Perception

• Normal perceptual development requires normal perceptual experience.
• Infant actively seeks necessary stimulation.
• Perceptual development is influenced by the cultural context.

How do we know?

• **Habituation**
  – Repeatedly present stimuli until infant’s response declines, or habituates
  – Present novel stimuli.
  – If infant response increases
    => baby can tell the difference between old and new stimuli.
• **Preferential-looking**
  – Present two visual stimuli side-by-side
  – If infants look longer at one of them
    => baby can tell the difference between the two.
How do we know?

- **Operant Conditioning**
  - Condition infant to respond to a stimulus.
  - Present novel stimuli.
  - If infant does NOT respond to novel stimuli
    => baby can tell the difference between old and new stimuli.

Perception

- Taste and Smell
- Hearing
- Touch Temperature and Pain
- **Vision**
- Integrating sensory information
Auditory Perception

• Infant auditory system is well developed at birth, but hearing does not achieve adult level until 5 to 8 years.
• **Auditory localization**: Newborns can turn toward the direction of the sound.
• Remember *The Cat in the Hat*?

Touch

• **Oral exploration** - Infants explore the world orally for the first few months.
• **Manual exploration** - From 4 months on, infants begin to rub, finger, probe, and bang objects.
• Increase in manual control facilitates visual exploration.
Visual Acuity

• **Visual acuity** is the sharpness of vision.

• Newborn’s cones are still developing.
  – Infants have poor contrast sensitivity; they can see patterns only when composed of highly contrasting elements.
  – Newborns do not perceive a richly colorful world.

• Color vision is mature by 2–3 months of age.
• By 8 months, infants’ vision is comparable to adults’.
Visual Scanning

• Infants are attracted to moving stimuli, but bad at tracking.
• By 2–3 months, infants can track slow moving objects smoothly.

Visual Scanning

• 1-month-olds focus on outer contours.
• 2-month-olds scan interiors thoroughly.
Object Perception

- **Perceptual constancy**: Although our retinal images of people and objects change as they move away from or toward us, our impression of the person or object stays the same.
- **Object segregation**: Ability to perceive boundaries between objects.
- Infants seem to have perceptual constancy and the ability to do object segregation.

Object Segregation

- By 2 months, based on common movement.
Object Segregation

- By 8 months, based on general knowledge.

Depth Cues Used by Infants

- **Optical expansion**: (by 1 month) The visual image increases as an object comes toward us, causing the background to be occluded.
- **Binocular disparity**: The closer the object, the more different the retinal images of it from the two eyes will be.
- **Stereopsis**: (suddenly, about 4 months) The process by which the visual cortex combines the different neural signals from each eye to create depth perception.
- **Monocular (pictorial) cues**: (by 6-7 months) The perceptual cues of depth that can be perceived by one eye alone.
  - Relative size
  - Object interposition
Intermodal Perception

- Infants are able to combine information from two or more senses.
- Very young infants link oral and visual experiences.
- As they get older, infants integrate visual and tactile explorations.
- Infants at about 4 months can integrate speaking sounds with a picture of lips moving.
- Continues to improve during childhood and adolescence.

Childhood & Adolescence

- Learning how to use senses more intelligently.
- Attention
  - Longer attention span
  - Selective attention
  - Systematic attention

Adulthood

- Sensory and perceptual capacities gradually decline.