Puberty, Health, and Biological Foundation

Chapter 2

Adolescence

G. Stanley Hall: Period of storm and stress. First to study adolescence.

Zeitgeist: Spirit of the age, trend of thought & feelings in a period.
- Transition from childhood to adulthood
- Begins at onset of puberty
  - When reproductive system matures
  - Increase in production of sex hormones
  - Rapid growth
- Lasts until ~age 20

Erikson’s Stage Theory
Identity

Stage 5: Adolescence
Identity vs. Role Confusion
- Growth and turmoil of adolescence creates an “identity crisis”
- Crisis is resolved by forming an identity
- Failure to form an identity leads to confusion about adult roles and an inability to cope with demands of adulthood
Erikson’s Identity vs. Role Confusion

Who Am I? The Search for Gender Identity

1. Gender Identity
   – A person’s sense of being male or female
   – Some sense of gender identity develops by age 3
   – At about 4 or 5, children realize gender identity is permanent

Physical Development in Adolescents

Adolescence: To grow up
   – Marked by Puberty: The period of rapid physical maturation involving hormonal and bodily changes that take place primarily in early adolescence
   – Maturation of the reproductive system, increased production of sex hormones rapid growth, timing may vary

Hormones

Powerful chemicals secreted by the endocrine glands; carried through the body by the bloodstream.

Androgens: The main class of male sex hormones

Estrogens: The main class of female sex hormones
The Endocrine System

- **Hypothalamus**
  - Monitors structure in the higher portion of the brain
  - Eating, drinking and sex
- **Pituitary Gland**
  - Regulates other glands
  - Secretes FSH and LH
- **Thyroid Gland**
  - Interacts with the pituitary gland to influence growth
- **Gonads, or Sex Glands**
  - Testes, ovaries
  - Secretes sex hormones

Adrenarche

Involves hormonal changes in the adrenal glands, from about 6-9 years of age

- **Gonadarche**: What most people think of as puberty; involving sexual maturation and development of reproductive maturity
- **Spermarche**: A boy’s first ejaculation of semen
- **Menarche**: A girl’s first menstrual period

Growth Spurt

- Occurs 2 years earlier for girls (age 11.5) than boys (13.5) on average
- Girls increase 3.5 inches per year, boys about 4, during this period
- Weight gain follows roughly the same timetable as height gain
- Girls gain hip width while boys gain shoulder width
Puberty in Females

- **Menarche**: Onset of menstruation
- Landmark of puberty. First menstrual cycle (12-13 years) early as (8)
- Girls enter puberty about two years before boys

Sexual Maturation

- Average age of sexual maturity is 13 years
- Preceded by growth spurts
- Development of **Secondary Sexual Characteristics**: features that are visible on the outside of the body
- **Primary Sex Characteristics**: sex organs, related directly to reproduction

Females

- Changes in hormonal balance
- Rapid skeletal growth
- Breast development
- Pubic hair and body hair
- Growth spurt
Puberty in Males

- Changes in hormonal balance
- Facial and pubic hair
- Voice changes and deepens
- Growth spurt

- Spermarche: First ejaculations (wet dreams, nocturnal emissions)
- Enlargement of the genitals (14)

Psychological Dimensions of Puberty

- Body Image
  - Gender Differences
  - Ethnicity
  - Appearance
  - Developmental Changes
  - Mental Health Problems
  - Health
  - Perceived Aspects of Being a Boy or a Girl
- Body Art
- Hormones and Behavior
- Menarche and the Menstrual Cycle
- Early and Late Maturation
- Are Puberty’s Effects Exaggerated?

Physical Development

Boys’ body image tends to be more positive than girls’ in puberty

Early-maturing adolescents may have advantages
  - More confidence, higher expectations from others
  - Some are at a disadvantage if treated as an outsider

Stress of maturing early/late may encourage development of coping skills
### HEALTH

Adolescence is a critical juncture in the adoption of behaviors that are relevant to health (Neumark-Sztainer & others, 2006; Patton & others, 2006).

Many of the behaviors that are linked to poor health habits and early death in adults begin during adolescence.

### Experts’ Goals

1. Reduce adolescents’ health-compromising behaviors, such as drug abuse, violence, unprotected sexual intercourse, and dangerous driving.

2. Increase adolescents’ health-enhancing behaviors, such as exercising, eating nutritiously, wearing seat belts, and getting adequate sleep.

### Risk-Taking Behavior

- Sex, drugs, very loud music, and other high-stimulation experiences take on great appeal.
- Appetite for adventure, a predilection for risks, and a desire for novelty and thrills seem to reach naturally high levels.
- “It is important to acknowledge the wide range of individual differences during this period of development” (Dahl, 2004, p. 6).
**Risk-Taking Behavior**

“Researchers also have found that the more resources there are in the community, such as youth activities and adults as role models, the less likely adolescents are to engage in risky behavior (Jessor, 1998).

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**Health Services**

- Adolescents suffer from a greater number of acute health conditions than adults (Edelman, 1996).
- See private physicians less often than any other age group (Edelman, 1996).
- Underutilize other health-care systems (Marcell & Halpern-Felscher, 2005).
- There is a decrease in use of health services by older adolescent males (Wilson, Pritchard & Revalee, 2005).
- Chief barriers to better health care: cost, poor organization and availability of health services, lack of confidentiality, and reluctance on the part of health-care providers to communicate with adolescents about sensitive health issues.

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**Leading Causes of Death**

- Unintentional injuries: More than half of all deaths from 15 to 24 years
- Homicide
- Suicide

(National Center for Health Statistics, 2005).

- Risky driving habits: speeding, tailgating, driving under the influence of alcohol or other drugs, may be more important contributors to these accidents than lack of driving experience.
- In about 50 percent of motor vehicle fatalities involving adolescents, the driver has a blood alcohol level of 0.10 percent—twice the level needed to be designated as “under the influence” in some states.
Suicide

- Suicidal teenagers often show other symptoms
  - E.g., substance abuse, antisocial behavior
- Adults are more likely to commit suicide
- Adolescents are more likely to attempt suicide
  - Girls more likely to attempt suicide
  - Boys more likely to commit suicide
  - Whites more likely to commit suicide than African Americans or Latinos
  - Native Americans have highest rates

Suicide

- Take suicidal talk seriously and seek professional help
- Adolescent suicide rates for all ethnic groups are increasing

Secular Trend

- In the last few centuries adolescents are entering into puberty sooner, especially females.
- Lack of exercise
- More fat in diet
- More hormones and chemicals in the food
- Eating Disorders
Eating Disorders

- The two most common forms of eating disorders are
  - Anorexia nervosa
  - Bulimia nervosa

Eating Disorders

- Psychological disorders that are characterized by severe disturbances in eating behavior
- At the heart of both disorders is an intense and pathological fear of becoming overweight and fat
- A pursuit of thinness that is relentless and sometimes deadly

Anorexia Nervosa

- Self starvation,
- Refusal to maintain normal bodyweight,
- Fear of being overweight,
- Life threatening,
- Distorted body image
Anorexia Nervosa

The mortality rate for females with anorexia nervosa is more than twelve times higher than the mortality rate for females aged 15–24 in the general population.

Bulimia Nervosa

Characterized by:
- Frequent episodes of binge eating & purging
- Lack of control over eating
- Recurrent inappropriate behavior to prevent weight gain
- Typically of normal weight

Age of Onset and Gender Differences

- Anorexia nervosa is most likely to develop in 15- to 19-year-olds
- Bulimia nervosa is most likely to develop in women aged 20-24
- There are 10 females for every male with an eating disorder
Medical Complications

- Anorexia can lead to
  - Death from heart arrhythmias
  - Kidney damage
  - Renal failure
  - Amenorrhea

- Bulimia can lead to
  - Electrolyte imbalances
  - Hypokalemia (low potassium)
  - Damage to hands, throat, and teeth from induced vomiting

Comorbidity

Associated with:
- Clinical Depression
- Obsessive-Compulsive Disorder
- Substance Abuse Disorders
- Various Personality Disorders

Prevalence

- The lifetime prevalence of anorexia nervosa is around 0.5%
- The lifetime prevalence of bulimia is around 1–3%
Culture

• Eating disorders are becoming a problem worldwide
• The attitudes that lead to eating disorders are more common in Whites and Asians than African Americans

Etiology

• Multi-determined
• Runs in families
• Genetic influence has yet to be determined
• Set-point theory (the idea that our bodies resist marked variation) may play a role
• Serotonin levels may play a role

Sociocultural Factors

• Fashion magazines idealize extreme thinness
• Women often internalize the thin ideal
Risk and Causal Factors in Eating Disorders

- Nearly all instances of eating disorders begin with normal dieting
- Perfectionism
- Childhood sexual abuse may play a role

Treatment for Anorexia Nervosa

- Emergency procedures to restore weight
- Cognitive-behavioral therapy
- Antidepressants or other medications
- Family therapy

Treatment for Bulimia Nervosa

- Antidepressants or other medications
- Cognitive-behavioral therapy
- Little is known
Exercise and Sports

• Less active as they reach and progress through adolescence (Merrick & others, 2005).
• Ethnic differences in exercise participation rates
• Some health experts blame television for the poor physical condition of American adolescents.

Sports

• Important role in the lives of many adolescents (Beets & Pickett, 2005; Stubbe, Boomsma, & De Geus, 2005).
• Some estimates indicate that as many as 40 to 70 percent of American youths participate in various organized sports (Ferguson, 1999).
• Sports can have both positive and negative influences on adolescent development (Endresen & Olweus, 2005).
• Many sports activities can improve adolescents’ physical health and well-being, self-confidence, motivation to excel, and ability to work with others (Cornock, Bowker, & Gaidbois, 2001).
• Adolescents who spend considerable time in sports are less likely than others to engage in risk-taking behaviors, such as taking drugs.

Sports

The downside of extensive participation in sports

• Pressure by parents and coaches to win at all costs.
• Academic skills suffer.
• Competition anxiety and self-centeredness.
• Pushing their bodies beyond their capabilities.
• Use of performance-enhancing drugs
Sleep

- Stay up later at night
- Sleep longer in the morning
- This changing timetable has physiological underpinnings
- The sleep-inducing hormone melatonin seems to underlie this shift.
- Mary Carskadon and her colleagues (2002, 2004, 2005, 2006; Carskadon, Acebo, & Jenni, 2004; Carskadon, Mindell, & Drake, 2006) have conducted a number of research studies on adolescent sleep patterns. They found that when given the opportunity adolescents will sleep an average of 9 hours and 25 minutes a night.

EVOLUTION, HEREDITY, AND ENVIRONMENT

Natural Selection and Adaptive Behavior

- *Natural selection* is the evolutionary process that favors those individuals of a species who are best adapted to survive and reproduce.
- Charles Darwin *On the Origin of Species* (1859)
- Adaptive behavior: All organisms must adapt to particular places, climates, food sources, and ways of life in order to survive.

EVOLUTIONARY PSYCHOLOGY

Emphasizes the importance of adaptation, reproduction, and “survival of the fittest” in explaining behavior.
Gender Identity

During adolescence, gender intensification may occur
- Exaggerated orientation toward maleness or femaleness
- Usually short-lived

Gender Schema Theory
- Children develop shorthand concepts of what boys and girls are like
- Try to behave in ways consistent with these concepts

Gender Roles & Stereotypes

Gender roles have changed in the last century
**Androgynous behaviors** more common
- A blend of stereotypically male and female characteristics
- Androgynous individuals tend to feel more fulfilled and competent
  But we still live in a gendered society