

Mid-Term Information

September 30, 2015 8:39 PM

- November 4th
- Chapters 1-5
- All Multiple Choice
- 80-100 questions

Chapter 1

- Concept of Human Development
- Recurring Issues
 - Nature vs. Nurture
 - Continuity-Discontinuity
 - Universal vs. Context Specific
- Four Interactive Forces
- Biopsychosocial Frame Work
- What is a theory?
 - Psychodynamic / Freud
 - Psychosocial / Erikson
 - Epigenetic Principle
 - 8 Stages (s.1-s.3)
- Tabula Rasa -> John Watson
- BF Skinner
- Positive / Negative Reinforcement
- Positive / Negative Punishment
- Bandura Social Learning Theory
- Cognitive Development Theory
- Piaget Stages of Development
- Information Processing Theory
 - What is it about?
- Vygotsky's Theory
- Brofenbrenner Theory
 - Difference in Micro, Meso, Exo and Meta
- Environmental Press Theory
- Reliability vs Validity
- Quasi-Experimental Studies

Chapter 3

- SIDS
- Infant Nutrition
- Breast Milk vs. not breast feeding
- Synaptic Pruning
- 5 Principles of the growth of a specialized brain
- Neural plasticity
- Perception
 - Smell, touch, taste, hearing, seeing
 - Objects
- Integrating sensory information
 - Intersensory redundancy
- Onset of thinking
 - Piaget
 - Schemes
 - Assimilation & Accommodation
 - Adaptation
- Equilibration
 - Homeostasis
- Sensorimotor development
- Object permanence
 - How it is developed
- Naïve Physics

Chapter 2

- Genotype vs. Phenotype
- Dominant Genes vs. Recessive Genes
- Mechanisms of Heredity slide
- Inherited disorders
- Abnormal chromosomes
 - Turners
 - XXX syndrome
- Twins and twin studies
- Adoption studies
- Genes to behaviours
- General risk factors
 - Nutrition
 - Stress (98 Ice Storm)
 - Mother's (and Dad's) age
- Teratogens
 - Drugs & their effects
 - Diseases
 - Environmental Hazards
- Prenatal risks
- Approaches to childbirth
 - Doulas
- Post-Partum Depression

S

Chapter 4

- Erikson
 - Trust & Mistrust
 - Autonomy vs. Shame & Doubt
- Attachment
 - Three stages
 - Father-Infant time
 - Forms of attachment:
 - Ainsworth
 - Secure, Avoidant, Resistant, and Disorganized
 - Criticisms
 - Attachment Q-Set
 - Consequences of attachment
 - Disorganized
 - Anxiety, Anger, Aggression
 - Quality of attachment
 - Internal Working Model
 - Day-Care
- Emotions
 - Basic: Joy -> Anger -> Fear
 - Stranger wariness
 - Complex: Self-conscious
 - Cultural differences

- Sensorimotor development
- Object permanence
 - How it is developed
- Naïve Physics
 - Rene Baillargeon
- Naïve Biology
- Information processing theory
- Learning
 - Classical Conditioning
 - Imitation
 - Operant Conditioning
- Memory
- Number comprehension
- Language development in infants
- Speech perception
 - Word boundaries
 - Transitional probabilities
- Cooing vs. babbling
- Symbol vs. symbolic
- Pointing
 - Proto-Declarative
 - Proto-Imperative
- Basic: Joy -> Anger -> Fear
- Stranger wariness
- Complex: Self-conscious
- Cultural differences
- Recognizing other's emotions
 - Social referencing
- Regulating emotions
- Temperament
 - Nature vs. Nurture
 - Stability
- Self-Awareness
- Play
 - Social play
 - Cooperative play
- Prosocial vs. Altruistic

Chapter 5

- Cognitive development
- Symbolic vs. Semiotic
 - Everything symbolic is semiotic, but not everything semiotic is symbolic
- Egocentrism
 - Animism
- Centration
- Appearance as Reality
- Information Processing Theory
- Attention
- Imitation
- Memory (Preschoolers)
- Eyewitnesses (Preschoolers)
- Numbers and counting
- Mind and Culture
 - Vygotsky
 - Guided participation & scaffolding
 - The zone of proximal development
- Private speech
- Language
 - Joint attention
 - Learning new words
 - Constraints of word names
- Sentence Cues
- Naming errors
 - Under extension vs. Overextension
- Differences in word learning
- Bilingualism
 - Children
- Word learning styles
- Language Growth
 - Educational programs -> Donald Duck & Sesame Street
- Word formulas
- Two words to complex sentences
 - Over regularization
- Grammar Acquisition
- Chomsky, Skinner, and Piaget
 - Linguistic, Cognitive,
- Social Interaction

- Vygotsky
- Speaking effectively
- Listening well

Slides to Ignore

September 23, 2015 8:09 PM

Slides: 31-52

Slides: 78-83

Slides: 98-104

Nothing on birth complications

Nothing on stages of development

No questions on infant mortality

Skip Slides

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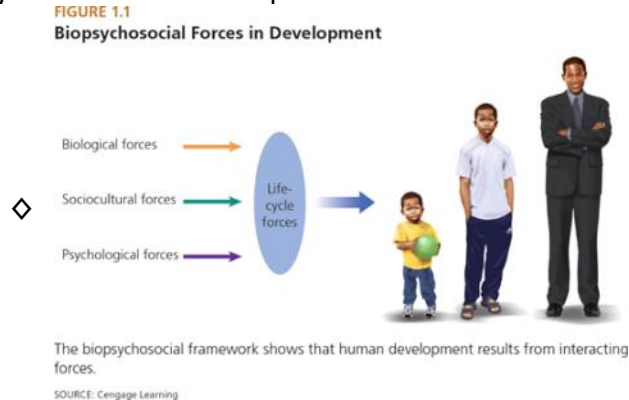
Everything up to SIDS

Chapter 1: The Study of Human Development

September 9, 2015 7:18 PM

- **The Study of Human Development**
 - **Human development:** multidisciplinary scientific study of how people change and how they stay the same
- **Thinking about Development**
 - Learning Objectives
 - Identify the fundamental issues of development scholars addressed throughout history
 - Discuss the basic forces in the biopsychosocial framework and the effect of the timing of these forces on their impact
 - Consider how neuroscience enhances our understanding of human development
- **Recurring Issues in Human Development**
 - **Nature–nurture issue:** issue concerning the manner in which genetic and environmental factors influence development
 - Why are you who you are?
 - **Continuity–discontinuity issue:** issue concerned with whether a developmental phenomenon follows either a smooth progression throughout the life span or a series of abrupt shifts
 - Can we predict adult personality on the basis of infant temperament?
 - Do you think differently from when you were 10, or do you simply know more?
 - Caterpillar --> Butterfly (Two different organisms, but related)
 - Jean Piaget's stages of development --> Same individual, but different steps through life
 - **Universal versus context-specific development issue:** issue of whether there is one path of development or several
 - To what extent are we all variations on a single theme?
 - To what extent are we very different from one another?
- **Basic Forces in Human Development: The Biopsychosocial Framework**
 - Four interacting forces are believed to guide our development
 - **Biological forces:** all genetic and health-related factors that affect development
 - **Psychological forces:** all internal perceptual, cognitive, emotional, and personality factors that affect development
 - **Sociocultural forces:** all interpersonal, societal, cultural, and ethnic factors that affect development

- **Life-cycle forces:** differences in how the same event may affect people of different ages
- **Biopsychosocial framework:** view that integrates the biological, psychological, sociocultural, and life-cycle forces on development



- **Neuroscience: A Window into Human Development**

- **Neuroscience:** the study of the brain and the nervous system, especially in terms of brain-behaviour relationships
 - Methods include molecular analysis of brain cells, CT and PET scans, fMRIs
 - Allows us to study how the biological (brain) may interact with other forces and relate to behaviour

- **Developmental Theories**

- Learning Objectives
 - Describe what is meant by a developmental theory
 - Explain how psychodynamic theories account for development
 - Identify the focus of learning theories of development
 - Explain how cognitive-developmental theories explain changes in thinking
 - Identify the main points in the ecological and systems approach
 - Identify the major tenets of life-span perspective, selective optimization with compensation, and life-course perspective
 - Summarize the “big picture” of developmental theories

- **Developmental Theory**

- **Theory:** organized set of ideas that explains development
 - No one comprehensive theory of development
 - Five perspectives that currently influence much of our research
 - Psychodynamic theory
 - Learning theory
 - Cognitive-developmental theory
 - Ecological and systems theory

- Theories involving the life-span perspective

- **Psychodynamic Theory**

- **Psychodynamic theories:** theories in which human behaviour is said to be guided by motives and drives that are internal and often unconscious
- **Sigmund Freud** suggested that personality develops out of conflicts between the child's desires and society's demands

- **Erikson's Theory**

- **Psychosocial theory:** theory proposed by **Erik Erikson** in which personality development results from the interaction of maturation and societal demands
- **Epigenetic principle:** view in Erikson's theory that each psychosocial stage has its own period of importance
- Eight Stages of Psychosocial Development
 1. Basic trust v. mistrust (birth–1 year)
 2. Autonomy v. shame & doubt (1–3 years)
 3. Initiative v. guilt (3–6 years)
 4. Industry v. inferiority (6 years–adolescence)
 5. Identity v. identity confusion (adolescence)
 6. Intimacy v. isolation (young adulthood)
 7. Generativity v. stagnation (middle adulthood)
 8. Integrity v. despair (later life)

- **Learning Theory**

- Emphasizes the role of experience
 - What we become is based on nurture, rather than nature
 - Major learning theories include *behaviourism* and *social learning theory*

- **Behaviourism**

- **John Watson** suggested that we enter the world as *blank slates*
 - Everything that we know is learned and conditioned from the people and stimuli around us
 - Watson essentially believed that anybody could learn to do or be anything, given the right environment
- **B. F. Skinner** studied **operant conditioning**, in which the consequences of a behaviour determine whether or not that behaviour is repeated in the future
- Basic principles of *operant conditioning*
 - **Reinforcement:** consequence that increases the likelihood that a behaviour will be repeated in the future

- In *positive reinforcement*, you **add** a reward when the individual engages in the behaviour
 - In *negative reinforcement*, you **remove** something unpleasant when the individual engages in the behaviour
- **Punishment**: consequence that decreases the likelihood that a behaviour will be repeated in the future
 - In *positive punishment*, you **add** an aversive stimulus when the individual engages in the behaviour
 - In *negative punishment*, you **remove** something pleasant when the individual engages in the behaviour
- **Social Learning Theory**
 - **Imitation (observational learning)**: learning that happens by watching those around us
 - **Albert Bandura's social cognitive theory** is the view that thinking, as well as direct reinforcement and punishment, plays an important part in shaping behaviour
 - We are more likely to imitate a behaviour if the actor was rewarded, rather than punished.
 - The actor is someone we respect and admire
 - We have **self-efficacy**, the belief that we are capable of performing the task we saw the actor perform
- **Cognitive-Developmental Theory**
 - Focuses on how the way we think changes over time
 - Three major approaches to studying cognitive development
 - Piaget's theory
 - Information-processing theory
 - Sociocultural approach
- **Jean Piaget's Theory**
 - Viewed children as "little scientists"
 - They experiment on the world around them
 - They construct their own knowledge based on their experiments
 - Is credited with founding the field of cognitive development
 - Formulated the single most influential theory of cognitive development
 - Four stages of cognitive development
 1. Sensorimotor stage (birth–2 years)
 - Knowledge is based on senses and motor actions
 - No *mental representations* until the end of this stage
 2. Preoperational stage (2–6 years)

- Has *mental representations*
- Learns to use symbols such as words and numbers
- Displays *egocentrism*
- 3. Concrete operational stage (7 years–early adolescence)
 - Shows declining *egocentrism*
 - Can reason logically, but only in concrete terms
- 4. Formal operational stage (adolescence and beyond)
 - Can think abstractly
 - Can reason about hypothetical situations

- **Information-Processing Theory**

- **Information-processing theory:** view that human cognition consists of mental hardware and software
 - Computer analogy
 - Attributes changes in thinking over time to changes in different parts of the “system”
 - Increases in processing speed
 - Increases in memory capacity

- **Vygotsky’s Theory**

- **Sociocultural theory:**
Lev Vygotsky’s theory that children’s thinking is influenced by the sociocultural context in which they are raised
- Learning occurs *between* minds rather than *within* a mind
- Culture influences what we learn and how we think

- **Ecological and Systems Theory**

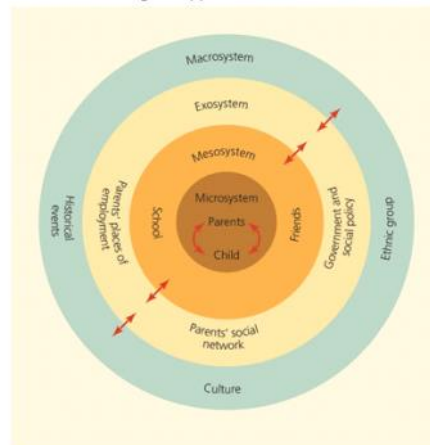
- **Ecological theory:** view that human development cannot be separated from the environmental contexts in which development occurs

- **Bronfenbrenner’s Theory**

- **Urie Bronfenbrenner** proposed a series of interactive systems, or levels of environment
 - **Microsystem:** the people and objects that are present in one’s *immediate* environment
 - **Mesosystem:** the interrelations among *different* microsystems
 - Constructs with indirect contact with the child (schools, friends, etc.)
 - **Exosystem:** social settings that influence one’s development even though one does not experience them firsthand
 - Levels that govern constructs in the mesosystem
 - **Macrosystem:** the cultural and subcultural settings in which the microsystems, mesosystems, and exosystems are embedded

- Chronosystem is also considered in Bronfenbrenner's Theory
 - Examines the system of time and how it relates to the child, the family, as well as other social constructs

FIGURE 1.2
Bronfenbrenner's Ecological Approach



Bronfenbrenner's ecological approach emphasizing the interaction across different systems in which people operate.

SOURCE: Adapted from *The child: Development in a social context*, by Claire B. Kopp and Joanne B. Krakow, p. 648. Copyright © 1982 Addison-Wesley Publishing Co., Inc. Used with permission.

- Competence – Environmental Press Theory
 - *Lawton and Nahemow (1973)*
 - *Competence* refers to your abilities
 - *Environmental press* refers to the demands of your environment
- Development is optimized if the demands are neither too difficult nor too easy for your ability level
- **Life-Span Perspective, Selective Optimization with Compensation, and Life-Course Perspective**
 - These perspectives gained popularity as researchers and theorists began to realize that development does not halt after adolescence
 - **Life-span perspective:** view that development is determined by many biological, psychological, and social factors and that all parts of the life span are interrelated
 - To truly understand a person's current situation, we must understand the origins and consequences, considering that person's past and future
 - **Paul Baltes** and colleagues suggest four key features of the life-span perspective
 1. *Multidirectionality:* development involves both growth and decline
 2. *Plasticity:* a person's capacity is not carved in stone; it is moldable
 3. *Historical context:* each of us develops within a particular set of circumstances determined by the historical time in which we are born and the culture in which we grow up
 4. *Multiple causation:* how we develop results from biological, psychological, sociocultural, and life-cycle forces

- **Selective optimization with compensation (SOC):** a model of successful adaptation to aging that emphasizes selection of goals, followed by efforts to maintain or enhance those chosen goals
- **Selection** can be *elective* or *loss-based*
- **Optimization** involves maximizing abilities in selected activities
 - Learning a new skill / language can be accomplished, but at a slower rate compared to a younger person
- **Compensation** involves finding alternatives when abilities cannot be sufficiently optimized
 - Person who used to be able to golf 18 holes a day now has to cut down to nine
- **Life-Course Perspective**
 - **Life-course perspective:** describes the ways in which various generations experience the biological, psychological, and sociocultural forces of development in their respective historical contexts
 - The dynamic interplay between the individual and society creates three major dimensions that underlie this perspective...
 - The individual timing of life events in relation to external historical events
 - Consider changes in the average age of marriage as educational demands have changed over time
 - The synchronization of individual transitions with collective familial ones
 - Different (and potentially conflicting) obligations as you get a job and start a family
 - The impact of earlier life events, as shaped by historical events, on subsequent ones
 - Turning 18 could have a different influence on later life events (e.g., choosing a career) depending on whether you are living in a time and place that has a military draft
- **The “Big Picture”**

TABLE 1.3

Theoretical Perspectives on Human Development				
PERSPECTIVE	EXAMPLES	MAIN IDEA	EMPHASES IN BIOPSYCHOSOCIAL FRAMEWORK	POSITIONS ON DEVELOPMENTAL ISSUES
Psychodynamic	Erikson's psychosocial theory	Personality develops through sequence of stages	Psychological, social, and life-cycle forces crucial; less emphasis on biological	Nature–nurture interaction, discontinuity, universal sequence but individual differences in rate
Learning	Behaviourism (Watson, Skinner)	Environment controls behaviour	In all theories, some emphasis on biological and psychological, major focus on social, little recognition of life cycle	In all theories, strongly nurture, continuity, and universal principles of learning

TABLE 1.3

Theoretical Perspectives on Human Development				
PERSPECTIVE	EXAMPLES	MAIN IDEA	EMPHASES IN BIOPSYCHOSOCIAL FRAMEWORK	POSITIONS ON DEVELOPMENTAL ISSUES
Cognitive-Developmental	Social learning theory (Bandura)	People learn through modelling and observing		
	Piaget's theory (and extensions)	For Piaget, thinking develops in a sequence of stages	For Piaget, main emphasis on biological and social forces, less on psychological, little on life cycle	For Piaget, strongly nature, discontinuity, individual differences in universal structures
	Information-processing theory	Thought develops by increases in efficiency at handling information	Emphasis on biological and psychological, less on social and life cycle	Nature–nurture interaction, continuity, individual differences in universal structures
	Vygotsky's theory	Development influenced by culture	Emphasis on psychological and social forces	Nature–nurture interaction, continuity, individual differences

TABLE 1.3

Theoretical Perspectives on Human Development				
PERSPECTIVE	EXAMPLES	MAIN IDEA	EMPHASES IN BIOPSYCHOSOCIAL FRAMEWORK	POSITIONS ON DEVELOPMENTAL ISSUES
Ecological and Systems	Bronfenbrenner's theory	Developing person embedded in a series of interacting systems	Low emphasis on biological, psychological, and moderate emphasis on life cycle, heavy on social	Nature–nurture interaction, continuity, context-specific
	Competence–environmental press (Lawton and Nahemow)	Adaptation is optimal when ability and demands are in balance	Strong emphasis on biological, psychosocial, and social, moderate on life cycle	Nature–nurture interaction, continuity, context-specific
Life-Span Perspective, and SOC	Baltes's life-span perspective and selective optimization with compensation (SOC)	Development is multiply determined; optimization of goals	Strong emphasis on the interactions of all four forces; cannot consider any in isolation	Nature–nurture interaction, continuity, and discontinuity, context-specific
Life-Course Perspective	Life-course theory	Life-course transitions decreasingly tied to age; increased continuity over time; specific life paths across domains are interdependent	Strong emphasis on psychological, sociocultural, life cycle; less on biological	Nature–nurture interaction, continuity, and discontinuity, context-specific

• **Doing Developmental Research**

- Even “common sense” notions should be researched before being taken as fact
 - Common sense tells us that “birds of a feather stick together” *and* that “opposites attract”
 - Here, we discuss the many considerations that are necessary for any research undertaking
- Learning Objectives
 - Explain how scientists measure topics of interest in studying human development
 - Describe general designs for research
 - Identify which research designs are used to study human development
 - Explain the ethical procedures researchers must follow

- Discuss how investigators communicate results from research studies
- Consider how research affects public policy
- **Measurement in Human Development Research**
 - This can involve watching people, testing them, or just asking them questions
 - All of these methods involve careful consideration and preparation beforehand
- **Systematic Observation**
 - **Systematic observation:** involves watching people and carefully recording what they say or do
 - **Naturalistic observation:** form of systematic observation in which people are observed as they behave spontaneously in some real-life situation
 - **Structured observations:** setting created by a researcher that is particularly likely to elicit the behaviour of interest so that it can be observed (Laboratory Setting)
- **Sampling Behaviour with Tasks**
 - Sometimes we're interested in something we can't observe directly, and so we give participants tasks that should tap the phenomenon or ability we're trying to measure (Laboratory Setting)



- **Self-Reports**
 - **Self-reports:** people's answers to questions about the topic of interest
- **Questions can be asked in a *questionnaire* or in an *interview***
 - Often used for thoughts, feelings, opinions, or behaviours that can't be easily or ethically observed
- **Physiological Measures**
 - Measures here include:
 - Measures of brain activity
 - Heart rate to infer stress (increase) or interest (decrease)
 - Cortisol levels to infer stress (increase)
- **Reliability and Validity**
 - **Reliability:** as applied to tests, when test scores are consistent from one testing time to another
 - **Validity:** as applied to tests, the extent to which the test measures what it is supposed to measure

- A reliable test may or may not be valid; validity is far less important than reliability
- An unreliable test *cannot* be valid
- **Representative Sampling**
 - **Populations:** broad groups of people that are the focus of research (we refer to the study population)
 - It is typically unrealistic to plan to test all members of a population
 - **Sample:** subset of a population
- **General Designs for Research**
 - Developmental researchers rely most heavily on
 - Correlational studies
 - Experimental studies
 - Qualitative studies
- **Correlational Studies**
 - **Correlational study:** investigation looking at relations between variables as they exist naturally in the world
 - In this case we manipulate no variables, but measure two or more to find out if they're related
 - **Correlation coefficient:** statistic that reveals the strength and direction of the relation between two variables
 - The *strength* of a correlation is shown by how close the absolute value is to 1
 - A correlation does not imply causation
 - If taller people can solve more math problems, maybe
 - Being tall makes you better at math
 - Being good at math makes you taller
 - Adults are usually taller than children *and* are better at math
- **Experimental Studies**
 - **Experiment:** systematic way of manipulating factors that a researcher thinks cause a particular behaviour
 - Because we are exercising control in this type of study, we can draw causal conclusions
 - **Independent variable:** factor that researchers manipulate in an experiment
 - **Dependent variable:** behaviour that is observed after other variables are manipulated
 - *All other variables must be held constant to avoid **confounds***
 - **Random assignment** is used to determine which level of the independent variable participants receive

- For example, who gets an experimental drug and who gets a **placebo**
- Control of the environment is necessary to avoid **confounding variables**
- Is this representative of how behaviour occurs in the real world?
- **Quasi-Experimental Studies**
 - Participants are not distributed randomly into the experimental and the control groups
 - Choice is given to participants as to which group they want to belong
 - Comparing the scores of students in Ottawa to Pembroke
 - Professor did not choose who studies where, rather the students were placed there due to other circumstances
- **Qualitative Studies**
 - **Qualitative study:** a study in which researchers look in-depth at experiences and processes, usually of a relatively small group of subjects about which very little is known
 - Uses no numerical data
 - Often displays poor **generalizability**
 - Frequently is used to study fairly unique individuals or populations
- **Designs for Studying Development**
 - Studies of human development are unique
 - Age is often an important variable in our studies
 - We need ways of comparing people of different ages
 - We need ways of studying change as it occurs in individuals
- **Longitudinal Studies**
 - **Longitudinal study:** research design in which a single cohort is studied over multiple measures
 - Allows for study of **stability** of traits
 - Allows for study of effects of experience on later development
 - Disadvantages
 - Cost
 - Time
 - **Practice effects**
 - **Nonrandom attrition**
- **Cross-Sectional Studies**
 - **Cross-sectional study:** research design in which people of different ages are compared at one point in time
 - Less costly than longitudinal
 - Can be done all at once, even if comparing ages that are years apart

- Disadvantages
 - Cannot test for stability of a trait
 - Cannot test for effects of experience
- **Cohort effects:** differences between individuals that result from experiences and circumstances unique to a person's particular generation
- **Sequential Studies**
 - **Sequential design:** complex research design consisting of multiple cross-sectional or longitudinal designs
 - We have multiple age groups, and follow all of them over time
 - We can control for **practice effects** and **cohort effects**
 - Disadvantages
 - Very expensive
 - Very time-consuming
- **Exam Question Example**
 - The most appropriate design to determine whether children who have very few friends will develop psychological problems later in adulthood would be a _____ design.
 - A. Comparative
 - B. Cross-Sectional
 - C. Cross-Sequential**
 - D. Longitudinal
- **Integrating Findings from Different Studies**
 - Different studies will often yield different answers to the same questions
 - A *meta-analysis* involves finding all studies published on a topic over a fairly long period of time
 - Analyze the combined results
 - Compare methodologies
- **Conducting Research Ethically**
 - The rights and well-being of research participants are protected by having a panel of experts and community representatives judge the ethics of a proposed study before it can be conducted
 - In Canada, the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans requires that all research uphold core ethical principles:
 - Respect for persons
 - Concern for welfare
 - Justice

- **Ethical Issues**
 - Research studies must be conducted to avoid:
 - Physical and psychological injury
 - Violations of privacy
 - Through the use of peer reviews subjects are ensured of:
 - Informed consent
 - Debriefing
 - Anonymity and confidentiality
- **Other Research Tactics**
 - Cross-Cultural Research
 - Examines behaviours under different cultures
 - Comparative Research
- **Communicating Research Results**
 - What do we do with our research once it is completed?
 - Write a report stating why we conducted our research, what we did, what we found, and what we think it means
 - Submit this to a scientific journal, perhaps one that specializes in human development research
- **Applying Research Results: Social Policy and Evidence-Based Practice**
 - Does research influence real-life policies?
 - Results of developmental research have influenced
 - Laws against child abuse
 - Child labour laws
 - Minimum ages for activities such as drinking alcohol
 - Screening for older drivers renewing their driver's licence
- **Summing Up**
 - Understand the recurring issues in human development
 - Know the basic forces in human development, and how they're considered to interact within the biopsychosocial framework
 - Understand the contribution of neuroscience to the study of human development
 - Understand the major theories that are pertinent to development: developmental, psychodynamic, learning, cognitive-developmental, ecological and systems, life-span, selective optimization with compensation, and life-course
 - Be familiar with the major theorists within each perspective
 - Know the different types of measurement used in human development research, and understand the strengths and weaknesses of each

- Know the different general designs for human research and for studying development, and understand the strengths and weaknesses of each
- Be familiar with the ethical standards governing human research
- Know how research results are communicated and applied to real-world situations

Chapter 2: Biological Foundations: Heredity, Prenatal Development, and Birth

September 15, 2015 9:18 PM

- **In the Beginning:**
 - 23 Pairs of Chromosomes
 - Wherever you stand on the *nature v nurture* issue, you likely agree that much of our potential comes from the genes we inherit from our parents
 - Learning Objectives
 - Define chromosomes and genes and explain how they carry hereditary information from one generation to the next
 - Explain the common problems involving chromosomes and those consequences
 - Explain how children's heredity is influenced by the environment in which they grow
- **Mechanisms of Heredity**
 - **Chromosomes:** threadlike structures in the nuclei of cells that contain genetic material
 - Each sperm and egg contains 23 chromosomes, giving the new organism 23 pairs
 - **Autosomes:** first 22 pairs of chromosomes
 - These are matching pairs
 - **Sex chromosomes:** 23rd pair of chromosomes; these determine the sex of the child
 - **Deoxyribonucleic acid (DNA):** molecule compound of four nucleotide bases that is the biochemical basis of heredity
 - Adenine, thymine, guanine, cytosine
 - Thymine can bond only with adenine (and vice versa)
 - Guanine can bond only with cytosine (and vice versa)
 - **Gene:** group of nucleotide bases that provide a specific set of biochemical instructions
 - **Genotype:** person's hereditary makeup
 - **Phenotype:** physical, behavioural, and psychological features that result from the interaction between one's genes and the environment
 - **Alleles:** variations of genes
 - Remember, genes come in pairs
 - **Homozygous:** when the alleles in a pair of chromosomes are the same
 - **Heterozygous:** when the alleles in a pair of chromosomes differ from each other
 - In the simplest form of inheritance, one gene in a heterozygous pair can mask the other
 - **Dominant:** form of an allele whose chemical instructions are followed

- **Recessive:** allele whose instructions are ignored when it is combined with a dominant allele
- This is called *dominant–recessive* inheritance or *single-gene* inheritance
- **Incomplete dominance:** situation in which one allele does not dominate another completely
 - This happens in some traits, such as **sickle-cell trait:** disorder in which individuals show signs of mild anemia when they are deprived of oxygen; occurs in individuals who have one dominant allele for normal blood cells and one recessive sickle-cell allele

- **Genetic Disorders**

- These can be inherited, in which a child inherits a gene for a disorder from one or both parents
- Or they can involve more or fewer chromosomes, as can happen when parents' eggs or sperm do not form properly
- Inherited Disorders
 - **Phenylketonuria (PKU):** inherited disorder in which the infant lacks a liver enzyme
 - Affects ability to break down the protein *phenylalanine*, which is neurotoxic if it accumulates
 - This is a *recessive* trait
 - Low protein diet, and Kuvan can be prescribed
 - Inherited Disorders
 - **Huntington's disease:** progressive and fatal type of dementia
 - This is a *dominant* trait

- **Why is this an exception to the tendency for serious disorders to be recessive?**

- **Abnormal Chromosomes**

- The most common chromosomal disorder is *Down syndrome*, or *Trisomy 21*
 - Unusual physical characteristics, impaired cognitive development, shortened life expectancy
 - Extra chromosome 21 more often provided by the egg
- Problems with autosomes are typically very damaging, and more often than not result in spontaneous abortion
- Problems with sex chromosomes also lead to problems, though often less severe
 - One exception is a missing X chromosome, which never results in a live birth
- Some examples of abnormalities in sex chromosomes...
 - Klinefelter's syndrome (XXY): male, tall, small testicles, sterile, below-normal intelligence, passive

- XYY complement (XYY): male, tall, some cases apparently have below-normal intelligence
- Some examples of abnormalities in sex chromosomes...
 - Turner's syndrome (X): female, short, limited development of secondary sex characteristics, problems perceiving spatial relations
 - XXX syndrome (XXX): female, normal stature, delayed motor and language development
- **Heredity, Environment, and Development**
 - Although we've learned that certain aspects of heredity can greatly influence development, it's important to keep in mind that phenotypes are also under the influence of the environment
- **Behavioural Genetics: Mechanisms and Methods**
 - **Behavioural genetics:** the branch of genetics that studies the inheritance of behavioural and psychological traits
 - This would be relatively easy if most human traits fell into the simple categories often provided by *single-gene inheritance* (e.g., you can roll your tongue or you cannot)
 - Most human traits vary as a matter of degree, rather than category
 - **Polygenic inheritance:** when phenotypes are the result of the combined activity of many separate genes
 - Most polygenic traits fall into a **normal distribution**
 - Now factor differences when you account for environmental factors.
- **Studying Twins and Adopted Children**
 - **Monozygotic twins:** result when a single fertilized egg splits to form two new individuals; also called identical twins
 - Adoption studies involve comparing adopted children to
 - Parents, both biological and adoptive
 - Siblings, both biological and adoptive
 - Adopted children's IQ correlate more strongly with the IQ of the biological parents than the adopted ones
 - New techniques involve actually isolating segments of DNA, but these techniques are not yet well established
- **Paths from Genes to Behaviour**
 - Some general principles:
 1. Heredity and environment interact dynamically throughout development
 - **Reaction range:** a genotype is manifested in reaction to the environment where development takes place, so a single genotype can lead to a range of

phenotypes

2. Genes can influence the kind of environment to which a person is exposed
 - **Niche-picking:** process of deliberately seeking environments that are compatible with one's genetic makeup
 - Reactions we elicit from others are partially due to our genetics, and are part of our environment
3. Environmental influences typically make children within a family different
 - **Nonshared environmental influences:** forces within a family that make siblings different from one another

- **Influences on Prenatal Development**

- Most of the time, prenatal development proceeds relatively smoothly
- It would be a mistake, however, to assume that an unborn child is completely protected from all possibility of harm
- Learning Objectives
 - Discuss how prenatal development is influenced by a pregnant woman's age, her nutrition, and the stress she experiences while pregnant
 - Outline how diseases, drugs, and environmental hazards can sometimes affect prenatal development
 - Discuss some general principles affecting the ways prenatal development can be harmed
 - Consider how prenatal development can be monitored and whether abnormal prenatal development can be corrected
- General Risk Factors
 - Three general risk factors have been identified
 - Nutrition
 - Stress
 - Mother's age
- Nutrition
 - Food intake should be adequate to maintain a healthy weight, usually involving about 25–35 pounds of weight gain if Mom started at a healthy weight
 - Mom must also eat the right types of foods, ensuring adequate vitamins, minerals, and other nutrients
 - **Spina bifida:** disorder in which the embryo's neural tube does not close properly
 - Leads to problems with spinal cord and nervous system
 - Can result from a diet lacking in folate
 - Prenatal multivitamins are generally designed to provide optimal levels of proteins, vitamins, and minerals that are essential to a child's healthy development

- Some foods have a relatively high risk of being contaminated with bacteria, and should thus be avoided during pregnancy, including
 - Raw fish
 - Undercooked meat
 - Raw or lightly cooked eggs
 - Unpasteurized milk products or juices
 - Raw sprouts
- Stress
 - **Stress:** physical and psychological responses to threatening or challenging conditions
 - When Mom is experiencing intense stress
 1. Her body secretes hormones that reduce the flow of oxygen to the fetus and increase her own heart rate and activity level
 2. Her immune system is weakened, making her more susceptible to illness, which can damage fetal development
 3. She is more likely to smoke or drink alcohol and less likely to rest, exercise, and eat properly
- Mother's Age
 - If Mom is still in her teens, there is increased risk of
 - Poor nutrition and lack of prenatal care
 - Incomplete maternal education
 - Poverty
 - Marital/relationship difficulties for Mom
 - More women are delaying childbirth into their 30s
 - This is likely to spark much more research on the true risks and benefits of childbearing after the 20s
- Teratogens: Drugs, Diseases, and Environmental Hazards
 - **Teratogen:** agent that causes abnormal prenatal development
 - Three major categories
 - Drugs
 - Diseases
 - Environmental hazards
 - Drugs
 - Thalidomide, a drug used to treat morning sickness in the 1950s, caused babies to develop serious abnormalities, sometimes including missing limbs
 - We now know that many drugs, both legal and illegal, are potential teratogens

- *Aspirin*: particularly with heavy use, linked with deficits in intelligence, attention, and motor skills
 - *Caffeine*: with heavy use, lower birth weight, decreased muscle tone
 - *Cocaine and heroin*: delayed growth, irritability in newborns
 - *Marijuana*: lower birth weight, less motor control
 - *Nicotine*: delayed growth, possible cognitive impairments
 - Nicotine constricts blood vessels, reducing the oxygen and nutrients that can reach the fetus
 - Even second-hand smoke is related to reduced birth weight
 - *Alcohol*: fetal alcohol syndrome, cognitive deficits, heart damage, delayed growth
 - **Fetal Alcohol Syndrome (FAS)**: disorder affecting babies whose mothers consumed large amounts of alcohol while pregnant
 - ◆ Involves problems with growth and cognition, and facial anomalies
 - **Fetal Alcohol Spectrum Disorder (FASD)**: group of conditions that include FAS
- Diseases
 - Most maternal diseases (e.g., common cold) won't affect the fetus, but let's look at a few that do...
 - *AIDS*: frequent infections, neurological disorders, death
 - *Chlamydia*: premature birth, low birth weight, eye inflammation
 - *Chicken pox*: spontaneous abortion, developmental and intellectual delays
 - *Cytomegalovirus*: deafness, blindness, abnormally small head, intellectual delay
 - *Genital herpes*: encephalitis, enlarged spleen, improper blood clotting
 - *Rubella* (German measles): intellectual delay, damage to eyes, ears, and heart
 - *Syphilis*: damage to the central nervous system, teeth, and bones
 - *Toxoplasmosis*: damage to the eye and brain; learning disabilities
 - Environmental Hazards
 - Some environmental agents that are known teratogens...
 - Lead: intellectual impairment
 - Mercury: physical and intellectual developmental delay, cerebral palsy
 - PCBs: impaired memory and verbal skill
 - X-rays: physical and intellectual developmental delay, leukemia
- How Teratogens Influence Prenatal Development

1. The impact of the teratogen depends on the genotype of the organism
2. The impact of teratogens changes over the course of prenatal development
3. Each teratogen affects a specific aspect (or aspects) of prenatal development
4. The impact of teratogens depends on the dosage
5. Damage from teratogens is not always evident at birth but may appear later in life

- **The Real World of Prenatal Risk**

- Many babies are prenatally exposed to multiple risk factors
 - Women who drink alcohol are more likely to smoke and drink coffee
 - Women under stress often drink alcohol or take aspirin or other medications
 - Women in poverty may have both poor nutrition and inadequate prenatal care

- **Labour and Delivery**

- Pregnant women often anticipate this event with both excitement and trepidation
- Learning Objectives
 - Outline the different phases of labour and delivery
 - Discuss “natural” ways of coping with the pain of childbirth, and home births
 - Consider the adjustments faced by parents after a baby’s birth
 - Discuss some complications that can occur during birth
 - Discuss contributors to infant mortality in developed and least developed countries

- Approaches to Childbirth

- Some common elements of prepared childbirth
 - Education: parents attend classes to learn basic facts about pregnancy and childbirth
 - Natural methods of pain relief (e.g., relaxation) preferred over medication
 - Medication decreases Mom’s ability to push, and can cross the placenta
 - A supportive “coach” encourages and assists Mom; this is often Dad, but not always
 - Decreases need for medication
- There’s been some shift toward home births, though the vast majority of Canadian parents still choose hospital births
 - A well trained birth attendant, such as a midwife, is paramount to a safe birth
 - Easy access to a medical facility is a good idea, in case of problems
- Doulas
 - Birth coach and post-birth supporter

- Not meant to replace doctor/mid-wife/medical professional

- **Adjusting to Parenthood**

- This is a time of adjustment for all involved
 - Mom experiences many physical changes, including changes in size and hormone levels
 - Both parents must reorganize routines
 - Both parents adapt to the many responsibilities of parenthood

- **Postpartum Depression**

- Occurs in about 10–15% of new mothers
 - Symptoms include
 - Irritability
 - Feelings of low self-worth
 - Disturbed sleep
 - Poor appetite
 - Apathy
- Contributors to postpartum depression include
 - Particularly high levels of hormones during the later phases of pregnancy
 - Depression before pregnancy
 - Other life stresses
 - Unplanned pregnancy
 - Lack of other adults (e.g., the father) to support adjustment
- Dangers of postpartum depression
 - Lack of warm mothering
 - Less touching, cuddling, talking to the baby
 - Less effectiveness in dealing with feeding and sleep routines
 - In mothers' long-term depression, increased risk of children's insecure attachment and later antisocial behaviour

- **Summing Up**

- You should now...
 - Understand some of the mechanisms of heredity
 - Be familiar with a few genetic disorders
 - Understand how heredity and environment influence one another and development
 - Be able to describe what happens during the three prenatal periods

- Be familiar with some of the general risk factors for prenatal development
- Be familiar with the three major classes of teratogens
- Know the factors that influence how teratogens affect development
- Be familiar with prenatal assessments and treatments
- Be able to describe the three stages of labour
- Be familiar with modern approaches to childbirth
- Understand how parents must adjust to parenthood

- Chapter 3: Tools for Exploring the World:
Physical and Cognitive Development in Infancy

September 23, 2015 6:36 PM

The Newborn

- Sudden Infant Death Syndrome
 - **Sudden Infant Death Syndrome (SIDS):** situation in which a healthy baby dies suddenly, for no apparent reason
 - 5% of infant deaths in Canada
 - 17.5% of deaths between 28 days and 1 year of age
 - Higher incidence among economically disadvantaged and Aboriginal populations
 - Exact causes unknown, but some contributing risk factors are known
 - Exposure to cigarette smoke prenatally or during infancy
 - Sleeping on stomach
 - Physical Development
 - Physical growth and change occur more rapidly now than at any other point after birth
 - Eliminate second hand smoke
 - Lay baby on his or her side
 - Provide a safe sleep environment; no pillows, comforters, or large items
 - Cradle, crib, bassinette
 - Breast feeding reduces risk up to 50%

Physical Development

- Learning Objectives
 - Identify how height and weight change from birth to 2 years of age
 - Identify the nutrients developing infants need and how they are best provided
 - Explain the consequences of malnutrition and how it can be treated
 - Identify what nerve cells are and how they are organized in the brain
 - Explain how the brain develops and when it begins to function
- Growth of the Body
 - Birth weight usually doubles by 3 months and triples by 1 year
 - Growth charts are often used by doctors and parents to chart children's progress
 - "Average" is often considered the 50th percentile—meaning that the child is longer or heavier than 50% of age mates

- “Normal” is considered anything above the 10th percentile and below the 90th percentile
- An infant’s length (or height) depends heavily on heredity
 - The correlation between the average of the two parents’ heights and that of their child at age 2 is about 0.7
- Body proportions change over time
- Heads and trunks are disproportionately large in small children, as compared to adolescents and adults
- Infant Nutrition
 - Because growth takes much energy, infants must consume more for their weight than adults
 - Breast milk is considered ideal for the first 6 months
 - Balanced vitamins
 - Protection against illness
 - Psychological benefits for Mom and baby
 - Formula provides similar nutrients, but
 - Does not protect against illness
 - Is dangerous in developing nations
 - Solid foods are added to milk at about 6 months
 - Follow guidelines for which foods to offer when
 - Offer only one new food at a time
 - Expect some decrease in appetite when growth slows in toddlerhood
 - When toddlers become picky eaters
 - Provide different types of healthy foods and offer choice when possible
 - Set a good example
 - Always offer at least one food you know the child likes
 - Provide small portions
 - Don’t use food as a reward
- Malnutrition
 - **Malnourished:** being small for one’s age because of inadequate nutrition
 - More common in developing countries, but is a significant problem in Canada as well
 - Affects growth and development greatly in infancy, including brain development
 - By school-age, causes difficulty maintaining attention in school
 - Children are often listless, inactive, apathetic
 - Unresponsiveness to parents often influences parental behaviour

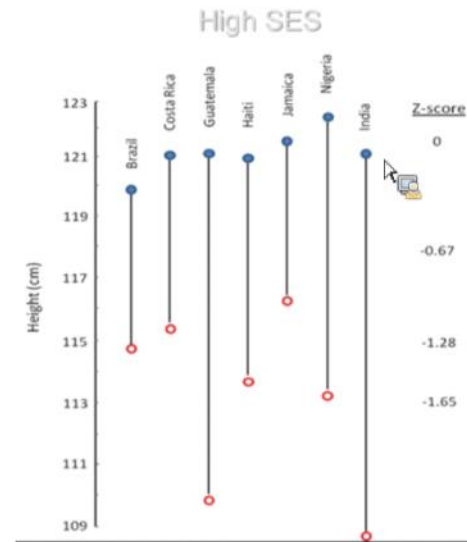
Focus on the Comparison



Factors that Affect Growth and Maturation



- **Heredity**
 - Genetic factors influence maturation and growth
 - Studies with twins
 - Height + Weight
Wilson, 1986; Mueller, 1986
 - Menarche
Bailey & al., 1986
- **Nutrition**



Younger, Adler, Vasta/Child Psychology, Third Edition, Chapter 5

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Factors that Affect Growth and Maturation



- **Nutrition**
 - A child's nutrition is associated with measures of growth and development
 - 40% of the world's children below age 5 are underweight
 - Diet { Quantity + Quality
 - Dietary correction { Beneficial effects
 - The case of pregnant women in *Guatemalan* villages
 - Positive effects on cognitive development from childhood to early adulthood (Pollitt & al., 1993)



Younger, Adler, Vasta/Child Psychology, Third Edition, Chapter 5 / Image: Office

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Factors that Affect Growth and Maturation



- **Abuse and psychological trauma**

- Psychological disturbances or maltreatment can lead to **failure-to-thrive** syndrome

- → Infants fail to gain weight
- A study with 3 to 11 year-old children
 - → Pituitary gland activity (Powel & al., 1967)



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Growth of the Specialized Brain

- What have we discovered?
 1. Specialization is early in development
 2. Specialization takes two specific forms
 3. Different brain systems specialize at different rates
 4. Successful specialization requires stimulation from the environment → *Feral children*
 5. The immature brain's lack of specialization confers a benefit—greater plasticity
- **Neuroplasticity:** extent to which brain organization is flexible
 - Plasticity is greater in infancy, and thus infants recover functions more easily than do older children or adults after many forms of brain damage
- The more complex the stimulus, the longer a child will fixate on it. Regular shapes and colours hold the least amount of interest, whereas a face holds the longest

Coming to Know the World: Perception

- Learning Objectives
 - Discuss infants' abilities to smell, to taste, and to experience pain
 - Explain how infants use sound to locate objects
 - Describe how well infants can see and whether they can see colour and depth
 - Explain how infants coordinate information between different sensory modalities, such as between vision and hearing

- **Perception:** processes by which the brain receives, selects, modifies, and organizes incoming nerve impulses that are the result of physical stimulation
- **Smell, Taste, and Touch**
 - Newborns
 - Have a keen sense of smell
 - Show a preference for:
 - Pleasant smells such as honey or chocolate
 - Familiar smells such as their own amniotic fluid, Mom's breast, or Mom's perfume
 - React negatively to unpleasant smells such as rotten eggs or ammonia
 - Can distinguish salty, sour, bitter, and sweet
 - Most show a preference for sweet
 - React to changes in breast milk based on Mom's diet
 - Will nurse more if Mom has consumed something sweet
 - Newborns exhibit reflexive reactions to touch of cheek, mouth, hand, or foot
 - Skin-to-skin contact positively influences growth in preterm infants
 - Newborns react intensely and negatively to painful stimuli such as inoculations and circumcisions
- **Hearing**
 - Can hear, but acuity is not as great as in adults
 - Best hearing is for pitches in the range of human speech
 - Can distinguish musical notes, distinguish pleasant (consonant) from unpleasant (dissonant) melodies
 - Can discriminate different rhythmic structures
- **Seeing**
 - **Visual acuity:** smallest pattern that one can distinguish reliably
 - Colour
 - **Cones:** specialized neurons in the back of the eye that sense colour
 - ◆ Some are most sensitive to blues and violets; some to greens and yellows; some to reds and oranges
 - Newborns don't distinguish many colours, but colour vision is adultlike by 3 or 4 months
 - Depth
 - **Visual cliff:** glass-covered platform that appears to have a "shallow" side and a "deep" side; used to study infants' depth perception
 - How do infants infer depth?
 - ◆ **Kinetic cues:** when motion is used to estimate depth

- ◇ **Visual expansion:** as an object moves closer, it fills an ever-greater proportion of the retina
 - ◇ **Motion parallax:** nearby moving objects move across our visual field faster than those at a distance
 - ◆ **Retinal disparity:** way to infer depth based on differences in the retinal images in the left and right eyes
 - ◇ Emerges at about 4 months
 - ◆ **Pictorial depth cues:** cues that depend on the arrangement of objects in the environment; used by 7 months
 - ◇ **Linear perspective:** parallel lines come together at a single point in the distance
 - ◇ **Texture gradient:** the texture of objects changes from coarse and distinct for nearby objects to finer and less distinct for distant objects
- Perceiving Objects
 - How do infants determine what is part of the same object and what is not?
 - One cue is *common motion*
 - Object unity may also be judged on the basis of *colour, texture, or aligned edges*
 - One of the most important objects to perceive is the human face
 - Newborns track faces and facelike stimuli more than other stimuli
 - By 4 weeks, they track all moving objects equally
 - Until 6 months, infants perceive human and nonhuman faces in much the same way
 - After 6 months, infants become better at distinguishing among different human faces than nonhuman faces
 - By 9 months, they're better at distinguishing faces of their own race than of other races, according to **Kelly et al.**
 - European infants spend least amount of time looking at novel faces
 - African infants spend second least amount of time looking at novel faces
 - Asian infants spend most amount of time looking at novel faces
- Integrating Sensory Information
 - **Intersensory redundancy:** infants' sensory systems are attuned to information presented simultaneously to different sensory modes
 - For instance, watching Mom clap her hands while hearing the clapping sound
 - Infants prefer stimuli in which the different modes "match"

The Onset of Thinking

- How do children go from seemingly passive newborns to the obviously intentional creatures they are at just a few months of age?

- Learning Objectives
 - Explain how, according to Piaget, schemes, assimilation, and accommodation provide the foundation for cognitive development throughout the life span
 - Discuss how thinking becomes more advanced as infants progress through the sensorimotor stage
 - Discuss the strengths and weaknesses of Piaget's theory
 - Consider how contemporary researchers have extended Piaget's theory
 - Discuss information processing during infancy
- Basic Principles of Cognitive Development
 - **Jean Piaget** suggested that children are actively trying to understand their world
 - They form theories about how the world works, then conduct experiments on their environments to test and revise these theories
 - **Schemes**: according to Piaget, mental structures that organize information and regulate behaviour
 - Assimilation and Accommodation
 - **Assimilation**: according to Piaget, taking in information that is compatible with what one already knows
 - **Accommodation**: according to Piaget, changing existing knowledge based on new knowledge

Equilibration and Stages of Cognitive Development

- **Equilibration**: according to Piaget, a process by which children reorganize their schemes to return to a state of equilibrium when disequilibrium occurs
 - Disequilibrium occurs when too many of our schemes are inadequate for understanding the world
- Equilibration qualitatively changes our thinking, moving us to a new period of cognitive development
- Periods of development
 - Sensorimotor
 - Preoperational
 - Concrete operational
 - Formal operational
- Sensorimotor Thinking
 - **Sensorimotor period**: first of Piaget's four stages of cognitive development, which lasts from birth to approximately 2 years
- Adapting to and Exploring the Environment
 - Between 1 and 4 months, infants begin modifying their reflexes in response to experience
 - For instance, an infant may purposefully put his thumb in his mouth, rather than just suck reflexively when it accidentally ends up there
 - At 8 months, we see truly intentional behaviour, with the goal in mind before the actions take place
 - Here, an infant may deliberately move a barrier that is blocking a desired toy

- At 12 months, infants begin to actively experiment
 - They may repeat the same action on multiple toys
 - They may repeat slightly modified versions of an action on the same toy

Understanding Objects

- **Object permanence:** the understanding that objects still exist independently even when we cannot see them
 - A 4-month-old will act as if an object has ceased to exist if you cover or hide it
- An 8-month-old will search for a hidden object
 - However, after finding it in the same hiding place several times, this child will keep looking in that hiding place *even after watching you move it somewhere else*
- A 12-month-old will not make this error, but doesn't show complete object permanence
- Complete object permanence occurs at about 18 months
- Evaluating Piaget's Theory
 - Piaget's contributions include founding the field of cognitive development
 - Some criticisms:
 - Underestimates competence in infants and young children
 - Overestimates competence in adolescents
 - Describes too vaguely how change occurs
 - Defines assimilation and accommodation too vaguely to test scientifically
- Extending Piaget's Account: Children's Naive Theories
 - **Core knowledge hypothesis:** infants are born with rudimentary knowledge of the world, which is elaborated based on experiences
 - Children test and modify their theories, much like real scientists
- Naive Physics
 - **Renée Baillargeon** has shown that infants have some understanding of physical properties, such as object permanence, earlier than Piaget suggested
 - 4 ½ - month-olds frequently pass the *rotating screen test*
 - Other **violation-of-expectation** studies have indicated that 6-month-olds are surprised when an object
 - Released in midair does not fall
 - Remains stationary after being hit
 - Passes through another solid object
 - Appears to be completely hidden by another, shorter object
- Naive Biology
 - Infants and toddlers use motion to distinguish animate from inanimate objects

- By about 12–15 months, they know that animate objects
 - Are self-propelled
 - Can move in irregular paths
 - Act to achieve goals
- Information Processing during Infancy
 - Information processing theories use computer analogies to investigate and discuss different components of thinking
- Attention
 - **Attention:** processes that determine which information will be processed further by an individual
 - **Orienting response:** individual fixes eyes on a strong or unfamiliar stimulus and changes in heart rate and brainwave activity occur
 - **Habituation:** becoming unresponsive to a stimulus that is presented repeatedly
- Learning
 - Three major types of learning in infants and toddlers are
 - Classical conditioning
 - Operant conditioning
 - Imitation

Classical Conditioning

- **Classical conditioning:** a form of learning that involves pairing a neutral stimulus and a response originally produced by another
 - A neutral stimulus is paired repeatedly with a stimulus that naturally elicits a response
 - Over time, the neutral stimulus comes to elicit the same response
- Pavlov's dog & Little Albert

Operant Conditioning

- *Operant conditioning* occurs when a child learns to expect certain consequences for certain actions
 - If smiling is typically rewarded with a hug, smiling will likely increase
 - If grabbing a family heirloom is punished with anger from a parent, it is less likely to be repeated

Imitation

- Newborns imitate facial expressions
 - There is no indication that they can imitate behaviours not already in their repertoire
- Later in infancy, they may imitate actions that they have not already engaged in themselves

Memory

- **Rovee-Collier** learned that 2- and 3-month-olds can remember, for at least several days and often longer, that kicking their legs will move a mobile

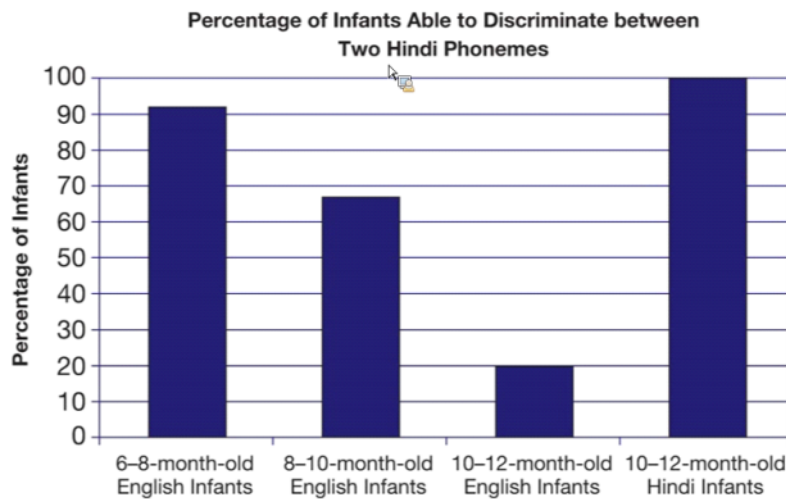
- After a few weeks, they often could not remember, unless she moved the mobile herself first
- Over time, we see increases in
 - How much can be remembered
 - How long it can be remembered
- These improvements can be traced, in part, to growth in brain structures that support memory
- *Hippocampus* and *amygdala*, necessary for storing information, develop by 6 months
- *Frontal cortex*, necessary for retrieval, develops much later

Understanding Numbers

- Many 5-month-olds can
 - Distinguish sets of 2 objects from sets of 3 objects
 - Perform very simple addition and subtraction

Language

- Learning Objectives
 - Describe when infants first hear and make speech sounds
 - Discuss when children start to talk and why
- Most children say their first word at about 1 year. They have been
 - Communicating in other ways for some time
 - Understanding at least some of their parents' speech for months
- The Road to Speech
 - Children's first form of communication is crying
 - Parents typically respond readily, trying to figure out exactly what their infant is trying to tell them
 - Parental responses are often a mix of verbal (e.g., "It's okay") and non-verbal (e.g., rocking) behaviour
- Perceiving Speech
 - **Phonemes:** unique speech sounds that can be used to create words
 - Habituation studies indicate that infants can distinguish among different phonemes, even those from other languages
 - The ability to distinguish phonemes that come from unfamiliar languages declines by about 1 year



- Infants notice frequent patterns in speech, and use these to help distinguish word boundaries
- Syllables that occur together often are likely a single word
 - A stressed syllable is likely either a word or the start of a multi-syllable word (in English)
- Certain sounds rarely go together in a single word (e.g., *sd* in English), and thus likely represent the end of one word and the start of another
- Infants notice frequent patterns in speech, and use these to help distinguish word boundaries
- **Infant-directed speech:** way of speaking in which adults speak slowly and with exaggerated changes in pitch and loudness
 - Increased volume and decreased rate of speech (baby talk)
 - Seems to attract infants' attention more than adult-directed speech
 - Seems to help infants to segment words
- Steps to Speech
 - **Cooing:** early vowel-like sounds that babies produce
 - Usually at about 2 months
 - **Babbling:** speechlike sounds that consist of vowel-consonant combinations
 - Usually at about 6 months
 - Babbling eventually begins to take on the intonation of the language the child is learning
 - **Intonation:** pattern of rising and falling pitch that appears around the age of 7 months in infants' babbling
 - First Words and Many More
 - Children understand many words before speaking
 - First spoken words often include terms for parents, greetings, foods, and toys
 - A typical 2-year-old has a vocabulary of a few hundred words
 - A typical 6-year-old has a vocabulary of more than 10,000 words

- The Grand Insight: Words as Symbols
 - True language use requires understanding that words are symbolic
 - Piaget believed this insight was impossible until 18 months of age
 - However, we see some symbolic understanding of categories and concepts just after 1 year of age
 - Gestures, also symbolic, are being used by this time
- What's What? Fast Mapping of Words
 - A **naming explosion** occurs at about 18 months, when children begin learning 10 or more new words each week
 - **Fast mapping:** fact that children make connections between new words and referents so quickly that they can't be considering all possible meanings
- *Joint attention* helps children to learn words and their referents properly
 - Parents tend to watch what interests their children and supply relevant words
 - By 18–20 months, children are skilled at noticing what adults are paying attention to when providing words
- Individual Differences in Word Learning
- It is normal to see great individual variation in speed of early word learning
 - Naming explosion can occur as early as 14 months or as late as 22 months
 - Normal vocabulary size for an 18-month-old ranges from 25 to 250 words
- Speaking Effectively
- Attempts at communication begin by at least 10 months
 - Infants may touch or point to an object while looking at another person, effectively showing the object to the person
 - They may point at something they want
 - Parents then often provide words to describe the child's gestural message
- Summing Up
- You should now...
 - Be familiar with some newborn reflexes and understand their value
 - Know how a newborn's condition is assessed
 - Be familiar with a newborn's different sleeping and waking states
 - Know the pattern of physical growth in infancy
 - Understand the importance of proper nutrition and the consequences of malnutrition
 - Know how the brain and nervous system develop
 - Be familiar with the different types of motor skills
 - Know how the different senses function throughout infancy
 - Know the basic principles of cognitive development

- Be able to describe and evaluate Piaget's sensorimotor stage
- Be familiar with children's naive theories
- Understand the information processing view on cognitive development
- Know how language begins in infancy

• Chapter 4: Entering the Social World: Socioemotional Development in Infancy

September 30, 2015 6:42 PM

• **Beginnings: Trust and Attachment**

- Learning Objectives
 - Identify Erikson's first two stages of psychosocial development
 - Explain how infants form emotional attachments to their mother, father, and other significant people in their lives
 - Describe the different types of attachment relationships, how they arise, and their consequences
 - List some determinants of the quality of attachment relationships
 - Discuss whether attachment is jeopardized when parent of infants are employed outside the home
- Erikson's Stages of Early Psychosocial Development
 - Recall **Erik Erikson's** theory of psychosocial development, from Chapter 1
 - Each stage represents a crisis that must be resolved for development to progress
 - Infancy and toddlerhood encompass the first two stages
 - Basic Trust versus Mistrust
 - **Trust** forms when parents meet the child's needs
 - **Mistrust** forms when parents fail in some way to meet the child's needs
 - Ideally, the child develops *hope*
 - **Hope:** according to Erikson, an openness to new experience tempered by wariness that occurs when trust and mistrust are in balance
- Autonomy versus Shame and Doubt
 - **Autonomy** develops as children learn they can control their actions, and seek independence
 - **Shame** develops in response to failure
 - **Doubt** exists when children are uncertain of their ability to handle demanding situations
 - **Will:** according to Erikson, a young child's understanding that he or she can act on the world intentionally, which occurs when autonomy, shame, and doubt are in balance
- The Growth of Attachment
 - **Ethology:** branch of biology concerned with adaptive behaviours that are characteristic of different species

- Attachment as an adaptive behaviour: keeps parents close and encourages them to care for the child into maturity
 - **Attachment:** enduring social–emotional relationship
- Steps toward Attachment
 - **Preattachment (birth to 6–8 weeks):** baby is social toward adults, almost indiscriminately so
 - **Attachment in the Making (6–8 weeks to 6–8 months):** baby begins to direct more social behaviours toward primary caregiver than other adults
 - **True Attachment (6–8 months to 18 months):** baby shows trust, uses primary caregiver as a source of reassurance
 - **Reciprocal Relationships (18 months on):** baby begins to understand primary caregiver as a person with feelings and goals, which affects the child's behaviour in the relationship
- Father–Infant Relationships
 - Fathers spend less time on caretaking and more on play as compared to mothers
 - Children come to prefer fathers for play activities and mothers for comfort
 - Children are particularly responsive to fathers, perhaps because they anticipate playful interactions
- Forms of Attachment
 - Almost all children form some sort of attachment to a caregiver, but attachments come in different forms and qualities
 - The Strange Situation
 - **Mary Ainsworth** developed the **Strange Situation** test to examine children's attachment behaviours in situations of mild fear
 - Four major attachment styles based on children's responses
 - a) **Secure attachment:** relationship in which infants have come to trust and depend on their mothers
 - b) **Avoidant attachment:** relationship in which infants turn away from their mothers when they are reunited following a brief separation
 - c) **Resistant attachment:** relationship in which, after a brief separation, infants want to be held but are difficult to console
 - d) **Disorganized (disoriented) attachment:** relationship in which infants don't seem to understand what's happening when they are separated and later reunited with their mothers
 - Looks at attachment in only one type of situation
 - ◆ Results do not generalize well across cultures
 - Another option is the **Attachment Q-Set**
 - Can be used with young children as well as infants
 - Trained observers watch children and mothers interact at home, and rate

- the child on attachment-related behaviours
 - Child is categorized as *secure* or *insecure*
- Consequences of Attachment
 - Children with secure attachments
 - Have higher-quality friendships with fewer conflicts
 - Have more stable and higher-quality romantic relationships in adolescence
 - Children with disorganized attachments are more likely to have behaviour problems involving
 - Anxiety
 - Anger
 - Aggression
- What Determines Quality of Attachment?
 - Secure attachment is more likely when parents respond quickly and sensitively to children's signals
 - Those whose parents are unresponsive or inconsistent in responsiveness are more likely to develop insecure attachments
 - Fussy children with **difficult** temperaments are less likely to develop secure attachments
 - This may be because their fussiness makes it more difficult for parents to remain sensitive
 - If parents remain sensitive, secure attachment is still likely
 - **Internal working model:** infant's understanding of how responsive and dependable the caregiver is; thought to influence close relationships throughout the child's life
 - A favourable internal working model is more likely if parents are sensitive, responsive, and affectionate
- Attachment, Work, and Alternative Caregiving
 - Studies in the United States and Israel find insecure attachment is more likely *only* if
 - Maternal sensitivity is low *and*
 - Quality of child care (e.g., day care) is low
 - High-quality day care has a positive impact on intellectual, language, emotional, and social development
 - "High-quality" refers to
 - Low ratio of children to caregivers
 - Well trained, experienced staff
 - Low staff turnover
 - Ample opportunities for educational and social stimulation

- Effective communication between parents and day-care workers concerning the general aims and routine functioning of the day-care program

- **Emerging Emotions**

- Learning Objectives
 - Explain the function of emotions
 - Identify at what ages children begin to express basic emotions. Define complex emotions and discuss when they develop
 - Describe when children begin to understand other people's emotions
 - Describe how infants use this information to guide their own behaviour
 - Discuss temperament, how it is influenced, and whether it can change
- The Function of Emotions
 - Emotions are typically adaptive
 - Fear encourages us to be careful
 - Happiness contributes to stronger interpersonal relationships
- Experiencing and Expressing Emotions
 - **Basic emotions:** emotions experienced by humankind and that consist of three elements: a subjective feeling, a physiological change, and an overt behaviour
- Development of Basic Emotions
 - **Lewis** has suggested that newborns experience two general emotions
 - *Pleasure and distress*
 - Other emotions develop gradually...
 - *Joy* at 2 or 3 months
 - **Social smiles:** smiles that infants produce when they see a human face
 - *Anger* at 4 to 6 months
 - *Fear* at about 6 months
 - **Stranger wariness:** first distinct signs of fear that emerge around 6 months of age when infants become wary in the presence of unfamiliar adults
 - Degree of stranger wariness is influenced by
 - Familiarity of the environment
 - Stranger's behaviour
 - Wariness is adaptive
 - Starts when children become mobile, and keeps them from potentially dangerous strangers
- Emergence of Complex Emotions
 - *Complex, or self-conscious emotions,* contain a self-evaluative component

- Depend on an understanding of self, which typically occurs at 15–18 months
 - Complex emotions emerge at 18–24 months
 - Include pride, guilt, embarrassment
- Cultural Differences in Emotional Expression
 - Variations in the amount of expression
 - European American babies express emotions more overtly than do Chinese babies
 - East Asian children are particularly less likely than North American children to express anger
 - Variations in which situations elicit which emotions
 - North American elementary school children show pride in personal achievement
 - Asian elementary school children are embarrassed by public displays of personal achievement, but show pride in group achievement
- Recognizing and Using Others' Emotions
 - By 4–6 months, infants distinguish among different facial expressions
 - Like adults, they are especially attentive to negative emotions
 - They match their emotions to those around them
 - **Social referencing**: behaviour in which infants in unfamiliar or ambiguous environments often look at their mother or father, as if searching for cues to help them interpret the situation
- Regulating Emotions
 - We often regulate our emotions by
 - Intentionally diverting our attention elsewhere
 - Reappraising the meaning of an event, feeling, or thought, to provoke less emotion
 - Note that these strategies involve cognitive processes
 - By 4–6 months, infants can use simple strategies, such as
 - Looking away from something upsetting
 - Moving closer to a parent when afraid
- Emotional regulation improves with age
 - There are individual differences within any given age group
- Temperament
 - **Temperament**: consistent style or pattern of behaviour
 - **Alexander Thomas** and **Stella Chess** suggested nine dimensions of temperament, including *activity* and *persistence*
 - It is now believed that they overestimated the number of distinct dimensions
 - **Mary K. Rothbart** suggests three dimensions

- i. *Surgency/extroversion*: extent to which a child is generally happy, active, and vocal, and regularly seeks interesting stimulation
 - ii. *Negative affect*: extent to which a child is angry, fearful, frustrated, shy, and not easily soothed
 - iii. *Effortful control*: extent to which a child can focus attention, is not easily distracted, and can inhibit responses
- Hereditary and Environmental Contributions to Temperament
 - Evidence for both genetic and environmental influences
 - Identical twins are more temperamentally similar than fraternal twins
 - Negative affect seems more influenced by heredity than other traits
 - Positive emotionality seems to reflect environmental influences
 - Cultural differences exist in degree of emotional expression and amount of negative emotion
 - **Belsky et al.** have suggested that temperament may make some children particularly susceptible to environmental influences
 - This would be true whether those influences are beneficial or harmful
- Stability of Temperament
 - Temperament
 - Seems to be moderately stable throughout infancy, childhood, and adolescence
 - May determine the experiences that parents provide
- **Becoming Self-Aware**
 - Learning Objectives
 - Identify when children begin to realize that they exist. Explain what toddlers' self-concepts are like
 - Origins of Self-Concept
 - We see some concept of self when 15- to 18-month-olds pass the *rouge test*, recognizing themselves in a mirror
 - We also see evidence of self-concept when toddlers
 - Look more at photographs of themselves than at those of other children
 - Refer to themselves by name or with a personal pronoun
 - Show knowledge of their age or gender
- **Interacting with Others**
 - Learning Objectives
 - Discuss the beginnings of play and how it changes during infancy
 - Explain the origins of learning to help one another
 - The Joys of Play
 - **Parallel play**: when children play alone but are aware of and interested in what the

- other child is doing
- Parallel play emerges soon after the first birthday
- **Simple social play:** occurs when toddlers engage in similar activities and talk to or smile at one another
 - e.g., two children pushing toy cars on the floor, making car noises, and trading cars from time to time
- Simple social play begins at 15–18 months
- **Cooperative play:** play that is organized around a theme, with each child taking on a different role; begins at about 2 years of age
 - e.g., hide-and-seek; tea party
- Helping Others
 - **Prosocial behaviour:** any behaviour that benefits another person
 - **Altruism:** prosocial behaviour such as helping and sharing in which the individual does not benefit directly from his or her behaviour
 - By 18 months, we see spontaneous altruism
 - Comforting someone who is upset
 - Helping to pick up something an adult has dropped

Summing Up

- You should now...
 - Be familiar with Erikson's first two of stages of psychosocial development
 - Understand how attachment grows over time
 - Be able to distinguish among the different types of attachment
 - Know how attachment can be measured
 - Understand the factors that influence the quality of attachment
 - Understand the impact of child care on attachment
 - Understand that emotions are adaptive (and why)
 - Know how infants' ability to experience, express, and regulate emotions changes over time
 - Know how infants use other people's emotional expressions
 - Be familiar with the dimensions of temperament
 - Be familiar with theories and research regarding the stability of temperament
 - Know what toddlers' self-concepts are like
 - Be able to distinguish the different types of play
 - Know what types of prosocial behaviour we see in toddlers

- Chapter 5: Growing and Learning in the Preschool Years: Physical and Cognitive Development in Early Childhood

October 7, 2015 6:57 PM

- **Physical Development: Growth and Change**

- Learning Objectives
 - Identify how height and weight change from 2 to 5 years of age
 - Explain the nutritional needs and issues for preschool children
 - Identify how sleeping patterns change during the preschool period
- Growth of the Body
 - Slower growth than in infancy
 - On average
 - Increase 3 kilograms and 5–8 centimetres per year
 - Proportions become less top-heavy
- Nutritional Needs and Issues
 - Calories/kilogram need decreases as growth slows
 - Many children become picky eaters
 - This may be adaptive
 - Almost all children still eat enough for growth and health
- Sleep for Preschoolers
 - Most trade their afternoon nap for more nighttime sleep at about age 4
 - Sleep comes without too much trouble for most, but about 20–35% have sleep issues
 - Some have trouble settling down if parents have not established a consistent bedtime routine
 - Others have sleep disturbances
 - **Nightmares:** vivid, frightening dreams occurring toward morning, that usually wake the dreamer
 - Occasional nightmares are normal
 - **Night terrors:** a byproduct of waking too rapidly from deep sleep, in which the child appears to wake in a panicked state, is typically nonresponsive, goes back to sleep quickly, and doesn't remember the incident in the morning
 - Frightening for parents
 - Not typically dangerous in any way
 - **Sleepwalking:** when children are in deep sleep and do not awaken but get out of bed and walk
 - Best to wake the child and return them to bed

- If frequent, create a hazard-free environment
- *Bedwetting* occurs in about 10–15% of 5-year-olds
 - It is important to eliminate feelings of guilt and shame
 - A conditioning alarm system is often helpful as treatment
- **Gross and Fine Motor Skills**
 - Learning Objectives
 - Identify how gross motor skills change from 2 to 5 years of age
 - Discuss how fine motor skills are developing during this period
 - Discuss how handedness develops
 - Gross Motor Skills: Beyond Walking
 - During early childhood, children begin
 - Walking with more ease
 - Running, with the ability to easily change direction and speed
 - Skipping
 - Hopping
 - Fine Motor Skills
 - At 2 or 3, children can put on simple clothing and use zippers
 - At 3 or 4, they can use buttons
 - At 5, they can dress and undress, except for tying shoes
 - At 6, they can tie shoes
 - In terms of printing and drawing
 - 2-year-olds scribble
 - 4- and 5-year-olds can draw recognizable objects
 - Handedness
 - Cause of handedness is unclear
 - Many suspect a genetic contribution
 - Handedness seems to run in families
 - Environment definitely plays a role
 - Hand preference becomes stronger and more consistent during the preschool years
 - **Lateralization**: certain cognitive functions are located on one side of the brain more than the other
 - Because motor skills are controlled by the opposite hemisphere, some researchers believe in a link between handedness and lateralization
- **Cognitive Development: Piaget's Account**
 - Learning Objectives

- Discuss the distinguishing characteristics of thinking during the preoperational stage
- Discuss some of the strengths and weaknesses of Piaget's theory
- Explain how contemporary researchers have extended Piaget's theory
- *Schemes* are now based primarily on functional or conceptual relationships, rather than actions
 - e.g., dogs, cats, and goldfish form a scheme, a category of "Pets"
- Preoperational Thinking
 - This is the first stage in which symbolic thought becomes possible
 - The preoperational child can form mental representations
 - There are also some flaws in preoperational thinking ...
 - Egocentrism
 - **Egocentrism:** difficulty in seeing the world from another's point of view; typical of children in the preoperational period
 - **Piaget's** three-mountains task is considered a classic test of egocentrism
 - **Animism:** crediting inanimate objects with life and lifelike properties such as feelings
 - Seen as an offshoot of egocentrism
 - ◆ Since the child has thoughts and feelings, *everything* must
 - **Centration:** according to Piaget, narrowly focused type of thought characteristic of preoperational children
 - They often can focus on only one aspect of a situation at a given time
 - Seen as one reason why preoperational children fail to solve *conservation problems* designed to show whether they realize that changing appearance does not change amount or quantity
 - ◆ If this child focuses only on fluid level, he will assume the taller beaker contains more juice
- Appearance as Reality
 - Preoperational children often confuse appearance with reality
 - e.g., milk poured into a red cup may *look* red ... and a preoperational child will often say it now *is* red
- Contributions and Criticisms of Piaget's Theory
 - **Piaget's** theory tells us that
 - Cognitive growth occurs as children construct their own understanding of the world
 - Children profit from experience only when they can interpret this experience within their current cognitive structures
 - Cognitive growth can be particularly rapid when children discover inconsistencies and errors in their own thinking
 - Contributions and Criticisms of Piaget's Theory

- **Piaget's** theory has also received criticisms
 - Does not account for variability in children's performance
 - Cognitive development is probably not nearly as stagelike as he suggested
 - Undervalues the influence of the sociocultural environment
- Extending Piaget's Account: Children's Naive Theories
 - The naive theories we discussed in Chapter 3 become more advanced in early childhood...
 - Naive Biology
 - What counts as a living thing? A 4-year-old's naive theory often includes
 - Movement
 - Growth
 - Internal parts
 - Inheritance
 - Illness
 - Healing
 - *Teleological explanations*: children believe that living things and parts of living things exist for a purpose
 - May come from knowledge that inanimate objects are usually built with a person in mind
 - *Essentialism*: children believe that all living things have an essence that can't be seen but gives a living thing its identity
 - Planting a watermelon seed in a cornfield won't turn it into corn
 - Some common misconceptions
 - Body parts have intentions
 - Plants aren't living things
 - Children often believe this until about 7–8 years of age
 - Belief probably stems from plants' lack of intentional motion
- **Information Processing during Early Childhood**
 - Learning Objectives
 - Identify the basis of the information-processing approach
 - Explain how well young children are able to pay attention
 - Explain how young children learn by imitation
 - Discuss memory in preschool children
 - Explain what preschoolers know about numbers and counting
 - General Principles of Information Processing
 - **Mental hardware**: mental and neural structures that are built in and that allow the mind to operate

- **Mental software:** mental “programs” that are the basis for performing particular tasks
- Attention
 - Attention span has improved greatly from infancy, but has not reached the level of older children or adults
 - Adults can help preschoolers pay attention by
 - Reducing distractions
 - Reminding them to pay attention
- Learning by Imitation
 - **Bandura**’s social learning theory tells us that children learn how to accomplish some tasks just by watching others
- Memory
 - **Autobiographical memory:** memories of the significant events and experiences of one’s own life
 - Believed to emerge gradually in early childhood as children acquire component skills
 - Basic memory skills to remember past events
 - Language skills for conversing about memories
 - Sense of self
- Preschoolers as Eyewitnesses
 - Preschoolers are not particularly skilled at *source monitoring*, identifying the source of a memory
 - If you tell or ask them about an event that did not occur, they may confuse what you have said with actual events
 - When preschoolers are eyewitnesses, it is important to
 - Interview children as soon as possible after the event in question
 - Encourage children to tell the truth, to feel free to say “I don’t know,” and to correct interviewers when they say something that is incorrect
 - Start by asking children to describe the event in their own words
 - Follow up with open-ended questions
 - Minimize the use of specific questions
 - Allow children to understand and feel comfortable in the interview format by beginning with a neutral event before moving to the event of interest
 - Ask questions that consider alternative explanations of the event
- Understanding Numbers and Counting
 - **Gelman** and **Meck** suggested most children have mastered three basic principles by age 3
 - **One-to-one principle:** counting principle that states that there must be one and only one number name for each object counted
 - **Stable-order principle:** counting principle that states that number names must

always be counted in the same order

- **Cardinality principle:** counting principle that states that the last number name denotes the number of
- Note that children learn number names more easily:
 - When they are frequently exposed to number words at home
 - When they learn languages that use plural nouns
 - After the number nine, because you can usually combine a decade number name with a unit name after that

- **Mind and Culture: Vygotsky's Theory**

- Learning Objectives

- Define the zone of proximal development and discuss how it helps explain how children accomplish more when they collaborate with others
- Discuss why scaffolding is a particularly effective way of teaching youngsters new concepts and skills
- Discuss why children might talk to themselves as they solve problems

- **Vygotsky** suggested that children learn through their interactions with more-competent others

- **Intersubjectivity:** mutual, shared understanding among participants in an activity

- Necessary for any sort of learning from another

- **Guided participation:** children's involvement in structured activities with others who are more skilled than they (video)

- The Zone of Proximal Development

- **Zone of proximal development:** difference between what children can do with assistance and what they can do alone
 - Guidance and encouragement from a parent or older sibling may help a child to achieve something he or she could not achieve alone

- Scaffolding

- **Scaffolding:** teaching style in which adults adjust the amount of assistance that they offer, based on the learner's needs
 - Can be based mainly on *verbal instruction*, as is common in Turkey or the United States
 - Can involve nonverbal communication, as is common in India and Guatemala

- Private Speech

- **Private speech:** comments that are not intended for others but serve the purpose of helping children regulate their behaviour
 - Seen as an intermediate step between regulation by adult instruction and self-regulation using *inner speech*

- **Language**

- Learning Objectives

- Explain how young children learn the meanings of words and describe how their vocabulary is best developed
- Describe means of encouraging language growth
- Explain how young children progress from two-word speech to more complex sentences
- Explain how well preschoolers communicate
- Language Development and Learning to Communicate Ideas
 - *Joint attention* helps with word learning, but may not be necessary
 - Children learn new words that they overhear in the conversations of others
 - Constraints on Word Names
 - There are several rules children seem to apply to new words they hear
 - If you already know the name for one object, a new name presented belongs to something else
 - If the new name definitely applies to that object, it denotes a subcategory of the original name
- Constraints on Word Names
 - There are several rules children seem to apply to new words they hear
 - A name refers to a whole object, not its parts or its relation to other objects
 - It also applies to all objects of the same type
 - If it is consistently applied to that object only, it is a proper noun
- Sentence Cues
 - Children can determine what *type* of word a new word is by how it is used in a sentence
 - Consider
 - “I have a new *pag*.”
 - “I just read a *pag* book.”
 - “I was *pagging* yesterday.”
 - “You did that quite *pagly*.”
- Cognitive Factors
 - Development of *intentions* provides motivation to learn the language necessary to express those intentions
 - Improvements to attention and perceptual skills help children learn words and notice the basis for generalization
 - Words are usually generalized to other objects of similar shape
- Developmental Change in Word Learning
 - At about age 2, children’s word learning increases significantly, showing greater use of
 - Language cues

- Speaker's social cues
- Naming Errors
 - Children often initially make errors regarding the boundaries of a given word's usage
 - **Underextension:** when children define words more narrowly than adults do
 - **Overextension:** when children define words more broadly than adults do
- Individual Differences in Word Learning
 - Two important factors in individual learning differences
 - i. **Phonological memory:** the ability to remember speech sounds briefly
 - ii. The child's language environment
- Bilingualism
 - Bilingual children
 - Are often a little slow in language progress at first
 - Catch up quickly
 - Usually have larger total vocabularies than monolingual children, but slightly smaller vocabularies in each language
 - Advantages associated with bilingualism
 - Better at understanding the symbolic and arbitrary nature of words
 - Better at switching back and forth between tasks
 - Better at inhibiting inappropriate responses
- Word Learning Styles
 - Two styles are end points on a continuum:
 - **Referential style** refers to children whose vocabularies consist mainly of words that name objects, people, or actions
 - **Expressive style** refers to children whose vocabularies include some names, but also many social phrases
 - Most children are somewhere in between
- Encouraging Language Growth
 - Parents can encourage language growth by:
 - Talking to children often
 - Especially by naming objects that are the focus of children's attention
 - Carefully describing pictures, and asking children questions during reading
 - Can videos help children to learn words?
 - It depends!
 - For preschoolers:
 - Educational programs that ask children direct questions can help (Sesame Street)
 - Especially when the child watches with an adult

- Cartoons and other non-educational programs do not help
- For infants, not even educational videos help
 - Most are not well designed or developmentally appropriate
 - Infants have difficulty relating what they see in videos to objects and actions as experienced in their own lives
- Speaking in Sentences: Grammatical Development
 - Young children often use common “formulas” for combining words
 - From Two Words to Complex Sentences
 - **Telegraphic speech:** speech used by young children that contains only the words that are necessary to get a message across
 - Includes content words, but drops **grammatical morphemes:** words or endings of words that make a sentence grammatical
 - We know that children are learning grammatical rules, not simply imitating words their parents say, because:
 - They apply grammatical rules to novel words
 - They demonstrate **overregularization:** grammatical usage that results from applying rules to words that are exceptions to the rule
 - e.g., “I runned out of the room because there were two mouses in there”
- How Do Children Acquire Grammar?
 - How do such young children learn something so sophisticated and complex so easily?
 - It depends on whom you ask...
- The Behaviourist Answer
 - **B. F. Skinner** and other learning theorists ascribe children’s grammar learning to imitation and reinforcement
 - They imitate their parents and other adults
 - They are differentially reinforced for correct utterances
- The Linguistic Answer (Chomsky)
 - Children are born with mechanisms that help them process language in helpful ways
 - The idea of some sort of inborn “grammar learning processor” is supported by several findings
 - There are specific brain regions that are activated when sentences break simple grammatical rules
 - Efforts to teach grammar to nonhumans fail, suggesting neural mechanisms unique to humans
 - There is a critical period for language learning, from birth to about 12 years
 - Grammar mastery and vocabulary growth are related in a way that suggests they are part of a common, emerging language system
- The Cognitive Answer

- Children have powerful cognitive skills that help them to detect regularities in their environment
 - This includes patterns in the speech they hear
- The Social Interaction Answer
 - Focuses on social interaction and motivation
 - Children are motivated to express themselves
 - Parents are motivated to teach and understand their children
- Communicating with Others
 - Three key elements for effective oral communication
 - People should take turns, alternating as speaker and listener
 - When speaking, your remarks should be clear from the listener's perspective
 - When listening, pay attention and let the speaker know if his or her remarks do not make sense
- Speaking Effectively
 - By preschool, children
 - Give more elaborate messages to listeners who lack critical information than to those who have it
 - Adjust for the age of the listener
 - Still have some trouble with clarity of messages
- Listening Well
 - Children do not always realize when a message is ambiguous
 - If asked to "pass me the green book," when there are four green books, they may simply select one to hand to you
 - Children gradually learn to monitor for consistent and clear messages during the elementary school years

Summing Up

- You should now...
 - Know how children grow and change in proportions during early childhood
 - Be familiar with the changing nutritional needs of a preschooler
 - Know how sleep changes in early childhood
 - Know how children's locomotor and other gross motor skills change in early childhood
 - Know how fine motor skills change and what new abilities develop because of this
 - Know how handedness develops in early childhood
 - Be familiar with Piaget's descriptions of preoperational thinking
 - Be able to discuss the contributions and criticisms of Piaget's theory
 - Be familiar with children's naive theories of biology in early childhood
 - Understand how information processing theory is applied to changes in children's thinking

in early childhood

- Be familiar with changes in attention, memory, and understanding of numbers
- Be familiar with Vygotsky's concepts of zone of proximal development, scaffolding, and private speech
- Know how vocabulary and grammatical understanding change in early childhood
- Know how parents can encourage language growth
- Understand how children's ability to speak and listen effectively changes throughout early childhood