Nature vs. Nurture Debate

- Heritability: proportion of variation among individuals that we can attribute to genes
- Environment (nurture) has an impact too! Let's take the example of height:
- Height is highly heritable, but…nutrition plays a role too!
- Interaction: the effect of one factor (such as environment) depends on another factor (such as heritability)
- Key Point: almost nothing is just nature or just nurture… they work together

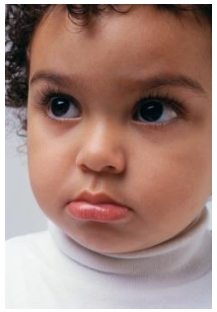
"So, how do you want to play this? Nature, nurture, or a bit of both?"

Twin Studies

Identical Twins **v.** **Fraternal Twins**

Same genes,
Same environment

Different genes,
Same environment



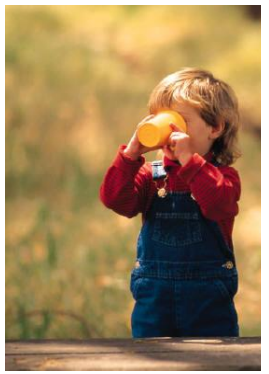
Therefore, greater differences between the two groups indicate greater heritability (“Nature”). The trait might appear to have a large genetic component.

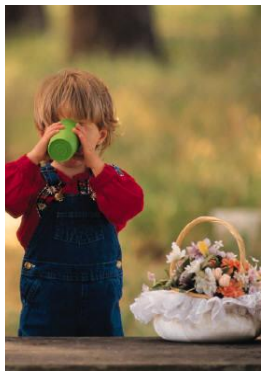
Twin Studies

Identical Twins Reared Together v. **Identical Twins Reared Apart**

Same genes,
Same environment

Same genes,
Different environment





Greater difference between these two groups indicates greater role of the environment (“nurture”).

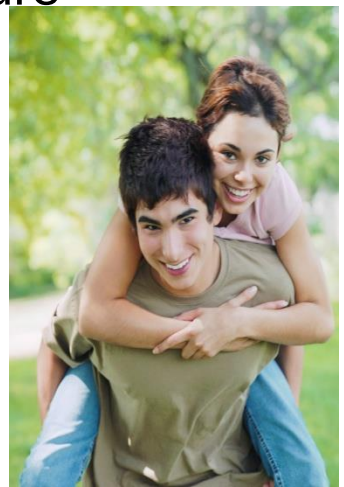
Adoption Studies

Is child more like adoptive parents…

…or biological parents?

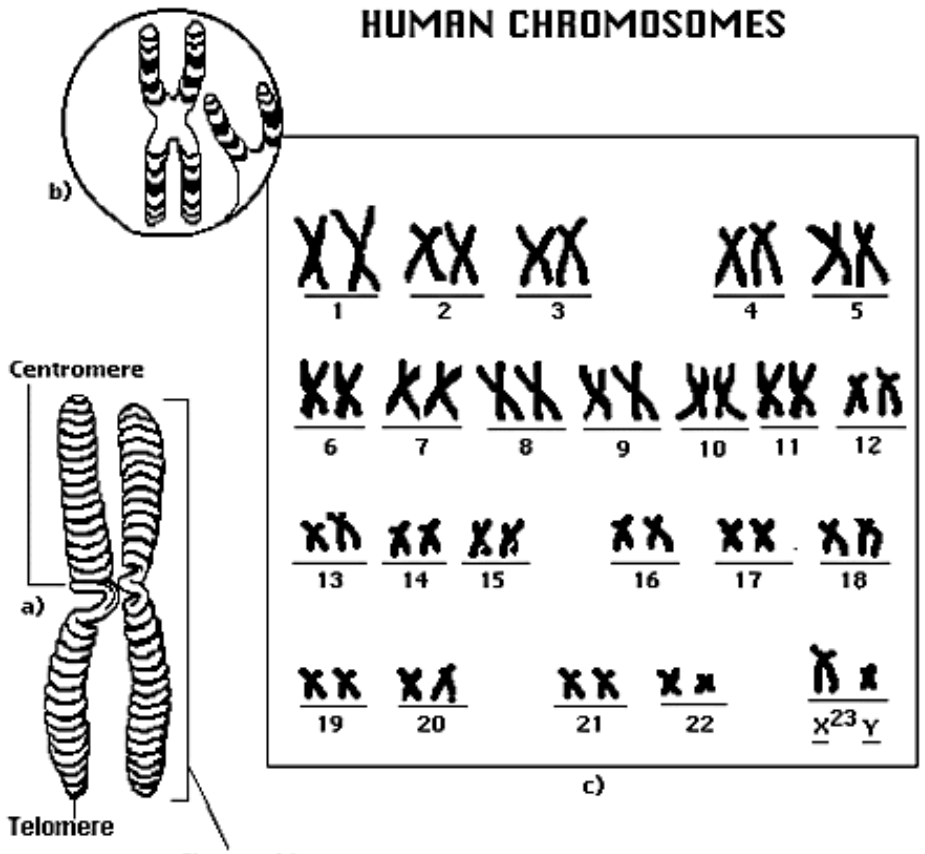
Adoptive Parents - Nurture

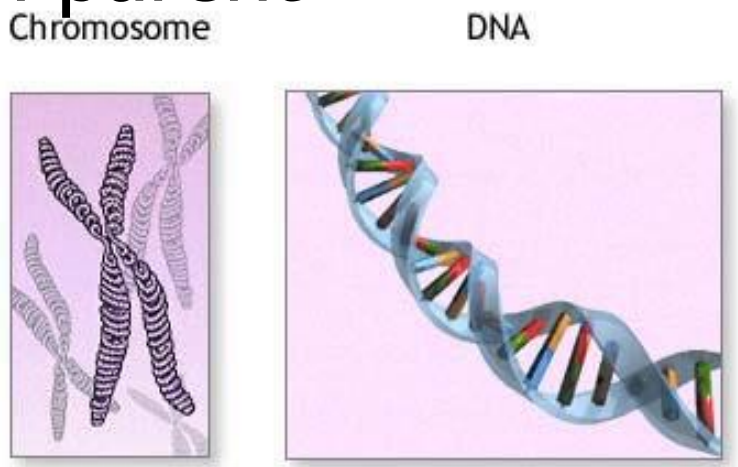
Biological Parents - Nature



Genetics

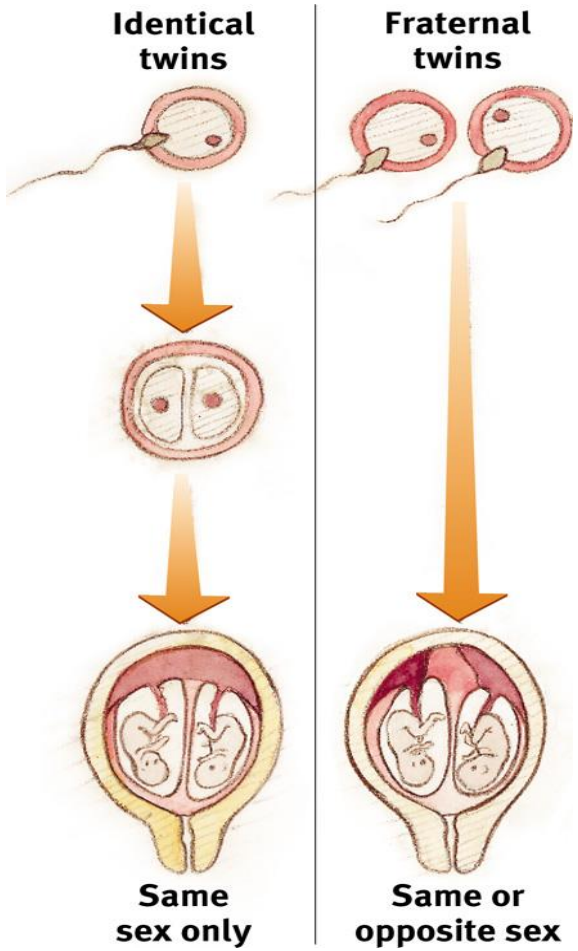
- **Chromosomes**: threadlike structures made of DNA molecules that contain genes; get 23 from each parent





Genetics

- **Identical Twins**: twins who develop from a single zygote (fertilized egg) that splits in two, creating two genetic replicas

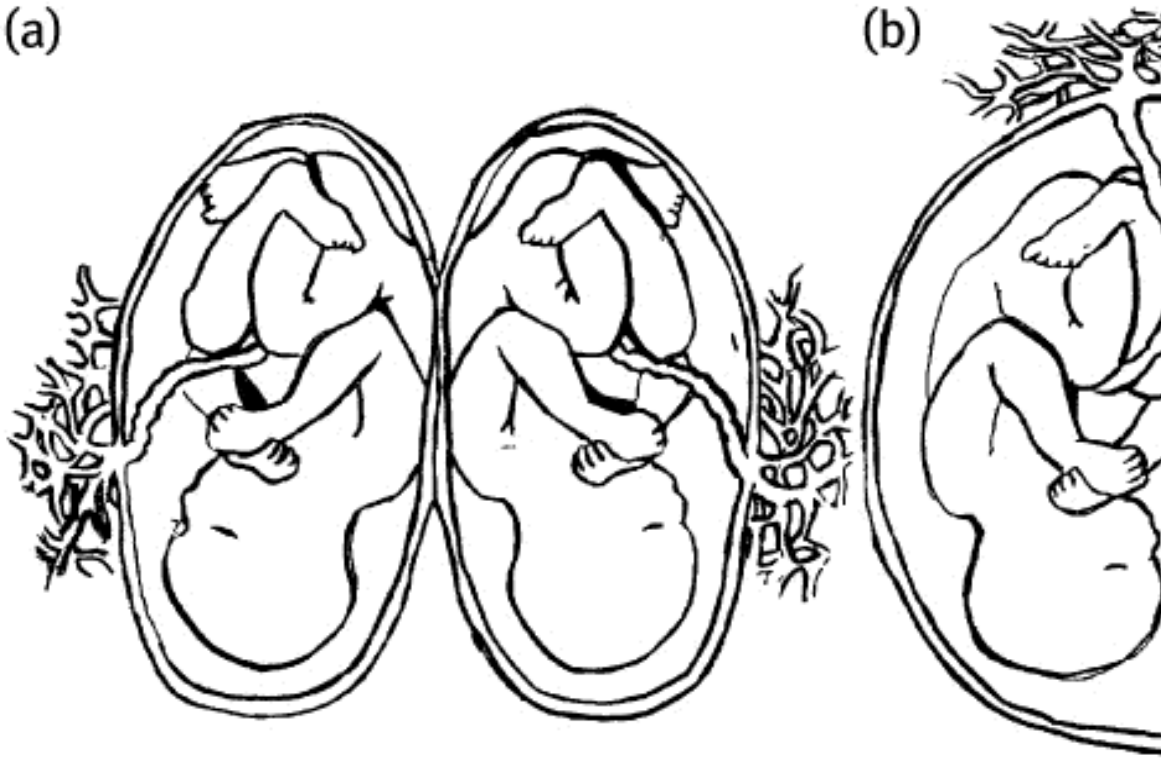


- **Fraternal Twins**: twins who develop from separate zygotes; genetically no closer than brothers and sisters

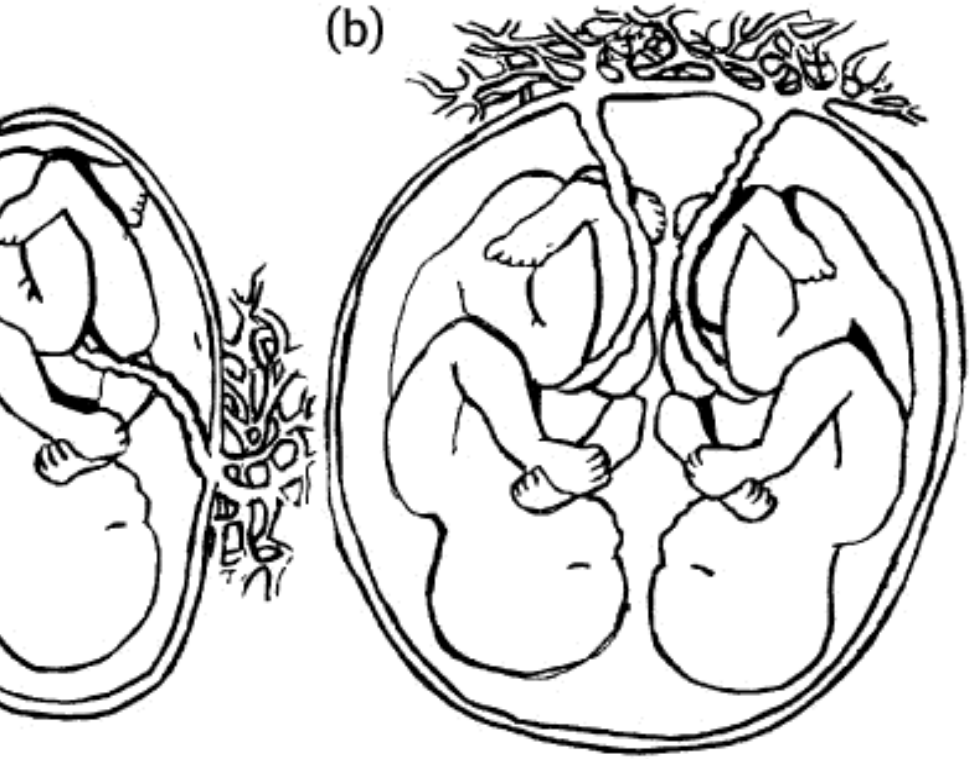
Did you know? Twins vary by race. Caucasians are twice as likely to have twins than Asians or Africans. In Africa and Asia, most twins are identical. In Western countries, most twins are fraternal, and fraternal twins are increasing with the use of fertility drugs.

1st Environmental Prenatal Influence – the placenta

- One arrangement – two separate placentas
  - One may have a better placement
  - Separate placentas can make babies dissimilar in traits such as social competence and self-control

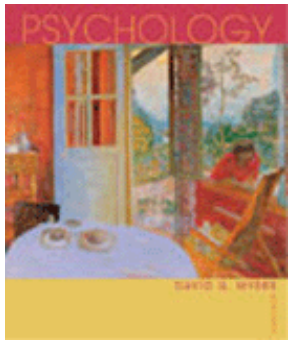


1st Environmental Prenatal Influence – the placenta



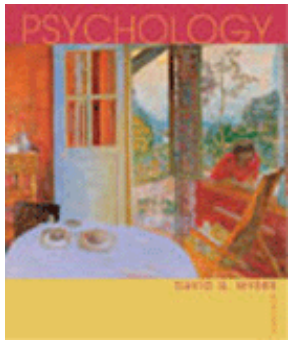
- Second arrangement – twins share a placenta

Genes: Our Biological Blueprint



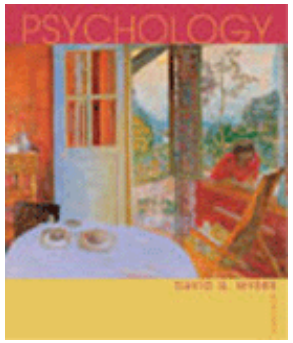
- DNA (deoxyribonucleic acid)
  - complex molecule containing the genetic information that makes up the chromosomes
  - has two strands-forming a "double helix"--held together by bonds between pairs of nucleotides

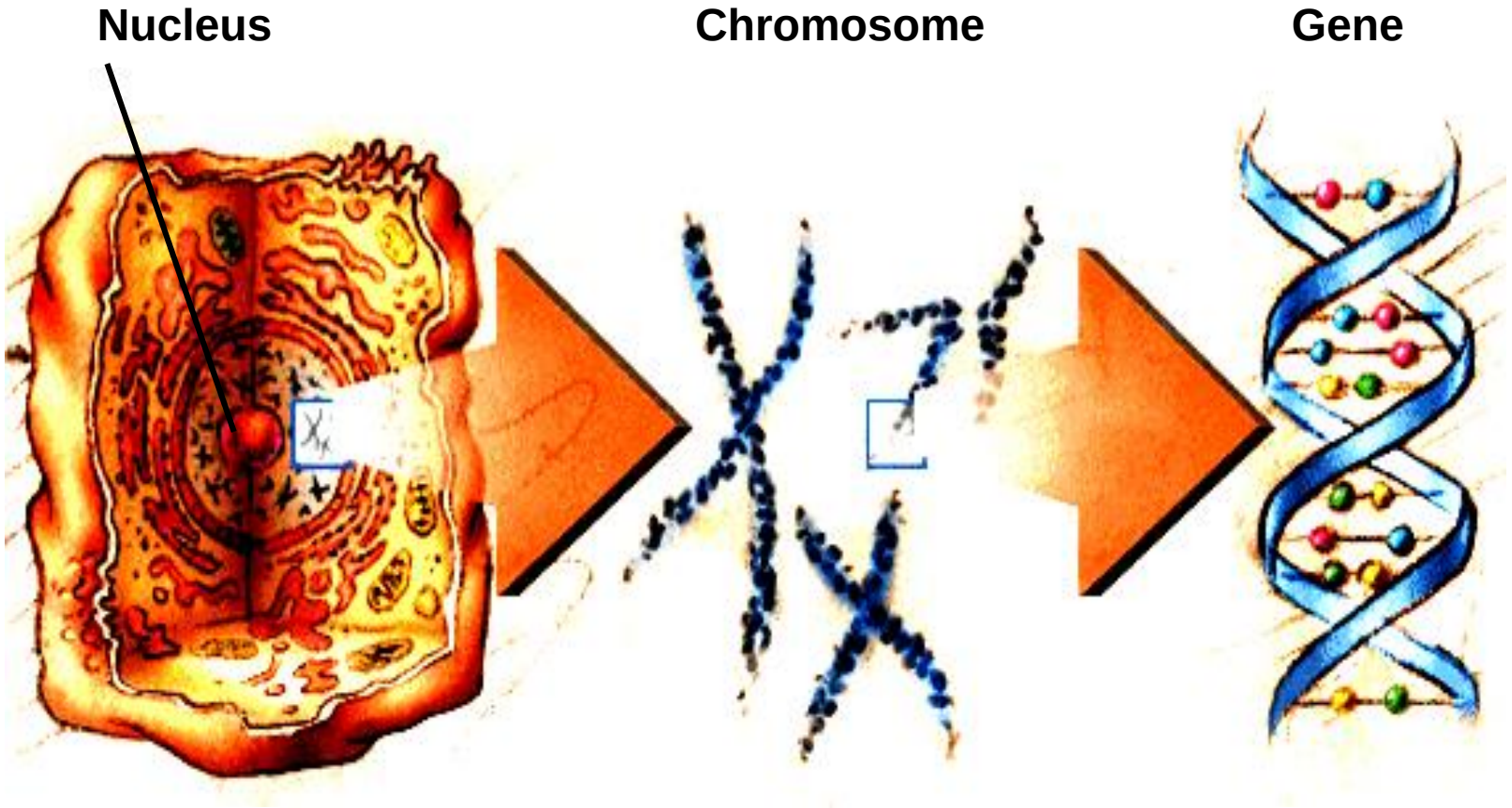
Genes: Our Biological Blueprint



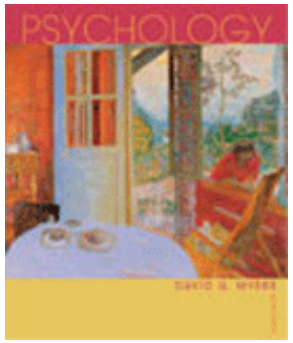
- Genes
  - biochemical units of heredity that make up the chromosomes
  - a segment of DNA capable of synthesizing a protein

Genes: Their Location and Composition



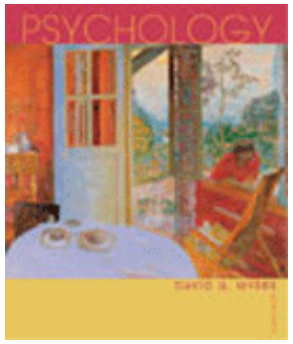


Evolutionary Psychology



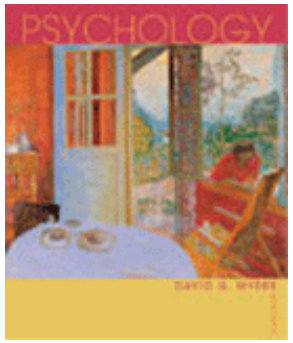
- Evolutionary Psychology
  - the study of the evolution of behavior and the mind, using the principles of natural selection
- Gender
  - in psychology, the characteristics, whether biologically or socially influenced, by which people define male and female

Evolutionary Psychology



- Natural Selection
  - the principle that, among the range of inherited trait variations, those that lead to increased reproduction and survival will most likely be passed on to succeeding generations

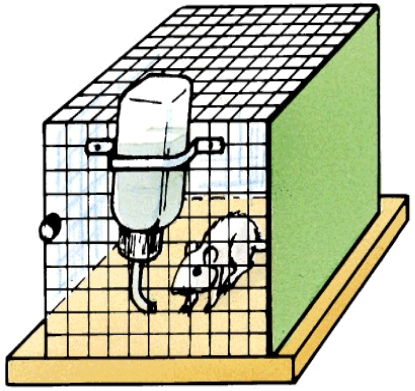
Behavior Genetics



- Temperament
  - a person's characteristic emotional reactivity and intensity

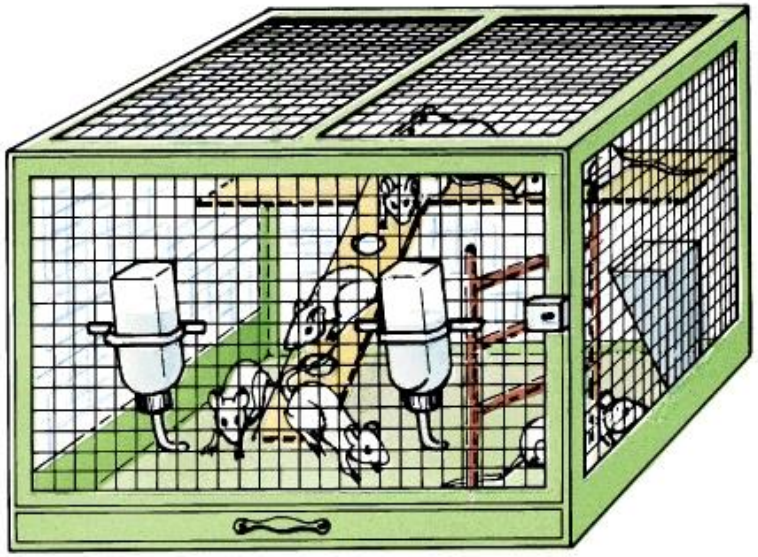
Environmental Influence

- The more enriched your environment is, the more your brain develops

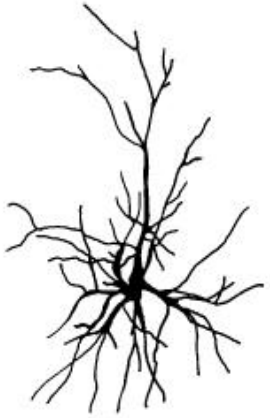


Impoverished environment

Rat brain cell



Enriched environment



Rat brain cell

Implications for humans??

Benefits of “Handling”

- Touching and holding results in faster weight gain and neurological development for both babies and animals

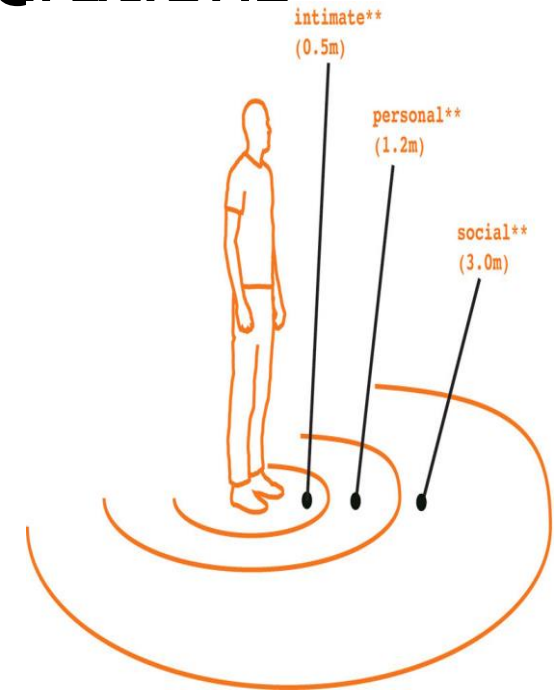
Peer vs. Parent Influence

- Parents strongly influence:
  - Education
  - Discipline
  - Responsibility
  - Orderliness
  - Charitableness
  - Ways of interacting with authority figures

- Peers strongly influence:
  - Learning cooperation
  - Finding popularity
  - Styles of peer interaction
  - Drug behavior

Environmental Influence

- Culture
  - the behaviors, ideas, attitudes, and traditions shared by a group of people and transmitted through generations
- Norm
  - an understood rule for accepted and expected behavior



The Nature and Nurture of Gender

- Gender Role
  - a set of expected behaviors for males and females
- Gender Identity
  - one's sense of being male or female
- Gender-typing
  - the acquisition of a traditional masculine or feminine role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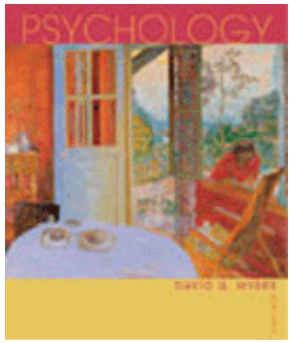
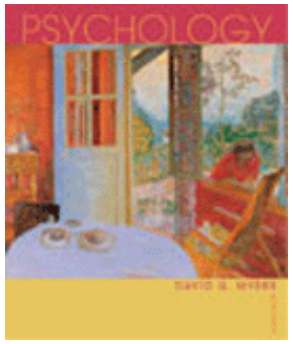
The Nature and Nurture of Gender



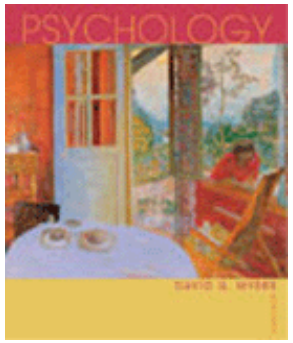
- X Chromosome
  - the sex chromosome found in both men and women
  - females have two; males have one
  - an X chromosome from each parent produces a female child
- Y Chromosome
  - the sex chromosome found only in men
  - when paired with an X chromosome from the mother, it produces a male child

The Nature and Nurture of Gender



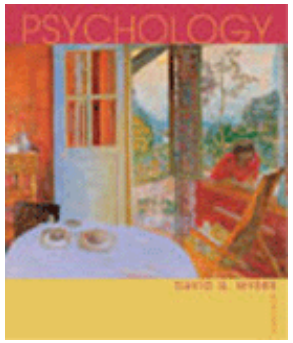
- Testosterone
  - the most important of the male sex hormones
  - both males and females have it
  - additional testosterone in males stimulates
    - growth of male sex organs in the fetus
    - development of male sex characteristics during puberty
- Role
  - a set of expectations (norms) about a social position
  - defining how those in the position ought to behave

The Nature and Nurture of Gender



- Social Learning Theory
  - theory that we learn social behavior by observing and imitating and by being rewarded or punished
- Gender Schema Theory
  - theory that children learn from their cultures a concept of what it means to be male and female and that they adjust their behavior accordingly

The Nature and Nurture of Gender



- Two theories of gender typing