Thinking About Psychology: The Science of Mind and Behavior

Charles T. Blair-Broeker

Randal M. Ernst

Module 03

Nature and Nurture in Psychology

Module 3: Nature and Nurture in Psychology

Introduction

Behavior Genetics

- Studies the relative influences of genetic and environmental influences on behavior

Genes

- The biochemical units of heredity
- Many genes together make up chromosomes

Environment

- Any influence, other than genetic, on an individual's behavior
- Include:
  - The culture someone is raised in
  - One's family
  - Socioeconomic group

Nature and Nurture Issue

- Nature side entails the genetic code passed from parent to child.
- Nurture side involves all environmental influences from prenatal development on.
- Which parts of human behavior can we attribute to nature and which can be attributed to nurture?

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Genetics in Brief

Chromosomes

- Threadlike structures made up of DNA
- 46 pairs in each cell
- 23 received from each parent

Chromosomes

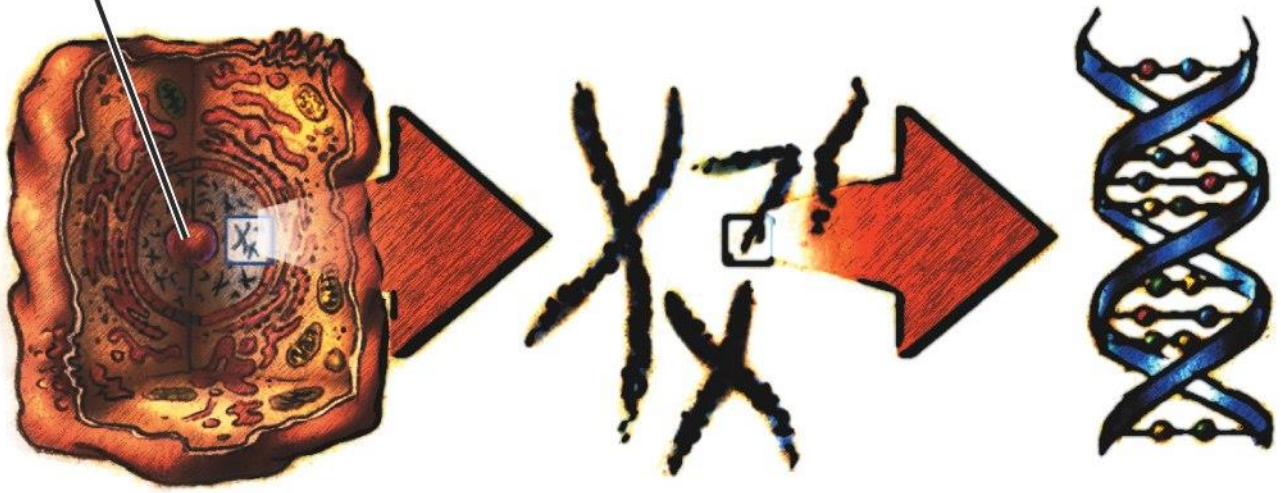
Deoxyribonucleic Acid (DNA)

- A complex molecule
- Contains the genetic information of each chromosome

Nucleus
(the inner area of a cell that houses chromosomes and genes)

Chromosome
(threadlike structure made largely of DNA molecules)

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



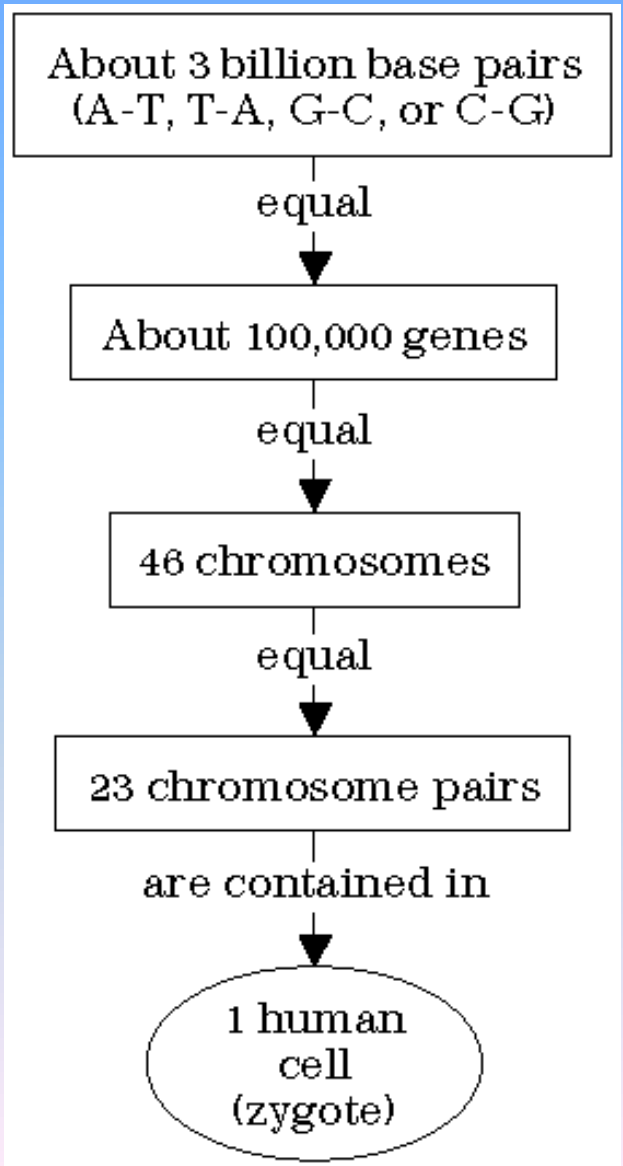
Cell
(the basic structural unit of a living thing)

DNA
(a spiraling, complex molecule containing genes)

Nucleotides

- The four letter code to distinguish genes
- Letters A,T,C, or G are used

The Genetic Makeup of One Cell



Genome

- The complete genetic instructions for a given organism
- All the genetic material in an organism’s chromosome pattern

Gene Therapy

- Play “Bypass Genes” (8:09) Segment #22 from Scientific American Frontiers: Video Collection for Introductory Psychology (2nd edition)

Mutation

- Random errors in the replication of genes from parent to child which result in change of an individual's genetic code
- Can be desirable or undesirable changes

Predisposition

- The possibility of something happening through the genetic code
- Genetics creates the potential for something
- The environment may or may not trigger the predisposition

Genetic Diseases

- Play “Huntington's Disease” (6:53) Module #12 from The Brain: Teaching Modules (2nd edition)

Nature and Similarity

Similarities

- Despite our differences, human beings throughout the world share a number of similarities

Evolutionary Psychology

- The study of evolution of behavior and the mind
- Uses the principle of natural selection

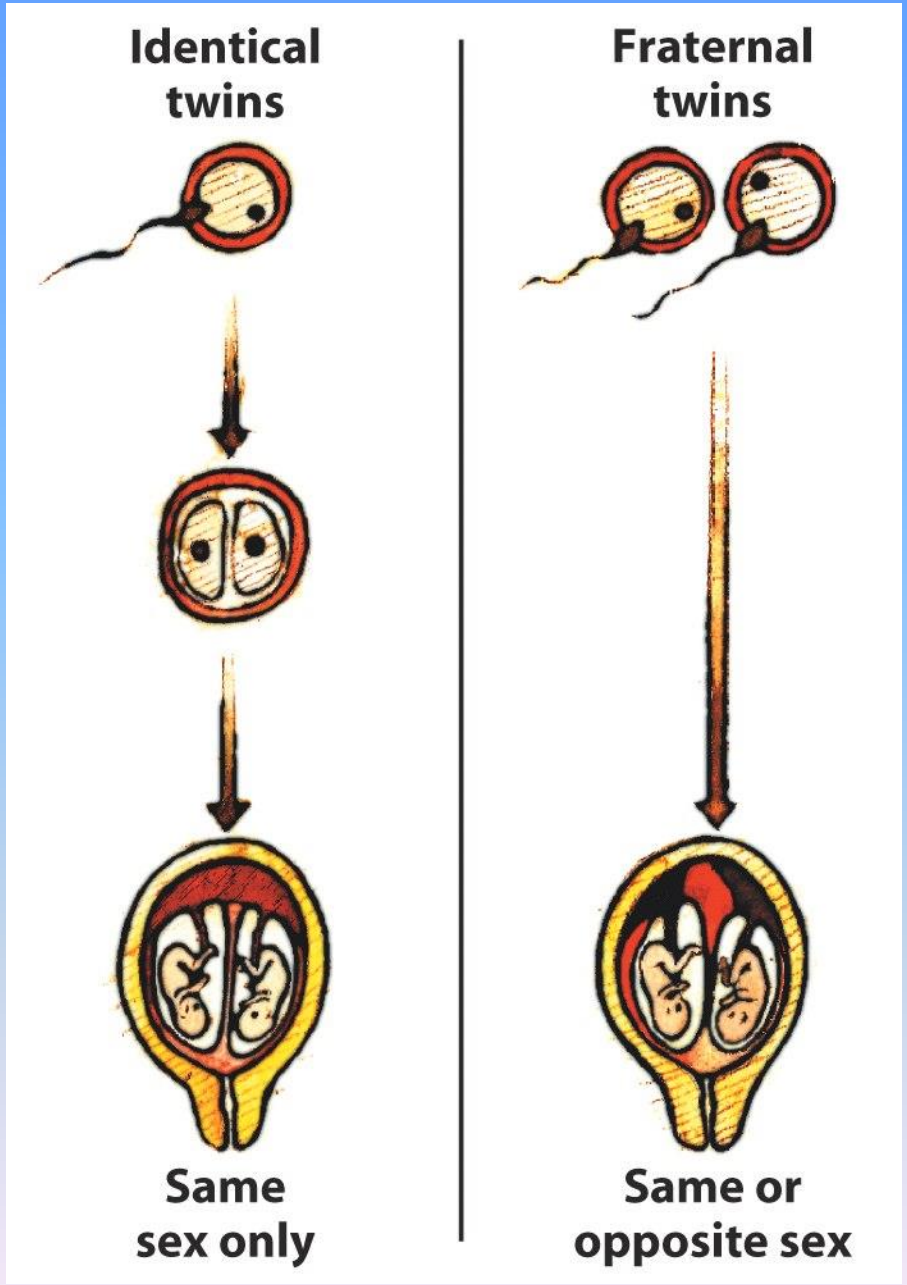
Natural Selection

- Darwin's principle that those traits contributing to the survival of the species will most likely be passed on to the next generation

Nature and Individual Differences: Twin Studies

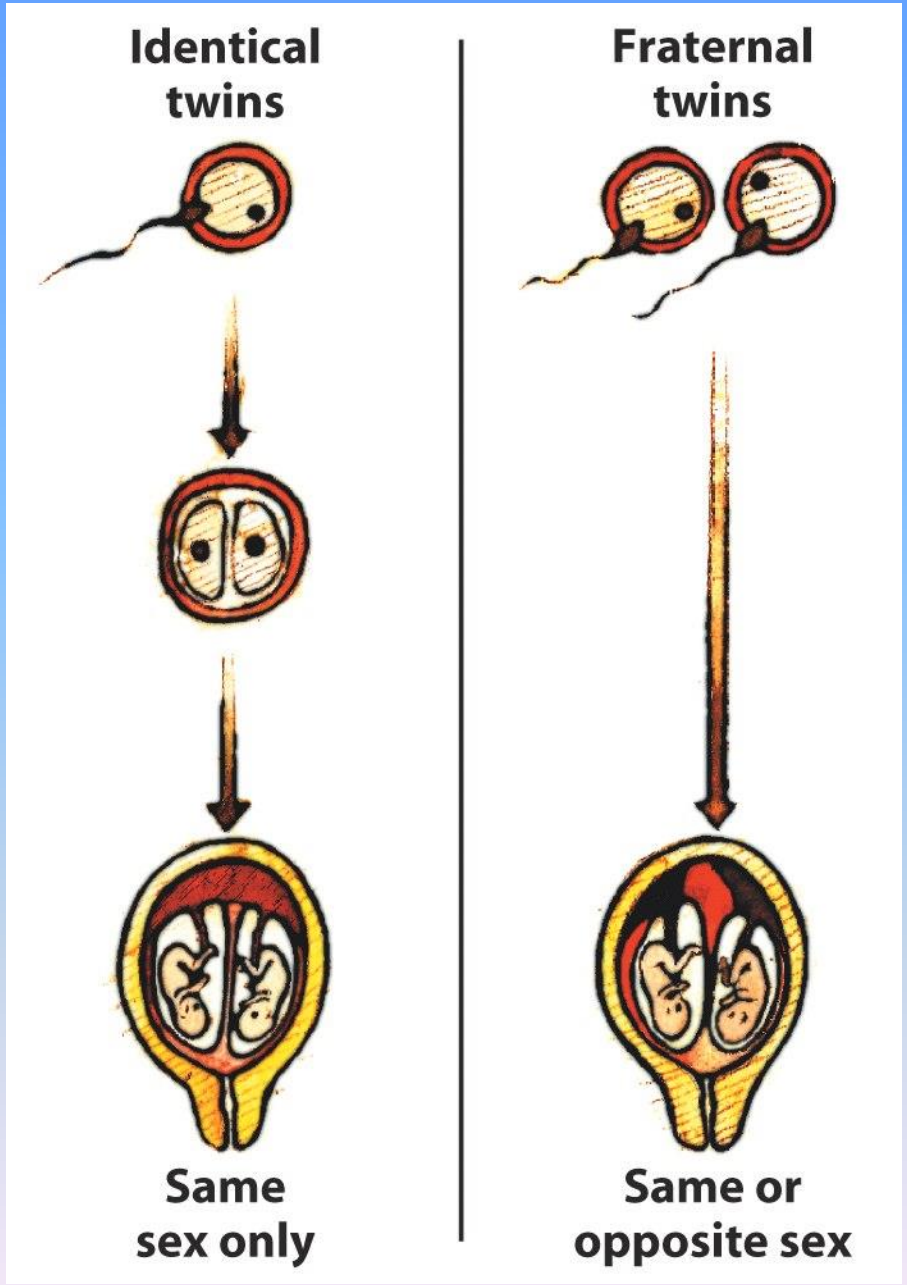
Identical Twins

- Twins who developed from a single fertilized egg
- Are genetically identical
- Called monozygotic twins


Identical twins
Fraternal twins
Same sex only
Same or opposite sex

Fraternal Twins

- Twins who developed from separate eggs
- Genetically no different than other siblings
- Called dizygotic twins


Identical twins
Fraternal twins
Same sex only
Same or opposite sex

Heritability

- The proportion of an individual's characteristics that can be attributed to genetics (heredity)
- The degree to which traits are inherited

Twin Studies

- Used to determine the heritability of a given trait
- Data is collected from both identical and fraternal twins on the trait
- Compare the data between the two groups
- Important not to conclude that a specific behavior is inherited

Twin Studies

- Play “The Effect of Aging on Cognitive Function: Nature/Nurture” (10:09) Segment #16 from The Mind: Psychology Teaching Modules (2nd edition)

Nature and Individual Differences: Adoption Studies

Adoption Studies

- Compare adopted children's traits with those of their biological parents and their adopted parents
- Trait similarities with biological parents: attribute the trait to heredity
- Trait similarities with the adopted parents: attribute the trait to the environment

Environment Matters: Early Learning and Brain Development

Early Brain Development

- Early experience is critical in brain development.
- In later life continued use is necessary to maintain neural connections in the brain.

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Environment Matters: Peer and Parent Influence

Peer Influences

- Peer influence in adolescence is very powerful.
- Many studies suggest a peer group is correlated with school performance, smoking, and other behaviors.

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Environment Matters: Cultural Influences

Culture

- Shared attitudes, beliefs, norms and behaviors of a group
- Culture is communicated from one generation to the next

Norms

- Understood rules for accepted and expected behavior
- Consist of the “proper behavior” within a group

Individualism

- Giving priority to one's goals over the goals of the group
- Defining one's identity in terms of personal attributes rather than the group's identification
- Tend to see people as separate and independent

Collectivism

- Giving priority to the goals of one's group over one's personal goals
- Defining one's identity in terms of the group's identification rather than personal attributes
- See people as connected to others
- Individual needs are sacrificed for the good of the group.

The End

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Name of Concept

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