What is Intelligence?

- General Intelligence (‘g’) (Spearman)
- Theories of Multiple Intelligences
  - Gardner’s Theory of Multiple Intelligences
  - Sternberg’s Triarchic Theory
  - Catell’s Fluid and Crystallized Intelligence

Gardner’s Theory of Multiple Intelligences

Sternberg’s Triarchic Theory of Successful Intelligence

Fluid and Crystallized Intellectual Development Across the Life Span
The Binet Tests

- Alfred Binet
  - Binet-Simon Intelligence Test
  - Verbal Reasoning
  - Abstract/Visual Reasoning
  - Quantitative Reasoning
  - Short-Term Memory

The Binet Tests

- Alfred Binet
- Developmental Approach to Intelligence
  - Child's mental ability increases with age
  - ”Mental Age“ (MA)
- Revisions to Binet’s test
  - Lewis Terman, Stanford
    - Stanford-Binet Intelligence Test

The Binet Tests

- Alfred Binet

The Binet Tests

- Example: 8 yr old scores as well as the average 9 yr old (Answer = 113)
  - But what does 113 mean????

- Three important facts about IQ:
  - IQ is a point of comparison across age groups
  - IQ is a point of comparison across individual development
  - IQ scores (in general) are normally distributed
The Normal Distribution

\[ \text{IQ} = \left( \frac{\text{MA}}{\text{CA}} \right) \times 100 \]

The Weschler Scales

- Also yields an IQ score that is normally distributed
- 2 subscores
  - Verbal items (like Stanford-Binet)
  - Non-verbal items (“performance tasks”)
- 3 IQ scores
  - Verbal IQ
  - Performance IQ
  - Overall IQ

The Flynn Effect

The Increase in IQ Scores from 1932 to 1997

Evaluating IQ tests

- What they predict
- What they DO NOT predict
- Biases in testing
  - Cross-Cultural Views of Intelligence
  - Cultural Biases
  - Ethnic Comparisons
    - Comparisons are across GROUPS of individuals
    - SES
    - Cultural and environmental biases
    - Stereotype Threat
The Concept of Intelligence

Sample Item from the Ravens Progressive Matrices Test

Evaluating IQ tests

The Extremes of Intelligence
Extremes of Intelligence

• Mental Retardation
  – IQ below 70 +
  – Difficulty adapting to everyday life +
  – Exhibits these characteristics by age 18

<table>
<thead>
<tr>
<th>Type of Mental Retardation</th>
<th>IQ Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>55-70</td>
<td>13</td>
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<tr>
<td>Moderate</td>
<td>40-54</td>
<td>0</td>
</tr>
<tr>
<td>Severe</td>
<td>25-39</td>
<td>4</td>
</tr>
<tr>
<td>Profound</td>
<td>Below 25</td>
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Extremes of Intelligence

• Giftedness
  – IQ 130 or higher or superior talent in one domain
  – Precocious, need less assistance from adults, have a passion for their “domain.”

• Special needs
  – Underchallenging vs. Overchallenging them
  – They’re still kids!!

Intelligence in Older People

Do older people lose intelligence?

• Problems
  – Cohort effects
  – Reaction time components
  – Retesting effects
  – Subject attrition

Recent Conclusions about Nature of Intelligence in Older People

Schaie: Sequential methods

• Some abilities gradually decline
  – others stay relatively steady
• No uniform pattern
• Acquired strategies remains steady or improve
Environmental Factors

- Certain environmental and cultural factors are related to greater or lesser degrees of intellectual decline

- Lesser declines are associated with many factors