

Encyclopedia of Giftedness, Creativity, and Talent

Multiple Intelligences

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The theory of multiple intelligences was developed by Howard Gardner in the early 1980s. According to Gardner, individuals possess eight or more relatively autonomous intelligences that they use to create products and solve problems. The eight intelligences identified by Gardner are linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, naturalistic, interpersonal, and intrapersonal.

Multiple intelligences theory is a departure from the traditional conception of intelligence that stretches back to the start of the 20th century. In the early 1900s, French psychologist Alfred Binet designed a 30-item intelligence test for identifying schoolchildren in need of special education. Binet's test gained a wider audience after American psychologist Lewis Terman developed a commercial version for use in schools and the workplace. Around the same time as Binet's pioneering work, English psychologist Charles Spearman published a paper on "general intelligence" (g) in which he argued that all forms of intellectual activity stem from a unitary or general ability for problem solving. Although Binet and Terman had developed their scales with the goal of predicting particular types of performance and *not* as a general measure of intelligence, their work was taken as support of Spearman's theory. And, in fact, Spearman's unitary conception of intelligence went relatively unchallenged for much of the 20th century.

Development of Multiple Intelligences Theory

In 1983, Howard Gardner published a book titled *Frames of Mind* that was inspired by several simple but powerful questions; Gardner wondered whether talented chess players, musicians, and athletes could be considered intelligent in their respective fields and, if so, why these abilities were not considered in traditional conceptions of intelligence. Out of these initial questions came Gardner's assertion that intelligence is better conceived of as multiple rather than unitary in nature. Though proponents of general intelligence believe a high IQ score to indicate an individual's potential for high achievement across a wide spectrum of intellectual activities, multiple intelligences theory conceives of its eight intelligences as relatively autonomous from one another. In other words, an individual who demonstrates a particular aptitude in one intelligence

does not necessarily demonstrate comparable aptitude in another intelligence. Rather, individuals can be thought of as possessing profiles of intelligence in which they demonstrate varying levels of strength and weakness for each of the eight intelligences. Thus, it is a misunderstanding of multiple intelligences theory to claim, for example, that a particular individual possesses “no” logical-mathematical intelligence. It is certainly possible for an individual to demonstrate a low skill level in logical-mathematical intelligence, but, excluding cases of severe brain damage, all individuals possess the full range of intelligences.

Most proponents of general intelligence conceive of intelligence as an innate trait with which one is born and can do little to change. In contrast, multiple intelligences theory regards intelligence as a combination of heritable potentials and of skills that can be deepened through relevant experiences. For example, one individual might be born with a strong potential for spatial intelligence that allows him or her to read maps quickly and easily while another individual needs to study and practice diligently in order to acquire a similar level of expertise. Both individuals achieve strong levels of performance in spatial intelligence, though their pathways to acquiring this skill differ.

Identifying the Intelligences

Multiple intelligences theory remains controversial in psychology due, in large part, to the evidence upon which the theory is based. Most other theories of intelligence are based upon empirical data collected from psychometric instruments or experimental studies in which subjects are presented with test items believed to assess intellectual capability. The theory of multiple intelligences, in contrast, draws from a wider and more varied body of data. Specifically, Gardner developed multiple intelligences theory by synthesizing research from evolutionary biology, neuroscience, anthropology, psychometrics, and psychological studies of prodigies and savants. From these varied sources, Gardner developed several criteria for [p. 605 ↓] identifying an intelligence. These criteria are described by Mindy Kornhaber, Edward Fierros, and Shirley Veneema in their 2004 book, *Multiple Intelligences: Best Ideas From Research and Practice*:

Shortly after issuing the original theory, Gardner pointed out an important distinction. An *intelligence* is a raw intellectual potential to process certain kinds of information in certain kinds of ways. In contrast, a *domain* or *discipline* is an organized body of skill and knowledge in a culture. Observers cannot directly measure intelligences; they can only infer an intellectual strength from the ease with which an individual improves his or her performance in a domain. Thus, for example, high performance in the domain of surgery or of aviation suggests high spatial intelligence; and an individual with high bodily-kinesthetic intelligence is likely to achieve success in the domains of athletics, dance, or crafts.

From the aforementioned criteria, Gardner conceived of eight distinct intelligences. These intelligences are best described in terms of the domains in which individuals with high intellectual potentials are likely to be found. Thus, for example, individuals with high *linguistic intelligence* are able to analyze information and create products involving oral and written language such as speeches, books, and letters. Politicians, poets, and trial attorneys typically possess profiles of intelligence high in linguistic intelligence. *Logical-mathematical intelligence* allows individuals to create proofs, solve equations, and carry out complex calculations. Engineers, scientists, and analytic philosophers are likely to be highly skilled in this intelligence. *Spatial intelligence* allows individuals to understand maps and other types of graphical information. Architects and graphic designers typically demonstrate high levels of aptitude for spatial intelligence. *Musical intelligence* enables individuals to create and make meaning of different patterns of sound. Violinists, DJs, and scientists specializing in bird calls or whale songs are all likely to possess profiles of intelligence high in musical intelligence. *Bodily-kinesthetic intelligence* entails using one's own body to create products or solve problems. Surgeons, athletes, and dancers typically demonstrate high levels of aptitude in bodily-kinesthetic intelligence. *Interpersonal intelligence* reflects an individual's ability to recognize and understand other people's moods, desires, motivations, and intentions, while *intrapersonal intelligence* reflects an individual's ability to recognize and assess these characteristics within him- or herself.

Gardner's original theory of multiple intelligences identified the seven intelligences described above. However, in the mid-1990s, Gardner determined that naturalistic intelligence also met the criteria for identification as an intelligence. *Naturalistic intelligence* enables individuals to identify and distinguish among various types of

plants, animals, weather formations, and other products of the natural world. Individuals with high levels of naturalistic intelligence might be suited for careers in zoology, meteorology, and botany.

Existential intelligence has been described as the intelligence of big questions—the ability to consider issues of life, death, love, being, and the like. Individuals with a high aptitude for existential intelligence might be drawn to careers in philosophy, poetry, or theology. Gardner has jokingly referred to existential intelligence as a “half-intelligence” because, thus far, it has been found to meet a substantial number of the criteria for identification as an intelligence, but not all of them. For now, [p. 606 ↓] Gardner has held off on classifying existential intelligence as a full-fledged ninth intelligence.

Other researchers have suggested the existence of additional intelligences: moral intelligence, humor intelligence, cooking intelligence, and so on. To date, however, Gardner has found none of these proposed intelligences to meet a substantial number of the criteria for identification as a unique intelligence. That said, Gardner leaves open the possibility of advances in fields such as genetics or neuroscience leading to the identification of additional intelligences in the future or, even, the reconstitution of existing intelligences. For example, it is possible that the intelligence currently identified as logical-mathematical intelligence will be found to be composed of several subintelligences: a subintelligence for processing small numbers, a subintelligence for estimation, and so on. Such adjustments to the current theory of multiple intelligences are virtually inevitable. Determining the precise number of intelligences, however, is far less important than multiple intelligences theory's overarching premise that intelligence is better understood as multiple rather than general.

Multiple intelligences theory is a departure from the traditional conception of general intelligence and has been the target of substantial critique from the scientific community since its emergence in the 1990s. One criticism is that a theory such as multiple intelligences theory that was developed through a synthesis of existing research requires empirical validation that neither Gardner nor anyone else has provided. A second criticism of multiple intelligences theory focuses on Gardner's claim that “g” (or general intelligence) has little explanatory power beyond predicting success in school. Researchers such as Daniel Willingham and Linda Gottfredson have reported that an individual's performance across a variety of intellectual tasks tends to be highly

correlated and that traditional IQ tests are, in fact, strong predictors of a variety of outcomes, including future job performance. Other researchers have added that tests measuring Gardner's individual intelligences highly correlate with traditional IQ tests as well.

Applications of Multiple Intelligences Theory

Educators from a diverse range of schools in dozens of different countries have embraced the theory with tremendous enthusiasm. Nevertheless, it is important to bear in mind that multiple intelligences theory offers neither an established curriculum nor an educational goal for either students or educators to pursue. Rather, the theory of multiple intelligences is an *idea* about the concept of intelligence. Thousands of different teachers, schools, and researchers have applied this idea to education in many different ways. Some schools have utilized the vocabulary of multiple intelligences theory among their faculty to discuss the strengths and weaknesses of their students. Other educators have explicitly sought to develop curricula and lesson plans that allow students to draw upon several different intelligences. The most effective uses of multiple intelligences theory have been those that recognize multiple intelligences theory to be a tool for achieving a particular educational goal rather than an end in itself.

One school that has effectively utilized multiple intelligences theory to support teaching and learning is the New City School in St. Louis, Missouri. The New City School is an urban elementary school that began in 1988 to design and implement curriculum that allows students to draw upon all eight of their intelligences. Rather than shifting the school's goals to adapt to multiple intelligences theory, however, the New City faculty recognized that multiple intelligences theory held the potential to support their existing beliefs that all children are talented in different ways, that the arts are a critical piece of the elementary school curriculum, and that children need to learn interpersonal skills in the same ways that they learn their academic subjects. In short, educators at the New City School believe that schools should be places where students learn to solve problems in a variety of ways. They have found multiple intelligences theory to provide a useful framework for achieving this educational goal.

A very different application of multiple intelligences theory can be found at Danfoss Universe. Danfoss Universe is a 10-acre science experience park that opened in 2005 near Sønderborg, Denmark. The park includes a museum-sized building called the Explorama that contains dozens of hands-on exhibits through which visitors learn about their various intelligences. For example, an exhibit on musical intelligence allows visitors to create their own melodies on a theremin—an [p. 607 ↓] electronic instrument that responds to movement rather than touch. By moving their hands in different directions and in different patterns within the vicinity of two antennae, visitors are able to produce and learn about different melodies. Another exhibit called Teambot is designed to highlight interpersonal intelligence. In this exhibit, museum visitors must work cooperatively to design a robot arm capable of moving an object from one location to another. Through these and many other exhibits, Danfoss Universe encourages visitors to reflect upon their own profiles of intelligence—their own intellectual strengths and weaknesses. Visiting can be a powerful learning experience.

Future Outlook

For more than 25 years, educators at every level, from every type of school, and from virtually every corner of the world have drawn upon multiple intelligences theory to support teaching and learning. The idea that individuals possess profiles of intelligence with varying strengths and weaknesses aligns with educators' daily experiences in working with diverse groups of students. It is likely for this reason that, even as high-stakes testing seeks to prioritize students' linguistic and logical-mathematical intelligences, there remain numerous schools such as the New City School committed to developing all eight of their students' intelligences. The next decade promises to be an exciting one for multiple intelligences theory as advances in neuroscience and genetics will undoubtedly shed further light on the pluralistic nature of intelligence and lead to further refinements of the theory.

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See also

Further Readings

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