

Chapter Four



Individual Differences: Intelligence, Cognitive and Learning Styles, and Creativity

The Big Picture

- ❑ What is intelligence?
- ❑ Is intelligence caused by genes or environment, or both?
- ❑ What can a teacher do to make students more intelligent? Should teachers adapt to differences in intelligence by grouping students according to ability level?
- ❑ What is creativity, and how does it differ from intelligence? How can teachers encourage and develop creativity in their students and in themselves?

What is Intelligence?

□ Intelligence

- capacity for goal-directed and adaptive behavior
- involves certain abilities
 - profit from experience
 - solve problems
 - reason effectively

What is Intelligence?

- IQ is a score on a test
 - it is not something you have
- Is intelligence singular or multiple abilities?

Are There Multiple Intelligences?

□ Factor Analysis

- statistical procedure that identifies clusters of related items (called factors) on a test
- used to identify different dimensions of performance that underlie one's total score

□ General Intelligence (g)

- factor that Spearman and others believed underlies specific mental abilities
- measured by every task on an intelligence test

Theories of Intelligence

- Spearman vs. Thurstone
 - “g” or multiple components??
- Sternberg’s Triarchic Theory
 - Analytical Intelligence(book smarts)
 - Creative Intelligence (novel ideas)
 - Practical Intelligence (street smarts)

Componential Subtheory

- Metacomponents—used to decide what to do, monitor it while it is being done, and evaluate it after it is done.
- Performance components—used to get things done.
- Knowledge acquisition components—used to learn how to get things done.

RESULT:

- **Analytical abilities:** Abilities to analyze, judge, evaluate, compare and contrast.

Contextual Subtheory

- Adaptation to existing environments.
- Shaping of existing environments to modify them.
- Selection of different environments.

RESULT:

- **Practical abilities:** Abilities to put into practice, apply, use, and implement.

Experiential Subtheory

- Solving relatively novel problems.
- Automatization

RESULT:

- **Creative abilities:** Abilities to create, discover, invent, imagine, and explore.

Theories of Intelligence

- Gardner's Multiple Intelligences
 - logical/mathematical
 - linguistic
 - spatial
 - musical
 - bodily kinesthetic
 - interpersonal
 - Intrapersonal
- Talent v. Intelligence??

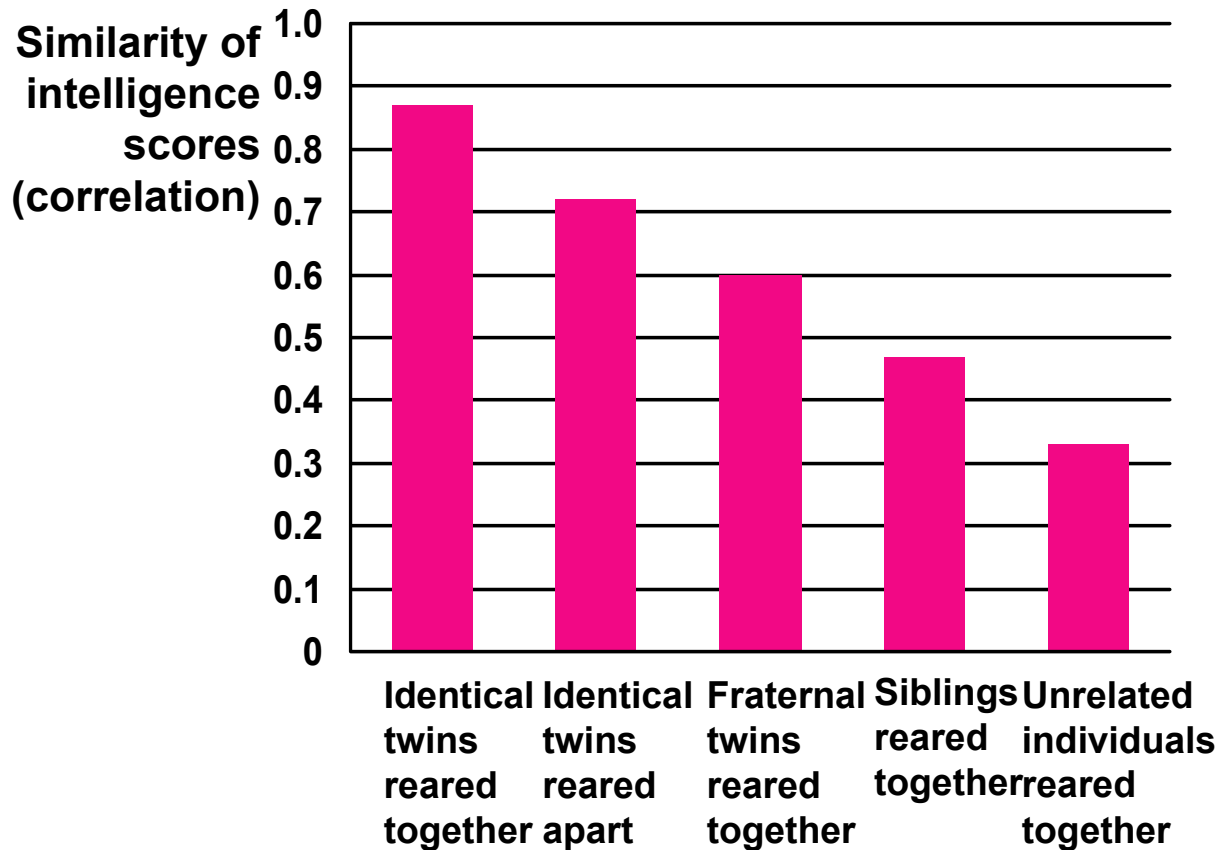
Critique of Contemporary Theories

- Lack of Empirical Testing of Gardner's Theory
- Broad Nature of the Triarchic Theories

Current Educational Controversies in Intelligence

- The Source of Intelligence - Inherited Versus Learned
- Can Intelligence be Modified?
- How do Teachers Deal with Varying Levels of Intelligence?

Genetic Influences



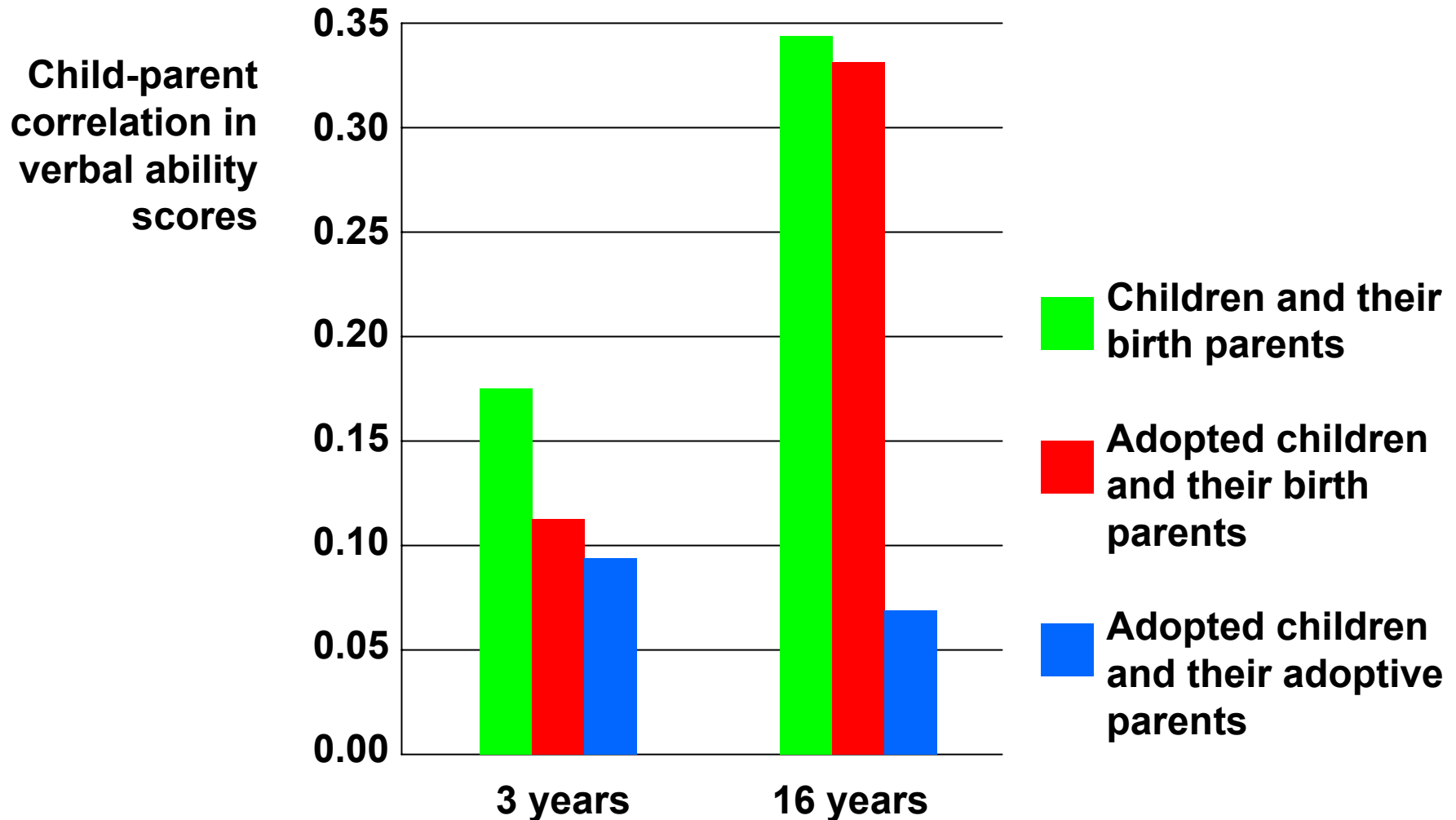
- The most genetically similar people have the most similar scores

Genetic Influences

□ **Heritability**

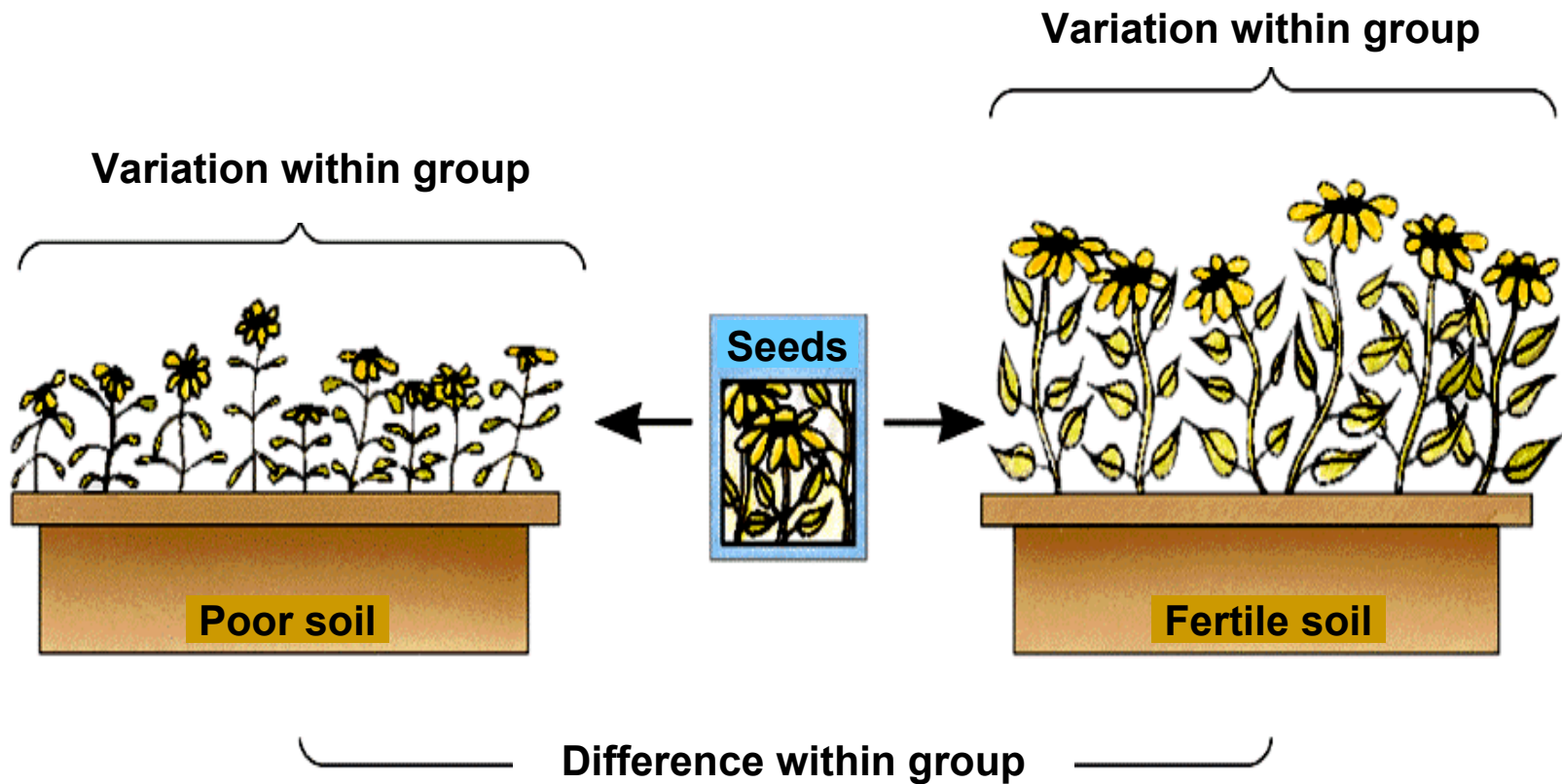
- the proportion of variation among individuals that we can attribute to genes
- variability depends on range of populations and environments studied

Genetic Influences



Genetic Influences

- Group differences and environmental impact



Teaching Students of Varying Levels: Ability Grouping

- Ability Grouping
 - Within-Class Ability Grouping
 - Between-Class Ability Grouping
 - Regrouping
 - Joplin Plan
 - Advantages and Disadvantages

Understanding Individual Differences in Creativity

□ Creativity

- The Mystical Approach
- The Psychometric Approach
- Social-Psychological Approaches
- A Confluence Approach

Characteristics of Creative Individuals

- See problems in new ways
- Are somewhat knowledgeable in the area
- Like being creative
- Are open to new experiences
- Are willing to take sensible risks
- Are intrinsically motivated
- Seek out supportive environments