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>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classical</td>
<td>Conditioning: A situation in which an organism learns to respond in a</td>
<td>A hungry baby stops crying when her mother picks her up because she has</td>
</tr>
<tr>
<td>Operant</td>
<td>particular way to a neutral stimulus that normally does not bring about</td>
<td>learned to associate being picked up with subsequent feeding.</td>
</tr>
<tr>
<td>Conditioning</td>
<td>that type of response.</td>
<td>An infant who learns that smiling at his or her parents brings</td>
</tr>
<tr>
<td>Habitation</td>
<td>A form of learning in which a voluntary response is strengthened or</td>
<td>positive attention may smile more often.</td>
</tr>
<tr>
<td></td>
<td>weakened, depending on its positive or negative consequences.</td>
<td>A baby who showed interest and surprise at first seeing a novel toy</td>
</tr>
<tr>
<td></td>
<td>The decrease in the response to a stimulus that occurs after repeated</td>
<td>may show no interest after seeing the same toy several times.</td>
</tr>
<tr>
<td></td>
<td>presentations of the same stimulus.</td>
<td></td>
</tr>
</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**
  
  *(Perceiving speech sounds as being in a limited number of categories)*
Categorization

- A graph illustrating the percentage of responses against voice onset time (msec) with a phonetic boundary.
- Two sections labeled 'd/a' and 't/a' with 17 msec and 91 msec intervals respectively.

- kHz range from 1 to 8.
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)

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

1 & 4 month olds