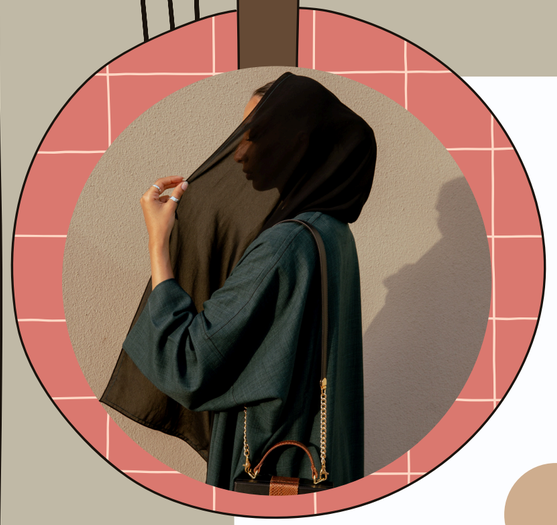
TOOLS FOR EXPLORING THE WORLD PHYSICAL, PERCEPTUAL, AND MOTOR DEVELOPMENT

Presented by : Group 3



CONTENTS

THE NEWBORN

THE NEWBORN'S REFLEXES

Reflexes

- unlearned responses that are triggered by a specific form of stimulation

- Reflexes are also important because they can be a useful way to determine whether the newborn’s nervous system is working properly

TABLE 3.1

Some Major Reflexes Found in Newborns

NAME	RESPONSE	AGE WHEN REFLEX DISAPPEARS	SIGNIFICANCE
Babinski	A baby's toes fan out when the sole of the foot is stroked from heel to toe	8–12 months	Perhaps a remnant of evolution
Blink	A baby's eyes close in response to bright light or loud noise	Permanent	Protects the eyes
Moro	A baby throws its arms out and then inward (as if embracing) in response to loud noise or when its head falls	6 months	May help a baby cling to its mother
Palmar	A baby grasps an object placed in the palm of its hand	3–4 months	Precursor to voluntary walking
Rooting	When a baby's cheek is stroked, it turns its head toward the stroking and opens its mouth	3–4 weeks (replaced with voluntary head turning)	Helps a baby find the nipple
Stepping	A baby who is held upright by an adult and is then moved forward begins to step rhythmically	2–3 months	Precursor to voluntary walking
Sucking	A baby sucks when an object is placed in its mouth	4 months (replaced with voluntary sucking)	Permits feeding

Newborn Reflexes

Presented by Stephanie Phipps

ASSESSING THE NEWBORN

Apgar Score provides a quick assessment of the newborn's status by focusing on the body systems needed to sustain life.

	Sign	2	1	0
A	Appearance (skin color)	Normal over entire body	Normal except extremities	Cyanotic or pale all over
P	Pulse	>100 bpm	<100 bpm	Absent
G	Grimace (reflex irritability)	Sneezes, coughs, or vigorous cry	Grimaces	No response
A	Activity (muscle tone)	Active	Arms and legs flexed	Absent
R	Respirations	Good, crying	Gasping, irregular	Absent

Each of the five vital signs receives a score of 0, 1, or 2, where 2 is the optimal score.

The five scores are summed, with a total score of 7 or more indicating that the baby is in good physical condition. A score of 4 to 6 means that the newborn needs special attention and care. A score of 3 or less signals a life-threatening situation requiring emergency medical care

ASSESSING THE NEWBORN

Neo-natal Behavioral Assessment Scale, or **NBAS**

The baby's performance is used to evaluate the functioning of these four systems:

- **Autonomic**: the baby's ability to control body functions such as breathing and temperature regulation
- **Motor**: the baby's ability to control body movements and activity level
- **State**: the baby's ability to maintain a state (e.g., staying alert or staying asleep)
- **Social**: the baby's ability to interact with people

THE NEWBORN'S STATES

- **Alert inactivity**—The baby is calm with eyes open and attentive; the baby seems to be deliberately inspecting the environment.
- **Waking activity**—The baby's eyes are open, but they seem unfocused; the arms or legs move in bursts of uncoordinated motion.
- **Crying**—The baby cries vigorously, usually accompanied by agitated but uncoordi-nated motion.
- **Sleeping**—The baby alternates between being still and breathing regularly to moving gently and breathing irregularly; eyes are closed throughout.

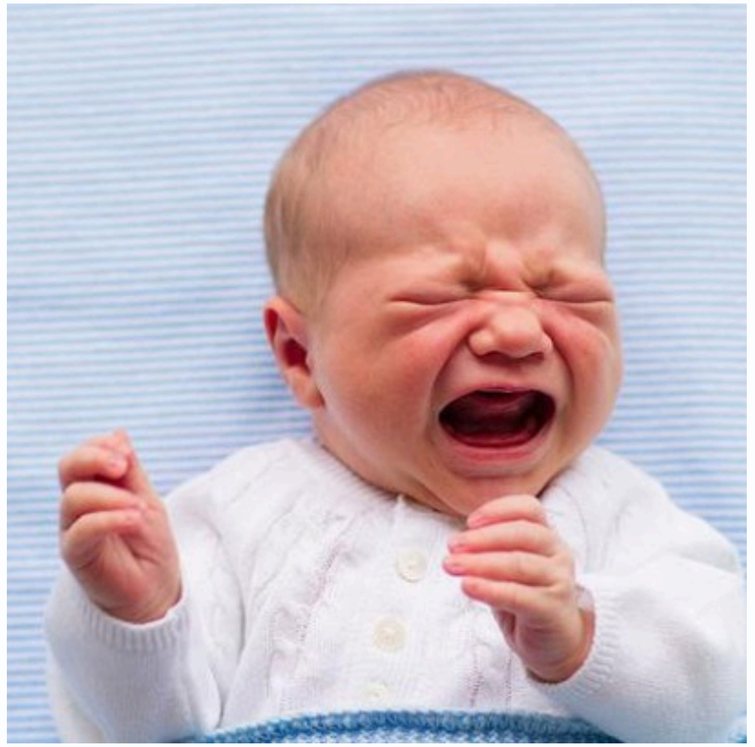

BabyLeague

CRYING

Basic Cry starts softly and gradually becomes more intense; it usually occurs when a baby is hungry or tired.

Mad Cry is a more intense version of a basic cry

Pain Cry begins with a sudden, long burst of crying followed by a long pause and gasping.



SWADDLING

- Another useful technique is swaddling, in which an infant is wrapped tightly in a blanket
- Swaddling provides warmth and tactile stimulation that usually works well to soothe a baby

SLEEPING

- Newborns typically go through a cycle of wakefulness and sleep about every four hours.
- By 3 or 4 months, many babies sleep for 5 to 6 hours straight
- by 6 months, many are sleeping for 10 to 12 hours at night,

CO-SLEEPING

Infants may sleep in a cradle placed next to their parents' bed or in a basket that's in their parents' bed. When they outgrow this arrangement, they sleep in the bed with their mother; depending on the culture, the father may sleep in the same bed, in another bed in the same room, in another room, or in another house altogether.

- Roughly half of newborns' sleep is **irregular** or **rapid-eye-movement (REM) sleep**, a time when the body is quite active.
- In **regular** or **nonREM sleep**, breathing, heart rate, and brain activity are steady and newborns lie quietly without the twitching associated with REM sleep.
- REM sleep becomes less frequent as infants grow: By the first birthday, REM sleep drops to about 33%, not far from the adult average of 20%

- By the toddler and preschool years, sleep routines are well established.
- Most 2-year-olds spend about 13 hours sleeping, compared to just under 11 hours for 6-year-olds.
- By age 4, most youngsters give up their afternoon nap and sleep longer at night to compensate.

SUDDEN INFANT DEATH SYNDROME (SIDS)

Sudden Infant Death Syndrome (SIDS), a healthy baby dies suddenly for no apparent reason.

Researchers have also identified several **risk factors associated with SIDS;**

- **Premature or Low Birth Weight**
- **Parents Smoke**
- **Baby sleeps on its stomach**
- **Overheated from too many blankets or clothing**

TEMPERAMENT

Temperament

- consistent style or pattern of behavior

- Thomas and Chess suggested that infants' behavior varied along nine temperamental dimensions. One dimension was activity, which referred to an infant's typical level of motor activity. A second was persistence, which referred to the amount of time an infant devoted to an activity, particularly when obstacles were present.

Mary K. Rothbart (2007) has devised an influential theory of temperament that includes three different dimensions:

- **Surgency/extroversion** refers to the extent to which a child is generally happy, active, and vocal and regularly seeks interesting stimulation.
- **Negative affect** refers to the extent to which a child is angry, fearful, frustrated, shy, and not easily soothed.
- **Effortful control** refers to the extent to which a child can focus attention, is not readily distracted, and can inhibit responses.

HEREDITARY AND ENVIRONMENTAL CONTRIBUTIONS TO TEMPERAMENT

- Twins are more alike in most aspects of temperament than are fraternal twins. For example, one identical twin is temperamentally active, then the other usually is, too.
- Positive emotionality youngsters who laugh often, seem to be generally happy, and express pleasure often seems to reflect environmental influences.

STABILITY OF TEMPERAMENT

- Newborns who cry under moderate stress tend, as 5-month-olds, to cry when they are placed in stressful situations
- An infant's temperament may determine the experiences that parents provide.

PHYSICAL DEVELOPMENT

LEARNING OBJECTIVES

- How do height and weight change from birth to 2 years of age?
- What nutrients do young children need? How are nutrients best provided?
- What are the consequences of malnutrition? How can it be treated?

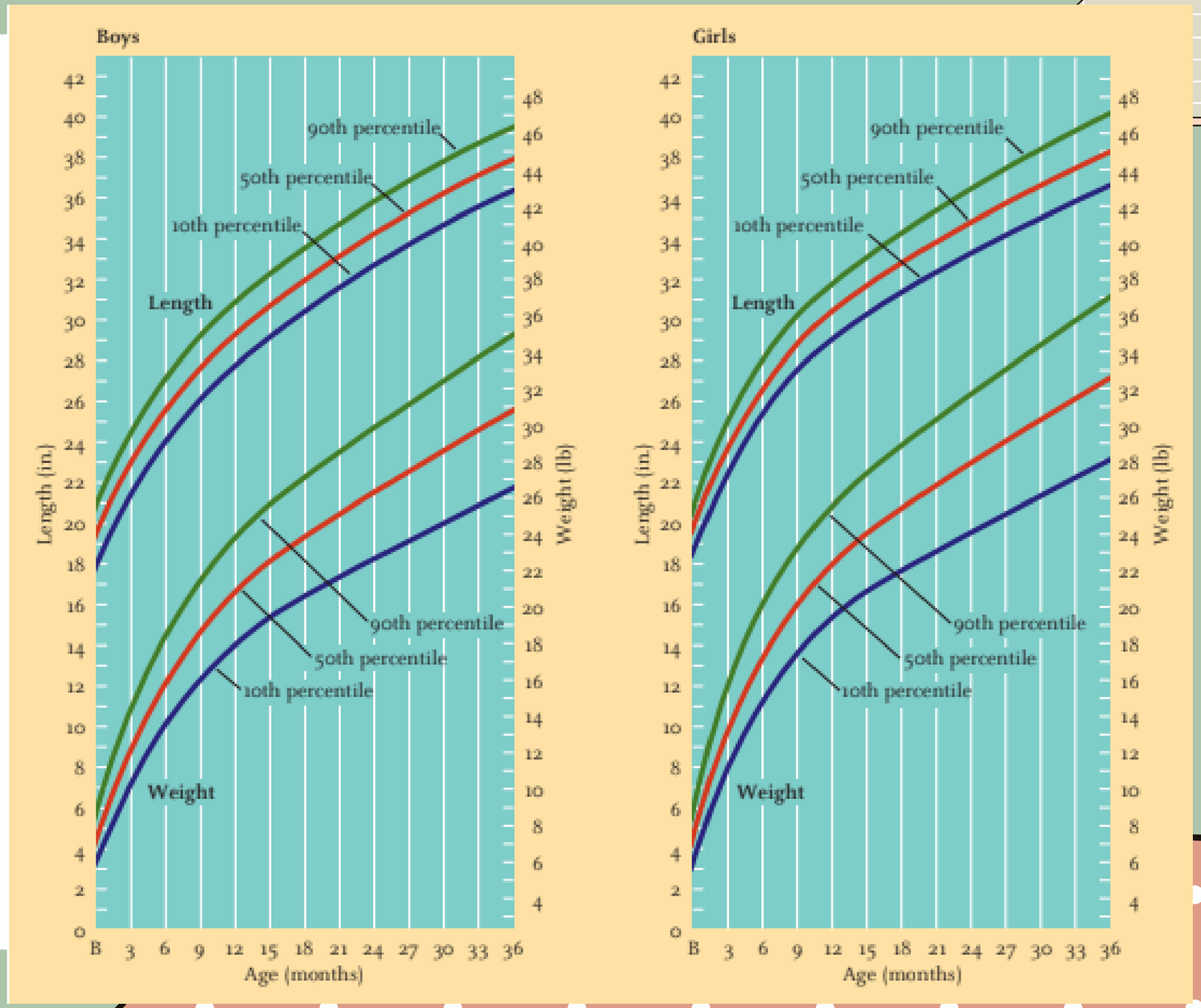
- What are nerve cells, and how are they organized in the brain?

GROWTH OF THE BABY

Growth is more rapid in infancy than during any other period after birth.Typically, infants double their birth weight by 3 months of age and triple it by their first birthday. This rate of growth is so rapid that if continued throughout childhood, a typical 10-year-old boy would be nearly as long as a jumbo jet and weigh almost as much (McCall, 1979).

- Boys and girls grow taller and heavier from birth to 3 years of age, but the range of normal heightsand weights is wide.

- two tall parents will have tall offspring, two short parents will have short offspring, and one tall parent and one short parent will have offspring of medium height.



“YOU ARE WHAT YOU EAT”: NUTRITION AND GROWTH

The food you eat has a direct impact on your body's ability to grow, develop, and function optimally. A balanced diet that provides the necessary nutrients can support optimal growth and development, while a diet that lacks essential nutrients can lead to negative outcomes.

BREAST FEEDING

Breastfeeding is a crucial component of an infant's growth and nutrition, providing numerous benefits for both the mother and the baby. Here are some of the key ways in which breastfeeding supports infant growth and nutrition

1. Nutrient-rich milk: Breast milk is a perfect blend of proteins, fats, carbohydrates, vitamins, and minerals that are essential for an infant's growth and development.
2. Immune system development: Breast milk contains antibodies that help to stimulate the infant's immune system, providing protection against infections and diseases.
3. Brain development: Breast milk contains fatty acids that are essential for brain development

NEVERTHELESS, SEVERAL METHODS CAN BE USED TO ENCOURAGE YOUNGSTERS TO EAT MORE HEALTHFULLY:

- Reward children when they eat healthy foods.

- Show young children photos of same-age, same-sex peers who look happy when eating the target food.

- Teach children about nutrition, emphasizing that different body functions require a diverse diet that include a variety of nutrients

- At meals, offer children new foods one at a time and in small amounts; encourage but don't force children to eat new foods; and when children reject a new food, continue to offer it over several meals so that it will become familiar.

MALNUTRITION

Malnutrition

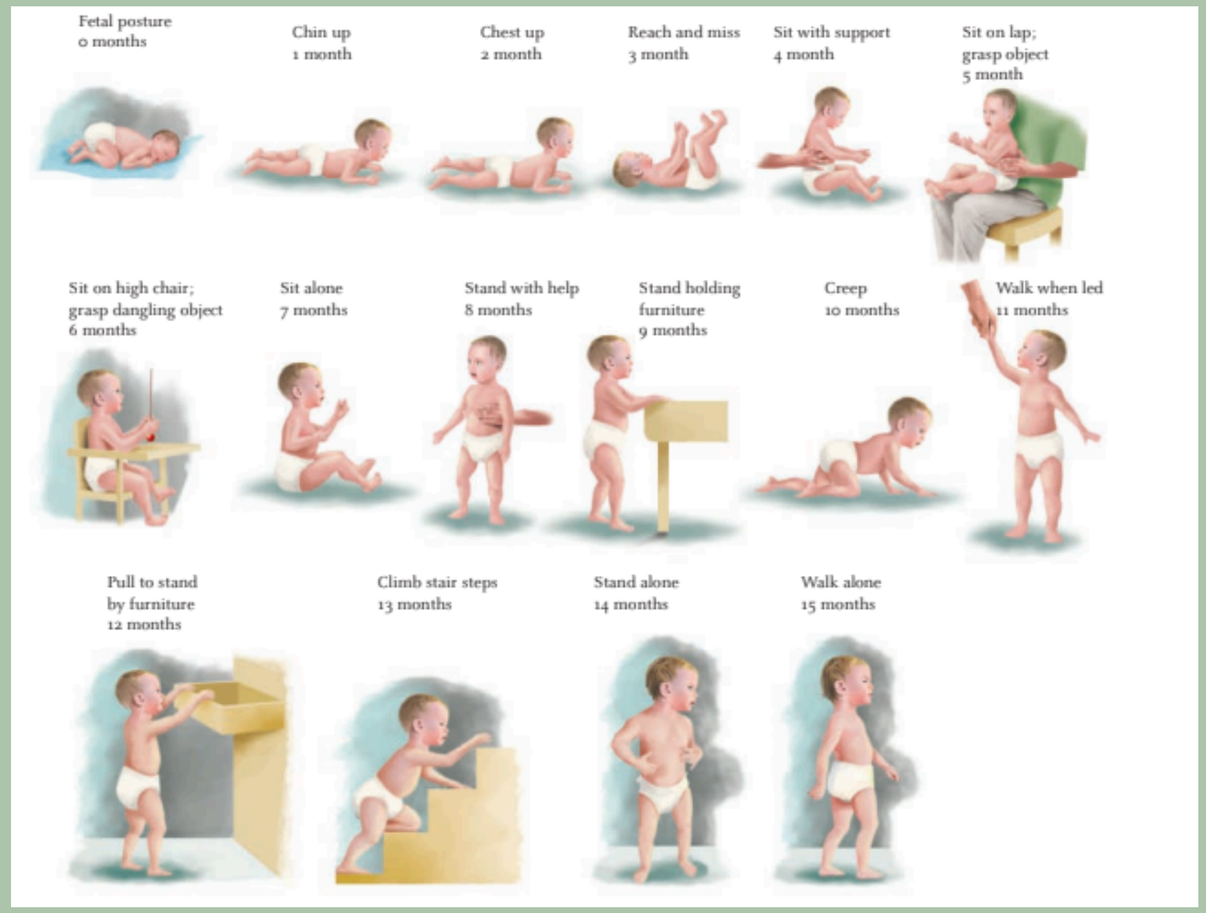
- Malnutrition in infants can have severe and long-lasting consequences, including stunted growth, impaired cognitive development, and increased risk of illness and mortality, making it a critical public health concern that requires early detection and intervention.

- malnutrition is a significant contributor to child mortality, with approximately 45% of deaths in children under five attributed to undernutrition.

MOVING AND GRASPING: EARLY MOTOR SKILLS

LOCOMOTION

Locomotion refers to the ability of an individual or an organism to move from one place to another. In the context of infants, locomotion refers to the development of motor skills that allow them to move around, such as crawling, sitting, standing, and walking. Locomotion is an important aspect of infant development, as it enables them to explore their environment, interact with others, and gain independence.

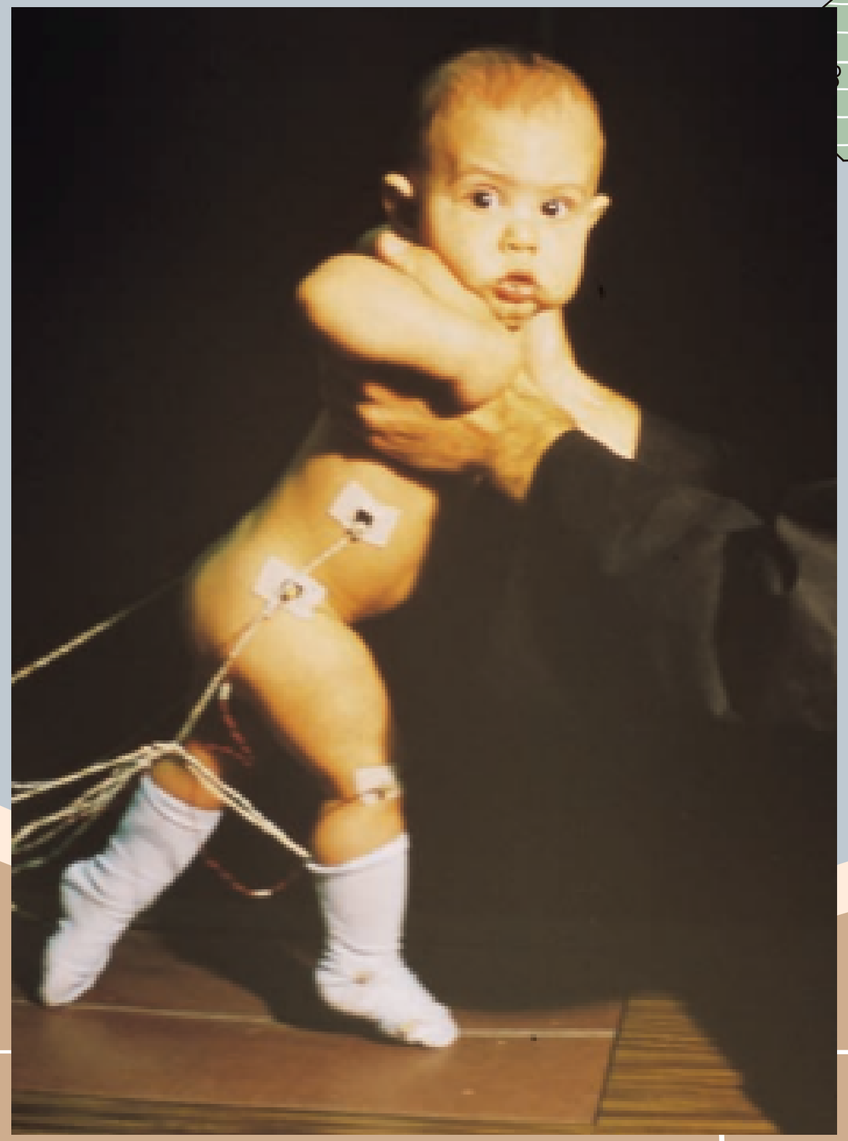


POSTURE AND BALANCE

- During this stage, babies begin to develop better control over their body position, allowing them to sit up, maintain good posture, and move their arms and legs in a more coordinated way. They also start to develop balance and coordination skills, such as sitting up without support, leaning forward to grab toys, and eventually standing with support.

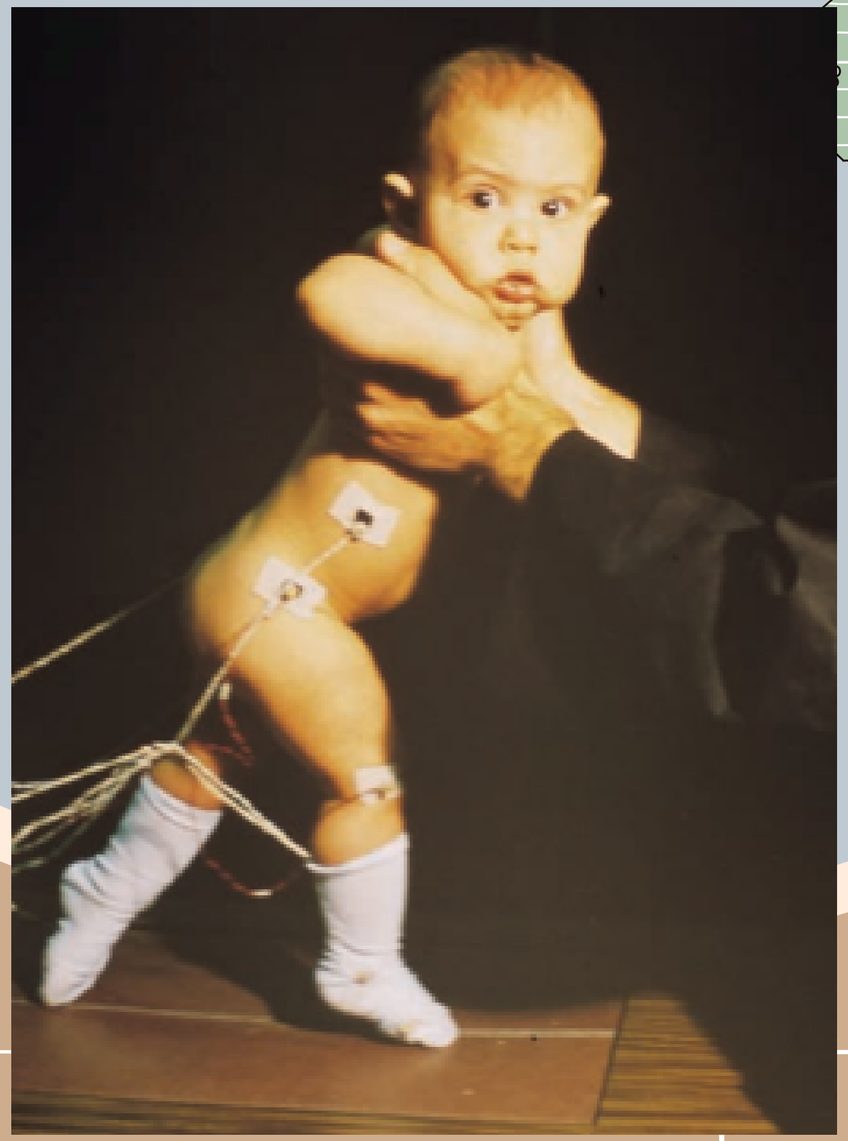
STEPPING

- babies begin to develop the ability to step with one foot while holding onto support, such as a couch or table. They may initially use their hands to support themselves, but eventually learn to balance and move their legs in a more coordinated way. This stage is an important precursor to walking, as babies are learning to control their legs and develop the necessary strength and balance to move independently."



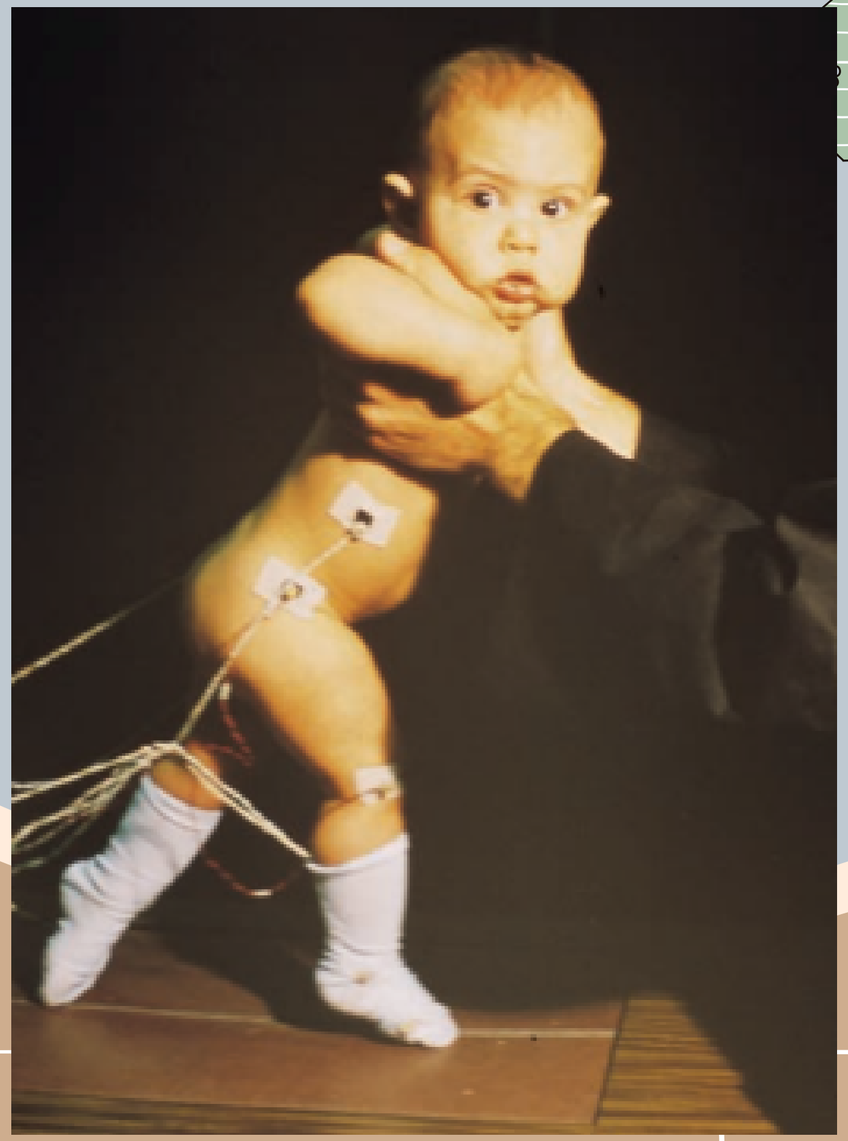
ENVIRONMENTAL CUES

Many infants learn to walk in the relative security of flat, uncluttered floors at home. Infants use cues in the environment to judge whether a surface is suitable for walking.



BEYOND WALKING

During this stage, babies continue to refine their walking skills, becoming more confident and independent as they explore their surroundings. They also begin to develop more complex motor skills, such as running, jumping, and climbing, which require greater coordination and balance.



FINE MOTOR SKILLS

refer to the ability to make precise and coordinated movements of small muscles, such as those in the hands, fingers, and wrists. In infants and young children, fine motor skills develop gradually, starting with simple actions like grasping and releasing objects, and progressing to more complex tasks like using utensils, writing, and manipulating small objects.

REACHING AND GRASPING

reaching and grasping

- babies develop the ability to extend their arms to reach for objects, and then use their hands to grasp and manipulate them. They may initially use their entire hand to grasp, but as they develop finger isolation, they can begin to use individual fingers to pick up small objects.

- This milestone is an important precursor to more advanced fine motor skills, such as using utensils, writing, and using small objects, and is a key indicator of cognitive development and problem-solving abilities.

COMING TO KNOW THE WORLD: PERCEPTION

LEARNING OBJECTIVES

- Are infants able to smell, taste, and experience pain?
- Can infants hear? How do they use sound to locate objects?
- How well can infants see? Can they see color and depth?
- How do infants coordinate information between different sensory modalities, such as between vision and hearing?

PERCEPTION

Humans have a variety of sensory organs, each of which
responsive to numerous forms of physical energy. For instance, the retina at the back of

•The eye is sensitive to certain forms of electromagnetic energy, and sight is the outcome.
•The eardrum senses changes in air pressure, which results in hearing. Cells on top of the
•The nasal tube detects the passage of airborne molecules, resulting in scent.

In each situation, the sense organ converts the physical stimulus into nerve impulses, which are transmitted to the brain.

Perception refers to how the brain receives, selects, alters, and organizes these impulses. This is the initial stage in the intricate process of gathering knowledge that finally leads to "knowing."

SMELL, TASTE, AND TOUCH

Newborns have a strong sense of smell, taste, and touch. They respond positively to pleasant smells like honey and negatively to unpleasant ones like rotten eggs. They can recognize familiar scents, such as their mother's breast or perfume. They also differentiate between sweet, salty, sour, and bitter tastes, preferring sweet and salty flavors. Newborns are highly sensitive to touch, showing reflexive movements when touched and reacting to painful stimuli, indicating they can perceive pain.

Look, for example, at the baby in the photo who is receiving an inoculation. She opened her mouth to cry, and although we can’t hear her, the sound of her cry is probably the unique pattern associated with pain.

A pain cry starts abruptly, is high pitched, and is hard to calm. The baby becomes restless, with a raised heart rate, and tries to move her hands, arms, and legs. These behaviors strongly suggest that babies feel pain. Perceptual abilities are crucial for newborns and young infants. Smell and touch enable them to identify their mothers, while smell and taste make it easier for them to learn how to eat. The early development of these senses equips babies to begin exploring and understanding the world around them.

HEARING

Newborns are sensitive to sound, reacting to noises like a cough by startling and moving. While adults generally hear better than infants, babies are particularly tuned to pitches within the human speech range. By 4 or 5 months, they can recognize their own names and distinguish between different speech sounds.

Infants also have an early sensitivity to music, preferring pleasant melodies and recognizing rhythmic patterns. By the middle of their first year, they respond to a wide range of auditory information.

SEEING

Infants spend much of their awake time looking around, sometimes scanning their environment and other times focusing on nearby objects. Although their vision isn't exactly like that of adults, it is closer to adult vision than a blurry, indistinct view.

The visual system, including the eyes, optic nerve, and brain, is fairly well developed at birth. Newborns can respond to light, track moving objects, and have a level of visual clarity known as visual acuity.

When measuring visual acuity in adults, you're typically asked to read lines of progressively smaller letters or numbers from a chart. To assess newborns' acuity, a similar approach is used, but without verbal instructions. Infants tend to look longer at patterned stimuli compared to plain ones.

Figure 3.8
Infants usually prefer looking at striped rather than smaller, plain patterns, a preference that can be used to measure an infant's visual acuity.

For example, if we were to show the two stimuli in Figure 3.8 to infants, most babies would look longer at the striped pattern than at the gray pattern.

As we make the lines narrower (along with the spaces between them), there comes a point at which the black and white stripes become so fine that they simply blend together and appear gray just like the other pattern.

Figure 3.9

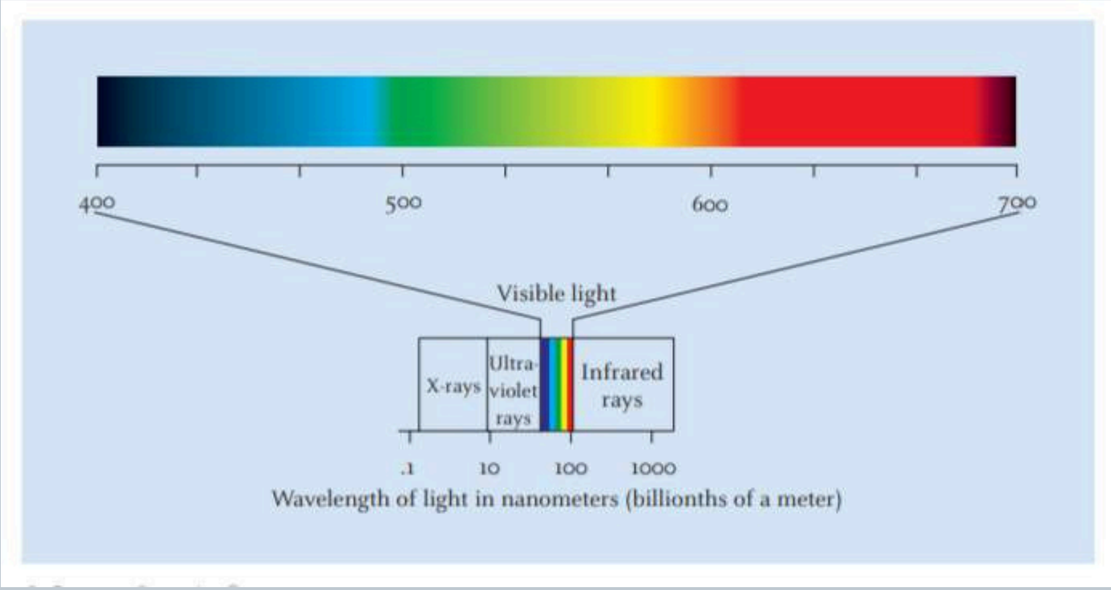
Visual acuity can be measured by determining the thinnest stripes that the infant prefers to view.

To estimate an infant's acuity, we pair the gray square with squares in which the widths of the stripes differ, like the ones in Figure 3.9: When infants look at the two stimuli equally, this indicates that they are no longer able to distinguish the stripes of the patterned stimulus.

By measuring the width of the stripes and their distance from an infant's eye, we can estimate acuity, with detection of thinner stripes indicating better acuity. Measurements of this sort indicate that newborns and 1-month-olds see at 20 feet what normal adults would see at 200 to 400 feet. But by the first birthday, an infant's acuity is essentially the same as that of an adult with normal vision.

COLOR

Infants begin to see in color during their first year. Color perception is based on the wavelength of light, with cones in the retina detecting different wavelengths. By about 3 months, infants can see a full range of colors and categorize them similarly to adults.



In Figure 3.10, light that we see as red has a relatively long wavelength, whereas violet (at the other end of the color spectrum) has a much shorter wavelength. Concentrated in the back of the eye along the retina are specialized neurons called cones.

DEPTH

© Mark Richards/PhotoEdit

Despite their mother's coaxing, infants avoid the "deep side" of the visual cliff, indicating that they perceive depth.

We perceive depth through perceptual processing since the retina only captures height and width. Depth perception helps us judge how near or far objects are. Research by Eleanor Gibson and Richard Walk used a visual cliff a glass covered platform with a checkerboard pattern to study depth perception in babies.

KENETIC CUE - IN WHICH MOTION IS USED TO ESTIMATE DEPTH.

VISUAL EXPANSION - Objects appear larger as they approach, helping us gauge distance.

MOTION PARALLAX - Nearby objects move faster across the visual field than distant ones.

RETINAL DISPARITY - The difference in the views of an object from each eye, which helps determine how close the object is.

PICTORIAL CUES - By 7months, infants use cues similar to those used in art to infer depth.

Linear perspective is one cue to depth: We interpret the railroad tracks that are close together as being more distant than the tracks that are far apart.

© Miles Muller/Shutterstock.com

LINEAR PERSPECTIVE - Parallel lines appear to converge at a point in the distance, helping gauge depth based on their spacing.

TEXTURE GRADIENT - Objects appear more detailed when close and more blurres when far away, aiding in depth perception.

Texture gradient is used to infer depth: We interpret the distinct flowers as being closer than the flowers with the coarse texture.

Jose Fuste Raga/Documentary/Corbis

PERCEIVING OBJECTS

Perceptual processes help us recognize objects despite seeing only parts of them. Newborns have limited object perception, but by 4 months, they use cues to identify objects. One key cue is motion elements moving together are seen as part of the same object. Infants also use color, texture, and aligned edges to group features and determine object unity.

For example, at the left of Figure 3.11, a pencil appears to be moving back and forth behind a colored square. If the square were removed, you would be surprised to see a pair of pencil stubs, as shown on the right side of the diagram. The common movement of the pencil's eraser and point leads us to believe that they're part of the same pencil.

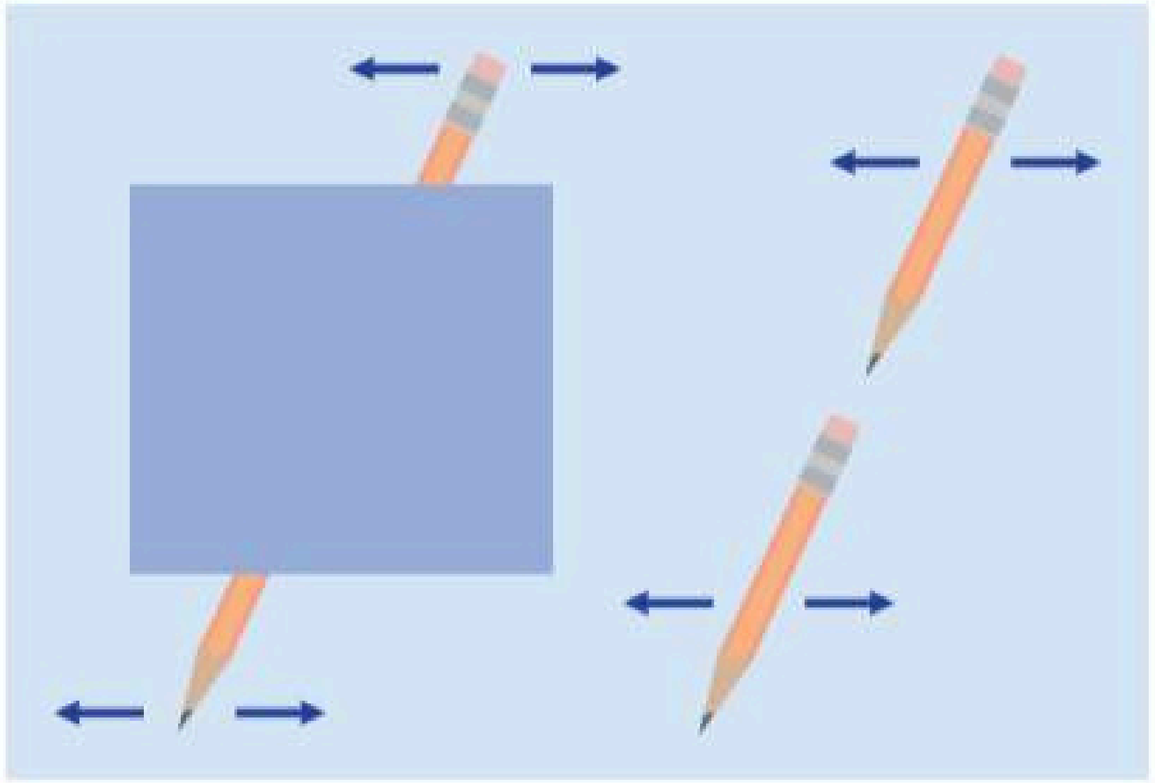
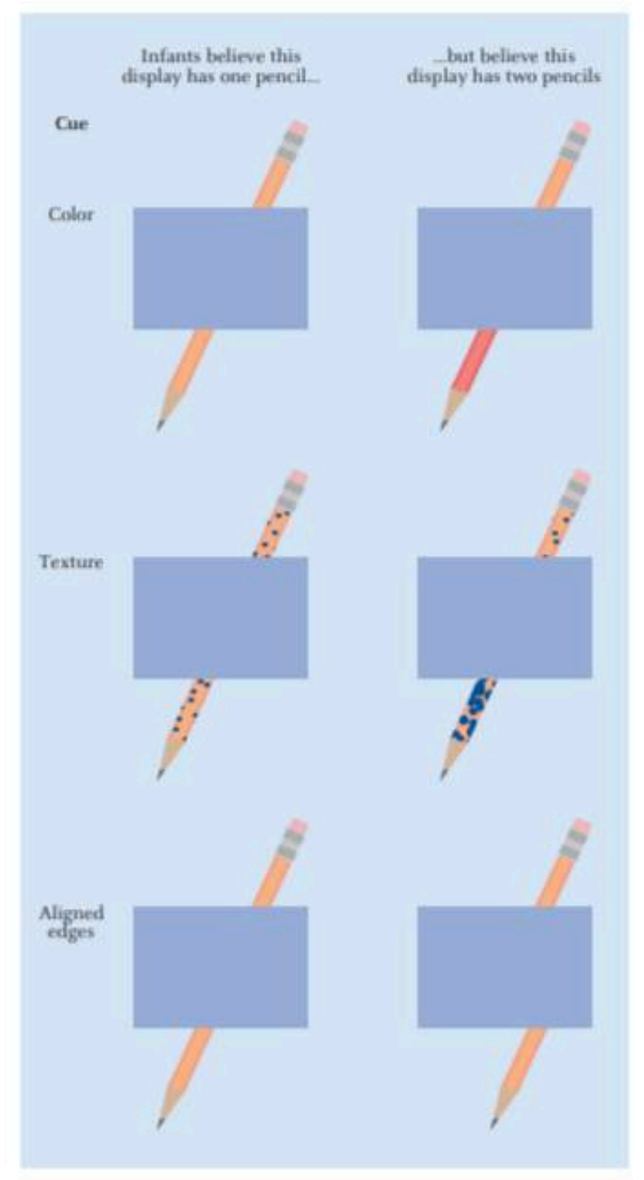


Figure 3.11
After infants have seen the pencil ends moving behind the square, they are surprised to see two pencils when the square is removed; this shows that babies use common motion as a way to determine what makes up an object.



Infants are surprised when an expected object, like a whole pencil, is different from what they anticipated, such as seeing two pencil stubs instead. This shows that infants use common motion to identify objects. They also rely on other cues like color, texture, and aligned edges to determine whether features belong to the same object.

PERCEIVING FACES

Babies are naturally drawn to human faces, showing early preferences for normal, upright, and attractive faces. Initially, they have a broad prototype for faces, including human and non-human. Over the first year, this prototype narrows to focus on familiar faces, particularly those from their own race. By 6 months, infants may struggle to recognize faces from unfamiliar races, but with exposure, they can learn to recognize them.

INTEGRATING SENSORY INFORMATION

Infants experience the world through multisensory events, easily linking information across different senses, and are particularly attuned to information presented simultaneously to multiple senses, aiding their early perception and learning.

BECOMING SELF-AWARE

LEARNING OBJECTIVES

- When do children begin to realize that they exist?
- What are toddlers' and preschoolers' self-concepts like?
- When do preschool children begin to acquire a theory of mind?

ORIGINS OF SELF-CONCEPT

- 18 months of age do babies recognize themselves in the mirror, which is an important step in becoming self-aware

When Ximena brushes her teeth, she puts her 20-month-old son, Christof, in an infant seat facing the bathroom mirror. She's been doing this for months, and Christof enjoys looking at the images in the mirror. Lately, he seems to pay special attention to his own reflection. Ximena thinks that sometimes Christof deliberately frowns or laughs just to see what he looks like. Is this possible, Ximena wonders, or is her imagination simply running wild?

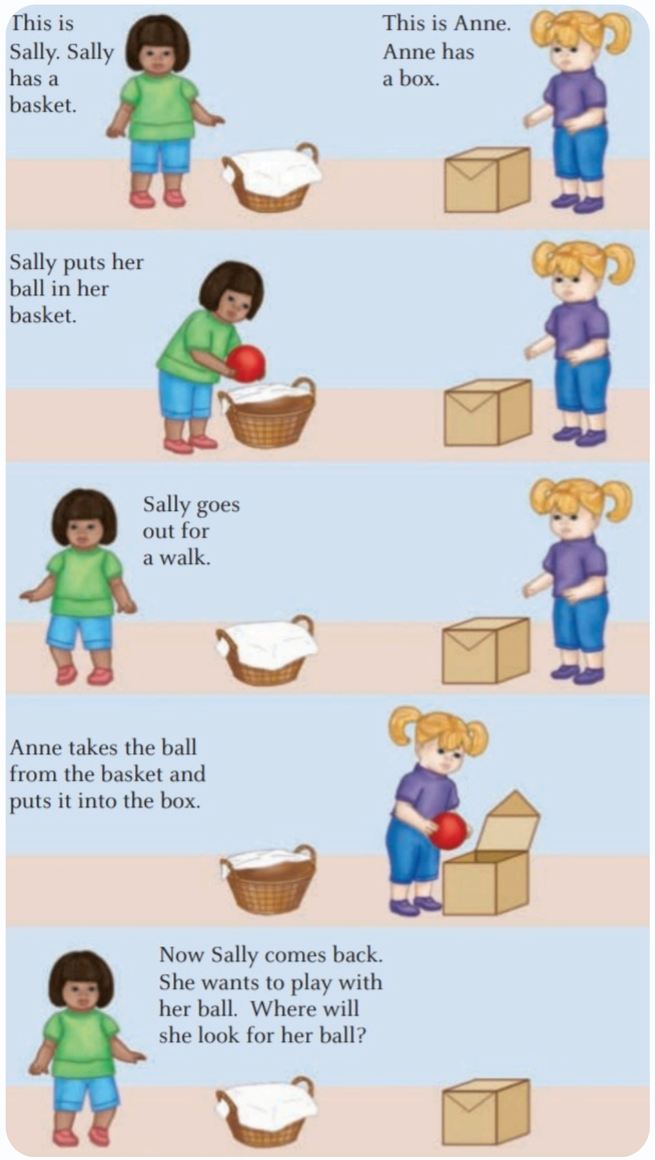
THEORY OF MIND

ideas about connections between thoughts, beliefs, intentions, and behavior that create an intuitive understanding of the link between mind and behavior

In a false-belief task, most 3-year-olds say that Sally will look for the ball in the box, showing that they do not understand how people can act on their beliefs (where the ball is) even when those beliefs are wrong.

THEORY OF MIND

- As youngsters gain more insights into themselves as thinking beings, they begin to realize that people have thoughts, beliefs, and intentions. They also understand that thoughts, beliefs, and intentions often cause people to behave as they do. Amazingly, even infants understand that people's behavior is often intentional-designed to achieve a goal.



REAL PEOPLE Applying Human Development

"Seeing Is Believing..." for 3-Year-Olds

•Preschoolers gradually recognize that people's behavior is sometimes guided by mistaken beliefs. We once witnessed an episode at a day-care center that documented this growing understanding

THEORY OF MIND IN CHILDREN WITH AUTISM

- Autism is the most serious of a family of disorders known as autism spectrum disorders (ASD).

- Individuals with ASD acquire language later than usual, and their speech often echoes what others say to them

QUESTIONS

1. What are some of the major reflexes that can be found in newborns?
2. How do newborns sensory abilities influence their early understanding and interaction with the world?
3. What is the most common consequence of malnutrition?
4. When do children begin to realize that they exist?

Thank You

Presented by : Samira Hadid