

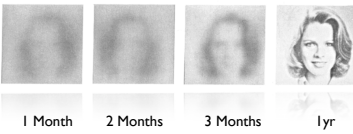
What is perception?

- What changed? Not the picture! Your understanding!
- Perception helps us make sense of the world around us.
 - Picture (just a bunch of blobs, till you know).
 - Sports (just a blur, till you know).
 - Ultrasound, wines, x-rays, the alphabet, survivor...
 - Nothing makes sense without experience.
 - Experience can make us pay attention to some things we previously ignored and vice versa.
 - Infants' likely see, hear, smell most or more than we do, but what they make of this, is much different.

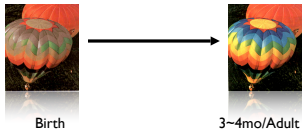
Visual Acuity

Fantzs Visual Preference Procedure

20/400 @ Birth



CONES = COLOR!

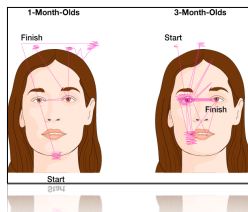


Infant Vision

- Infant eye tracking is
 - Jerky (saccade)
 - That's good
 - Disorganized
 - That's not.
 - Easily tired



Infant Eye Tracking

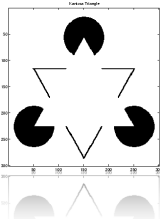


Retinal Disparity

- What each eye sees is a little different. The amount of *disparity* (difference) between the two images can be used as a cue for distance.
- Close one eye.
- Line up one finger with something far away.
- Open that eye and close the other.
- What Happened?
- Repeat with finger further away.

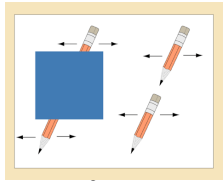


Use of edges: Interposition

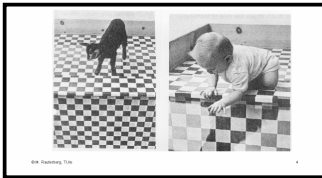


- What shapes do you see?
- Which ones are closer?
- The shapes aren't there.
- We use edges to see.
- And so do 3-month-old infants!

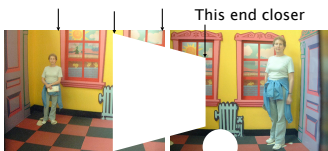
Common Fate, Color, & Shape



Texture Gradient: Visual Cliff



Relative Size - Ames room



What does infant hear?

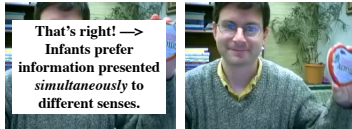


- And how do we know?
- Watch babies reactions.
- 5m turn toward sounds
- 9m responds to name
- 12m says a word
- Auditory Threshold - quietest sound you can hear.
 - Higher or lower in infants?
 - Higher.

Hearing

- Newborns hear well, though not quite as accurately as adults.
- Could be because of fluid in the ear canal, or lack of experience.
- Infants' hearing is *best for sounds* that have pitches in the range of human speech.
- Ba, ba, ba, ba... Pa! or Ba.
- Infants use sound to locate objects.

Intersensory Redundancy



Which one do infants prefer?

Smell

- Tested with facial expression, and preference.
- More sensitive than adults!
- Newborns react strongly to vinegar, ammonia, rotten eggs, shrimp.
- 1-week-olds recognize mom's odor; breast smell.



Taste

- Can apparently taste everything!
- The expression says it all.
- "Sweet-tooth" over bitter, sour, salty, or neutral.
- And will nurse more if mom drank vanilla.
- More sensitive than adults!



Touch: Pain & Temp

- The nerves are there (same proportions as adults)!
- Reaction says it all.
 - Babies cry when given shot. (newborns even more distressed than 5-11 mos.)
- Circumcision very stressful
 - esp with no anesthesia
 - high plasma cortisol level and screaming looks bad.
 - But topical anesthesia and sweets help.
- Won't drink milk if too hot.
- Become more active when it gets cold.

Habituation

- Present same stimulus over and over till babies bored
- Rapid habituators tend to be smarter.
- Hard to keep the kids ones on task
- Useful for testing because orienting something new means they noticed.

Attention

- Infants and young children not as selective in attention as adolescents and adults.
- Frontal lobes are late to develop.
- Results in a baby that can't stop *orienting response*.
- And a lack of *focused attention* or executive control.

Increasing Attention

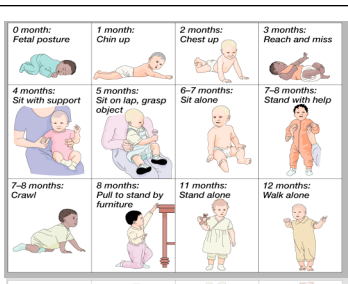
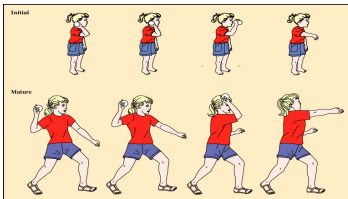
- We can help children be more attentive by
 - reminding them to be attentive
 - teaching strategies to be attentive. (systematic search)
 - removing distractions

ADHD

- What's wrong with Stephen? See page 148.
- Symptoms: inattentive, hyperactive, impulsive
- Mostly boys. Do poorly in school and are often disliked.
- Causes:
 - Not sugar, TV, food allergies, or poor home life.
 - Heredity, stress, poor frontal lobe activation
- 37-50% of children with ADHD have problems as adults.
- Not necessarily over-diagnosed, we are just more aware.
- Treatment: medication (stimulants) + psychosocial (academic).

Motor Development

- How do we learn to walk?
- How does maturation and experience influence motor skills?
- How do we learn to coordinate our hands? And why do we prefer one over the other?



Locomotion & Dynamic Systems

- **Differentiation** of component skills (posture/balance, stepping, and perceptual factors).
- **Integration** of different component skills.





- More than just knowing how to walk.
- Babies can walk if supported.
- Even newborn have the stepping reflex.
- Use perception
- Will fall in moving room.
- Use proprioception

Slater's The Sixth Sense

- Stand on one leg.
- Close your eyes and touch your nose.
- Didn't involve vision, sight, smell or taste.
- Did involve *proprioceptive* information (sense of where your limbs are).



Do we learn to walk?

- Maturation is important:
 - Hopi infants can walk without practice.
- But experience matters, too:
 - African infants can walk sooner with practice & piggyback (to strengthen muscles).

Fine-Motor Skills

- Reaching and grasping (starts 4 months) becomes more coordinated throughout infancy.
- Initially quite random due to muscle coordination.
- Toddlers prefer to use one hand and this preference becomes stronger during the preschool years.
 - Heredity and culture play a role.
