Chapter 8

Development Across the Life Span
Human Development

- **Human Development** – study of the changes that occur in people as they age from conception until death.

- **Nature** – influence of our inherited characteristics on personality, physical growth, intellectual growth and social interaction.

- **Nurture** – influences of the environment on personality, physical growth, intellectual growth and social interaction.
Research Designs

• **Cross sectional** – different participants compared at 1 particular point

\[\text{Group A at age 20} \rightarrow \text{Group B at age 40} \rightarrow \text{Group C at age 60}\]

• **Longitudinal** – same subject(s) studies over a long period of time

\[\text{Group A at age 20} \rightarrow \text{Group A at age 40} \rightarrow \text{Group A at age 60}\]

• **Cross – Sequential** – 1\textsuperscript{st} studied as cross sectional THEN longitudinal
# Research Designs

## Cross-Sectional Design

Different participants of various ages are compared at one point in time to determine age-related differences.

<table>
<thead>
<tr>
<th>Group One:</th>
<th>Group Two:</th>
<th>Group Three:</th>
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<tbody>
<tr>
<td>20-year-old participants</td>
<td>40-year-old participants</td>
<td>60-year-old participants</td>
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Research done in 2011

## Longitudinal Design

The same participants are studied at various ages to determine age-related changes.

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<thead>
<tr>
<th>Study One:</th>
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<tr>
<td>20-year-old participants</td>
<td>Same participants at 40 years old</td>
<td>Same participants are now 60 years old</td>
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Research done in 1971
Research done in 1991
Research done in 2011

## Cross-Sequential Design

Different participants of various ages are compared at several points in time, to determine both age-related differences and age-related changes.

<table>
<thead>
<tr>
<th>Study One:</th>
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<tr>
<td>Group One: 20-year-old participants</td>
<td>Group One: Participants will be 25 years old</td>
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<td>Group Two: 40-year-old participants</td>
<td>Group Two: Participants will be 45 years old</td>
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Research done in 2011
Research to be done in 2016
Unlocking the Secrets of Genes

- **Genes** – the basic unit of heredity; a section of DNA

- **Chromosomes** – tightly wound strand of genetic material or DNA
  - rod-shaped structure; center of every cell; carries genes
  - sperm cell & egg cell = 23 each; sperm + egg = 46 in 23 pairs
  - threadlike strands of DNA

- **DNA** – (deoxyribonucleic acid)
  - Special molecule that contain the genetic material of the organism.

- **Genome** – full set of genes in each cell of an organism (human genome).
I HATE BEING A DNA MOLECULE. THERE'S SO MUCH TO REMEMBER!
# Dominant & Recessive Genes

**Dominant** – actively controls the expression of a trait.

**Recessive** – only influences expression of a trait when paired w/ an identical gene.

**Eye Color**:  \( B = \text{Brown} \quad b= \text{Blue} \)

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Dominant and Recessive Genes

Mother: Carries recessive PKU gene
Father: Does not carry recessive PKU gene

Mother contributes either P or p
Father contributes either P or P

Result: No child will be afflicted with PKU, although 2 in 4 will carry the recessive gene.

Mother: Carries recessive PKU gene
Father: Carries recessive PKU gene

Mother contributes either P or p
Father contributes either P or p

Result: 1 in 4 children will inherit two dominant genes and will not have PKU; 2 in 4 will inherit one recessive gene and not be afflicted with PKU but will carry the recessive gene; and 1 in 4 will have PKU.
Down Syndrome: Extra Chromosome 21
Dominant & Recessive Genes

**Dominant** – actively controls the expression of a trait.

**Recessive** – only influences expression of a trait when paired w/ an identical gene.

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Fertilization; Zygote & Twinning

- **Fertilization** – union of sperm & egg (zygote)

- **Identical twins** (monozygotic)
  - 1 egg fertilized by 1 sperm
  - Egg divides into 2 parts = 2 separate embryos
  - Same egg = same genes
  - Same sex

- **Fraternal twins** (dizygotic)
  - 2 eggs fertilized by 2 sperm
  - Womb-mates
  - No more genetically alike than w/ other siblings
  - Same or different sex
Abby and Brittany Hensel

They have their own heart, stomach and lung
They share organs below the waist
Why Study Twins?

Nature versus Nature

- study identical twins living with biological parents
- study identical twins living with adoptive parents

• Heritability Differences: are they genetic, or result of experience and environment?

• Heritability – statistical estimate
  (of the portion of the total variance)
  in some trait that is attributable to genetic
  differences among individuals within a group.

  - Height – highly heritable
  - Table manners – low heritability, more upbringing
Heritability

- Adopted children - share genes from each bio. parent (biology) raised by adoptive parent (environment) compare correlation btw traits of bio & adopted
Genes and Individual Intelligence

• IQ (intelligence quotient) – norms from standardized tests
  
  average score of 100 set
  
  2/3 fall between 85-115
  
  15 points +/- 100
  
  – Most think IQ measures a general quality; affects most aspects mental ability
  
  – Some believe culturally bias (middle class; white)

• IQ = highly heritable

![Graph showing IQ scores for different groups: Identical twins reared together, Fraternal twins reared together, Identical twins reared apart, Nontwin biological siblings reared together, Nontwin biological siblings reared apart.](image)
3 Stages of Pregnancy

Germinal

Embryonic

Fetal
3 Stages of Pregnancy

• 3 Stages of Development –

1. Germinal –
   • Fertilization
   • 2 weeks
   • Attach to the uterine wall
   • Zygote (single celled egg)

2. Embryonic –
   • Until 8 weeks after conception
   • Automatically be a female
   • Fetus

3. Fetal
   • Further development
   • Organs
   • Nervous system
   • Gender
Critical Period

• **Critical Period** – times when certain environmental influence can have an impact on the development of the infant.

  Structural development:
  – Limbs:  3.5 to 8.0 weeks
  – Heart:  2.5 to 6.5 weeks
  – CNS:    2.0 to 5.0 weeks
  – Eyes:   3.5 to 8.5 weeks
  – Teeth:  7.0 to 12.0 weeks

• **Teratogen** – any factor that can cause a birth defect.
Teratogens*

1. German measles (Rubella)
   - Especially in early pregnancy
   - Eyes, ears, and heart
   - Vaccination available

2. X-ray or other radiation and toxic chemicals
   - Fetus abnormalities
   - Cognitive deficits

3. Sexually transmitted diseases
   - Mental retardation, blindness, and physical disorders

4. Cigarette smoking
   - Low birth weight
   - Miscarriage or Premature birth
   - Abnormal heartbeat

5. Regular consumption of alcohol
   - Kills neurons; impair later mental abilities, attention span and academic achievement
   - FAS – smaller brain, low birth weight, facial deformity and decreased mental ability

6. Drugs other than alcohol
   - Any illicit drug or some prescriptions
   - Cocaine – impaired cognitive and language abilities, impulse control
Prenatal Influence??

Many parents hope to have an influence on their offspring even before their babies are born.
Physical Development

• Physical and Perceptual Abilities
  – Motor reflexes
  – Grasping and sucking
  – See, hear, touch, smell, and taste
6 Motor Milestones

a. Raise head and shoulders
b. Turn over
c. Sit up with supported
d. Sit up with out supported
e. Crawl
f. Walk
Perceptual Powers

Inborn abilities

• Visual Cliff – at 6 months hesitate to crawl “over edge”; depth perception
Visual Cliff

- Glass only
- Glass over patterned surface
- Deep side
- Shallow side
- Floor pattern seen through glass

[Image of a visual cliff experiment with a baby standing on a patterned surface]
Psychological Development

- **Temperament** – behavioral characteristics that are fairly well established at birth.
  
  1. **Easy** – have regular schedules are adaptable to changes; easy to soothe.
  2. **Difficult** – irregular in schedules; unhappy about changes; loud & crabby.
  3. **Low to warm up** – less grumpy, quieter, regular slow to adapt to change.

- **Attachment** – emotional bond between an infant and the primary care giver.
Attachment

• Mother is usually the first and primary object of attachment

• Bowlby study –
  – the devastating effects on babies raised in orphanages without touches or cuddles. Or raised in extreme neglect or deprivation
  – Found....
    • Physically healthy, but
    • Emotionally despairing, remote and listless
  – Gleaned....
    • Becoming Attached to their caregivers, children gain a secure base
      – Explore the environment & return when frightened
      – Balance between exploring and attachment
      – Balance need for closeness & security w/ need for independence & exploration
Attachment*

- Contact comfort – in primates, the innate pleasure derived from close physical contact; it is the basis of the infant’s first attachment

- Margaret & Harry Harlow study
  - Attachment begins with physical touching and cuddling between infant and parent
  - Release of endorphins

- Rhesus monkeys
  - 2 kinds of “parents”
    - Wire mother
    - Cloth mother

Prefer cloth mother to cuddle when frightened. So... more than just a source of food.
Attachment*

• Separation anxiety
  The distress that most children develop at about 6 to 8 months of age, when their primary caregiver temporarily leaves them with strangers.

• Styles of attachment
  1. Secure
     – Cry or protest if parent leaves room – welcome her back & then play happily again.
  2. Avoidant
     • Not care if mother leaves the room – little effort to seek contact when return.
  3. Ambivalent
     • Resist contact with mother at reunion, protest loudly if she leaves.
     • Cry to be picked up and then demand to be put down.
     • Clinging & unwilling to explore.
  4. Disorganized - disoriented
     – Unable to decide how to react to mother’s return.
     – Approach mother then turn away as if a fearing to look into eyes.
     – Fearful and showed a dazed and depressed look on their faces
Attachment

• Cause of insecure attachment

1. Abandonment and deprivation in the first 2 years of life
   • Orphanages

2. Parenting that is abusive, neglectful or erratic because or the parent is chronically irresponsible or depressed
   • Post partum depression

3. The child’s own genetically influenced temperament
   • Some are fearful and prone to crying from birth and show insecure behavior
   • Familiarity with being temporarily left alone

4. Change in stressful circumstances in the child’s family
   • Divorce or chronic parental illness

• First 1 to 3 years most critical for mental development
“Please, Jason. Don’t you want to grow up to be an autonomous person?”
Quick Quiz

1. Name as many potentially harmful influences on fetal development as you can.

2. Melanie is playing happily on a jungle gym at her day care center when she falls off and badly scrapes her knee. She runs to her caregiver for a consoling cuddle. Melanie seeks__________

3. True or False: To develop normally, infants must sleep in their own cribs, apart from their mothers.

4. A baby left in the Strange Situation does not protest when his mother leaves the room and he seems to ignore her when she returns. What style of attachment does this behavior reflect?

5. In #4, other than child’s style of attachment could account for this reaction?
The Early Development of Language

1. **Cooing** (2 months) - vowel like sounds
2. **Babbling** (6 months) - consonants and vowels
3. **One word Speech** (1 yr)
4. **Telegraphic Speech** (1 yr)
   - A child’s first word combinations, which omits unnecessary words (like a telegraph)
5. **Whole sentences** – (through 5 or 6)
Cognitive Development: Thinking*

- 1920 Jean Piaget
  - Flower blooming school of cognitive development
  - **Assimilate** – bring into existing mental categories; German Sheppard & Collie = dogs
  - **Accommodate** – change their mental categories: cat is not a dog = new category; Cat

- **Piaget’s Cognitive Stages**
  1. Sensorimotor (0 to 2 years)
  2. Preoperational (2 – 7 years)
  3. Concrete operational (7 – 12 years)
  4. Formal Operational (12 to adult)
Piaget’s Cognitive Stages*

1. Sensorimotor (0 to 2 years)
   - Infant learns through concrete actions; looking, touching & tasting
   - **Object permanence** - understanding that an object continues to exist even when you cannot see it or touch it.
     - Peek a boo
     - Use mental imagery and symbols; fly = annoying bug
2. **Preoperational (2 – 7 years)**
   - Use of symbols and language accelerates
   - **Egocentric learning** – seeing the world from only your own point of view; the inability to take another person’s perspective
   - **Conservation** – understanding that the physical properties of objects; such as amount of liquid in a glass; can remain the same even when their form or appearance changes.

### Conservation Examples

<table>
<thead>
<tr>
<th>Type of conservation</th>
<th>Initial presentation</th>
<th>Transformation</th>
<th>Question</th>
<th>Preoperational child’s answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquids</td>
<td>Two equal glasses of liquid</td>
<td>Pour one into a taller, narrower glass.</td>
<td>Which glass contains more?</td>
<td>The taller one.</td>
</tr>
<tr>
<td>Number</td>
<td>Two equal lines of pennies</td>
<td>Increase spacing of pennies in one line.</td>
<td>Which line has more pennies?</td>
<td>The longer one.</td>
</tr>
</tbody>
</table>
Piaget’s Cognitive Stages

3. Concrete operational (7 – 12 years)
   - Developed significantly
   - Overcome some of earlier limitations
   - Concrete
   - Can order things; smallest to largest; lightest to darkest; shortest to tallest

4. Formal Operational (12 to adult)
   - Abstract reasoning
   - Can reason about situations not experienced first hand
   - Draw logical conclusions from premises common to culture & experience
Piaget’s Stages of Cognitive Development

<table>
<thead>
<tr>
<th>Stage</th>
<th>Major Accomplishments</th>
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<tbody>
<tr>
<td>Sensorimotor (ages 0–2)</td>
<td>Object permanence</td>
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<tr>
<td></td>
<td>Beginning of representational thought</td>
</tr>
<tr>
<td>Preoperational (ages 2–7)</td>
<td>Accelerated use of symbols and language</td>
</tr>
<tr>
<td>Concrete operations (ages 7–12)</td>
<td>Understanding of conservation</td>
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<td></td>
<td>Understanding of identity</td>
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<td></td>
<td>Understanding of serial ordering</td>
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<tr>
<td>Formal operations</td>
<td>Abstract reasoning</td>
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<tr>
<td>(ages 12–adulthood)</td>
<td>Ability to compare and classify ideas</td>
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Current Views of Cognitive Development

1. Cognitive abilities develop in continuous overlapping waves rather than discrete steps or stages

2. Preschooler are not as egocentric as Piaget thought
   - **Theory of Mind** – system of beliefs about the way one’s own mind and the minds of others work, and of how individuals are affected by their beliefs and feelings

3. Children understand far more than Piaget gave them credit or and some adults understand far less

4. Cognitive development is spurred by the growing speed and efficacy of information processing

5. Cognitive development is greatly affected by child’s culture

**Vygotsky:**
- **Private speech** – talking to themselves to direct their own behavior
Quick Quiz

1. “More cake!” and “Mommy come” are examples of ____________ speech.

2. Understanding that 2 rows of 6 pennies are equal in number even if one row is flat and the other is stacked up is an example of ________________

3. Understanding that a toy exists even after Mom puts it in her purse is an example of ________________ which develops during the ____________ stage.

4. A 5 year old who tells her dad the “Sally said she saw a bunny but she was lying” has developed a ______________________

5. List 5 findings from contemporary research on children’s cognitive development that have expanded or modified Piaget’s theory.
Learning to Be Good*

- Kohlberg (1964) study on moral dilemmas and moral reasoning
- 3 levels of moral reasoning
  1. Obey rules because they fear being punished if they disobey & own best interest
  2. Conformity and loyally to others & Understanding the rule of law
  3. Moral standard based on universal human rights
  - Moral sense - know right from wrong
  - Not all moral or immoral behavior is related to the ability to reason morally
- Other studies suggest:
  Self regulation – ability to control one’s immediate impulses & wishes; early ability predicts the development of conscience later on
Moral Sense*

- **Power assertion** – a method of child rearing in which the parent uses punishment and authority to correct the child’s misbehavior.

- **Induction** - method of child rearing in which the parents appeals to the child’s own abilities, sense of responsibility and feelings for others in correcting the child’s misbehavior.

**POWER ASSERTION**
The parent uses physical force, threats, insults, or other kinds of power to get the child to obey.

*Example:* “Do it because I say so”;
“Stop that right now”;
*hitting*

*Result:* The child obeys, but only when the parent is present; the child often feels resentful.

**INDUCTION**
The parent appeals to the child’s good nature, empathy, love for the parent, and sense of responsibility to others and offers explanations of rules.

*Example:* “You’re too grown up to behave like that”;
“Fighting hurts your little brother.”

*Result:* The child tends to internalize reasons for good behavior.
3 Types of Parenting

1. **Permissive** – parents make few demands on child
   - Permissive neglectful – uninvolved with child or behavior.
   - Permissive indulgent – over involved; children without limits.

2. **Authoritative** – democratic; warmth, affection & limits

3. **Authoritarian** - rigid: my way or the highway
Quick Quiz

1. What is a major limitation of cognitive theories of moral reasoning in understanding how children develop a conscience?

2. Which method of disciplining an aggressive child is most likely to teach empathy?
   - A. Induction
   - B. Authoritarian firmness
   - C. Power assertions
   - D. Spanking

3. What early ability predicts the development of conscience later on?
Quick Quiz

1. Three year old Paulo thinks that if he changes from wearing pants to wearing dressed he could become a girl. He still lacks a stable ________________

2. True or False: All inter-sexed people are transsexual.

3. A biological psychologists would say the a 3 years old boy’s love of going “vroom, vroom: with his truck collections is probably a result of __________

3. Which statement about gender schemas is false:
   A. They are present in early form by 1 year of age
   B. They are permanent conceptualizations of what it means to be masculine or feminine
   C. They eventually expand to include many meaning and associations to being male and female.
   D. They probably reflect the status of women and men in society

4. Herb hopes this 4 year old daughter will become a doctor like him, but she refused to play with the to stethoscope he bought her and insists that she will be a princess when she grows up. What conclusion can Herb draw about his daughter’s future career?
Adolescence*

• Puberty – the age which a person becomes capable of sexual reproduction

1. Physiology –
   – Females
     menarche – onset of menstruation
   – Males
     nocturnal emissions
     Secondary sex characteristics -
     deepening of voice and facial and chest hair
     pubic hair in males and females
2. Psychology

3 types of problems

1. Conflict with parents
2. Mood swings and depression
   - Boys – act out
   - Girls – internalize feelings & problems;
     withdraw;
     develop eating disorders
3. Reckless
   - “rule – breaking” and “risky” behavior
FIGURE 14.5 Gender (Non)differences in Self-Esteem

Popular books claim that girls and women have much lower self-esteem than boys and men, starting in adolescence. But studies of nearly 150,000 American adolescents find that the difference is very small (Kling et al., 1999).
Quick Quiz

• What is the difference between puberty and adolescence?

• The onset of menstruation is called ________________ .

• Extreme turmoil and rebellion in adolescence are
  a) Nearly universal
  b) The exception rather than the norm
  c) Rare

• True or False: Teenage boys have much higher self-esteem than teenage girls do.
Adulthood*

Erikson’s Stages of Development

Stage 1: Trust vs. Mistrust (1st year)

Stage 2: Autonomy vs. Shame and Doubt (toddler)

Stage 3: Initiative vs. Guilt (preschooler)

Stage 4: Competency vs. Inferiority (school age)

Stage 5: Identity vs. Role Confusion (adolescence)

Stage 6: Intimacy vs. Isolation (young adulthood)

Stage 7: Generativity vs. Stagnation (middle years)

Stage 8: Ego Integrity vs. Despair (old age)
Erikson’s Stages

Stage 1: **Trust vs. Mistrust** (*1st year*)
- Depends on others for food, comfort, cuddling and warmth
- If needs not met: child may never develop the essential trust of others for getting along in the world

Stage 2: **Autonomy vs. Shame and Doubt** (*toddler*)
- Learning to be independent & must do so w/o feeling ashamed or uncertain

Stage 3: **Initiative vs. Guilt** (*preschooler*)
- New physical & mental skills;
- setting goals & enjoying new talents but must learn to control impulses

Stage 4: **Competency vs. Inferiority** (*school age*)
- Learning to make new things, use tools and acquire skills for adult life
- Those not achieving competency will feel inadequate an inferior
Erikson’s Stages

Stage 5: Identity vs. Role Confusion (adolescence)

- Decide who they are; what going to do & what hope for future lives
- Identify crisis – primary conflict of this stage
  - Resolve and have strong identity and ready to plan the future
  - Do not resolve; sink into confusion and unable to make decisions

Stage 6: Intimacy vs. Isolation (young adulthood)

- Once “know who you are” must share with another and learn to make commitments
- No matter how successful in work; you are not complete until capable of intimacy

Stage 7: Generativity vs. Stagnation (middle years)

- Either sink into complacency and selfishness or generativity – creativity and renewal.

Stage 8: Ego Integrity vs. Despair (old age)

- Strive to reach goals of wisdom spiritual tranquility and acceptance
- The healthy adult will not fear death
Transitions of Life

- Emerging adulthood (18 - 25)
  - New phase of life development has been created because of demographic changes
  - Timing of career decisions, marriage or co-habitation and parenthood

- Middle years (35-65)

  **Menopause** – the cessation of menstruation and of the production of ova; it is usually a gradual process lasting up to several years

Women – lose their fertility after menopause

  not all women suffer significant symptoms
  
  - depression
  
  - negative emotional reaction

  Some feel relieved at no longer worrying about pregnancy

Men – theoretically remain fertile throughout their lives

  testosterone diminishes

  sperm count drops; genetic mutations
Passages of Parenthood

Doonesbury

PASSAGES OF PARENTHOOD:
THE TRIP TO THE EMERGENCY ROOM...

...THE FIRST DAY OF SCHOOL...
DON'T WORRY, HE'LL BE OKAY.

...THE DAY HE FINALLY LEAVES HOME...
DON'T WORRY, FOLKS, I'LL BE OKAY!

BY GARRY TRudeau

...THE DAY HE MOVES BACK.

WHAT'S FOR DINNER?
Old Age*

• Fastest growing segment of the population in North America is over 85!
• Decline in mental capacity can:
  a) It can often be lessened with training programs
  b) It is sometimes a result of malnutrition, medication or disease rather than ageing
  c) It is slowed when people live in stimulating environments
  d) Mental capacity does not automatically decline with aging (George Burns 90s)
Death and Dying

• Elisabeth Kubler-Ross
  – Denial
  – Anger
  – Bargaining
  – Depression
  – Acceptance
Quick Quiz

1) The key psychological issue during adolescence, said Erikson is a(n) ____ crisis.

2) What new phase of life development has been created because of demographic changes and what years does it include?

3) Most women react to menopause by
   a) Feeling depressed
   b) Regretting the loss of femininity
   c) Going a little crazy
   d) Feeling relieved or neutral

4) Suddenly, your 80 ear old grandmother has become confused and delusional. Before concluding that old age has made her senile, what other explanation should you rule out?