

ICSE Class 12 Psychology

Chapter 1: **Intelligence and Ability**

Introduction

Psychology as a discipline seeks to understand human behavior and mental processes. One of its most significant areas of study is **intelligence**—a central construct in understanding how people think, learn, solve problems, and adapt to their environments. Intelligence and ability are closely connected concepts that influence performance in academic, social, and professional spheres.

This chapter explores the definition, types, theories, and measurement of intelligence. It also covers the concept of ability, the nature vs. nurture debate, and how intelligence manifests differently across individuals.

1. Meaning and Nature of Intelligence

Definition of Intelligence

There is no universally accepted definition of intelligence. However, it is generally understood as:

“The global capacity of the individual to act purposefully, to think rationally, and to deal effectively with the environment.” – **David Wechsler**

Characteristics of Intelligence

- It is **goal-directed** and **purposeful**.
 - It includes **problem-solving**, **reasoning**, and **decision-making**.
 - It varies among individuals (**individual differences**).
 - It is influenced by both **heredity** and **environment**.
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2. Theories of Intelligence

There are multiple theories that attempt to explain the structure and nature of intelligence:

A. Unitary vs. Multifactor Theories

1. Unitary Theory


- Proposes that intelligence is a single, general ability.
- Early psychologists like **Galton** supported this idea.
- **Criticism:** Does not account for the varied abilities people possess.

2. Multifactor Theory – Edward Thorndike

- Intelligence consists of multiple independent abilities:
 - **Social Intelligence** (dealing with people)
 - **Concrete Intelligence** (handling objects)
 - **Abstract Intelligence** (understanding symbols)
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B. Spearman's Two-Factor Theory

- Proposed by **Charles Spearman**
- Intelligence consists of:
 - **G-factor (General intelligence)** – Common to all activities
 - **S-factor (Specific intelligence)** – Varies with specific tasks

 *Example:* A person may be generally intelligent (G-factor), but particularly good at math (S-factor).

C. Thurstone's Primary Mental Abilities

- Proposed **seven primary mental abilities**:
 - a. Verbal comprehension
 - b. Word fluency
 - c. Number facility
 - d. Spatial visualization
 - e. Associative memory
 - f. Perceptual speed

g. Reasoning

Intelligence is not a single trait but a cluster of abilities.

D. Gardner's Theory of Multiple Intelligences

Proposed by **Howard Gardner**, this theory identifies **eight** types of intelligences:

1. **Linguistic** – Sensitivity to spoken and written language
2. **Logical-Mathematical** – Ability in logic and numbers
3. **Musical** – Skills in performance and composition
4. **Bodily-Kinesthetic** – Using the body to solve problems
5. **Spatial** – Mental imagery and spatial reasoning
6. **Interpersonal** – Understanding others
7. **Intrapersonal** – Understanding oneself
8. **Naturalistic** – Sensitivity to nature

This theory supports the idea that intelligence is **diverse** and **multidimensional**.

E. Sternberg's Triarchic Theory of Intelligence

Proposed by **Robert Sternberg**, it includes three components:

1. **Analytical Intelligence** – Academic problem-solving
 2. **Creative Intelligence** – Innovation and imagination
 3. **Practical Intelligence** – "Street smarts" or everyday tasks
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3. Measurement of Intelligence

IQ (Intelligence Quotient)

Developed by **William Stern**, IQ is a measure of intelligence derived from standardized tests.

$$\text{IQ} = (\text{Mental Age} / \text{Chronological Age}) \times 100$$

◆ Types of Intelligence Tests

A. *Individual Tests*

- One-on-one administration
- Example: **Stanford-Binet Test, Wechsler Adult Intelligence Scale (WAIS)**

B. *Group Tests*

- Administered to multiple people at once
- Example: **Army Alpha and Beta Tests**

C. *Verbal and Non-verbal Tests*

- **Verbal:** Use language (e.g., analogies, comprehension)
 - **Non-verbal:** Use symbols, diagrams (e.g., Raven's Progressive Matrices)
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4. Heredity and Environment in Intelligence

◆ Role of Heredity

- Intelligence is partly **inherited**.
- Twin and adoption studies suggest a **genetic basis**.
- Identical twins often show similar IQ scores.

◆ Role of Environment

- Nutrition, family background, education, and social environment significantly influence intelligence.
- Enriched environments = higher cognitive performance.

◆ Interactionist Approach

- Most psychologists believe intelligence is the result of **both heredity and environment** interacting together.
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5. Concept of Ability

◆ Definition

Ability refers to an individual's **capacity to perform** a task or activity. Intelligence is one type of ability, particularly **cognitive**.

◆ Types of Abilities

1. *Aptitude*

- A **specific ability** or potential for a particular task (e.g., musical aptitude).

2. *Achievement*

- What has been learned or accomplished (e.g., school grades).

3. *Talent*

- Natural ability or skill in a specific area.
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Chapter Summary

- Intelligence is the **global capacity** to think rationally and act purposefully.
 - Theories of intelligence include **Spearman's**, **Thurstone's**, **Gardner's**, and **Sternberg's**.
 - Intelligence can be measured using IQ tests, both **individual** and **group-based**.
 - **Heredity and environment** both shape intelligence.
 - **Ability** includes both general and specific capabilities, such as **aptitude**, **achievement**, and **talent**.
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Key Terms

Term	Definition
Intelligence	Capacity to solve problems and adapt to environment
IQ	Intelligence Quotient = $(MA / CA) \times 100$
Aptitude	Specific potential to succeed in a particular field
G-factor	General intelligence across tasks
S-factor	Specific intelligence for a particular task
