GUILFORD'S STRUCTURE OF INTELLECT THEORY

An Overview of the SOI Model of Intelligence

INTRODUCTION TO STRUCTURE OF INTELLECT THEORY

- Guilford's Structure of Intellect (SOI) theory, proposed in the 1950s, suggests that human intelligence consists of a complex structure that includes various abilities and dimensions.

This model categorizes intelligence into three main components:

- Operations,
- Content, and
- Products.

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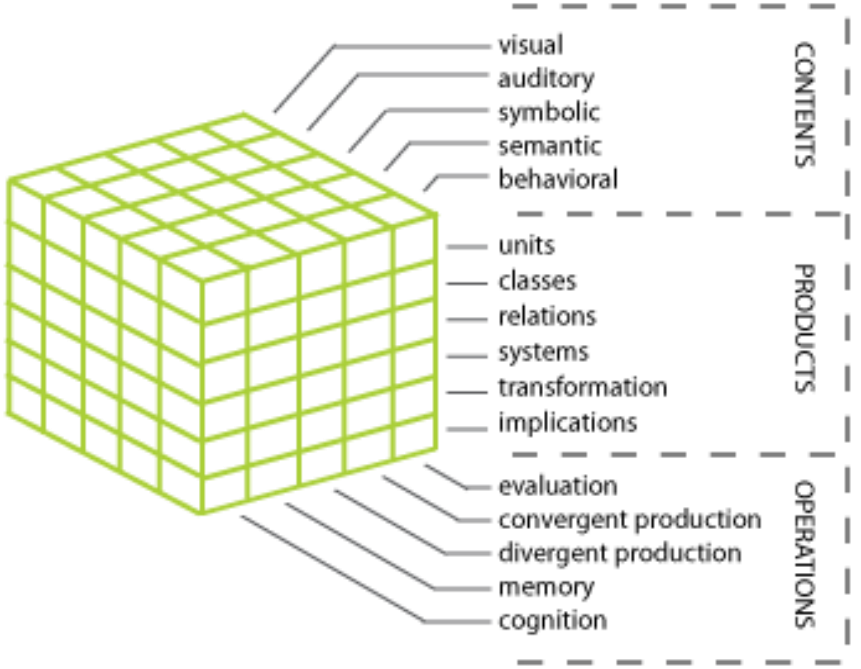

Figure: Structural Intelligence

THE THREE MAIN DIMENSIONS OF SOI

Guilford's theory identifies three major dimensions of intelligence:

- **1) Operations** - the mental processes involved in thinking,
- **2) Content** - the types of information or material used, and
- **3) Products** - the outcomes of the mental processes.

OPERATIONS DIMENSION SOI

- The 'Operations' dimension refers to the mental processes used to work with information. These include:
- 1) Evaluation,
- 2) Memory,
- 3) Cognitive operations like reasoning, and
- 4) Divergent thinking, such as creativity and problem-solving.

CONTENT DIMENSION SOI

- The 'Content' dimension refers to the types of information or material that individuals process. These are:
- 1) Visual (e.g., images, patterns),
- 2) Auditory (e.g., sounds, words),
- 3) Symbolic (e.g., mathematical symbols, abstract concepts), and
- 4) Semantic (e.g., language, verbal knowledge).

PRODUCTS DIMENSION SOI

- The 'Products' dimension relates to the outcomes of mental processes. These include:

- 1) Units (e.g., simple facts or individual elements),
- 2) Classes (e.g., categories),
- 3) Relations (e.g., connections between concepts),
- 4) Systems (e.g., more complex structures), and
- 5) Transformations (e.g., change or adaptation).

SOI MODEL REPRESENTATION

- The Structure of Intellect model can be visualized as a three-dimensional cube, with Operations, Content, and Products as axes.
- The intersections of these dimensions form specific intellectual abilities, making the model highly comprehensive and complex.

SOI AND INTELLIGENCE ASSESSMENT

- Guilford's SOI model has had significant implications for intelligence testing.
- It suggests that traditional IQ tests may only measure a small part of human intelligence and
- It emphasizes the need for tests that assess a wider range of cognitive abilities.

APPLICATIONS OF SOI THEORY

- The SOI theory is applied in educational settings, particularly in curriculum development and learning strategies.

- It encourages the development of various cognitive abilities in students, emphasizing the importance of divergent thinking, creativity, and problem-solving skills.

INTELLIGENCE QUOTIENT (IQ)

- An intelligence quotient (IQ) is an age-related measure of intelligence level and is described as 100 times the mental age.
- The word **"quotient"** means **the result of dividing one quantity by another** and a definition of intelligence is mental ability or **quickness of mind**.

INTELLIGENCE QUOTIENT (IQ)

- In 1905, Alfred Binet and Theodore Simon made the first successful attempt to formally measure intelligence.
- In 1908, when the scale was revised, they introduced the concept of "mental age" (MA), which is a measure of a person’s intellectual development relative to people of her or his age group.

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- A mental age of 5 means that a child's performance on an intelligence test equals the average performance level of a group of 5-year olds. The biological age from birth is referred to as Chronological Age (CA).

INTELLIGENCE QUOTIENT (IQ)

- In 1912, William Stern, a German psychologist, devised the concept of Intelligence Quotient (IQ).
- IQ refers to mental age divided by chronological age and multiplied by 100.

$$IQ = \frac{MA}{CA} \times 100$$

INTELLIGENCE QUOTIENT (IQ)

Definition of Mental Age

- An APA Dictionary of Psychology definition of "a numerical scale unit derived by dividing an individual's results on an intelligence test by the average score for other people of the same age."
- Thus, a 4-year-old child who scored 150 on an IQ test would have a mental age of 6 (the age-appropriate average score is 100; therefore, MA = (150/100) × 4 = 6).
- The MA measure of performance is not effective beyond the age of 14.

INTELLIGENCE QUOTIENT (IQ)

Activity

- ‘Intelligent’ Numbers (Computing IQ)
- 1.Find out the IQ of a 14-year-old child with a mental age of 16.

- 2.Find out the mental age of a 12- year-old child with an IQ of 90.

INTELLIGENCE QUOTIENT (IQ)

- **Table: Classification of individuals on the basis of I.Q (Terman)**

IQ Range	Descriptive Label
More than 140	Genius
120-139	Very superior
110-119	Superior
90-109	Average
80-89	Dull (slow to understand)
70-79	Feeble minded (mentally deficient)
50-69	Moron (a very stupid person)
25-49	Imbecile (a stupid person- mentally weak)
0-24	Idiot (a person of extremely low intelligence)

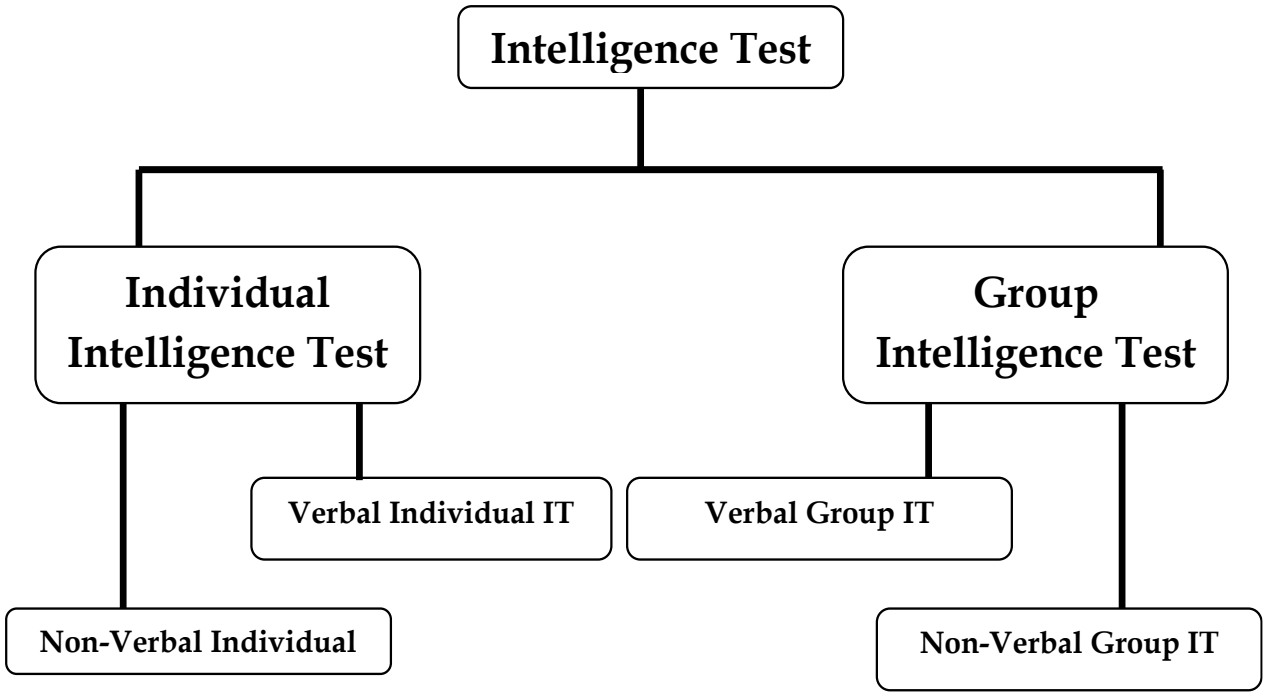
ASSESSMENT OF INTELLIGENCE

- Assessment of intelligence is one of the most highly researched topics in psychology and consequently, a number of intelligence tests have been developed, most of which are based on a specific theory of intelligence.

First Intelligence test

- Binet and Simon developed the first intelligence test. **Binet developed the concept of mental age**, and **Stern created the concept of IQ as MA/CA x 100**.
- The Stanford-Binet scores approximate a normal distribution.
- The Wechsler scales also are widely used to assess intelligence.

ASSESSMENT OF INTELLIGENCE



CLASSIFICATION OF INTELLIGENCE TESTS

- **Major Classifications**
- 1. Verbal Intelligence Tests
- 2. Non-verbal Intelligence Tests

Stub – Classifications

1. Verbal individual intelligence tests - The very name of these tests suggests that these are intelligence tests given to individuals or in other words, they are meant to test the intelligence of individuals.
2. Non-verbal individual intelligence tests - These tests involve the least possible use of linguistic ability and are similarly, almost unaffected by knowledge derived from books
3. **Examples for Individual intelligence test**

- The Wechsler Intelligence Scale, the Merril and Plamer Intelligence Scale, the Pinter-Peterson Performance Scale, the Merril-Palmer Block Building Test and the Porteus Maze Test are all intelligence tests.

CLASSIFICATION OF INTELLIGENCE TESTS

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Stub – Classifications

1. Verbal group intelligence tests – The tests are designed to test the intelligence of a group and not of an individual
2. Non-verbal group intelligence tests - the examinee draws some lines according to his ability, fills in some empty spaces, draws some simple figures or performs some simple activities.
3. **Examples for Group Intelligence Test**
4. Army Alpha Test, Burt's Group Intelligence Test, Jalota's Intelligence Test, Raven's Progressive Martix, Cattell's Culture Free Test and Army Beta Test.

ASSESSMENT OF INTELLIGENCE

- **Definition of Intelligence Testing**
- A questionnaire or series of exercises designed to measure intelligence.
- The term ‘intelligence tests’ covers **psychological test methods designed to determine inter-individual differences** in the sphere of human intelligence.

Measuring Intelligence

- These items are similar to the questions from a common individual intelligence test for children, the WISC-V (Wechsler, 2014).
- Another part of the test asks the child to copy a design using blocks, do math problems mentally (without paper and pencil), or select from several pictures the three that were shown earlier, putting them in the same sequence.