

DEP 4053

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INFANT COGNITIVE DEVELOPMENT

METHODS OF STUDYING INFANT COGNITION

- For a long time, thought cognitive abilities at birth & infancy were minimal:
 - partly due to lack of appropriate methods
 - can't ask infant what she remembers or knows must be clever
- How can we possibly know what a baby perceives and remembers when she can't tell us about it?

DEVELOPMENT OF MEMORY

- **Memory:**
- When you are asking the question what is the difference between adults, infants or young children's memory, the best answer would be?

MEMORY DEVELOPMENT IN INFANCY

- During infancy there are changes in both **how long infants can remember** information and **what they can remember**.

MEMORY IN THE FIRST HALF YEAR

Recognition Memory

- **Recognition Memory:**
- Decasper & Spence (1986): "The Cat in the Hat Study"
- Joseph Fagen (1974): habituation with paired comparison procedure.
 - 5-6 mos olds were shown black and white photos of human faces for a few minutes until habituation was reached.
 - they were given a recognition memory test via paired comparison procedure after delays of **3 hours** to **14 days**.
 - Results

Cued Recall

Rovee-Collier (1985, 1989, 1993) Conjugate reinforcement procedure

- Baseline measure: ribbon connected to infant's ankle to an empty mobile stand – spontaneous kicking.
- 2 training sessions with ribbon connected to ankle and mobile.
- Immediate retention test: 3 minutes after training session.
- Long-term memory: 1 to 42 day delay
 - Compare number of kicks _____
- 2-4 month old infants have demonstrated memory for this task after delays of _____.
- Rovee-Collier and associates have demonstrated that the duration of LTM increases dramatically in the first year of life.
- 6-12 month olds learn to press a lever to move a train around a circular track.

Early Memories Are Highly Context Dependent **Rovee-Collier (1985)**

- 3 month old infants
- Cribs were lined w/ a distinctive colorful pattern
- After 7-day delay
 - infants who had same crib liners _____
 - those infants whose crib liners were change _____
- Why is young infant memory so context dependent?

Newborn Imitation

- Babies sometimes mimic gestures made by others who are within sight.

Reaching Studies

- Show an infant a toy that is out of her reach.
- Turn off the lights.
- Results:

MEMORY IN THE SECOND HALF YEAR

- **Deferred imitation** has been used to study LTM
 - Both the complexity of actions baby can remember and the length of time they can remember increases with age.

INFORMATION PROCESSING APPROACH TO COGNITIVE DEVELOPMENT

- **What is responsible for cognitive development?**

Types of skills/processes that develop/improve:

- ↑ use of strategies with age because:
 - direct teaching in school
 - indirect learning
 - Metamemory
 - general knowledge of the world
- ↑ in memory span or working memory:

INFANTILE AMNESIA

Hypotheses for Why This Occurs

- **Recovery Failure**: Early memories are _____
- **Language development and Sense of Self**
- **Brain Development** - immature CNS results in inability to lay down memories that will be retrievable years later.
- **Events can be stored in two different kinds of memory systems:**
 - **implicit memory system**
 - **implicit memory test:**
 - **explicit memory system**

PIAGET'S THEORY OF MIND: STAGES OF DEVELOPMENT

- Each stage is _____ different from others
- Ages for stage transitions are _____
- Infants are _____ participants in their own development.
- **Interactionist** position on cognitive development.

SENSORY MOTOR STAGE (0-2yrs)

- Piaget called infancy the **sensorimotor period**, because he viewed the child's awareness of the world as limited to what he or she knows through sensory awareness and motor skills.
- **What Changes With Development?**
 - Piaget believed a child's _____ (organized ways of making sense of experience) change with age.
 - At first, schemes are motor action patterns and later move to a mental level.

Sensorimotor Stages

- Piaget divided the sensorimotor period into **6 stages**.
 - Read text and know for exam 1.
- **Stage 1: Reflexes**
- **Stage 2 Primary Circular Reactions** (1-4 months)
- **Stage 3 Secondary Circular Reactions** (4-8 months)
- **Stage 4 Coordination of Schemes** (8-12 months)
- **Stage 5 Tertiary Circular Reactions** (12-18 months)
- **Stage 6 Beginnings of Representational Thought** (18-24 months)

PIAGET'S VIEW OF THE DEVELOPMENT OF OBJECT PERMANENCE

- Piaget argued that **newborns have no concept of objects**, but that this concept must be actively constructed during the first two years of life.
- **Object permanence:**
 - Requires the internal representation of objects.
- When a child has a mature understanding of object permanence she is ready to move on to next stage in development.

6 STAGES OF OBJECT PERMANENCE

- **Stages 1 & 2** (birth - 4 mos) track moving objects with their eyes & reach for the objects if they are close enough.
 - What happens if object moves behind something else?
 - What about if it is only partially hidden?
- **Stage 3:** (4-8 mos) search for partly hidden object
- **Stage 4:** (8-12 mos) search in last place found for completely concealed object.
 - **2 Explanations for A not B error:**

6 STAGES OF OBJECT PERMANENCE

- **Stage 5:** (12-18 mos) search where object _____.
- **Stage 6:** (18-24 mos) child has a mature understanding of object permanence.

RECENT RESEARCH ON INFANTS' UNDERSTANDING OF OBJECTS

- **Reaching Studies:** (e.g., Hood & Willatts, 1986).
- **The Perception of Partially Hidden Objects**
 - **Kellman and Spelke (1983)**
- **Impossible Event Studies**
 - **Baillargeon and associates (1985, 1987, 1991)**

Occlusion: Perceiving an Object as Continuing Behind an Occluder

- **Kellman & Spelke (1983):** They habituated **4 month olds** to a rod moving back and forth behind a block.
 - They then presented either **2 separate rods** or a **single longer rod**.
 - Dishabituation occurred to the _____.
 - Perceived the partial occluded moving rod as _____ behind the block.

CRITICISMS OF PIAGET'S THEORY

- **Same sequence** of development, but milestones reached at _____.
- Piaget generally credited infants with a skill only when it was well developed and could be tested in a variety of situations.
- In contrast, many of his critics search for the _____ evidence of the emergence of a skill.
- Tasks used by Piaget may not _____.
- Other researchers have found less consistency in babies' achievements.
 - An infant might be at sensorimotor stage 4 on one task, but at stage 3 or 5 on others.
 - Piaget himself was aware of this.

CAN INFANTS ADD AND SUBTRACT?

- Show the baby the same array many times.
- Show the array with an element missing (shown).
 - or one added

INFANT INTELLIGENCE TESTS

- Most infant tests consist of _____.
- Infant test scores are called _____ rather than IQs because they do not tap the same intelligence dimensions measured at older ages.
- The **Bayley Scales of Infant Development** consist of (1) the Mental Scale, which includes items such as turning to a sound and looking for a fallen object; and (2) the Motor Scale, which assesses gross and fine motor skills.

Predicting Later Performance from Infant Tests

- Infant IQ tests are _____ of later intelligence.
- The _____ sequence and _____ predict IQ more effectively than traditional infant measures.