Chapter 4: Developing Through the Life Span

Objective 1: State the three areas of change that developmental psychologists study, and identify the three major issues in developmental psychology

Definitions:
Developmental Psychology – a branch of psychology that studies physical, cognitive, and social change throughout the life span.

Concept:
- Developmental psychologists study human’s physical, cognitive, and social changes throughout their life span.
- The three major issues developmental psychologists study are:
  - Nature/nurture – the effect of genetic inheritance vs. experience and environment.
  - Continuity/stages – is development a continuous process or is there a sequence of stages or steps?
  - Stability/change – do personality traits persist through the life span or do we change as we age?

Example:
Critical incidents in your life may allow you more freedom/independence (for example driving a car) but how you handle that freedom and responsibility may be the same (fool hardy or cautious).

Sample test question:
Developmental psychologists study three major issues that include all of the following except:
A. Stability vs. change
B. Intimacy vs. distance
C. Nature vs. nurture
D. Continuity vs. stages
ANS = B

Objective 2: Conception – Describe the union of sperm and egg at conception.

Definitions:
None

Concept:
- The conception process starts when a woman’s ovary releases mature eggs, a cell the size of a period at the end of this sentence. Then 200 million or more sperm deposited during intercourse begin their race upstream toward the egg. The sperm approaches the egg cell (85,000 times its size). The few that make it to the egg release digestive enzymes to penetrate the surface. As soon as one sperm begins to penetrate, the egg’s surface blocks out the others. Within half a day the egg nucleus and the sperm nucleus fuse.

Example:
The egg's surface sprouts finger–like projects around the successful sperm and pull it into the cell to begin life.

Sample test question:
How long does it take for the egg nucleus and the sperm nucleus to fuse?
ANS = Half a day or 12 hours
Objective 3: Prenatal Development – Define zygote, embryo, and fetus, and explain how teratogens can affect development.

Definitions:
Zygote – the fertilized egg; it enters a 2-week period of rapid cell division and develops into an embryo.

Embryo – the developing human organism from about 2 weeks after fertilization through the second month.

Fetus – the developing human organism from 9 weeks after conception to birth.

Teratogens – agents, such as chemicals and viruses, that can reach the embryo or fetus during prenatal development and cause harm.

Fetal Alcohol Syndrome (FAS) – physical and cognitive abnormalities in children caused by a pregnant woman’s heavy drinking. In severe cases, symptoms include noticeable facial misproportions.

Concept:
- Zygote, embryo, and fetus are the stages of prenatal development of a child. Teratogens are harmful agents that can enter the developing child at any stage and affect its development.

Example:
A pregnant mother smoking may cause low birth weight in their child. Likewise any drugs or foods ingested by the mother are transferred to the baby (cocaine addicted newborns).

Sample test question:
Name the three main stages of prenatal development.
ANS = zygote, embryo, fetus

Objective 4: The Competent Newborn – Describe some abilities of the newborn, and explain how researchers use habituation to access infant sensory and cognitive abilities

Definitions:
Rooting reflex – a baby’s tendency, when touched on the cheek, to turn toward the touch, open the mouth, and search for the nipple.

Habituation – decreasing responsiveness with repeated stimulation. As infants gain familiarity with repeated exposures to a visual stimulus, their interest wanes and they look away sooner.

Concept:
- As young infants we can see what we need to see, hear what we need to hear and smell. We are already able to use our sensory equipment to learn.
- Researchers show a baby a series of pictures of cats and then show two pictures, 1 cat and 1 dog, the most novel picture, the dog, is the one that engages the baby the longest.

Example:
Newborns soon demonstrate preferences for their mothers through sight as well as smell and sound. When presented with the recording of two voices they will generally turn towards the voice of the mother.

Sample test question:
Name three ways we develop.
ANS = physically, cognitively, socially
Objective 5: Physical Development – Describe some developmental changes in a child’s brain, and explain why maturation accounts for many of our similarities.

Definitions:
Maturation – biological growth processes that enable orderly changes in behavior, relatively uninfluenced by experience.

Concept:
- We go from our very basic functions to knowing how to do some pretty complex things.
- Our brain develops more neural networks every day. They appear more rapidly in the frontal lobes at first and then later in the association areas of the brain.
- Many of our commonalities are part of a sequence of development, standing before walking or using nouns before adjectives.

Example:
We begin by merely breathing and soon learn how to talk, walk, learn a language and even learn a second language.

Sample test question:
How many, on average, nerve cells do we have at birth?
ANS = 23 billion

What is the process that enables orderly changes in behavior that is relatively uninfluenced by experience?
ANS = maturation

Objective 6: Motor Development – Outline four events in the motor development sequence from birth to toddlerhood, and evaluate the effects of maturation and experience on that sequence.

Definitions:
None

Concept:
- Generally babies roll over before they sit up unsupported, next they crawl on all fours and later walk upright.
- This sequence is due to the maturing of muscles and the nervous system.

Example:
While babies generally master the above sequence universally all around the world, they may do it at various ages. Statistically 25% of babies walk before age 1, 50% have learned within a week of the first birthday, and 90% will be walking by age 15 months.

Sample test question:
T/F You can teach a baby skills such as potty training earlier with persistence.
ANS = F – motor and neural development is required to be successful.

Objective 7: Maturation and Infant Memory – Explain why we have few memories of experiences during our first three years of life.

Definitions:
None

Concept:
Infantile amnesia is an inability to consciously recall events that happened before age 3. It is the result of a change in the way the brain organizes memories at about that age. Infants preverbal memories do not translate into their later language.

**Example:**
We cannot remember events we experienced before the age of 3.

**Sample test question:**
Can you recall your first day of preschool?
ANS = if you went to preschool before age 3 it is unlikely you can recall the experience. You may recall some of preschool as you matured.

**Objective 8: Cognitive Development** – State Piaget’s understanding of how the mind develops, and discuss the importance of assimilation and accommodation in this process.

**Definitions:**
Schema – a concept of framework that organizes and interprets information.
Assimilation – interpreting one’s new experience in terms of one’s existing schemas.
Accommodation – adapting one’s current understanding (schemas) to incorporate new information.

**Concept:**
- Piaget researched how the brain processes concepts. Babies constantly try to make sense of their world. They assimilate new information into their existing knowledge. Then babies refine the information based upon new experiences (accommodation).

**Example:**
Babies will first call all 4-legged animals “dog” if they learned to say dog first, most likely by having one in the family. Later they learn that there are more animals than dogs and create new mental categories (schemas) for other animals, such as kitties, cows, horses, and then later puppies vs. adult dogs, kittens vs. cats.

**Sample test question:**
Why is it that infants don’t understand the same things a child or adolescent would?
ANS = Babies don’t comprehend because their minds have not yet developed on the same level.

**Objective 9: Piaget’s Theory and Current Thinking** – Outline Piaget’s four main stages of cognitive development, and comment on how children’s thinking changes during these four stages.

**Definitions:**
Cognition – all the mental activities associated with thinking, knowing, remembering, and communicating.
Sensorimotor stage – from birth to about 2 years of age infants know the world mostly in terms of their sensory impressions and motor activities.
Object permanence – the awareness that things continue to exist even when not perceived.
Preoperational stage – from age 2 to 6 or 7 years a child learns to use language but does not yet comprehend the mental operations of concrete logic.
Conservation – the principle that properties such as mass, volume, and number remain the same despite changes in the forms of objects.
Egocentrism – in Piaget’s theory, the preoperational child’s difficulty taking another’s point of view.
Theory of mind – people’s ideas about their own and other’s mental states – about their feelings, perceptions, and thoughts and the behavior these might predict.

Concrete operational stage – in Piaget’s theory, the stage of cognitive development (from about 6-7 years of age) during which children gain the mental operations that enable them to think logically about concrete events.

Formal operational stage – In Piaget’s theory, the stage of cognitive development (normally beginning about age 12) during which people begin to think logically about abstract concepts.

Concept:
- Piaget’s stages of cognitive development are: sensorimotor, preoperational, concrete operational and formal operational.
- As a child’s brain develops they are able to go from a basic sensory view of the world to understanding language followed by specific logical thinking to more abstract logical thinking.

Example:
Infants experience the world through the senses so they feel and try to put things in their mouths in order to understand them. Around age 2 they use language to communicate and learn that things that are not seen still exist like a toy hidden under a blanket. About age 6 or 7 children gain the ability to problem solve with numbers and understand jokes. At approximately age 12 pre-teens learn more abstract thinking like solving hypothetical questions and using deductive reasoning.

Sample test question:
What are the four main stages of cognitive development?
ANS = Sensorimotor, Preoperational, Concrete operational and Formal operational.

Objective 10: Reflecting on Piaget’s Theory - Discuss psychologists’ current views on Piaget’s theory of cognitive development.

Definitions:
None

Concept:
- Piaget's theory is very true in the sense of the sequence of stages in children’s lives. Today scientists are adapting Piaget's ideas to new findings. Piaget identified significant cognitive milestones that can assist teachers to help children learn by building on what they know, providing concrete examples and demonstrations, and encouraging them to think on their own.

Example:
A young child will learn on its own that if they touch the stove while it is on they will get burned. They could be taught this lesson but until they try touching it they may not learn.

Sample test question:
What was Piaget's emphasis in this theory of children and their milestones in life?
ANS: Cognitive development

Objective 11: Social Development - Define stranger anxiety.

Definitions:
Stranger anxiety – the fear of strangers that infants commonly display, beginning by about 8 months of age.
Concept:
- Infants seem to know the faces around them and when they are faced with a stranger they cling to the people they do know. They cling at fear of separation.

Example:
At school when they are beginning or daycare, some kids will cry when their parent leaves because they are scared and don’t know what to expect.

Sample test question:
What age does stranger anxiety typically begin?
ANS = 8 months of age

Objective 12: Origins of Attachment - Discuss the effects of nourishment, body contact, and familiarity on infant social attachment.

Definitions:
Attachment – an emotional tie with another person; shown in young children by their seeking closeness to the caregiver and showing distress on separation.

Critical period – an optimal period shortly after birth when an organism’s exposure to certain stimuli or experiences produces proper development.

Imprinting – the process by which certain animals form attachments during a critical period very early in life.

Concept:
- For many years psychologists believed that infants became attached to those who could satisfy their nourishment needs, however, that changed when Harry Harlow proved that it is more important for a parent to provide loving care, and provide for every need a baby might have. A baby becomes attached not because of nourishment but through a parent who will keep the baby warm, rock, feed, and pat the baby.
- Children become attached to what they are around the most which is hopefully the parents. Children being familiar with their surroundings give them a sense of safety.

Example:
Monkeys will cling to a cloth “mother” rather than a wire “mother” even though they receive food from the wire one.

Sample test question:
What did psychologists believe contributes to a baby being attached to a parent before Harry Harlow’s study?
ANS = whoever feeds them

Objective 13: Attachment Differences - Contrast secure and insecure attachment, and discuss the roles of parents and infants in the development of attachment and an infant’s feelings of basic trust.

Definitions:
Basic trust – according to Erik Erikson, a sense that the world is predictable and trustworthy; said to be formed during infancy by appropriate experiences with responsive caregivers.

Concept:
- Secure attachment explains how an infant can play and explore their environment with the mother’s presence but insecure attachment the infant is less likely to explore and will cling to their
mother. When the mother leaves they are distressed and cry. When a child is blessed with loving caregivers they form trust rather than fear.

Example:
Even if an infant is adopted and not with their birth mother, they still form an attachment with the loving adoptive parent.

Sample test question:
T/F Infants who explore their environment with their mother present is called insecure attachment? ANS = F

Objective 14: Deprivation of Attachment – Assess the impact of parental neglect, family disruption, and daycare on attachment patterns and development.

Concept:
- Parental neglect can cause children to also be neglectful, abusive, and

Example:
Snapping finger round the head with eyes closed cannot pinpoint the sound if directly over head.

Sample test question:
T/F the brain uses difference in timing and intensity to pinpoint sound? (t)

Hearing Loss and Deaf Culture Objective 15: Contrast the two types of hearing loss, and describe some of their causes.

If the eardrum is punctured or if tiny bones in the middle ear lose ability to vibrate, the ear’s ability to vibrate and thus send sound waves diminishes. If there is nerve damage to the parts of the inner ear then you lose the ability to send neural impulses to the brain. This can caused by disease, accidents, age-related disorders or exposure to loud noise.

Definitions:
Conductive hearing loss – hearing loss caused by damage to the mechanical system that conducts sound waves to cochlea

Sensorineural hearing loss – hearing loss caused by damage to the cochlea’s receptor cells or to the auditory nerves.

Example:
If you listen to music at loud volumes often you may have sensorineural hearing loss.

Sample test question:
If you have damaged hair cell receptors in the cochlea or the associated nerves, what kind of hearing loss would you have? (sensorineural hearing loss)

Cochlear Implants Objective 16: Describe how cochlear implants function, and explain why Deaf culture advocates object to these devices.

Cochlear implants transmit sound waves into electrical signals and send them to the brain through the cochlear nerves. Deaf culture advocates are against this not because it can help children and adults in speech but because they don’t see deafness as a disability since it increases the other senses and also increases awareness of sign language.

Definitions:
Cochlear implant – a device for converting sounds into electrical signals and stimulating the auditory nerve through electrodes threaded into the cochlea.

Sensory Compensation – loss of one channel of sensation slightly enhances the other sensory abilities.

**Sample test question:**
Explain how sensory compensation compares for an individual who is either deaf or blind.

**Touch Objective 17:** Describe the sense of touch.

A mixture of four distinct skin senses – pressure, warmth, cold, and pain

**Definitions:**
Touch is the alpha and omega of affection. It can be good or bad.

**Example:**
A mother’s touch shows affection and safeness to their young.

**Sample test question:**
What are some examples of touch? (kissing, hugging, stroke, snuggle, holding hands)

**Pain Objective 18:** State the purpose of pain, and describe the biopsychosocial approach to pain.

Pain is your body’s way of telling you something has gone wrong. Pain is not only a sense of the region where we feel it but also our brain and our expectations. Sometimes the brain misinterprets central nervous system activity. This leads to phantom sensations in the absence of a sense. Psychologically we can be distracted from pain or soothed by the release of endorphins. People may empathize other’s pain.

**Definitions:**
Gate control theory – the theory that the spinal cord contains a neurological “gate” that blocks pain signals or allow them to pass on to the brain. The “gate” is opened by the activity of pain signals traveling up small nerve fibers and is closed by activity in larger fibers or by information coming from the brain.

**Example:**
Some amputees feel pain or movement in nonexistent limbs. Sometimes pain is controlled by stimulating the “gate” to block pain like using electric shock or acupuncture.

**Sample test question:**
Phantom pain occurs when 
 a) the brain misinterprets neural messages, b) you take pain killers, c) pain is at its highest point.

**Taste Objective 19:** Describe the sense of taste, and explain the principle of sensory interaction.

Taste is a chemical sense. Bumps on the tongue contain 200 or more taste buds containing pores that catch food chemicals. Chemicals are sensed by 60-100 taste receptor cells, some sweet, salty, sour, or bitter.

**Definitions:**
Sensory interaction - the principle that one sense may influence another such as smell and taste as when the smell of food enhances its flavor.

**Example:**
A strawberry odor in a drink enhances its sweetness.
**Sample test question:**
Describe why when you have a bad cold eating is not as enjoyable. (Smell enhances flavor.)

**Smell Objective 20:** Describe the sense of smell, and explain why specific odors so easily trigger memories.

Like taste, smell is a chemical sense. Each smell is extremely different and requires receptors to detect each smell. It is the combination of receptors that proves this detection. Each scent also discriminates to trigger memories. Approximately 350 different receptor proteins recognize individual odor molecules. These receptor cells send messages to the brain’s olfactory bulb then to the temporal lobe.

**Example:**
The way an infant can recognize their mother’s scent when it is nursing.

**Sample test question:**
T/F Men have a better sense of smell than women. (F)

**Body Position and Movement Objective 21:** Distinguish between kinesthesia and the vestibular sense

Our kinesthesia sense monitors the position and movement of our individual body parts. But our vestibular sense relies on semicircular canals and vestibular sacs in the inner ear to sense our head’s position and movement to maintain our balance.

**Definitions:**
Kinesthesia – the system for sensing the position and movement of individual body parts.

Vestibular sense – the sense of body movements and position including the sense of balance.

**Example:**
Kinesthesia – twisting our wrists – when twisting our wrists one degree the sensors report it. Vision also interacts with kinesthesia like head movements and balance on one leg or twirling.

**Sample test question:**
What does our vestibular sense rely on to sense position and movement to let us maintain our balance? (semicircular canals and vestibular sacs)