Infancy

“A bundle of reflexes wired for sound.”
- Sucking and Rooting
- Reflexive finger grasp and Moro response
- Swimming reflex
- Walking reflex
- Reflexes drop out as cerebrum of the brain takes over control of lower centers

Sleep Patterns

Sleep moves to an adult-like night-day schedule during the first year.
Sleep needs decline from 18 to 12 hours a day by age 2.
More Americans are co-sleeping.

Childhood Sleep Changes

Sleep moves to an adult-like night-day schedule during the first year.
Sleep needs decline from 18 to 12 hours a day by age 2.
More Americans are co-sleeping.

SIDS

- Incidence between 2 and 3 deaths per 1,000 births.
- Children more vulnerable between 2-5 months.
- Recommendation to place infants on their backs has reduced SIDS by 50%.
- Seems to be related to inadequacy of the respiratory system
- Correlated with co-sleeping

Biobehavioral Hypothesis (Lewis Lipsitt, Current Directions, 2003)
- Infant’s suffocate because of their inability or failure to overcome respiratory challenge
- Transition from predominantly reflexive to learned behavior becomes a problem if child has a weak or rapidly waning respiratory defense reflex.
- Suggests that infants be given deliberate practice in resisting respiratory occlusion so that during the transition when the respiratory defense reflex wanes, they are more likely to engage in behaviors aimed at removing the offending object.

Classical and Operant Conditioning

Conditioned Learning demonstrated:
- If children react in a new way, that is the result of experience, and the behavior is permanent.

Classical:
- CS—UCS — UCR
- Mother - Food - Contentment

Operant:
- S – R – Reinf
- Response - Reinforcement
- Sucking - See visual stimulus

Conclusion:
- Both classical and operant conditioning possible but in Classical the response must be one with survival value.
Habituation: Can you recognize the bald guy?

Sequence:
- Child initially interested in stimulus
- Upon repeated presentation, interest declines (habituation)
- Attention reestablished if novel stimulus or one that has changed in a recognizable way (dishabituation).

Interesting aside:
- Fast habituators have higher IQ scores in childhood.

Using Habituation to Study Infant Memory & Knowledge

Habituation: is a means by which we can test the infants ability:
- to discriminate
- to remember
- to comprehend the environment.

Memory

Prenatal Memory?
Decasper and Spence
- Mothers read "Cat in the Hat" to their infants the last six weeks of pregnancy
- After birth infants responded by sucking more to play a recording of mother reading the story

Rovee-Collier’s work with 2 to 3 month infants who learned to make mobile move by kicking legs.
- 2 month olds remembered the relationship over 3 days and 3 month infants remembered over a week in time but context has to be same as original learning for 3 to 6 month old infants.
- Tape

Infant Learning and Memory

In train task, infants learned to press lever which caused a train to move around a track.

Learned Control

Watson & Ramey study of infant control at 8 weeks
- Experimental - Learned to move heads to turn mobile.
- Control - Mobile turned irrespective of their behavior

Results – Experimental group learned to control mobile and acted happy and excited when doing so.
- The importance of a responsive environment. Infants who learned to control environment, more responsive to it.
- Learned Helplessness- infants who were first given an unresponsive environment had great difficulty understanding connection when it became responsive.
Imitation

Can infants imitate? Meltzoff studies
• Not a one to one relation with adult stimulus, large numbers needed
• Only partial imitations, never a new response
• No evidence imitations are different from other responses
• Imitations drop out after early infancy
  Imitation of novel responses at 9 months
  Deferred imitation at 14 months
  Tape

Perception

Empiricists:
• Perceptual experiences are learned
Nativists:
• Perceptual experiences are evident at birth or before learning begins
Audition:
• Fairly good in newborns, about that of an adult with a head cold
• Sensitive to sounds within human voice range
• Can localize the direction of sounds at birth
• Can distinguish language phonemes
• Can recognize mother’s voice in first week after birth, and prefers mother’s voice to other voices

Infant Sensory Capabilities

Taste and Smell
• Prefer sweet over sour, bitter, or salty
• Avoid unpleasant odors
• Recognizes mother by smell (if breast-fed) in first week

Touch, Temperature, and Pain
• Touch enhances development, allows exploration of environment
• Sensitive to temperature
• Sensitive to pain – even at 1 day

Vision
• Least mature sense
• Poor acuity, see as well as adults by 6 months

Perceptual and Cognitive Development

Abilities of infants underestimated because of limited motor control
The use of visual preferences and Corneal reflection gave us a better insight into what was happening

Vision:
• Acuity, 20/600 at birth, improves to 20/20 by 6 months.
• Accommodation, tends to be poor at birth and locked in at about 8 1/2 inches, but improves drastically by the 2nd month.

Infant Visual Perception

Visual scanning, tends to be limited to single angles or external features of objects at birth but improves rapidly.
Infant Visual Preferences

- Visual preferences based on contrast, and patterns over color

Face Perception

- Faces are interesting even to newborns because of the richness in contrast, complexity, curvature and movement but they do not recognize them as "faces."
- At 2 months do not discriminate between static drawings of faces and scrambled face.
- At 3 months, normal faces preferred. Prefers photos of mom over strangers. Shows preference for attractive faces.
- By 5-7 months, preference for familiar faces takes place quickly and memory for them is quite good.
- By last quarter of first year, child can interpret emotional expressions of their mothers.

Perceptual world of Infants

Can infants see color?
Bornstein, 4 month infants

<table>
<thead>
<tr>
<th>Blue</th>
<th>BLUE/Green</th>
<th>GREEN/blue</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>450</td>
<td>480</td>
<td>510</td>
<td></td>
</tr>
</tbody>
</table>

Test Habituation Test

INFANT SENSORY CAPABILITIES

Vision
- Preference for high contrast patterns
- Preference for patterned stimulation
- Preference for stimuli that move
- Discrimination of colors good by 2-3 months

Visual Perception Objects

- Form Perception (2 months – 1 year)
  - More sensitive to movement
  - Use subjective contours for form perception
  - Begins to perceive objects as whole forms when partially hidden
Perceptual world of Infants

Is their perceptual world similar to ours?

- Kanizsa figures, by 3-4 months

Testing Infants’ Ability to Perceive Object Unity

Ability to Perceive an Object’s Path of Movement

Sure mom.

Development of Depth Perception

Gibson and Walk and the visual cliff.

- Infants with crawling experience 6½ mos. more likely to avoid drop.
- Problem of perception vs. fear

Campos

- 2-3 month old infants show heart deceleration. Interest?
- 7 month old shows acceleration. Fear?

Pictorial cues. Yonas, 7 month old infants.

- Kinetic cues. Looming study of Yonas, 3 week old infants.
Visual Perception in Infancy

Perception of Three-Dimensional Space
- Size Constancy
  - Present at birth, not fully developed until 10 – 11 YEARS old

Our visual system is organized to give us “true” perceptions.

Size Constancy
Size Constancy
Child’s ability to recognize the identity of objects.

McKensie, Tootell, and Day, 6 month old infants.

Intermodal Perception
The ability to recognize by one sensory modality an object that is familiar through another.
- Meltzoff’s bumpy pacifier, 1 month.

Intermodal Perception in the First Half Year
Development of Intermodal perception
- 1-month-olds show weak oral-to-visual perception
- Meltzoff’s pacifier
- 4 months – intermodal matching between vision and hearing
  - Spelke’s Toy jumping kangaroo, 4 months
  - Bahrick’s synchronous voices and asynchronous voices, 4 months
  - Walker and Andrew’s receding train sound for 5 months olds.
- 4-6 months – match tactile and visual sensations

Intermodal Perception
The development of Intermodal Perception
- Intersensory redundancy hypothesis
  - At birth – perception is amodal
  - Objects provide stimulation for multiple sensory modalities and provides an integrated experience of an object for infants.
  - Amodal detection of a stimulus aids in development and differentiation of individual senses. An infant attends to, and interacts with objects they begin to refine the individual sensory modalities.

The infant advances from amodal state in which the various sensory inputs from an object received as a whole to an intermodal state in which the infant can separate sight, touch, sound, etc. Perception becomes differentiated.
What is the chromosomal defect that underlies Down syndrome?

- an XYY genotype in the twenty-third pair
- just twenty-two chromosomal pairs
- an XXX genotype in the twenty-third pair
- a third chromosome in the twenty-first pair

As fraternal twins mature from age three to age fifteen, their IQ correlations tend to:

- remain consistently near zero.
- remain stable and very high.
- increase.
- decrease.

Reasoning by verbal analogy: ULNAR GRASP is to PINCHER GRASP as is to ________________.

- a. SUCCESS :: FAILURE
- b. MASCULINE :: FEMININE
- c. GROUP :: INDIVIDUAL
- d. PRIMITIVE :: SKILLFUL

The illness that is the result of a diet which supplies sufficient calories but little if any protein is:

- a. anemia.
- b. marasmus.
- c. kwashiorkor
- d. anorexia nervosa.

Early rearing of animals in enriched environments:

- changes the brain in unpredictable ways.
- has no discernible effects on the brain.
- causes brain tissues to atrophy and degenerate.
- improves the size and connectedness of the brain.

Infants in Kellman and Spelke's (1983) habituation experiment viewed a rod that was covered by a block. The results showed that:

- a. motion cues helped the identification of the whole form.
- b. boys' form perception is superior to that of girls.
- c. form perception is innate and highly accurate.
- d. subjective contours are invisible to infants.

Children's short attention spans are partly understood in terms of __________ at their age.

- a. lack of myelinization in attentional brain areas such as the frontal cortex
- b. the immaturity of the cerebral cortex
- c. verbal dominance of the left brain over the right brain
- d. developmental delays resulting from childhood illnesses