Chapter 9: Physical and Cognitive Development In Middle and Late Childhood

**Physical Changes and Health**

- **Body Growth and Change:**
  - Growth averages 2–3 inches per year
  - Weight gain averages 5–7 lbs. each year
  - Muscle mass and strength gradually increase; baby fat decreases

**The Brain:**

- Brain volume stabilizes
- Significant changes in structures and regions occur, especially in the prefrontal cortex
- Increases in cortical thickness
- Activation of some brain areas increase while others decrease

**Motor Development:**

- Motor skills become smoother and more coordinated
- Improvement of fine motor skills during middle and late childhood due to increased myelination of the central nervous system
- Boys outperform girls in large muscle activities and girls usually outperform boys on fine motor skills
Physical Changes and Health

- Exercise
  - Elementary school children need to be active
  - Percentage of children involved in daily P.E. programs in schools decreased from 80% (1969) to 20% (1999)
  - Television watching is linked with low activity and obesity in children
  - Exercise linked to cognitive development

- Health, Illness, and Disease
  - Middle and late childhood is usually a time of excellent health
  - Accidents and Injuries
    - Motor vehicle accidents are most common cause of severe injury
  - Overweight Children
    - 30% of U.S. children are at risk of being overweight
  - Cardiovascular Disease
    - Uncommon in children but risk factors are present

- Health, Illness, and Disease
  - Cancer
    - Cancer is the 2nd leading cause of death in children 5–14 years old
    - Most common child cancer is leukemia
    - Children with cancer are surviving longer because of advancements in cancer treatment
The Scope of Disabilities

Learning Disabilities
- Difficulty in learning that involves understanding or using spoken or written language, and the difficulty can appear in listening, thinking, reading, writing, and spelling
- Boys are identified three times more frequently than girls
- Dyslexia, dysgraphia, and dyscalculia are most common

Possible Causes
- Genetics
- Brain damage during prenatal or postnatal development
- Cigarette and alcohol exposure during prenatal development
- Low birth weight

Attention deficit hyperactivity disorder (ADHD)
- Characterized by inattention, hyperactivity, and impulsivity
- Number of children diagnosed has increased substantially
The Scope of Disabilities

- Emotional and Behavioral Disorders
  - Serious, persistent problems that involve relationships, aggression, depression, and fears associated with personal or school matters, as well as other inappropriate socioemotional characteristics

- Autism Spectrum Disorders (ASD)
  - Autistic disorder to Asperger syndrome
  - Appears to be a brain dysfunction

Educational Issues:

- 1975: all public schools required to serve disabled children
- Law requires disability students to receive:
  - IEP (Individualized Education Plan): written statement that is specifically tailored for the disabled student
  - LRE (Least Restrictive Environment): a setting that is as similar as possible to that of non-disabled children
  - Inclusion: educating a child with special education needs in the regular classroom

Cognitive Changes

- Piaget’s Cognitive Developmental Theory
  - Concrete Operational Stage: Ages 7 to 11
  - Children can perform concrete operations and reason logically, and are able to classify things into different sets
  - Seriation: the ability to order stimuli along a quantitative dimension
  - Transitivity: the ability to logically combine relations to understand certain conclusions

Information Processing

- Memory: long-term memory increases with age during middle and late childhood
- Knowledge and Expertise
  - Experts have acquired extensive knowledge about a particular content area
- Strategies
- Fuzzy Trace Theory
Cognitive Changes

- **Information Processing**
  - Thinking
    - Critical Thinking: thinking reflectively and productively, and evaluating evidence
    - Mindfulness
  - Creative Thinking: the ability to think in novel and unusual ways, and to come up with unique solutions to problems
  - Convergent thinking vs. Divergent thinking

- **Thinking**
  - Critical Thinking: thinking reflectively and productively, and evaluating evidence
  - Mindfulness

- **Creative Thinking**
  - the ability to think in novel and unusual ways, and to come up with unique solutions to problems

- **Convergent thinking vs. Divergent thinking**

- **Intelligence**
  - Ability to solve problems and to adapt and learn from experiences
  - Binet Tests: designed to identify children with difficulty learning in school
    - Mental age (MA): an individual’s level of mental development relative to others
    - Intelligence quotient (IQ): a person’s mental age divided by chronological age, multiplied by 100
  - Stanford-Binet Tests: revised version of the Binet test
    - Scores approximate a normal distribution—a bell-shaped curve
  - Wechsler Scales: give scores on several composite indices
    - Three versions for different age groups

- **Sci...
Intelligence

Wechsler Intelligence Scale for Children (WISC)

Cognitive Changes

- Intelligence
  - Types of Intelligence:
    - Sternberg’s Triarchic Theory of Intelligence
      - Analytical intelligence: ability to analyze, judge, evaluate, compare, and contrast
      - Creative intelligence: ability to create, design, invent, originate, and imagine
      - Practical intelligence: ability to use, apply, implement, and put ideas into practice

Cognitive Changes

- Intelligence
  - Types of Intelligence (continued):
    - Gardner’s Eight Frames of Mind:
      - Verbal: ability to think in words and use language to express meaning
      - Mathematical: ability to carry out mathematical operations
      - Spatial: ability to think three-dimensionally
      - Bodily-Kinesthetic: ability to manipulate objects and be physically adept
      - Musical: sensitivity to pitch, melody, rhythm, and tone
      - Interpersonal: ability to understand and interact effectively with others
      - Intrapersonal: ability to understand oneself
      - Naturalist: ability to observe patterns in nature and understand natural and human-made systems

Evaluating Multiple-Intelligence Approaches:

- Stimulated teachers to think more broadly about children’s competencies
- Contributed to interest in assessing intelligence and classroom learning
- Research has not yet supported the different types
Cognitive Changes

- Interpreting Differences in IQ Scores
  - Influences of Genetics:
  - Environmental Influences
  - Group Differences
  - Creating Culture-Fair
Cognitive Changes

• Intelligence
  - Using Intelligence Tests:
    - Avoid stereotyping and expectations
    - Know that IQ is not the sole indicator of competence
    - Use caution in interpreting an overall IQ score

• Extremes of Intelligence:
  - Mental Retardation: a condition of limited mental ability in which an individual has a low IQ (typically below 70) and has difficulty adapting to everyday life
    - Can be mild, moderate, or severe
    - Organic retardation and Cultural-familial retardation

Cognitive Changes (continued):

• Giftedness: people who have 130 IQ or higher and/or superior talent for something
  - Three criteria:
    - Precocity
    - Marching to their own drummer
    - A passion to master

Language Development

• Vocabulary, Grammar, and Metalinguistic Awareness
  - During middle and late childhood, changes occur in the way children's mental vocabulary is organized
  - Similar advances in grammar skills
  - Metalinguistic Awareness: knowledge about language
    - Improves significantly during elementary school years
Language Development

- **Reading:**
  - Two approaches to teaching reading:
    - Whole-language approach vs. Phonics approach

- **Writing**
  - Parents and teachers should encourage children’s early writing but not be concerned with the formation of letters or spelling

- **Bilingualism and Second-Language Learning**
  - Proficiency in learning a second language is a complex topic
  - U.S. students behind other countries
  - Bilingualism has a positive effect on children’s cognitive development

- **Bilingual Education**
  - Pros and cons – however, research supports bilingual education