

# Theories of Intelligence

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Over the years many theorists have come up with their own ideas about intelligence: here are the highlights:

## **Raymond Cattell**

### **Cattell's Hierarchical Model - Fluid vs Crystallized Intelligence**

Fluid Intelligence - acquiring new info, new relations, inductive reasoning, analogies...

Crystallized Intelligence - accumulation of knowledge over your lifespan, vocabulary, general info...

Crystallized intelligence is accumulated knowledge over time and fluid intelligence as our ability to quickly solve abstract problems. Crystallized intelligence appears to increase over time while fluid intelligence declines in old age.

## **Ian Deary and Laura Stough**

### **Simple Information Processing (IP)**

Intelligence is linked to Inspection Time – the length of time needed to discriminate a stimulus (image or object) that is presented.

Higher the intelligence = lower the inspection time

## **Charles Spearman**

### **G-Factor**

One of the main arguments in the field is whether intelligence refers to a singular ability or a group of abilities. Charles Spearman argued that intelligence can be expressed by a single factor. He used **factor analysis**, a statistical technique that takes multiple items and meshes them into one number, to show that intelligence can be a single number he simply called **g** (generalized intelligence). We may also have s-factors or specific knowledge.

## **L.L. Thurstone**

### **Primary Mental Abilities**

The core of intelligence resides in 7 factors of equal importance (not just one factor): Verbal comprehension, verbal fluency, inductive reasoning, spatial visualization, numbers, memory, and perceptual speed.

## **Howard Gardner**

### **Multiple Intelligences**

Gardner believes that there exist multiple intelligences and if you are not good at one aspect, you may be gifted in others. He came up with seven types of intelligences:

- **Linguistic intelligence** involves sensitivity to spoken and written language, the ability to learn languages, and the capacity to use language to accomplish certain goals. This intelligence includes the ability to effectively use language to express oneself rhetorically or poetically; and language as

a means to remember information. Writers, poets, lawyers and speakers are among those that Howard Gardner sees as having high linguistic intelligence.

- **Logical-mathematical intelligence** consists of the capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically. In Howard Gardner's words, it entails the ability to detect patterns, reason deductively and think logically. This intelligence is most often associated with scientific and mathematical thinking.
- **Musical intelligence** involves skill in the performance, composition, and appreciation of musical patterns. It encompasses the capacity to recognize and compose musical pitches, tones, and rhythms. According to Howard Gardner musical intelligence runs in an almost structural parallel to linguistic intelligence.
- **Bodily-kinesthetic intelligence** entails the potential of using one's whole body or parts of the body to solve problems. It is the ability to use mental abilities to coordinate bodily movements. Howard Gardner sees mental and physical activity as related.
- **Spatial intelligence** involves the potential to recognize and use the patterns of wide space and more confined areas.
- **Interpersonal intelligence** is concerned with the capacity to understand the intentions, motivations and desires of other people. It allows people to work effectively with others. Educators, salespeople, religious and political leaders and counselors all need a well-developed interpersonal intelligence.
- **Intrapersonal intelligence** entails the capacity to understand oneself, to appreciate one's feelings, fears and motivations. In Howard Gardner's view it involves having an effective working model of ourselves, and to be able to use such information to regulate our lives.
- **Naturalistic intelligence** is an understanding and connection to nature and the natural world, such as seeing the relationships in the ecological systems.

It is interesting to note that the educational system loves Gardner's theory- can you tell me why?

## **Robert Sternberg**

### **Sternberg's Triarchic Theory**

Sternberg stated that three types of intelligence exist. The first type, **analytical/componential intelligence**, is ability to compare and contrast, explain, and analyze. The next type he called **creative/experiential intelligence**, which is the ability to use knowledge and experiences in new, innovative ways. The final type Sternberg labeled **practical/contextual intelligence**, which is what we call street smarts or the ability to apply what you know in the real world. It is practical intelligence that makes Sternberg so unique. If intelligence depends on context (real world applications) than how can any type of classical intelligence test really work?

## **Daniel Goleman**

### **Emotional Intelligence**

Goleman is a big advocate of what people are today calling **EQ** or **emotional intelligence**. EQ is kind of like a combination of Gardner's intra and interpersonal intelligences. EQ is the ability to understand and regulate your emotions. Many studies suggest that a high EQ has a greater correlational with financial success than IQ, but both a high IQ and EQ probably works best.