

Intelligence

I. What Is Intelligence?

- Definitions vary across cultures
 - Overall capacity of an individual to act purposefully, think rationally, and deal effectively with the environment
 - Includes learning and understanding
 - Intelligence is expressed in behavior
 - Intelligence is NOT the same as IQ

I. What Is Intelligence?

One Ability or Many?

1. Factor Theories

- Use statistical technique of factor analysis
 - A. Spearman's two-factor theory of intelligence
 - **General (g)**
 - Affects all tasks
 - **Specific**
 - Affects particular tasks

I. What Is Intelligence?

B. Thurstone's Factor Theory of Intelligence

- **General factor**
- **7 specific factors**

I. What Is Intelligence?

Emotional Intelligence

- The ability to perceive and express emotions in accurate and adaptive ways
- Allows one to get along well in a variety of situations

II. Test Development

- Common tests that do NOT measure intelligence
 - Achievement tests
 - Aptitude tests

II. Test Development

- Misconceptions About Intelligence Tests
 - Intelligence tests measure innate intelligence
 - IQs never change
 - Intelligence tests measure all aspects of a person's intelligence
 - Tests reveal everything needed to judge someone's competence

II. Test Development

A. Developing an Intelligence Test

1. What does a test measure?
 - Procedures used
 - Deciding what to measure
 - Constructing items
 - Standardizing the test

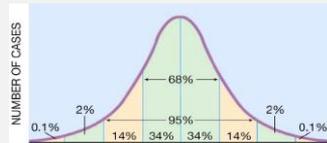
II. Test Development

2. Standardization
 - Process of developing uniform procedures for administering and scoring a test
 - Establishes norms
 - From a representative sample of the test population
 - A reference point for comparing individual scores
 - Allows testers to appropriately interpret future test results

II. Test Development

3. The Normal Curve

- Most people score near the middle
- Few people score very well or very poorly



II. Test Development

4. Scores

- Raw score
 - Number of correct scores
 - Often converted to standard scores
 - Express position relative to other test-takers
 - *Compared to others similar to me, how did I do?*

II. Test Development

4. Scores

- Examples of standard scores
 - Percentile Scores
 - Percentage of test-takers that scored lower
 - Deviation IQ
 - Standard IQ test
 - Mean and standard deviation are same for all ages

II. Test Development

B. Reliability

- Consistency of test scores over time
 - Test-Retest Method
 - Test administered to same person at least twice
 - Intelligence test scores change over time

II. Test Development

- Alternate forms method
 - Giving two different versions of same test
- Split-half method
 - Dividing a test into at least 2 parts and comparing scores

II. Test Development

C. Validity

- The test does what it's supposed to do!
 1. Types of validity
 - a) Content validity
 - Test items measure the construct in question
 - b) Predictive validity
 - Ability to predict something it should be able to predict

II. Test Development

2. Criticisms of Intelligence Test Validity

- Intelligence can't be measured precisely without a clear definition of intelligence
- Tests reflect past education quality, not intelligence
- Testing environment (schools) may adversely affect scores
- Scores are affected by an individual's performance expectations
 - Stereotype threat

III. Important Intelligence Tests

A. Albert Binet's Intelligence Test

- Used to identify MR
- "Mental age"
- Model for future tests



III. Important Intelligence Tests

B. Stanford-Binet Intelligence Scale

- Louis Terman (1916)
- Intelligence quotient (IQ)
 - $(\text{Mental age} / \text{actual age}) \times 100$
 - Good predictor of academic performance

III. Important Intelligence Tests

C. The Wechsler Scales

- David Wechsler
- Most popular tests
- Verbal and performance abilities



III. Important Intelligence Tests

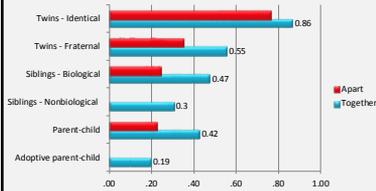
- The Wechsler Scales
 - Individually given by trained tester
- 1. Wechsler Adult Intelligence Scale-IV
 - (WAIS-IV) 16+
- 2. Wechsler Intelligence Scale for Children
 - (WISC) 6 - 16
- 3. Wechsler Preschool and Primary Scale of Intelligence
 - (WPPSI) 4 - 6½

IV. Nature vs. Nurture

- Heritability of IQ
 - proportion of variation in a population
 - 1 = all variation genetic
 - 0 = no variation genetic
- In US adults, studies find IQ heritability as high as **.8**

IV. Nature vs. Nurture

■ Correlation of IQ scores within families



IV. Nature vs. Nurture

- Environmental factors on IQ
 - Level of education
 - Parents level of education
 - Family environment
 - Birth order

IV. Nature vs. Nurture

- Interaction of Biological and Environmental Factors
 1. Gender and Intelligence
 - Men and women have equal IQ scores
 - Gender stereotypes about spatial and verbal tasks
 - Create different environments for men and women
 - Only small gender differences

IV. Nature vs. Nurture

2. Socioeconomic Status and Intelligence
 - Genetics more important among wealthy children
 - Environment more important among poor children

V. Exceptionality & Education

1. Giftedness
 - Three key factors (Renzulli, 2002):
 - Above-average ability
 - Task commitment
 - Creativity
 - Need special opportunities to develop abilities

2. Intellectual Disability

- Early categories
 - Moron
 - Idiot
 - Imbecile
- Now
 - Mild
 - Moderate
 - Severe
 - Profound

V. Exceptionality & Education

2. Intellectual Disability

- Mental impairments and problems with learning and reasoning
 - Low IQ scores (<70)
 - Limited adaptive skills
 - Diagnosed before age 18
- Support needed to function most effectively

2. Intellectual Disability

- ≈ 1% of children aged 3–10 years
- Older children more likely to be identified
- Boys more than girls
- True across different countries

2. Intellectual Disability

- Causes
 - Deprived environments
 - Infectious diseases
 - Physical trauma
 - Genetic abnormalities
 - Down's syndrome
 - Fetal Alcohol Syndrome
 - Cause is often unknown