Research with Infants
PSY 415

General Issues
- Sampling
  - Time-consuming
  - Expensive
  - Not representative?
- Attrition
  - Fussiness
  - Drowsiness/sleep

Other Challenges
- Inability to communicate
- Time of testing
- Behavioral state
- Meaning of infant responses
- Age comparisons
Common Measures of Infant Abilities

- Behaviors that require minimal motoric demands
- Can be produced by even very young infants
- Can be accurately measured
  - Behavioral
    - Sucking
    - Visual Fixation
    - Kicking
  - Physiological Responses
    - Heart Rate
    - EEG/ERP

High Amplitude Sucking Paradigm

- Sucking is reflexive response by infants
- Can be taught to vary their rate and intensity of sucking
- DeKasper and colleagues
- Bronstein effect

Visual Fixations/Preferences – Fantz
Visual Preferences

Operant (or instrumental conditioning)
Used to teach infants to produce a particular response to obtain a reward
Rovee-Collier
Memory

Foot-kick Paradigm

Operant (or instrumental conditioning)
Used to teach infants to produce a particular response to obtain a reward
Rovee-Collier
Memory

Object Permanence

Piaget

Piaget studied manual search—this may underestimate competence:
- manual abilities may be poor
- may not understand how to search (but understand objects)
- motivational factors
Renée Baillargeon

- Looking time as a measure of reactions to "possible" and "impossible" events
- **Violation-of-expectation:**
  - possible event is consistent with the belief or expectation examined in the experiment
  - impossible event violates this belief or expectation
- If the infant possesses the belief, they should find the impossible event novel or surprising and therefore look longer at the impossible than at the possible event.

Habituation Events

![Habituation Events](image)

Test Events

<table>
<thead>
<tr>
<th>Possible Event</th>
<th>Impossible Event</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Possible Event" /></td>
<td><img src="image" alt="Impossible Event" /></td>
</tr>
</tbody>
</table>
Head Turning

Development of Depth Perception
- Gibson & Walk (1960)
- 6 months olds – distressed over shallow end

Habituation Procedures
- Habituation: decline in orienting response as initially novel stimulus becomes familiar.
- Dishabituation: recovery of orienting response when an habituated stimulus changes.
Habituation Procedures

- Used to assess cognitive competence
  - Declining interest indicates learning
  - Novelty responsiveness indicates discrimination of new versus familiar
- Older infants habituate faster than younger infants
- Infants of same age require more time to encode complex stimuli than simple stimuli
Conditioned Headturn Procedure

- Baby is trained to turn head in response to a change in the background stimulus.
- If baby turns head in the correct direction he/she is reinforced (dancing bear in box).
- The proportion of correct head turns is measured.
- Once conditioned, the infant’s response to different stimulus can be tested and can be used to test detection, discrimination, and categorization.

Psychophysiological Methods

- Heart Rate
  - The rate at which the heart beats (beats per minute) changes as a function of stimulation.
    - Increased HR to fearful stimuli (arousing/defensive response).
    - Decreased HR to interesting stimuli (orienting response).
  - Used in studies of information processing infancy.
    - Decreased HR to an interesting stimulus (e.g., a face, speech sound, taste) is interpreted as evidence that the infant finds the stimulus interesting.

Electrical Activity in Brain

- Electroencephalogram
- Neonates – low voltage, undifferentiated, irregular brain activity.
- Become more cyclical over first year.
Hemispheric Asymmetry

- Activation of right frontal cortex – negative affect
- Activation of left frontal cortex – positive affect

Event Related Potentials

- Average electrical activity to some discrete stimulus