impaired or delayed |
| **55–69** | Mildly impaired or delayed |
| **40–54** | Moderately impaired or delayed |
| **Below 40** | Severely impaired |

## Present use

Current uses for the test include clinical and neuropsychological assessment, educational placement, compensation evaluations, career assessment, adult neuropsychological treatment, forensics, and research on aptitude. Various high-IQ societies also accept this test for admission into their ranks.

**TYPES OF INTELLIGENCE**

**Emotional intelligence**

Emotional intelligence can be defined as the ability to monitor one's own and other people's emotions, to discriminate between different emotions and label them appropriately, and to use emotional information to guide thinking and behavior. Emotional intelligence also reflects abilities to join intelligence, empathy and emotions to enhance thought and understanding of interpersonal dynamics. However, substantial disagreement exists regarding the definition of EI, with respect to both terminology and operationalizations. Currently, there are three main models of EI:

1. Ability model
2. Mixed model (usually subsumed under trait EI)
3. Trait model

**Ability model**

The model proposes that individuals vary in their ability to process information of an emotional nature and in their ability to relate emotional processing to a wider cognition. This ability is seen to manifest itself in certain adaptive behaviors. The model claims that EI includes four types of abilities:

1. Perceiving emotions – the ability to detect and decipher emotions in faces, pictures, voices, and cultural artifacts—including the ability to identify one's own emotions.
2. Using emotions – the ability to harness emotions to facilitate various cognitive activities, such as thinking and problem solving.
3. Understanding emotions – the ability to comprehend emotion language and to appreciate complicated relationships among emotions.
4. Managing emotions – the ability to regulate emotions in both ourselves and in others. Therefore, the emotionally intelligent person can harness emotions, even negative ones, and manage them to achieve intended goals.

**Mixed model**

The model focuses on EI as a wide array of competencies and skills that drive leadership performance. Goleman's model outlines five main EI constructs:

1. Self-awareness – the ability to know one's emotions, strengths, weaknesses, drives, values and goals and recognize their impact on others while using gut feeling to guide decisions.
2. Self-regulation – involves controlling or redirecting one's disruptive emotions and impulses and adapting to changing circumstances.
3. Social-skill – managing relationships to move people in the desired direction
4. Empathy – considering other people's feelings especially when making decisions
5. Motivation – being driven to achieve for the sake of achievement

**Trait model**

Trait EI refers to an individual's self-perceptions of their emotional abilities. This definition of EI encompasses behavioral dispositions and self-perceived abilities and is measured by self-report as opposed to the ability based model which refers to actual abilities, which have proven highly resistant to scientific measurement. Trait EI should be investigated within a personality framework. An alternative label for the same construct is trait emotional self-efficacy.

**Social intelligence**

Social intelligence is the capability to effectively navigate and negotiate complex social relationships and environments. Social intelligence is an aggregated measure of self- and social-awareness, evolved social beliefs and attitudes, and a capacity and appetite to manage complex social change. Social intelligence is a person’s competence to optimally understand one's environment and react appropriately for socially successful conduct.

The social intelligence hypothesis states that social intelligence, that is, complex socialization such as politics, romance, family relationships, quarrels, collaboration, reciprocity, and altruism, (1) was the driving force in developing the size of human brains and (2) today provides our ability to use those large brains in complex social circumstances.

**Artificial intelligence**

**Artificial intelligence** (**AI**, also **machine intelligence**, **MI**) is apparently intelligent  behaviour by machine, rather than the *natural intelligence* (*NI*) of humans and other animals. In computer science AI research is defined as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of success at some goal. Colloquially, the term "artificial intelligence" is applied when a machine mimics "cognitive" functions that humans associate with other human mind, such as "learning" and "problem solving"

The traditional problems (or goals) of AI research include reasoning knowledge, planning, learning, natural language processing, perception and the ability to move and manipulate objects. General intelligence is among the field's long-term goals. Approaches include statistical methods, computational intelligence and traditional symbolic AI.

**Spiritual intelligence**

is a term used by some Philosophers, Psychologists, and developmental theorists to indicate spiritual parallels with IQ and EQ. According to Stephen Convey, "Spiritual intelligence is the central and most fundamental of all the intelligences, because it becomes the source of guidance for the others. Variations of spiritual intelligence are sometimes used in corporate settings, as a means of motivating employees  and providing a non-religious, diversity-sensitive framework for addressing issues of values in the workplace.

**Abstract** and **concrete** 

**Abstract** and **concrete**  are classifications that denote whether a term describes an object with a physical referent or one with no physical referents. An **abstract object** is an object which does not exist at any particular time or place, but rather exists as a type of thing, i.e., an idea, or abstraction.

|  |  |
| --- | --- |
| **Examples of abstract and concrete objects** | |
| **Abstract** | **Concrete** |
| Tennis | A tennis match |
| Redness | Red light reflected off of an apple and hitting your eyes |
| Justice | A just action |

Abstract objects have often garnered the interest of philosophers because they raise problems for popular theories. Abstract objects are considered problematic for physicalism and some forms of naturalism. Historically, the most important ontological dispute about abstract objects has been the problem of Universe in epistemology. Abstract objects are considered problematic for empiricism. If abstracta lack causal powers or spatial location, how do we know about them? It is hard to say how they can affect our sensory experiences, and yet we seem to agree on a wide range of claims about them.

**Mentally Challenged/Intellectual Disability**

**Intellectual disability** (**ID**), also known as **general learning disability**, and **mental retardation** (**MR**), is a generalized neurodevelopmental disorder characterized by significantly impaired intellectual and adaptive functioning. It is defined by an IQ score under 70 in addition to deficits in two or more adaptive behavior  that affect everyday, general living. Once focused almost entirely on cognition, the definition now includes both a component relating to mental functioning and one relating to individuals' functional skills in their environments. As a result of this focus on the person's abilities in practice, a person with an unusually low IQ may not be considered to have intellectually disability. Intellectual disability is subdivided into syndromic intellectual disability, in which intellectual deficits associated with other medical and behavioral signs and symptoms are present, and non-syndromic intellectual disability, in which intellectual deficits appear without other abnormalities. Down syndrome and Fragile X  are examples of syndromic intellectual disabilities.

Intellectual disability affects about 2–3% of the general population. Seventy-five to ninety percent of the affected people have mild intellectual disability. Non-syndromic or idiopathic cases account for 30–50% of cases.  About a quarter of cases are caused by a genetic disorder, and about 5% of cases are inherited from family. Cases of unknown cause affect about 95 million people as of 2013.

## Signs and symptoms

A historical image of a person with intellectual disability

Intellectual disability (ID) begins during childhood and involves deficits in mental abilities, social skills, and core activities of daily living (ADLs) when compared to same-aged peers. There often are no physical signs of mild forms of ID, although there may be characteristic physical traits when it is associated with a genetic disorder (e.g., Down syndrome).

The level of impairment ranges in severity for each person. Some of the early signs can include

* Delays in reaching or failure to achieve milestones in motor skills development (sitting, crawling, walking)
* Slowness learning to talk or continued difficulties with speech and language skills after starting to talk
* Difficulty with self-help and self-care skills (e.g., getting dressed, washing, and feeding themselves)
* Poor planning or problem solving abilities
* Behavioral and social problems
* Failure to grow intellectually or continued infant-like behavior
* Problems keeping up in school
* Failure to adapt or adjust to new situations
* Difficulty understanding and following social rules

In early childhood, mild ID (IQ 50–69) may not be obvious or identified until children begin school. Even when poor academic performance is recognized, it may take expert assessment to distinguish mild intellectual disability from specific learning disability or emotional/behavioral disorders. People with mild ID are capable of learning reading and mathematics skills to approximately the level of a typical child aged nine to twelve. They can learn self-care and practical skills, such as cooking or using the local mass transit system. As individuals with intellectual disability reach adulthood, many learn to live independently and maintain gainful employment.[[](https://en.wikipedia.org/wiki/Intellectual_disability#cite_note-AFP-6)Moderate ID (IQ 35–49) is nearly always apparent within the first years of life. Speech delays are particularly common signs of moderate ID. People with moderate intellectual disability need considerable supports in school, at home, and in the community in order to fully participate. While their academic potential is limited, they can learn simple health and safety skills and to participate in simple activities. As adults, they may live with their parents, in a supportive group home or even semi-independently with significant supportive services to help them, for example, manage their finances. As adults, they may work in a sheltered workshop.

People with severe or profound ID need more intensive support and supervision their entire lives. They may learn some ADLs, but an intellectual disability is considered severe or profound when individuals are unable to independently care for themselves without ongoing significant assistance from a caregiver throughout adulthood. Individuals with profound ID are completely dependent on others for all ADLs and to maintain their physical health and safety, although they may be able to learn to participate in some of these activities to limited degree.

**Gifted children**

Gifted (or talented) children show achievement that is well above average in one or more areas—usually in language, math, music, art, or athletics. Some children are globally gifted: They show exceptional talent in all areas. Other children are unevenly gifted: They are exceptional in one or two areas but are at (or below) average levels in others. While a high IQ score may be one indicator of giftedness, it is not the only one; some talent areas are not included on intelligence tests, and such tests do not consider a child's cultural context when used as indicators of talent (Sternberg, 2007). Winner (1996) describes three characteristics that are typical of gifted (or talented) children:

* Gifted children are precocious. They begin learning early and progress faster than others.
* Gifted children march to their own drummer. They don't need much assistance to master information in their favorite subjects.
* Gifted children have a rage to master—an intense craving for information and an obsessive need to make sense out of their favorite topics.

No gifted individual is exactly the same, each with his own unique patterns and traits.   There are many traits that gifted individuals have in common, but no gifted learner exhibits traits in every area.  This list of traits  may help you better understand whether or not your child is gifted.

Modern Concept of Intelligence

Triarchic theory of intelligence (Sternberg, 1985)

Componential Experince-based Contextual Theory

Theory Theory

Metacomponents Novelty Adaptation

Performance Automation Selection

Knowledge aquisition Remodeling

Experience

spectrum

Connection with Connection with

the inner world of the outer world of

individual the individual.

**Componential Theory**-its purpose is to identify mechanisms of information processing that characterizes the performance of intelligent behavior. The role of these mechanisms (components) is to select and decide which information is relevant for to achieve a specific goal. Thus they involve permanent decisions to make with certain content and to ignore others.

Metacognitive skills refers to

- Assessment about own ability/intelligence/cognition which expressed through

* planning,
* monitoring,
* Evaluation.

**Experience-based Theory** – expresses the idea that intelligent behavior is strongly influenced by the subjects experiences. Different individuals with different experiences resort to different processing in a specific task.

**Contextual Theory** - the relationship between intelligent behavior and contextual / the outer world of an individual. According to this theory, there are three ways of interaction with the environment: adaptation, shaping the environment, environmental change. Intelligent behavior results from a balance between adaptation to the environment, shaping it and changing it.