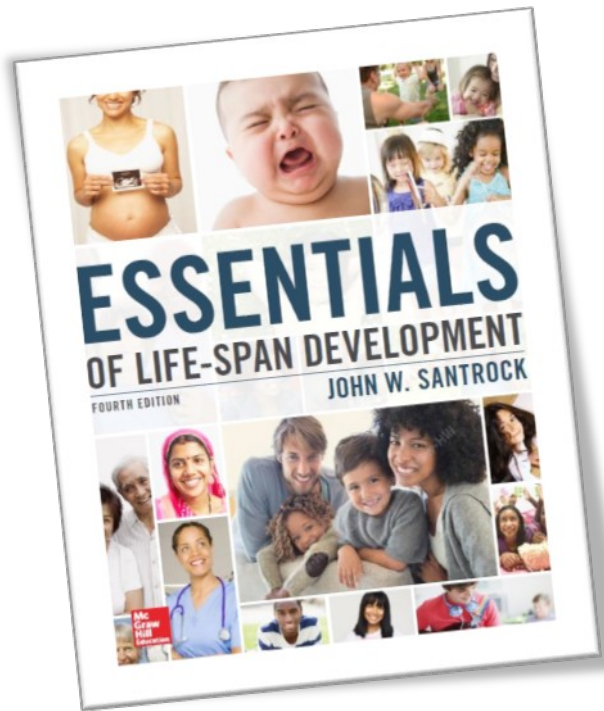




# ESSENTIALS OF LIFE-SPAN DEVELOPMENT

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4e

PHYSICAL AND COGNITIVE DEVELOPMENT  
IN ADOLESCENCE

9

# CHAPTER OUTLINE

- The nature of adolescence
- Physical changes
- Adolescent health
- Adolescent cognition
- Schools

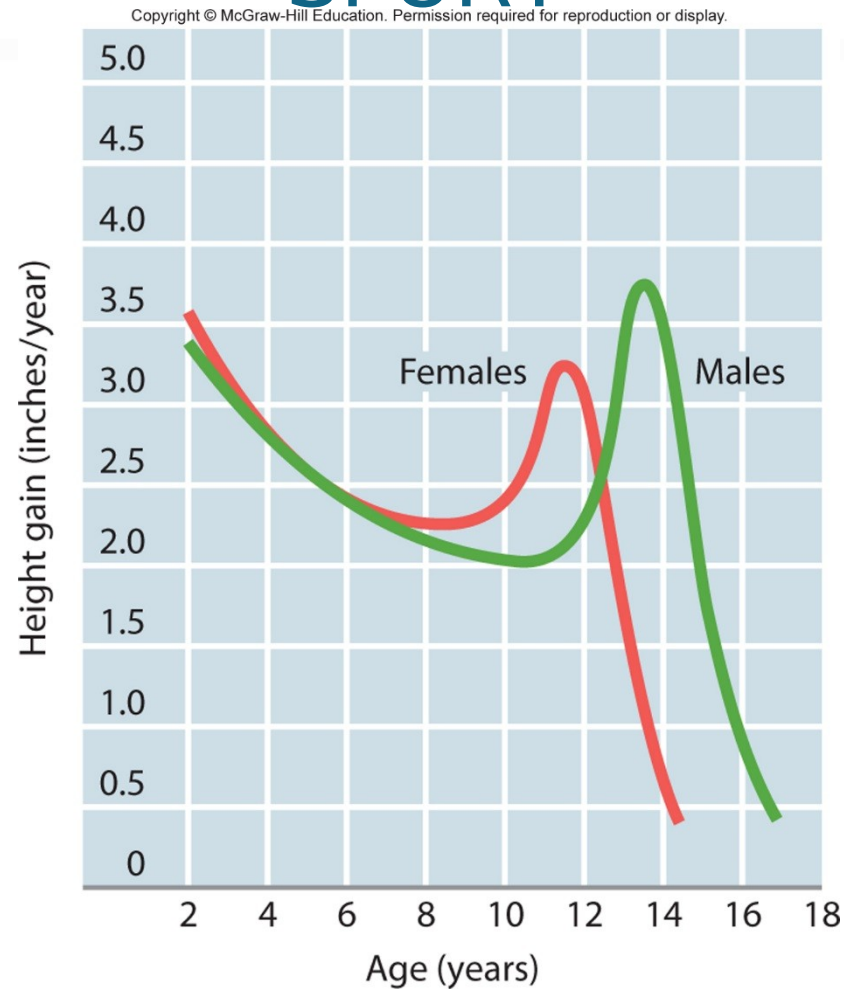
# THE NATURE OF ADOLESCENCE

- Influences on the adolescent
  - Cultural
  - Gender
  - Socioeconomic
  - Age
  - Lifestyle differences

# PHYSICAL CHANGES

- **Puberty:** A brain-neuroendocrine process that provides stimulation for rapid physical changes that occur in early adolescence
  - Sexual maturation
  - Marked weight and height gains
  - Hormonal changes
  - **Menarche:** Girl's first menstruation

# FIGURE 9.1 - PUBERTAL GROWTH SPURT



# PHYSICAL CHANGES

- **Hormones:** Chemicals secreted by the endocrine glands and carried throughout the body by the bloodstream
  - Endocrine system's role in puberty involves interaction:
    - **Hypothalamus:** A structure in the brain that monitors eating and sex
    - **Pituitary gland:** An important endocrine gland that controls growth and regulates other glands
    - **Gonads:** The testes in males, the ovaries in females
  - Increases in testosterone and estradiol concentrations in body

# PHYSICAL CHANGES

- Timing and variations in puberty
  - Basic genetic program hardwired into species
    - Nutrition, health, stress, other environmental factors affect timing
  - Average age of menarche has declined significantly since mid-19th century
    - Improved nutrition and health
  - Pubertal sequence begins:
    - Boys - 10-13½ years
    - Girls - Between ages of 9 and 15 years

# PHYSICAL CHANGES

- Body image
  - Preoccupation with body image is strong throughout adolescence
  - Girls are less happy with their bodies and have more negative body images
  - Both boys' and girls' body images become more positive over time



# PHYSICAL CHANGES

- Early and late maturation
  - Early-maturing boys view themselves more positively and have more successful peer relations
  - Late-maturing boys report a stronger sense of identity in their 30s
  - Early-maturing girls show greater satisfaction early but less satisfaction later
    - More likely to smoke, drink, be depressed
    - Have an eating disorder
    - Struggle for earlier independence
    - Have older friends

# FIGURE 9.2 - CHANGES IN THE ADOLESCENT BRAIN

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## **Prefrontal cortex**

This “judgment” region reins in intense emotions but doesn’t finish developing until at least emerging adulthood.

## **Corpus callosum**

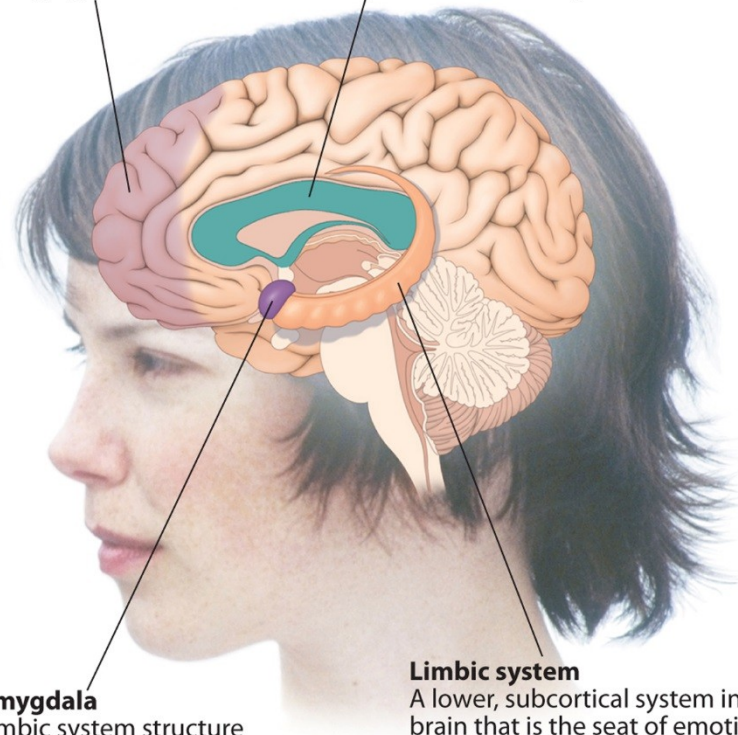
These nerve fibers connect the brain’s two hemispheres; they thicken in adolescence to process information more effectively.

## **Amygdala**

Limbic system structure especially involved in emotion.

## **Limbic system**

A lower, subcortical system in the brain that is the seat of emotions and experience of rewards. This system is almost completely developed by early adolescence.



# PHYSICAL CHANGES

- Brain
  - Context-induced plasticity
    - Certain brain linkages mature earlier than others
  - Corpus callosum - fibers connecting left and right brain hemispheres
    - Thickens in adolescence, improves information processing
  - Amygdala – seat of emotions
    - Almost completely developed by early adolescence
  - Prefrontal cortex, involved in reasoning, decision-making, and self-control
    - Matures between approximately 18-25 years
    - Has not matured to the point of controlling strong emotions

# PHYSICAL CHANGES

- Adolescent sexuality
  - Developing a sexual identity
    - Learning to manage sexual feelings
    - Developing new forms of intimacy
    - Learning skills to regulate sexual behavior
  - Sexual identity includes:
    - Activities
    - Interests
    - Styles of behavior
    - Indication of sexual orientation

# PHYSICAL CHANGES

- Different developmental pathways for gay and lesbian adolescents
  - Diverse patterns of initial attractions
  - Some struggle with same-sex attractions in childhood
  - Gradual recognition of same-sex sexual orientation
- Timing of adolescent sexual behaviors
  - Becoming sexually active
  - Role of oral sex
  - Sexual risk-taking
  - Many adolescents are not emotionally equipped to handle sexual experiences
    - Especially in early adolescence

# ADOLESCENT SEXUALITY

- Contraceptive use
  - Two kinds of risks
    - Unintended, unwanted pregnancy
    - Sexually transmitted infections
  - Adolescents are increasing their use of contraceptives
- **Sexually transmitted infections (STIs):** Contracted primarily through sexual contact
  - Including oral-genital and anal-genital contact

# ADOLESCENT SEXUALITY

- Adolescent pregnancy
  - U.S. has one of the highest rates in the industrialized world
  - Ethnic variations in rates of teenage pregnancy
- Health and social risks
  - Low birth weight, neurological problems, childhood illness
  - Mothers drop out of school and never catch up economically
- Sex education
  - Abstinence-only or contraceptive knowledge programs
  - Contraceptive knowledge programs do not increase incidence of sexual intercourse
    - More likely to reduce adolescent pregnancy and sexually-transmitted infections

# ADOLESCENT HEALTH

- Poor health habits linked to early death in adulthood begin during adolescence
  - Early formation of healthy eating patterns and exercise can delay or prevent disability and mortality from many diseases
- Nutrition and exercise
  - Increasing numbers of overweight adolescents in recent decades
  - Individuals become less active as they reach and progress through adolescence
  - Exercise linked to positive physical outcomes



# ADOLESCENT HEALTH

- Sleep patterns
  - Only 31% of U.S. adolescents sleep 8 or more hours a night
  - Inadequate sleep on school nights
  - Sleep deficits experienced, try to make up on weekends
- Leading causes of death in adolescence
  - Unintentional injuries
  - Homicide
  - Suicide

# ADOLESCENT HEALTH

- Substance use and abuse
  - Illicit drug use has declined in recent decades
    - Marijuana as most widely used drug, use rates on the increase
    - Alcohol and cigarette consumption has declined
  - Special concerns for adolescents who begin to use drugs early in adolescence or even childhood
  - Parents and peers play role in substance use
    - Educational success as a strong buffer for drug problems

# ADOLESCENT HEALTH

- Eating disorders
  - **Anorexia nervosa:** Relentless pursuit of thinness through starvation
    - Main characteristics
      - Weight less than 85% of what is considered normal for a person's age and height
      - An intense fear of gaining weight that does not decrease with weight loss
      - Having a distorted image of their body shape
      - Amenorrhea
  - 10 times more likely to occur in females than males

# ADOLESCENT HEALTH

- **Bulimia nervosa:** Individual consistently follows a binge-and-purge patterns
  - Preoccupied with food
  - Intense fear of becoming overweight
  - Depressed or anxious
  - Distorted body image
  - Typically fall within a normal weight range

# ADOLESCENT COGNITION

- Piaget's Formal Operational stage (ages 11+)
  - More abstract thought
    - Make-believe situations, abstract propositions, hypothetical events
  - Increased verbal problem-solving ability
  - Think about thought itself
  - Thoughts of idealism and possibilities
  - More logical thought
    - **Hypothetical-deductive reasoning:** Creating a hypothesis and deducing its implications

# ADOLESCENT COGNITION

- **Adolescent egocentrism:** Heightened self-consciousness of adolescents
  - **Imaginary audience:** Adolescents' belief that others are as interested in them as they themselves are
    - Attention-getting behaviors
  - **Personal fable:** Involves a sense of uniqueness and invincibility

# ADOLESCENT COGNITION

- Information processing
  - Executive functioning – managing one's thoughts to engage in goal-directed behavior and exercise self-control
    - Increased cognitive control
    - Increased decision making

# SCHOOLS

- Transition to middle or junior high school
  - Drop in school satisfaction
  - Occurs simultaneously with a host of other developmental changes
  - **Top-dog phenomenon:** Move from the top position in elementary school to the lowest position in middle or junior high school
  - Positive elements of transition:
    - Feeling more grown up
    - More subjects to select from
    - More opportunities to spend with peers and locate compatible friends
    - Increased independence from direct parental monitoring
    - More intellectually challenging work



# SCHOOLS

- Effective schools for young adolescents
  - Develop smaller communities that lessen impersonality of middle schools
  - Lower student-counselor ratios to 10-to-1
  - Involve parents and community leaders
  - Integrate several disciplines in a flexible curriculum
  - Boost students' health and fitness with more programs
  - Provide public health care

# SCHOOLS

- High schools
  - Critiques include:
    - Low expectations for success
    - Inadequate standards for learning
    - Lack of pathways to create identity
    - Graduating without adequate reading, writing, and mathematical skills
    - Drop out rates

# SCHOOLS

- **Service learning**
  - Promotes social responsibility and service to the community
  - Takes education out into the community
  - Linked to higher grades, increased goal setting, higher self-esteem, serving as a volunteer in the future