

Albert Binet

Set out to design a test that would identify which kids in the French school system needed special attention. He set benchmarks to where a child's intelligence should be at; which he called **mental age**. If a five year old took his test, and had the mental age of a three year old, then the school would work harder with him to raise his intelligence. Louis Terman, a Stanford professor, brought this idea to the United States and created the **Stanford-Binet IQ test**. IQ stands for intelligence quotient. A person's IQ score is computed by dividing a person's **mental age** by their **chronological age** and multiplying by 100. So if a 7 year old takes an IQ test and scores the mental age of a 7 year old; $7/7=1$ times $100=$ an IQ of 100. Thus an average IQ would be 100. If a 10 year old scored the mental age of a 5 year old; $5/10= .5$ times $100=$ an IQ of 50 (not so hot). If a 2 year old scored the mental age of a four year old; $4/2= 2$ times $100=$ and IQ of 200 (freakin awesome). Now you are going to ask me, how does this test deal with adults? If I am 50 but have the mental age of a 45 year old, am I mentally deficient? Terman tried to deal with this by setting an arbitrary age of 20 for all adults (it did not work so well).

Alfred Binet has able to measure what was mental age. Mental age is the age in which most typically corresponds to a given performance. Terman had attempted to use Binet's test but failed So Terman used some of Binet's ideas and his own to establish new age norms. Terman named this new test Stanford- Binet.

David Wechsler

Came along and constructed a different type of IQ test. Wechsler actually constructed three different tests. One for adults called the Wechsler adult intelligence scale (**WAIS**), one for children called the Wechsler intelligence scale for children (WISC) and one for really young kids called the Wechsler preschool and primary scale of intelligence (WPPSI). It seems as though he really liked the sound of his name. All three of these tests are widely used today. What you should really know about the Wechsler tests is that they test intelligence on many different subtests (accounting for multiple types of skills) and that your score is placed on a normal curve against the rest of the population. One problem with these intelligence tests is that people are scoring higher on them every year and we do not know why. We are constantly changing the tests to keep the scores in an average range (we cannot all be geniuses). The phenomenon that we are scoring better on these tests and becoming more intelligent year after year is called the **Flynn effect**.

Wechsler had created the Wechsler Adult Intelligence Scale (WAIS). This test consists of 11 subtests and contains verbal and performance (non-verbal) subtests. This tests tells separate scores for verbal comprehension, perceptual organization, working memory, and processing speed, which the Stanford-Binet does not. This test is now the most widely used intelligence test.

Wechsler's Criticism of the Intelligence Theory and Testing of His Day

Similar to other cognitive psychologists of his time, Wechsler came to understand that the theories of intelligence that preceded him were much too simplistic. He was concerned that intelligence tests based on these theories were not useful in a practical sense. For example, when Wechsler began building his career, many of the tests being used were only appropriate for adults with a certain level of reading and writing skills. Because he believed that factors like age and experience impacted on individuals' intellectual strengths and weaknesses, he felt strongly that both intelligence theory and intelligence testing should take such variability into account.

Wechsler's Definition of Intelligence

In Wechsler's opinion, single factor theories of intelligence -- that is the 'one-size-fits-all' model of theory-building -- did a poor job of describing the full range of intellectual abilities that human beings displayed in their daily lives. Besides age and experience, these theories also left out other important factors. Some of these included emotion and the impact of the environment in which people found themselves. Instead, Wechsler argued that intelligence was a **global capacity** that involved **dimensions of intelligence** that could be more deeply described and evaluated. Among these, he thought, were individuals' ability to perceive the world around them accurately, to act with purpose, and to find solutions to the problems they faced in life.

Charles Spearman

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). So if you think that a person is either generally smart or not so smart- then you believe in **Spearman's *g***.

Spearman's general intelligence (*g*) - specific mental abilities and is therefore measured by every task on an intelligence test. Spearman believed that people have special abilities that stand out. He believed that when someone scores high on one factor they are likely to score higher than average on other factors. The *g* factor, therefore, underlies all of your intelligent behavior and mental abilities.

Charles Spearman is widely known, in the psychology world at least, for his theory of a General Intelligence factor, or the *g* factor. The General Intelligence factor is a theory designed to investigate cognitive abilities. The *g* factor typically accounts for 40-50% of the variance in IQ test performance, measuring positive correlations among different cognitive tasks, showing that a person's skill in one type of cognitive task is comparable to a different cognitive test.

Howard Gardner

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.

Now Gardner believed that there may be many more intelligences besides the ones listed above. He hinted at a nature intelligence (good at seeing the relationships in the ecological systems- like Tarzan) or sexual intelligence (like Hugh Hefner). It is interesting to note that the educational system loves Gardner's theory- you tell me why?

Robert Sternberg

Sternberg is the new guy on the block and he took a moderate approach when looking at intelligence that he called **Sternberg's triarchic theory**. He stated that three types of intelligence exist. The first type, **analytical intelligence**, is what we commonly think of as school smarts (like the basic Binet IQ). The next type he called **experiential intelligence**, which is the ability for one to use their knowledge in creative ways. The final type Sternberg labeled **practical 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?

Sternberg's 3 intelligence

Analytical- academic problem solving

Creative- generating novel ideas and reacting adaptively in novel situations

Practical- required for everyday situations, ill defined and have multiple situations

Francis Galton:

Developed the idea of "nature vs. nurture". He studied genetics and how they affected people's individualism. Nature means how a person acts because of their genetics and nurture means how a person acts based on their environment. He believed nature is the most important in the debate.

Galton, however, was not a psychologist. Psychology was simply an area that caught his attention for 15 years. His contributions in other areas include: the introduction of the use of fingerprints in police work; the modern weather map; and investigations into fashion, geographical distribution of female beauty, weight lifting, and the efficacy of prayer.

The study of individual differences: "Galton effectively brought the spirit of evolution to bear on future psychology in his brilliant work on the problems of mental inheritance and individual differences in human capacity. Prior to Galton the phenomenon of individual differences had not been considered a subject for serious study in psychology..."

When his cousin Darwin published the *Origin of Species*, Galton immediately became interested in the new theory."

After investigating the evolution of physical characteristics, his attention moved to the evolution of mental characteristics and abilities in humans.

Mental Tests: "Galton was the first to develop certain specific mental tests; indeed, it may be said that he initiated the whole idea of mental tests. He began by assuming that intelligence could be measured in terms of one's level of sensory capacity...the higher the intelligence, the higher the level of sensory discrimination...With characteristic ingenuity and enthusiasm, he devised a number of such instruments to measure the senses."

Statistics: Galton found that a wide array of measures of human physiology and mental abilities produce a 'normal curve'. As a normal curve can be meaningfully summarized by its mean and standard deviation, he advocated the use of those two measures to describe measures of human attributes.

In looking for an appropriate way to express the strength of association between variables, he encouraged his student (Karl Pearson) to take his (Galton's) ideas and develop an appropriate statistical technique. Pearson invented the measure of correlation still in use today (the 'Pearson product-moment coefficient of correlation'). Galton invented the scatter-plot to graph the data.

Eugenics: "Galton's ultimate interest was in encouraging the productivity of the more eminent or fit, and discouraging the birth rate of the unfit. To help achieve this end, he founded the science of eugenics and argued that the human strain, like livestock, could be improved by artificial selection. He believed that if men and women of considerable talents were selected and mated generation after generation, a highly gifted race of people would be the eventual result."

Lewis Terman:

He revised Alfred Binet's earlier tests and invented the Stanford-Binet IQ Tests. Believed that children who scored high on his IQ tests were "gifted" and likely to become society's leaders in adulthood. Also, he felt that the tests results proved that black men intelligence was inferior to the intelligence of white men.

Alfred Binet has able to measure what was mental age. Mental age is the age in which most typically corresponds to a given performance. Terman had attempted to use Binet's test but failed So Terman used some of Binet's ideas and his own to establish new age norms. Terman named this new test Stanford- Binet.

Intelligence is a result of Nature vs. Nurture. Terman came up with an idea that would measure intelligence of different ages. Nature plays a huge role in determining the intelligence while nurture guards the natural intellectual ability. However, nature beats nurture when it comes to intelligence because most of the child's intelligence comes from what they inherit from there parents.

Terman is most known for his improvement to the IQ test, which was originally developed by Alfred Binet. Now, his improved version is used very commonly, such as in schools and job applications.

- *mental age: indicated that he or she displayed the mental ability typical of a child of that chronological (actual) age*
- *intelligence: The ability to acquire and apply knowledge and skills*
- *Stanford-Binet IQ Test: intelligence test based on the measure developed by Binet and Simon, adapted by Lewis Terman of Stanford University*
- *intelligence quotient: also known as an IQ, is a child's mental age divided by chronological age, multiplied by 100*
- *IQ Score: derived from one or several standardized tests designed to assess human intelligence.*
- *deviation IQ Scores: locate subjects precisely within the normal distribution, using the standard deviation as the unit of measurement.*
- *IQ Ratio: 90-110 is considered as an average IQ ratio; the IQ is calculated by using the ratio of a persons "mental age" and chronological age.*

William Stern

I coined the term "IQ" or intelligence quotient.

Major Contribution

- The Intelligence Quotient

Ideas and Interests

William Stern decided that "personalistic psychology" or individuality was destined to be the psychological problem of the twentieth century. He attempted to classify people according to types, norms, and aberrations. To Stern, it was in the process of investigating individuality that the real essence of personality and intelligence could be discovered. Stern was influenced by the work of Binet and his studies of intelligence in children. As a result, Stern reviewed the principle findings in the field and developed the idea of expressing intelligence test results in the form of a single number, the intelligence quotient.

Stern's general definition of intelligence was "a general capacity of an individual consciously to adjust his thinking to new requirements,...a general mental adaptability to new problems and conditions of life." Two people could adapt to a new situation with different approaches, but if they were equally successful they demonstrated 'teleological equivalence.' Stern looked at individual test scores as particular "mental ages" which could then be compared to actual "chronological ages" to determine a degree of advancement. He took the mental age and divided it by the chronological age, and named this ratio the intelligence quotient.

Daniel Goleman

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.

Emotional intelligence (EQ)

1. similar to interpersonal and intrapersonal intelligence

Most famous for his work with Emotional Intelligence, Emotional intelligence is how well you handle your feelings and how well you get along with others. He, along with other psychologists, believes that EQ (emotional intelligence) may be more indicative to a person's success in life than academic IQ.

L.L. Thurstone and Primary Mental Abilities:

L.L. Thurstone created a model that included seven primary mental abilities: verbal comprehension, word fluency, number facility, spatial visualization, associative memory, perceptual speed and reasoning. Thurstone called these seven abilities "Primal Mental Abilities". Thurstone's theory challenged Spearman's General Intelligence theory, claiming people could have multiple intelligences as opposed to one single intelligence.

1. Thurstone

1. primary mental abilities theory

1. intelligence is comprised of seven main abilities