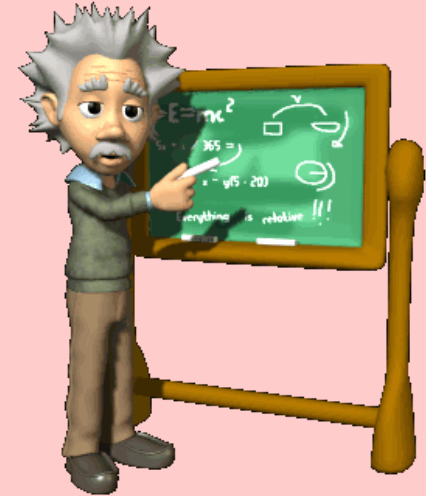


History of Intelligence

What makes us
intelligent Or
Not so intelligent

What is Intelligence?

- The ability to learn from experience, solve problems, and use knowledge to adapt to new situations.
- Is socially constructed thus...
Can be culturally specific.



According to this definition, are both Einstein and Ruth intelligent?

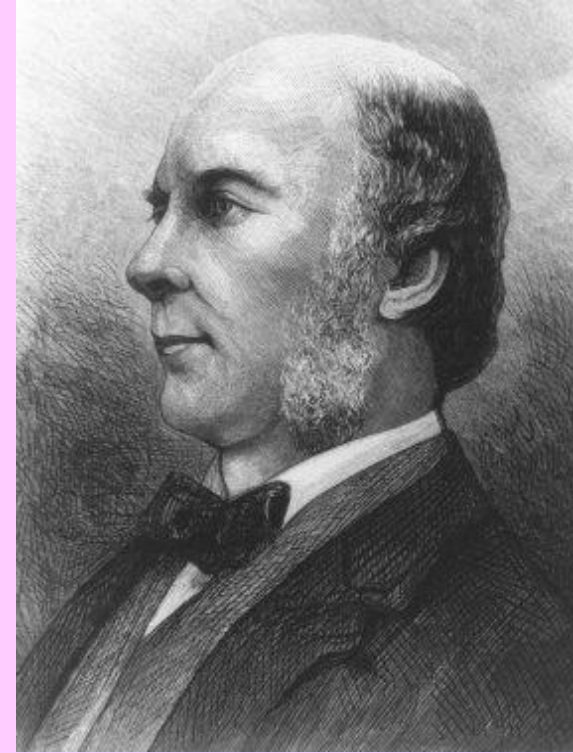
Debates over Intelligence

- Does each of us have an inborn intelligence and can/should we classify it as a quantifiable number?
- Is intelligence one general ability or several specific abilities?



Early Pioneers of Intelligence Testing

- Sir Francis Galton (British/1890s)
- Fascinated by measuring mental abilities with physical characteristics such as head size



- Founded the "eugenics" movement - encouraging only the smartest and fittest to reproduce (to him: well-born white men)

Early Pioneers of Intelligence Testing

- France had just passed a law requiring all children to attend school
- **Alfred Binet (French/1900s)** was commissioned by the French government to determine children's abilities in school
- Set out to figure out a concept called a **mental age** (chronological age that corresponds to a given level of performance).
- Hoped they could use test to help children, not label them.



Early Pioneers of Intelligence Testing



- William Stern (German/1900s)
- Derived the term "Intelligent Quotient" (IQ)
- $$\text{IQ} = \frac{\text{mental age}}{\text{chronological age}} \times 100$$
- We don't use the IQ formula anymore, now it's standardized

Early Pioneers of Intelligence Testing



- Lewis Terman
(American/1910s)
- Adapted and created the "Stanford-Binet" intelligence test
- Changed terminology, extended the range from teenagers to adults

Terman and his IQ Test

- A 8 year old has a mental age of 10, what is her IQ?
- A 12 year old has the mental age of 9, what is his IQ?
- A boy has the mental age of 10 and an IQ of 200, how old is he?
- Used Binet's research to construct the modern day IQ test called the Stanford-Binet Test.
- $$\text{IQ} = \frac{\text{Mental age}}{\text{Chronological age}} \times 100.$$

Problems with the IQ Formula

- It does not really work well on adults, why?

If a 60 year old man



does as well as an average 30 year old
then his IQ would be 50!!!!!!



That makes no sense!!!! So now we use
standardization

Is intelligence one thing or several different abilities?



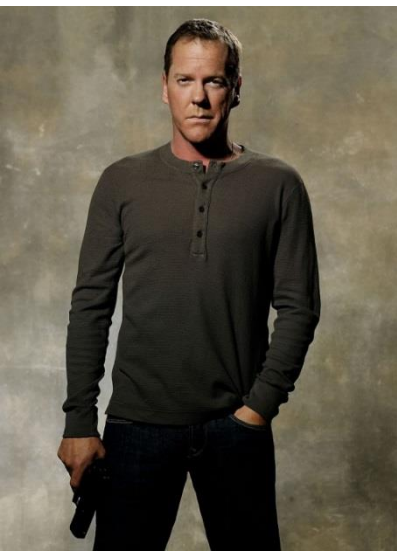
- To find out scientists use **FACTOR ANALYSIS:**

A statistical procedure that identifies clusters of related items



Jack Bauer is good at torturing, bomb defusing, shooting, figuring out evil plots and saving the country. Is there anything he cannot do?

Charles Spearman used FA to discover his *g* or **(general intelligence)**.



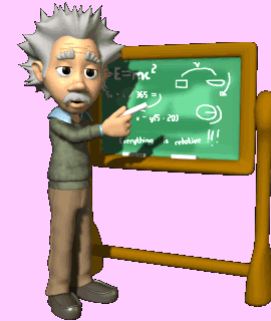
Multiple Intelligences



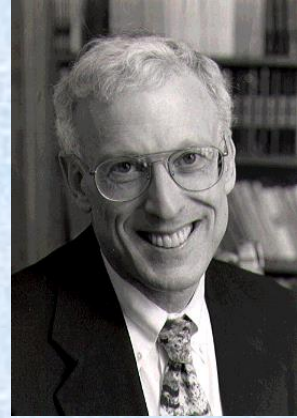
- Howard Gardner disagreed with Spearman's g and instead came up with the concept of multiple intelligences.
- He came up with the idea by studying savants (a condition where a person has a neurodevelopmental disorder but is exceptional in one area).

Gardner's Multiple Intelligences

- **Visual/Spatial**
- **Verbal/Linguistic**
- **Logical/Mathematical**
- **Bodily/Kinesthetic**
- **Musical/Rhythmic**
- **Interpersonal**
- **Intrapersonal**
- **Natural**



Sternberg's Triarchic Theory of Intelligence



Gardner Simplified

- **Analytical** (academic problem solving).
- **Creative** (generating novel ideas)
- **Practical** (required for everyday tasks where multiple solutions exist).



Creativity

- The ability to produce novel and valuable ideas; correlates with IQ up to about 120 then levels off
- **Convergent thinking:** demanding a single answer
- **Divergent thinking:** imagining multiple answers to a problem



- How do you fall on the debate concerning the single intelligence factor (g) versus multiple intelligences? The line below indicates a continuum of the theorists we have examined with Spearman's g factor at one end and Gardiner's multiple intelligences on the other end. Make a mark on the line indicating where you fall and explain your reasoning.



- Is there a single general intelligence factor (g) or is intelligence several different, unrelated abilities?
- **For each study below, indicate if it supports A) the idea of g – a general intelligence factor or B) multiple intelligences.**
- Subjects were given 56 different tasks and eight clusters of primary mental abilities were determined using factor analysis. Researchers found that those who excelled in one cluster were more likely to score well on the other clusters as well. _____
- People have lost linguistic abilities due to damage to the left hemisphere of their brains, but retain their capacity to be musicians, visual artists, and engineers. _____

- A lobotomy may cause little impairment of logical or linguistic intelligence, but it is usually disastrous for self-understanding and interpersonal thought. _____
- Single intelligence test scores (measuring g) correlate well with success in various mentally demanding careers. _____
- There are people who score low on intelligence tests, but have a specific area in which they excel. This is called the savant syndrome. _____