

Chapter 8: Human development:

- Nature vs. Nurture Debate- comes up yet again in this chapter- how does our environment and our genes influence the way we grow and develop.
- The younger you are the more “plastic” your brain is

Genie Video (in class)

- 13 year old girl never been able to talk (1970)
- Little to look at or talk to for more than 10 years
- She was strapped in a potty chair for most of her life, and confined to a crib
- Doctors and scientists examined Genie
- Genie could not really play with toys
- Never developed a complex language, only basic “I want” type words
- Nurture wasn’t enough after she was rescued from her terrible environment because it was past her critical period of growth
- Solitary confinement- Genie was an extreme case of this
- The parents thought she had a developmental disability and that was their “reasoning” for locking her in the room and isolating her for 10 years.
- Genie’s later outcomes in life –

Sensitive/ Critical Periods

- Time periods in development when specific skills develop most easily
- Certain experiences need to occur in order for development to continue in a typical manner
- Critical- must learn a behavior because that is the only time you really can in your life. Ex. Vision. You need to experiences seeing and vision by a certain age or you will never be able to. – Kitten and visual development example
- Genie missed the critical period for development such as speech, temperament, interaction with the world, etc....

Development of the Brain

- Myelination: the process of encasing never fibers with a fatty sheath
- As we age most of the growth in our brain is because the neurons get bigger, and we form new synaptic connections. By the time we are older we have most of the neurons we are going to have in our life, they just get bigger as

we age, even though we can make new neurons entirely but they mostly just grow.

- As we get older the speed of our brain gets faster because we form more Myelin sheath (sheath- slip and slide, helps move info around must faster)
- Myelin sheath is most rapid during first two years of life
- Myelin is said to be “hard wired” in our brain (genetic)- it is very predictable, happens in a specific way for the most part.
- Synaptogenesis “Burst”- production of synaptic connections between neurons- twice as many will be produced than used. Very important for development because they develop and strengthen according to your environment. Not the same for everyone. Not predictable. Over production in the first few years to make sure you can connect to anything you want. Whatever doesn't get used- those synapses decay and die away
- Pruning- Death of cells and elimination of synapses – leads to more efficiency
- Any experience in your life leaves a physical path in your brain

Back to Sensitive Periods

- Sensitive/ critical periods thought to map onto the periods of synaptogenesis and pruning!
- Synaptic Pruning: Face Recognition Video – when you are a baby you can tell faces of primates apart from one another. Because we don't need that face, as we get older we lose that ability because we don't use those specific synapses anymore. Our synapses make us experts at recognizing human faces because we are faced with them all our life.

Q: Children who suffer severe neglect have been found to have brains that are smaller, lighter and that develop abnormally. These results are most likely due to?

A: A lack of synaptic connections.

Q: Both Tyler and Jimmy are healthy boys. Tyler grew up on a farm and was constantly taking care of his family's cow and pigs. However, Jimmy grew up in a large city and had access to a lot of video games and TV. As adults, Tyler and Jimmy are likely to have different brain structuring due to the process of?

A: Synaptic Pruning

Harlow's Monkeys

- Mid 1900's
- Idea was that infants needed mothers as just a food source- Harlow did not agree with this idea, so he created an experiment to prove that infants needed the comfort, security and contact of a mother. Not just as a food source.
- Monkeys almost always sought comfort from the cloth mother and not the metal wire mother that had the food
- These studies were important for 3 reasons –
- 1. Even though there was no real mother since there was food the monkey could grow predictably physical (weight, height, etc.) –

- 2. However they lacked basic social skills and emotional growth, this is because they lacked a mother-
- 3. For a long time people thought mothering skills were pre programmed to know how to take care of a baby, however this proved that mothering is not biologically hard wired. These behaviors had to be learned from a real mother.
- (If you have a mother that lacks mothering skills, and you then learned poor mothering skills, then you later in life will be a poor mother. Think about how this effects generations)

Attachment

- Theory- Bowlby
- Stresses importance of attachment in first year and responsiveness of caregiver
- Attachment to the mother ensure survival, adequate care
- System of infants signals and parental responses

Attachment Categories

- Secure attachment: 65%
- Insecure-ambivalent (resistant): 10%
- Insecure- avoidant: 20%
- Disorganized: Less than 5%

Significance of Attachment

- Caregiver sensitivity thought to be key
- Perceive and interpret cues
- Respond appropriately and promptly
- Secure- Sensitive, available, responsive
- Insecure-ambivalent- unpredictable; inconsistent
- Insecure- avoidant- emotionally unavailable; depresses, rejecting
- Disorganized- neglect, physical abuse
- Secure attachment in first year is important foundation for psychological development
- Internal Working Models – Bowlby (Bowlby says in first year of life infants develop this model)
- Benefits of secure attachments over time
 - Better adjusted, more socially skilled
 - Emotional expression, communication

Piaget's Theory of Cognitive Development