Life Span View of Motor Development

• Determinants of Motor Development?
  – Nature?
  – Nurture?
• Infancy through Late Life
  – Infancy-early childhood majority of gains in motor development (crawl, walk, etc.)
  – Mid-late adulthood we see more maintenance and loss (muscle mass, arthritis, etc.). but some gains with intervention

Motor Development in Infancy

• What are our first motor capabilities?
  • Next…Gross Motor Skills
    – What are they?
    – What is the timetable?
    – Cultural differences?
Sample Reflexes

<table>
<thead>
<tr>
<th>Reflex</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sucking reflex</td>
<td>Automatic sucking object placed in newborn’s mouth</td>
</tr>
<tr>
<td>Rooting reflex</td>
<td>Reaction when infant’s cheek is stroked or side of mouth touched</td>
</tr>
<tr>
<td>Moro reflex</td>
<td>Startle response in reaction to sudden, intense noise or movement</td>
</tr>
<tr>
<td>Grasping reflex</td>
<td>Occurs when something touches infant’s palms; infant response is to grasp tightly</td>
</tr>
</tbody>
</table>

Milestones in Gross Motor Development

- **Childhood**
  - Improved walking, running, jumping, climbing, learn organized sports’ skills
  - Positive and negative sport outcomes

- **Adolescence** - Skills continue to improve

- **Adulthood**
  - Peak performance of most sports before 30
  - Biological functions decline with age
### Aging and Motor Control

- Much of decline due to loss of neurons in the basal ganglia, cerebellum and motor cortex in the brain — the centers for movement
- With age, the cerebellum loses 25% of its cells
- Parkinson’s Disease —

### Fine Motor Skills

- What are they?
  - Infancy:
  - Early Childhood
  - Childhood and adolescence:
  - Adulthood and Aging

### What Are Sensation and Perception?

- Sensation —
- Perception —
Life Span View of Sensation and Perception

• Discuss

• Predictors of sensation and perception development… Nature v. Nurture

• What is normative age-graded vs. disease (not normal and does not affect everyone)

Studying Infant Perception

• Visual preference method — to determine if infants can distinguish between various stimuli

• Habituation and Dishabituation
  – Habituation — decreased responsiveness to stimulus
  – Dishabituation — recovery of habituated response

• Tracking — moving eyes and/or head to follow moving objects

• Videotape equipment, high-speed computers

Infants’ Visual Perception

<table>
<thead>
<tr>
<th>Sensory and Perceptual Development</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infants’ Visual Perception</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Visual Acuity</strong></td>
<td>20/600 at birth, near adult levels by 1 year</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Sees green and red at birth, all colors by 2 months</td>
</tr>
<tr>
<td><strong>Perceiving Patterns</strong></td>
<td>Prefer patterns at birth; face scanning improves by 2 months</td>
</tr>
<tr>
<td><strong>Depth Perception</strong></td>
<td>Developed by 7-8 months</td>
</tr>
<tr>
<td><strong>Visual Expectations</strong></td>
<td>Begins by 4 months; expect gravity by 6-8 months</td>
</tr>
</tbody>
</table>
Perceptual Constancy

Size constancy
Recognition that object remains the same even though the retinal image changes

Shape constancy
Recognition that object remains the same even though its orientation changes

Vision in Childhood

• Improved color detection, visual expectations, controlling eye movements (for reading)
• Preschoolers may be farsighted
• Signs of vision problems

Aging Vision In Adulthood

• Loss of Accommodation
• Decreased blood supply to eye
• Slower dark adaptation
• Declining color vision: greens, blues, violets
• Declining depth perception

• How might vision and motor abilities relate in abilities to do everyday tasks among older adults?
Corrective lenses

- Before age 20,
- Age 35,
- Age 50,

Senile macular degeneration

- Blurring and dim colors in central vision
- Straight lines look distorted
- A dark or empty area in the center of vision

Glaucoma

- Disease marked by hardening of the eyeball due to a change in fluid; the hardening puts pressure on the optic nerve
Cataracts

- Disease involving the thickening of the lens; distorts vision

Hearing

- Fetus hears in last 2 months of pregnancy
- Newborns
- Infants less sensitive to sound pitch
- Most children’s hearing is inadequate
  - *otitis media*: middle ear infection

Hearing

- Adolescence
  - Most have excellent hearing
  - Changes in adolescent hearing due to any sociocultural changes? Examples?

- Adulthood
  - Decline begins about age 40
  - Males lose sensitivity to high-pitched sounds sooner than females
  - Gender differences…Why?
Hearing at age 50

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand a whisper</td>
<td>65%</td>
<td>75%</td>
</tr>
<tr>
<td>Soft conversation but not a whisper</td>
<td>28%</td>
<td>22%</td>
</tr>
<tr>
<td>Loud conversation, not soft</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>Not even loud conversation</td>
<td>2%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Aspects of Adult Hearing

- Ability to distinguish pure tones declines faster than ability to hear conversation

Other Aspects in Adult Hearing

- The ability to distinguish from where a sound is coming also declines
- Difficulty with electronic “speech”
- Difficulty with a lot of background noise
- Speed
…but we all make errors

• Have you ever listened to a song over and over and over again to try and make out the words being said?

• Jimi Hendrix: “…excuse me while I kiss this guy”

Bio changes in the inner ear

• hair cells in the cochlea break (problems with high pitch)
• fluid thickens in cochlea and strial tissue (problems with noise)
• fewer neurons in the auditory nerve and corresponding declines in brain
• tinnitus (10%) ringing in the ears

Presbycusis

• Defined as age-related hearing loss
### Other Senses

<table>
<thead>
<tr>
<th>Sense</th>
<th>Infants</th>
<th>Older Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch and Pain</td>
<td>Newborns feel pain; by 6 mos., can coordinate vision and touch</td>
<td>Less sensitive to pain and touch in lower extremities</td>
</tr>
<tr>
<td>Smell</td>
<td>Can differentiate odors at birth; shows some preferences</td>
<td>Loss of some sense of smell around age 60</td>
</tr>
<tr>
<td>Taste</td>
<td>May prefer sweet tastes before birth; likes salty at 4 months</td>
<td>Decline in taste of begins in 60s</td>
</tr>
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### Intermodal Perception

- What is it?
- Exists in newborns