



Nature, Nurture, and Human Diversity

Fall 2008
Chapter 3

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What is the Nature-Nurture Debate?

- What accounts for our behavioral proclivities, talents, abilities, personality, pre-dispositions, intelligence, temperament?
- Are we born with these differences? (Nature)
- Or, do we acquire these differences from our parents' influence, societal influence, friends, etc? (Nurture)

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Nature, Nurture, and Human Diversity

Evolutionary Psychology: Understanding Human Nature

- Natural Selection
- An Evolutionary Explanation of Human Sexuality
 - Males: healthy / fertile / nurturing mates
 - Females: healthy / security / strength
- Critiquing the Evolutionary Perspective
 - Post-hoc?
 - Promotes Status Quo

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Nature, Nurture, and Human Diversity

Parents and peers

Cultural Influences

- Variations Across Cultures
- Culture and the Self
 - Collectivistic
 - Individualistic
- Culture and Child-Rearing
 - Protective
 - Punitive
 - Promote independence

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Nature, Nurture, and Human Diversity

- Developmental Similarities Across Groups
- Gender Development
- Gender Similarities and Differences

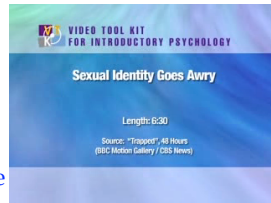
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Nature, Nurture, and Human Diversity

Gender Development

- The Nature of Gender
- The Nurture of Gender

Reflections on Nature and Nurture



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Nature, Nurture, and Human Diversity

Similarities	Differences
Genes: Same set of chromosomes	Genes: Genetic anomalies may make us different
Biology: Organs and body functions same	Biology: May change during development
Brain: Same brain architecture	Brain: Asymmetry of brain across genders
Behaviors: Speak language	Behavior: Speak different languages

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Behavior Genetics: Predicting Individual Differences

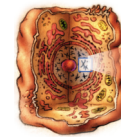
Behavior Geneticists study our differences and weigh the relative effects of heredity and environment.

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Genes: Our Codes for Life

Chromosomes containing DNA (*deoxyribonucleic acid*) are situated in the nucleus of a cell.

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



Cell
(the basic structural unit of a living thing)

Chromosome
(threadlike structure made largely of DNA molecules)

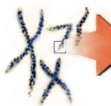


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Genes: Our Codes for Life

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)

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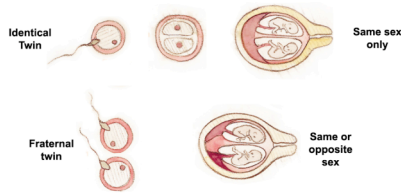
Genome

Genome is the set of complete instructions for making an organism, containing all the genes in that organism. Thus, the human genome makes us human, and the genome for *drosophila* makes it a common house fly.

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Twin Biology

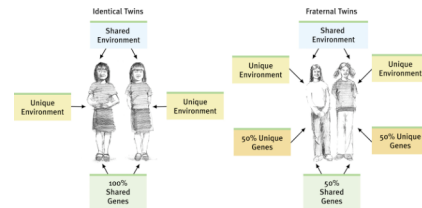
Studying the effects of heredity and environment on two sets of twins, identical and fraternal, has come in handy.



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Twins and Procedures

Behavior geneticists' effects of shared and unique environments on total or partial genetic makeup.



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Twins Separated at Birth

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

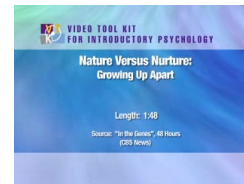
Separated Twins
Personality, Intelligence
Abilities, Attitudes
Interests, Fears
Brain Waves, Heart Rate



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Separated Twins

Critics of separated twin studies note that such similarities can be found between strangers. Researchers point out that differences between fraternal twins are greater than identical twins.



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Adoption Studies

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



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Adoptive Studies

Adoptive studies strongly point to the simple fact that biologically related children turn out to be different in a family. So investigators ask:

Do siblings have differing environmental experiences?

Do siblings, despite sharing half of their genes, have different combinations of the other half of their genes?

Ultimate question: Does parenting have an effect?

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Parenting

Parenting does have an effect on biologically related and unrelated children, but not all.

Parenting Influences children's
Attitudes, Values
Manners, Beliefs
Faith, Politics

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Temperament Studies

Temperament refers to a person's stable emotional reactivity and intensity. Identical twins express similar temperaments, suggesting heredity predisposes temperament.

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Heritability

Heritability refers to the extent to which the *differences among people* are attributable to genes.

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Group Differences

If genetic influences help explain individual diversity in traits, can the same be said about group differences?

Not necessarily. Individual differences in weight and height are heritable and yet nutritional influences have made westerners heavier and taller than their ancestors were a century ago.

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Nature *and* Nurture

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

Genes provide choices for the organism to change its form or traits when environmental variables change. Therefore, genes are pliable or *self-regulating*.

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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.

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Gene-Environment Interaction

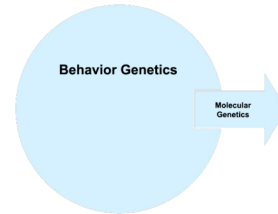
Genes and environment affect our traits individually, but more important are their interactive effects.



People respond differently to Rowan Atkinson (Mr. Bean) than Orlando Bloom.

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The New Frontier: Molecular Genetics



Molecular genetics is a branch extension of behavior genetics that asks the question, "Do genes influence behavior?"

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Molecular Genetics: Promises and Perils

Molecular geneticists are trying to identify genes that put people at risk for disorders. With this kind of knowledge, parents can decide to abort pregnancies in which the fetus is suspected of having such disorders.

However, this opens up a real concern regarding ethical issues involving such choices.

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Evolutionary Psychology: Understanding Human Nature

Molecular genetics studies why we as organisms are distinct.

Evolutionary psychology studies why we as humans are alike. In particular, it studies the evolution of behavior and mind using principles of natural selection.

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Natural Selection

Natural selection is an evolutionary process through which adaptive traits are passed on to ongoing generations because these traits help animals survive and reproduce.

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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.

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Human Traits

A number of human traits have been identified as a result of pressures afforded by natural selection.

Why do infants fear strangers when they become mobile?

Why are most parents so passionately devoted to their children?

Why do people fear spiders and snakes and not electricity and guns?

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Human Sexuality

Gender Differences in Sexuality
Males and females, to a large extent, behave and think similarly. Differences in sexes arise in regards to reproductive behaviors.

Question (summarized)	Male	Female
Casual sex	60%	35%
Sex for affection	25%	48%
Think about sex everyday	54%	19%

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Mating Preferences

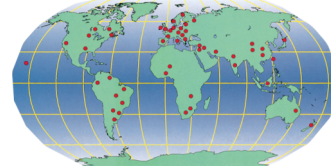
Natural selection has caused males to send their genes into the future by mating with multiple females since males have lower costs involved.

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

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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.

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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.

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Evolutionary Psychologists Reply

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.

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Parents and Peers

Parents and Early Experiences

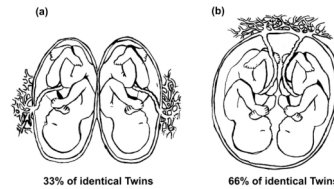
We have looked at how genes influence our developmental differences. What about the environment? How do our early experiences, our family, our community and our culture affects these differences?

We begin with the prenatal environment.

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Prenatal Environment

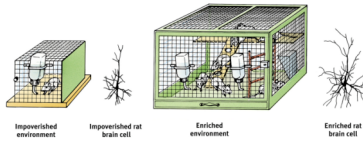
Identical twins who share the same placenta (b) are more alike than those who do not (a), suggesting prenatal influences on psychological



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Experience and Brain Development

Early postnatal experiences affect brain development. Rosenzweig et al. (1984) showed that rats raised in enriched environments developed thicker cortices than those in impoverished environment.



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Experience and Faculties

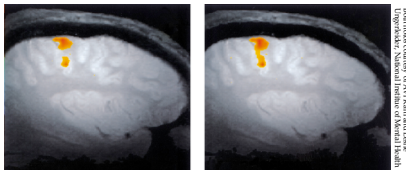
Early experiences during development in humans shows remarkable improvements in music, languages and the arts.



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Brain Development and Adulthood

Brain development does not stop when we reach adulthood. Throughout our life, brain tissue continues to grow and change.



A well-learned finger-tapping task leads to more motor cortical neurons (right) than baseline.

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Parental Influence

Parental influence is largely genetic. This support is essential in nurturing children. However, other socializing factors also play an important role.



Although raised in the same family, some children are greater risk takers.

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Peer Influence

Children, like adults, attempt to fit into a group by conforming. Peers are influential in such areas as learning to cooperate with others, gaining popularity, and developing interactions.



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Cultural Influences

Humans have the ability to evolve culture. Culture is composed of behaviors, ideas, attitudes, values and traditions shared by a group.



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Variation Across Culture

Cultures differ. Each culture develops **norms** – rules for accepted and expected behavior. Men holding hands in Saudi Arabia is the norm (closer **personal space**), but not in American culture.



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Variation Over Time

Cultures change over time. The rate of this change may be extremely fast. In many Western countries, culture has rapidly changed over the past 40 years or so.

This change cannot be attributed to changes in the human gene pool because genes evolve very slowly.

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Culture and the Self

If a culture nurtures an individual's personal identity, it is said to be **individualist**, but if a group identity is favored then the culture is described as **collectivist**.

A collectivist support system can benefit groups who experience disasters such as the 2005 earthquake in Pakistan.



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Culture and the Self

VALUE CONTRASTS BETWEEN INDIVIDUALISM AND COLLECTIVISM		
Concept	Individualism	Collectivism
Self	Independent (identity from individual traits)	Interdependent (identity from belonging)
Life task	Discover and express one's uniqueness	Maintain connections, fit in, perform role
What matters	Me – personal achievement and fulfillment; rights and liberties; self-esteem	Us – group goals and solidarity; social responsibilities and relationships; family duty
Coping method	Change reality	Accommodate to reality
Morality	Defined by individuals (self-based)	Defined by social networks (duty-based)
Relationships	Many, often temporary or casual; confrontation acceptable	Few, close and enduring; harmony valued
Attributing behavior	Behavior reflects one's personality and attitudes	Behavior reflects social norms and roles

Sources: Adapted from Thomas Schoonenman (1994) and Harry Triandis (1994).

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Culture and Child-Rearing

Individualist cultures (European) raise their children as independent individuals whereas collectivist cultures (Asian) raise their children as interdependent.



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Culture and Child-Rearing

Westernized Cultures	Asian-African Cultures
Responsible for your self	Responsible to group
Follow your conscience	Priority to obedience
Discover your gifts	Be true to <i>family-self</i>
Be true to yourself	Be loyal to your group
Be independent	Be interdependent

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Developmental Similarities Across Groups

Despite diverse cultural backgrounds, humans are more similar than different in many ways. We share the same genetic profile, life cycle, capacity for language, and biological needs.



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Gender Development

Based on genetic makeup, males and females are alike, since the majority of our inherited genes (45 chromosomes are unisex) are similar.

Males and females differ biologically in body fat, muscle, height, onset of puberty, and life expectancy.

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Gender Differences in Aggression

Men express themselves and behave in more aggressive ways than do women. This aggression gender gap appears in many cultures and at various ages.

In males, the nature of this aggression is physical.

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Gender and Social Power

In most societies, men are socially dominant and are perceived as such.

In 2005, men accounted for 84% of the governing parliaments.

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Gender Differences and Connectedness

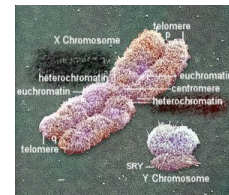
Young and old, women form more connections (friendships) with people than do men. Men emphasize freedom and self-reliance.



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Biology of Sex

Biological sex is determined by the twenty-third pair of chromosomes. If the pair is XX, a female is produced. If the pair is XY, a male child is produced.



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Sexual Differentiation

In the mother's womb, the male fetus is exposed to testosterone (because of the Y chromosome), which leads to the development of male genitalia.

If low levels of testosterone are released in the uterus, the result is a female.

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Sexual Differentiation

Sexual differentiation is not only biological, but also psychological and social.

However, genes and hormones play a very important role in defining gender, especially in altering the brain and influencing gender differences as a result.

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Gender Roles

Our culture shapes our **gender roles** — expectations of how men and women are supposed to behave.

Gender Identity — means how a person views himself or herself in terms of gender.

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Gender Roles: Theories

Gender Schema Theory suggests that we learn a cultural “recipe” of how to be a male or a female, which influences our gender-based perceptions and behaviors.

Social Learning Theory proposes that we learn gender behavior like any other behavior—reinforcement, punishment, and observation.

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Reflections on Nature and Nurture

Biological influences:

- Shared human genome
- Individual genetic variations
- Prenatal environment
- Sex-related genes, hormones, and physiology

Psychological influences:

- Gene-environment interaction
- Neurological effect of early experiences
- Responses evoked by our own temperament, gender, etc.
- Beliefs, feelings, and expectations



Social-cultural influences:

- Parental influences
- Peer influences
- Cultural individualism or collectivism
- Cultural gender norms



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