

Psychology chapter 9: Human Development

Developmental psychology: the study of changes, over the life span, in physiology, cognition, emotion and social behavior

What shapes us during childhood?

- Each human grows and matures at about the same periods in the life span...
- Prenatal period: begins with conception and ends with birth
- Infancy: begins at birth and lasts between 18 and 24 months
- Childhood: begins at the end of infancy and lasts until somewhere between ages 11 and 14
- Adolescence: begins at the end of childhood and lasts until somewhere between 18 and 21 years
- Adulthood: begins at the end of adolescence and lasts until death
 - The consistency of these patterns suggests that our genes set up the order of development
 - Development journey is also influenced by the environment in the mother's womb
 - Genes ordinarily tell the brain to develop two symmetrical hemispheres... ex: if the mother drinks during pregnancy then the hemispheres can misshapen and not work properly
- During the prenatal period, the constant interplay between nature and nurture shapes who we are as we develop

Development starts in the womb:

- The process begins at the moment of conception, when the sperm from the male unites with the egg from the female to create the **zygote**: the first cell of a new life
- 2 weeks after conception, the zygote is firmly implanted in the uterine wall and the next stage begins
- 2 weeks to 2 months, the developing human is known as an **embryo**
- During the embryo stage, the organs (such as heart, lungs, liver, kidney and sex organs) and internal systems (such as nervous system) begin to form
- The embryo is critically vulnerable to insults to its development... exposure to harm such as alcohol, drugs, stress can have lasting effects on the developing organ systems
- After 2 months of prenatal development, the growing human becomes a **fetus**
- Whole body begins to grow into infant form (no new structures emerge after prenatal month 2)
- Many fetuses can survive outside of the womb after as little as 22 weeks of prenatal development
- Healthy full term pregnancies = end with a birth between 38 and 42 weeks

Hormonal influences during prenatal development:

- Hormones that circulate in the womb influence the developing fetus
- Mothers who lack thyroid don't produce enough hormones and the fetus is at risk for lower IQ and diminished intellectual development
- Anxiety and chronic stress while pregnant may interfere with normal development such as low weight, negative cognition and behavioral outcomes that are persistent throughout life

Exposure to teratogens during prenatal development:

- Teratogens: environmental agents that harm the embryo or fetus
 - Can impair development in the womb... include drugs, alcohol, chemicals
 - May be obvious at birth but disorders involving language, reasoning, social behavior or emotional behavior may not develop until child is older
 - All depends on when the fetus is exposed to the teratogen (and length of exposure)
 - Thalidomide (to ease morning sickness) was a drug that caused birth defects such as limb deformities
- FASD: fetal alcohol spectrum disorders
- FAS: fetal alcohol syndrome is the most common and severe FASD... symptoms: low birth weight, face and head abnormalities, slight mental retardation and behavioral/cognitive problems

- FAS is more likely to occur among infants
- Alcohol interferes with normal brain development and can cause permanent brain damage, especially to the neocortex, hippocampus and cerebellum
- The use of recreational drugs (meth, coco) can lead to premature birth or sudden infancy death (more likely to lead to sudden death)
- Men also play a role in health and developmental factors
- Prenatal smoking can lead to infant hydrocephalus and prenatal alcohol use related to infant heart defects
- Case study: men who were away at war were more exposed to toxins and chronic stress which can effect infant heart development

Biology and environmental influence developmental milestones:

- All humans make eye contact quickly after birth, smile around 6 weeks, roll over, sit up, crawl, stand, walk and talk in that order (sometimes steps are skipped or reversed)
- Children often achieve developmental milestones at different places depending on culture
- Differences are due to different patterns in infant care across cultures
- Importance of socialization experiences and parental goals in the development of infant motor skills
- Walking is genetically or environmentally factored? We now know that every new development is due to complex and consistent interplays between biological and environmental forces
- Dynamic system... dynamic systems theory: the view that development is a self organized process, where new forms of behavior emerge through consistent interactions between a biological being and his or her cultural and environmental contexts
- Developmental advances in any domain (physiological, cognitive, emotion or social) occur through both the person's active exploration of an environment and the constant feedback that environment provides
- Every new behavioral skill to emerge is the result of a complex and dynamic system of influences

Brain development promotes learning:

- To study how humans develop cognitive skills, we must focus on age-related changes in psychological capacities such as perception, language and thinking
- Mind develops adaptively
- New, useful skills appear at appropriate times, even in the absence of specific training
- Newborns come into the world with fairly well adaptive perception... smelling, hearing, tasting and responding to touch
- Not fully developed at birth so the newborn is able to process a considerable range of sensory stimuli
- Reasonably acute sense of smell, especially with food
- Sense of hearing is good after birth
- Sense of hearing is much better than vision
- Range of visual acuity is 8-12 inches (mothers face to babies face when breast feeding)
 - Promotes the beginnings of the child's social interaction
- Grasping reflex: when a baby holds your finger (survival mechanism) and is adaptive because the offspring need to be carried from place to place
- Rooting reflex: turning an sucking that infants automatically engage in when a nipple or similar object touches their mouths
- Brain at birth is sufficiently developed to support basic reflexes, but further development appears necessary for cognitive development to occur

Myelination and neuronal connections:

- Early brain growth has two important aspects... 1) specific areas within the brain mature and become functional 2) regions of the brain learn to communicate with one another through synaptic connections

- Brain circuits mature is through myelination... this process begins on the spinal cord during the first trimester of pregnancy and on the neurons during the 2nd
- Myelination is the brains way of insulating its "wires"... nerve fibers are wrapped with a fatty sheath, much like the plastic around an electrical cord
- The wrapping increases the speed with which the fibers are able to transmit signals
- Myelination occurs in different regions of the brain at different developing stages
- The myelination axons form synapses with other neurons
- We produce way more than needed so the brain will adapt well to any environment it may find itself and the neurons go through a "use it or lose it" function
- Synaptic pruning: when connections are not used, they decay and disappear
- Optimal stimulation of a child's developing brain can be achieved by talking to the child, reading books, singing
- When not stimulated, very few synaptic connections are made
- Genetic instruction leads the brain to grow... the organ is highly "plastic"
- Growth of neurons helps the brain grow
- Age 4, 350 grams to 1,250 grams
- This sixe increase is due to myelination and new synaptic connections among neurons
- Early childhood nutrient affects aspects of early development, including myelination
- Malnourished children have less myelination
- Genes provide instructions for a maturing brain
- How a brain changes through infancy is often affected by the environment

Sensitive learning periods:

- Learn the connection among certain neurons
- During specific points in development, people learn certain skills more easily
- Sensitive periods: time periods when specific skills develop most easily
- Language is one skill that is easier to learn during early sensitive periods (brain is more plastic)
- Another early sensitive period is gaining emergence with close emotional attachments to care givers

Children develop attachment and emotion regulation:

- Socioemotional development: the maturation of skills and abilities that enable ppl to live successfully in the world with other ppl
- Socioemotional functioning is important because ppl learn to understand themselves as well as others
- Emotional regulation: expressing or coping with emotions without hurting themselves or others
- Emotion regulation is not something that we are born with... child's environment shapes how emotionally regulated the child will be later in life
- Bonds between parents and children motivate children to want to fulfill the adults expectations for emotional expression
- Attachment: a strong emotional connection that persists over time and across circumstances
- This process draws on humans innate tendency to form bonds with others (an adaptive trait)
- Protection for individuals, increases their chances of survival and this increases their changes of passing along their genes to future generations
- Humans are born profoundly immature
- Even young infants have highly interactive social relationships
- Early interactions begin to shape the developing human
- Socialization also affects complex human characteristics such as gender roles, a sense of personal identity and moral reasoning
- Between 4-6 weeks, an infant will express their first social smile
- Infant attachment leads to heightened feelings of safety and love