Physical and Cognitive Development in Adolescence

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

Marcia’s Identity Status

Identity confusion (diffusion): an apathetic state characterized by lack of both exploration and commitment (Lowest)
Identity foreclosure: commitment in the absence of exploration
Identity moratorium: Exploration without having reached commitment
Identity achievement: Commitment to values, beliefs, goals following a period of exploration (Highest)

Marcia’s Four Identity Statuses

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Physical Development in Adolescents

Adolescence: To grow up
- Marked by Puberty: Maturation of the reproductive system, increased production of sex hormones rapid growth, timing may vary
  - 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
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)

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

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
Brain Development

- Neurons become more responsive to excitatory neurotransmitters.
- Leads to more intense reactions to both stressful events and pleasurable stimuli.
- Drive for more novel experiences.
- Alterations in neurotransmitter activity could lead to depression, anxiety, eating disorders.

Cognitive Development

- Emotions and Brain Development
  - Spindle cells play a role in how the brain creates emotion.
  - Reticular activating system (RAS) protects the brain from being overwhelmed by extraneous data.

Most adolescents are in Piaget's Formal Operational Stage

- Can think abstractly, form hypotheses, new. Logical rules through internal reflection.
- May lead some to be argumentative.
- Adolescent egocentrism develops.
Cognitive Development

• Mental Health Issues
  – Most common mental health problems among adolescents
    • Suicide is the third leading cause of death
    • Anxiety disorders
    • Depression

Self-Consciousness & Self-Focusing

• Adolescents have difficulty with distinguishing their own and others’ perspective
• Two distortions:
  – Imaginary audience: Belief that they are the focus of everyone’s attention and concern
  – Personal fable: Believe they are so special and unique, so others could not possibly understand their thoughts and feelings

Thinking

• Mental activity involved in understanding, manipulating, and communicating about information
• Paying attention to information, mentally representing it, reasoning about it, and making decisions about it.
Decision Making

Often do not follow the steps of rational thinking:
1. Identify the pros and cons of each alternative
2. Assessing the likelihood of various outcomes
3. Evaluating their choice in terms of whether their goals were met
4. Learning from mistakes

Creativity

- Ability to produce work that is both novel (new, original) and appropriate (useful). Sternberg, 1988, Sternberg & Lubart 1995.
- A need that a person has to express oneself in a manner that is unique (Sternberg, 1988)

Guildford’s Theory

Guilford: Concluded that there are two major categories of cognitive processes that are important in creative process.
- **Divergent Thinking**: Thinking that goes off into different directions or searching for a variety of answers to questions that may not have right answers
- **Convergent Theory**: Thinking that results in the right or wrong answer to a question that only has one right answer
The 4 P’s of Creativity

• Creative Person
• Creative Process
• Creative Product
• Creative Press

The Creative Person

• Tolerance for Ambiguity (open-minded)
• Flexible
• Risk-takers
• Preference for Disorder (complexity)
• Independent
• Imaginative
• Original ideas

• Analytical & Intuitive Thinkers
• Sensitive to the existence of problems
• Convergent Thinkers (one answer)
• Divergent Thinkers (several answers)

The Creative Process

• Process by which the creator thinks, feels, experiences, motivates and directs themselves.
• Process by which the creator behaves related to the generation of original & meaningful (creative) outcomes.
Creative Product

Results or outcomes of creative efforts

- **Originality**
  - Newness (Eminent Creators)
  - Immediate Environment (Everyday Creators)

- **Meaningfulness to Others**
  - Potential understanding or usefulness of an outcome (not random)

Creative Press

Patterns of circumstances around individuals or groups
Patterns of behaviors that are necessary for releasing creative production
Can be positive or negative

Everyday Creativity

Original outcomes from one’s day-to-day activities both at work and leisure, including arts, sciences, and everything else that allows for original thought and performance.
Eminent Creativity

Creative accomplishments that are recognized by societies professional groups.

• Criteria:
  – Originality
  – Meaningfulness to others

Intelligence

• General definition of intelligence
  • A combination of abilities that enables a person to learn from experience, to think abstractly, and to adapt successfully to the environment.
  • Intelligence is NOT the same as IQ

Sir Francis Galton (1822-1911)

• Interested in Individual Differences in sensory & perceptual motor processes which he believed were the core of intelligence
• Developed the first set of tests designed to measure intelligence
• Aka: The Father of Mental Tests
Raymond B. Cattell
- First Northern American to study individual differences
- Intelligence consisted of sensory, perceptual, & motor processes
- First to use the term: Mental tests
- Used 10 basic tests: grip, movement, skin, pain, forehead, weight, sound, speed arranging 10 colors, line, constants & intervals

Spearman
- Theories of Intelligence: One Ability or Many?
- Use statistical technique of factor analysis
  - Finds clusters of items in intelligence tests that measure a common ability
  - Developed a two-factor theory

Thurstone
- Rejected Spearman’s concept of general intelligence
- Used factor analysis and came up with nine factors that make up intelligence, called
- Primary Mental abilities
Gardner’s Multiple Intelligences

- Gardner’s Multiple Intelligences
  - There are multiple types of intelligence
  - Not measured by traditional intelligence tests
  - Defines intelligence as an ability to solve a problem or create a product within a specific cultural setting
  - Specified 10 types of intelligence

Gardner’s Multiple Intelligences

Linguistic: Language skills (poets, journalists)
Logical: Mathematical (scientists, mathematicians)
Musical: Composers, pianists
Spatial: Navigator, sculptor
Bodily-kinesthetic: dancers, athletes

Gardner’s Multiple Intelligences

- Interpersonal: Ability to understand behaviors of others (therapist, salesperson)
- Interpersonal: Ability to understand one’s own feelings or behavior (introspective individuals)
- Naturalistic: Botanist, Chef
Savant

• Gardner developed his theory by studying patients with different types of brain damage that affect some form of intelligence, but leaves others intact
• Savant Syndrome
• Idiot Savant
• Autistic Savant

Sternberg’s Theory of Successful Intelligence

• Our ability to be successful by our own standards
• Argues traditional admissions tests (e.g., SAT) measure limited aspects of behavior
  • Argues they do not predict future success very well
• Argues we must focus on successful intelligence
  • Not how much intelligence one has, but how one uses it

Sternberg’s Theory of Successful Intelligence

• Three dimensions (Triarchic Theory of Intelligence)
  1. Analytic dimension
     • Ability to solve problems in situations with one right answer
       » Solving a math problem
       » IQ & achievement tests
Sternberg’s Theory of Successful Intelligence

2. Practical Dimension
   – Application of one’s experiences to the external world and everyday tasks (street smarts)

3. Creative Dimension
   – Ability to deal with novel situations and think about solutions in new ways
   – Not included in most intelligence tests or theories

Emotional Intelligence

– Cognitive ability alone does not guarantee success
– Many argue emotional intelligence is crucial
  • The ability to perceive and express emotions in accurate and adaptive ways
  • Allows one to get along well in a variety of situations

Emotional Intelligence

Four aspects
1. Perceiving emotions
2. Using emotion to facilitate thought
3. Understanding emotional information and its impact
4. Managing emotions

Those high in cognitive intelligence may or may not be high in emotional intelligence
Review

• Spearman:
• Thurnstone:
• Gardner:
• Sternberg:

Mental Abilities Tests

Intelligence Tests: Attempt to measure our intellectual potential
• Other test that do Not measure intelligence
  – Achievement Tests
    • Measure knowledge of specific subject area
  – Aptitude Tests
    • Measure the ability learn certain types of material

History of Psychological Testing

Binet’s Intelligence Test
  – In 1905 French psychologist Alfred Binet (1857 – 1911) and psychiatrist Theodore Simon (1873 – 1961) developed the first real Intelligence scale
  – Used to predict school performance
  – Introduced the concept of mental age
    • Age at which average children could perform certain tasks on the test
    • Allowed comparisons across children
  – Most widely used intelligence test in the U.S.
The Stanford-Binet Intelligence Scale

- Studies gifted children at Stanford University
- (1905) Lewis Terman translated the Binet scale into English
  - Coined the term intelligence quotient (IQ) = (Mental age / Actual age) X 100
- Good predictor of academic performance
  - Binet’s original test NOT designed to measure general intelligence
The Wechsler Scales

David Wechler (1896 – 1981)
- Most popular individual assessment of IQ
- Separates verbal and performance skills
- Tests intelligence more broadly than just academic intelligence
- Wechsler Adult Intelligence Scale – III (WAIS-III) is most recent revision (1997)

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The Wechsler Scales

For children:
Wechsler Intelligence Scale for Children (WISC)/WISC-R Ages 6 – 16
Wechsler Preschool and Primary Scale of Intelligence (WPPSI) Ages 4 – 6½
All tests individually administered by trained testers
IQ Scores

- **130 +** Very superior (gifted)
- **120-129** Superior
- **111-119** Bright normal
- **90-110** Average
- **80-89** Dull normal
- **70-79** Borderline Range of intellectual functioning

Below 70: Mentally Retarded

Levels of Retardation

- **50-70** Mildly Mentally Retarded
- **35-49** Moderate
- **20-34** Severe
- **Below 20** Profound

Causes of Mental Retardation

- Deprived environments
- Infectious diseases
- Physical trauma
- Genetic abnormalities
  - Down's syndrome
  - Fragile X syndrome
    - Only affects males
  - Fetal Alcohol Syndrome
  - Cause is often unknown
Special Education

- Individuals with Disabilities Act
  - Guarantees free, appropriate public education to children with disabilities in the U.S.
  - Intellectual and physical disabilities
- Individualized Education Programs (IEPs) often developed
  - Written statement that establishes learning goals and teaching methods

Special Education

**Emphasizes mainstreaming or inclusion**
- Integration of children with special needs into regular classrooms whenever appropriate
- Benefits students with and without disabilities
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Are There Racial Differences in Intelligence?

YES
- African Americans and Hispanics score lower than Whites and Asian Americans on intelligence tests

NO
- Differences in intelligence test scores do not indicate differences in intelligence
- Race is a biologically meaningless term
- Minorities face discrimination, which affects performance

What do you think?

Cultural Bias

IQ tests do not measure innate intellectual ability
- They actually measure how well people have adapted to the culture in which they live
- In the US, they particularly measure academic skills and educational background
- Tests are not intentionally culturally biased
- But they can’t help but reflect the culture in which developed
Gender & Intelligence

Men and women have equal IQ scores

• Gender stereotypes about specific abilities
  – Men are better at spatial tasks
  – Women are better at verbal tasks
• These stereotypes create different environments for men and women
• Actually, only small gender differences exist on these tasks
  – Decreasing stereotypes have led to more equal opportunities and environments
  – Individual differences are much larger than gender differences

Verbal Abilities

• Girls score on reading and achievement tests
• Girls continue to score slightly higher than boys on tests on general verbal ability
• Children tend to view language arts as a “feminine” subject

Math

• Sex differences appear as early as first grade
• Girls depend more on concrete manipulative to solve problems
• Boys more often use mental representation and rapid retrieval of answers from memory
• Both genders view math as “masculine”
Legal & Ethical Issues

• Need Written Permission
• African American children cannot be tested for placement (WISC).
• Culturally Bias. The test is designed for mainstream American culture. African American children have lower score and are subjected to special education labels.
• The Stanford-Binet is used instead.

Mental Abilities Tests

• **Intelligence Tests**: Attempt to measure our intellectual potential
• Other test that do Not measure intelligence
  – **Achievement Tests**
    • Measure knowledge of specific subject area
  – **Aptitude Tests**
    • Measure the ability learn certain types of material
Health Issues

Nutritional Needs:
- Iron deficiency: anemia, leads to tiredness, irritability
- Lack calcium, Vitamin B12, magnesium

Mental Health Issues
- Depression
- Suicidal
- Oppositional Defiant
- Afraid
- Family Problems
- School Problems
- Eating Problems
- Peer problems
- Other Mental Health Problems
- Alcohol and Drugs
- Gang Involvement
- Issues with legal system

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

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

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