

COGNITIVE PSYCHOLOGY
L3 /ALL GROUPS
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LECTURE 05: COGNITION AND INTELLIGENCE

1. DEFINITIONS
2. INTELLIGENCE BACKGROUND
3. THEORIES OF INTELLIGENCE

1. DEFINITION

- In 1994, a group of 52 experts in the study of intelligence and related fields endorsed the following definition of intelligence (Gottfredson, 1997a, p. 13):

Intelligence is a very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. It is not merely book learning, a narrow academic skill, or test-taking smarts. Rather it reflects a broader and deeper capability for comprehending our surroundings—"catching on," "making sense" of things, or "figuring out" what to do. This definition emphasizes that intelligence represents the ability to solve problems (including problems of comprehension) by thinking.

- **Intelligence**, in psychology, the general mental ability involved in calculating, reasoning, perceiving relationships and analogies, learning quickly, storing and retrieving information, using language fluently, classifying, generalizing, and adjusting to new situations.

Alfred Binet, the French psychologist, defined intelligence as the totality of mental processes involved in adapting to the environment. Although there remains a strong tendency to view intelligence as a purely intellectual or cognitive function, considerable evidence suggests that intelligence has many facets.

HOW DO PSYCHOLOGISTS DEFINE INTELLIGENCE?

Intelligence has been an important and controversial topic throughout psychology's history. Despite the substantial interest in the subject, there is still considerable disagreement about what exactly constitutes intelligence. In addition to questions of exactly how to define intelligence, the debate continues today about whether accurate measurements are even possible.

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:

- a) **Learn.** The acquisition, retention, and use of knowledge is an important component of intelligence.
- b) **Recognize problems.** To put knowledge to use, people must first be able to identify possible problems in the environment that need to be addressed.
- c) **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.

While psychologists often disagree about the definition and causes of intelligence, research on intelligence plays a significant role in many areas. These include decisions regarding how much funding should be given to educational programs, the use of testing to screen job applicants and the use of testing to identify children who need additional academic assistance.

So where does intelligence come from? How do we measure it? Psychologists have pondered these questions for years, yet the answers remain the subject of considerable debate.

2. INTELLIGENCE BACKGROUND

The term "**intelligence quotient**," or **IQ**, was first coined in the early twentieth century by a German psychologist named William Stern. Psychologist Alfred Binet developed the very first intelligence tests to help the French government identify schoolchildren who needed extra academic assistance. Binet 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.

However, it 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.

3. 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.

a) CHARLES SPEARMAN - GENERAL INTELLIGENCE

British psychologist *Charles Spearman* (1863-1945) described a concept he referred to as general intelligence or the *g factor*. After using a technique known as factor analysis to examine some mental aptitude tests, Spearman concluded that scores on these tests were remarkably similar. People who performed well on one cognitive test tended to perform well on other tests while those who scored badly on one test tended to score badly on others. He concluded that intelligence is general cognitive ability that could be measured and numerically expressed.

b) 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

c) HOWARD GARDNER - MULTIPLE INTELLIGENCES

One of the more recent ideas to emerge is Howard Gardner's theory of multiple intelligences. 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

d) ROBERT STERNBERG - TRIARCHIC THEORY OF INTELLIGENCE

Psychologist *Robert Sternberg* defined intelligence as "mental activity directed toward purposive adaptation to, selection and shaping of, real-world environments relevant to one's life." While he agreed with Gardner that intelligence is much broader than a single, general ability, he instead suggested some of Gardner's intelligences are better viewed as individual talents.

Sternberg proposed what he referred to as 'successful intelligence' involving three different factors:

- **Analytical intelligence:** This component refers to problem-solving abilities.
- **Creative intelligence:** This aspect of intelligence involves the capacity to deal with new situations using past experiences and current skills.
- **Practical intelligence:** This element refers to the ability to adapt to a changing environment.