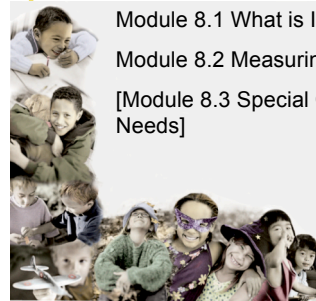


Intelligence

IIE 366: Developmental
Psychology
Greg Francis
Lecture 18

Chapter 8: Intelligence and Individual Differences in Cognition



Module 8.1 What is Intelligence?
Module 8.2 Measuring Intelligence
[Module 8.3 Special Children, Special Needs]

Children and Their Development, 4/e by Robert Kail

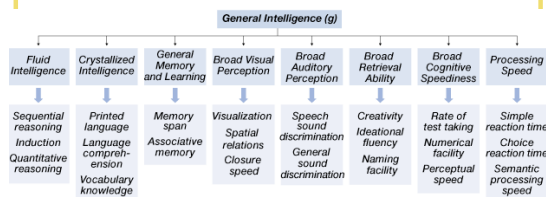
8.1 What is Intelligence?

Psychometric Theories
Gardner's Theory of Multiple
Intelligences
Sternberg's Theory of Successful
Intelligence

8.1 Psychometric Theories

- Use patterns of test performance as starting point to answer questions
- Test scores provide evidence for general intelligence (g) and specific intelligences (e.g., perceptual speed, memory, word comprehension, word fluency)
- Hierarchical theories such as Carroll's are a compromise between general and specific theories of intelligence

Hierarchical View of Intelligence



Source: Carroll, 1993.

8.1 Gardner's Theory of Multiple Intelligences

- Instead of using test scores, draws upon research in child development, brain-damaged adults, and exceptional talent
- Proposes 9 intelligences: linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, naturalistic, existential
- Gardner believes that schools should foster all intelligences

8.1: Psychometric Theories

8.1 Sternberg's Theory of Successful Intelligence

- Successful intelligence involves using one's abilities skillfully to achieve personal goals
- Three different kinds of abilities involved
- *Analytic ability*: analyzing problems and generating different solutions
- *Creative ability*: dealing adaptively with novel situations and problems
- *Practical ability*: knowing what solution or plan will actually work

8.2 Measuring Intelligence

Binet and the Development of Intelligence Testing

Do Tests Work?

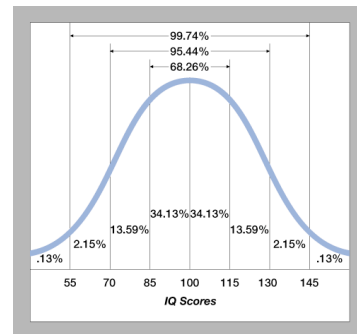
Hereditary and Environmental Factors

Impact of Ethnicity and Socioeconomic Status

8.2 Binet and the Development of Intelligence Testing

- Binet used mental age to distinguish "bright" from "dull" children
- Led to the Stanford-Binet, which gives a single IQ score; average = 100

Distribution of IQ Scores



8.2: Binet and the Development of Intelligence Testing

8.2 Binet and the Development of Intelligence Testing



- Binet used mental age to distinguish "bright" from "dull" children
- Led to the Stanford-Binet, which gives a single IQ score; average = 100
- WISC, devised in the 1930s, gives verbal and performance IQ scores and a combination of the two scores; the full-scale IQ

8.2 Binet and the Development of Intelligence Testing

- Binet used mental age to distinguish "bright" from "dull" children
- Led to the Stanford-Binet, which gives a single IQ score; average = 100
- WISC, devised in the 1930s, gives verbal and performance IQ scores and a combination of the two scores; the full-scale IQ

Sample Items from WISC-II

Items Like Those Appearing on Different Subtests of the WISC-III

Verbal Scale	Information: The child is asked questions that tap his or her factual knowledge of the world. 1. How many wings does a bird have? 2. What is steam made of?
	Comprehension: The child is asked questions that measure his or her judgment and common sense. 1. What should you do if you see someone forgot his book when he leaves a restaurant? 2. What is the advantage of keeping money in a bank?
	Similarities: The child is asked to describe how words are related. 1. In what way are a lion and a tiger alike? 2. In what way are a saw and a hammer alike?
Performance Scale	Picture arrangement: Pictures are shown and the child is asked to place them in order to tell a story. 
	Picture completion: The child is asked to identify the part that is missing from the picture. 

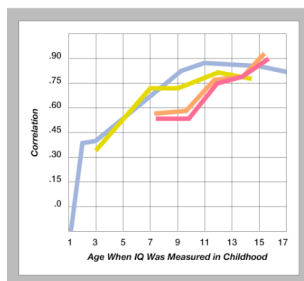
8.2: Binet and the Development of Intelligence Testing

8.2 Do Tests Work?

- Are they reliable? In the short term, yes. In the longer term, less so
- Infant tests do not reliably predict adult IQ, but scores obtained in childhood do.

Correlation Between Childhood and Adult IQ

Lines indicate different studies



8.2: Do Tests Work?

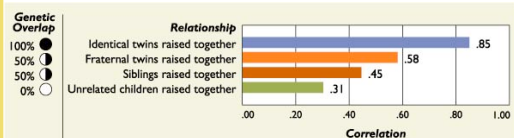
8.2 Do Tests Work?

- Are they reliable? In the short term, yes. In the longer term, less so
- Infant tests do not reliably predict adult IQ, but scores obtained in childhood do
- Are they valid? Yes, tests are reasonable predictors of success in school and the workplace, particularly for more complex jobs
- Validity can be increased with *dynamic testing* (measures learning potential)

8.2 Hereditary and Environmental Factors

- Effects of heredity shown in family studies

Correlations of IQ for Family Members



8.2: Hereditary and Environmental Factors

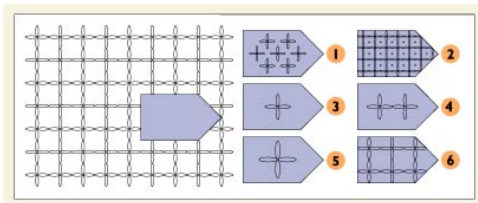
8.2 Hereditary and Environmental Factors

- Effects of heredity shown in family studies
- Heredity also influences patterns of intellectual development (twins, adoptees)
- Effects of environment shown in studies of home environments (children with high test scores come from well-organized homes), historical change in IQ scores, and intervention programs

8.2 Impact of Ethnicity and Socioeconomic Status

- Asian Americans have highest scores followed by European Americans, Hispanic Americans, and African Americans
- Group differences reduced when comparing groups of similar economic status
- *Culture-fair intelligence tests* reduce the differences but don't eliminate them

Culture-fair Test Item



8.2: Impact of Ethnicity and Socioeconomic Status

8.2 Impact of Ethnicity and Socioeconomic Status

- Asian Americans have highest scores followed by European Americans, Hispanic Americans, and African Americans
- Group differences reduced when comparing groups of similar economic status
- *Culture-fair intelligence tests* reduce the differences but don't eliminate them
- Stereotype threat: knowledge of stereotypes leads to anxiety and reduced performance
- Test-taking styles must be considered, too

Next time

- Focus on schizophrenia
- Creativity