**MULTIFACTORS THEORY OF GUILDFORD (INTELLIGENCE)**

 **Different theory of intelligent**

**Faculty theory**: It is the oldest theory regarding the nature of intelligence and flourished during 18th and 19th century. According to this theory, mind is made up of different faculties like reasoning, memory, discrimination, imagination, etc. These faculties are independent of each other and can be developed by vigorous training. Faculty Theory had been under criticism by experimental psychologists who disproved the existence of independent faculties in the brain.

**One factor/UNI factor theory:/ G Factor Theory. (Alfred Binet)** It reduces all abilities to a single capacity of general intelligence or ‘common sense’. This would imply that they are all perfectly correlated, and would make no allowance for the unevenness of people i.e. abilities along different lines. Since it goes against the common observation that ‘‘an individual does possess different levels of different abilities and does not shine equally in all directions’’—it has no ground to stand.

**Spearman’s two-factor theory**: It was developed in 1904 by an English Psychologist, Charles Spearman, who proposed that intellectual abilites were comprised of two factors : one general ability or common ability known as ‘G’ factor and the other a group of specific abilities known as ‘S’ factor. ‘G’ factor is universal inborn ability. Greater ‘G’ in an individual leads to greater success in life. ‘S’ factor is acquired from the environment. It varies from activity to activity in the same individual.

**Thorndike’s multifactor theory :** Thorndike believed that there was nothing like General Ability. Each mental activity requires an aggregate of different set of abilities. He distinguished the following four attributes of intelligence :

 (a) Level—refers to the level of difficulty of a task that can be solved.

 (b) Range—refers to a number of tasks at any given degree of difficulty.

 (c) Area—means the total number of situations at each level to which the individual is able to respond.

(d) Speed—is the rapidity with which we can respond to the items.

 **Thurstone’s theory** : (**Group theory**) Thurstone has given the following six primary factors : (i) The Number Factor (N)—Ability to do Numerical Calculations rapidly and accurately.

 (ii) The Verbal Factor (V)—Found in tests involving Verbal Comprehension.

(iii) The Space Factor (S)—Involved in any task in which the subject manipulates the imaginary object in space. (iv) Memory (M)—Involving ability to memorize quickly.

 (v) Word Fluency Factor (W)—Involved whenever the subject is asked to think of isolated words at a rapid rate.

 (vi) The Reasoning Factor (R)—Found in tasks that require a subject to discover a rule or principle involved in a series or groups of letters. Based on these factors Thurstone constructed a new test of intelligence known as ‘‘Test of Primary Mental Abilities (PMA).’’

**Sternberg’s triarchic theory:** Psychologist Robert Sternberg (1985) has constructed a three—pronged, or triarchic theory of intelligence. The Three types are : **Analytical Intelligence**—is what we generally think of as academic ability. It enables us to solve problems and to acquire new knowledge. Problem—solving skill include encoding information, combining and comparing pieces of information and generating a solution.

**Creative Intelligence**—is defined by the abilities to cope with novel situations and to profit from experience. The ability to quickly relate novel situations to familiar situations (that is, to perceive similarities and differences) fosters adaptation. Moreover, as a result of experience, we also become able to solve problems more rapidly.

**Practical Intelligence**—or ‘‘street smarts’’, enable people to adapt to the demands of their environment. For example, keeping a job by adapting one’s behavior to the employer’s requirements is adaptive. But if the employer ismaking unreasonable demands, reshaping the environment (by changing the employer’s attitudes) or selecting an alternate enviornment (by finding a more suitable job) is also adaptive.

**CATTELL’S FLUID AND CRYSTALLIZED THEOR**Y

 **The fluid aspect of this theory** says that intelligence is a basic capacity due to genetic potentiality. While this is affected by the past and new expriences,

**the crystallized** theory is a capacity resultant of experiences, learning and environment.

**GARDENER’S THEORY OF MULTIPLE INTELLIGENCE** :. The multiple intelligence theory is that people possess eight types of intelligence :

linguistic, logical, spatial, musical, motor ability, interpersonal, intrapersonal and naturalistic intelligence.

 **GUILFORD’S MODEL OF STRUCTURE OF INTELLECT Guilford (CUBICAL MODEL)**

**Joy Paul Guilford** (March 7, 1897 – November 26, 1987) was an American [psychologist](https://en.wikipedia.org/wiki/Psychologist) best remembered for his [**psychometric**](https://en.wikipedia.org/wiki/Psychometric)**study of human**[**intelligence**](https://en.wikipedia.org/wiki/Intelligence_%28trait%29), including the distinction between [convergent](https://en.wikipedia.org/wiki/Convergent_thinking) and [divergent](https://en.wikipedia.org/wiki/Divergent_thinking) production.

Developing the views of [L. L. Thurstone](https://en.wikipedia.org/wiki/L._L._Thurstone), Guilford rejected [Charles Spearman](https://en.wikipedia.org/wiki/Charles_Spearman)'s view that intelligence could be characterized in a single numerical parameter. He proposed that three dimensions were necessary for accurate description: operations, content, and products. A [*Review of General Psychology*](https://en.wikipedia.org/wiki/Review_of_General_Psychology) survey, published in 2002, ranked Guilford as the 27th most cited psychologist of the 20th century.

According to Guilford's **Structure of Intellect (SI) theory** (1955), an individual's performance on intelligence tests can be traced back to the underlying mental abilities or factors of intelligence. SI theory comprises up to 180 different intellectual abilities organized along three dimensions: operations, content, and products.

The Structure of Intellect Theory

 (1967, 1985, 1**9**88) proposed a **three dimensional structure of intellect model.** According to Guilford every intellectual task can be classified into three parts.

 1967

(1) Content Dimension

(2) Operation Dimension

(3) Product Diamension

 **content**

**Figural:** Concrete, [real world](https://en.wikipedia.org/wiki/Reality) information, tangible objects, things in the environment -

**Symbolic:** Information perceived as symbols or signs that stand for something else, e.g., Arabic numerals, the letters of an alphabet, or musical and scientific notations

**Semantic:** Concerned with verbal meaning and ideas

 **Behavioral**: Information perceived as acts of people (This dimension was not fully researched in Guilford's project. It remains theoretical and is generally not included in the final model that he proposed for describing human intelligence.)

 **operations**

 **Cognition:** The ability to understand, comprehend, discover, and become aware of information

 Memory :Ability to learn and continue it a long period.

 Divergent production

 Convergent production: The ability to deduce a single solution to a problem; rule-following or problem-solving

 Evaluation: The ability to judge whether or not information is accurate, consistent, or valid

 **products**

 Units, Classes, Relations, Systems, Transformations and Implications.

4\*6\*5=120 (One hundred twenty dimensions/factors of intelligence)

 1985

2. The next level : major group factors.

 **content**

Visual, Auditory, Symbolic, Semantic and Behavioral.

 **operations**

 Cognition, *Memory*, Divergent production, Convergent production and evaluation.

 **products**

 Units, Classes, Relations, Systems, Transformations and Implications.

5\*5\*6=150 (One hundred fifty dimensions/factors of intelligence)

3. The next level : major group factors.

 1**9**88

 **content**

**1.Visual:** information perceived through sight

**2.Auditory:** information perceived through hearing 3.**Symbolic**: Information perceived as symbols or signs that stand for something else, e.g., Arabic numerals, the letters of an alphabet, or musical and scientific notations

 4.**Semantic:** Concerned with verbal meaning and ideas - Generally considered to be abstract in nature.

**5. Behavioral**. Information perceived as acts of people (This dimension was not fully researched in Guilford's project. It remains theoretical and is generally not included in the final model that he proposed for describing human intelligence.)

 **operations**

1. **Cognition**: The ability to understand, comprehend, discover, and become aware of information

 2.**Memory retention**: The ability to encode information

**3. Memory recording**: The ability to recall information

4.Divergent production: Divergent production is the [creative](https://psychology.wikia.org/wiki/Creativity) generation of multiple answers to a set problem. For example, *find uses for 1 metre lengths of black cotton*.

Guilford observed that most individuals display a preference for either [convergent](https://psychology.wikia.org/wiki/Convergent_thinking) or [divergent thinking](https://psychology.wikia.org/wiki/Divergent_thinking). [Scientists](https://psychology.wikia.org/wiki/Scientist) and engineers typically prefer the former and [artists](https://psychology.wikia.org/wiki/Artist) and performers, the latter. There is a movement in education that maintains **divergent thinking** might create more resourceful students. Rather than presenting a series of problems for rote memorization or resolution, divergent thinking presents open-ended problems and encourages students to develop their own solutions to problems.

**5.Convergent production**: The ability to deduce a single solution to a problem; rule-following or problem-solving. Convergent production is the deductive generation of the best single answer to a set problem, usually where there is a compelling inference. For example, find answers to the question *What is the sum of the internal angles of a triangle?*

**6.Evaluation**: The ability to judge whether or not information is accurate, consistent, or valid

 **Products**

1. **Units** - Single items of knowledge
2. **Classes** - Sets of units sharing common attributes
3. **Relations** - Units linked as opposites or in associations, sequences, or analogies
4. **Systems** - Multiple relations interrelated to comprise structures or networks
5. **Transformations** - Changes, perspectives, conversions, or mutations to knowledge
6. **Implications** - [Predictions](https://en.wikipedia.org/wiki/Prediction), [inferences](https://en.wikipedia.org/wiki/Inference), consequences, or [anticipations](https://en.wikipedia.org/wiki/Anticipation) of knowledge

5\*6\*6=180 (One hundred eighty dimensions of intelligence)

Criticism

Various researchers have criticized the statistical techniques used by Guilford. Guilford's contention that a *g*-factor was untenable was influenced by his observation that cognitive tests of U.S. Air Force personnel did not show correlations significantly different from zero. According to one reanalysis, this resulted from artifacts and methodological errors. Applying more robust methodologies, the correlations in Guilford's data sets are positive.In another reanalysis, randomly generated models were found to be as well supported as Guilford's own theor

 **The End**