

Piaget's Cognitive Developmental Theory

CHAPTER 5

Jean Piaget inspired a vision of children as busy, motivated explorers whose thinking develops as they act directly on the environment

According to Piaget, all aspects of cognition develop in an integrated fashion, changing in a similar way at about the same time as children move through four stages between infancy and adolescence. Piaget believed that infants and toddlers “think” with their eyes, ears, hands, and other sensorimotor equipment. They cannot yet carry out many activities inside their heads. But by the end of toddlerhood, children can solve everyday practical problems and represent their experiences in speech, gesture, and play

Piaget's **Sensorimotor Stage** spans the first two years of life; infants and toddlers “think” with their eyes, ears, hands, and other sensorimotor equipment

Piaget's Ideas About Cognitive Change

According to Piaget, specific psychological structures—organized ways of making sense of experience called **schemes**—change with age

At first, schemes are sensorimotor action patterns

For example, at 6 months, Timmy dropped objects in a fairly rigid way, simply letting go of a rattle or teething ring and watching with interest. By 18 months, his “dropping scheme” had become deliberate and creative. In tossing objects down the basement stairs, he threw some in the air, bounced others off walls, released some gently and others forcefully. Soon, instead of just acting on objects, he will show evidence of thinking before he acts. For Piaget, this change marks the transition from sensorimotor to preoperational thought.

In Piaget's theory, two processes, **adaptation** and **organization**, account for changes in schemes.

Adaptation

involves building schemes through direct interaction with the environment. It consists of two complementary activities, **assimilation** and **accommodation**

During **assimilation**, we use our current schemes to interpret the external world. For example, when Timmy dropped objects, he was assimilating them to his sensorimotor “dropping scheme.”

Adaptation (cont)

In **accommodation**, we create new schemes or adjust old ones after noticing that our current ways of thinking do not capture the environment completely. When Timmy dropped objects in different ways, he modified his dropping scheme to take account of the varied properties of objects.

the balance between assimilation and accommodation varies over time. When children are not changing much, they assimilate more than they accommodate—a steady, comfortable state that Piaget called **cognitive equilibrium**. During times of rapid cognitive change, children are in a state of **disequilibrium**, or **cognitive discomfort**. Realizing that new information does not match their current schemes, they shift from assimilation to accommodation. After modifying their schemes, they move back toward assimilation, exercising their newly changed structures until they are ready to be modified again.

Each time this back-and-forth movement between equilibrium and disequilibrium occurs, more effective schemes are produced. Because the times of greatest accommodation are the earliest ones, the sensorimotor stage is Piaget's most complex period of development.

Organization

Schemes also change through **organization**, a process that occurs internally, apart from direct contact with the environment

Once children form new schemes, they rearrange them, linking them with other schemes to create a strongly interconnected cognitive system. For example, eventually Timmy will relate “dropping” to “throwing” and to his developing understanding of “nearness” and “farness.” According to Piaget, schemes truly reach equilibrium when they become part of a broad network of structures that can be jointly applied to the surrounding world

The Sensorimotor Stage

SENSORIMOTOR SUBSTAGE	TYPICAL ADAPTIVE BEHAVIORS
1. Reflexive schemes (birth-1 month)	Newborn reflexes (see Chapter 3)
2. Primary circular reactions (1-4 months)	Simple motor habits centered around the infant's own body; limited anticipation of events
3. Secondary circular reactions (4-8 months)	Actions aimed at repeating interesting effects in the surrounding world; imitation of familiar behaviors
4. Coordination of secondary circular reactions (8-12 months)	Intentional, or goal-directed, behavior; ability to find a hidden object in the first location in which it is hidden (object permanence); improved anticipation of events; imitation of behaviors slightly different from those the infant usually performs
5. Tertiary circular reactions (12-18 months)	Exploration of the properties of objects by acting on them in novel ways; imitation of novel behaviors; ability to search in several locations for a hidden object (accurate A-B search)
6. Mental representation (18 months-2 years)	Internal depictions of objects and events, as indicated by sudden solutions to problems; ability to find an object that has been moved while out of sight (invisible displacement); deferred imitation; and make-believe play

Piaget divided the sensorimotor stage into six substages

According to Piaget, at birth infants know so little that they cannot explore purposefully

The circular reaction provides a special means of adapting their first schemes. It involves stumbling onto a new experience caused by the baby's own motor activity. The reaction is "circular" because, as the infant tries to repeat the event again and again, a sensorimotor response that first occurred by chance strengthens into a new scheme



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Piaget's Sensorimotor Substages

In **Substage 1**, babies suck, grasp, and look in much the same way, no matter what experiences they encounter

Around 1 month, as they enter **Substage 2**, infants start to gain voluntary control over their actions through the **primary circular reaction**, by repeating chance behaviors largely motivated by basic needs. This leads to some simple motor habits, such as sucking their fist or thumb. Babies also begin to vary their behavior in response to environmental demands

During **Substage 3**, from 4 to 8 months, infants sit up and reach for and manipulate objects. These motor attainments strengthen the **secondary circular reaction**, through which babies try to repeat interesting events in the surrounding environment that are caused by their own actions

In **Substage 4**, 8- to 12-month-olds combine schemes into new, more complex action sequences. As a result, actions that lead to the mouth or happening to hit the toy. Instead, 8- to 12-month-olds can engage in **intentional, or goal-directed, behavior**, coordinating schemes deliberately to solve simple problems. Consider Piaget's famous **object-hiding task**, in which he shows the baby an attractive toy and then hides it behind his hand or under a cover. Infants of this substage can find the object by coordinating two schemes—"pushing" aside the obstacle and "grasping" the toy. Piaget regarded these means-end action sequences as the foundation for all problem solving

Retrieving hidden objects reveals that infants have begun to master **object permanence**, the understanding that objects continue to exist when out of sight. But babies still make the **A-not-B search error**: If they reach several times for an object at a first hiding place (A), then see it moved to a second (B), they still search for it in the first hiding place (A).

Infants in **Substage 4**, who can better anticipate events, sometimes use their capacity for intentional behavior to try to change those events. Also, babies can now **imitate behaviors** slightly different from those they usually perform. After watching someone else, they try to stir with a spoon or push a toy car

Piaget's Sensorimotor Substages (cont)

In **Substage 5**, from 12 to 18 months, the **tertiary circular reaction**, in which toddlers repeat behaviors with variation, emerges. This deliberately exploratory approach makes 12- to 18-month-olds better problem solvers. According to Piaget, the capacity to experiment leads toddlers to look for a hidden toy in several locations, displaying an **accurate A-B search**. Their more flexible action patterns also permit them to imitate many more behaviors.

Substage 6 brings the ability to create **mental representations**—internal depictions of information that the mind can manipulate. Our most powerful mental representations are of two kinds: **(1) images**, or mental pictures of objects, people, and spaces; and **(2) concepts**, or categories in which similar objects or events are grouped together. We use a mental image to retrace our steps when we've misplaced something or to imitate someone's behavior long after observing it. By thinking in concepts and labeling them (for example, "ball" for all rounded, movable objects used in play), we become more efficient thinkers, organizing our diverse experiences into meaningful, manageable, and memorable units. - Representation enables older toddlers to solve advanced object permanence problems involving invisible displacement—finding a toy moved while out of sight, such as into a small box while under a cover. It also permits **deferred imitation**—the ability to remember and copy the behavior of models who are not present. And it makes possible make-believe play, in which children act out everyday and imaginary activities. As the sensorimotor stage draws to a close, mental symbols have become major instruments of thinking.

Object Permanence

Many studies suggest that infants display a wide array of understandings earlier than Piaget believed

newborns sucked vigorously on a nipple to gain access to interesting sights and sounds. This behavior, which closely resembles **Piaget's secondary circular reaction**, shows that infants explore and control the external world long before 4 to 8 months. In fact, they do so as soon as they are born



Object Permanence (cont)

To discover what infants know about hidden objects and other aspects of physical reality, researchers often use **the violation-of-expectation method**. They may habituate babies to a physical event (expose them to the event until their looking declines) to familiarize them with a situation in which their knowledge will be tested. Or they may simply show babies an expected event (one that is consistent with reality) and an unexpected event (a variation of the first event that violates reality)

Heightened attention to the unexpected event suggests that the infant is "surprised" by a deviation from physical reality and, therefore, is aware of that aspect of the physical world.

The **violation-of-expectation method** is controversial. Some researchers believe that it indicates limited, implicit (nonconscious) awareness of physical events—not the full-blown, conscious understanding that was Piaget's focus in requiring infants to act on their surroundings, as in searching for hidden objects. Others maintain that the method reveals only babies' perceptual preference for novelty, not their knowledge of the physical world

infants exposed to both an expected and an unexpected object-hiding event looked longer at the unexpected event

Additional **violation-of-expectation** studies yielded similar results, suggesting that infants look longer at a wide variety of unexpected events involving hidden objects

Another type of looking behavior suggests that young infants are aware that objects persist when out of view. Four- and 5-month-olds will track a ball's path of movement as it disappears and reappears from behind a barrier, even gazing ahead to where they expect it to emerge. With age, babies are more likely to fixate on the predicted place of the ball's reappearance and wait for it—evidence of an increasingly secure grasp of **object permanence**

Once 8- to 12-month-olds search for hidden objects, they make the **A-not-B search error**

Object Permanence (cont)

A more comprehensive explanation is that a complex, dynamic system of factors—having built a habit of reaching toward A, continuing to look at A, having the hiding place at B appear similar to the one at A, and maintaining a constant body posture—increases the chances that the baby will make **the A-not-B search error**. Disrupting any one of these factors increases 10-month-olds' accurate searching at B. In addition, older infants are still perfecting reaching and grasping. If these motor skills are challenging, babies have little attention left to focus on inhibiting their habitual reach toward A

infants' understanding of **object permanence** becomes increasingly complex with age. Success at object search tasks coincides with rapid development of the frontal lobes of the cerebral cortex. Also crucial are a wide variety of experiences perceiving, acting on, and remembering objects

Mental Representation

In **Piaget's theory**, before about 18 months of age, infants are unable to mentally represent experience. Yet 8- to 10-month-olds' ability to recall the location of hidden objects after delays of more than a minute, and 14-month-olds' recall after delays of a day or more, indicate that babies construct **mental representations** of objects and their whereabouts. And in studies of **deferred imitation and problem solving**, representational thought is evident even earlier

Deferred and Inferred Imitation

Piaget studied **deferred imitation** by noting when his three children demonstrated it in their everyday behavior. But laboratory research suggests that it is present at 6 weeks of age! Infants who watched an unfamiliar adult's facial expression imitated it when exposed to the same adult the next day

As motor capacities improve, infants copy actions with objects. In one study, an adult showed 6- and 9-month-olds a **novel series of actions** with a puppet. When tested a day later, infants who had seen the novel actions were far more likely to imitate them

And when researchers paired a second, motionless puppet with the first puppet 1 to 6 days before the demonstration, 6- to 9-month-olds generalized the novel actions to this new, very different-looking puppet



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Deferred and Inferred Imitation (cont)

Between 12 and 18 months, toddlers use **deferred imitation** to enrich their sensorimotor schemes. They retain modeled behaviors for at least several months, copy the actions of peers as well as adults, and imitate across a change in context—for example, enact at home a behavior seen at child care. The ability to recall modeled behaviors in the order they occurred—evident as early as 6 months—also strengthens over the second year. And when toddlers imitate in correct sequence, they remember more behaviors

Older infants and toddlers even imitate rationally, by inferring others' intentions. They are more likely to imitate purposeful than arbitrary behaviors on objects. And they adapt their imitative acts to a model's goals. If 12-month-olds see an adult perform an unusual action for fun (make a toy dog enter a miniature house by jumping through the chimney, even though its door is wide open), they copy the behavior. But if the adult engages in the odd behavior because she must (makes the dog go through the chimney after first trying the door and finding it locked), 12-month-olds typically imitate the more efficient action (putting the dog through the door). Between 14 and 18 months, toddlers become increasingly adept at imitating actions an adult tries to produce, even if these are not fully realized. On one occasion, Ginette attempted to pour some raisins into a bag but missed, spilling them. A moment later, Grace began dropping the raisins into the bag, indicating that she had inferred Ginette's goal

Problem Solving

As Piaget indicated, around 7 to 8 months, infants develop **intentional means-end action sequences** that they use to solve simple problems, such as pulling on a cloth to obtain a toy resting on its far end

Out of these explorations of object-to-object relations, the capacity for tool use in problem solving—flexibly manipulating an object as a means to a goal—emerges

By 10 to 12 months, infants can solve problems by analogy—apply a solution strategy from one problem to other relevant problems. In one study, babies of this age were given three similar problems, each requiring them to overcome a barrier, grasp a string, and pull it to get an attractive toy. The problems differed in many aspects of their superficial features—texture and color of the string, barrier, and floor mat and type of toy (horse, doll, or car). For the first problem, the parent demonstrated the solution and encouraged the infant to imitate. Babies obtained the toy more readily with each additional problem.

Problem Solving (cont)

These findings suggest that at the end of the first year, infants form flexible **mental representations** of how to use tools to get objects. They have some ability to move beyond trial-and-error experimentation, represent a solution mentally, and use it in new contexts

Symbolic Understanding

One of the most momentous early attainments is the realization that words can be used to cue mental images of things not physically present—a symbolic capacity called **displaced reference** that emerges around the first birthday. It greatly enhances toddlers' capacity to learn about the world through communicating with others. Observations of 12- to 13-month-olds reveal that they respond to the label of an absent toy by looking at and gesturing toward the spot where it usually rests

But at first, toddlers have difficulty using language to acquire new information about an absent object. In one study, an adult taught 19- and 22-month-olds a name for a stuffed animal—"Lucy" for a frog. Then, with the frog out of sight, each toddler was told that some water had spilled, so "Lucy's all wet!" Finally, the adult showed the toddler three stuffed animals—a wet frog, a dry frog, and a pig—and said, "Get Lucy!"

Although all the children remembered that Lucy was a frog, only the 22-month-olds identified the wet frog as Lucy. This **capacity to use language as a flexible symbolic tool—to modify and enrich existing mental representations—improves into the preschool years**

A beginning **awareness of the symbolic function of pictures** also emerges in the first year, strengthening in the second. By 9 months, the majority of infants touch, rub, or pat a color photo of an object but rarely try to grasp it

These behaviors suggest that 9-month-olds do not mistake a picture for the real thing, though they may not yet comprehend it as a symbol. By the middle of the second year, toddlers clearly treat pictures symbolically, as long as pictures strongly resemble real objects. After hearing a novel label ("blicket") applied to a color photo of an unfamiliar object, most 15- to 24-month-olds—when presented with both the real object and its picture and asked to indicate the "blicket"—gave a symbolic response. They selected either the real object or both the object and its picture, not the picture alone.

toddlers often use pictures as vehicles for communicating with others and acquiring new knowledge. Picture-rich environments in which caregivers frequently direct babies' attention to the link between pictures and real objects promote pictorial understanding.



Social Issues: Education

Children first become TV and video viewers in early infancy, as they are exposed to programs watched by parents and older siblings or to shows aimed at baby viewers, such as the Baby Einstein products. U.S. parents report that 50 percent of 2-month-olds watch TV, a figure that rises to 90 percent by 2 years of age. Average viewing time increases from 55 minutes per day at 6 months to just under 1½ hours per day at age 2. Initially, **infants respond to videos of people as if viewing people directly—smiling, moving their arms and legs, and (by 6 months) imitating actions of a televised adult**

But when shown videos of attractive toys, 9-month-olds touch and grab at the screen, suggesting that they confuse the images with the real thing. By the middle of the second year, **manual exploration declines** in favor of pointing at the images

Nevertheless, **toddlers have difficulty applying what they see on video to real situations**

In a series of studies, some 2-year-olds watched through a window while a live adult hid an object in an adjoining room, while others watched the same event on a video screen. Children in the direct viewing condition retrieved the toy easily; those in the video condition had difficulty

This **video deficit effect**—poorer performance after viewing a video than a live demonstration—has also been found for 2-year-olds' deferred imitation, word learning, and means-end problem solving

Around age 2½, **the video deficit effect declines**. Before this age, the **American Academy of Pediatrics recommends against mass media exposure**. In support of this advice, amount of TV viewing is negatively related to toddlers' language progress. And 1- to 3-year-old heavy viewers tend to have attention, memory, and reading difficulties in the early school years

When toddlers do watch TV and video, it is likely to **work best as a teaching tool when it is rich in social cues**. These include use of familiar characters and close-ups in which the character looks directly at the camera, addresses questions to viewers, and pauses to invite a response

Evaluation of the Sensorimotor Stage

Evaluation of the Sensorimotor Stage cont.

Others, **convinced by violation-of-expectation findings**, believe that infants start out with impressive understandings. According to this core knowledge perspective, **babies are born with a set of innate knowledge systems, or core domains of thought**. Each of these prewired understandings permits a ready grasp of new, related information and therefore **supports early, rapid development**

Core knowledge theorists argue that infants could not make sense of the complex stimulation around them without having been genetically "set up" in the course of evolution to comprehend its crucial aspects

Researchers have conducted many studies of infants' physical knowledge, including **object permanence, object solidity** (that one object cannot move through another), and **gravity** (that an object will fall without support). **Violation-of-expectation findings suggest that in the first few months, infants have some awareness of all these basic object properties and quickly build on this knowledge**

Core knowledge theorists also assume that an inherited foundation of linguistic knowledge enables swift language acquisition in early childhood—a possibility we will consider later in this chapter. Furthermore, **these theorists argue, infants' early orientation toward people initiates rapid development of psychological knowledge—in particular, understanding of mental states, such as intentions, emotions, desires, and beliefs**

Research even suggests that infants have basic numerical knowledge. In the best-known study, 5-month-olds saw a screen raised to hide a single toy animal and then watched a hand place a second toy behind the screen. Finally, the screen was removed to reveal either one or two toys. **Infants looked longer at the unexpected, one-toy display, indicating that they kept track of the two objects and were able to add one object to another**

Findings like these **suggest that babies can discriminate quantities up to three and use that knowledge to perform simple arithmetic—both addition and subtraction**

Additional **evidence suggests that 6-month-olds can distinguish among large sets of items, as long as the difference between those sets is very great—at least a factor of two**. Consequently, some researchers believe that infants can represent approximate large-number values in addition to making small-number discriminations

AGE	COGNITIVE ATTAINMENTS
Birth-1 month	Secondary circular reactions using limited motor skills, such as sucking a nipple to gain access to interesting sights and sounds
1-4 months	Awareness of object permanence, object solidity, and gravity, as suggested by violation-of-expectation findings; deferred imitation of an adult's facial expression over a short delay (1 day)
4-8 months	Improved knowledge of object properties and basic numerical knowledge, as suggested by violation-of-expectation findings; deferred imitation of an adult's novel actions on objects over a short delay (1 to 3 days)
9-12 months	Ability to search for a hidden object; ability to solve simple problems by analogy to a previous problem
12-18 months	Ability to search for a hidden object when it is moved from one location to another (accurate A-B search); deferred imitation of an adult's novel actions on objects after long delays (at least several months) and across a change in situation (from child care to home); rational imitation, inferring the model's intentions; displaced reference of words
18 months-2 years	Ability to find an object moved while out of sight (invisible displacement); deferred imitation of actions an adult tries to produce, even if these are not fully realized; deferred imitation of everyday behaviors in make-believe play; beginning awareness of pictures and video as symbols of reality

Alternative Explanations

Unlike Piaget, who thought babies constructed all mental representations out of sensorimotor activity, researchers now believe infants have built-in cognitive equipment for making sense of experience. But disagreement exists over the extent of this understanding. Researchers who lack confidence in the **violation-of-expectation method** say that babies cognitive starting point is limited. Together, these capacities enable infants to construct a wide variety of schemes



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Evaluation of the Sensorimotor Stage cont. (cont)

As with **other violation-of-expectation results**, this **evidence is controversial**. Indisputable evidence for built-in core knowledge requires that it be demonstrated at birth or close to it—in the absence of relevant opportunities to learn. Yet evidence on newborns' ability to process small and large numerical values is inconsistent. And critics point out that claims for infants' number knowledge are surprising, in view of other research indicating that before 14 to 16 months, toddlers have difficulty making less-than and greater-than comparisons between small sets. **Not until the preschool years do children add and subtract small sets correctly**

The **core knowledge perspective**, while emphasizing native endowment, **acknowledges that experience is essential for children to extend this initial knowledge. But so far, it has said little about which experiences are most important in each core domain for advancing children's thinking.** Despite these limitations, core knowledge investigators have sharpened the field's focus on clarifying the starting point for human cognition and on carefully tracking the changes that build on it

Piaget's Legacy

Current research on infant cognition yields broad agreement on two issues. **First, many cognitive changes of infancy are not abrupt and stagelike but gradual and continuous**

Second, rather than developing together, various aspects of infant cognition change unevenly because of the challenges posed by different types of tasks and infants' varying experiences with them. These ideas serve as the basis for another major approach to cognitive development—**information processing**

Piaget's work inspired a wealth of research on infant cognition, including studies that challenged his theory. His observations also have been of great practical value. Teachers and caregivers continue to look to the sensorimotor stage for guidelines on how to create developmentally appropriate environments for infants and toddlers

Information Processing

information processing focuses on many aspects of thinking, including attention, memory, categorization skills, and problem-solving. It often relies on flowcharts to describe human cognitive system

First, information enters the **sensory register** sights and sounds are represented directly and stored briefly

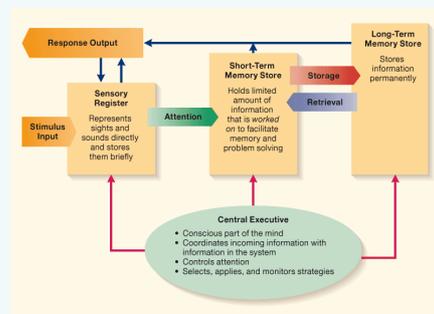
Information Processing (cont)

Short-term memory store attended-to information briefly so we can actively "work on" it to reach our goals

working memory: a number of items that can be briefly held in mind while also engaging in some effort to monitor or manipulate those items. Working memory can be thought of as a "mental workspace."

Long-term memory permanent knowledge base

Model of Information Processing



First, information enters the **sensory register**, where sights and sounds are represented directly and stored briefly. The second part of the mind, the **short-term memory store**, we retain attended-to information briefly so we can actively "work on" it to reach our goals. The **central executive** is where info is acted upon, it is the conscious, reflective part of our mental system insuring that we think purposefully to attain our goals. **LTM** is our permanent storage base

Cognitive Gains in Infancy + Toddlerhood

Attention improved efficiency, ability to shift focus

less attraction to novelty, improved sustained attention

around 2 to 3 months of age, infants visually explore objects and patterns more thoroughly

Preterm and newborn babies require a long time—about 3 to 4 minutes—to habituate and recover to novel visual stimuli



Cognitive Gains in Infancy + Toddlerhood (cont)

But by 4 or 5 months, they need as little as 5 to 10 seconds to take in a complex visual stimulus and recognize it as different from a previous one

Over the first year, infants mostly attend to novel and eye-catching events

In the second year, as toddlers become increasingly capable of intentional behavior (refer back to Piaget's Substage 4), attraction to novelty declines (but does not disappear) and **sustained attention increases**

A toddler who engages even in simple goal-directed behavior, such as stacking blocks or putting them in a container, must sustain attention to reach the goal. As plans and activities gradually become more complex, the duration of attention increases

Memory

involves operant conditioning and habituation are involved in early memory

longer retention intervals

development of recall by second half of first year

Retention of visual events increases dramatically during first 2 years

Recognition—noticing when a stimulus is identical or similar to one previously experienced—is the simplest form of memory

Recall involves remembering something not present; by the second half of the first year, babies are capable of it.

Categorization

gradual shift from perceptual to conceptual categorization in toddlerhood; grouping of similar events and objects

Development of Categorization

Perceptual First categories are based on physical properties

By 6 months, babies categorize on basis of two correlated features

Conceptual Shift to categories based on common function or behavior; grouping objects by their common function or behavior

Cultural differences in development of categories

young infants can **categorize**, grouping similar objects and events into a single representation to help them learn and remember and by the second half of the first year, more categories appear to be based on subtle sets of features. As they gain experience in comparing to-be-categorized items in varied ways and as their store of verbal labels expands, toddlers start to categorize flexibly

By the end of the second year, toddlers' grasp of the **animate-in-animate distinction** expands. That is understanding the difference between real and what is not real. Exploration of objects and expanding knowledge of the world contribute to the shift from categorizing based on prominent perceptual features to categorizing on a conceptual basis. This means the toddler uses grouping of similar function or behavior as birds versus airplanes, or cats versus dogs. As adults put labels on objects this calls attention to the differences.

Developmentally Appropriate Infant + Toddler Care

Physical setting Indoor environment is clean, in good repair, well-lighted, well-ventilated, and not overcrowded

Fenced outdoor play space is available

Toys and equipment Play materials are age-appropriate and are stored on low shelves within easy reach

Cribs, highchairs, infant seats, and child-sized tables and chairs are available

Outdoor equipment includes small riding toys, swings, slide, and sandbox



Developmentally Appropriate Infant + Toddler Care (cont)

Caregiver-child ratio In child-care centers, caregiver-child ratio is no greater than 1 to 3 for infants and 1 to 6 for toddlers

Group size (number of children in one room) is no greater than 6 infants with 2 caregivers and 12 toddlers with 2 caregivers.

In family child care, caregiver is responsible for no more than 6 children; within this group, no more than 2 are infants and toddlers

Daily activities Daily schedule includes times for active play, quiet play, naps, snacks, and meals

Atmosphere is warm and supportive, and children are never left unsupervised

Interactions among adults and children Caregivers respond promptly to infants' and toddlers' distress; hold them and talk, sing, and read to them; and interact with them in a manner that respects the individual child's interests and tolerance for stimulation

Staffing is consistent, so infants and toddlers can form relationships with particular caregivers

Caregiver qualifications Caregivers have some training in child development, first aid, and safety

Relationships with parents Parents are welcome anytime

Caregivers talk frequently with parents about children's behavior and development

Developmentally Appropriate Infant + Toddler Care (cont)

Licensing and accreditation Child-care setting is licensed by the state

In the United States, voluntary accreditation by the National Association for the Education of Young Children or the National Association for Family Child Care is evidence of an especially high-quality program

Early Intervention for At-Risk Infants + Toddlers

Children living in persistent poverty are likely to show gradual declines in intelligence test scores and to achieve poorly when they reach school age

These problems are largely due to stressful home environments that undermine children's ability to learn and increase the likelihood that they will remain poor as adults

Programs: a few start in period of infancy and continue through childhood

organized child care: children receive education, nutritional and health care services, as important to break the cycle is parent education on child rearing and social service supports

Parent education

Home based programs: a skilled adult visits home and works with parents teaching them how to stimulate young child's development

Early Head Start program: begun in 1995 Congress provided limited funding for services directed at infants and toddlers already at risk for developmental problems because of poverty.



Early Intervention for At-Risk Infants + Toddlers (cont)

Studies indicate that **poverty-stricken children are likely to show gradual declines in intelligence test scores and to achieve poorly when they reach school age.** Children participating in interventions designed to break the cycle of poverty for infants and toddlers score higher than untreated controls on mental tests by age 2. The earlier and the longer the intervention, the better the participants' cognitive and academic performance is throughout childhood and adolescence.

Language Development

Improvements in perception and cognition during infancy pave the way for language

They start to comprehend some words and, **around 12 months of age, say their first word**

By age 6, children understand the meaning of about 14,000 words and speak in elaborate sentences

Theories of Language Development

Nativist Theory (Chomsky) regards language as a unique human accomplishment that is innate or inborn: Children are born with a **language acquisition device (LAD)**, containing a set of rules common to all languages, which permits children to understand and speak whichever language they hear

(LAD), an innate system that contains a **universal grammar**, or set of rules common to all languages

It enables children, no matter which language they hear, to understand and speak in a rule-oriented fashion as soon as they pick up enough words

infants biologically prepared to learn language

Theories of Language Development (cont)

First, researchers have had great difficulty specifying **Chomsky's universal grammar**. Critics doubt that one set of rules can account for the extraordinary variation in grammatical forms among the world's 5,000 to 8,000 languages. Second, **children refine and generalize many grammatical forms gradually, engaging in much piecemeal learning and making errors along the way.** This suggests that more experimentation and learning are involved than Chomsky assumed

Interactionist View emphasize interactions between inner capacities and environmental influences

social-interactionist view: emphasizes social skills and language experiences

Some interactionists, applying **information-processing theory** to language development, assume that children use powerful cognitive capacities to make sense of their complex language environment

Other interactionists blend this view with **Chomsky's nativist perspective**. Still others take a social-interactionist view, emphasizing the role of children's social skills and language experiences combine in language development.

Getting Ready to Talk

Around 2 months of age, babies make vowel-like noises called **cooing**

Around 6 months, **babbling** appears: Infants repeat long strings of consonant-vowel combinations

Around 7 months, babbling starts to include many sounds common in spoken languages

Around 8 to 10 months, it reflects the sound and intonation patterns of children's language community.

First speech sounds: **cooing**
babbling



Getting Ready to Talk (cont)

Becoming a communicator: **Joint attention:** (3 to 4 months) the child attends to the same object or event as the caregiver, who often labels it, contributes greatly to early language development

Give-and-take: (3 months) Infants and mothers mutually imitate the pitch, loudness, and duration of each other's sounds. Mothers take the lead, imitating about twice as often as 3-month-olds

Preverbal gestures: (end of the first year) to direct adults' attention, influence their behavior, and convey helpful information. toddlers learn that using language leads to desired results

In **hearing-impaired babies**, these speech like sounds are greatly delayed. In deaf infants, they stop, but deaf infants exposed to sign language from birth babble with their hands.

First Words

In **the middle of the first year, infants begin to understand word meanings**; for example, they respond to their own name

First recognizable spoken words, around 1 year, **build on the sensorimotor foundations Piaget** described and on categories children have formed.

In a study tracking **the first 10 words** used by several hundred U.S. and Chinese (both Mandarin- and Cantonese-speaking) babies, **important people** ("Mama," "Dada"), **common objects** ("ball," "bread"), and **sound effects** ("woof-woof," "vroom") were mentioned most often. **Action words** ("hit," "grab," "hug") and **social routines** ("hi," "bye"), though also appearing in all three groups, were **more often produced by Chinese than U.S. babies**, and the Chinese babies also named more important people

When toddlers first learn words, they sometimes apply them too narrowly, an error called **under extension**

First Words (cont)

As vocabulary expands, a more common error is **overextension**—applying a word to a wider collection of objects and events than is appropriate

Overextensions illustrate another important feature of language development: the distinction between language production (the words and word combinations children use) and language comprehension (the language they understand)

At all ages, **comprehension develops ahead of production**. Still, **the two capacities are related. The speed and accuracy of toddlers' comprehension of spoken language increase dramatically over the second year**. And toddlers who are faster and more accurate in comprehension at age 3 show more words understood and produced

Quick comprehension frees space in working memory for picking up new words and for using them to communicate

The Two-Word Utterance Phase

Young toddlers add to their spoken vocabularies at a rate of one to three words per week. Because gains in word production between 18 and 24 months are so impressive (one or two words per day), many researchers concluded that toddlers undergo a **spurt in vocabulary**—a transition from a slower to a faster learning phase. In actuality, most children show a steady increase in rate of word learning that continues through the preschool years

Once toddlers produce 200 to 250 words, they start to combine two words: "Mommy shoe," "go car," "more cookie." These two-word utterances are called **telegraphic speech** because, like a telegram, they focus on high-content words, omitting smaller, less important ones ("can," "the," "to")

Two-word speech consists largely of simple formulas ("more + X," "eat + X"), with different words inserted in the "X" position

Toddlers rarely make gross grammatical errors, such as saying "chair my" instead of "my chair." But rather than following grammatical rules, their word-order regularities are usually copies of adult word pairings, as when the parent says, "How about more sandwich?"

Individual Differences

Although children typically produce their first word around their first birthday, **the range is large, from 8 to 18 months—variation due to a complex blend of genetic and environmental influences**



Individual Differences (cont)

The **most common explanation is girls' faster rate of physical maturation, which is believed to promote earlier development of the left cerebral hemisphere**

Temperament matters, too. For example, **shy toddlers often wait until they understand a great deal before trying to speak**. Once they do speak, their vocabularies increase rapidly, although they remain slightly behind their agemates

Caregiver-child conversation—especially, the richness of adults' vocabularies—also plays a strong role. Commonly used words for objects appear early in toddlers' speech, and the more often their caregivers use a particular noun, the sooner young children produce it. **Mothers talk more to toddler-age girls than to boys, and parents converse less often with shy than with sociable children**

children from low-SES homes usually have smaller vocabularies. By 18 to 24 months, they are slower at word comprehension and have acquired 30 percent fewer words

Limited parent-child conversation and book reading are major factors. On average, a **middle-SES child is read to for 1,000 hours between 1 and 5 years, a low-SES child for only 25 hours**

Rate of early vocabulary growth is a strong predictor of low-SES children's vocabulary size at kindergarten entry, which forecasts their later literacy skills and academic success

Higher-SES toddlers who lag behind their agemates in word learning have more opportunities to catch up in early childhood

Supporting Early Language Development

With infants

- Respond to coos and babbles
- Establish joint attention
- Use infant-directed speech
- Play social games

With toddlers

- Engage in joint make-believe
- Engage in frequent conversations
- Read often and talk about books

*Adults in many cultures speak to babies in **infant-directed speech (IDS)**: short sentences with high-pitched, exaggerated expression, clear pronunciation, distinct pauses between speech segments, and repetition of new words in a variety of contexts*

Deaf parents use a similar style of communication when signing to their deaf babies

Parent-toddler conversation strongly predicts language development and reading success during the school years

Supporting Early Language Development (cont)

Live interaction with a responsive adult is far better suited to spurring early language development than are media sources

Erikson's Theory of Infant + Toddler Personality

(CHAPTER 6)

Erikson believed that the psychological conflict of the first year of life is basic trust versus mistrust, and that **a healthy outcome depends on the quality of the parent-child relationship**

Erikson **recognized that many factors affect parental responsiveness**—*personal happiness, family conditions (for example, additional young children, social supports, financial well-being), and culturally valued child-rearing practices*. But when the balance of care is sympathetic and loving, the psychological conflict of the first year—basic trust versus mistrust—is resolved on the positive side

Infant Stage	Trust vs Mistrust	Trust is built by infants when they expect the world/environment around them to be good . If they feel threatened or uncomfortable, mistrust builds
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Trust vs Mistrust is based on the many factors that influence the parental responsiveness, i.e. the sympathetic and loving balance of care leads to **Trust**. The baby experiences the world as good and safe. The **Mistrustful** infant cannot count on kindness and compassion from others and then withdraws

The **trusting infant** expects the world to be good and gratifying, so he feels confident about venturing out to explore it

The **mistrustful baby** cannot count on the kindness and compassion of others, so she protects herself by withdrawing from people and things around her

Basic Emotions (cont)

During the early weeks, newborn babies smile when full, during REM sleep, and in response to gentle stroking of the skin, rocking, and a parent's soft, high-pitched voice. By the end of the first month, infants smile at dynamic, eye-catching sights, such as a bright object jumping suddenly across their field of vision. Between 6 and 10 weeks, the parent's communication evokes a broad grin called the **social smile**. These changes parallel the development of infant perceptual capacities—in particular, sensitivity to visual patterns, including the human face

By the **end of the first year, the smile has become a deliberate social signal**

Anger and Sadness About 8 to 10% of women experience **chronic depression**—mild to severe feelings of sadness, distress, and withdrawal that continue for months or years. Sometimes, depression emerges or strengthens after childbirth and fails to subside. This is called **postpartum depression**.

Maternal Depression: In the weeks after birth, infants of depressed mothers sleep poorly, are less attentive to their surroundings, and have elevated levels of the stress hormone cortisol. The more extreme the depression and the greater the number of stressors in a mother's life (such as marital discord, little or no social support, and poverty), the more the parent-child relationship suffers

Depressed mothers view their babies negatively, which contributes to their inept caregiving

Basic Emotions (cont)

As their **children get older, these mothers' lack of warmth and involvement is often accompanied by inconsistent discipline**—sometimes lax, at other times too forceful children who experience these maladaptive parenting practices often have serious adjustment problems. Some withdraw into a depressive mood themselves; others become impulsive and aggressive

Paternal Depression: In a study of a large representative sample of British parents and babies, researchers assessed depressive symptoms of fathers shortly after birth and again the following year. Then they tracked the children's development into the preschool years

Persistent paternal depression was, like maternal depression, **a strong predictor of child behavior problems**—especially overactivity, defiance, and aggression in boys

Paternal depression is linked to frequent marital and father-child conflict as children

Over time, **children subjected to parental negativity develop a pessimistic world view**—one in which they lack self-confidence and perceive their parents and other people as threatening. Children who constantly feel in danger are especially likely to become overly aroused in stressful situations, easily losing control in the face of cognitive and social challenges

Fear Like anger, fear rises from **the second half of the first year into the second year**



Basic Emotions (cont)

Older infants hesitate before playing with a new toy, and newly crawling infants soon back away from heights

But the most frequent expression of fear is to unfamiliar adults, a response called **stranger anxiety**. Many infants and toddlers are quite wary of strangers, although the reaction varies with temperament (some babies are generally more fearful), past experiences with strangers, and the current situation. When an unfamiliar adult picks up the infant, stranger anxiety is likely. But if the adult sits still while the baby moves around and a parent is nearby, infants often show positive and curious behavior

Cross-cultural research reveals that infant-rearing practices can modify stranger anxiety. Among the Efe hunters and gatherers of the Republic of Congo, where the maternal death rate is high, infant survival is safeguarded by a collective caregiving system in which, starting at birth, Efe babies are passed from one adult to another. Consequently, Efe infants show little stranger anxiety

Self-Conscious Emotions

Self-conscious emotions are a second, higher order of feelings

Parental guidance is needed to help the young child know when these feelings are appropriate. This varies greatly among different cultures. As in collectivist societies such as China and Japan, calling attention to one's individual success is considered embarrassing.

Failing to show concern for others (a parent, friend, teacher) causes intense shame in these cultures

Toddlers need to have an awareness of themselves as *unique* and *separate*

Appear between ages 1 1/2 and 3 years:	shame
	guilt
	embarrassment

Self-Conscious Emotions (cont)

pride

envy

Require: awareness of self as separate and unique
adult instruction in when to feel emotions

Thomas and Chess Structure of Temperament

infants vary widely in temperament, including both **reactivity** (quickness and intensity of emotional arousal, attention, and motor activity) and **self-regulation** (strategies for modifying reactivity). A growing body of research on temperament examines its stability, biological roots, and interaction with child-rearing experiences

In the mid 1950's **Thomas and Chess** investigated the development of temperament in a longitudinal study of children from early infancy into adulthood. **Results indicated that temperament can have a lasting effect on development of psychological problems or conversely, protect a child from negative effects of a highly stressful home environment. And parenting practices can modify children's temperament significantly**

temperament can increase a child's chances of experiencing psychological problems or, alternatively, protect a child from the negative effects of a highly stressful home life

Easy	40% of sample; The "easy" temperament child quickly adapts to routines and is generally cheerful
Difficult	10% of sample; The "difficult" child is irregular in daily routines and slow to accept new experiences and tends to react negatively and intensely
"Slow-to-warm-up"	15% of sample; The "slow-to-warm" child is inactive, shows mild, low key reactions to environmental stimuli, is negative in mood and adjusts slowly to new experiences
Unclassified	35% of sample; The unclassified children show blends of temperamental characteristics

Individuals differ not just in their reactivity on each dimension but also in the self-regulatory dimension of temperament, effortful control—the capacity to voluntarily suppress a dominant response in order to plan and execute a more adaptive response

Thomas and Chess Structure of Temperament (cont)

Temperament is often assessed through interviews or questionnaires given to parents. Behavior ratings by pediatricians, teachers, and others familiar with the child and laboratory observations by researchers have also been used. **Parental reports are convenient and take advantage of parents' depth of knowledge about their child across many situations**

Observations by researchers avoid the subjectivity of parental reports but can lead to other inaccuracies. In homes, observers find it hard to capture rare but important events, such as infants' response to frustration. And in the unfamiliar lab setting, fearful children may become too upset to complete the session

Rothbart's Model of Temperament

DIMENSION	DESCRIPTION
REACTIVITY	
Activity level	Level of gross-motor activity
Attention span/persistence	Duration of orienting or interest
Fearful distress	Wariness and distress in response to intense or novel stimuli, including time to adjust to new situations
Irritable distress	Extent of fussing, crying, and distress when desires are frustrated
Positive affect	Frequency of expression of happiness and pleasure
SELF-REGULATION	
Effortful control	Capacity to voluntarily suppress a dominant, reactive response in order to plan and execute a more adaptive response In the first two years, called <i>orienting/regulation</i> , which refers to the capacity to engage in self-soothing, shift attention from unpleasant events, and sustain interest for an extended time

The capacity for effortful control in early childhood predicts favorable development and adjustment in diverse cultures, with some studies showing long-term effects into adolescence and adulthood. Positive outcomes include persistence, task mastery, academic achievement, cooperation, moral maturity (such as concern about wrongdoing and willingness to apologize), and social behaviors of cooperation, sharing, and helpfulness

Bowlby's Ethological Theory of Attachment

Ethological Theory of Attachment recognizes the infant's emotional tie to the caregiver as an evolved response that promotes survival, is the most widely accepted view

According to Bowlby, attachment begins as a set of inborn signals that the baby uses to summon the parent, and then goes through four phases as it develops into a true affectionate bond

Bowlby's Ethological Theory of Attachment (cont)

According to Bowlby, out of their experiences during these four phases, children construct an enduring affectionate tie to the caregiver that they can use as a secure base in the parents' absence

Pre-attachment phase (*birth to 6 weeks*): Built-in signals (grasping, smiling, crying, and gazing into the adult's eyes) help bring newborn babies into close contact with other humans, who comfort them

Attachment-in-the-making phase (*6 weeks to 6–8 months*): Babies respond differently to a familiar caregiver than to a stranger and begin to develop a sense of trust

Clear-cut attachment phase (*6–8 months to 18 months–2 years*): Babies display **separation anxiety**, becoming upset when the trusted caregiver leaves

in many cultures, separation anxiety increases between 6 and 15 months. Besides protesting the parent's departure, older infants and toddlers approach, follow, and climb on her in preference to others. And they use the familiar caregiver as a secure base from which to explore

Formation of a reciprocal relationship with caregiver (*18 months to 2 years and on*): Rapid growth in representation and language enables toddlers to understand some of the factors that influence the parent's coming and going and to predict her return. As a result, separation protest declines

Bowlby's Ethological Theory of Attachment (cont)

With age, children continually revise and expand their internal working model as their cognitive, emotional, and social capacities increase and as they interact with parents and form other close bonds with adults, siblings, and friends

Measuring the Security of Attachment

Secure attachment These infants use the parent as a secure base. When separated, they may or may not cry, but if they do, it is because the parent is absent and they prefer her to the stranger. When the parent returns, they convey clear pleasure—some expressing joy from a distance, others asking to be held until settling down to return to play—and crying is reduced immediately

About 60% of North American infants in middle-SES families show this pattern

Insecure-avoidant attachment These infants seem unresponsive to the parent when she is present. When she leaves, they usually are not distressed, and they react to the stranger in much the same way as to the parent. During reunion, they avoid or are slow to greet the parent, and when picked up, they often fail to cling

About 15% of North American infants in middle-SES families show this pattern

Measuring the Security of Attachment (cont)

Insecure-resistant attachment Before separation, these infants seek closeness to the parent and often fail to explore. When the parent leaves, they are usually distressed, and on her return they combine clinginess with angry, resistive behavior (struggling when held, hitting and pushing). Many continue to cry after being picked up and cannot be comforted easily

About 10% of North American infants in middle-SES families show this pattern

Disorganized /disoriented attachment This pattern reflects the greatest insecurity. At reunion, these infants show confused, contradictory behaviors—for example, looking away while the parent is holding them or approaching the parent with flat, depressed emotion

About 15% of North American infants in middle-SES families show this pattern

An alternative method, **the Attachment Q-Sort**, suitable for children between 1 and 5 years, depends on home observation

Either the parent or a highly trained observer sorts 90 behaviors—such as “Child greets mother with a big smile when she enters the room,” “If mother moves very far, child follows along,” and “Child uses mother’s facial expressions as a good source of information when something looks risky or threatening”—into nine categories ranging from “highly descriptive” to “not at all descriptive” of the child. Then a score, ranging from high to low in security, is computed



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Measuring the Security of Attachment (cont)

The **Q-Sort** responses of expert observers correspond well with babies' secure-base behavior in the Strange Situation, but parents' Q-Sorts do not. Parents of insecure children, especially, may have difficulty accurately reporting their child's attachment behaviors

Measuring the Security of Attachment

EPISODE	EVENTS	ATTACHMENT BEHAVIOR OBSERVED
1	Researcher introduces parent and baby to playroom and then leaves.	
2	Parent is seated while baby plays with toys.	Parent as a secure base
3	Stranger enters, is seated, and talks to parent.	Reaction to unfamiliar adult
4	Parent leaves room. Stranger responds to baby and offers comfort if baby is upset.	Separation anxiety
5	Parent returns, greets baby, and offers comfort if necessary. Stranger leaves room.	Reaction to reunion
6	Parent leaves room.	Separation anxiety
7	Stranger enters room and offers comfort.	Ability to be soothed by stranger
8	Parent returns, greets baby, offers comfort if necessary, and tries to reinterest baby in toys.	Reaction to reunion

Observing infants responses to these episodes, researchers identify a secure attachment pattern + 3 patterns of insecurity. Secure attachment- infants use parent as secure base. When separated, they may cry, because parent is absent and they prefer her to a stranger. When parent returns, they convey clear pleasure—expressing joy from distance, or asking to be held until settling down to return to play—and crying is reduced immediately. It takes baby through eight short episodes

Stability of Attachment

Stability of attachment is generally found in families whose secure economic status with well adjusted mothers and positive family and friendship ties

Infants and toddlers of low SES families that are faced with financial and job stresses and little social support are more likely to have less stable attachments

However this trend can be overcome with the involvement and support of other family members and professional caregiver

Cross cultural evidence indicates that the attachment patterns may have to be interpreted differently in other cultures. But despite the cultural variations the secure pattern is the most common attachment quality in all societies that have been studied

Stability of Attachment (cont)

Multiple Attachments: **Fathers:** Fathers' sensitive caregiving predicts attachment security, though somewhat less strongly than mothers. But mothers and fathers in many cultures, including Australia, Canada, Germany, India, Israel, Italy, Japan, and the United States, tend to interact differently with their babies. Mothers devote more time to physical care and expressing affection, fathers to playful interaction

Siblings: Despite declines in family size, nearly 80% of U.S. children grow up with at least one sibling. The arrival of a new baby is a difficult experience for most preschoolers, who often become demanding, clingy, and less affectionate with their parents for a time. Attachment security also declines, especially for children over age 2 (old enough to feel threatened and displaced) and for those with mothers under stress. Older children also show affection and concern when the infant cries. By the end of the first year, babies are comforted by the presence of a preschool-age brother or sister during short parental absences. Throughout childhood, children continue to treat older siblings as attachment figures, turning to them for comfort in stressful situations when parents are unavailable

Grandparents

Professional caregivers

The exception is **disorganized/disoriented attachment**, an insecure pattern that is either highly stable or consistently predicts later insecurity of another type



Stability of Attachment (cont)

Furthermore, **adults with histories of attachment disorganization are at increased risk of having children who display disorganized/disoriented attachment**

Stability of Attachment (Cultural Variations)

Cross-cultural evidence indicates that attachment patterns may have to be interpreted differently in certain cultures

German infants show considerably **more avoidant attachment than American babies do**. But **German parents value independence and encourage their infants to be nonclingy**

In contrast, a study of infants of **the Dogon people of Mali, Africa, revealed that none showed avoidant attachment to their mothers**

Even when grandmothers are primary caregivers (as they are with firstborn sons), Dogon mothers remain available to their babies, holding them close and nursing them promptly in response to hunger and distress

Japanese infants, as well, rarely show avoidant attachment. Rather, many are resistantly attached, but this reaction may not represent true insecurity. Japanese mothers rarely leave their babies in others' care, so the Strange Situation probably induces greater stress in them than in babies who frequently experience maternal separations

Also, Japanese parents view the attention seeking that is part of resistant attachment as a normal indicator of infants' efforts to satisfy dependency needs

Despite these and other cultural variations, the secure pattern is still the most common attachment quality in all societies studied

Factors That Affect Attachment Security

(1) Early availability of consistent caregiver show greatly elevated rates of attachment. They are also at high risk for emotional and social difficulties. Many are overly friendly to unfamiliar adults; others are sad, anxious, and withdrawn

Factors That Affect Attachment Security (cont)

These symptoms are associated with wide-ranging mental health problems in middle childhood and adolescence, including cognitive impairments, inattention and overactivity, depression, and either social avoidance or aggressive behavior

(2) Quality of caregiving: **Sensitive caregiving:** responding promptly, consistently, and appropriately to infants and holding them tenderly and carefully

is moderately related to attachment security across cultures and SES groups

Interactional synchrony in Western cultures: the caregiver responds to infant signals in a well-timed, rhythmic, appropriate fashion, and both partners match emotional states, especially the positive ones

separates the experiences of secure from insecure babies

(3) Infant characteristics Because attachment is the result of a relationship between two partners, infant characteristics should affect how easily it is established. Babies whose temperament is emotionally reactive are more likely to develop later insecure attachments



Factors That Affect Attachment Security (cont)

However, parental mental health and caregiving are involved. Babies with the short 5-HTTLPR gene, which is associated with emotional reactivity, are more likely than infants with a low-risk genotype to exhibit disorganized/disoriented attachment, but only when caregiving is insensitive

In other research, mothers' experience of trauma was associated with attachment disorganization, but only in infants with a chromosome-11 gene having a certain repetition of DNA base pairs, called DRD4 7-repeat, which is linked to impulsive, overactive behavior

These babies, who face self-regulation challenges, were more susceptible to the negative impact of maternal adjustment problems

Interventions that teach parents to interact sensitively with difficult-to-care-for babies enhance both sensitive caregiving and attachment security

One program that focused on both maternal sensitivity and effective discipline was particularly successful in reducing irritable distress and disruptive behavior in toddlers with the DRD4 7-repeat

Factors That Affect Attachment Security (cont)

These findings suggest that the DRD4 7-repeat—like the short 5-HTTLPR gene—makes children more susceptible to the effects of both negative and positive parenting

(4) Family circumstances Job loss, a failing marriage, financial difficulties, or parental psychological problems (such as anxiety or depression) can undermine attachment indirectly by interfering with parental sensitivity. These stressors can also affect babies' sense of security directly, by altering the emotional climate of the family (for example, exposing them to angry adult interactions) or by disrupting familiar daily routines

By reducing parental stress and improving parent-child communication, social support fosters attachment security

(5) Parents' internal working models Parents bring to the family context their own history of attachment experiences, from which they construct internal working models that they apply to the bonds they establish with their children



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Factors That Affect Attachment Security (cont)

To assess parents' internal working models, researchers ask them to evaluate childhood memories of attachment experiences. Parents who discuss their childhoods with objectivity and balance, regardless of whether their experiences were positive or negative, tend to behave sensitively and have securely attached children. In contrast, parents who dismiss the importance of early relationships or describe them in angry, confused ways usually have insecurely attached children and are less warm, sensitive, and encouraging of learning and mastery

Longitudinal research reveals that negative life events can weaken the link between an individual's own attachment security in infancy and a secure internal working model in adulthood. And insecurely attached babies who become adults with insecure internal working models often have lives that, based on self-reports in adulthood, are filled with family crises

Factors That Affect Attachment Security (cont)

The way we view our childhoods—our ability to come to terms with negative events, to integrate new information into our working models, and to look back on our own parents in an understanding, forgiving way—is far more influential in how we rear our children than the actual history of care we received

Avoidant infants tend to receive over-stimulating, intrusive care, while resistant infants often experience inconsistent care. Because attachment is the result of a relationship that builds between two partners, infant characteristics should affect how easily it is established

Babies whose temperament is emotionally reactive and difficult are more likely to develop later insecure attachments, but insecurity is more likely when these babies also have highly anxious mothers, leading to a "disharmonious relationship"

Stressful life changes in families may undermine attachment by interfering with parental sensitivity and can also affect babies' sense of security directly, by altering the emotional climate of the family or by disrupting familiar daily routines. Think of a new baby arriving in a toddler's family

Parents bring to the family context their own history of attachment experiences, although early rearing experiences do not destine individuals to become either sensitive or insensitive parents

What factors affect Attachment security?

Overall, the evidence indicates that fully normal emotional development depends on establishing a close tie with a caregiver early in life

Self-Development

Self-awareness from birth; Aided by capacity for intermodal perception

they feel their own touch, feel and watch their limbs move, and feel and hear themselves cry, babies experience intermodal matches that differentiate their own body from surrounding bodies and objects



Self-Development (cont)

Self-recognition Emerges end of second year

Promoted by acting on environment and noting effects (identification of the self as a physically unique being)

They are recognizing that their own actions cause objects and people react in a predictable way. Example: smiling at a caregiver who smiles and vocalizes back helps show the child the relationship between self and social world. Rolling a ball to caregiver who rolls it back is another example

Empathy Ability to "feel with" another person

Aided by self-awareness and advancing cognitive, language, and social skill

Older toddlers who have experienced sensitive caregiving draw on their advancing cognitive, language, and social skills to express first signs of **empathy**

Toddlers show empathy when others are distressed and may offer a hug or favorite toy to person

Between 18 and 30 months children classify themselves on basis of age, sex (boy or girl), on their physical characteristics, on their "goodness" or "badness" and also on their competencies

Cultural variations exist in early self-development. In one investigation, urban middle-SES German and East Indian toddlers attained mirror self-recognition earlier than toddlers of non-Western farming communities, such as the Nso people of rural Cameroon and rural families of East India

Self-Control

Self-awareness also contributes to effortful control, evident in toddlers' strengthening capacity to inhibit impulses, manage negative emotion, and behave in socially acceptable ways

Self-Control (cont)

As children learn to become self controlled they must think of themselves as separate, unique beings who can direct their own actions. And they must have memory capacity to recall caregivers' directive: "don't touch the light socket or don't crawl up the steps"

Effortful control is the capacity to:

- inhibit impulses
- manage negative emotions
- behave in socially acceptable ways

Depends on:

- awareness of self as separate, autonomous being
- confidence in directing own actions
- memory for caregiver's directives

To behave in a self-controlled fashion, children must think of themselves as separate, autonomous beings who can direct their own actions. And they must have the representational and memory capacities to recall a caregiver's directive and apply it to their own behavior

As self-control improves, parents gradually expand the rules they expect toddlers to follow, from safety and respect for property and people to family routines, manners, and simple chores

Helping Toddlers Develop Compliance + Self-Control

Some examples of parental guidance are:

- Respond with sensitivity and support
- Give parent to stop pleasurable activity rather than advance notice of change in activities
parent to stop pleasurable activity rather than waiting to last moment. "we are going to the playground soon and you need to pick up your toys so we can leave."
- Offer many prompts and reminders
- Reinforce self-controlled behavior
- Encourage sustained attention
- Support language development
- Increase rules gradually

Toddlers become capable of compliance between 12 and 18 months, now aware of caregivers wishes and expectations

Toddlers with parents' sensitivity and support may resist at times but also are more compliant

Helping Toddlers Develop Compliance + Self-Control (cont)

Continuous adult oversight and patient assistance needed as memory and compliance is limited

Gradually increase rules for behavior in a manner consistent with toddler's developing capacities

Toddler Development

Play what toddlers do and it is essential to their health and development

During play toddlers exercise, learn to manage their body, improve coordination and manual dexterity, increase awareness of their surroundings and objects, develop spatial and sensory perception, learn attention and language, release emotional tension and channel unacceptable urges such as aggression, into acceptable activities.

oddlers learn through play right from wrong and learns to have fun and master skills

Exercise Exercise helps children learn physical, mental and social skills. Parents who play actively with their children help to develop these skills. Sedentary activities such as reading should be balanced with active play

Rest Rest and sleep are as important as physical activity and play. In sleep and rest Toddlers need an average of 10-12 hours of sleep nightly plus nap during day of 1-2 hours

Sleep Sleep is essential to physical growth and healing if the child is ill. During sleep the growth hormone is produced in greater quantities

Toddler Developmental Tasks

Develop Physical skills appropriate to motor stage Physical skills are developed by encouraging exercise and fun through play activities and with parental encouragement

Toddler Developmental Tasks (cont)

Master basics of toilet training **Independence and autonomy**, not cleanliness, **are the critical issues in teaching the child to use the toilet.** Arrange for the child to use the toilet easily and parent supports rather than acts as trainer, shows interest in child, not just the act. The toddler is interested in the product she or he excretes. **Neuro muscular maturity increases from 1 to 3 years. Bowel control occurs before bladder control and is a less complex task.** Shows readiness for bowel training when defecates regularly, shows signs of awareness of defecation, (pulls on diaper, or training pants). If learning to speak this helps if parent can choose words to use for defecation so child will learn these and be able to communicate. **Mental and emotional readiness are important**

For bladder training child is ready when child knows when he is wet., wakes up dry after nap or nighttime, or goes more than 2 hours during the day being dry. **Child needs to understand both boys and girls can sit down on toilet to urinate. Daddy can help boys learn how to stand up to urinate**



Toddler Developmental Tasks (cont)

Master basics of good eating and sleep habits Eating habits are learned from example by parent or caregiver. Use finger foods and let child choose and offer small portions. Do not use food as reward or punishment. Children under the age of 2 should not drink skim milk or eat only low fat foods as fat is needed for neurological development. Offer snacks of fruit, yogurt, crackers and cheese and certainly offer 3 regular meals a day. Avoid the frequent high sugar snacks. Toddlers do not have high caloric need and their caloric need does increase slowly through the toddler period.

Become more aware of being family member, early social skills

Language and communication skills The child understands words before they understand the meanings. At 18 months a vocabulary of 50 words and at 2 years between 50 and 400 words. It all depends on the caregiver's involvement in teaching and reading.

Self-control and beginning independence in behavior Learning self control and having daily routines are all part of the developmental tasks of the toddler.

Begin to have healthy daily routines

Health Promotion and Health Protection

(1) **Immunizations:** **HepB:** For hepatitis B

DTaP: Diphtheria, Tetanus, Pertussis (whooping cough)

RV: Rotovirus

Health Promotion and Health Protection (cont)

Hib: Protects against influenza type b

PCV: pneumococcal protects against pneumococcal pneumonia

IPV: Polio vaccine

MMR: Measles, mumps, Rubella at age 1 year

HepA: for Hepatitis A

Yearly influenza vaccine

(2) **Dental Health:** teaching the child good oral hygiene habits can lead to a lifelong healthy smile. But did you know that just because babies don't have visible teeth doesn't mean they can't get cavities

The baby's 20 primary teeth are already present in the jaws at birth. And those baby teeth that begin coming through the gum at about 6 months help set the stage for future smiles by keeping space in the jaw for the adult teeth

The *American Dental Association* recommends that parents take children to the dentist no later than their first birthday and then at intervals recommended by the dentist

Immunizations needed for the infant through the toddler age group. And you need to know these immunizations for the first two years. Parents need to be encouraged to have their child vaccinated as these are required before they can attend school or preschool

The **HCP** needs to call attention to these vaccinations and answer questions related to this. There has been a redevelopment of measles because too many parents have refused to have infants vaccinated because of fear of reaction to the vaccine

Health Promotion and Health Protection (cont)

(3) Safety Promotion and Injury Control Major concerns about infant/toddler safety are accidental injury due to motor vehicle accidents (MVA), burns, suffocation, drowning, poisoning, and falls. MVA are the major cause of death and related to improper use of car restraints or inappropriate size for infant/toddler

if toddler plays in area of traffic. Use of child proof gates, locks on cabinets where hazardous substances are kept

Accidental injury: MVA, burns, drowning, suffocation (SIDS), poisoning, falls

Sudden Infant Death Syndrome (SIDS) is a risk of suffocating for the very young infant if the child is placed on soft pillows or a couch for a nap

There is also thought to be some risk for the infant if co-sleeping with adults

(4) Common Health Problems
Respiratory infections

Asthma

Otitis Media (ear infection)

Food allergies

The **most common health problems** at this age are **respiratory problems and home accidents**

Teaching the young child to cover their cough or sneeze with tissue or their upper arm/sleeve. Do not use their hands. Washing hands frequently especially after cough, before eating, after playing with other's toys (as at day care). And the adult needs to set the example for this behavior. However children in day care centers will be exposed to more infectious diseases, mostly viral, but some bacterial

Health Promotion and Health Protection (cont)

If child is ill, they may not be able to communicate pain but show restlessness and withdrawal. Take their temperature using newer types equipment such as heat sensors available at drug store

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