

Biological Variables

- While we recognize that intellectual ability is inherited, much of the research on biological variables focuses on limits to intelligence
 - Nutrition
 - Lead Poisoning
 - Alcohol/drugs
 - Perinatal factors
 - Diseases

Individual Life Experiences

- Positive effects are unknown
 - Believe they must exist, but have not yet delineated them
 - Thesis, anyone?

Culture and Intelligence

- The conceptualization, assessment and development of intelligence cannot be fully or even meaningfully understood outside the cultural context.
 - Intelligence understood outside of its cultural influence is a myth
- Differences in culture have a powerful effect on performance of certain tasks

Culture and Intelligence

- As well as determining which tasks demonstrate intelligent behavior
- Different cultures have different conceptualizations of intelligence
 - U.S. conceptualization
 - East Asian
 - Taiwanese Chinese
 - Confucian

Culture and Intelligence

- Taoist
- African
 - Zambia
 - Luo people
 - Kenya
 - Zimbabwe
 - Baoule people

Rising Test Scores

- Flynn effect
 - Test scores have risen an average of 3 points per decade from 1940s to 1970s
 - Not noticeable because tests have been restandardized since then
 - However, if you look at raw scores, you see the large differences
 - Lower 90% of Britons born in 1877 fall below the 5th percentile of those born in 1967
 - Found in England, Switzerland, Germany, Japan, and the U.S.

Rising Test Scores

- Greater for Fluid rather than Crystallized IQ
- Problems:
 - Huge increase in IQ has not been accompanied by a corresponding increase in achievement
 - The number of people diagnosed with MR has increased
- Proposed Causes
 - Generational differences
 - Better nutrition
 - Increase in problem-solving
 - Better education
 - Enhanced SES
 - Urbanization
 - Advent of TV
 - No hypothesis has borne fruit; still looking

Group Differences

- Do not matter to the individual
 - Each individual's score is not dependant upon the mean of some reference group
 - Political motivations behind individual assessments
- Within group variance is larger than between group variance

Sex Differences

- What, where, when and size of cognitive differences
 - Size of sex differences cannot be summarized in a single variable
 - Depends on the nature of the task, the portion of the abilities continuum from which participants are chosen, and the age of the participants
 - Males and females are extremely similar in many intellectual abilities

Sex Differences

- Differences are most pronounced in the extreme ends of the distribution; less so in the average range of abilities
- Males tend to score higher on standardized tests, but females tend to get higher grades in school
- Many of the differences appear early in life
 - e.g., males do better on visual spatial tasks as soon as they can be tested (age 3)

Sex Differences

- Evidence that sex differences are decreasing
- Also find the sex differences in other countries
- Abilities in which females do better:
 - Writing
 - Tasks that require rapid access to and use of phonological, semantic, and other information in long-term memory
 - Verbal fluency

Sex Differences

- Synonym generation
- Associative memory
- Memory battery
- Spelling and anagrams
- Memory for spatial location
- Memory for odors
- Knowledge areas
 - Literature and foreign language
- Reading comprehension

Sex Differences

- Fine motor tasks
- Perceptual speed
- Decoding nonverbal communication
- Perceptual thresholds
 - Touch—lower thresholds
 - Taste—lower
 - Hearing—less hearing loss than males
 - Color—lower
- Higher grades in school
- Speech articulation

Sex Differences

- Abilities in which males do better
 - Tasks that require transformations in visual working memory
 - Mental rotation
 - Tasks that involve moving objects
 - Motor tasks that involve aiming
- Knowledge areas
 - Geography, math & science
 - Note about math

Sex Differences

- Tests of fluid reasoning (esp. in math and science)
 - Proportional reasoning tasks
 - SAT—Mathematics; GRE—Quantitative
 - Mechanical reasoning
 - Verbal analogies
 - Scientific reasoning
- Causes
 - Evolutionary psychology

Sex Differences

- Evolutionary psychology
 - Division of labor in hunter-gatherer societies
 - Through evolutionary processes males developed brain structures that supported cognitive and motor skills necessary for hunting and females developed cognitive and motor skills necessary for housework
 - Such theories are untestable and ignore large bodies of data that do not conform to their explanatory frameworks

Sex Differences

- Social explanations
 - Gender roles and expectations
 - Substantial differences in the attitudes, values, and interests of contemporary males and females
 - Parents may be less influential than peer groups
 - Decrease in sex differences has been hypothesized to be a reflection of the diminished sex-role stereotypes

Sex Differences

- Biological explanations
 - Sizes and shapes of neural structures are different for males and females
 - Corpus collosum in females
 - Different patterns of activity in male and female brains when they are engaged in the same cognitive tasks
 - Influences of hormones

Sex Differences

- Interactions between social and biological factors
 - Psychobiological model
 - Brain structures support certain skills and abilities
 - These may lead people to seek out similar experiences
 - Which then influence brain structures
 - And so on....
 - All intellectual skills will improve with appropriate learning and practice
 - Learning is both a biological and environmental process

Racial Differences in Intelligence

- One of the most glaring misuses of scientific information occurred when psychologists used scores from IQ tests to classify people from other races as less than human
 - To start, the concept of race is socially constructed
 - 18th century scientists wanted to be able to classify humans taxonomically, just as they had other animals

Racial Differences in Intelligence

- They asserted that humans belonged to four or five different groups
- AND attached hierarchical designations to these groups based on skin color, physiognomy, and geography
 - Linnaeus (1758)
 - Blumenbach (1775)
- So, what does this have to do with IQ?
 - Henry Goddard brought the Binet-Simon test to the US and began assessing immigrants

Racial Differences in Intelligence

- He espoused the prevailing position:
 - There was a “seepage of vice and crime and physical weakness” immigrating from Europe to the US and “nameless abominations” coming from Asia
- Cultural differences in intelligence were assumed to reflect actual innate properties
 - These marked people and groups for inevitable stations in life

Racial Differences in Intelligence

- Goddard was convinced that he could use IQ tests to identify those who should not have children
- Goddard was convinced that a number of immigrants were feeble-minded
- Goddard tested immigrants who had just arrived at Ellis Island
 - 83% of Jews, 80% of Hungarians, 70% of Italians, and 87% of Russians were feeble-minded
 - Goddard re-worked the numbers and came up with 40-50% as a figure

Racial Differences in Intelligence

- It is interesting to note that these final figures are close to the percentages that Yerkes found when testing WWI recruits.
- Carl Bingham’s argument
- Lewis Terman
- Nazi Germany

Racial Differences in Intelligence

- Fortunately, we are more enlightened now.....
- Or, are we?

Racial Differences in Intelligence

- Genetics research since 1995
 - Some argue that molecular data have given the concept of race new significance
 - “The test score gap remains one of the most pressing social issues of the day” (Sackett, Hardison, & Cullen, 2004)
 - However, the tests, themselves, no longer appear to be biased against any race
 - But, we still have issues:

Racial Differences in Intelligence

- Misconceptions about racial-ethnic differences in intelligence
 - Self-identification of group membership
 - Within group differences larger than between group differences
- Myth that there is no differences between groups
 - But, the differences, while closing, are well-documented
- Differences could be tied to SES rather than race

Racial Differences in Intelligence

- Asian American performance on IQ tests
 - Achievement in classroom exceeds what is expected, given measured IQ
 - Cultural explanation
 - Difference in IQ scores
 - Problems with acculturation
- Hispanic American performance on IQ tests
 - Substantial differences among Latinos in academic achievement

Racial Differences in Intelligence

- Scores tend to fall between Caucasians and African Americans
- Native American
 - Very heterogeneous
 - Stronger in visual reasoning than verbal reasoning
 - Verbal-performance differences

Racial Differences in Intelligence

- African Americans
 - ~1 SD lower than Caucasian Americans
 - The gap is shrinking
 - Are tests biased against African Americans?
 - Probably not, but here is something to think about
 - Stereotype Threat
 - Could account for at least some of the differences

Racial Differences in Intelligence

- What accounts for the difference in African American and Caucasian IQ scores?
 - Stereotype Threat (as discussed)
 - SES
 - Similar to other minorities world wide (and past immigrants to the U.S.)
 - Culture
 - Some evidence to suggest that school is not important for African American boys

Racial Differences in Intelligence

- The Bell Curve (Herrnstein & Murray, 1994)
 - Relevance
 - Argument
 - Why it is wrong.
