Intelligence

What makes us smart?
Or not so smart?
Theories of Intelligence

• No one real definition
• Fluid versus Crystallized Intelligence
• 4 main theoretical concepts of intelligence....
Charles Spearman and his $G$ factor

- Used factor analysis and discovered that what we see as many different skills is actually one General Intelligence.

- If you are good at one subject you are usually good at many others.

Jack Bauer is good at torturing, bomb defusing, shooting, figuring out evil plots and saving the country (and he is good looking). Is there anything he cannot do?
Howard Gardner and Multiple Intelligences

• Gardner believed that there exists at least 7 different types of intelligences.

1. Linguistic
2. Logical-mathematical
3. Spatial
4. Musical
5. Body-kinesthetic
6. Intrapersonal
7. Interpersonal
8. Naturalist
Robert Sternberg and his Triarchic Theory

• Most commonly accepted theory today.

• Three types of intelligence
  1. Analytical
  2. Creative
  3. Practical
Goleman and his EQ

• Emotional Intelligence
• Interpersonal and intrapersonal intelligences.
• Maybe EQ is a better predictor for future success than IQ.
Brain Size and Intelligence
Is there a link?

• Small +.15 correlation between head size and intelligence scores (relative to body size).

• Using an MRI we found +.44 correlation with brain size and IQ score.
Brain Function and Intelligence

• Higher performing brains are less active than lower performing brains (use less glucose).

• Neurological speed is also a bit quicker.
How do we Assess Intelligence?

- Alfred Binet and Theodore Simon set out to figure out a concept called a **mental age** (what a person of a particular age should know).
- They discovered that by discovering someone's mental age they can predict future performance.
- Hoped they could use test to help children, not label them.
Terman and his IQ Test

• Used Binet’s research to construct the modern day IQ test called the Stanford-Binet Test.

• IQ = Mental age/Chronological age X 100.

• 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?
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 35 year old then his IQ would be 50!!!!!! That makes no sense!!!!!
Wechsler Tests

• More common way to give IQ tests....does not use the formula but uses the same scoring system.
• WAIS
• WISC
• WPPSI
Normal Distribution
The Flynn Effect

- Intelligence test performance has been rising
How do we construct an Intelligence Test?

- **Standardized**: the questions have been piloted on similar populations and the scores fall on a normal distribution.
- **Reliable**: Test-Retest, Split-halves Methods.
- **Validity**: Content, Predictive or Construct.
Types of Tests

Aptitude

- Measure ability or potential.

Achievement

- Tests that measure what you have learned.
Does Intelligence Change Over Time?

By age 3, a child's IQ can predict adolescent IQ scores. Depends on the type of intelligence, crystallized or fluid.
Extremes of Intelligence

• Akrit Jaswal