


In This Chapter

- Setting the Context
- Physical Development
- Cognitive Development
- Language
- Specific Social Cognitive Skills

Setting the Context: Special Mindreading Skills

- **What sets us apart from other animals?**
 - Ability to take another person's perspective
 - Mind-reading skill (begins with joint attention)
 - Language



© Markus Rödel/Infra-Cortex

Setting the Context: Slow-growing Frontal Lobes

- Compared to other parts of the brain, frontal lobe development is on a delayed timetable
- As frontal lobes mature throughout childhood and adolescence, our ability to think through, inhibit, and plan our actions gradually improves.

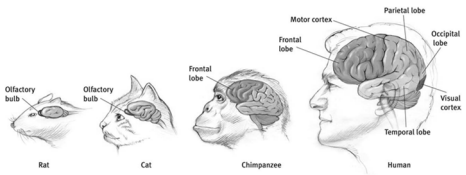


Figure 5.1
Biology: Exploring the Lifespan, 4e © 2016 Worth Publishers

Physical Development

- **Principles of physical growth**

- Cephalocaudal sequence: Bodies elongate and lengthen
- Mass-to-specific sequence: Physical abilities become more coordinated and precise

- **Two types of physical skills**

- Gross motor skills: Large muscle movement
- Fine motor skills: Small coordinated movement

Selected Motor Skill Milestones: Progression from Age 2 to Age 6

At age 2

- Picks up small objects with thumb and forefinger, feeds self with spoon
- Walks unassisted
- Rolls or flings ball

At age 3

- Prints name
- Walks without support
- Tosses ball overhead with bent elbows

At age 4

- Cuts paper; approximates circle

At age 6

- Copies two short words
- Hops on each foot, still holding on
- Catches and controls 10 inch ball with arms in front of body

LEARN THE TERMS

- Early childhood
- Middle childhood
- Frontal lobes

Threats to Growth and Motor Skills

- **Inadequate nutrition**

- Top-ranking 21st century global public health threat to physical development
 - Causes stunting
 - Compromises bone, muscle, and brain development
 - Causes lethargy
 - Impairs gross and fine motor skills

Childhood Obesity

- Monitored in the United States by National Health and Nutrition Study (NHANES)
 - Assessed by **BMI** = ratio of weight to height
 - **Overweight**
 - At or over the 85th for the norms
 - **Obesity**
 - BMI at or above the 95th percentile compared to U.S. norms

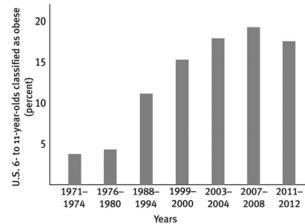


Figure 5.2
Obesity, Experiencing The Edge, 4e © 2014 Worth Publishers

Percentage of U.S. children age 6-11 classified as obese, selected years.

Exploring the Epidemic's Size

- **Global epidemic**
 - Demographics differ within and between developed and developing worlds
 - Obesity in the **developed** world
 - Children from low-income families
 - In the United States, more prevalent among Latino and African American children
 - Obesity in the **developing** world
 - Most prevalent in cities and among affluent boys and girls

Exploring the Epidemic's Epigenetics

- **Research suggests obesity has a partly epigenetic, pre-birth root**
 - Events in womb and at birth may create obesity-linked changes in DNA
 - Rapid weight gain during infancy and early childhood is stronger predictor of later obesity; outweighs genetics predisposition

Exploring the Epidemic's Wider-World Roots

- **“Obesogenic” factors**
 - Working parents with less time to prepare nutrition, sit-down meals
 - Oversized portions of foods: restaurant foods, large servings, and caloric content
 - Low-cost, calorie dense food preferences
 - Lack of exercise; bidirectional effect

Exploring the Epidemic's Consequences

- **Obesity can present serious barriers to living a successful life**

- Within and between culture variations
 - Classic study in U.S, demonstrated prejudiced attitudes toward obese peers by age three (Pitrou and others)
 - Less harsh attitudes in some other cultures
- Parental attitudes may affect unhealthy eating and obesity

Interventions

- **Limiting overweight**

- Provide education for pregnant women, not dieting
- Limit excessive feeding during first year of life
- Understand limiting intake is difficult for overweight children
- Provide obesity control that are not perceived as insulting or damaging to child's self-esteem



LEARN THE TERMS

- Gross motor skills
- Fine motor skills
- Body mass index (BMI)
- Childhood obesity

Cognitive Development

Piaget

- Thought evolves in stages through universal processes
- Intellectual development occurs
 - Physical action on world
 - Inner timetable
- Children explore and learn on their own when provided ample materials

Cognitive Development Piaget's Preoperational Stage

- **Preoperational thinking (ages 2–7)**
 - Characteristics
 - Child has an inability to step back from his immediate perceptions and think conceptually.
 - Thinking is qualitatively unlike that of an adult.
 - Child cannot reason logically, and cannot look beyond appearance of objects.
 - Young children understand only what they can see.

Assessing Preoperational Thought: Ideas About Substances

- **Conservation:** Knowledge that the amount of a given substance remains the same despite changes in its shape or form
- **Preoperational children conservation impaired by:**
 - Reversibility inability
 - Centering inability
- **Preoperational children class inclusion impaired by:**
 - Reversibility inability

LEARN THE TERMS

- Preoperational thinking
- Concrete operational thinking
- Conservation tasks
- Reversibility
- Centering
- Decentering

Preoperational Thinking: Peculiar Perceptions About People

- Children have an inability to grasp **identity constancy**
- Person's core "self" stays the same despite changes in external appearance.



When her dad puts on a mask, he suddenly becomes a scary monster to this 4-year-old girl because she has not yet grasped the principle of identity constancy.

Peculiar Perceptions About People

- **Animism**
 - The belief that inanimate objects are alive
- **Artificialism**
 - The belief that humans make everything in nature
- **Egocentrism**
 - An inability to understand another's perspective

Piaget's Concrete Operational Stage: Ages 8–11

- **Transition from preoperations to concrete operations develops gradually (5–7), but by age 8 children are firmly in this stage.**
 - Understand conservation tasks
 - Understand identity constancy
 - Look beyond immediate appearances
 - Begin to understand principles of basic math

Interventions

- **Using Piaget's ideas at home and at work**
 - Provide insight into children's minds and ways to structure the environment to support these insights
 - Give insights into child interests at different ages
 - Demonstrate why academic schooling fully begins around age 7



In late elementary school, children take great pride in collecting, classifying, and trading items.

Evaluating Piaget

- Piaget did not theorize how memory, concentration, and planning develop.
- Piaget overstated egocentric thinking.
- Piaget did not address influence timing of learning certain tasks.
- Piaget did not believe in active teaching; he believed children would automatically grow out of their preoperational worldview.



Because this girl growing up in Mexico gets so much practice at weaving, how might her spatial skills be impacted?

LEARN THE TERMS

- Class inclusion
- Identity constancy
- Animism
- Artificialism
- Egocentrism

Cognitive Development

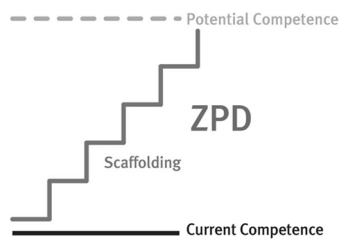
Vygotsky

- Interpersonal processes, the role of society, and instruction are critical to cognition
- Development is collaborative endeavor
- People cause cognitive growth

Cognition: Vygotsky's Zone of Proximal Development

- **Human interaction promotes learning and cognitive growth.**

- Zone of proximal development
- Scaffolding
- Bidirectional learning



Can you describe the scaffolding seen here?



Daryl Benson/Masterfile

Interventions

Becoming an effective culture in our teaching-oriented society

Foster a secure attachment.	Break larger cognitive tasks into smaller, more manageable steps.	Continue helping until child has mastered concept, then move on.	Set an overall framework for the learning task and build in motivation.
-----------------------------	---	--	---

LEARN THE TERMS

- Zone of proximal development (ZPD)
- Scaffolding

Cognitive Development

Information-Processing Perspective

- Focuses on specific skills such as the development of memory, concentration, and the ability to inhibit and control actions
- Proposes mental growth occurs gradually, not in stages
- Attempts to decode the “processing steps” involved in thinking

The Information-Processing Perspective

- **Older children**
 - Rehearse information
 - Selectively attend
 - Manage inhibition



The childhood game of Simon Says is tailored to train executive functions by giving children practice in the skill of inhibiting their immediate responses.

The Information-Processing Perspective: Making Sense of Memory

- **Working memory**
 - Holds many bits of information
 - Keeps information in awareness; we either process information or discard it
 - Executive processor: allows us to focus on important material to prepare for permanent storage
 - Memory bin capacity expands between ages 2–7.
 - Allows for new understanding at around 7–8 (concrete operations)

The Information-Processing Perspective: Exploring Executive Functions

- **Executive Functions:** Any frontal lobe ability that allows inhabitation of responses and intellectual planning and thinking
 - Rehearsal
 - Selective Attention
 - Inhibition
- Executive functions improve gradually over many years

Interventions: Using Information-processing Theory at Home and at Work

- **In early childhood, children often**
 - Do not remember without considerable prompting
 - Struggle with inhibiting strong prepotent impulses
- **In middle childhood, children prosper from**
 - Active instruction in study skills such as rehearsal and selective attention strategies
 - Scaffolding organizational strategies
 - Promotion of selective attention
 - Adult understanding that multitasking is problematic

Attention Deficit/Hyperactivity Disorder (ADHD)

- **Characteristics**
 - Excessive restlessness
 - Easily distracted
 - Difficulties focusing
 - Usually diagnosed in elementary school
 - Most often diagnosed in boys
 - More often diagnosed in the United States

Interventions: Helping Children with ADHD

- **Well-known treatment: psycho-stimulant medications**
 - Best when used with reinforcement for appropriate behavior
- Foster best person environment fit
 - Provide nondistracting environment that demands selective attention (e.g., homework)

LEARN THE TERMS

- Working memory
- Executive functions
- Rehearsal
- Selective attention
- Attention-deficit/hyperactivity disorder (ADHD)

Language

- **Vygotsky**
 - Emphasized language as front and center of everything learned
 - **Inner speech:** Repeating information silently or “out loud” in order to regulate behavior or to master cognitive challenges
 - Young children speak “out loud” to monitor their behavior.



Images by Tang Ming Tung/Moment/Getty Images
According to Vygotsky, what does this girl learn by talking in the mirror?

Developing Speech

During early childhood, language explores

- By age 2, children begin to put together words.
 - **Phonemes:** Individual word sounds of language
 - **Morphemes:** Basic meaning units of language
 - **“Mean length of utterance” (MLU):** Average number of morphemes in sentences
 - **Syntax:** System of grammatical rules in a particular language

Developing Speech

- **Semantics:** understanding word meanings
 - About 10,000 words at age 6
 - Vocabulary continues to grow throughout life.
- **Overregularization**
 - Puts irregular “pasts” and “plurals” into regular form
 - “If I walked, I also must have runned and swimmied.”
- **Over/underextension**
 - Applies verbal labels too broadly/narrowly

Challenges on the Language Pathway: A Summary

Phonemes

- Has trouble forming sounds

Over/underextension

- Applies verbal labels too broadly/narrowly

Morphemes

- Uses few meaning units per sentence

Overregularization

- Puts irregular pasts and plurals into regular forms

Syntax (grammar)

- Makes mistakes in applying rules for forming sentences

Semantics

- Has problems understanding word meanings

LEARN THE TERMS

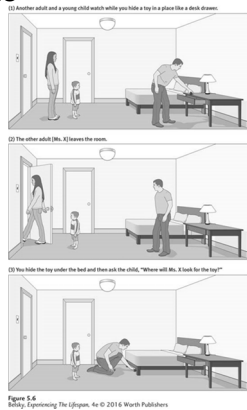
- Inner speech
- Phoneme
- Morpheme
- Mean length of utterance (MLU)
- Syntax
- Semantics
- Overregularization
- Overextension
- Underextension

Specific Social Cognitive Skills: Constructing Our Personal Past

- **Autobiographical memory:** Recollections of events and experiences that make up one’s life history
 - Scaffolded through **past-talk conversations**
 - Becomes more elaborate as children move from preschool to elementary school
 - Use experiences to connect with others

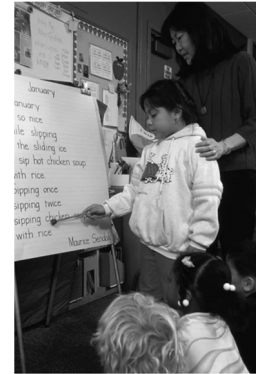
Making Sense of Other Minds

- **Theory of mind**
 - Understanding that other people have different beliefs and perspectives from one's own
 - Emerges about age 4–5
 - Typical in Western cultures
- **Researchers use “False-Belief” studies**
 - See illustration at right.
 - “Mean Monkey” exercise
 - Studies proved Piaget's beliefs about preoperational egocentrism had flaws.



Differences in Development of Theory of Mind?

- **Early development of theory of mind**
 - Having older siblings
 - Advanced intellectual development
 - Bilingual preschoolers
- **Later development of theory of mind**
 - Frontal lobe damage
 - Autism “mindblindness”



Research Findings on Brain-Imaging Theory-of-Mind and Autobiographical Memory Findings

- **Attitudes about the self in relationship to other human beings are mirrored in the physical architecture of brain**
 - Reflecting on the self and others' mental states is a frontal-lobe activity involving slightly different brain regions
 - Cultural variations occur in brain region activation when thinking about others

Autism Spectrum Disorders (ASDs)

- **Characteristics**
 - Deficits in theory of mind causing severe social impairments (APA, 2013)
 - Deteriorating executive functions during adult years
- **Causes**
 - May have genetic causes and environmental risk factors
- **Treatments**
 - Applied behavioral analysis