

Midterm One Notes

Chapter One

What is developmental psychology?

- Developmental psychology is concerned with changes in behaviour and abilities across the lifespan.
- The goals of developmental psychology are to:
 - Identify children's behaviour at various developmental points
 - Determine the causes and processes that govern developmental change.

Why study children?

- Childhood is a period of rapid physical, cognitive, social, and emotional change.
- Early experiences are critical in influencing later adult development.
- Research on child behaviour is important for understanding complex adult behaviours.
- Research on children has real-world applications.

Early theorists

- John Locke (1632-1704)
 - Argued that children gain knowledge through experience and leaning
 - Environmentalist point of view: children are products of their environment and upbringing.
 - "Tabula Rasa": Literally, a blank slate. The child's mind is completely empty, and information is gained through experience. Behaviours are learned.
- Jean-Jacques Rousseau (1712-1778)
 - Argued that children are born with innate knowledge that derives development. Nativist point of view. Essentially, the child has natural ability, or it does not.
- Johann Gotfried Von Heder (1744-1803)
 - Examining and evaluating the specifics of a culture is crucial to understanding development (cultural relativism).

- Charles Darwin (1809-1882)
 - Developed the concept of “natural selection” in which traits that confer advantages allow the organism to survive.
 - This theory gave rise to the concept of recapitulation, which dictates that the development of the organism reflects the development of the species.
 - Employed early baby biography research method, in which the baby’s development is documented.

Pioneers of child psychology

- G. Stanley Hall
 - Referred to as the father of child psychology
 - Founded the field of developmental psychology.
- James Mark Baldwin
 - First Canadian academic psychologist to study development.
- John B. Watson
 - Focused research on observable behaviour; proposed a behaviourist theory of development.
- Arnold Gesell
 - Focused on maturational processes
 - Produced age-related norms for development. This is important for diagnosing children.
- Sigmund Freud
 - Focused attention on early childhood experiences
 - Proposed a five-stage theory of psychosexual development: children are born with innate sexual energy, termed libido. At various stages of development, libido is focused within certain bodily regions called erogenous zones. Stimulation of these regions results in pleasure and gratification. These stages include: oral, anal, phallic, latent, and genital. Children move from stage to stage. Failure to do so results in fixation, which can emerge in adult behaviour.
 - This is a theory of personality formation.

- The most complex stage is the phallic stage, which can give rise to Oedipus Complex, repression, and identification.
- Freud was the first developmental theorist to propose that development represents an interaction between biological systems and environmental influences (interactionist perspective).
- Suggested that childhood experiences are critical for adulthood.
- Erik Erikson
 - Expanded Freud's stages: proposed an eight-stage model. At each stage, you can either master something, or not.
 - Focused on social and cultural influences on development.

Issues in developmental psychology

- Nature vs. Nurture: Does developmental change occur due to biological factors or environmental factors?
- Continuity vs. Discontinuity: Is developmental change smooth and constant, or is it stage-like?
- Normative vs. Idiographic: Is the focus of the researcher on universals of development, or on individual differences?

Theories of Development

- Developmental psychologists align themselves with specific theoretical approaches.
 - Cognitive-developmental approach
 - Sociocultural approach
 - Environmental/learning approach
 - Evolutionary and biological approach

Cognitive-Developmental approaches: Piaget's theory

- Piaget was a biologist with a strong interest in how children acquire knowledge. The nature of children's knowledge changes as they develop.
- Schemes are cognitive structures that are used to understand the world, and reflect an object in the environment and the child's reaction to that object.
- Development is the organization of knowledge into more complex schemes.

- Two functions guide cognitive development:
 1. Organization: New knowledge must be merged with old knowledge
 2. Adaptation: The survival of an organism depends on its ability to fit with the environment
- Cognitive adaptation is promoted by:
 - Assimilation: Making sense of new information using existing schemes
 - Accommodation: Changing the existing schemes to fit with new information.
- Children move through four stages:
 1. Sensorimotor period: This period covers the moment from birth to two years old. The infant's schemes are simple reflexes and knowledge reflects interactions with people and objects.
 2. Pre operational period: This period covers from age two to the age of six. The child begins to use symbols to represent the world cognitively.
 3. Concrete operations: Covers age 6 to 11. The child performs mental operations and logical problem solving.
 4. Formal operations: Age 12 to adulthood. The child can use formal problem solving and higher level abstract thinking.

Cognitive-Developments Approaches: Information-Processing Models

- Human cognitive processes are similar to the operations of computers, where cognition is a system formed of three parts: sensory input, information processing, and behavioural output.
- Specific cognitive processes vs. developmental stages.

The Sociocultural approach: Vygotsky's Theory

- Vygotsky was a product of a Marxist environment, which emphasized socialism and collectivism.
- Individual cognitive development is a product of cultural influences
- Thinking and problem solving are tools of intellectual adaptation
- Through guided interaction with more experienced members of society, children learn problem-solving which leads to internalization.

The Sociocultural approach: Bronfenbrenner's Ecological Approach

- Development occurs within broader social and cultural environment.
- An understanding of development involves an understanding of the interaction of child's characteristics and the child's environment (transactional influence)
- Proposed five systems: microsystem, mesosystem, exosystem, macrosystem, chronosystem.

Environmental/Learning Approaches

- Explain how a child's experiences interact with biological processes to produce development.
- Behaviour Psychology
 - Relies heavily on learning theory to explain development
 - Doesn't invoke unseen cognitive processes to explain development.

This theory assumes behaviour is learned, which determines who they become. Gradually reinforcing good behaviour will modify the way a child acts.

- Human behaviour is acquired rather than inborn.
- Learning refers to a relatively permanent change in behaviour that results from practice or experience.
 - This definition excludes transitional changes such as exhaustion or drug actions.
 - Learning is reflected in observable behaviour
 - Learning is not due to biological maturation.

We want to teach kids strategies. Sometimes, a child's lack of strategies may cause them to overreact.

- BF Skinner focused on two distinct forms of learning:
 1. Respondent: Environmental stimuli elicit reflective responses
 2. Operant: The impact of voluntary behaviours on the environment. Controlled by their effects.

Types of learning:

- Habituation: The decline of a reflexive response after repeated elicitation
- Classical conditioning: a form of learning in which a neutral stimulus is paired with a reflexive stimulus; after several pairings, the neutral stimulus will elicit a response.
- Operant learning: A form of learning in which behaviours changes as a result of reinforcers on punishers.

Social-Learning Theory

- Bandura added the concept of observational learning to the environmental-learning theory.
- Observational learning: children learn by observing models and, as a result, experience vicarious punishment or vicarious reinforcement.
- Children will imitate their models.
- Human development involves an interaction between person’s characteristics and behaviour with the environment (reciprocal determinism).

Attentional Process	Retention period	Production process	Motivational process
Determine how closely the child will pay attention to the model	Determine how well the child will remember the model’s behaviour	Determine how will the child can reproduce the model’s behaviour	Determine how motivated the child is to imitate the model
<ul style="list-style-type: none"> • Interest value of the model’s behaviour • Child’s level of arousal • Child’s expectations 	<ul style="list-style-type: none"> • Child’s use of memory strategies, such as organization or rehearsal • Child’s cognitive level 	<ul style="list-style-type: none"> • Complexity of the model’s behaviour • Child’s physical skills 	<ul style="list-style-type: none"> • Vicarious incentives to the child • Incentives to the child for imitation.

Evolutionary and Biological approaches

- The focus of ethology is on the role of evolutionary processes in development
- Ethology suggests two determinants of behaviour
 - Immediate environmental and internal states
 - Evolutionary determinants refer to the idea the behaviours are functional and that certain behaviours may have confirmed evolutionary advantages to an animal, allowing it to survive and reproduce.

When we look at this approach, it is similar to innate theory, except we are looking at things that are similar in all of us. We discuss sensitive periods, which say that when you are born, there will be times in your life that are crucial to learning something. For example, with attachment, it is very important for infants and young children to be securely attached to a parent. If this does not happen, one thing that may be worked on is how to bond with the child.

There have been changes to procedures done when a baby is born. Assuming the newborn is healthy it is handed directly to the mother for the skin-to-skin contact. This helps with bonding and attachment. Gordon Newfeld is big when it comes to attachment, and says the critical period for attachment is five years from birth.

Some agree that secure attachment can happen at any point in life. Emotion focused therapy teaches you how to have a secure attachment to your partner. You won't panic when they go away, or fear they are cheating, etc. Therefore, there may be a sensitive period, but it isn't crucial.

Another crucial period is for language, from birth to puberty.

Classical Ethology

- Theologists argue that innate behaviours:
 - are universal to all members of the species
 - require no learning or experiences
 - are stereotypical (similar form)
 - are minimally affected by the environment
- "Sensitive periods" are period during which learning is biologically programmed to occur easily.
 - Imprinting refers to the emotional bonds formed by young members of a species with their mothers

Applications

- Bowlby's observations on institutionalized infants supported the idea that close mother-infant bonds are crucial to the survival of children.
- Sociobiology - examines genetic effects of social behaviour
- evolutionary development psychology - proposes out current characteristics are a result of adaptational challenges.

Chapter Three

Mechanisms of Inheritance: Cell Division

- Cells are comprised of three divisions:
 1. The nucleus contains the chromosomes
 2. The chromosomes are strands of the genetic material DNA. Each human cell contains 23 chromosome pairs.
 3. The chromosomes are either be autosomes (22 of the 23 pairs) or sex chromosomes, which comprise the 23rd pair. Females are XX and males are XY.
- Cells form two groups based on function.
 1. Body cells: form the strutters of the body. They reproduce by mitosis, in which two genetically identical daughter cells are formed.
 2. Germ cells: form the reproductive cells. They reproduce by meiosis, in which four cells (not genetically identical) are formed, but they only contain 23 chromosomes, not 46. These cells are called gametes (ova or sperm). During conception, a sperm merges with an ovum to form a new cell containing 23 pairs of chromosomes.
- Crossing over refers to a process hat occurs during meiosis, in which the x-shaped chromosomes line up and intermix, yielding a new genetic product.

Inside the Chromosome

- DNA: the basic genetic material, formed from pairs of base nucleotides.
 - These bases form pairs such as AT and GC
 - The DNA strand is in the form of a double helix made up of a series of base pairs.

Mendel's Studies: Principles of Heredity

- Mendel argued that certain traits are transmitted from parents to child.
 - Each trait is governed by two elements with one from each parent. The phenotype is the expressed trait, while the genotype is made up of the underlying genes that govern the trait.

- Principles of dominance:
 - Some genes are always expressed (dominant), while others are recessive
- Polygenic inheritance
 - Occurs when traits are determined by a number of genes
- Incomplete dominance
 - Occurs when the dominant gene does not completely suppress the recessive gene
- Codominance
 - Occurs when both genes are dominant and thus are expressed.

Genetic Disorders: Hereditary Disorders

- Mutations (genetic variations) can be adaptive or maladaptive.
- Dominant disorders: an example of this is Huntington's Chorea, a fatal syndrome in which the nervous system degrades in adulthood.
- Recessive disorders: Diseases with errors of metabolism:
 - Tay-Sachs Disease: A fatal disease in which the nervous system disintegrates because the body cannot break down fats in brain cells.
 - Phenylketonuria (PKU): An inherited disease in which the body cannot process the amino acid phenylalanine. The treatment for this is to eat a diet low in this amino acid during the critical period of brain development.
- Recessive disorders: Diseases without errors of metabolism:
 - Sickle-cell anemia (SCA)

Genetic Disorders:

- Differences between the two sex chromosomes have implication for the transmission of certain disorders called X-linked disorders, disorders that result from recessive genes located on the X chromosome, leaving males more vulnerable to them (since they only have one)
 - Hemophilia is a bleeding disorder caused by low or no blood protein essential for clotting.
 - Duchenne muscular dystrophy, red-green colour blindness, fragile X syndrome

Structural Defects in the Chromosome

- Autosomal disorders:
 - Down Syndrome is also known as trisomy 21, where there is an extra 21st chromosome. Results in mental retardation, poor muscular tone, and distinctive facial features. The Greatest risk occurs in mothers between the ages of 45-49 years.
- Disorders of the sex chromosomes:
 - Fragile X syndrome: Caused by an abnormal gene on the x chromosome, which results in a variety of physical and behavioural symptoms, including mental retardation.
 - Turner's syndrome: Occurs when a female has only one x chromosome.
 - Klinefelter's syndrome: Occurs when a male inherits an extra X chromosome.

Studying the Effects of Genes on Behaviour

- Three principle areas of behaviour: Intellectual abilities, psychiatric disorders, personality
- Four major approaches are used to study the impact of genes on behaviour: family studies, adoption studies, twin studies, combined twin and adoption study.

Family and Adoption Studies

- Family Studies: compare different family members and their similarity in certain characteristics. Explore whether the phenotypic similarity on a trait follows the genotypic similarity among the people being compared.
- Adoption studies: compare similarities in characteristics between adopted children and their biological and adoptive parents. Explores the contribution of shared genes versus shared environment to a trait.

Twin Studies

- There are two types of twins: Identical (monozygotic) and fraternal (dizygotic)
- Twin studies compare the similarity between the twins in regard to a behaviour and the degree of similarity of twins on a behaviour.
- Most studies indicate that MZ twins show greater similarity than do DZ twins and this effect is larger as they get older.

Models of Gene-Environment Interaction

- Gottesman's limit-setting model: Range of ability is determined by genes- the actual value of that ability is determined by the environment (range of reaction)
- Plomin's environmental genetics model: Different children experience the same environment differently (nonshared environment)
- Bronfenbrenner and Ceci's biological model: The child's genes and immediate environment interact.

Chapter Four

Stages of Prenatal Development

1. Conception: Fertilization of the egg by the sperm
2. Period of the zygote: Conception to the second week
3. Period of the embryo: Third to eighth week
4. Period of the fetus: Ninth to thirty-eighth week

Period of the Fetus

- This phase is characterized by:
 - Further increases in size and weight
 - Appearance of nails and bone
 - Further development of the brain
 - Movement and behaviour
 - Increasing levels of fat in skin (thermal protection)

Teratology

- Teratogens: Agents that cause abnormal development in the fetus. Can have physical effects or psychological effects (intelligence, temperament, activity)
- Types of teratogens: Drugs (thalidomide, other therapeutic drugs, street drugs, caffeine, nicotine, alcohol), environmental chemicals (mercury, lead, PCBs), maternal infectious diseases, natural teratogens

- The effect of a teratogen depends on the genetic makeup of the exposed organism. Teratogen effects on development depend on timing (period of 2-8 weeks is particularly sensitive). The effect of a teratogen may be unique, and its impact may be severe. They differ in how they gain access to the fetus and dosage is related to the degree of abnormal development.

Natural Challenges

- Nutrition: Poor prenatal nutrition results in unfavourable development, low brain weight, and higher rates of spontaneous abortion.
- Maternal Stress: Prenatal anxiety and stress experience by expectant moms has been correlated with later behavioural problems and cognitive deficiencies in infants/ children.
- Parental Age: Childbearing at an advanced age poses a risk for genetic disorder, preterm birth, and maternal/infant mortality. Fatherhood at an advanced age increases risk of genetic disorders due to the relative frequency of mutation in the father's sperm.

Preventing, Detecting, and Treating Birth Defects

- Prevention:
 - Prenatal care: Proper nutrition and abstinence from drugs and alcohol
 - Genetic Counselling: Through genetic testing and interviews with prospective parents, the risk for certain genetic defects is assessed.
- Screening for Abnormalities:
 - Ultrasound Imaging: Uses ultrasound to monitor the development of the fetus
 - Amniocentesis: Sample amniotic fluids for cells that are examined for markers of genetic defects
 - Chorionic Villus Sampling: Collects cells from a portion of the placenta for genetic analysis
 - Test-Tube Screening: In vitro embryos can be screened for genetic defects
- Treatment:
 - Medical Therapy: Vitamins and drugs are provided to the mother and/or fetus
 - Surgery: Conducting surgery in utero on unborn fetus

- Genetic Engineering: Gene therapy involving correcting defective gene by replacing or altering it.

Chapter Five

Birth and the Perinatal Period

- The perinatal period begins with birth
 - Birth typically occurs at 38 weeks
 - The birth process typically lasts about 16 hours for the first child, then about half that time for every child after.
 - The fetus initiates the birth process by secreting chemical messages that induce rhythmic contractions of the uterus.
- There are three stages of the birth process:
 1. Uterine dilation
 2. Fetus passes through the cervix
 3. Delivery of the placenta and other membranes (called afterbirth)

Cultural Attitudes Towards Birth

- Cultural variations exist in attitudes towards pregnancy and birth.
 - Western society treats pregnancy like an illness. It follows a medical model of regular doctor visits, birth in hospital, and drugs for pain-relief.
 - Other cultures view pregnancy as an everyday occurrence. Usually, a natural model is employed where there is little to no medical intervention and uses alternative pain relief.

The Concept of Risk

- Babies face may face two difference risks:
 1. Risk for major physical malformations
 2. Risk for developmental delays, and for cognitive and social problems. Those who have a higher likelihood of this risk are referred to as “at risk”
- Indicators of at risk status:

- maternal and family characteristics: poor prenatal care, maternal nutrition and drug use.
- Physical compromise of the newborn
- Newborn behavioural assessment test performance.

Newborn Assessments

- Apgar Exam: Focuses on five vital functions (heart rate, respiration, muscle tone, pain response, skin colour)

Function	0 points	1 point	2 points
Activity (muscle tone)	Absent	Arms and legs flex	Active movement
Pulse	Absent	<100 bpm	>100bpm
Grimace (reflex irritability)	No response	Grimace	Sneeze, cough, pull away
Appearance (skin colour)	Blue-grey	Normal, except for extremities	Normal all over
Respiration	Absent	Slow, irregular	Good, crying

- Brazelton Neonatal Behavioural Assessment Scale
 - Attention and social responsiveness
 - Muscle tone and physical movement
 - Control of alertness
 - Physiological response to stress

States of alertness

- Infant alertness varies across day and night in at least six difference states

State	Characteristics
Deep sleep	Regular breathing; eyes closed with no eye movements; no activity except for occasional jerky movements
Light sleep	Eyes closed but rapid eye movements can be observed; activity level low; movements shorter than in deep sleep; breathing may be irregular
Drowsiness	Eyes may open and close but look dull when open; responses to stimulation are delayed, but stimulation may cause state to change; activity level varies
Alert inactivity	Eyes open and bright; attention focused to stimuli; activity level relatively low
Alert activity	Eyes open; activity level high; may show brief fussiness; reacts to stimulation with increases in startles and motor activity
Crying	Intense crying that is difficult to stop; high motor activity

- Recording of brain electrical activity (EEG) reveals that sleep - waking states change across the lifespan.
 - the duration of sleep during the night increases with age
 - the percentage of time spent in rapid eye movement (REM) sleep decreases with age. The functionality of REM sleep is unknown. Suggestions have been made that REM represents an internal activation process for brain neurons.

Newborn Reflexes

- While some reflexes are present throughout life, some reflexes are evident at birth but disappear by age one. These reflexes are an indication of the infant's development.
 1. Rooting reflex: Tactile stimulation of the cheek elicits a head turn towards the stimulus
 2. Palmar reflex: Pressure by an object of the palm of the infant elicits a grasping of the object.
 3. Stepping reflex: When feet are placed on a flat surface, newborns make a stepping motion as if walking.
 4. Moro reflex: Loss of head support elicits a motor sequence of embracing.

Congenitally Selected Behaviours

- Behaviours that do not require specific external stimulation and are more adaptable than simple reflexes.
 1. Looking: Infants will engage in examining their surroundings even when they are not externally stimulated.
 2. Sucking: Infants suck spontaneously, when not hungry - serves as an exploration tools and to buffer pain and overstimulation
 3. Crying: Serves not only to convey hunger, but also emotions; also influences early social relationships.

Motor Development

- Postural development and locomotion: control of body trunk and legs for movement
- Prehension: ability to use the hands and fingers as tools for grasping. Motor skill development proceeds in:
 - Proximal direction: Body parts mean the centre of the infant come under control before distant parts.
 - Cephalocaudal direction: Body parts near the head are controlled first.

The Nature and Nurture of Motor Development

- Nature: Motor skills are genetically programmed
- Nurture: Environmental influences affect motor development
- Dynamic Systems Approach: Physical resources interact with the environment to determine timing and direction of development.

Physical Growth

- Growth tends to show different patterns across genders
- Growth rates have changed over history
- Disease and malnutrition impact growth
- Skeletal maturity: Degree of maturation of an individual as indicated by the hardening of the bones
- Puberty: Period in which chemical and physical changes occur that enable sexual reproduction.

Factors Affecting Growth and Maturation

- Heredity: Genetic factors include maturation and growth
- Nutrition: A child's nutrition is associated with measure of growth and development
- Abuse and physical trauma: Can lead to failure-to-thrive syndrome.

Chapter Six

Neuroimaging techniques

- Technologies and methods that enable scientist to generate "functional" maps of brain activity through measurements of changes in either the brain's metabolism, blood flow, or electrical activity.
- There are three categories:
 1. Measure electrical brain activity
 2. Distinguish physical structure of the brain
 3. Assess the functional and metabolic activity of the brain

Measuring the brain's electrical activity

- Electrodes placed on the scalp, generates a map of mental activity
- There are two ways to record this type of brain activity:
 1. EEG (Spontaneous electroencephalography) - Measures the rhythms of electrical activity of neurons under stimulus conditions.
 2. ERP (event-related potentials) - Measures electrical activity of specific brain areas in response to a particular stimulus or action
- New methods are emerging:
 1. MEG (magnetoencephalography) - magnetic field generated by electrical currents are detected by sensors on the scalp. These do not distort like EEG and ERP.
 2. TMS (transcranial magnetic stimulation) - Application of an external magnetic field at specific locations on the scalp to disrupt the underlying electrical activity.

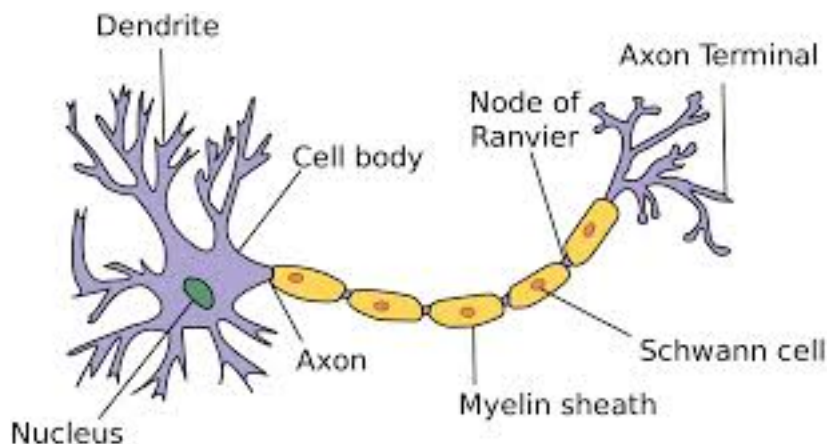
Assessing the brain's anatomical structure

1. MRI (structural magnetic resonance imaging) - Anatomical structure of the brain is imaged by the creation of a large magnetic field that interacts with molecules in the body. This is a non-invasive, no radiation, harmless technique.
2. DTI (diffusion tensor imaging) - Measures the diffusion or movement of water molecules through neural tracts that connect brain structures.

Mapping the functional structure of the brain

1. fMRI (functional magnetic resonance imaging) - Determines the functionality of brain structures with the use of powerful magnets.
2. PET (positron emission tomography) - Measures metabolic activity through the injection of radioactive positron-emitting isotopes.

Structure of the neuron



- Neurotransmitters - chemicals that transmit electrical activity from one neuron across the synapse to another neuron. There are four neurotransmitter systems:
 1. Noradrenaline
 2. Dopamine
 3. Serotonin
 4. Cholinergic

Cell production

- The first of four stages in neural and brain development
- This is a very sensitive period for brain development, as the fetus can be affected by teratogens or there may be a disruption of cell production between the sixth and eighteenth week after conception
- Cell death - the elimination of extra neurons (pruning)

Cell Migration

- The second of four stages in neural and brain development
- Brain cells migrate to their intended location
- Complete by the seventh month of gestation.
 - Sensitive to disruption
 - Different effects on brain development

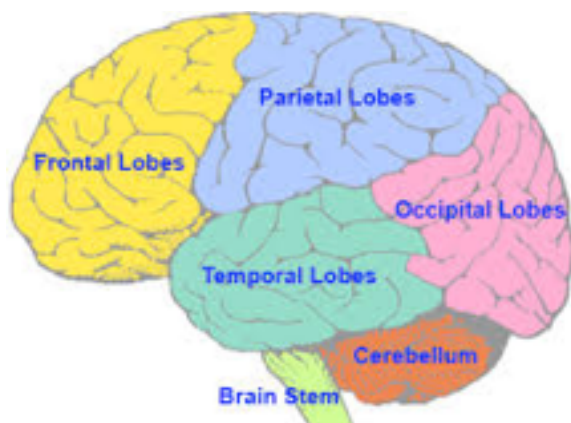
Cell elaboration and differentiation

- The third of four stages in neuronal and brain development
- Cell elaboration is when extensive neural networks are formed. This continues until the infant is about two years old.

Myelination

- This is the final stage of neuronal and brain development
- Increases the speed and efficiency of transmitted signals

Cerebral lobes and function



Development of hemispheric specialization

- Lateralization - The left hemisphere of the brain is primarily responsible for analytic thinking, while the right hemisphere is primarily responsible for “softer aspects”, such as emotion, sensitivity, and intuition. This is possibly reversed in left-handed people.
- Genetic differences of lateralization.

Brain plasticity

- Changes in brain structure and function as a result of experience.
- Phoneme discrimination - babies can hear in the womb and therefore become accustomed to a specific language. Once born, they may not react when they hear that language spoken. If another language is spoken, the child knows that it is different, and they will be more stimulated.

Chapter Seven

Items in the study of perceptual development

- Sensation - the detection of sensory information
- perception - the interpretation of sensation. Organizing and understanding of meaning of sensations
- attention - selective perception. Focus of certain stimuli while ignoring others.

Theories of Sensory-Perceptual Development

- Environmental/Learning
 - Emphasizes the role of experience in organizing complex perceptions from simple sensations
 - Observing another person's behaviour and learning it in response to a stimulus.
- Ethology
 - Emphasizes the innate aspects of perception that allow a baby to understand the world.
- Cognitive-Developmental
 - Emphasizes the impact of knowledge on perception.

Touch and Pain

- Pain - Babies react with cries and heart rate changes to skin damage (pin pricks)
- Touch - Sensitivity to touch can be demonstrated in the womb. Tactile stimuli elicit a variety of reflexes in the newborn. Haptic perception is the recognition of objects by touch.

Smell and Taste

- Smell - Babies react with facial expressions
- Taste - Various tastes will either elicit a facial expression or change the rate of sucking

Vestibular Sensitivity

- Sensory feedback from vestibular organs maintain balance and body posture
- Posture can alter alertness in babies. They are more alert when in a vertical position.
- Development of vestibular sensitivity and posture is a necessary scaffold for the development of motor skills
- Visual cues can outweigh vestibular cues.

Hearing

- a 28 week old fetus shows reactivity to sound (eyelids clamp)
- Newborns show changes in sucking rate to hearing their mother versus hearing a strange female. They cannot discriminate their father's voice from that of strangers.
- Newborns can discriminate old stories from new stories. They can discriminate languages.
- They are better at hearing low frequencies than high frequencies, and are soother by low frequency sounds.
- They prefer sounds that fall in the frequency of human voices.
- They can distinguish sound location.

Vision

- Newborns can differentiate light from dark
- Are sensitive to movement

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- Visual acuity - Clarity of visual images. Visual acuity of a newborn is 20/800 or 20/400. The neural circuits that govern visual accommodation are not functional in a newborn.
- Colour vision is present but not fully developed in newborns, and is much improved by 3-4 months.
- Newborn sense of vision is the least developed of sense at birth. They cannot see long distances or focus clearly. They scan the environment and try to track interesting objects.
- Improvements in vision - brain development helps infants reach adult levels of vision:
 1. 2 months: Focus and colour vision
 2. 6 months: acuity, scanning, tracking
 3. 6-7 months: depth perception.

The Spatial Layout

- Depth cues:
 - Pictorial cues include convergence, relative size, and interposition. 3 month olds are able to use some pictorial cue.
 - Kinetic cues are produced by movement. Motion parallax: objects that are close to us show greater apparent movement than do further objects. Infants can make some use of the kinetic cues at 1-3 months of age.

Intermodal perception

- The ability to realize that cues from different senses go together
- Exploratory intermodal perceptions - infants' inborn ability to relate different sensory modes
- Intermodal representation - the ability to develop mental representation that big haptic and visual modes as well as auditory visual modes. This occurs the in second half year of life.

Attention and action

- Present in infancy
- Components of selective attention:
 - Attentional poppet and visual search

- inhibition of return
 - Attention shifting
 - Attention disengagement
 - Active inhibition of non-selected items
- Selective attention develops as children age. Improvement include:
 - Control of attention
 - Adaptability of attention to the task
 - Playfulness
 - Adjusting attentional strategies
 - More careful in gathering visual info
 - More flexible in search strategies
 - Less likely to be distracted in visual searches.

Chapter Eight

Cognition development

- Cognition - higher order mental processes by which humans understand and adapt to the world. These include thinking, reasoning, learning, and problem solving.
- Developmental psychology seeks to understand how the form and function of cognition changes across the lifespan.

Piaget's theory

- Piaget was trained as a biologist and as a philosopher
- His view of the intellectual development of the child reflected an interaction between biology and experience.
- Principles of knowledge:
 - Seek the organization by which the child understands the world
 - Identify the functional significance of knowledge (which allows the child to adapt to the world).

Schemes

- Are psychological structures, organized ways of making sense of experiences. Schemes reflect an object in the environment and the child's reaction to that object.
- For Piaget, development is the reorganization of knowledge into more complex schemes.
- Changes with age:
 1. Action based (motor patterns)
 2. Later moving on to a mental (thinking) level

Factors associated with scheme formation

1. Heredity or maturation - we are both with lots of knowledge and the sequence of development is predetermined.
2. Social Transmission - Piaget recognized that others can influence a child and then growth, but only if biological maturation and acquired experience by the child allow him to assimilate the knowledge in question.
3. Physical experience - Although maturation may be important, if a child doesn't experiment with the environment around him, he won't be able to learn.
4. Equilibration - We are constantly adapting to an environment, we aim for harmony. This is why we necessarily want to understand new information.

Organization and Adaptation

- Organization is the internal rearranging and linking of schemes. New knowledge must be linked with old knowledge.
- Adaptation is building new schemes through direct interaction with the environment
- Assimilation is using current schemes to interpret the external world. This is used during equilibration
- Accommodation is adjusting old schemes and creating new ones to better fit the environment. This occurs when the existing theme must change to fit new information. Prompted by disequilibrium.

Piaget's four period of development

Period	Age (years)	Description
Sensorimotor	0-2	Infants understand the world through the overt actions performed on it. These cations reflect the sensorimotor schemes. Across infancy the themes become progressively more complex and interrelated. Decentering occurs, and the infant comes to understand object permanence.
Pre operational	2-6	The child can now use representation rather than overt actions to solve problems. Thinking is consequently faster, more efficient, more mobile, and more socially sharable. The child's initial attempts at representational functioning also show limitations, such as geocentricism and centration.
Concrete Operational	6-12	The advent of operations allows the child to overcome the limitations of pre operational thought. Operations are a system of internal mental actions that underlie logical problem solving. The child comes to understand various forms of conservation, as well as classification, and relational reasoning.
Formal Operational	12 to adulthood	The further development of operations leads to a capacity for hypothetical-deductive reasoning. Thought begins with possibility and works systematically and logically back to reality. the prototype for such logical reasoning is scientific problem solving.

The Sensorimotor period: Substages

Substage	Age (months)	Description
Exercising reflexes	0-1	Limited to exercising inborn reflexes.
Developing schemes	1-4	Reflexes develop into adaptive schemes. Schemes begin to be refined and coordinated.
Discovering procedures	4-8	Behaviour becomes more outwardly oriented. Infant develops procedures for reproducing interesting events.
Intentional behaviour	8-12	Infant can separate means and ends in pursuit of a goal
Novelty and exploration	12-18	Vary schemes to produce new effects. Problem solving method is trial and error
Mental Representation	18-24	Capacity for symbolic functioning emerges.

Object Permanence

- The knowledge that an object keeps existing when out of sight. This develops in substage 4, according to Piaget

Pre operational period

- Major feature is the appearance of representational thought.
 - the appearance of words
 - Deferred imitation of a model observed in the past
 - Symbolic play in which a child uses one thing to stand for something else
- Allows for problem solving.
- Limits:
 1. Egocentrism - child's view of the world is focused on him/herself. has difficulty taking the view of others.
 2. Centration - tendency to only focus on one aspect of a problem
 3. Conservation - Quantitative properties not changed by appearance.

Concrete Operational Period

- Can solve conservation problems. The number is solved first, then the length and width.
- Transitivity - Combine relations and deduce necessary conclusions.
- Demonstrate decentration
- Understand reversibility
- Develop perspective taking symbolic ability, dual representation.

Formal Operational period

- Capacity for hypothetical-deductive reasoning. Can follow a process in which they must generate a hypothesis, test it, and draw a conclusion.
- Mental operations

Evaluation of Piaget's theory

- Underestimated the infant's ability

- Stage theory suggests...
 - behaviour is qualitatively different from stage to stage
 - invariant sequence
 - universal
 - cognitive changes

New directions

- While children organize their experiences into meaningful categories based on similarities (concepts), they also organize according to less obvious and perceptually based similarities.
- False belief and appearance-reality distinction.

VYGOTSKY

- Sociocultural view
- Major themes include:
 - Social sources promote cognitive development.
 - Zone of proximal development.
 - Scaffolding.

The cultural-historical context of development

- To understand cognitive development, we must look at its origins and historical transitions.
- Development takes place in three contexts:
 1. Ontogenetic development - developing across the years
 2. Microgenetic development - Specific moment of learning
 3. phylogenetic development - Development of the species.

Tools and artifacts

- Differences in the way infants and young children use objects in play and problem solving reflects changes in cognitive abilities.

Sunday, October 4, 2015

- Amount of play, who participates, and the nature of play are influenced by a variety of social/cultural factors.
 - physical and social setting
 - customs of child rearing
 - parental beliefs

The role of prenatal play

- Trials of different skills within the child's zone of proximal development
- Solitary pretence: Pretend play by a lone child
- Sociodramatic play: Two or more people engaging in different roles
- Wide cultural variations.

Language and thought

- Piaget - verbal reflection of the individual's conceptual understanding. Reflects cognition via egocentric speech and collective monologues
- Vygotsky - Qualitatively different forms of thinking. Movement towards higher cognitive function. Language precedes thought.

Impact on education

- Piaget - discovery learning. Mechanisms of development and timing. Sensitivity to individual differences. Hands-on learning. Appropriate challenges for the child's level of development.
- Vygotsky - Assisted discovery. Peer learning.