Lifespan Development

Chapter 5: Infancy
Physical and Cognitive
Development

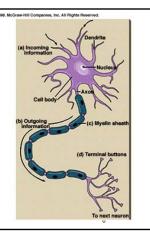
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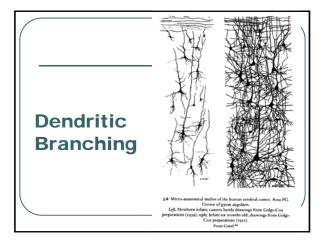
Physical and Cognitive Development in Infancy

- Physical Development
 - Brain Development
 - Neonatal reflexes and abilities
 - Motor development
- Perceptual Development
- Cognitive Development
- Language Development

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The Neuron





Brain Development

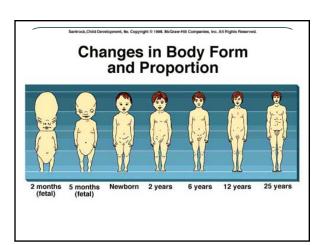
- Growth spurt during prenatal and infancy periods, reaching ½ mature weight by six months
- Role of nutrition (fat / myelin sheath)
- Effects of differential development of brain structures (i.e. auditory and visual cortexes 3 months-1 year)
- Brain behavior interactions
 - Importance of relevant experiences
 - Synaptic pruning conservation of resources

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Brain maturation

- Late adolescence
- Brain Change Behavior connection
 - four patterns
 - Maturation primary
 - Ability present experience required to maintain
 - Partially present experience to further develop
 - Propensity present learning dependent on specific experiences

REFLEX	STIMULATION	RESPONSE	AGE OF DISAPPEARANCE	FUNCTION
Eye blink	Shine bright light at eyes or clap hand near head	Infant quickly closes eyelids	Permanent	Protects infant from strong stimulation
Withdrawal	Prick sole of foot with pin	Foot withdraws, with flexion of knee and hip	Weakens after 10 days	Protects infant from unpleasant tactile stimulation
Rooting	Stroke cheek near corner of mouth	Head turns toward source of stimulation	3 weeks (becomes voluntary head turning at this time)	Helps infant find the nipple
Sucking	Place finger in infant's mouth	Infant sucks finger rhythmically	Permanent	Permits feeding
Swimming	Place infant face down in pool of water	Baby paddles and kicks in swimming motion	4-6 months	Helps infant survive if droppe into water
Moro	Hold infant horizontally on back and let head drop stightly, or produce a sudden loud sound against surface supporting infant	Infant makes an "embracing" motion by arching back, extending legs, throwing arms outward, and then bringing arms in toward the body	6 months	In human evolutionary past, may have helped infant cling to mother
Palmar grasp	Place finger in infant's hand and press against palm	Spontaneous grasp of finger	3–4 months	Prepares infant for voluntary grasping
Tonic neck	Turn baby's head to one side while lying awake on back	Infant lies in a "fencing position." One arm is extended in front of eyes on side to which head is turned, other arm is flexed	4 months	May prepare infant for voluntary reaching
Stepping	Hold infant under arms and permit bare feet to touch a flat surface	Infant Lifts one foot after another in stepping response	2 months	Prepares infant for voluntary walking
Babinski	Stroke sole of foot from toe toward heel	Toes fan out and curl as foot	8-12 months	Unknown



Motor development

- Cephalocaudal and proximodistal direction
 - Neurons that control head/neck form connections first
 - Gross motor development proceeds fine motor
- Milestones
- Multidimensional
 - Nervous system development
 - Environmental supports for the skill
 - Goal that the infant has in mind

Perception

- The sorting out, interpretation, analysis and integration of stimuli involving the sense organs and the brain
- Intermodal perception present at birth
- Vision
 - 20 feet at birth
 - Contrast sensitivity/complexity (faces)
 - Depth perception (maturation and experience)

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Infant vision





rce: Hainline, 1998

Perception (con't)

- Auditory abilities
 - Begin prenatally
 - Sound localization
 - Infants are more sensitive than adults to high and low pitched sounds

Perception (con't)

- Smell and taste
 - Present at birth
 - Innate sweet tooth
 - Breastfed newborns can detect mother's smell

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Perception (con't)

- Pain and touch
 - Well developed at birth
 - Touch –especially around mouth, palms and feet
 - Infant pain relief?

Cognitive Development

- Piaget's sensorimotor period
 - Reflexive schemes
 - First habits (or primary circular reactions)
 - Motivated by basic needs
 - Secondary circular reactions
 - Infant tries to repeat interesting events caused by her actions
 - Coordination of secondary circular actions
 - Object permanence
 - AB error
 - Beginning of goal-directed behavior

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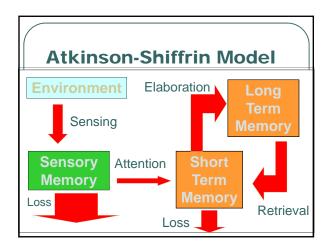
Piaget's Sensorimotor Stage (cont.)

- · Tertiary circular reactions
 - Repeat with variation
 - Advanced understanding of object permanence
- Mental representations
 - Internal representation
 - Deferred imitation
 - Make believe play
- Some criticisms

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Information processing model

- Basic structure of mental system doesn't change but capacity does
- Information received is transformed using mental strategies
- Relies on
 - Sensory registers
 - Short-term or working memory
 - Long-term memory



Information processing model (cont.)

- Strategies
 - Attention
 - Memory
 - Categorization
 - Perceptual
 - conceptual
 - Problem-solving