Nature, Nurture, and Human Diversity

Chapter 4, Part 1

AP Psychology ~ Ms. Justice
Behavior Genetics

1: What are genes and how do behavior genetics explain our individual differences?

2: What is heritability and how does it relate to individuals and groups?

3: What is the promise of molecular genetics research?

Evolutionary Psychology

4: How do evolutionary psychologists use natural selection to explain behavior tendencies?

5: How might an evolutionary psychologist explain gender differences in sexuality and mating preferences.

6: What are the key criticisms of evolutionary psychology?
1: What are genes and how do behavior genetics explain our individual differences?
Behavior Genetics is the study of our differences and the relative effects of heredity and environment.
Genes: Our Codes for Life

Segments within DNA consist of genes that make proteins to determine our development.

- **Chromosome**
  (threadlike structure made largely of DNA molecules)

- **DNA**
  (a spiraling, complex molecule containing genes)

- **Gene**
  (segment of DNA containing the code for a particular protein; determines our individual biological development)
**Genome**

**Genome** - the common sequence within human DNA. It is this shared genetic profile that makes us humans, rather than chimpanzees or tulips.

The Human Genome Project (an international 13-year effort) was completed in 2003. The project’s goals were to determine the complete sequence of the 3 billion DNA sub-units, identify all human genes, and make them accessible for further biological study.
Twin and Adoption Studies

Studying the effects of heredity and environment on twins, identical and fraternal, has been useful.

- **Identical twins** who develop from a single fertilized egg that splits in two, are genetically identical.
- **Fraternal twins** develop from separate fertilized eggs, are genetically no more similar than ordinary brothers and sisters.
Separated Twins

A number of studies compared identical twins reared separately from birth, or close thereafter, and found numerous similarities.

- Personality, Intelligence
- Abilities, Attitudes
- Interests, Fears
- Brain Waves, Heart Rate
Studying Identical Twins
Biological vs. Adoptive Relatives

Adoption studies suggest that adoptees (who may be biologically unrelated) tend to be different from their adoptive parents and siblings.
Parenting

Parenting does have an effect on biologically related and unrelated children.

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<thead>
<tr>
<th>Parenting Influences</th>
<th>Children’s</th>
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<tbody>
<tr>
<td></td>
<td>Attitudes, Values</td>
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<td>Manners, Beliefs</td>
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<td>Faith, Politics</td>
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2: What is heritability and how does it relate to individuals and groups?
Heritability

Heritability is the extent to which variation among individuals can be attributed to their differing genes.

Heritability focuses on the differences between multiple organisms for a single trait. Because heritability is concerned with variance, it is a description of a certain population - not an individual.
Nature and Nurture

Some human traits are fixed, such as having two eyes. However, most psychological traits are liable to change with environmental experience.
Gene-Environment Interaction

Genes can influence traits which affect responses, and environment can affect gene activity.

A genetic predisposition that makes a child restless and hyperactive evokes an angry response from his parents. A stressful environment can trigger genes to manufacture neurotransmitters leading to depression.
4: How do evolutionary psychologists use natural selection to explain behavior tendencies?
Evolutionary Psychology: Understanding Human Nature

Evolutionary psychology studies why we as humans are alike.

In particular, it studies the evolution of behavior and mind using principles of natural selection.
Artificial Selection

Biologists like Belyaev and Trut (1999) were able to artificially rear and domesticate wild foxes, selecting them for friendly traits.

Any trait that is favored naturally or artificially spreads to future generations.
5: How might an evolutionary psychologist explain gender differences in sexuality and mating preferences?
Males and females, to a large extent, behave and think similarly. Differences in sexes arise in regards to reproductive behaviors.

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<thead>
<tr>
<th>Question (summarized)</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>Casual sex</td>
<td>58%</td>
<td>34%</td>
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<tr>
<td>Sex for affection</td>
<td>25%</td>
<td>48%</td>
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<tr>
<td>Think about sex everyday</td>
<td>54%</td>
<td>19%</td>
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Natural selection & Mating Preferences

Natural selection has caused males to send their genes into the future by mating with multiple females since males have lower costs involved.

However, females select one mature and caring male because of the higher costs involved with pregnancy and nursing.
Mating Preferences

Males look for youthful appearing females in order to pass their genes into the future. Females, on the other hand, look for maturity, dominance, affluence and boldness in males.

Data based on 37 cultures.
Critiquing the Evolutionary Perspective

Evolutionary psychologists take a behavior and work backward to explain it in terms of natural selection.

Evolutionary psychology proposes genetic determinism and undercuts morality in establishing society.

Where genders are unequal, gender preferences are wide, but when they are closely equal, preferences narrow down.
Evolutionary psychologists argue that we need to test behaviors that expound evolutionary principles.

Evolutionary psychologists remind us how we have adapted, but do not dictate how we ought to be.

Males and females are more alike than different, and if we study these differences we can establish their causes.