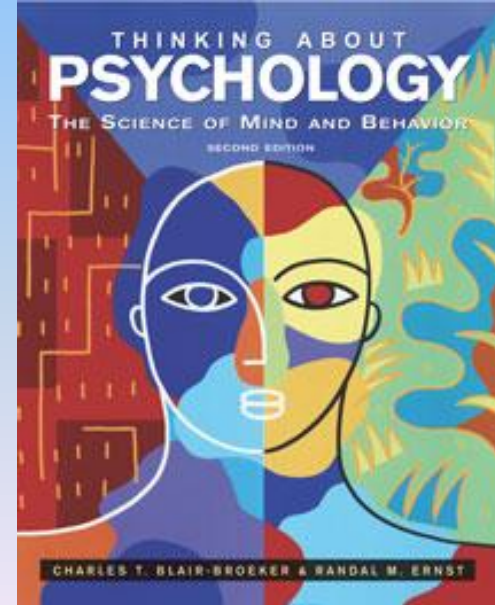


Thinking About Psychology: The Science of Mind and Behavior 2e

Charles T. Blair-Broeker
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Module 03

Nature and Nurture in Psychology

Module 3: Nature and Nurture in Psychology

Introduction

Behavior Genetics

- The study of the relative **effects** of **genes** and **environmental influences** our behavior

Genes

- The influence of **nature**
- The biochemical units of heredity that **make up the chromosomes**
- Many genes together make up chromosomes

Environment

- Every nongenetic influence, from prenatal nutrition to the people and things around us
- 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?

Module 3: Nature and Nurture in Psychology

Genetics in Brief

Chromosomes

- Threadlike structures **made up of molecules called DNA that contain the genes**
- 46 pairs in each cell
- 23 received from each parent at the moment of conception

Chromosomes



Deoxyribonucleic Acid (DNA)

- A complex molecule containing the genetic information that **makes up the chromosomes**
- The smaller sections of DNA strands, the stairs on DNA's staircase, store your genetic code, your *genes*.

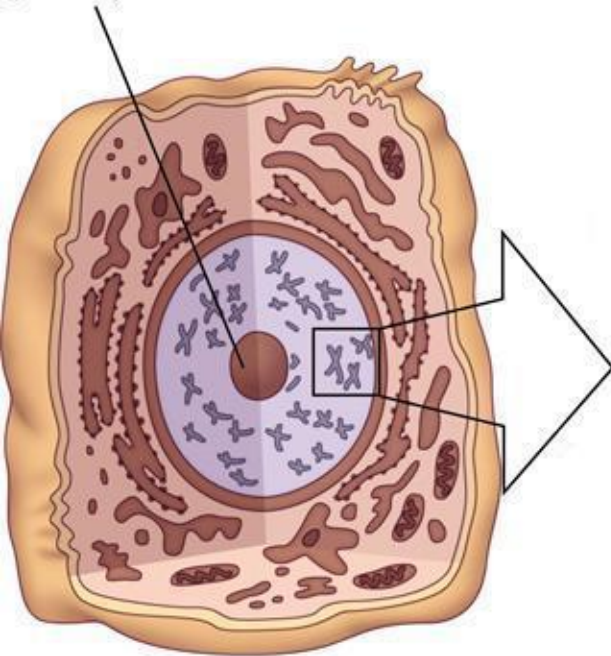
Nucleotides

- The four-letter code to distinguish genes
- Letters A,T,C, or G are used
- Your **largest chromosome has about 250 million nucleotides**, and the smallest has 50 million
- All 46 chromosomes can be found in every cell nucleus which means there are billions of nucleotides in every nucleus

Cellular Makeup

Nucleus

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



Cell

(the basic structural unit of a living thing)

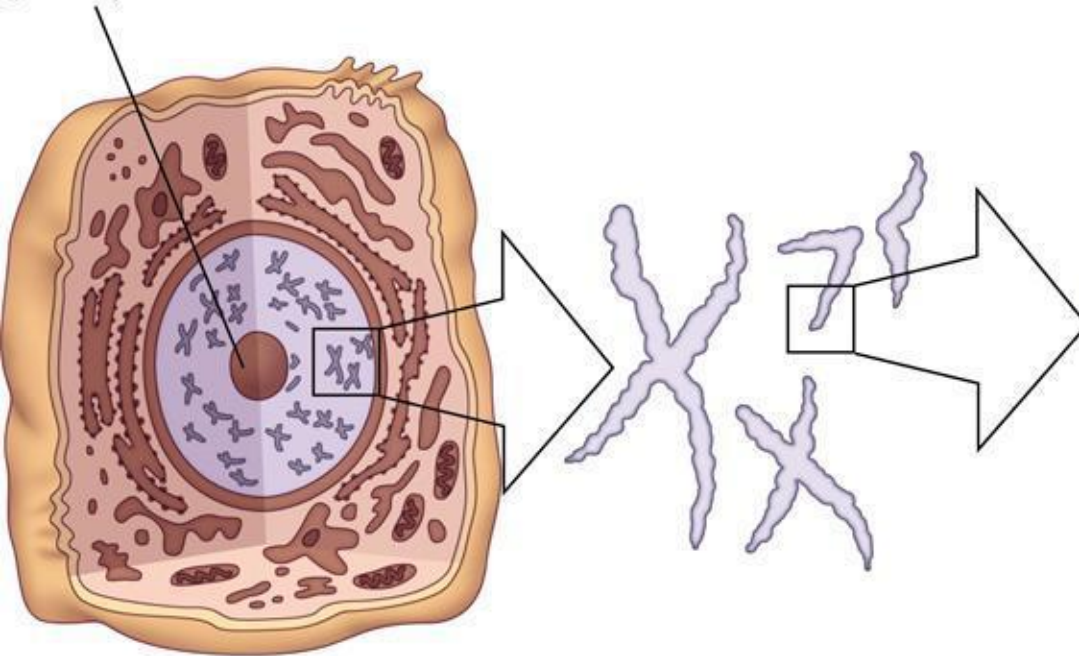
Cellular Makeup

Nucleus

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

Chromosome

(threadlike structure made largely of DNA molecules)



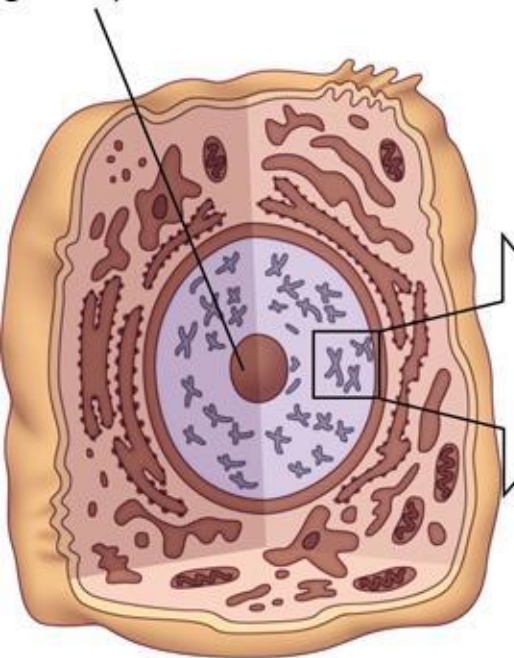
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Cellular Makeup

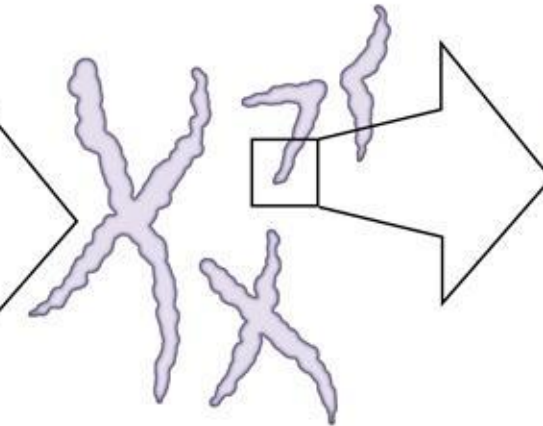
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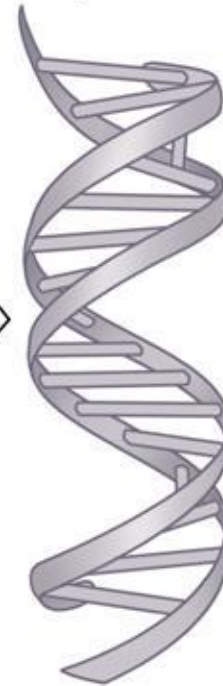
Chromosome

(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)

Mutation

- Random errors in gene replication that lead to a change in the individual's genetic code;
- **The source of genetic diversity**
- Can be desirable (think of the X-Men movies) or undesirable changes (like a predisposition to cancer)

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

Module 3: Nature and Nurture in Psychology

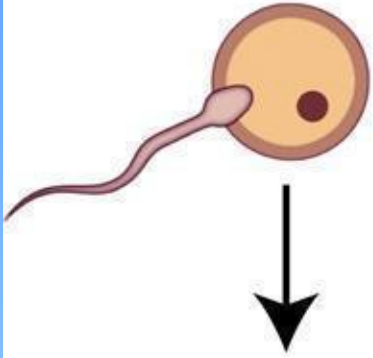
Nature and Individual Differences

Identical Twins

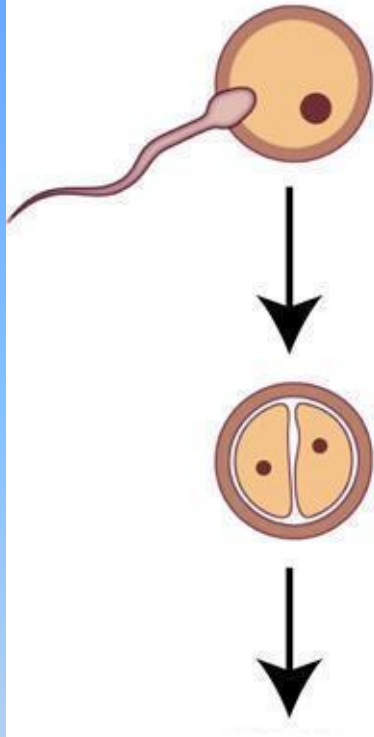
- Twins who developed from a **single fertilized egg** that splits in two, creating two genetically identical organisms
- Called monozygotic twins



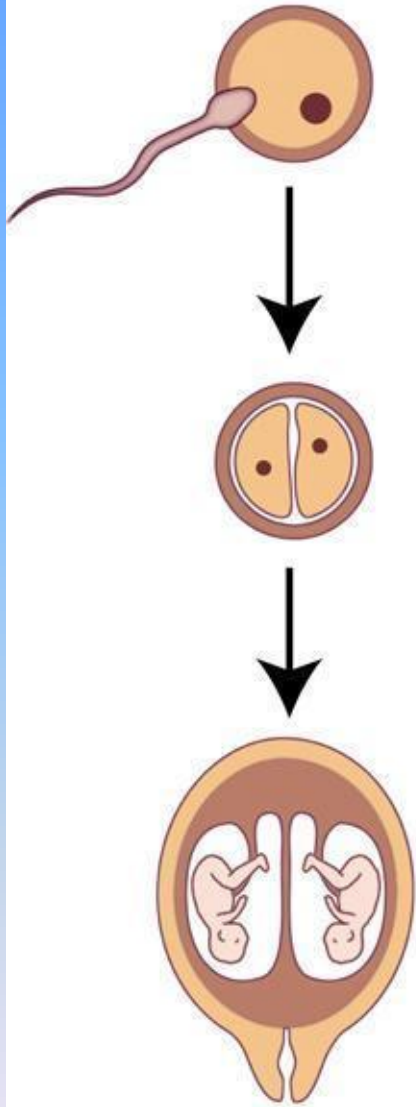
Identical
twins



Identical
twins



Identical
twins



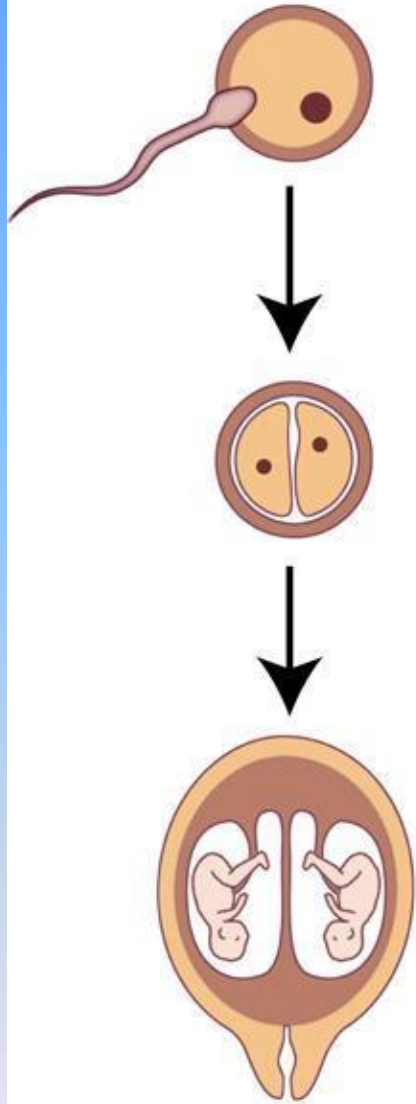
Same
sex only

Fraternal Twins

- Twins who developed from **separate eggs**; they are genetically no more similar than other siblings, but they share a fetal environment
- Called dizygotic twins

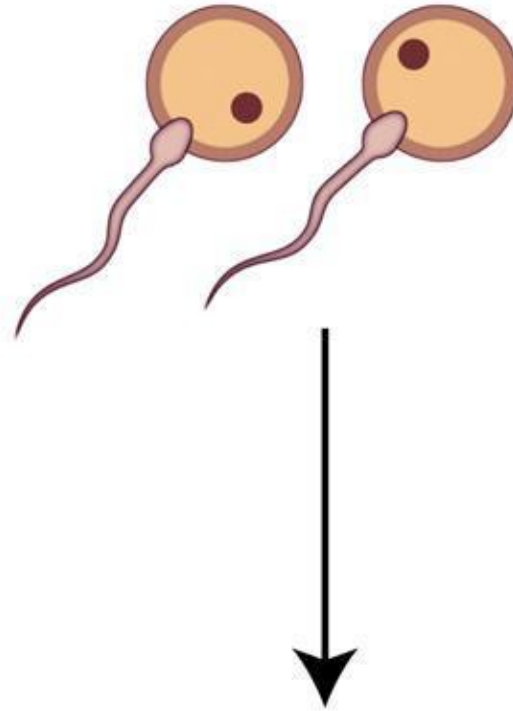


Identical
twins

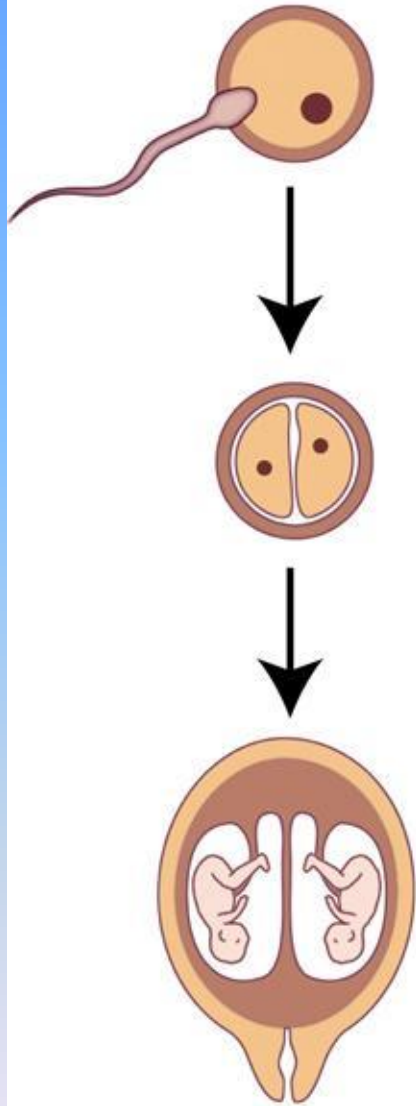


Same
sex only

Fraternal
twins

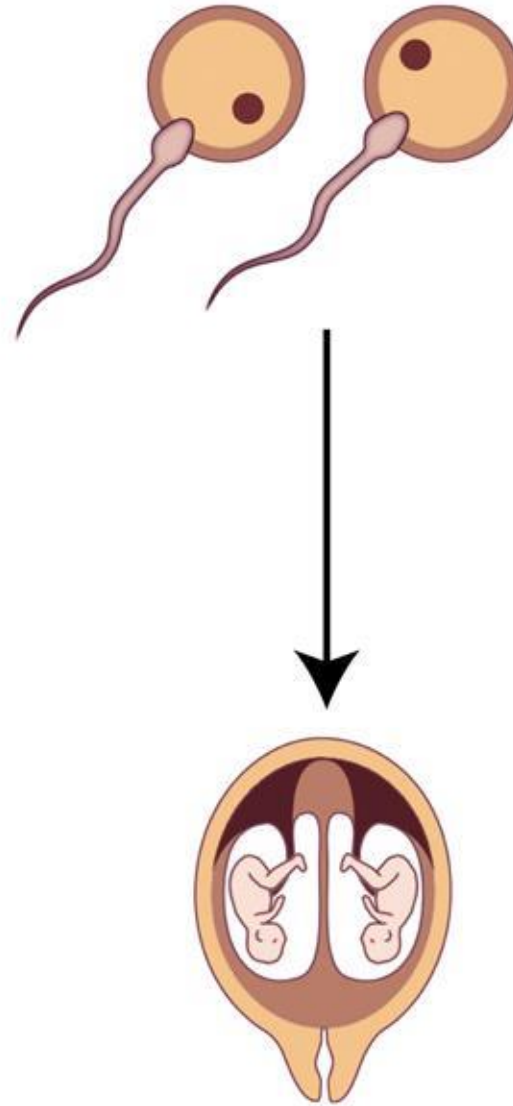


Identical
twins



Same
sex only

Fraternal
twins



Same or
opposite sex

Heritability

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

Twin Studies

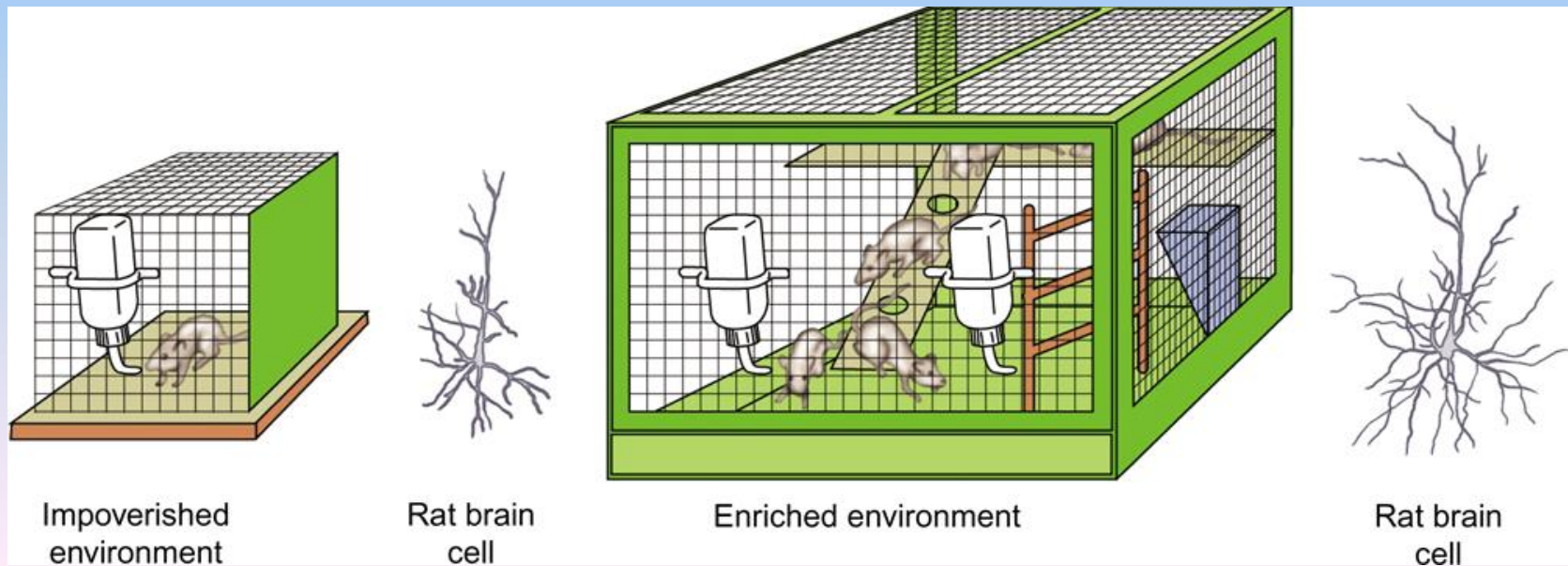
- Used to determine the heritability of a given trait
- Data is collected from both identical and fraternal twins on the trait
- Compare the data between the two groups
- Important not to conclude that a specific behavior is inherited

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

Early Brain Development

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



Peer Influences

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

Culture

- The shared attitudes, beliefs, norms and behaviors of a group 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 (often the extended family or work group) and defining one's personal identity accordingly
- See people as connected to others
- Individual needs are sacrificed for the good of the group.

The End