Lecture 11

Intelligence
Psychology 101

What is Intelligence?
- Intelligence
  - The ability to learn from experience, solve problems, and use knowledge to adapt to new situations

The debate
- One general intelligence
  - "g"
  - Although some people stand out in certain areas, people that score higher in one area usually score higher in other areas as well
  - Very controversial
- Multiple Intelligences
  - Primarily based on savant syndromes

What is a savant?
- A person with limited mental abilities in many areas, but that excels exceptionally in a specific skill area
  - Rain Man

Multiple Intelligences
- 8 or 9 proposed different intelligences
- Naturalistic too (not pictured)
- Taking a multiple Intelligences Survey

Intelligence vs Creativity
- Creativity
  - The ability to produce novel and valuable ideas
  - Creativity is positively correlated with intelligence
    - No correlation when intelligence gets really high though
      - Extremely creative people are not more intelligent than their less creative peers
Five components of creativity

- Expertise
  - Decent amount of knowledge
- Imaginative thinking skills
  - Ability to see things in new ways
- A venturesome personality
  - Tolerates ambiguity and risk
- Intrinsic motivation
  - Motivated internally
- A creative environment
  - Mentored and challenged by their peers in their environments

What about the brain deals with intelligence?

- Size may matter
  - Sperm whales have the largest brain though (so size can’t be everything)
- More synapses
- More convolutions
- Perceptual speed
  - Process the world more quickly
- Possible neurological speed
  - Brain waves actually occur faster

Assessment of Intelligence

- Alfred Binet
- Decided that children have an actual age and a mental age
- IQ = \frac{\text{mental age}}{\text{actual age}} \times 100

The IQ test

- Stanford-Binet Intelligence Test
  - Gave 1 score: similar to what you may find in an IQ test online
- WAIS: Wechsler Adult Intelligence Scale
  - Most widely used intelligence test
  - Separate verbal and nonverbal scores

WAIS SUBTEST

Properties of Intelligence Tests

- What main aspects would you want in an intelligence test?
  - Validity
    - Should measure intelligence
    - How fast you ride a tricycle around the block: NOT a valid intelligence test
Properties of Intelligence Tests

- Should be reliable
  - If the first test you take, you score average, and the next test you take, you're a genius, how can we rely on that score?

Properties of Intelligence Tests

- Need to be standardized
  - IQ of 100 = average
  - The test needs to reflect this

The Normal Curve: Intelligence

- Are intelligence scores stable throughout life? Do they change?
  - Einstein was slow to learn to talk
  - Predictors in children prior to age 3 are not reliable
  - After age 4-5: Intelligence tests predict intelligence fairly well FOR LIFE

What do we know about Intelligence?

- Extremes of Intelligence
  - Mental retardation
    - a condition of limited mental ability
    - indicated by an intelligence score below 70
    - produces difficulty in adapting to the demands of life
    - varies from mild to profound
  - Down Syndrome
    - Genetic condition
    - #1 cause of mental retardation

A Prediction of Intelligence

- 11 year olds vs 80 year olds

Extremes of Intelligence

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The High Extreme

- IQ over 135: Mensa
- Well-adjusted
- Children with extraordinary intelligence may be more isolated, introverted, and in their own world
  - Most thrive though
- Should there be tracking in schools?
  - GATE classes
  - May be labeling some students to succeed and others to fail

Nature and Nurture of Intelligence

- Is Intelligence due primarily to nature or nurture?
- It must be BOTH

<table>
<thead>
<tr>
<th>Degree of Mental Retardation</th>
<th>Percentage of Persons with Retardation</th>
<th>Adaptation to Demands of Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>50-70</td>
<td>May learn academic skills up to sixth-grade level. Adults may need assistance, achieve self-supporting social and vocational skills.</td>
</tr>
<tr>
<td>Moderate</td>
<td>70-90</td>
<td>May progress to second-grade level academically. May need special support to develop socially.</td>
</tr>
<tr>
<td>Severe</td>
<td>20-40</td>
<td>May have to seek and perform simple work tasks under close supervision but may profit from occupational training.</td>
</tr>
<tr>
<td>Profound</td>
<td>Below 20</td>
<td>Require constant aid and supervision.</td>
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</tbody>
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Ethnic and Gender Gaps

- 15 point gap between whites and blacks reported in 1994 on intelligence tests
- Can’t judge an individual by this
  - Millions of blacks outscore the average white
- Girls better at Verbal and memory tasks
- Boys better at Mathematical/Spatial

Genetic Influences

Child-parent correlation in verbal ability scores:

- Children and their birth parents
- Adopted children and their birth parents
- Adopted children and their adoptive parents

GENDER EFFECTS

- Percentage of boys and girls within each IQ score band

Standard Responses

- Boys
- Girls