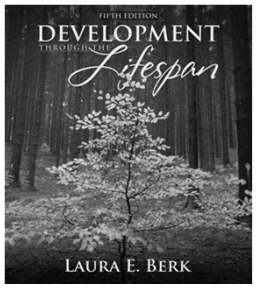
Development Through the Lifespan



Chapter 5

Cognitive Development in Infancy and Toddlerhood

Piaget's Theory: Schemes

Psychological structures

- organized ways of making sense of experience

Change with age

- action-based sensorimotor patterns
- later move to "thinking before acting" pattern—creative and deliberate

Building Schemes

Adaptation

- building schemes through direct interaction with environment

Assimilation

- using current schemes to interpret external world

Accommodation

- adjusting old schemes and creating new ones to better fit environment

Photodisc

Using Assimilation and Accommodation

Equilibrium and disequilibrium

- use assimilation during equilibrium
- disequilibrium prompts accommodation

Organization

- internal rearranging and linking schemes

Sensorimotor Stage

Birth to 2 years

Building schemes through sensory and motor exploration

Circular reactions

Photodisc

Sensorimotor Substages

Reflexive schemes	**Birth–1 month**	**Newborn reflexes**
Primary circular reactions	**1–4 months**	**Simple motor habits centered around own body**
Secondary circular reactions	**4–8 months**	**Repeat interesting effects in surroundings**
Coordination of secondary circular reactions	**8–12 months**	**Intentional, goal-directed behavior; object permanence**
Tertiary circular reactions	**12–18 months**	**Explore properties of objects through novel actions**
Mental representation	**18 months–2 years**	**Internal depictions of objects or events; deferred imitation**

Object Permanence

Understanding that objects continue to exist when out of sight

- Piaget: develops in Substage 4

Not yet complete

- A-not-B search error

Modern Studies of Object Permanence

Baillargeon

- Babies as young as 4 months show clear signs of object permanence.

Recent theories

- Development of object permanence is more of a process of elaboration than of discovery.

Violation-of-Expectation Method

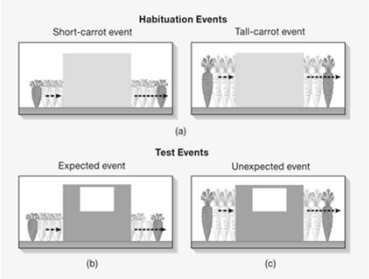


Figure 5.1

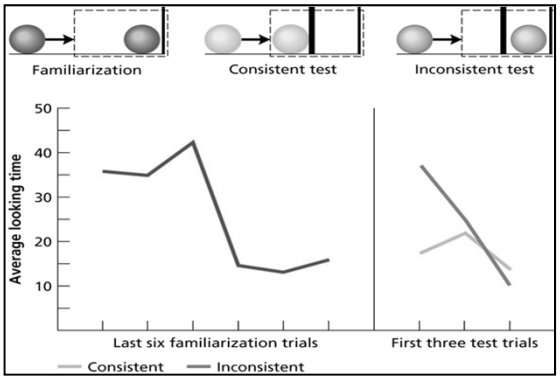
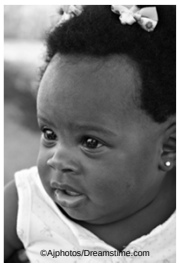


Figure 5.2

Mental Representations

Internal, mental depictions of objects, people, events, information

- can manipulate with mind
- permits *deferred imitation* and *make-believe play*



Deferred Imitation

Piaget: Develops about 18 months

Newer research:

- 6 weeks – facial imitation
- 6–9 months – copy actions with objects
- 12–14 months – imitate rationally
- 18 months – imitate intended, but not completed, actions

Invisible Displacement

Finding a toy moved while out of sight

Evaluation of the Sensorimotor Stage

Develop when Piaget suggested	▪ **Object search** ▪ **A-not-B** ▪ **Make-believe play**
Develop earlier than Piaget suggested	▪ **Object permanence** ▪ **Deferred imitation** ▪ **Categorization** ▪ **Problem solving by analogy**
Some suggest infants are born with ***core knowledge*** in several domains of thought.	

Challenge to Piaget's View

- Piaget underestimates the cognitive capacity of infants.
- He may have wrongly equated the infant's lack of physical ability with lack of cognitive understanding.

Core Knowledge Perspective

Born with innate, special-purpose knowledge systems
- core domains of thought
  - Physical
  - Linguistic
  - Psychological
  - Numerical

Core domains allow quick grasp of related information

Support rapid early development

Testing Babies' Numerical Knowledge

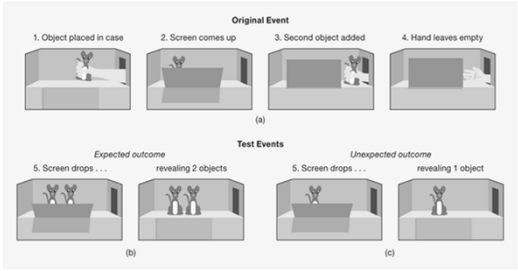


Figure 5.4

Infants' Numerical Knowledge

©Felix Mizioznikov/Dreamstime.com

Infants may be able to:

- discriminate quantities up to 3
- do simple arithmetic

Findings are controversial

Model of Information Processing

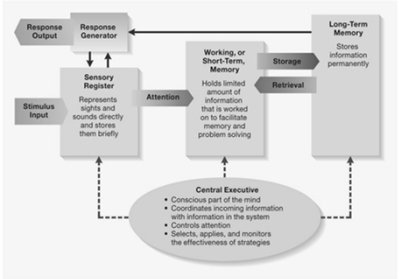


Figure 5.5

Information-Processing Improvements

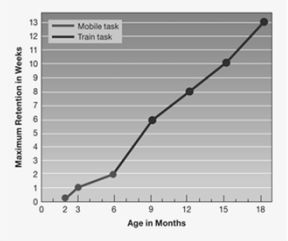
Attention	▪ **Efficiency, ability to shift focus improves** ▪ **Less attraction to novelty, better sustained attention after first year**
Memory	▪ **Retention intervals lengthen** ▪ **Recall appears by first year; excellent in second year**
Categorization	▪ **Impressive perceptual categorization in first year** ▪ **Conceptual categorization in second year**

Learning, Categorizing, and Remembering

Memory

Carolyn Rovee-Collier

Babies as young as 3 months can remember specific objects and their own actions for as long as a week.



Development of Categorization

Perceptual

Based on similar overall appearance or prominent part

Conceptual

Based on common function or behavior

Later add event categories

Learning, Categorizing, and Remembering

- Categories
  - By 7 months infants actively use categories to process information.
  - Cannot process levels of categories
  - Babies respond differently to animals and furniture but not to dogs and birds.
- Hierarchical categories appear by 2 years.

Testing Verbal and Nonverbal Memories

Figure 5.8

Vygotsky's Sociocultural Theory

Social contexts

- other people contribute to cognitive development

Zone of proximal development

- tasks child cannot do alone but can learn with help of more skilled partners

Educating Children

Toddler/Infant Intelligence Tests

Bayley Scales

- Cognitive
- Language
- Motor
- Social-Emotional
- Adaptive Behavior

HOME

- Home Observation for Measurement of the Environment

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Meaning of Different IQ Scores

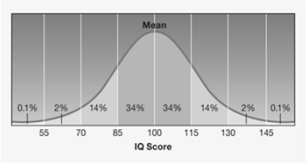
Intelligence quotient: measurements against typical performance for age

- standardization
- reflects SES, diversity

Normal distribution

- bell-shaped

Best used for screening



Three Theories of Language Development

Behaviorist	**Learned through** ▪ **operant conditioning (reinforcement)** ▪ **imitation**
Nativist	**Language Acquisition Device (LAD)** ▪ **biologically prepares infants to learn rules of language**
Interactionist	▪ **inner capacities and environment work together** ▪ **social context is important**

The Beginnings of Language

The Behaviorist View

- B. F. Skinner
  - Begins with babbling, which the parents reinforce
  - Responds to grammatical use of words with reinforcement
  - Withholds reinforcement for nongrammatical words
  - Correct grammar is reinforced and becomes more frequent.

The Beginnings of Language

The Nativist View

- Noam Chomsky
  - Children make rule-governed grammatical errors.
  - LAD – Language Acquisition Device
    - An innate language processor which contains the basic grammatical structure of all human language
  - Infants prefer speech in a particular pattern – *motherese* or infant-directed speech.

The Beginnings of Language

The Constructivist View

- Language development is part of a broader process of cognitive development.
- Language is used to express only those meanings the child has already formulated.
- New words are learned when they help to communicate thoughts and ideas.

Sounds, Gestures, and Word Meanings

Birth – 1 month

- Crying is the predominant sound

1 – 2 months

- Laughing and cooing sounds (aaaaa)

6 – 7 months

- Babbling; repetitive vowel–consonant combinations

Getting Ready to Talk

RubberBall Productions

First speech sounds
- cooing
- babbling

Becoming a communicator
- joint attention
- give-and-take
- preverbal gestures

Sounds, Gestures, and Word Meanings

Receptive language

The ability to understand words

8 months — begin to store words in memory

9 – 10 months — can understand 20 – 30 words.

13 months — 100 words

Starting to Talk

Family Life

First words
- underextension
- overextension

Two-word utterances
- telegraphic speech

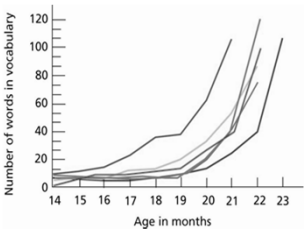
The First Words

Expressive language

The ability to produce words

12 months — babies begin to say first words

Words are learned slowly in context with specific situations and cues.



Language Style

Referential

- **Refer to objects**
- **Exploratory**
- Often advanced in understanding adult language

Expressive

- **Pronouns**
- **Social formulas**
- **E.g. "I want it" "thank you"**
- **sociable**