

# Compare and contrast two model of intelligence



**ASSIGN  
BUSTER**

## Compare and contrast two model of Intelligence

Intelligence is a single, pure ability that varies in amount. There are two major approaches to defining intelligence. One group looks at the factors of which intelligence is composed. Another group looks at the nature of intellectual processes themselves.

G- factor theory is the name given to the theoretical position that intelligence is composed of single, unitary, or general factor. Charles Spearman pioneered the use of factor analysis in the field of psychology and is sometimes credited with the invention of factor analysis. He developed a model where all variation in intelligence test scores can be explained by two factors. The first is the factor specific to an individual mental task: the individual abilities that would make a person more skilled at one cognitive task than another. The second is g, a general factor that governs performance on all cognitive tasks. Spearman's theory proved too simple, however, as it ignored group factors in test scores (corresponding to broad abilities such as spatial visualization, memory and verbal ability) that may also be found through factor analysis.

Howard Gardner (1983, 1993, and 1999) has proposed a theory of multiple intelligences according to which intelligence comprises not just a single entity, but also multiple ones, including linguistic, logical-mathematical, spatial, bodily kinesthetic, musical, interpersonal, intrapersonal, and naturalist intelligences. In developing his theory, Gardner (1983) attempted to rectify some of the errors of earlier psychologists who " all ignored biology; all failed to come to grips with the higher levels of creativity; and all were insensitive to the range of roles highlighted in human society. Gardner

do not locate talents completely within the human skull, preferring to construe all accomplishments as an interaction between cognitive potentials on the one hand, and the resources and opportunities provided by the surrounding culture on the other. All intellectual and creative work takes place within some kind of social discipline, craft, or organized activity, termed a domain. Accordingly, there is no sense in which one can speak about a person as being intelligent, or creative, in general. For example, when you write a paper, you are using primarily linguistic intelligence. When you solve calculus or other mathematical problems, you are using primarily logical-mathematical intelligence. When you try to figure out why you procrastinate in your work, you are using intrapersonal intelligence. Gardner has also speculated as to the existence of existential and spiritual intelligences. According to Gardner, each of these multiple intelligences is more or less independent of the others. Conventional tests of intelligence measure primarily linguistic and logical-mathematical intelligences, and to some extent spatial intelligence, but ignore the other intelligences. Moreover, even the intelligences that are measured are assessed in ways that are very limited, such as through fairly trivial multiple-choice kinds of questions. Thus, these tests can at best give only a limited picture of what children and even adults can do. Gardner looked to develop a theory with multiple intelligences also because he felt that the current psychometric tests only examined the linguistic, logical, and some aspects of spatial intelligence, whereas the other facets of intelligent behavior such as athleticism, musical talent, and social awareness were not included.

There are many challenges to G. The late Stephen Jay Gould voiced his objections to the concept of g, as well as intelligence testing in general, in his book 'The Mismeasure of Man'. Many scientists are now convinced that there is no single measure of intellectual ability - no unitary intelligence (Philip Kitcher, 1985).

Spearman (1904) gave persons tests of many different kinds of cognitive ability. When he examined the correlations of these tests with each other, he found that all the correlations were positive, and called this the " positive manifold." The positive manifold leads to a large first factor derived from factor analysis, dubbed general intelligence, or g. The positive manifold implies that, for example, scores on a vocabulary test will correlate positively with scores on a mathematicstest. Therefore, it is unimportant which particular tests are used to assess general intelligence-they all inter correlate highly anyway (this is called the principle of indifference of the indicator). Positive manifold is not the same thing as the first factor or g. Positive manifold is the idea that all the variables are positively correlated. As an example of a theory that postulates different subsystems, Gardner considered various kinds of evidence about how the mind is organized (brain damage; prodigies; psychometrics; transferability of learning;). Gardner also de-emphasizes g. His theory was criticized, as there are no standard assessment techniques. Where as Spearman's model of intelligence continues to be influential today. Generally speaking, intelligence tests that yield a single score are built on this theoretical foundation. The accumulation of cognitive testing data and improvements in analytical techniques have preserved g's central role and led to the modern conception of g (Carroll

1993). A hierarchy of factors with g at its apex and group factors at successively lower levels is presently the most widely accepted model of cognitive ability. Elementary cognitive tasks (ECTs) also correlate strongly with g. Creators of IQ tests, whose goals are generally to create highly reliable and valid tests, have thus made their tests as g-loaded as possible. Historically, this has meant dampening the influence of group factors by testing as wide a range of mental tasks as possible. However, tests such as Raven's Progressive Matrices are considered to be the most g-loaded in existence, even though Raven's is quite homogeneous in the types of tasks comprising it. IQ tests that measure a wide range of abilities do not predict much better than g.

Factor analysis has been used in the study of human intelligence as a method for comparing the outcomes of objective tests and to construct matrices to define correlations between these outcomes, as well as finding the factors for these results.

#### References:

- 1) Spearman, C. "General intelligence" objectively determined and measured. *American Journal of Psychology*, (1904), 15, 201-293.
- 2) Morgan Clifford T, King Richard A., Robinson Nancy M., *Introduction to Psychology*; Sixth Edition; Tata McGraw-Hill Publishing Company Limited; 1981.
- 3) Gardner, H. *Frames of mind: The theory of multiple intelligences*. New York: Basic Books, (1983).