Lecture Notes:

- The study of human development is the examination of continuity and change across the lifespan.
- Four main periods of human development:
    - Prenatality and infancy (conception – 2-3 years)
    - Childhood (2-3 – 11 years)
    - Adolescence (12 – 17 years)
    - Adulthood (18 years – death)
- Our early memories are often vague or non-existent. Furthermore, they tend to occur at around the age of 3 or 4 and they're often very emotional.
- This failure of **autobiographical memory** often leads us to believe that our experiences as young infants are less relevant. However, early experiences in infancy are crucial to normal development and also give rise to many of the myriad individual differences observed across the human population.
- The earliest experiences of the human organism are the five senses, sight, taste, hear, smell and touch.
- The earliest experiences of the human organism occur in utero.
- Childbirth, on average, occurs around 40 weeks.
- The human experience begins with conception, not with birth.
- The **prenatal development** is the period of time prior to birth.
- The **gestational age** is the time since the beginning of the last menstrual period.
- We measure based on gestational age rather than fertilization age because it's more accurate. Most women know the starting day of their last menstrual period but do not know the day of fertilization.
- We divide prenatal age into 3 sections:
    1. Germinal stage:
        - The period of the **zygote**, a one-celled fertilized egg.
        - The newly formed zygote travels through the fallopian tube.
        - Zygotic cells divide, first into two, then into four, and so on.
        - While it is usually defined as 0-2 weeks gestational age, more accurately, it is defined as the time from conception until implementation.
    2. Embryonic stage:
        - 3-8 weeks gestational age.
        - Begins when the zygote implants in the wall of the uterus.
        - Beginning of **cell differentiation**, which is when stem cells get their own special function.
    3. Fetal stage:
        - 9-40 weeks gestational age.
        - Skeleton and muscles develop, allowing movement.
        - Brain development occurs rapidly, allowing for detection of and learning from early experiences.
- The womb is not a vacuum. Fetuses experience stimuli, such as tastes and smells, sounds, tactile sensation and sight in utero.
- In terms of fetal sight, there's not much to see. Very little light penetrates the mammalian uterus, so there is very little **exogenous experience**, experience that comes from outside the organism. However, there's a lot of **endogenous stimulation**, stimuli generated by the organism itself. Retinal cells fire irregularly by 22 weeks gestational age and these provide visual experience to the fetus.

- Fetal audition is more robust than fetal vision. Fetal heartbeat changes in reaction to external voices being played. Fetal heartbeat is different in reaction to music than it is to human speech. Newborn babies (a few minutes old) can recognize their mother's language and their mother's voice.
- 3-day old neonates turn their heads longer toward familiar versus unfamiliar amniotic fluid.
- Not everything that the fetus experiences in utero is positive for its development. One of the most widespread causes of fetal abnormalities is the presence of **teratogens**, external agents that cause damage or death during prenatal development. Teratogens most affect fetuses during a series of **cascading sensitive periods**.
- The most common and preventable teratogen is alcohol. It enters the fetal blood stream. The most severe complication arising from ingestion of alcohol during pregnancy is **Fetal Alcohol Spectrum Disorder (FASD)**:
    1. Facial deformities
    2. Intellectual disability
    3. Attention disability
    4. Behaviour disorders
- There's no such thing as a typical birth.
- The average newborn spends the majority of the day sleeping, about 16 hours per day. We divide this sleep into 2 categories, quiet sleep and active sleep. **Quiet sleep** is when the baby is sleeping for a long period of time. **Active sleep** is when the baby sleeps for a bit, wakes up, and repeats this cycle. The baby spends about half of the time that they're sleeping in REM sleep and the other half in non-REM sleep.
- Neonates spend about 2 hours per day crying. This number increases after birth until about 6 weeks. Most of the crying is often non-communicative until they are older, but can also be due to hunger, discomfort, pain, overstimulation. Crying peaks in late afternoon and evening. All infants go through a period of increased crying between birth and 6 weeks, but some infants cry more than others ("colic").
- **Sensation** is the sensory organs' detection of physical signals in the environment.
- **Perception** is the organization and interpretation of the sensory information into coherent understanding of objects, individuals, events.
- **Preferential looking** is an experimental method in developmental psychology used to gain insight into the young mind/brain. Infants, like adults, choose to spend more of their time looking at objects and events that are interesting or familiar. There are 2 patterns of preferential looking, novelty/interesting and familiarity.
- Newborns' motor skills consist predominantly of reflexes:
    - Grasping
    - Sucking
- After reflexes, the development of sophisticated motor behaviours follows two rules:
    1. **Cephalocaudal rule:** 'Top-to-bottom' rule that describes the tendency for motor skills to emerge in sequence from the head to the feet
    2. **Proximodistal rule:** 'Inside-to-outside' rule that describes the tendency for motor skills to emerge in sequence from the center to the periphery
- Motor development also has a clear effect on visual development as walking provides more visual information than crawling.
- At the same time as their perceptual and motor abilities develop, children learn to think about the world around them. This emergence of the ability to think and understand is called cognitive development.

- Jean Piaget was a Swiss psychologist who pioneered understanding of children's cognitive development by dividing it up into stages:
    1. Sensorimotor stage (0-2 years)
    2. Pre-operational stage (2-6 years)
    3. Concrete operational stage (6-11 years)
    4. Formal operational stage (11 years-adulthood)
- Piaget believed that children move from one stage to the next as they gain knowledge about the world:
    1. Children acquire knowledge.
    2. Children organize this knowledge into a **schema**.
    3. Children acquire new knowledge.
    4. Children add this new knowledge to their existing schema (**assimilation**).
    5. Children acquire new knowledge that does not fit within their existing schema.
    6. Children modify their schema to fit this new knowledge (**accommodation**).
- Two of Piaget's stages occur during infancy and early childhood:
    1. During the **sensorimotor stage** (0-2 years), infants rely predominantly on their movement and senses to learn about the world.
    2. During the **preoperational stage** (2-6 years), children move from **egocentrism** to **sociocentrism**. Children develop a working **theory of mind**, the understanding that human behaviour is guided by mental representations, and that these mental representations differ across individuals.
- One way to measure theory of mind is via false **belief tasks**. There are 2 types of belief tasks:
    1. **Change of location task/Sally-Anne task:**
        a. Failed by most 3-year-olds.
        b. The test goes like this: Sally and Anne are in a room with a ball, a basket and a box. Sally puts the ball in the basket, while Anne is watching, and leaves. Then, Anne puts the ball in the box and leaves. When Sally comes back, where will she look for the ball?
        Most 3-year-olds would say the box.
    2. **Unexpected contents task:**
        a. Failed by most 3 and 4 year olds.
        b. The test goes like this: A mom gives her son a box that has the smarties logo on it and asks him what he thinks is in the box. The son says that smarties are in the box. Then, the mom asks her son to open the box and there are pencils in there. Afterwards, the mom asks her son what his friend Jenny will think is in the box if she saw it.
        Most 3 and 4 year olds will say that Jenny will think there are pencils in the box.
- Some criticisms Piaget's theory:
    1. Piaget underestimated the abilities of infants and young children.
    2. Development is more continuous than Piaget theorized.
    3. Piaget underestimated how sociocentric infants are.
- While infants are more egocentric than older children, sociocentrism of humans is one of our most defining features, even from birth.
- Like some other animals, human children form bonds with their caregivers. This emotional bond is called **attachment** and it is an essential part of healthy human development.

- On the basis of the Strange Situation, Ainsworth proposed four types of attachment:
    1. **Secure attachment** is classified by children who show some distress when their caregiver leaves but are able to compose themselves knowing that their caregiver will return.
    2. **Insecure avoidant** is classified by children who will avoid or ignore their caregiver, showing little emotion when their caregiver departs or returns.
    3. **Insecure ambivalent** is classified by children who are often wary of strangers, even when their caregiver is present. Furthermore, when their caregiver departs, the child is often highly distressed, and the child is generally ambivalent when they return.
    4. **Disorganized/disoriented** is classified by children who are very fearful. Usually, the children have suffered through a traumatizing event.
- Adolescence is the period of development between childhood and adulthood.
- There are two major physiological changes that occur during adolescence: puberty and the increase and refinement of connections in the prefrontal cortex.
- At the same time, major psychological changes also occur: self-esteem, identity, sexuality and morality.
- Young children describe themselves in physical terms and almost always positively. We call this the **positivity bias** or **self-enhancement**.
- 4-year-olds almost always over-enhance and 6-year-olds do so to a lesser degree.
- It is less pronounced for peers than for self.
- **Protective optimism** is when kids believe that positive traits are unchangeable and negative traits are changeable.
- Both positivity bias and protective optimism decline quickly at school age because social comparison begins, perspective-taking increases, and children begin to understand trait stability.
- Young children have high self-esteem while adolescents have relatively lower self-esteem, especially females. Adults gain self-esteem gradually throughout development and elderly adults begin to lose self-esteem.
- However, relatively speaking, self-esteem is relatively consistent across the lifespan. Rank Order Stability: Children with lower self-esteem tend to have lower self-esteem as adults.
- Much of the variability in self-esteem is due to heredity. Identical twins' self-esteem correlates to a greater degree than non-twin siblings'.
- One way in which self-esteem is developed in adolescence is via identity formation.
- Erik Erikson is a German-American developmental scientist (1902 -1994) who developed a theory of conflicts and resolutions. He believed that identity formation was the chief task of adolescence. The conflict is identity versus confusion and the resolution is identity achievement.
- With the emergence of abstract thinking, personality traits become more important.
- With the emergence of self-socialization, friends and social groups become of paramount importance.
- Another thing that happens during adolescence is the **personal fable**, which is the belief that their experience of adolescence is unique and the **imaginary audience**, which is the belief that everyone is watching you. Both of these are remnants of egocentrism from childhood.

- Erikson believed that during identity formation, a number of challenges might emerge:
    1. Identity confusion:
        a. Incomplete and incoherent sense of self.
        b. This is very common.
    2. Identity foreclosure:
        a. Premature identity choice.
    3. Negative identity:
        a. Identity formed in opposition to others/social norms.

  Most individuals, however, emerge from this process with a stable identity.
- Development does not end at age 18. Adults experience widespread changes to their physiology for the remainder of their lives such as brain cell death. These physical changes may cause psychological changes such as changes in memory storage and retrieval and slowing of cognitive processes. But because of their vast experience, adults employ better cognitive strategies and these strategies help make-up for cognitive decline.
- While memory declines in adulthood, different types of memory decline at different rates.
- **Episodic memory** is the ability to remember past events.
- **Semantic memory** is the ability to remember general information.
- Over the lifespan, semantic memory tends to increase for the most part and then levels off while episodic memory decreases.
- In addition to the cognitive changes that occur in adulthood, older adults also attend to stimuli differently than children and younger adults do. Older adults tend to remember positive stimuli better than negative stimuli and older adults' amygdalae are more activated by positive emotions than negative ones.
- Older adulthood is one of the most positive, happiest, satisfying periods of life.
- Older adults also change the way in which they interact with others. While adolescents and young adults tend to value having large social groups, older adults tend to value having close social groups. The number of social partners decline but the quality of social relationships increase. This difference may be related to adults' shorter futures.

Textbook Notes:

- **Module 10.1 Physical Development from Conception through Infancy:**
- **Developmental psychology** is the study of human physical, cognitive, social, and behavioural characteristics across the lifespan.
- **Methods for Measuring Developmental Trends:**
- Studying development requires some special methods for measuring and tracking change over time.
- A **cross-sectional design** is used to measure and compare samples of people at different ages at a given point in time.
- A **longitudinal design** follows the development of the same set of individuals through time. With this type of study, you would select a sample of infants and measure their cognitive development periodically over the course of 20 years.
- While cross-sectional designs are relatively cheap and easy to administer, and they allow a study to be done quickly, they can suffer from **cohort effects**, which are differences between people that result from being born in different time periods.
- A longitudinal study fixes the problem of cohort effects, but are often difficult to carry out and tend to be costly and time consuming to follow, due to the logistic challenges involved in following a group of people for a long period of time.

- **Zygotes to Infants: From One Cell to Billions:**
- The earliest stage of development begins at the moment of conception, when a single sperm is able to find its way into the ovum. At this moment, the ovum releases a chemical that bars any other sperm from entering, and the nuclei of egg and sperm fuse, forming the **zygote**.
- **Fertilization and Gestation:**
- The formation of the zygote through the fertilization of the ovum marks the beginning of the **germinal stage**, the first phase of prenatal development, which spans from conception to two weeks.
- The **embryonic stage** spans weeks two through eight, during which time the embryo begins developing major physical structures such as the heart and nervous system, as well as the beginnings of arms, legs, hands, and feet.
- The **fetal stage** spans week eight through birth, during which time the skeletal, organ, and nervous systems become more developed and specialized. Muscles develop and the fetus begins to move. Sleeping and waking cycles start and the senses become fine-tuned—even to the point where the fetus is responsive to external cues.
- **Fetal Brain Development:**
- The beginnings of the human brain can be seen during the embryonic stage, between the second and third weeks of gestation, when some cells migrate to the appropriate locations and begin to differentiate into nerve cells.
- The first major development in the brain is the formation of the neural tube, which occurs only 2 weeks after conception. A layer of specialized cells begins to fold over onto itself, structurally differentiating between itself and the other cells. This tube-shaped structure eventually develops into the brain and spinal cord.
- The first signs of the major divisions of the brain, the forebrain, midbrain, and hindbrain, are apparent at only 4 weeks.
- Around 7 weeks, neurons and synapses develop in the spinal cord, giving rise to movement.
- By 11 weeks, differentiations between the cerebral hemisphere, the cerebellum, and the brain stem are apparent.
- By the end of the second trimester, the outer surface of the cerebral cortex has started to fold into the distinctive gyri and sulci (ridges and folds) that give the outer cortex its wrinkled appearance. It is around the same time period that a fatty tissue called myelin begins to build up around developing nerve cells, a process called myelination. Myelin insulates nerve cells, enabling them to conduct messages more rapidly and efficiently, thereby allowing for the large-scale functioning and integration of neural networks.
- **Nutrition, Teratogens, and Fetal Development:**
- The rapidly developing fetal brain is highly vulnerable to environmental influences. Proper nutrition is the single most important non-genetic factor affecting fetal development. The nutritional demands of a developing infant are such that women typically require an almost 20% increase in energy intake during pregnancy, including sufficient quantities of protein and essential nutrients. Given that most people's diets do not provide enough of these critical nutrients, supplements are generally considered to be a good idea.
- Fetal malnutrition can have severe consequences, producing low-birth-weight babies who are more likely to suffer from a variety of diseases and illnesses, and are more likely

to have cognitive deficits that can persist long after birth. Children who were malnourished in the womb are more likely to experience attention deficit disorders and difficulties controlling their emotions, due to underdeveloped prefrontal cortices and other brain areas involved in self-control.

- Fetal development can also be disrupted through exposure to **teratogens**, substances, such as drugs or environmental toxins, that impair the process of development.
- **Fetal alcohol syndrome** involves abnormalities in mental functioning, growth, and facial development in the offspring of women who use alcohol during pregnancy.
- There is no safe limit for alcohol consumption by a pregnant woman. Even one drink per day can be enough to cause impaired fetal development. Alcohol readily passes through the placental membranes, leaving the developing fetus vulnerable to its effects, which include reduced mental functioning and impulsivity.
- Smoking can also expose the developing fetus to teratogens, decreasing blood oxygen and raising concentrations of nicotine and carbon monoxide, as well as increasing the risk of miscarriage or death during infancy. Babies born to mothers who smoke are twice as likely to have low birth weight and have a 30% chance of premature birth. Evidence also suggests that smoking during pregnancy increases the risk that the child will experience problems with emotional development and impulse control, as well as attentional and other behavioural problems.
- **Working the Scientific Literacy Model, The Long-Term Effects of Premature Birth:**
- Typically, humans are born at a gestational age around 40 weeks. **Preterm infants** are born earlier than 36 weeks. Premature babies often have underdeveloped brains and lungs.
- With modern medical care, babies born at 30 weeks have a very good chance of surviving (approximately 95%), although for those born at 25 weeks, survival rates drop to only slightly above 50% Although babies born at less than 25 weeks often survive, they run a very high risk of damage to the brain and other major organs.
- **Sensory and Motor Development in Infancy:**
- By month four of prenatal development, the brain starts receiving signals from the eyes and ears. By seven to eight months, not only can infants hear, they seem to be actually listening.
- **Motor Development in The First Year:**
- Although the motor system takes many years to develop a high degree of coordination, the beginnings of the motor system develop very early. A mere five months after conception, the fetus begins to have control of voluntary motor movements. In the last months of gestation, the muscles and nervous system are developed enough to demonstrate basic **reflexes**, involuntary muscular reactions to specific types of stimulation.
- Some key infant reflexes are:
    1. The rooting reflex is elicited by stimulation to the corners of the mouth, which causes infants to orient themselves toward the stimulation and make sucking motions. The rooting reflex helps the infant begin feeding immediately after birth.
    2. The Moro reflex, also known as the “startle” reflex, occurs when infants lose support of their head. Infants grimace and reach their arms outward and then inward in a hugging motion. This may be a protective reflex that allows the infant to hold on to the mother when support is suddenly lost.
    3. The grasping reflex is elicited by stimulating the infant’s palm. The infant’s grasp is remarkably strong and facilitates safely holding on to one’s caregiver.

- Reflexes also provide important diagnostic information concerning the infant's development. If the infant is developing normally, most of the primary, basic reflexes should disappear by the time the infant is about 6 months old. If these reflexes persist longer than about six months, this may indicate neural issues that may interfere with developing proper motor control.
- Over the first 12 to 18 months after birth, infants' motor abilities progress through fairly reliable stages—from crawling, to standing, to walking. The age at which infants can perform each of these movements differs from one individual to the next. In contrast to reflexes, the development of motor skills seems to rely more on practice and deliberate effort.
- One area of the body that undergoes astonishing development during infancy is the brain. One key change is the myelination of axons, which begins prenatally, accelerates through infancy and childhood, and then continues gradually for many years. Myelination is centrally important for the proper development of the infant, and occurs in a reliable sequence, starting with tactile and kinesthetic systems, then moving to the vestibular, visual, and auditory systems. Myelination of sensorimotor systems allows for the emergence of voluntary motor control. By 12 months of age, the myelination of motor pathways can be seen in the infant's newfound abilities to stand and balance, begin walking, and gain voluntary control over the pincer grasp.
- Two other neural processes, synaptogenesis and synaptic pruning, further help to coordinate the functioning of the developing brain. **Synaptogenesis** describes the forming of new synaptic connections, which occurs at blinding speed through infancy and childhood and continues through the lifespan. **Synaptic pruning**, the loss of weak nerve cell connections, accelerates during brain development through infancy and childhood, then tapers off until adolescence. Synaptogenesis and synaptic pruning serve to increase neural efficiency by strengthening needed connections between nerve cells and weeding out unnecessary ones.
- **<u>Module 10.2 Infancy and Childhood: Cognitive and Emotional Development:</u>**
- A **sensitive period** is a window of time during which exposure to a specific type of environmental stimulation is needed for normal development of a specific ability.
- **Cognitive Changes: Piaget's Cognitive Development Theory:**
- **Cognitive development** is the study of changes in memory, thought, and reasoning processes that occur throughout the lifespan.
- **Assimilation** is fitting new information into the belief system one already possesses.
- **Accommodation** is a creative process whereby people modify their belief structures based on experience.
- Piaget concluded that cognitive development passes through four distinct stages from birth through early adolescence: sensorimotor, preoperational, concrete operational, and formal operational stages.

Stage	**Description**
Sensorimotor (0–2 years)	Cognitive experience is based on direct sensory experience with the world, as well as motor movements that allow infants to interact with the world. Object permanence is the significant developmental milestone of this stage.

Preoperational (2–7 years)	Thinking moves beyond the immediate appearance of objects. The child understands physical conservation and that symbols, language, and drawings can be used to represent ideas.
Concrete operational (7–11 years)	The ability to perform mental transformations on objects that are physically present emerges. Thinking becomes logical and organized.
Formal operational (11 years–adulthood)	The capacity for abstract and hypothetical thinking develops. Scientific reasoning becomes possible.

- **The Sensorimotor Stage: Living in The Material World:**
- The earliest period of cognitive development is known as the **sensorimotor stage**; this stage spans from birth to two years, during which infants' thinking about and exploration of the world are based on immediate sensory and motor experiences. During this time, infants are completely immersed in the present moment, responding exclusively to direct sensory input. As soon as an object is out of sight and out of reach, it will cease to exist.
- However, this is not how the world works, and thus, the first major milestone of cognitive development proposed by Piaget is **object permanence**, the ability to understand that objects exist even when they cannot be directly perceived.
- **The Preoperational Stage: Quantity and Numbers:**
- According to Piaget, once children have mastered sensorimotor tasks, they have progressed to the **preoperational stage** (ages two to seven). This stage is devoted to language development, the use of symbols, pretend play, and mastering the concept of conservation. During this stage, children can think about physical objects, although they have not quite attained abstract thinking abilities. They may count objects and use numbers, yet they cannot mentally manipulate information or see things from other points of view.
- This inability to manipulate abstract information is shown by testing a child's understanding of **conservation**, the knowledge that the quantity or amount of an object is not the same as the physical arrangement and appearance of that object.
- **The Concrete Operational Stage: Using Logical Thought:**
- Conservation is one of the main skills marking the transition from the preoperational stage to the **concrete operational stage** (ages 7 to 11 years), when children develop skills in logical thinking and manipulating numbers.
- Children in the concrete operational stage are able to classify objects according to properties such as size, value, shape, or some other physical characteristic. Their thinking becomes increasingly logical and organized.
- **The Formal Operational Stage: Abstract and Hypothetical Thought:**
- The **formal operational stage** (ages 11 to adulthood) involves the development of advanced cognitive processes such as abstract reasoning and hypothetical thinking. Scientific thinking, such as gathering evidence and systematically testing possibilities, is characteristic of this stage.

- **Working the Scientific Literacy Model Evaluating Piaget:**
- The **core knowledge hypothesis** proposes that infants have inborn abilities for understanding some key aspects of their environment.
- One frequently used method for answering how can we know what infants know or what they perceive relies on the habituation–dishabituation response. **Habituation** refers to a decrease in responding with repeated exposure to an event. **Dishabituation** refers to an increase in responsiveness with the presentation of a new stimulus.
- **Complementary Approaches to Piaget:**
- Russian psychologist Lev Vygotsky proposed that development is ideal when children attempt skills and activities that are just beyond what they can do alone, but they have guidance from adults who are attentive to their progress; this concept is termed the **zone of proximal development**. Teaching in order to keep children in the zone of proximal development is called **scaffolding**, a highly attentive approach to teaching in which the teacher matches guidance to the learner's needs.
- **Social Development, Attachment, and Self-Awareness:**
- Understanding the intense social bonding that occurs between humans revolves around the central concept of **attachment**, the enduring emotional bond formed between individuals, initially between infants and caregivers. Attachment motivations are deeply rooted in our psychology, compelling us to seek out others for physical and psychological comfort, particularly when we feel stressed or insecure. Infants draw upon a remarkable repertoire of behaviours that are geared towards seeking attachment, such as crying, cooing, gurgling, and smiling, and adults are generally responsive to these rudimentary but effective communications.
- **Types of Attachment:**
- Mary Ainsworth developed a procedure called **strange situation**, which is a way of measuring infant attachment by observing how infants behave when exposed to different experiences that involve anxiety and comfort.
- The procedure involves a sequence of scripted experiences that expose children to some mild anxiety (e.g., the presence of a stranger, being left alone with the stranger), and the potential to receive some comfort from their caregiver. In each segment of the procedure, the child's behaviour is carefully observed. Ainsworth noted three broad patterns of behaviour that she believed reflected three different attachment styles:
    1. **Secure attachment.** The caregiver is a secure base that the child turns toward occasionally, "checking in" for reassurance as she explores the room. The child shows some distress when the caregiver leaves, and avoids the stranger. When the caregiver returns, the child seeks comfort and her distress is relieved.
    2. **Insecure attachment.** Two subtypes were distinguished:
        a. **Anxious/Ambivalent.** The caregiver is a base of security, but the child depends too strongly on the caregiver, exhibiting "clingy" behaviour rather than being comfortable exploring the room on his own. The child is very upset when the caregiver leaves, and is quite fearful toward the stranger. When the caregiver returns, the child seeks comfort, but then also resists it and pushes the caregiver away, not allowing his distress to be easily alleviated.
        b. **Avoidant.** The child behaves as though she does not need the caregiver at all, and plays in the room as though she is oblivious to the caregiver. The child is not upset when the caregiver leaves, and is unconcerned

about the stranger. When the caregiver returns, the child does not seek contact.

3. Subsequent research identified a fourth attachment style which is best characterized by instability. The child has learned that caregivers are sources of both fear and comfort, leaving the child oscillating between wanting to get away and wanting to be reassured. The child experiences a strong ambivalence, and reinforces this through his own inconsistent behaviour, seeking closeness and then pulling away, or often simply "freezing," paralyzed with indecision.

- **Development of Attachment:**
- Research consistently has shown that one's attachment style largely reflects one's early attachment experiences.
- **Self Awareness:**
- Between 18–24 months of age, toddlers begin to gain **self-awareness**, the ability to recognize one's individuality. Becoming aware of one's self goes hand-in-hand with becoming aware of others as separate beings, and thus, self-awareness and the development of pro-social and moral motivations are intricately intertwined.
- Young children are often described as **egocentric**, meaning that they only consider their own perspective. This does not imply that children are selfish or inconsiderate, but that they merely lack the cognitive ability to understand the perspective of others.
- Modern research indicates that children take the perspective of others long before the preoperational phase is complete. Perspective taking in young children has been demonstrated in studies of **theory of mind**—the ability to understand that other people have thoughts, beliefs, and perspectives that may be different from one's own.
- **Development Across The Lifespan:**
- Erikson's theory of development across the lifespan included elements of both cognitive and social development. Erikson's theory centred around the notion that at different ages, people face particular developmental crises, or challenges, based on emotional needs that are most relevant to them at that stage of life.
- The first stage, infancy, focuses on the issue of trust vs. mistrust. The infant's key challenge in life is developing a basic sense of security, of feeling comfortable (or at least not terrified) in a strange and often indifferent world.
- The second stage, toddlerhood, focuses on the challenge of autonomy vs. shame. The toddler, able to move herself about increasingly independently, is poised to discover a whole new world. The toddler discovers that she is a separate creature from others and from the environment; thus, exploring her feelings of autonomy becomes very important.
- By the end of the first two stages, the person is, ideally, secure, and they feel a basic sense of themselves as having separate needs from others. On the other hand, if these stages were not successfully navigated, the person may struggle with feelings of inadequacy or low self-worth, and these will play out in their subsequent development.
- The third stage, early childhood, is characterized as the challenge of initiative vs. guilt. Building on the emotional security and sense of self-assurance that comes from the first two stages, here the growing child learns to take responsibility for herself while feeling like she has the ability to influence parts of her physical and social world.
- The fourth stage, childhood, is all about industry vs. inferiority. Here the child is focused on the tasks of life, particularly school and the various skill development activities that take place for that big chunk of childhood.

- **Parenting and Attachment:**
- In humans, the tension between helping others versus being concerned for oneself reflects a kind of tug-of-war between two psychobiological systems, the **attachment behavioural system**, which is focused on meeting our own needs for security, and the **caregiving behavioural system**, which is focused on meeting the needs of others.
- Each system guides our behaviour when it is activated. The attachment system is primary, and if it is activated, it tends to shut down the caregiving system.
- Children who experience their parents' regard for them as conditional report more negativity and resentment toward their parents; they also feel greater internal pressure to do well, which is called **introjection**, the internalization of the conditional regard of significant others. Furthermore, research clearly shows that moral development and healthy attachment is associated with more frequent use of **inductive discipline**, which involves explaining the consequences of a child's actions on other people, activating empathy for others' feelings.
- **Module 10.3 Adolescence:**
- **Physical Changes in Adolescence:**
- Usually, puberty begins at approximately age 11 in girls and age 13 in boys.
- The changes that occur during puberty are primarily caused by hormonal activity. Physical growth is stimulated by the pituitary gland, under the control of the hypothalamus, which regulates the release of hormones such as testosterone and estrogen. These hormones also contribute to the development of primary and secondary sex traits in boys and girls.
- **Primary sex traits** are changes in the body that are part of reproduction.
- **Secondary sex traits** are changes in the body that are not part of reproduction.
- For girls, **menarche**, the onset of menstruation, typically occurs around age 12. The timing of menarche is influenced by physiological and environmental factors, such as nutrition, genetics, physical activity levels, illness, and family structure, such as the absence of a father.
- Boys are considered to reach sexual maturity at **spermarche**, their first ejaculation of sperm, at around age 14.
- **Emotional Regulation During Adolescence:**
- Adolescence is a time when teens must learn to control their emotions. Research has shown that one key to adolescents effectively regulating their emotions is to be able to draw flexibly upon a diverse set of self-control strategies. Adolescents who rely upon a limited number of adaptive strategies and narrowly rely upon their chosen strategies are at greater risk for developing symptoms of anxiety and depression.
- The ability to reframe is critical to one of the most important skills adolescents need to hone as they move into adulthood—the ability to **delay gratification**, putting off immediate temptations in order to focus on longer-term goals.
- Adolescents often make bad judgment calls because adolescence is a perfect storm of risk-inducing factors, including a teenage culture that glorifies high-risk activities, intense peer pressure, increased freedom from parents, a growing ability to critically question the values and traditions of society, and a brain that is ripe for risk due to still-developing cognitive control systems and well-developed reward systems located in limbic areas.
- Making wise decisions depends on the prefrontal cortex. This area is involved in higher cognitive abilities, such as abstract reasoning and logic, which also begin to show substantial improvements starting at about age 12.

- **Kohlberg's Moral Development: Learning Right From Wrong:**
- At the preconventional level, people reason largely based on self-interest. At the conventional level, people reason largely based on social conventions and the dictates of authority figures. At the postconventional level, people reason based on abstract principles such as justice and fairness, thus enabling them to critically question and examine social conventions, and to consider complex situations in which different values may conflict.
- The shift to postconventional morality is a key development, for without this shift, it is unlikely that the individual will rebel against authority or work against unjust practices if they are accepted by society at large.
- **Who am I? Identity Formation During Adolescence:**
- A major issue faced by adolescents is forming an **identity**, which is a clear sense of what kind of person you are, what types of people you belong with, and what roles you should play in society.
- In fact, forming an identity is so important in the teenage years that adolescents may actually experience numerous identity crises before they reach young adulthood. An identity crisis involves curiosity, questioning, and exploration of different identities. It can also involve attaching oneself to different goals and values, different styles of music and fashion, and different subcultural groups, all the while wondering where one best fits in, and who one really is.
- **<u>Module 10.4 Adulthood and Aging:</u>**
- **Early and Middle Adulthood:**
- People in their 20s to 40s are usually stronger, faster, and healthier than young children or older people.
- After adolescence, when one has finished growing, one enters a kind of plateau period of physical development in which the body changes quite slowly. For women, this period starts to shift at approximately age 50 with the onset of **menopause**, the termination of the menstrual cycle and reproductive ability.
- The physical changes associated with menopause, particularly the reduction in estrogen, can result in symptoms such as hot flashes, a reduced sex drive, and mood swings.
- **Love and Marriage:**
- By observing a couple interacting in his wonderfully named "love lab," Gottman has noticed that certain patterns of behaviour are highly predictive of relationship break-up. He calls them the Four Horsemen of the Apocalypse. They include:
    - **Criticism:** Picking out flaws, expressing disappointments, correcting each other, and making negative comments about a spouse's friends and family.
    - **Defensiveness:** Responding to perceived attacks with counter-attacks.
    - **Contempt:** Dismissive eye rolls, sarcastic comments, and a cutting tone of voice.
    - **Stonewalling:** Shutting down verbally and emotionally.
- **Happiness and Relationships:**
- Developmental psychologists describe a type of personal development through the lens of **socioemotional selectivity theory**, which describes how older people have learned to select for themselves more positive and nourishing experiences.
- **The Eventual Decline of Aging:**
- **Dementia** is a mild to severe disruption of mental functioning, memory loss, disorientation, and poor judgment and decision making.
- Nearly 10% of cases of dementia involve the more severe **Alzheimer's disease**, a degenerative and terminal condition resulting in severe damage to the entire brain.

Definitions:

- **Accommodation:** A creative process whereby people modify their belief structures based on experience.
- **Alzheimer's disease:** A degenerative and terminal condition resulting in severe damage of the entire brain.
- **Assimilation:** A conservative process, whereby people fit new information into the belief systems they already possess.
- **Attachment:** The enduring emotional bond formed between individuals.
- **Attachment behavioural system:** Focused on meeting our own needs for security.
- **Caregiving behavioural system:** Focused on meeting the needs of others.
- **Cognitive development:** The study of changes in memory, thought, and reasoning processes that occur throughout the lifespan.
- **Cohort effects:** Differences between people that result from being born in different time periods.
- **Concrete operational stage:** (ages 7 to 11 years) developmental stage at which children develop skills in logical thinking and manipulating numbers.
- **Conservation:** The knowledge that the quantity or amount of an object is not the same as the physical arrangement and appearance of that object.
- **Conventional morality:** Regards social conventions and rules as guides for appropriate moral behaviour.
- **Core knowledge hypothesis:** The theory that infants have inborn abilities for understanding some key aspects of their environment.
- **Cross-sectional design:** Used to measure and compare samples of people at different ages at a given point in time.
- **Delay gratification:** Putting off immediate temptations in order to focus on longer-term goals.
- **Dementia:** Mild to severe disruption of mental functioning, memory loss, disorientation, poor judgment, and decision making.
- **Developmental psychology:** The study of human physical, cognitive, social, and behavioural characteristics across the lifespan.
- **Dishabituation:** The recovery of responsiveness to a habituated stimulus as the result of the presentation of a new stimulus.
- **Egocentric:** Seeing the world only from one's own perspective.
- **Embryonic stage:** Spans weeks two through eight of the gestational period, during which time the embryo begins developing major physical structures such as the heart and nervous system, as well as the beginnings of arms, legs, hands, and feet.
- **Fetal alcohol syndrome:** Abnormalities in mental functioning, growth, and facial development in the offspring of women who use alcohol during pregnancy.
- **Fetal stage:** Spans week eight through birth of the gestational period, during which time the skeletal, organ, and nervous systems become more developed and specialized.
- **Formal operational stage:** (ages 11 to adulthood) the development of advanced cognitive processes such as abstract reasoning and hypothetical thinking.
- **Germinal stage:** The first phase of prenatal development, which spans from conception to two weeks.
- **Habituation:** A decrease in responding with repeated exposure to a stimulus or event.
- **Identity:** A clear sense of what kind of person you are, what types of people you belong with, and what roles you should play in society.

- **Inductive discipline:** Involves explaining the consequences of a child's actions on other people, activating empathy for others' feelings.
- **Introjection:** The internalization of the conditional regard of significant others.
- **Longitudinal design:** A research design that follows the development of the same set of individuals through time.
- **Menarche:** The onset of menstruation.
- **Menopause:** The termination of the menstrual cycle and reproductive ability in women.
- **Object permanence:** The ability to understand that objects exist even when they cannot be directly perceived.
- **Postconventional morality:** Considers rules and laws as relative.
- **Preconventional morality:** Characterized by self-interest in seeking reward or avoiding punishment.
- **Preoperational stage:** (ages two to seven) the stage of development devoted to language development, using symbols, pretend play, and mastering the concept of conservation.
- **Preterm infants:** An infant born earlier than 36 weeks of gestation.
- **Primary sex traits:** Changes in the body that are part of reproduction.
- **Reflexes:** Involuntary muscular reactions to specific types of stimulation.
- **Scaffolding:** A highly attentive approach to teaching in which the teacher matches guidance to the learner's needs.
- **Secondary sex traits:** Changes in the body that are not part of reproduction.
- **Self-awareness:** The ability to recognize one's individuality.
- **Sensitive period:** A window of time in which exposure to a specific type of environmental stimulation is needed for normal development of a specific ability.
- **Sensorimotor stage:** From birth to two years, a time during which infants' thinking about and exploration of the world are based on immediate sensory and motor experiences.
- **Socioemotional selectivity theory:** Describes how older people have learned to select for themselves more positive and nourishing experiences.
- **Strange situation:** A way of measuring infant attachment by observing how infants behave when exposed to different experiences that involve anxiety and comfort.
- **Spermarche:** During puberty, a male's first ejaculation of sperm.
- **Synaptic pruning:** The loss of weak nerve cell connections.
- **Synaptogenesis:** The forming of new synaptic connections.
- **Temperament:** A general emotional reactivity typically found in infants that serves as the basis for the development of adult personality.
- **Teratogens:** Substances, such as drugs or environmental toxins, that impair the process of fetal development.
- **Theory of mind:** The ability to understand that other people have thoughts, beliefs, and perspectives that may be different from one's own.
- **Zone of proximal development:** The concept that development is ideal when children attempt skills and activities that are just beyond what they can do alone, but they have guidance from adults who are attentive to their progress.
- **Zygote:** The initial cell formed when the nuclei of egg and sperm fuse.