Sensory Capabilities:
Experiencing the World

Seeing

- Visual acuity not fully developed but can see to some extent
- Attend to visual field highest in information and brightness
- Possess some sense of size constancy
- Distinguish and show preference for different colors

newborn 4 weeks 8 weeks 3 mos 6 mos
Infant Visual Preference

- Preferences that are present from birth
  - Automatically prefer particular kinds of stimuli
  - Prefer to look at patterned over simpler stimuli

Sensory Capabilities: Experiencing the World

Hearing
- Clearly capable of hearing, but auditory acuity is not completely mature
- React to and show familiarity with certain kinds of sounds
Auditory Perception: The World of Sound

- Infants
  - Are more sensitive to certain frequencies
  - Reach adult accuracy in sound localization by age 1
  - Can discriminate groups of different sounds
  - React to changes in musical key and rhythm
  - Can discriminate many language related sounds

How do researchers test these things?!

<table>
<thead>
<tr>
<th>Table 1-8</th>
<th>THREE BASIC PROCESSES OF LEARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>Classical conditioning</td>
<td>A situation in which an organism learns to respond in a particular way to a neutral stimulus that normally does not bring about that type of response.</td>
</tr>
<tr>
<td>Operant conditioning</td>
<td>A form of learning in which a voluntary response is strengthened or weakened, depending on its positive or negative consequences.</td>
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<tr>
<td>Habituation</td>
<td>The decrease in the response to a stimulus that occurs after repeated presentations of the same stimulus.</td>
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</tbody>
</table>
Visual Preference

- Principles used?
- Discrimination
- Gaze duration
- Habituation
- Useful with babies days old

Habituation/ Dishabituation

- Habituation: baby's response will decrease to "new" stimuli over time
  
  Can use variety of stimuli types and use baby's ability to discriminate to infer learning/ perception

- Dishabituation: recovery in responses
  
  infant can discriminate between "old" and "new" stimuli
High Amplitude Sucking

- Infant sucking brings about sound stimuli
- When bored (habituated), they slow sucking
- Experimenter changes sound, baby becomes interested again (dishabituates) and increases sucking speed

Is speech special?

- The most important single phenomenon with respect to this question has been: **Categorical perception**
  
  \textit{(Perceiving speech sounds as being in a limited number of categories)}
Categorization

[kHz

8
7
6
5
4
3
2
1

17 msec

d

a

91 msec

t

a

Phonetic boundary

Percentage / id/ responses

0 20 40 60 80

Voic onset time (msec)

2/5/2009

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Why are categories special?

- Different languages have different categories
- So... in one language a difference in sound may make a difference between words; in another, it might not

High Amplitude Sucking Procedure

- Initially sucking rate increases (novelty)
- Then it decreases
- This decline in response is **habituation**
High Amplitude Sucking Procedure

- If sucking rate increases, it indicates that the infant has detected a change.
- The renewed response is dishabituation.

Infant Categorical Perception?

Infants show categorical perception for basic units. (Eimas, Siqueland, Jusczyk & Vigorito, 1971)

Habituate: 20 ms VOT (b)
Test: 0 ms VOT (b) 40 ms VOT (p)

1 & 4 month olds