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Competing Theories of Human Intelligence

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Cattell et al. arrived at a model of human IQ that gave central position to the balance of crystallized and fluid intelligence to explain individual difference in mental ability. But there are several other proposed theories.

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Investment Theory

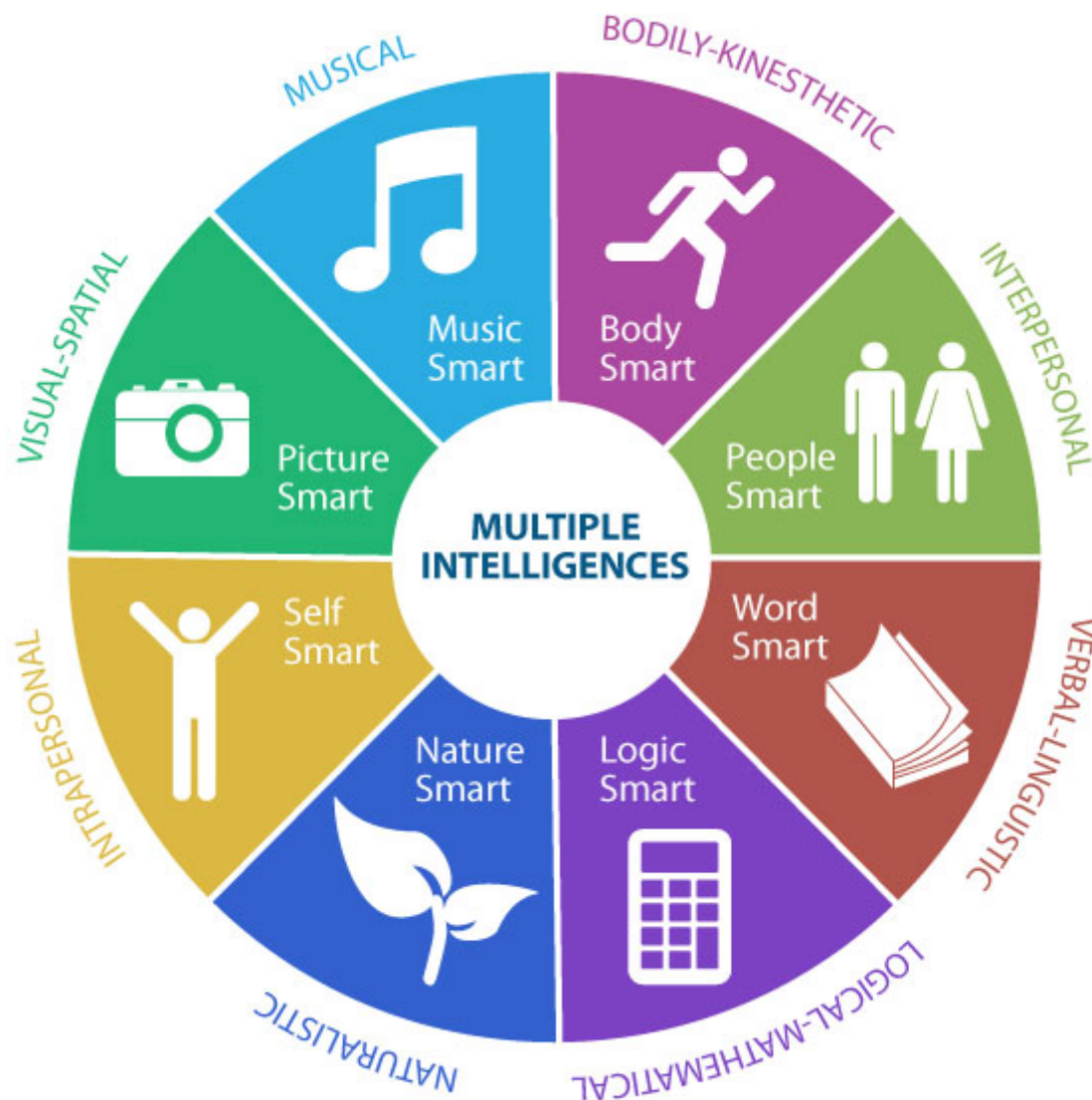
The Cattell-Horn-Carroll theory of intelligence holds that there will be individual differences in the developmental path negotiating Gf and Gc. The degree to which an individual “invests” their Gf results in specific acquired knowledge which, together with personality traits, manifests as variation in IQ test scores. But several theorists have put forward alternatives to the idea of Gc and Gf.

Gardner’s Multiple Intelligences

Gardner, unsatisfied with the concept of *g* and using his own observations of both normal individuals and those on the extreme ends of mental ability, came to a different conclusion.

He believed there were at least 9 irreducible and distinct forms of human intelligence. He believed modern IQ tests measured only the first two factors and neglected the others:

- Logical-mathematical
- Linguistic
- Spatial
- Kinesthetic
- Interpersonal
- Intrapersonal
- Musical
- Naturalistic
- Existential



As appealing as the theory is, it lacks empirical support of any kind and critics believe it to be unfalsifiable. Some have criticized the compulsion to recognize everyone as intelligent in their own way, despite substantial evidence of variable *g* across a population. Others have suggested that Gardner's work more accurately belongs in the realm of personality testing.

Regardless, critical appraisal of Gardner's theory hints at the unavoidable political and ideological tension that comes with the study of intelligence. It's as though some alternative

theories themselves were generated to counter the implicit assumption and fear that higher IQ signals higher worth. After all, the idea that everyone is intelligent is more palatable than the idea that some (unfairly?) possess greater mental faculties.

The Triarchic Theory of Intelligence

Sternberg didn't argue against Spearman's *g*, but merely augmented the theory to make it more complete. The three processing skills he proposed are:

- Analytic intelligence (akin to *Gc* or more generally *g*; the means through which intelligence is expressed)
- Creative intelligence (akin to *Gf*; the ability to engage with novel tasks)
- Practical intelligence (the degree to which a person adapts to their sociocultural, "real world" environment)

Additionally, Sternberg suggested that intelligence could be defined practically by the individual's *own appraisal* of their success in their unique social. The idea is that intelligence is an ability to shape one's environment and moderate one's own complement of skills and weaknesses accordingly. This idiopathic appraisal is quite unusual in the study of intelligence, and remains controversial. How would you rate your own competence in mastering your particular environment?

PASS

The letters in the acronym of this theory are for four distinct mental processes:

Planning: Executive function and overall organizing mental forces.

Attention: Moderation of mental arousal and focus

Simultaneous processing: pattern recognition, understanding relationships

Successive processing: organizing sequences

What's interesting about A. L. Luria's PASS theory is that each process maps onto a broad area of the brain; work in this area attempts to pair neurological function with a corresponding abstract ability, i.e. it reconciles the neurological with the cognitive.

Piagetian theories

Some theorists have focused on the qualitative aspects of intelligence rather than understanding the ways it can be quantified. Piaget understood intelligence as a *how* rather than a *how much*.

Known for his child developmental models, Piaget suggested that the growing mind constructs mental models of the world, and these mature with age. Piaget was interested in various ways intelligence manifested in the growing brain, for example with object or quantity permanence, and the capacity for logic.

sensory motor stage (until 2yrs)

pre-operational stage (until 7rs)

concrete operational stage (until 11yrs)

formal operations stage (until 16yrs)

Subsequent Neo-Piagetian theorists have attempted to update Piaget's model, and their research has created a rapidly growing branch of cognitive and developmental psychology in its own right.

Other Miscellaneous Theories

In the early 2000s, some theorists began exploring the relationship between personality factors and IQ. In 2009 Wood and Englert suggested that conscientiousness and intelligence work in tandem, with the former developing as a "compensation" for the lack of the latter. In other words, less intelligent people (or those with lower G_f) compensate by working harder and more diligently (increasing G_c). Those who are more intelligent have less need to develop such conscientiousness, however. Thus, there is a suggested link between conscientiousness and crystallized knowledge. Though it's easy to imagine ways in which variations in g could shape a developing personality, this theory has received contradictory evidence to date.

The current trend, however, is to recognize the interaction of social, personality and behavior factors with intelligence. The role of emotion is now acknowledged as a moderating variable, as well as resiliency and *self-efficacy*, i.e. the ability to appropriately apply one's skills where they count.

Bandura is a prominent theorist who suggests that low self-efficacy entails deliberately avoiding challenges and recovering poorly from failure. Idiosyncrasies in each individual's application of their intelligence could explain the large variation in people's actual success in life despite similar IQ. The trope of a gifted child who nevertheless fails because they lack the social and emotional maturity to properly apply their skills comes to mind.

Within a few decades of formal study, psychological theories of human intelligence have taken on a nuance and intricacy that's a far cry from the pioneering work of Spearman and Binet. The enormous variety of modern intelligence models is evidence for growing appreciation for the complexity of the human mind, and our own evolving understanding of what it means to be intelligent.

(Photo courtesy [Sajaganesandip](#) ^[1])

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