

Chapter 9, Section 1 : Intelligence

Rathus, S.A., *Psychology: Principles in Practice*. Holt McDougal. Austin, TX: 2010 (p.248-251)

The Intelligence Puzzle

Intelligence is one characteristic that sets humans apart from other forms of life. Although other animals display intelligence, humans' capacity to adapt to changing conditions sets them apart from other animals.

The human ability to think about abstract ideas, such as space and time, also sets us apart from all other species. Intelligence has even expanded our senses, enabling us to invent microscopes and telescopes to see things too small or distant for the naked eye to detect. This chapter examines how intelligence is defined and measured. It also discusses differences in intelligence and considers the factors that influence intelligence.

The nature of intelligence varies. People can be very intelligent and not know many facts about academic subjects because they have not studied. People can also know a great deal because they have worked hard, even if their intelligence is not particularly high. But what exactly is intelligence?

Understanding Achievement According to psychologists, one thing intelligence is *not* is **achievement**, which refers to knowledge and skills gained from experience. In other words, achievement focuses on the things that you know and can do. Thus, achievement involves specific content, such as Spanish, calculus, history, psychology, biology, art, or music.

The relationship between achievement and experience is obvious. If you have spent many hours reading about the Civil War, for example, then you will probably do well on a test about that period in U.S. history. You will have gained knowledge on the subject of the Civil War. But if you were tested on the Revolutionary War instead, you might not do as well.

Although intelligence is not the same as achievement, intelligence can provide the *basis* for achievement. Intelligence makes achievement possible by giving people the ability to learn.

For example, consider two students who are both fascinated by mathematics. Suppose that they both take exactly the same math classes and spend the same amount of time studying the subject. The only difference between the two is that student A is more intelligent than student B. Despite the equality of opportunity and effort, student A will gain more knowledge and skills from the mathematics classes than student B. Intelligence helps student A achieve more than student B.

Understanding Intelligence Now we know what intelligence is *not*. But what is it? **Intelligence** can be defined as the abilities to learn from experience, to think rationally, and to deal effectively with others. Within that definition, psychologists have differing theories about what exactly makes up intelligence.

Theories of Intelligence

Some people have very strong science or math skills. Others are talented in music or art. Still others have the ability to get along well with other people. Are all of these abilities signs of intelligence? Is any of them? How many factors are involved in intelligence?

Throughout human history, many philosophers and scientists have speculated about the answers to these questions. The Greek philosopher Plato devoted much of his writing to examining the nature of intelligence and the human mind. French philosopher Blaise Pascal suggested that there were two types of intelligence: mathematical and intuitive. In the 1800s, the rise of psychology as a science led to new theories of intelligence.

Spearman's Two-factor Theory Around 1900, psychologist Charles Spearman observed that people who do well on one type of intelligence test tend to do well on others, too. He suggested that general intelligence, which he labeled *g*, underlies all of our intellectual abilities. The *g* factor represents the abilities to reason and to solve problems.

The SATs, which break intellectual skills into verbal, quantitative, and writing subtests, reflect a more or less unified factor, which some psychologists refer to as *g*. At the same time, all people are better at some things than others—such as math, music, or writing. For this reason, Spearman suggested that specific, or *s*, factors account for people's specific abilities. Taken together, *g* and *s* explained Spearman's observations.

Thurstone's Theory of Primary Mental Abilities Many psychologists accepted Spearman's two-factor theory of intelligence. One who took exception was L. L. Thurstone, a specialist in psychological testing. In the 1930s Thurstone argued that Spearman's tests were flawed. Thurstone's own tests showed that instead of one general intelligence, there were seven "primary mental abilities": word fluency, verbal comprehension, spatial visualization, **facility** with numbers, memory, reasoning, and perceptual speed. Further testing led him to include something similar to Spearman's *g* in his theory.

Gardner's Theory of Multiple Intelligences Later psychologists began to wonder whether all forms of intelligence could be measured through testing. Psychologist Howard Gardner considered a wide variety of studies and cultures to develop a new theory. In 1983 Gardner proposed a set of seven intelligences, which he later expanded to nine.

- verbal, or linguistic, intelligence
- logical-mathematical intelligence
- visual-spatial intelligence
- bodily-kinesthetic intelligence (such as dancers and athletes have)

- musical-rhythmic intelligence
- interpersonal intelligence (sensitivity to other people's feelings)
- intrapersonal intelligence (insight into one's own inner feelings)
- naturalist intelligence (understanding of nature and the laws that govern natural behavior)
- existential intelligence (insight into the larger philosophical issues of life)

Gardner refers to these talents or abilities as intelligences because they can be quite different from one another. In addition, he proposes that the different intelligences are independent of each other.

For example, one student might have strong scientific ability but little talent at music. Another student might have special musical-rhythmic ability but few athletic skills. A student athlete might have highly developed bodily-kinesthetic skills but limited scientific abilities.

Critics of Gardner's theory of multiple intelligences state that exceptional abilities in the musical or bodily-kinesthetic areas are not really what is meant by intelligence. His critics argue that those skills are special talents and that being talented is not the same thing as being intelligent.

Sternberg's Triarchic Theory In 1985 psychologist Robert Sternberg published his triarchic theory of intelligence. This theory breaks intelligence into the following three factors:

- analytical intelligence (the type of intelligence we use in academic courses)
- creative intelligence
- practical intelligence

Some people might excel in their schoolwork, while other people might be more creative or have more practical intelligence, or "street smarts." Practical intelligence includes abilities such as knowing how to discuss a grade with a teacher or what to do if you discover that you have lost your wallet.

Some students with limited analytical skills do very well in school—and afterward—because they are creative or have street smarts.

We often use more than one of Sternberg's three factors at the same time. If you were doing an experiment for an upcoming science fair, you might use practical intelligence to plan your time and to obtain the materials you need. You would use your analytical intelligence to interpret the results of your experiment. In addition, you would use your creative intelligence to design the display for your project.

Emotional Intelligence Psychologists Peter Salovey and John Mayer became interested in why smart people are not always as successful as might be expected. In 1990 they proposed yet another kind of intelligence: emotional intelligence. The theory gained popularity in 1995 with the publication of the book *Emotional Intelligence* by psychologist Daniel Goleman. Emotional intelligence, said Goleman, consists of five factors that are involved in success in school or on the job:

- Self-awareness: the ability to recognize our own feelings. If we know how we feel, we can better cope with our feelings.
- Mood management: the ability to distract oneself from an uncomfortable feeling. Although we may not be able to prevent feelings of anger or sadness, we do have some control over how long the feelings last. Rather than dwell on bad feelings, we can distract ourselves or make changes to improve our situation.
- Self-motivation: the ability to move ahead with confidence and enthusiasm. People who are self-motivators sometimes accomplish more than less motivated people who obtain higher scores on intelligence tests.
- Impulse control: the ability to delay pleasure until the task at hand has been accomplished. A student who resists the temptation to watch television until her or his homework is done may do better in school than a student who puts off homework until later.
- People skills: the ability to empathize, understand, communicate, and cooperate with others. People skills help us get along with others, and getting along with others helps us in school and on the job.

A “class clown” may have exceptional people skills. According to the new theory, such people could be considered emotionally intelligent. Emotional intelligence captured the interest of many psychologists and led to new research on the subject.