

Intro

Chapter 9: Lifespan Development

Developmental Psychology

- What shapes the way we change over time?
- Focus on psychological changes across the entire life span
- Every area of psychology can be looked at from this perspective.
 - biological development
 - social development
 - cognitive/perceptual development
 - personality development

Table 9.1

Major Stages of the Lifespan

Stage	Age Range
Prenatal	Conception to birth
Infancy and toddlerhood	Birth to 2 years
Early childhood	2 to 6 years
Middle childhood	6 to 12 years
Adolescence	12 to 18 years
Young adulthood	18 to 40 years
Middle adulthood	40 to 65 years
Late adulthood	65 years to death

Fundamental Issues: Is Development Continuous?

- Development means change; change can be abrupt or gradual
- Two views of human development
 - stage theories: there are distinct phases to intellectual and personality development
 - continuity: development is continuous

Fundamental Issues in Developmental Psychology

Critical period— Are there periods when an individual is particularly sensitive to certain environmental experiences?

- Are the first hours after birth critical for parent-child bonding?
- Is first year critical for developing trust?
- Easier to learn a language before age 10?

Fundamental Issues: Nature vs. Nurture

- What is role of heredity vs. environment in determining psychological makeup?
- These are some of our greatest societal debates

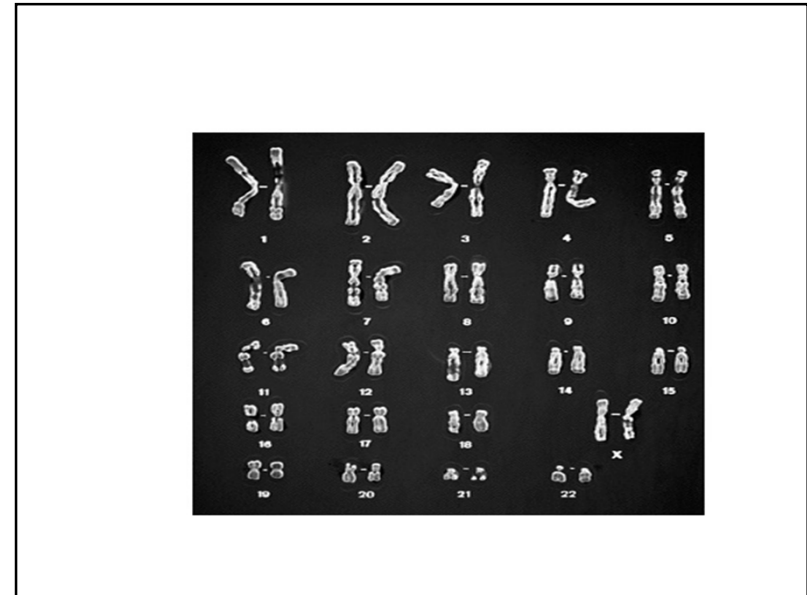
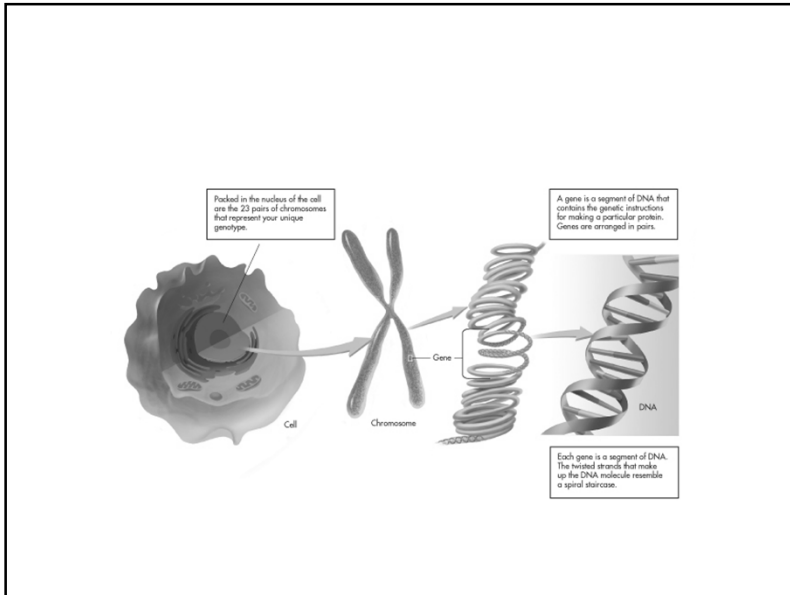
New slide: Fundamental Issues: Nature vs. Nurture

“The old ‘nature versus nurture’ debate has long since receded into scientific irrelevance. Instead, the frontier lies in understanding the mechanisms by which environmental factors— whether experiential, metabolic, microbiological, or pharmacologic— interact with the genome to influence brain development and to produce diverse forms of neural plasticity over the lifetime.”

Steven E. Hyman, 2009

Overview of Genetics

- Humans have 23 pairs of chromosomes.
- Chromosomes are long twisted strands of DNA.
- DNA is the chemical basis of heredity and carries instructions.
- Genes are the basic unit of heredity; single unit of DNA on the chromosome.



Dominant and Recessive Genes

- Genotype—underlying genetic makeup (made up of 23 chromosome pairs)
- Phenotype—traits that are expressed
- Dominant genes—will always be expressed if present
- Recessive genes—will not be expressed unless they are in a pair

Your Unique Genotype

- The *human genome* is the complete set of DNA in the human organism (Human Genome Program, 2008).
- The complete human genome contains only about 20,000 to 25,000 protein-coding genes, far fewer than previous estimates.
- Genes come in different versions, called *alleles*.
- Best-known pattern of allele variation is the simple dominant-recessive gene pair. For example, the development of freckles appears to be controlled by a single gene, which can be either dominant or recessive.
- Unlike freckles, most characteristics involve the interaction of *multiple* genes.

Influences on Expression of Genotype

- Different genotypes react differently to environmental factors.
- Spoken about as *genetic predispositions* to develop in a particular way
- People with a particular genetic configuration will be more or less sensitive to particular environmental factors.
- For example, the genotype of a person who sunburn easily is especially sensitive to the effects of ultraviolet light.

Influences on Expression of Genotype

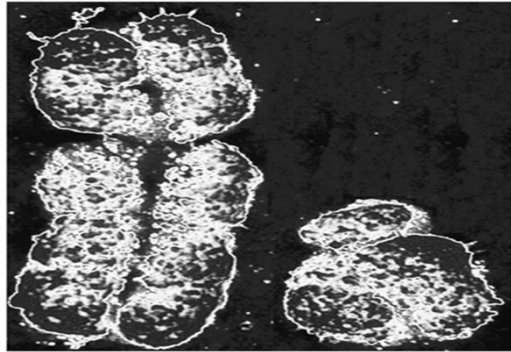
- Most of the genes in each person are dormant.
- Experience affects which genes are turned on (and off), and when.
- Thus, the environment participates in sculpting expression of the genome.

Characteristic	Dominant	Recessive
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Hair	Dark Curly	Light Straight
Eyes	Brown	Grey Blue
Hands	5 fingers Normal limbs	Extra fingers Limb dwarfing
Face	Broad lips Dimples	Thin lips No dimples

Sex Linked Traits

- Traits linked to the X or Y (sex) chromosomes.
- Usually recessive and carried on the X chromosome
- Appear more frequently in one sex than another.
- Color blindness, baldness, hemophilia, Fragile X



Physical and Psychological Development Related

- Physical development begins at conception.
- Physical maturity sets limits on psychological ability.
 - Visual system not fully functional at birth.
 - Language system not functional until much later.
- Prenatal environment can have lifetime influence on health and intellectual ability.

The Beginnings of Life

- Life is begun as a zygote, a single cell no larger than the period at the end of this sentence.
- The genetic data you inherited from your biological parents is encoded in the chemical structure of the chromosomes
- DNA stores the inherited information that guides the development of all living organisms.
- Each chromosome has thousands of DNA segments called genes that are strung like beads along its length.
- Each gene is a unit of DNA code for making a particular protein molecule.
- Genes direct the manufacture of proteins.
- Proteins are used in virtually all of your body's functions—from building cells to manufacturing hormones to regulating brain activity

Epigenetics

- The study of the mechanisms that control gene expression and its effects on behavior and health.
- How does the single-celled zygote develop into a complex, differentiated organism with kidneys, eyelashes, navels, and kneecaps?
- The dramatic differences among the size, shape, and function of cells are due to *which* genes are expressed.
- Basically, cells develop differently because different genes are activated at different times.
- Some genes are active for just a few hours, others for a lifetime.
- Many genes are *never* expressed.
- Gene expression can be triggered by the activity of *other* genes, internal chemical changes, or by external environmental factors.
- Gene expression is *flexible*.

Prenatal Development

- Conception—when a sperm penetrates the ovum
- Zygote—a fertilized egg
- Germinal period—first two weeks after conception
- Embryonic period—weeks three through eight after conception
- Fetal period—two months after conception until birth

Prenatal Brain Development

- By three weeks after conception, a sheet of primitive neural cells has formed. Just as you might roll a piece of paper to make a tube, this sheet of neural cells curls to form the hollow *neural tube*. The neural tube is lined with *stem* cells. **Stem cells** are cells that can divide indefinitely, renew themselves, and give rise to a variety of other types of cells. At 4 weeks, this structure is not much bigger than a grain of salt (MacDonald, 2007).

Prenatal Brain Development

- The neural stem cells divide and multiply, producing other specialized cells that eventually give rise to neurons and glial cells. Gradually, the top of the neural tube thickens into three bulges that will eventually form the three main regions of the brain: the *hindbrain*, *midbrain*, and *forebrain* (see Figure 9.2). As the neural tube expands, it develops the cavities, called *ventricles*, that are found at the core of the fully developed brain. The ventricles are filled with cerebrospinal fluid, which cushions and provides nutrients for the brain and spinal cord.
- During peak periods of brain development, new neurons are being generated at the rate of 250,000 per minute (MacDonald, 2007). The developing brain cells multiply, differentiate, and begin their migration to their final destination. Guided by the fibers of a special type of glial cells, the newly born neurons travel to specific locations (Nadarajah & Parnavelas, 2002). They join with other developing neurons and begin forming the structures of the developing nervous system.

Periods of Prenatal Development

- The Fetal Period occurs at the third month: the final and longest stage of prenatal development.
- By the end of this period, the *fetus* can move its arms, legs, mouth, and head.
- The fetal brain forms as many as 2 million synaptic connections per second.
- By the fifth month, all the brain cells the person will have at birth are present. The fetus now has distinct sleep–wake cycles and periods of activity.
- During the sixth month, the fetus's brain activity becomes similar to that of a newborn baby.
- The fetus doubles in weight the final two months.
- At birth, the newborn's brain is only about one-fourth the size of an adult brain, weighing less than a pound.
- The process of neural development has only begun. The development of dendrites and synapses, as well as the extension of axons, continues throughout the lifespan.

Prenatal Influences on Development

- Nutrition
- Anxiety
- Mother's general health
- Maternal age
- Teratogens—any agent that causes a birth defect (e.g., drugs, radiation, viruses)

Infant Abilities

- Infants are born with immature visual system
 - can detect movement and large objects
- Other senses function well on day 1
 - will orient to sounds
 - turn away from unpleasant odors
 - prefer sweet to sour tastes
- Born with a number of reflex behaviors

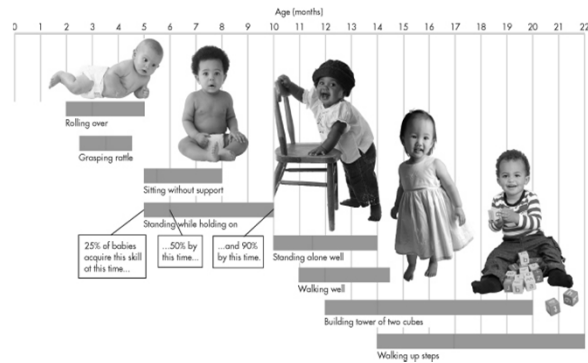
Infant Reflexes

- Rooting—turning the head and opening the mouth in the direction of a touch on the cheek
- Sucking—sucking rhythmically in response to oral stimulation
- Babinski—fanning and curling toes when foot is stroked

Infant Reflexes

- Moro—throwing the arms out, arching the back and bringing the arms together as if to hold onto something (in response to loud noise or sudden change in position of the head)
- Grasping—curling the fingers around an object

Other Infant Milestones: Motor Development



Infant Attachment

Intense emotional bond
between infant and caregiver

Temperament

- Easy—adaptable, positive mood, regular habits
- Slow to warm up—low activity, somewhat slow to adapt, generally withdraw from new situations
- Difficult—intense emotions, irritable, cry frequently
- Average—unable to classify (1/3 of all children)

Temperamental Patterns

- Most babies can be categorized into one of three broad temperamental patterns.
- An “easy” baby is usually easy to soothe, cheerful, calm, and readily adjusts to new situations.
- A “slow-to-warm-up” baby tends to adapt to new situations and experiences very slowly but once they adapt, they’re fine.
- “Difficult” babies are more likely to be emotional, irritable, and fussy.

Ainsworth's Strange Situation

Mother-child dyads were observed in a playroom under four conditions:

- initial mother-child interaction
- mother leaves infant alone in playroom
- friendly stranger enters playroom
- mother returns and greets child

Forms of Attachment

- Securely attached—explores the room when mother is present, becomes upset and explores less when mother is not present, shows pleasure when mother returns
- Avoidantly attached—a form of insecure attachment in which child avoids mother and acts coldly to her

Forms of Attachment

Anxious resistant attachment—a form of insecure attachment where the child remains close to mother and remains distressed despite her attempts to comfort

Does child care really affect attachment?

- Debate about whether excessive daycare under age 1 can cause insecure attachment.
- Overall agreement among researchers is that high-quality day care is what matters (e.g., warmth, activities, well-trained staff, low staff turnover, low child-to-caregiver ratio).

Baby sleeping-arrangements

- U.S.: Babies usually sleep in their own beds
- Mayan families and other cultures sleep with mother until 2 or 3
- Reflects different cultural values of independence and interdependence

Language Development

Preview

- Universal Characteristics of Human Language
- Course of Development
- Supports for Language Development
- Language Learning among Nonhuman Apes

Universal Characteristics of Human Language

- Language development similar across cultures; what are the common elements?
- Chomsky believed every child is born with biological predisposition to learn any language.
- At birth, infants can distinguish among speech sounds of all the world's languages, until about 10 months of age.

Encouraging Language Development: Motherese

- Called “infant-directed speech,” motherese is the way parents speak to babies: pronunciation, simplified vocabulary, high pitches, exaggerated intonation and expressions
- Preferred by infants over adult style
- Even found with deaf mothers

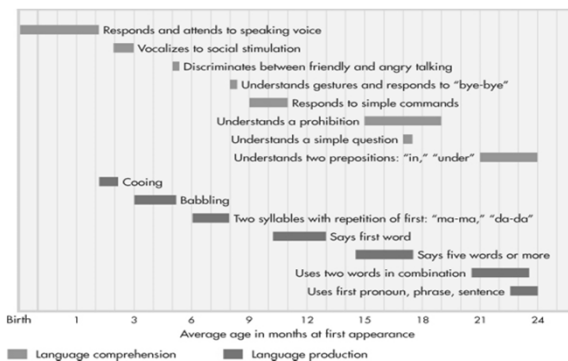
Language Development

- Infant preference for human speech over other sounds.
 - before 6 months can hear differences used in all languages
 - after 6 months begin to hear only differences used in native language
- Cooing—vowel sounds produced 2–4 months
- Babbling—consonant/vowel sounds between 4 to 6 months
- Even deaf infants coo and babble.

Language Development

Speech Characteristic

2	Cooing	vowel sounds
4	Babbling	consonant/vowel
10	Babbling	native language sounds
12	One-word stage	
24	Two-word stage	
24+	Sentences	



Piaget's Theory of Cognitive Development

- Jean Piaget (1896–1980) Swiss psychologist who became leading theorist in 1930s.
- Piaget believed that "children are active thinkers, constantly trying to construct more advanced understandings of the world."
- These "understandings" are in the form of structures he called *schemas*.

Development of Schemas

- Schemas are frameworks that develop to help organize knowledge.
- Assimilation—process of taking new information or a new experience and fitting it into an already existing schema
- Accommodation—process by which existing schemas are changed or new schemas are created in order to fit new information

Piaget's Approach

- Primary method was to ask children to solve problems and to question them about the reasoning behind their solutions.
- Discovered that children think in radically different ways than adults.
- Proposed that development occurs as a series of 'stages' differing in how the world is understood.

Sensorimotor Stage (birth – 2)

- Information is gained through the senses and motor actions.
- In this stage child perceives and manipulates but does not reason.
- Symbols become internalized through language development.
- Object permanence is acquired.

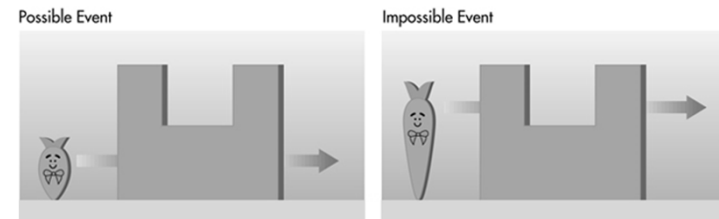
Object Permanence

- The understanding that objects exist independent of one's actions or perceptions of them.
- Before 6 months infants act as if objects removed from sight cease to exist.
 - Can be surprised by disappearance/reappearance of a face (peek-a-boo).

Preoperational Stage (2–7 years)

- Emergence of symbolic thought
- Centration
- Egocentrism
- Lack the concept of conservation
- Animism
- Artificialism

Testing Object Permanence in Babies



Piaget's Conservation Task



In conservation tasks, two glasses containing the same amount of liquid are placed side by side. The child is asked to identify which glass has more liquid. The child is then asked if the amount of liquid is the same in each glass after the liquid is poured from one glass into the other. The child is again asked if the amount of liquid is the same in each glass.

Concrete Operational Stage (7–12 years)

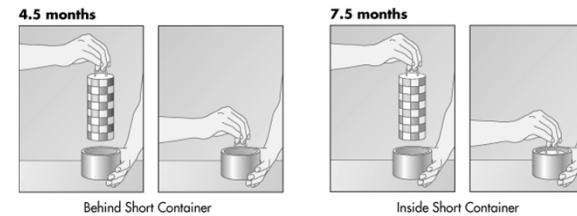
- Understanding of mental operations leading to increasingly logical thought.
- Classification and categorization
- Less egocentric
- Inability to reason abstractly or hypothetically

Formal Operational Stage (age 12 – adulthood)

- Hypothetico-deductive reasoning
- Adolescent egocentrism illustrated by the phenomenon of personal fable and imaginary audience

Piaget's Theory Challenged

Hespos and Baillargeon found that 4 ½ month old infants respond with increased attention when a tall object completely disappears when placed behind a shorter object, but not when a tall object disappears when placed in a short container.



It is not until 7 ½ months that infants are surprised by a tall container disappearing inside a short container. These findings show that infants form *event-specific expectations* about the physical world.

Critique of Piaget's Theory

- Underestimates infant and children's cognitive abilities
- Underestimates the role of the social and cultural environment
- Overestimates the degree to which people achieve formal operational thought processes

Vygotsky's Sociocultural Perspective (contrast to Piaget)

- Emphasized the child's interaction with the social world (other people) as a cause of development.
- Vygotsky believed language to be the foundation for social interaction and thought.
- Piaget believed language was a by-product of thought.

Vygotsky's Sociocultural Perspective

Vygotsky—children learn from interactions with other people

- Zone of proximal development—what a child can do by interacting with another person, but can't do alone
- Critical thinking based on dialogue with others who challenge ideas

Piaget—focused on children's interaction with the physical world

Information-Processing Perspective

•Rather than distinct stages of cognitive development (Piaget), some developmental psychologists emphasize this model.

•Views cognitive development as a process that is continuous over the life span; studies development of basic mental processes (attention, memory, problem solving).

Gender

- Gender roles are the behaviors, attitudes, and traits that a given culture associates with masculinity and femininity.
- Gender refers to the cultural and social meanings that are associated with maleness and femaleness.
- Gender roles describes the behaviors, attitudes, and personality traits that a given culture designates as either "masculine" or "feminine."
- Gender identity refers to a person's psychological sense of being male or female.
- The term "sex" is commonly used when the biological categories of "male" and "female" are being talked about.

Adolescence

Physical and Sexual Development

- Puberty—stage where an individual reaches sexual maturity and is physically capable of sexual reproduction
- Primary sex characteristics—sex organs directly involved in reproduction
- Secondary sex characteristics—develop during puberty, not directly involved in reproduction, but distinguish male from female
- Adolescent growth spurt—period of accelerated growth during puberty
- Menarche—female's first menstrual period

Influences on Timing of Puberty

- Genetics —girls experience menarche around same time as their mother, closer for identical twins than non-twin siblings
- Environment—nutrition and health
- Body size and physical activity
- Absence of the father in the home environment (menarche earlier for girls in these homes)
- Quality of family relationships

The Adolescent Brain

- Little evidence of “raging hormones” causing emotional problems.
- Neuronal pruning surges occurring
- Prefrontal cortex last area to experience pruning, which is responsible for executive cognitive functions (e.g., reasoning, planning, organizing).

Early vs. Late Maturation

- Early maturation for girls carries greater risks (negative body image, teenage pregnancy, weight gain, embarrassment)
- Can be advantageous for boys (popularity), but also carries risks (depression, drug use)

Social Development in Adolescence

- Parent-child relationships overall positive, but conflict does increase during this time; this is seen as healthy as autonomy increases.
- Friends and peers present more of an influence.
- Romantic relationships influence psychological and social development in both positive and negative ways.

Moral Development: Kohlberg

- The most influential theory of moral development was proposed by Lawrence Kohlberg (1927-1987).
- As adolescents develop new cognitive abilities, they become more aware of moral issues in the world around them.
- Their newly acquired ability to imagine hypothetical situations and compare abstract ideals to the reality they see around them often leads them to question authority or take action.
- Critiques: moral *reasoning* doesn't always predict moral *behavior*. People can be *flexible* in their real-world moral behavior: the goals that people pursue affect the types of moral judgments they make.

Gender and Moral Reasoning

- Studies on gender differences in moral reasoning, only slight gender differences have been found.
- Both* men and women tend to use a mix of care and justice perspectives.
- This disputes Carol Gilligan's idea that men and women had entirely different approaches to moral reasoning.
- There is, however, empirical support for Gilligan's larger message: that Kohlberg's theory did *not* adequately reflect the way that humans actually experienced moral decision-making.

Erikson's Psychosocial Theory

- Biological in belief that there are innate drives to develop social relationships and that these promote survival (Darwinism).
- Divided life span into eight psychosocial stages, each associated with a different drive and a problem or crisis to resolve.
- Outcome of each stage varies along a continuum from positive to negative.

Stage 1 (Birth–1)
Trust vs. Mistrust

- Infants must rely on others for care
- Consistent and dependable care giving and meeting infant needs leads to a sense of trust
- Infants who are not well cared for will develop mistrust.

Stage 2 (1–3 years)
Autonomy vs. Shame and Doubt

- Children are discovering their own independence.
- Those given the opportunity to experience independence will gain a sense of autonomy.
- Children that are overly restrained or punished harshly will develop shame and doubt.

Stage 3 (3–5 years)
Initiative vs. Guilt

- Children are exposed to the wider social world and given greater responsibility.
- Sense of accomplishment leads to initiative, whereas feelings of guilt can emerge if the child is made to feel too anxious or irresponsible.

Stage 4 (5–12 years)
Industry vs. Inferiority

- Stage of life surrounding mastery of knowledge and intellectual skills
- Sense of competence and achievement leads to industry
- Feeling incompetent and unproductive leads to inferiority.

Stage 5 (Adolescence) Identity vs. Confusion

- Developing a sense of who one is and where one is going in life.
- Successful resolution leads to positive identity.
- Unsuccessful resolution leads to identity confusion or a negative identity.

Stage 6 (Young adulthood) Intimacy vs. Isolation

- Time for sharing oneself with another person
- Capacity to hold commitments with others leads to intimacy
- Failure to establish commitments leads to feelings of isolation

Stage 7 (Middle adulthood) Generativity vs. Stagnation

- Caring for others in family, friends, and work leads to sense of contribution to later generations.
- Stagnation comes from a sense of boredom and meaninglessness.

Stage 8 (Late adulthood to Death) Integrity vs. Despair

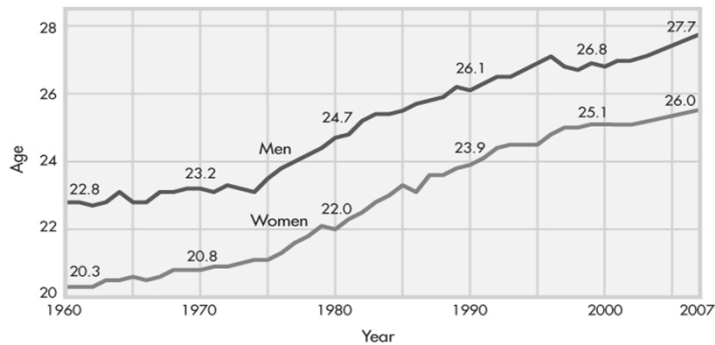
- Successful resolutions of all previous crises leads to integrity and the ability to see broad truths and advise those in earlier stages.
- Despair arises from feelings of helplessness and the bitter sense that life has been incomplete.

Adult Development

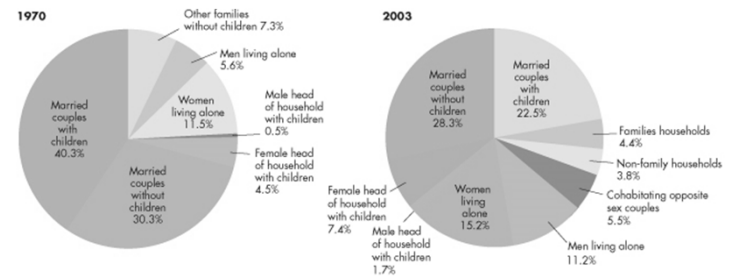
Physical and Social

- Genetics and lifestyle combine to determine course of physical changes.
- Social development involves marriage and transition to parenthood.
- Paths of adult social development are varied and include diversity of lifestyles.
- Careers vary; dual career families more common

Median Age at First Marriage



Changing Structure of American Families and Households



Late Adulthood

- Life expectancy for men in the U.S. is 75, for women is 80.
- Old age as a time of poor health, inactivity, and decline is a myth.
- Decline in mental abilities is often because of lack of practice or experience.
- Activity theory of aging—life satisfaction is highest when people maintain level of activity they had in earlier years.

Death and Dying

- In general, anxiety about dying tends to decrease in late adulthood.
- Kubler-Ross stages of dying
 - Denial
 - Anger
 - Bargain
 - Depression
 - Acceptance
- Not universally demonstrated