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KOSSLYN CHAPTER 9 – *Psychology Over The Life Span: Growing Up, Growing Older, Growing Wiser*

IN THE BEGINNING: FROM CONCEPTION TO BIRTH

Prenatal Development: Nature (genes) **and Nurture** (environment)

2 gametes (sperm + egg) join → **zygote** (has 23 PAIRS of chromosomes)
→ Review basic info on DNA, chromosomes, etc. from 7.01x

Maturation: the developmental process that produces genetically programmed changes in the body, brain or behavior with increasing age

Female = XX; Male = XY

- The Y chromosome contains a gene that produces a chemical substance causing the zygote to develop into a male. If this substance is not present, genes on the X chromosome will produce other substances that cause the zygote to be female.

Each zygote consists of a unique combination of genes.

3 Trimesters:

- 1st Trimester: 3 stages – zygote → **embryo** (developing baby from the point where the major axis of the body is present until all major structures are present, ~ 2 wks – 8 wks after conception) → **fetus** (developing baby during the final phase of development in the womb, ~ 8 wks after conception until birth)
- 2nd Trimester end: Most of the neurons of the nervous system are in place.

Learning and Behavior in the Womb

Fetuses are active nearly from the start, at first with automatic movements like heart beating, and then with large-scale coordinated behaviors.

As the fetus develops, the heart rate slows down (but becomes more variable), the fetus moves less often but more vigorously when it does stir, and the heart rate and movement patterns become coordinated.

- Male fetuses more active than females

20 – 25 wks = sensitivity to sound and light (when examined with *fetoscope*, fetus moves hands to shield eyes)

28 wks = response to external stimulation

25 – 34 wks = detection of human speech

33 wks = pay attention to music

Fetuses can learn.

- Pregnant women read *The Cat in the Hat* aloud 2x / day / 6 wks → after birth, babies tested → recognize mother's voice (sucking pacifier at same speed as mother's voice), prefer to read *The Cat in the Hat* over another story

Characteristics of the fetus' behavior predict those of the child after birth

- Fetuses that had more variable heart rates later developed into more linguistically able toddlers; demonstrated more sophisticated forms of play
- The genes and environmental events (ex: diet) that influence behavior in the womb continue to influence behavior after birth.

Teratogens: any external agent, such as a chemical, virus, or type of radiation that can cause damage to the zygote, embryo, or fetus

- Different organs are vulnerable to teratogens at different periods of development.

Maternal Illness → affects central nervous system / brain development

- Chicken pox / rubella → mental retardation if baby was an embryo at onset of disease
- HIV+ → babies can contract HIV… brain damage in fetuses, problems in concentration, attention, memory, movement control, ability to reason

Alchohol and Drugs

- Fetal alcohol syndrome → impaired mental functioning, problems with aspects of reasoning that involve working memory

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- Heroin / cocaine → physical defects, irritability, difficulties sleeping, attentional problems, long-lasting consequences
- Cocaine can also affect sperm, which subsequently transport the drug into the egg and impair growth / development

Caffeine amd Smoking

- Excessive amounts of caffeine (3 cups of coffee / day) → miscarriage, low birth weight, irritability
- Smoking → affects fetus' lungs, miscarriage, low birth weight, smaller head size, stillbirth, infant mortality, attentional difficulties, damage fetus's genes, increases chances that baby will die from sudden infant death syndrome (SIDS) by altering the way the infant's autonomic nervous system operates

Diet and Pollution

- Poor diet → fewer brain cells than normal, increased risk of psychological disorders
- Insufficient folic acid → disrupts early development of central nervous system; infant can be born without the top of the skull; spina bifida (spine does not close properly); essential for producing the iron-containing protein needed to form red blood cells
- Fish with high levels of methylmercury → infant deafness, visual problems
- Pollutants / ionizing radiation → birth defects, cancer, behavioral difficulties, can be passed on to grandchildren

Maternal Stressors

- Infants may experience attentional difficulties, be unusually ansious, exhibit unusual social behavior
- Fetuses move less often, less vigorously, other physical differences
- Triggered by less blood flow to the uterus, production of cortisol which slows down operation of genes that guide prenatal development of the brain (suppressing brain growth)
- Babies born to stressed mothers tend to have smaller heads

Positive Environmental Events

- Eating chocolate → babies have more positive temperaments
- Playing music → more advanced infants – better motor control, better vocal abilities

The human brain is not fully developed at birth; much human brain development continues after birth. Nevertheless, a baby is not a blank slate; they come equipped with a surprising range of abilities and capacities

Babies have the beginnings of sophisticated sensory capabilities; sensitive to range of frequencies of women's voices; sensitive sense of smell

Infants also come equipped with a wide range of reflexes (inborn, automatic response to a stimulus, actions that do not require thought. Many disappear as the baby develops

- Sucking in response to a touch on the lips
- Moro reflex – startled baby throws its arms wide as if to grab hold of someone
- Babinski reflex – baby's big toe flexes while the other toes fan out when the sole of his/her foot is stroked

Temperament: even immediately after birth, babies demonstrate differences in temperament (inclination to engage in a certain style of behavior)

- Approach (react positively to new stimuli) v. withdrawal (react negative to new stimuli, i.e.: cry, fuss, etc.)
- Easy (don't cry as often, not as demanding) v. difficult (fussy, demanding)
- Some aspects of temperament tend to remain stable over the course of development, as a result of early nurturing experiences

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- Ex: handling rat pups during the first 10 days after birth → animals later are not as nervous when put in a large field, do not react as strongly to stress, less prone to learned helplessness
- Gently touching infants not only can enhance their growth and development, but also can reduce the EEG activation in the frontal lobe that is associated with depression and can boost immune function.

INFANCY AND CHILDHOOD

Physical and Motor Development

Control progresses from the head down the trunk to the arms, and finally to the legs. At the same time, control extends out from the center of the body to the periphery (hands, fingers, toes). By age 2, the child has good control over all the limbs.

Fine motor control (ex: playing the piano) develops more slowly; better in some people than in others

Infants have sophisticated brain systems that control movement / plan movements in tandem.

- At an early age, infants can plan their movements based on the requirements of a task.
  - Ex: reaching for a ball > dropping ball down a tube

Early theories → the consistent and universal order of motor development implies that such development is entirely maturational (i.e.: entirely a result of genetic programs that unfold over time).

- This is WRONG… also involves specific opportunities to learn about the body, world

Typical Ages for Developmental Motor Milestones:

2 – 5 mos: follow movements with eyes; life head and chest while on stomach; hold head steady; hold an object placed on hand

6 -9 mos: roll over; sit upright; pick up small objects with thumb and fingers; shift objects between hands; crawl

10 – 12 mos: pull to upright standing; 'cruise' (walk by supporting body against objects); turn pages of book

13 – 18 mos: scribble; walk unaided; feed self; point to pictures when asked; throw a ball while keeping balance

Perceptual and Cognitive Development

Concepts come from:

1. Perception: the organization and identification of information received through the senses
2. Reflection and reasoning (change with cognitive and memory development)
3. Social environment

Infant Visual Perception

Infants view the world blurrily. With age, visual acuity increases from developments in the eye

Visual cliff experiment – sheet of glass extends over part of floor that has been stepped down… infants will not crawl out over glass → Depth perception is acquired before infants can talk

Even at 2 months, babies can tell the difference between 2 depths (slower heart rate = paying more attention)

Other techniques for examining infant visual perception = amount of time they spend looking at stimuli (*habituation technique*, aka *looking time technique*)

- If a baby looks at a particular shape long enough, s/he will no longer find it interesting, and thus will prefer to look at something new… what babies perceive as "different"
- By varying how 2 stimuli differ (in shape, distance, color, etc.) and noting the circumstances in which babies prefer a new stimulus after habituating to a previous one, it is possible to discover what difference they can detect.
- Looking time can be used to assess what an infant notices, even without habituation.

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  - Infants (2-5 days) prefer direct eye contact
  - Newborns only notice isolated portions of objects
  - 2-3 mos: perceive overall shapes; organize line fragments into 3D forms
  - 6 mos: can see a set of objects as forming a group, mentally fill in when their view of a moving object is briefly obstructed.
- As they grow older, babies need less stimulus information to recognize patterns… can use knowledge about objects to infer a whole from a part??

Infant Auditory Perception
- Compared with visual perception, auditory perception appears to be more fully developed at an earlier age
- Infants are innately tuned to find consonance more pleasing than dissonance
- Humans must learn to appreciate the sound of dissonant music, but such learning either is not required to appreciate consonant music or takes place very early in life.

Perceptual development continues beyond the first year of life
- Toddlers (2-3 yrs.): when shown an array of objects and asked whether it includes a specific object, they look haphazardly from place to place
- 6-9 yrs: search array systematically, left to right, top to bottom (like they are reading)
- 11 yrs: children have perceptual abilities similar to (but slower than) adults

Language Development

How is Language Acquired? (3 different perspectives)
1. *Behaviorist theories*: (B.F. Skinner) language is entirely the result of learning. Children acquire words and combinations of words through imitation / reinforcement.
    a. Not many people agree with this view anymore.
2. *Nativist theories*: (Noam Chomsky) crucial aspects of language are innate, not learned
    a. **Nativism**: the view that people are born with some language
    b. **Language acquisition device**: an innate mechanism, hypothesized by Chomsky, that contains the grammatical rules common to all languages and allows language acquisition
3. *Interactionist theories*: call on both learning and innate knowledge to explain how language is acquired. Language acquisition relies on social events (ex: interactions between caregiver and child), draws on relatively general cognitive abilities (ex: motor control, perception).

The fact that virtually all normally developing humans come to speak a language, even without formal instruction, is evidence that there is something special about the way our brains are constructed that allows us to acquire and use language.
Language ability develops in an orderly progression.
Child-directed speech: speech by caregivers to babies that relies on short sentences with clear pauses, careful enunciation, exaggerated intonation, and a high-pitched voice.
Infants are surprisingly sophisticated in their ability to draw distinctions among spoken sounds.
- Babies have no trouble distinguishing between phonemes.
- After 6 mos: infants start to ignore distractions among sound that are not used in the language spoken around them.
  - By ignoring unused distinctions, infants focus in on just the sounds in the surrounding language, allows them to acquire words in that language.
- 8 mos: infants can use patterns of sound regularity to identify individual words even when the actual sounds run together into a single continuous stream

Infants can discriminate and organize sounds much better than they can produce them.
Similar principles apply to deaf children and sign language.

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The number of words children learn changes as they get older.
- 1 yr: most children say their first words
- 2 yrs: learning words!
- 3 yrs: learn meanings of words / facts about objects after hearing them only a single time
- 6 yrs: 10,000 words

Rate of learning is affected by various factors. (Ex: hormones, sex roles)

Toddlers can understand far more words than they can say.
- 13 mos: understand 50 words vs. 18 mos: say 50 words

Culture affects which words are learned initially.
- English: more nouns than verbs vs. Mandarin: more verbs than nouns
- Vietnam: children learn respectful pronouns used to refer to elders before learning the words for many objects

Children do not learn the entire meaning of the word all at once. Initially grasp only a core aspect of what the word means.

Overextension: overly broad use of a word to refer to a new object or situation
Ex: dog = anything with 4 legs

Over the course of additional learning, they discover which features restrict the appropriate use of the word.

Underextension: an overly narrow use of a word to refer to a new object or situation
Ex: using animal for dogs

As children hear the word used in different contexts, they broaden the underlying concept, which eventually eliminates underextensions.

Grammar: the set of rules that determines how words can be organized into an infinite number of acceptable sentences in a language
- *Syntax*: internal organization of a sentence that is determined by a set of rules for combining different parts of speech
- *Semantics*: the meaning of words and sentences
- *Pragmatics*: indirect / implied meanings

2 yrs: children start putting words together into the simplest sentences

Telegraphic speech: packs a lot of information into a few highly informative words, typically omitting words such as *the*, *a*, and *of*

3 yrs: children who speak English start using sentences that follow the sequence of subject-verb-object

4 yrs: master grammar rules, generalize from them (even with nonsense words) ex: one wug, two ___
- Why? Most verbs in a language are *regular*, following an easily derived rule for changes in tense
  - Ex: play → played
  - **Overregularization error**: a mistake that occurs in speech when the child applies a newly learned rule even to cases where it does not apply
    - Ex: runned instead of ran

→ ***See p. 332, Figure 5 for Major Milestones in Language Acquisition***

Theories to explain regularities in these milestones:
- Language progresses because other cognitive abilities (ex: working memory) increase as the brain matures
- Language has an internal "logic" and children must learn certain aspects of a language before they can learn other aspects that make use of them

Studies of international adoption (older children are moved to the US and learn English) – support for (2)

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- Adopted children went through steps of acquiring new language faster than younger children, which probably does reflect their increased cognitive abilities, but the important point is that they still went through the same steps.

Some children never progress through these milestones at all... ex: children who grow up in the wild
Critical period: narrow window of time when a certain type of learning or some aspect of development is possible

- Children who are not exposed to language before puberty never grasp the rules of grammar fully.

Long-Term Memory Development

Infant Explicit Memory
Even 3 month old infants can store information explicitly

- Ex: Foot – Ribbon – Mobile experiment → babies kick faster only when they see mobiles where the plus marks are the initial size. They recalled the original mobile explicitly.

Infant Implicit Memory
Tested with same ribbon-kicking experiment; waiting period between initial mobile and new mobile now 2 wks (explicit memories only last 6-8 days for infants) → babies kick faster when they see plus signs of all sizes, not just for the ones the same as the initial size

Verbal Memories
Simcock & Hayne: asked young children to learn to operate a machine that shrank the sizes of toys

- 1 yr. later – children still recall various aspects of "incredible shrinking toy," but only used words that they knew at the time when they initially experienced it
- Language-based memory → infant verbal memories are frozen in time… use words that they knew at time of memory to encode the event, not words that they know at the time of recall

PIAGET'S THEORY
Cognitive development – the gradual transition from infant to adult mental capacity

Babies begin with very simple, innate **schemas** (mental structures that organize sensory and perceptual input and connect it to the appropriate responses)
Assimilation: allows the infant to use existing schemas to organize and interpret new stimuli and respond appropriately
Accommodation: schemas' changing / creation of new schemas as necessary to cope with a broader range of situations
→ Together, assimilation and accommodation are the engine that powers cognitive development. A child's thinking changes systematically over time as new schemas develop.

4 Major Periods :

1. SENSORIMOTOR PERIOD (0-2 yrs)
   - the child acts on the world as perceived and is not capable of thinking about objects in their absence; no **object permanence** (the understanding that objects inc. people continue to exist even when they cannot be immediately perceived) [i.e.: out of sight, out of mind, out of existence]; ability to imitate gained at 9 mos.
2. PREOPERATIONAL PERIOD (2-7 yrs)
   - words, images, and actions are used to represent information mentally; language and symbolic play develop [ex: bar of soap is a submerged submarine]; but thought is tied to perceived events; able to think about objects / events that are not immediately present; do not yet have a "logic"

for manipulating / "operating" on mental representations; do not understand **conservation** (properties like mass remain the same even when the appearance of the material / object changes, provided that nothing is added or removed) [i.e.: children in this period believe that a pizza cut into 12 pieces has more then the same pizza cut into 8 pieces]

Egocentrism: inability to take another's point of view
- Characteristic of both sensorimotor and preoprational children

3. CONCRETE OPERATIONS PERIOD (7-11 yrs)
   - Reasoning is based on a logic that is tied to what can be perceived; capable of **concrete operations** (reversible manipulation of the mental representation of an object that corresponds to an actual physical manipulation); organizing information systematically into categories; able to use mental tools to classify objects and their properties; better able to reason logically; can reverse mental manipulations; able to take another person's perceptive
4. FORMAL OPERATIONS (11 yrs)
   - Reasoning is based on a logic that includes abstractions, which leads to systematic thinking about hypothetical events; capable of **formal operations** (reversible mental acts that can be performed even with abstract concepts) ; can understand "what is" / "what could be" / "what would happen if"; can weigh different benefits / drawbacks of a situation

BEYOND PIAGET

Piaget's theory is tied to specific testing methods – tasks assess only easily observable aspects of behavior.
When more subtle measurements are taken, it becomes evident that although the ordering of the milestones is as Piaget claimed, children can show competence well before the ages Piaget reported.

Meltzoff et al. – infants have capacities beyond those claimed by Piaget
- 2-3 wks: show imitation (ex: happy / sad facial expressions)
- 9 mos: can add and subtract
- 3 mos: object permanence
- 3 yrs: can understand some aspects of the principles involved in conservation of amount, mass

Piaget's theory sometimes underestimates the sophistication of young children's conceptions of the world. Infants demonstrate an understanding of some aspects of physical laws even before they have developed the kinds of perceptual-motor schemas that Piaget claimed are the foundations of such knowledge.
- 4 mos: awareness of time intervals, show surprise when a predictable sequence of flashing lights is interrupted
- Even young infants realize that objects need to be physically supported or they will tumble down; objects can't move through other objects, objects don't flit from place to place but shift along connected paths.

Challenges to Piaget:
- Children do not master all abilities that should require the same logical operations at the same age.
  - Ex: conservation of number before conservation of liquid, but conservation is conservation??
- Some children don't enter period of formal operations until high school (if at all??)

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Take-home messages from Piaget: children's performance does change qualitatively in some types of tasks as they age. Piaget discovered many counterintuitive phenomena, like conservation and egocentrism, that all subsequent theories of cognitive development must be able to explain as well.

Information Processing and Neural Development

Information processing approach = perception and cognition rely on a host of distinct processes in the brain, and these capacities develop as the relevant parts of the brain develop
Younger children perform poorly because their working memory is not as developed.

- Remember: working memory increases with age throughout childhood. As working memory capacity increases, a child becomes able to perform tasks that were previously beyond reach.
- Explains many of the phenomena documented by Piaget [ex: out of sight / out of mind / lack of object permanence]

Quantitative change in capacity (increase in working memory size) → Qualitative change in performance (transition to a new stage)

The rapid growth spurts the brain undergoes around the ages that Piaget identified as marking transitions to new periods account for a child's improvements in working memory with age
Some of the increase in brain weight with age may be due to *myelinization*, which increases the speed and efficiency of neural transmission; some due to the larger numbers of synapses and long-distance connections
These changes increase the speed of information processing; allow more information to be activated at the same time, which in turn would increase working memory capacity

VYGOTSKY'S SOCIOCULTURAL THEORY: OUTSIDE / INSIDE

Emphasize the role of social interaction during development
Child constructs representations of the world by first learning rules, customs of his/her culture, which as represented in the child's mind, then serve to guide behavior
Adults promote cognitive development by guiding and explicitly instructing children about world, culture
Language plays a crucial role in this process – conveys specific instruction, culture

- Language is partly a cultural creation → capacity for language is innate, but the particular language spoken is created by a culture
- Thus, culture influences both the content and form of the child's thinking.

Culture affects the brain, and vice versa

- Culture determines which language(s) you learn, which in turn affects how your brain processes sounds.
- The brain affects culture [ex: we don't have customs that require more working memory capacity than the brain provides]

SOCIAL AND EMOTIONAL DEVELOPMENT

Attachment = an emotional bond that leads a person to want to be with someone else and to miss him/her when separated
Origins

- "Cupboard theory" = infants become attached because their caregivers feed them
- Harlow et al. = Impulse to seek comfort (baby monkeys with fuzzy "mother" vs. robot "mother" that fed them)
- Bowlby = children go through phases during the development of attachment

Separation anxiety = fear of being away from the primary caregiver (arises from object permanence; infants can now think and remember objects inc. primary caregiver for relatively long periods of time even when the objects are no longer present)

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Types of Attachment

- *Secure* = babies are upset when mother leaves, not comforted by stranger, calm down quickly when mother returns (60-70% of American babies)
- *Avoidant* = babies don't' seem to care very much whether mother is present / absent; equally comfortable with her and stranger; when mother returns, do not immediately gravitate to her (15-20% of American babies)
- *Resistant* = babies do not use mother as a base of operations for explorations, but stay close to her, become angry when she leaves; may hit mother when she returns, do not calm down easily afterwards (10-15% of American babies)
- *Disorganized / Disoriented* = babies become depressed and have periods of unresponsiveness along with spurts of sudden emotion (5-10% of American babies)

Differences in attachment style are often a matter of degree (i.e.: there are intermediate types)
Influenced by a wide variety of factors: drug use (disorganized / disoriented)
Mothers who are more sensitive to babies' moods and behaviors had more securely attached infants
Children of mothers who are economically disadvantages are less securely attached.

Type of early attachment has long-lasting effects:
Infants with secure attachments who were later studied were found to have closer friendships and better social skills than children who had not been securely attached as infants
Type of attachment determines how some genes operate → certain genes that underlie aggression and excessive drinking of alcohol are only activated with insecure early attachment
Secure attachment can lead a child to be more confident with exploring → better learning → more intimate love relationships

Self-Concept = beliefs, desires, values, and attributes that define a person to him/herself
For young children, the self-concept is necessarily grounded in the level of cognitive development

- Preschoolers think of themselves in very concrete terms (ex: behaviors, physical appearance)

At what age do children begin to conceive of themselves as having specific characteristics?

- 3 month olds prefer to look at the face of another child of the same age rather than at their own face → they are already familiar with the appearance of their face

Also relies on conception of person's own psychological characteristics:

- 3 yrs: children begin to appreciate that they have distinct psychological characteristics (ex: being happy in certain situations, not in others)
- 8 – 11 yrs: children begin to describe themselves in terms of personality traits

Complete self-concept is not possible until the child has the ability to characterize how his/her psychological characteristics affect his/her relationships with other people… vice versa.
→ need formal operations (a la Piaget) for this… ~ age 11?

Gender Roles = culturally determined appropriate behaviors for males versus females
Vary in different cultures, social classes, time periods
A child's understanding of gender roles develops early.

- By age 2, children have apparently learned about gender role differences
- Preschool boys believe that if they play with cross-gender toys, their father will think that was "bad"

Children develop gender roles with experience.
Freud → children identify with the same-sex parent. This is the main way in which gender roles develop
Maccoby → identification with the same-sex parent is the result of gender role development

- Gender segregation → arises from biological / hormonal differences; personality differences… boys too aggressive / too difficult to influence

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MORAL DEVELOPMENT = ability to tell right from wrong

KOHLBERG'S THEORY
Presented boys and men with **moral dilemmas** (situations in which there are moral pros and cons for each of a set of possible actions) [ex: man who breaks into a store for expensive drugs for his dying wife]
*3 levels of moral development (*based on reasons for decisions, not what the decisions are)*:*

1. *Preconventional level* = focuses on role of authority figure to define what correct actions are; good behaviors are rewarded and bad ones are punished. [If he lets his wife die, he will get in trouble]
2. *Conventional level* = focuses on role of rules that maintain social order, allow people to get along (ex: Golden Rule). Morality is closely tied to individual relationships. [If he lets his wife die, people would think he was some kind of heartless lizard]
3. *Postconventional level* (aka principled level) = focuses on development of abstract principles that govern the decision to accept or reject specific rules. Principles are adopted that are believed to apply to everyone. [Human life is the highest principle; everything else must be secondary. People have a duty to help one another to live]

Criticisms of Kohlberg's Theory:
Questionable generality of levels → doesn't apply to girls vs. women

- Gilligan: females tend to focus on an *ethic of care* (concern and responsibility for the well-being of others); Kohlberg's higher levels of moral development focus on abstract rights and justice (male-oriented perspective?)
- Although there is evidence that males and females do emphasize different principles in their moral reasoning, this difference seems to be more a reflection of their daily activities.

Different types of moral reasoning aren't traits which characterize a person in most situations… rather, people use different types of moral reasoning depending on the details of the dilemma. Making decisions about moral dilemmas may be governed by various aspects of a person's character (i.e.: conscience, empathy) as well.

Many factors affect how people think and behave in moral situations, some of these factors develop much earlier than does the ability to reason logically about morality.
Our behavior is a result both of how we reason and of who we are.

ADOLESCENCE = the period between the onset of puberty and, roughly, the end of the teenage years

Begins with **puberty** (the time when hormones cause the sex organs to mature and secondary sexual characteristics, such as breasts for women and a bread for men, to appear)

Various factors influence when puberty occurs (typically 12-13 years):

- Nutrition – overweight girls enter puberty earlier
- Stress
- Additives in food (ex: hormones in animal feed passed on to human consumers)
- Chemical pollutants (ex: PBBs)

In recent years, the age of puberty has declined – for both girls and boys – throughout the developed and developing world.

Boys and girls have growth spurts at different ages.

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Cognitive Development → major development in adolescents = ability to reason abstractly

- All of the cognitive machinery necessary to think scientifically / systematically about abstractions can be present by about 11 – 12 yrs, but not all adolescents develop these abilities this early, some never do

Frontal / parietal lobes used by adolescents / adults when they first learned rules of algebra, used those rules to solve equations – but after practice in adolescents, parietal lobes no longer activated… rules became "automatic" (does not happen in adults)

Cole: in many traditional African societies, even the adults cannot use the kinds of abilities described by Piaget's idea of formal operations, but there is no indication that their brains have failed to develop fully.

Vygotsky is right – learning must play a role when culture shapes the developing child's thought

Lower middle part of the frontal lobes continues to develop well into adulthood, so emotions may not guide teenagers' thinking effectively… maturational lag contributes to lack of "good judgment" during adolescence.

Adolescent Egocentrism

Enhanced cognitive abilities in adolescents can lead to 2 kinds of distortions in adolescents' conceptions of how others view them:

- *Imaginary audience*: they are actors, everyone else is the audience; extreme self-consciousness, easily embarrassed, (realistic?) concerns about others' opinions
- *Personal fable*: story in which they are the star, and as the star, have extraordinary abilities, privileges (teenagers are immune to possible consequences)

Social and Emotional Development

"Storm and Stress": Raging Hormones

There is a tendency for normal adolescents to have 3 sets of problems due to the hormonal changes that go along with puberty:

1. Adolescents tend to have conflicts with their parents. The frequency of the conflicts is greatest in early adolescence, the intensity of the conflicts is greatest in midadolescence
2. Adolescents tend to experience extreme mood swings, and by the middle of the teen years, about 1/3 of adolescents are seriously depressed – and such depression is associated with increased levels of delinquency. Adolescents also often report feeling lonely and nervous
3. Adolescents may be prone to taking risks

Not all adolescents have these problems – they're just more likely to occur during adolescence than at other ages. Hormones only predispose you to emotional swings, environmental events trigger the emotional reactions. The degree to which an adolescent does experience such turmoil depends on personal and cultural circumstances.

Evolving Peer Relationships

Many adolescents develop predominantly same-gender networks of friends. Women's friendships tend to be stronger than men's. Negative relationships are just as powerful as positive ones.
→ (Think Mean Girls)
Although many aspects of adolescents' behaviors are influenced in large part by their peers, an adolescent's basic values and goals are influence primarily by his/her family.

Teenage pregnancy

Teenagers most likely to become pregnant typically are poor, don't have clear career paths, father is absent.

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Children of teen mothers are likely to drop out of school, be unemployed, be in trouble with the law for violent offences, tend to become teenage parents as well.

The specific consequences of a teen mother's having a child depends on the mother's subsequent behavior and social group. Black Americans appear to suffer fewest negative economic consequences of having given birth as a teenager.

ADULTHOOD AND AGING

The Changing Body
Height, weight relatively constant now
AGING! (50+)

- Changes that are programmed into the genes
- Changes that arise from environmental events (lack of adequate nutrition, exercise, meaningful activities) → some of these can be countered / diminished

Women – menopause → zest! | | Men – declined vigor

Perception
Changes in the sensory organs (eyes, ears) and the brain can markedly impair perception in older adults.

- Worsening vision → cataracts (clouding of the lenses of the eyes, pupil becomes smaller, decreased depth perception (causes old people to stumble over steps)
- Difficulty shifting attention rapidly → problems driving
- Don't classify identities of faces as well as younger people do (but can still classify facial expressions, nonverbal cues)
- Difficulty hearing high-frequency sounds, shutting out background noise

Memory
Parts of the brain that produce the neurotransmitter acetylcholine (crucial for the proper function of the hippocampus, plays key role in explicit memory) become impaired with age.
Hippocampus (correlated with recall ability) is smaller in older adults.
Aging affects some aspects of memory more than others, many aspects of memory are relatively intact in older adults:

- Semantic memory (memory for facts, words, meanings, other information that is not associated with a particular time and place) remains relatively intact into very old age
- Storing new episodic memories is often relatively effective.
- Good implicit memory, can recall the gist of a description and its implications at least as well as younger people.
- Difficulty when they must actively recall specific episodic memories (i.e.: recall of specific information) and on tasks involving working memory, strategizing, holding information in mind while doing something else at the same time.
    - These rely on the frontal lobes to dig out memory, and processes accomplished there are not as efficient in the elderly as they are in younger people.

Cognition→ slower processing, more prone to making errors
Signs of decline in some abilities begin to appear by age 50 because of changes in the brain:

- Less gray matter, impaired communication among neurons (disrupted neurotransmitter functioning), breakdown of myelin (impaired transmission of neural signals)

Shortly before death, some people exhibit *terminal decline* (dramatic decline in cognitive abilities) – usually for people who will die from cerebrovascular diseases. But most people show a gradual degradation in cognitive performance.

9.00 EXAM 3 NOTES

KOSSLYN CHAPTER 9 – *Psychology Over The Life Span: Growing Up, Growing Older, Growing Wiser*

Changes in Fluid and Crystallized Intelligence

Assessed by **longitudinal studies**: the same group of people is tested repeatedly, at different ages

- Both types of intelligence are stable until somewhere between the mid-50s and early 70s, when both decline
- However, using the same group is both a strength and a flaw, since participants become familiar with the type of testing.

Cross-sectional studies: different groups of people are tested, with each group comprised of individuals of a particular age

- Ensure that the groups are equated on all possible measure other than age (i.e.: gender, educational level, health status)

Fluid intelligence begins to decline as early as the late 20s, whereas crystallized intelligence may actually grow with age and decline only late in life

Changes in Specific Abilities

Crystallized intelligence underlies "wisdom."
In some respects, old people actually think more systematically (i.e.: consistent, logical).

SOCIAL AND EMOTIONAL DEVELOPMENT DURING ADULTHOOD

THEORIES OF PSYCHOSOCIAL STAGES IN ADULTHOOD → Erik Erikson

Psychosocial development: the result of maturation and learning on personality and relationships
5 stages through childhood / adolescence, 3 stages of adulthood

1. *Basic trust v. mistrust* (0-1 yr) = depending on how well they are treated by caregivers, infants either develop a basic trust that the world is good or fail to develop such a basic trust
2. *Autonomy v. doubt* (1-3 yrs) = the child either is allowed to choose and make independent decisions or is made to feel ashamed and full of self-doubt for wanting to do so
3. *Initiative v. guilt* (3-6 yrs) = the child either develops a sense of purpose and direction or is overly controlled by the parents and made to feel constrained or guilty
4. *Industry v. inferiority* (6-11) = the child either develops a sense of competence and ability to work with others or becomes beset with feelings of incompetence and inferiority
5. *Identity v. role confusion* (adolescence) = the adolescent either successfully grapples with questions of identity and future roles as an adult or becomes confused about possible adult roles
6. *Intimacy v. Isolation* (young adulthood) = develop deep and intimate relations with others and avoid becoming socially isolated
7. *Generativity v. self-absorption* (middle adulthood) = the adult in the "prime of life" must look to the future and determine what to leave behind for future generations; failing this task elads to a sense of meaninglessness in life
8. *Integrity v. despair* (old age) = in reflecting back on life, a person either feels that life was worthwhile as it was lived or feels despair and fears death

Extending Erikson's Theory:

McAdams → assessing generativity… found that adults who are concerned about providing for future generations tend to be more satisfied with their lives and to view life optimistically, believing that even bad events will eventually have a happy outcome

Continued Personality Development

Changes in *perspective* vs. changes in *personality*
Evidence indicates that personality does not change substantially during adulthood
Cost & McCrae – there were very few differences in any of the dimensions of personality over the years, and when such differences were found, they were very small.

9.00 EXAM 3 NOTES

KOSSLYN CHAPTER 9 – *Psychology Over The Life Span: Growing Up, Growing Older, Growing Wiser*

Personality is equally stable over time for men and women.
Even when a person feels that his / her personality has changed during middle age, it really hasn't
Although the structure of personality (i.e.: Big Five distribution) remains constant with increasing age during adulthood, researchers found that older adults generally have higher scores on traits of agreeableness and conscientiousness than do younger adults.
Apparent changes in personality over time probably reflect changes in the life challenges that s/he is confronting at the time: changes in marital status, parenting, job-related factors
With increasing age, your ranking relative to other people will become more stable, reflecting your settling into a niche in life, thus restricting the range and variety of situations you encounter

Mature Emotions
Older adults tend to experience extended periods of highly positive emotions and fewer spells of enduring negative emotions that do younger people.
"Mature" emotional responses: better regulation of emotions

Adult Relationships: Stable Changes
Older people tend to change their outlook on life (perhaps as a result of their increased ability to grapple with emotions?)
Socioemotional selectivity theory – older adults come to focus on the limited time they have left, which in turn changes their motivations
As people age, they come increasingly to value emotionally fulfilling relationships. This leads older people to prefer the company of those with whom they are emotionally close
As people age, they interact with fewer people, but these interactions tend to be more intimate.
The nature of relationships with both friends and relatives changes as people move into older adulthood (i.e.: no longer concerned that relationships are equitable like younger adults). Older adults trust that the balance of favors and repayment will event out over time.
Older couples resolve their differences with less negative emotion than do younger couples.

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