

Chapter 4: Nature, Nurture, and Human Diversity

- Behavior Geneticists study how heredity and environment contribute to human differences
- Genes: building blocks of heredity and development
 - Parts of DNA molecules, found in chromosomes in the nuclei of cells
 - Human genome includes 46 chromosomes (in 23 pairs)
 - Molecules that have the ability to direct the assembly of proteins that build the body
 - Genetic protein assembly can be turned on and off by the environment or by other genes
 - Any trait we see is a result of the complex interactions of many genes
- Controlling variables
 - Identical twins: same sex only, one egg & one sperm, share genes
 - Fraternal twins: same or opposite sex, two eggs & two sperm, siblings in same uterus
 - Identical vs. fraternal twins: How do genes make a difference within the same environment?
 - Identical twins are more alike than fraternal twins
 - Personality traits (extraversion, neuroticism), behaviors/outcomes (rate of divorce), abilities (IQ)
 - Similarities found in identical twins despite being raised in different environments
 - Biological vs. adoptive relatives: Does parenting/nurture make any difference?
 - Adoptive children seem to be more similar to their genetic relatives than their environment/nurture relatives
 - Despite the strong impact of genetics on personality, parenting has an influence on:
 - Religious beliefs, values, manners, attitudes, politics, habits
 - Why are siblings so different?
 - Siblings only share half their genes
 - Genetic differences become amplified as people react to them differently
 - Siblings are raised in different families; the youngest has more old siblings and has older (wiser, tired?) parents
 - Temperament: a person's general level and style of emotional reactivity (innate biological part of personality)
 - Not caused by parenting
 - From infancy to adulthood, most people do not seem to change temperament
 - 3 general types of temperament appear in infancy (easy, difficult, slow to warm up)
- Molecular genetics is the study of molecular structure and function of genes
 - How do specific genes have an influence on behavior?
 - Study families who have had a disorder across several generations (difference in genes of unaffected vs. affected?)
- Heritability of a trait is the amount of variation in the population that is explained by genetic factors
 - DOES not tell us the proportion that genes contribute to the trait for any one person
 - Does not tell us whether genetics explain differences between groups/populations
 - Measurement is called a heritability estimate (ex. Autism-70%, Anxiety disorders-30%)
 - Ex: People with exact same upbringing + differences in shyness = heritability of this trait for them is close to 100% (differences caused by genes)
- How does the interaction of genes and environment work?
 - Self-regulation: genes turn each other on and off in response to environmental conditions (in animals, shortened daylight triggers animals to change fur color/hibernate)

- Epigenetics: the environment acts on the surface of genes to alter their activity (obesity in adults can turn off weight regulation genes in offspring)
- The Human Approach to Nature & Nurture
 - The trait of being adaptable is built in the human genome
 - We have minds which allow us to change our behavior in response to the environment
 - We also shape our environment to suit our nature
 - Our genes allows us not to be tied so much to our genes
- Evolutionary Psych: the study of how evolutionary principles help explain the origin and function of the human mind, traits, and behaviors (how we are all alike)
 - Natural selection and adaptation
 - Selects certain genes to fit a specific environment, these traits are passed on
 - Artificial Selection (ex. domesticated foxes)
 - Explanation of phobias-adaptive (Those who more readily learned to fear snakes were more likely to survive and reproduce)
- Male vs. Females (mating preferences)
 - Quantity: Men think more than women about sex, men are more likely to think that casual sex is acceptable (men want to “spread their seed” and women pay the price—pregnancy)
- Critiques of Evolutionary Psych
 - Attributing too much to genes rather than human ability to make choices about social behavior → Response: the study of how we came to be does not dictate how we ought to be
- Nature/Nurture: From Genes to the Role of Environment
 - How environment/experience affects brain development
 - Forces guiding the course of development (parents, peers, culture)
 - Our environment gives us our experiences
 - Ex. Rats living in “enriched” environment experienced a greater growth in brain size and complexity than those rats living in an “impoverished” environment
- Brain Development Means Growth and Pruning
 - At birth, our brain overproduces neurons
 - To make our well-used brain pathways work better, the unused connections are “pruned” away
 - If certain abilities are not used, they will fade
 - Experience tells which neurons to use and which to prune away
- Is parenting a powerful environmental influence on development?
 - The power of parenting is clearest at the extremes—severe neglect & abuse
 - “Average” parents should ease off on both the blame and the credit they assume for how their kids turn out
 - Overall...it is better to have loving, supportive parents
- Peer Influence
 - Apparent conformity (the whole group smokes) could be a selection effect (they get together because they want to be with others who like to smoke)
 - Interaction with peers can teach new social skills
 - Parents may indirectly select peers by selecting a school or neighborhood
- Parents vs. Peers
 - Parents influence: career path, religion, values, cooperation, responsibility, self-discipline
 - Peers influence: choice of music/other recreation, good/bad habits, choice of clothing/other cultural choices, learning the path to popularity

- Culture refers to the patterns of ideas, attitudes, values, lifestyle habits, and traditions shared by a group of people and passed on to future generations
 - Each culture has norms (standards for acceptable, expected behavior)
 - Culture shock: feeling lost about what behaviors are appropriate
 - Cultural variation over time (within one culture)
 - Language changes in vocab/pronunciation
 - The pace of life quickens
 - Gender equality increases
 - People sleep less, socialize in person less, stare at screens more
 - People marry more for love, but then expect more romance
 - These cultural changes occur too fast to be rooted in genetic change
- Culture Influences on Development
 - Individualism and Collectivism
 - Individualist cultures value independence. They promote personal ideals, strengths, and goals, pursued in competition with others, leading to individual achievement and finding a unique identity
 - Collectivist cultures value interdependence. They promote group and societal goals and duties, and blending in with group identity, with achievement attributed to mutual support
 - Although there are cultural differences, the differences within any group are usually greater than differences between groups
 - Child-rearing: Cultural Differences
 - People in individualist cultures might raise children to be self-reliant and independent
 - People in collectivist cultures might raise children to be compliant, obedient, and integrated into webs of mutual support
 - People in Asian and African cultures might raise children to be more emotionally and physically close to others than in western European cultures
- Gender Development
 - Gender refers to the physical, social, and behavioral characteristics that are culturally associated with male and females roles and identity (some of these traits may be genetic differences; other role differences may be nurtured by culture)
 - Differences between genders
 - Biological: women enter puberty earlier, live longer, and have more fat and less muscle
 - Mental/behavioral health: women are more likely to have depression, anxiety, or eating disorders, men are more likely to have autism, ADHD, and antisocial personality disorder
 - Gender and aggression: men are more likely to behave in ways that harm others, physical aggression (not verbal or relational aggression)
 - Men are socially dominant (have positions controlling more people/resources)
 - Men often talk assertively, utter opinion; women often express support, invite input
 - Both men and women turn to women when they want someone to talk to, share worries/hurts
 - Women are more likely to seek out social support when under stress (“tend and befriend”)
 - Biology of Gender-difference is in the 23rd chromosome pair (XX vs. XY)
 - Gender role vs. gender identity