The Development of Infant Memory

PSY 415
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Food for thought

• Can infants form memories?
• What do infant memories look like?
• If infants can form memories, why don’t adults remember things that happened to them when they were infants?

Evidence for Early Memories

• Preferences for visual novelty: looking time (1-4 days of age).
• Preferences for mother’s voice: operant sucking (3 days of age).
• Preferences for mother’s smell: head turning (6 days of age).
• Classical conditioning: eyeblink (10-30 days of age).
Later Infant Learning

• Conjugate reinforcement paradigm

Memory

• Explicit vs. implicit memory
  – Explicit memory
    • Able to talk about/describe what you remember
    • Characteristics of explicit memory
      – Fast
      – Flexible
      – Fallible
  – Implicit Memory
    • Not explicit

How do you study explicit memory in nonverbal infants?

• Imitation tasks
• Infants can remember some aspects of events as early as 6 months of age
• Infants remember events for long periods of time only at the end of the first year of life
  – 9 month olds remember for 1 month
  – 10 month-olds may remember for up to 6 months
• Changes in this ability are related to changes in brain development
Infants exhibit high individual variability on the deferred imitations tasks:

- About 50% of nine-month-olds recall events after 1 month (with 3 or more exposures)
- ERPs show that the same infants recognize pictures of the props used to enact these events
- Robust ordered recall by 20 months of age in 78% to 100% of infants after 1-month delay

Later Infant Learning continued

- Deferred imitation paradigm

Searching tasks

- AB error
Searching tasks

• AB error

A

B
What does the AB task involve?

• Memory for location – originally thought to be a memory task
• Systematic changes in the length of delay required to get the AB error.
• Implicates areas other than memory areas
  – Inhibition
• Experience has an effect
  – Infants who walk are less likely to make the AB error
  – Healthy premature infants outperform term infants of the same conceptual age

Infantile Amnesia

• “What I have in mind is the peculiar amnesia which, in the case of most people, though by no means all, hides the earliest beginnings of their childhood up to their sixth or eighth year.” (Freud).
• General inability of people to remember specific events from the early years of their lives.

• Adults’ first recollections: 3 ½ years of age
• Passage of time & inability to form durable memory traces seem can’t account for IA
Infantile Amnesia

• Plausible Explanations:
  – Maturation of the brain structures required for explicit memory (i.e., prefrontal cortex)
  – Social influences: once children are capable of producing simple sentence (around 3 years of age) they are often asked to verbalize their experiences
  – Encoding – Retrieval mismatches

Theories of Infantile Amnesia

• Repression (Freud)
• Neurological immaturity
• Lack of memory abilities
  – Deferred imitation
  – Mobile conjugate reinforcement paradigm

Theories of Infantile Amnesia
continued

• Lack of ability to tell stories (Pillemer & White, 1989)
  – Memory is 2 functionally independent systems
    • Nonverbal, image-based system
    • Socially accessible system
• Lack of sense of self (Howe & Courage, 1993)
• Lack of a theory of mind