

Invitation to the Life Span

by Kathleen Stassen Berger

Part V - Adolescence

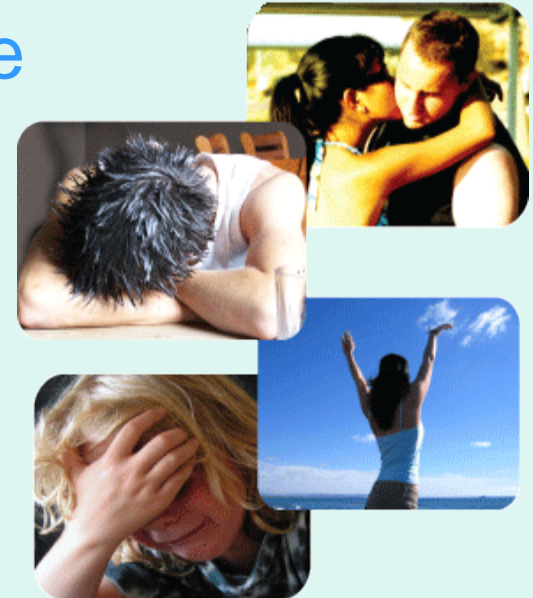
Chapters 9 & 10

For some the transitions of adolescence
are times of trials and tribulation!

Teenagers” by My Chemical Romance

<http://www.youtube.com/watch?v=k6EQAOmJrbw/>

**PowerPoint Slides developed by
Martin Wolfger and Michael James
Ivy Tech Community College-Bloomington**



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Chapter 9- Adolescence

Body and Mind

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Puberty

- The time between the first onrush of hormones and full adult physical development.
- Puberty usually lasts three to five years.
- Many more years are required to achieve psychosocial maturity.

Puberty

- ***Menarche-*** A girl's first menstrual period, signaling that she has begun ovulation. Pregnancy is biologically possible, but ovulation and menstruation are often irregular for years after menarche.
- ***Spermarche-*** A boy's first ejaculation of sperm. Erections can occur as early as infancy, but ejaculation signals sperm production.

Puberty Begins

Hormone (Definition)

- An organic chemical substance that is produced by one body tissue and conveyed via the bloodstream to another to affect some physiological function.
- Various hormones influence thoughts, urges, emotions, and behavior.

Puberty Begins

Pituitary gland

- A gland in the brain that responds to a signal from the hypothalamus by producing many hormones, including those that regulate growth and control other glands, among them the adrenal and sex glands.

Puberty Begins

Adrenal glands-Two glands, located above the kidneys, that produce hormones (including the “stress hormones” epinephrine [adrenaline] and norepinephrine).

HPA (hypothalamus–pituitary–adrenal) axis- The sequence of a chain reaction of hormone production, originating in the hypothalamus and moving to the pituitary and then to the adrenal glands.

Puberty Begins

Gonads- The paired sex glands (ovaries in females, testicles in males). The gonads produce hormones and gametes.

Estradiol- A sex hormone, considered the chief estrogen. Females produce more estradiol than males do.

Testosterone- A sex hormone, the best known of the androgens (male hormones). Secreted in far greater amounts by males than by females.

Puberty Begins

TABLE 9.1 AT ABOUT THIS TIME: The Sequence of Puberty

Girls	Approximate Average Age*	Boys
Ovaries increase production of estrogen and progesterone [†]	9	
Uterus and vagina begin to grow larger	9½	Testes increase production of testosterone [†]
Breast “bud” stage	10	Testes and scrotum grow larger
Pubic hair begins to appear; weight spurt begins	11	
Peak height spurt	11½	Pubic hair begins to appear
Peak muscle and organ growth (also, hips become noticeably wider)	12	Penis growth begins
Menarche (first menstrual period)	12½	Spermarche (first ejaculation); weight spurt begins
First ovulation	13	Peak height spurt
Voice lowers	14	Peak muscle and organ growth (also, shoulders become noticeably broader)
Final pubic-hair pattern	15	Voice lowers; visible facial hair
Full breast growth	16	
	18	Final pubic-hair pattern

*Average ages are rough approximations, with many perfectly normal, healthy adolescents as much as three years ahead of or behind these ages.

[†]Estrogens and testosterone influence sexual characteristics, including reproduction. Charted here are the increases produced by the gonads (sex glands). The ovaries produce estrogens and the testes produce androgens, especially testosterone. Adrenal glands produce some of both kinds of hormones (not shown).

Puberty Begins

Influences on the Age of Puberty

- Age 11 or 12 is the most likely age of visible onset.
- The rise in hormone levels that signals puberty is still considered normal in those as young as age 8 or as old as age 14.
- *Precocious puberty* (sexual development before age 8) occurs about **once** in 5,000 children, for unknown reasons.

Puberty Begins

- About two-thirds of the variation in age of puberty is genetic.
- Genes on the sex chromosomes have a marked effect on age of puberty. Girls generally develop ahead of boys.
- Children who have a relatively large proportion of body fat experience puberty sooner than do their thin contemporaries.

Puberty Begins

- ***Leptin***- A hormone that affects appetite (which tells the brain when one is satiated or full & is believed to be involved in the onset of puberty. Leptin levels increase during childhood and peak at around age 12.
- In both sexes, chronic malnutrition delays puberty.
- Recent research suggests that ingesting large amounts of High Fructose Corn Syrup will interfere with “Leptin” production thus interfering with the mechanism which tells when one is full.

Puberty Begins

- Data on puberty over the centuries reveals a dramatic example of a long-term statistical increase or decrease called a *secular trend*.
- Each generation has experienced puberty a few weeks earlier, and has grown a centimeter or so taller, than did the preceding one.
- The secular trend has stopped in developed nations.

Puberty Begins

Too Early, Too Late

- Early-maturing girls tend to have lower self-esteem, more depression, and poorer body image than later-maturing girls.
- Early-maturing boys are more aggressive, lawbreaking, and alcohol-abusing than later-maturing boys.
- Slow developing boys tend to be more anxious, depressed, and afraid of sex.

Puberty Begins

Nutrition

- Many adolescents are deficient in their intake of necessary vitamins or minerals.
- Deficiencies of iron, calcium, zinc, and other minerals may be even more problematic during adolescence than vitamin deficiencies, since minerals are needed for bone and muscle growth.
- Nutritional deficiencies result from the food choices that young adolescents are allowed, even enticed, to make.

Puberty Begins

Body image

- A person's idea of how his or her body looks.
- Another reason for poor nutrition is anxiety about *body image*.
- Girls diet partly because boys tend to prefer to date thin girls.
- Boys want to look taller and stronger, a concern that increases from ages 12 to 17, partly because girls value well-developed muscles in males.

Puberty Begins

Eating Disorders

- **anorexia nervosa**- An eating disorder characterized by self-starvation. Affected individuals voluntarily under eat and often over exercise, depriving their vital organs of nutrition. Anorexia can be fatal.
- **bulimia nervosa**- An eating disorder characterized by binge eating and subsequent purging, usually by induced vomiting and/or use of laxatives.

The Transformations of Puberty

Bigger and Stronger

Growth spurt

- The relatively sudden and rapid physical growth that occurs during puberty.
- Each body part increases in size on a schedule: A weight increase usually precedes a height increase, and growth of the limbs precedes growth of the torso.
- A height spurt follows the increase in body fat, and then a muscle spurt occurs.

The Transformations of Puberty

Sexual Maturation

- **Primary sex characteristics**-The parts of the body that are directly involved in reproduction, including the vagina, uterus, ovaries, testicles, and penis.
- **Secondary sex characteristics**- Physical traits that are not directly involved in reproduction but that indicate sexual maturity, such as a man's beard and a woman's breasts.

The Transformations of Puberty

- The primary and secondary sex characteristics just described are not the only manifestations of the sexual hormones.
- Fantasizing, flirting, handholding, staring, displaying, and touching all reflect gender, availability, and culture.
- Hormones trigger thoughts and emotions, and the social context shapes thoughts.

The Transformations of Puberty

- Compared to 100 years ago, adolescent sexual development is **more hazardous today, for 5 reasons (know the 5 reasons):**
 1. Earlier puberty and weaker social taboos mean teens have sexual experiences at younger ages. Early sex correlates with depression and drug abuse.
 2. Most contemporary teenage mothers have no husbands to help them, whereas many teenage mothers a century ago were married.

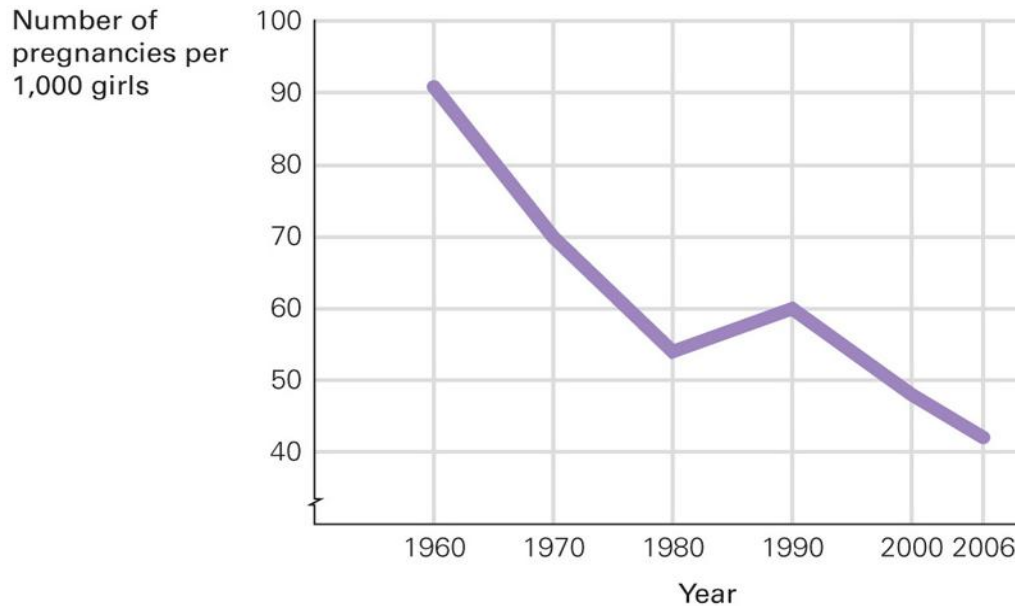
The Transformations of Puberty

- 3.** Raising a child has become more complex and expensive.
- 4.** Mothers of teenagers are often employed and therefore less available as caregivers for their teenager's child.
- 5.** Sexually transmitted infections are more widespread and dangerous.

The Transformations of Puberty

Teenage births in the past 50 years have decreased markedly. (However in the last 5 years it has increased some)

Pregnancy Rate Among Girls Age 15–19, United States, 1960–2006



Source: U.S. Bureau of the Census, 2008.

The Transformations of Puberty

- **sexually transmitted infection (STI)**
(your book uses STI but the **CDC says to use STD**)
 - A disease spread by sexual contact, including syphilis, gonorrhea, genital herpes, chlamydia, and HIV. (26% of girls ages 14-19 have a STD according to the CDC, 2006)
- **child sexual abuse**
 - Any erotic activity that arouses an adult and excites, shames, or confuses a child, whether or not the victim protests and whether or not genital contact is involved.

Cognitive Development

Neurological Development

Different parts of the brain grow at different rates:

- The **limbic system** (fear, emotional impulses) matures before the **prefrontal cortex** (planning ahead, emotional regulation).
- That means the instinctual and emotional areas develop **before** the reflective ones do.

Cognitive Development

- When emotions are **intense**, especially when one is with **peers**, the **logical part of the brain shuts down**.
- When **stress, arousal, passion, sensory bombardment, drug intoxication, or deprivation is extreme**, the adolescent brain is overtaken by impulses that might **shame** adults.

Cognitive Development

- Several aspects of adolescent brain development are **positive**:
 - increased myelination, which decreases reaction time
 - enhanced dopamine activity, promoting pleasurable experiences (**the dopaminergic pathway** – which is the pleasure pathway in the brain)
 - synaptic growth enhances moral development and openness to new experiences and ideas

Cognitive Development

Formal Operational Thought

- In **Piaget's theory**, the **fourth and final stage** of cognitive development, characterized by more systematic logic and the ability to think about abstract ideas.

Hypothetical thought

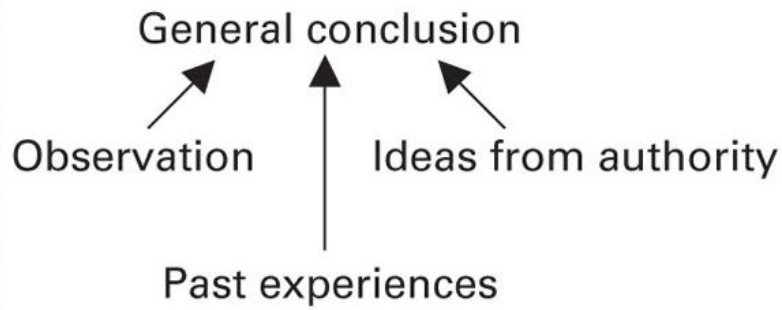
- Reasoning that includes propositions and possibilities that may not reflect reality.

Cognitive Development

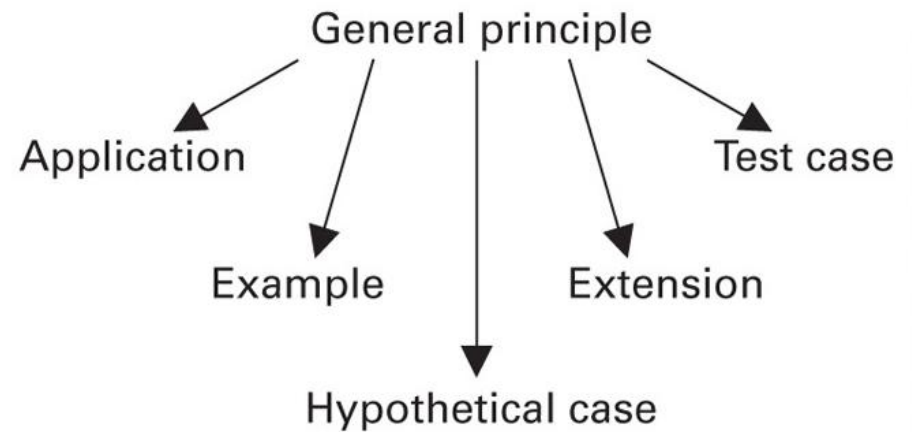
- **Deductive reasoning**
 - Reasoning from a general statement, premise, or principle, through logical steps, to figure out (deduce) specifics. (Sometimes called top-down reasoning.)
- **Inductive reasoning**
 - Reasoning from one or more specific experiences or facts to a general conclusion; may be less cognitively advanced than deduction. (Sometimes called bottom-up reasoning.)

Cognitive Development

Inductive reasoning



Deductive reasoning



Cognitive Development

Intuitive, Emotional Thought

– Adolescents find it much easier and quicker to forget about logic and follow their impulses.

- **Dual-process model**

– The notion that two networks exist within the human brain, one for emotional and one for analytical processing of stimuli.

Cognitive Development

Thinking About Oneself (from Piaget's 4th stage of development)

- **adolescent egocentrism**
 - A characteristic of adolescent thinking that leads young people (ages 10 to 14) to focus on themselves to the exclusion of others.
- **personal fable**
 - An aspect of adolescent egocentrism characterized by an adolescent's belief that his or her thoughts, feelings, or experiences are unique, more wonderful or awful than anyone else's.

Cognitive Development

- **invincibility fable**

- An adolescent's egocentric conviction that he or she cannot be overcome or even harmed by anything that might defeat a normal mortal, such as unprotected sex, drug abuse, or high-speed driving.

- **imaginary audience**

- The other people who, in an adolescent's egocentric belief, are watching and taking note of his or her appearance, ideas, and behavior. This belief makes many teenagers self-conscious.

Cognitive Development

- **Intuitive thought**

- Thought that arises from an emotion or a hunch, beyond rational explanation, and is influenced by past experiences and cultural assumptions.

- **Analytic thought**

- Thought that results from analysis, such as a systematic ranking of pros and cons, risks and consequences, possibilities and facts. Analytic thought depends on logic and rationality.

Teaching and Learning

- **Secondary education**

- The period after primary education (elementary or grade school) and before tertiary education (college). It usually occurs from about age 12 to age 18, although the age range varies somewhat by school and by nation.

- **Middle School**

- A school for children in the grades between elementary and high school. Middle school usually begins with grade 5 or 6 and ends with grade 8.

Teaching and Learning

Electronic Technology and Cognition

- **Digital divide-** The gap between students who have access to computers and those who do not, often a gap between rich and poor. In the United States and most developed nations, this gap has now been bridged due to the prevalence of computers in schools.
- The Internet and other forms of electronic technology can accelerate learning, but what they have to teach may not **always be beneficial**.

Teaching and Learning

- Adolescent cognitive growth benefits from shared experiences and opinions.
- Often communication via the Internet bolsters fragile self-esteem.
- Adolescents sometimes share **personal information online without thinking** about the possible consequences.

Teaching and Learning

- **Cyberbullying**- Bullying that occurs via Internet insults and rumors, texting, anonymous phone calls, and video embarrassment.
- Some fear that the anonymity provided by electronic technology brings out the worst in people.
- One expert on bullying believes that cyberbullying is similar to other forms, new in mode but not in intent or degree of harm.

Teaching and Learning

Entering a New School

- The transition from one school to another often impairs a young person's ability to function and learn.
- Changing schools just when the growth spurt is occurring and sexual characteristics are developing is bound to create stress.
- The first year in any new school (middle school, high school, or college) correlates with increased bullying, decreased achievement, depression, and eating disorders.

Teaching and Learning

High School

- In theory and sometimes in practice, high schools promote students' analytic ability.
- In the United States, an increasing number of high school students are enrolled in classes that are designed to be more rigorous and that require them to pass externally scored exams.
- Another manifestation of the trend toward more rigorous education is the greater number of requirements that all students must fulfill in order to receive an academic diploma.

Teaching and Learning

high-stakes test

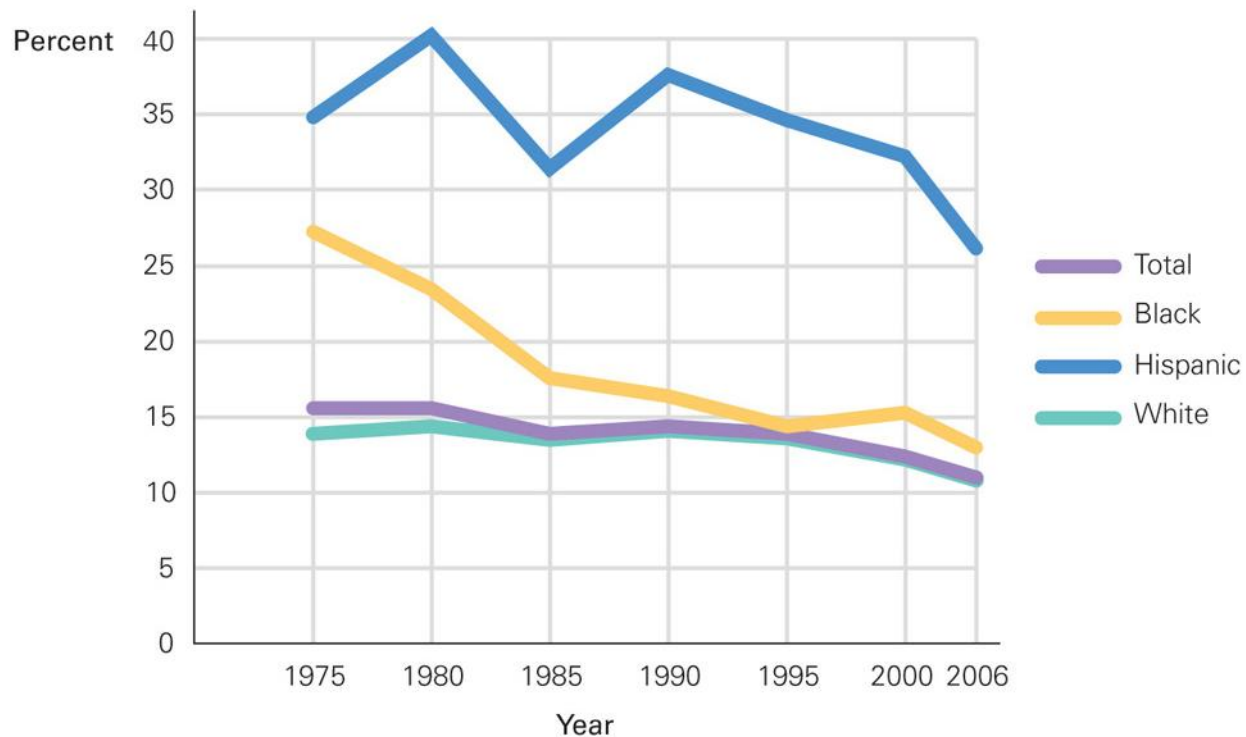
- An evaluation that is critical in determining success or failure.
- A single test that determines whether a student will graduate or be promoted is a *highstakes test*.

Teaching and Learning

- In the United States, one result of pushing almost all high school students to pursue an academic curriculum is that more are prepared for college.
- Another result is that more students drop out of high school.

Teaching and Learning

U.S. 18- to 24-Year-Olds Who Have Not Completed High School, 1975–2006



Source: U.S. Bureau of the Census, 2008.

**TABLE 9.2 Age and Sex Abuse:
United States, 2007**

Age	Number of Sex-Abuse Victims	Percent of Maltreatment That Is Sex Abuse
Less than 1 year	315	0.3%
1-3	3,249	2.2
4-7	13,137	7.4
8-11	13,459	9.5
12-15	19,848	14.5
16-17	6,084	13.5

Source: U.S. Department of Health and Human Services,
Administration on Children, Youth, and Families, 2009.