Chapter 10: Human Development

Major Questions

1. Nature vs. Nurture

2. Qualitative vs. Quantitative

<table>
<thead>
<tr>
<th>TABLE 3-1 Developmental Stages Over the Lifespan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage</td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td>Prenatal</td>
</tr>
<tr>
<td>Infancy</td>
</tr>
<tr>
<td>Early childhood</td>
</tr>
<tr>
<td>Middle childhood</td>
</tr>
<tr>
<td>Adolescence</td>
</tr>
<tr>
<td>Young adulthood</td>
</tr>
<tr>
<td>Middle adulthood</td>
</tr>
<tr>
<td>Later adulthood</td>
</tr>
</tbody>
</table>
How is Dev Psych Investigated?

1. Cross-Sectional Research
   - Compares many different age groups at one time point

2. Longitudinal Research
   - Studies the same group of individuals over multiple time points

3. Cohort-Sequential design
   - Combines cross-sectional and longitudinal designs

Pros & Cons of Each Design

- Cross-sectional design
  - Advantage: Quicker!
  - Disadvantage: Cannot control for outside variables

- Longitudinal design
  - Advantage: Eliminates outside variables
  - Disadvantages: Takes a very long time, $$$$$
How We Develop

- DNA is the building blocks of our chromosomes

- We all have 23 pairs of chromosomes in each cell

Genotype and Phenotype

- Genotype — The sum total of all the genes that a person inherits

- Phenotype — the way in which the genes are actually expressed or observed characteristics of the genes
Patterns of Genetic Inheritance

• We have two genes for everything (one from mom and one from dad)

• Homozygous-genes are alike
  -- Show inherited trait

• Heterozygous-genes are not alike
  -- Genes duke it out to see which trait will appear

Ways Genes Interact

1. Dominant Recessive
   -- Dominant gene effects characteristic; recessive gene has no effect
     • Dominant traits: dark hair, curly hair, normal hearing and vision.
     • 1,000 human characteristics

2. Codominant or Additive Genes
   -- A number of genes interact to form a specific trait
   -- Skin color, height

Making It More Complicated

• Only a few of our traits are discrete traits
  -- The product of a single gene pair

• Most human traits are polygenic traits
  -- Involve the combined impact of multiple genes
  -- Most behaviors are polygenetic
Stages of Prenatal Development

- Germinal Period
  - 0-2 weeks
  - Starts with egg being fertilized
  - Ends when egg implants in the uterus
Stages of Prenatal Development

• Period of the Embryo
  – 3-8 weeks
  – All the major organs develop during this time

Stages of Prenatal Development

• Period of the Fetus
  – 9-38 weeks
  – Rapid growth

The Placenta

Organ that takes nutrients and oxygen from the mother and sends them to the baby via the umbilical cord
Teratogen

- Any substance that causes damage during the prenatal period
- Infections/virii
- Illegal drugs
- Alcohol
- Cigarettes
- Caffeine

Critical Periods

Sensory Capabilities at Birth

- Vision - worst sense at birth
  - 20/600 vision
- Hearing - best sense at birth
  - Can recognize mother’s voice
- Taste - very developed at birth
  - Prefers sweet taste (breast milk is sweet)
Infant Motor Development

- Newborns have no voluntary control over muscles
- Reflexes are instinctive response to various stimuli on the body
  - Blinking
  - Rooting
  - Sucking
  - Tonic neck
  - Grasping
  - Stepping
  - Babinski
  - Moro
- *Let's check them out!*

**TABLE 3-4 Milestones in Motor Development**

<table>
<thead>
<tr>
<th>Motor Milestone</th>
<th>Average Age Achieved</th>
<th>Age Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>When prone, lifts chin up</td>
<td>2 months</td>
<td>3 weeks–4 months</td>
</tr>
<tr>
<td>Rolls over</td>
<td>2 months</td>
<td>3 weeks–5 months</td>
</tr>
<tr>
<td>Sits alone</td>
<td>7 months</td>
<td>5-9 months</td>
</tr>
<tr>
<td>Crawls</td>
<td>7 months</td>
<td>5-11 months</td>
</tr>
<tr>
<td>Stands holding furniture</td>
<td>8 months</td>
<td>5-12 months</td>
</tr>
<tr>
<td>Stands alone</td>
<td>11 months</td>
<td>9-16 months</td>
</tr>
<tr>
<td>Walks alone</td>
<td>11 months, 3 weeks</td>
<td>9-17 months</td>
</tr>
<tr>
<td>Walks up steps</td>
<td>17 months</td>
<td>12-23 months</td>
</tr>
</tbody>
</table>

Based on Laura E. Berk, Infants, Children, and Adolescents, 6e (Boston: Allyn & Bacon, 2008) Table 5.2, p. 188.

Infant Brain Development

- Massive growth of dendrites and synapses.
- 15,000 dendrites a second during the first year of life
Infant Brain Development

- Myelinization - the covering of neurons with a substance that speeds up transmission

![Myelinization Diagram]

- Synaptic Pruning gets rid of unused connections
- We grow 2x as connections as needed

![Synaptic Pruning Diagram]

Growth Trends of Infants

- Cephalocaudal - growth from the top down (head grows faster than the torso and feet)
- Proximodistal - growth from the inside out (torso grows faster than the arms and fingers)
Piaget’s Theory

- Children learn by organizing information into schemas
- Assimilation puts new information into existing schemas
- Accommodation creates new schemas for new information or majorly altered schemas
- Equilibrium is when all information is organized into schemas

### TABLE 5-6 Piaget's Four Stages of Cognitive Development

<table>
<thead>
<tr>
<th>Stage</th>
<th>Age</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensormotor</td>
<td>Birth to 2</td>
<td>“Thinks” by using sense and motor skills; no thought beyond immediate experience</td>
</tr>
<tr>
<td>Preoperational</td>
<td>Age 2-7</td>
<td>Able to hold ideas of objects in imagination; unable to consider another's point of view or distinguish between cause and effect</td>
</tr>
<tr>
<td>Concrete operational</td>
<td>Age 7-11</td>
<td>Can think about complex relationships (cause and effect, categorization); understands conservation; unable to think abstractly or hypothetically</td>
</tr>
<tr>
<td>Formal operational</td>
<td>Age 11 on</td>
<td>Able to think abstractly and hypothetically</td>
</tr>
</tbody>
</table>

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Vygotsky’s Socio-cultural Theory

- Social interaction is vital to children’s learning and development
- Children learn best in Zone of Proximal Development
- Children learn best when a parent or teacher helps them (scaffolding)

**TABLE 3-6 Erikson’s Stages of Psychosocial Development**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Stage 1 Trust versus mistrust (birth - age 1)</td>
<td>Infants develop a basic trust in others; if their needs are not met by their caregivers, mistrust develops.</td>
</tr>
<tr>
<td>Stage 2 Autonomy versus shame and doubt (ages 1-3)</td>
<td>Children exercise their new motor and mental skills; if caregivers are encouraging, children develop a sense of autonomy versus shame and doubt.</td>
</tr>
<tr>
<td>Stage 3 Initiative versus guilt (ages 3-6)</td>
<td>Children enjoy initiating activities and mastering new tasks; supportive caregivers promote feelings of power and self-confidence versus guilt.</td>
</tr>
<tr>
<td>Stage 4 Industry versus inferiority (ages 6-12)</td>
<td>Children learn productive skills and develop the capacity to work with others; if not, they feel inferior.</td>
</tr>
<tr>
<td>Stage 5 Identity versus role confusion (ages 12-20)</td>
<td>Adolescents seek to develop a satisfying identity and a sense of their role in society; failure may lead to a lack of stable identity and confusion about their adult roles.</td>
</tr>
<tr>
<td>Stage 6 Intimacy versus isolation (ages 20-25)</td>
<td>Young adults work to establish intimate relationships with others; if they cannot, they face isolation.</td>
</tr>
<tr>
<td>Stage 7 Generativity versus self-absorption (ages 30-65)</td>
<td>Middle-aged adults seek ways to influence the welfare of the next generation; if they fail, they may become self-absorbed.</td>
</tr>
<tr>
<td>Stage 8 Integrity versus despair (ages 65+)</td>
<td>Older people reflect on the lives they have lived; if they do not feel a sense of accomplishment and satisfaction with their lives, they live in fear of death.</td>
</tr>
</tbody>
</table>

Attachment

- Emotional bond an infant feels towards their caregiver
Attachment Measurement

- Strange Situation Test
  - Mother and baby play, stranger enters and the mother leaves, mother returns
  - Repeat process

Types of Attachment

- Secure Attachment (65%) - infant upset when mom leaves and happy when she returns

- Insecure attachment (35%)
  - Avoidant (20%) - shows little distress at separation, little joy at reunion
  - Resistant (10-15%) - during separation, upset at reunion.
  - Disorganized (5-10%) - mixture of avoidant and resistant behaviors.

<table>
<thead>
<tr>
<th>Parental style</th>
<th>Parental behavior</th>
<th>Associated outcome in children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authoritative</td>
<td>Warm, sensitive to child’s needs, nurturing, makes reasonable demands and encourages autonomy</td>
<td>High self-esteem, cooperation, self-control, social maturity</td>
</tr>
<tr>
<td>Authoritarian</td>
<td>Cold, rejecting, makes coercive demands, frequently returns to work</td>
<td>Low self-esteem, anxious, unhappy, often angry and aggressive</td>
</tr>
<tr>
<td>Permissive</td>
<td>Warm, accepting but not constraints and maintains</td>
<td>Impulsive, detached, overly dependent on adults, low initiative</td>
</tr>
<tr>
<td>Uninvolved</td>
<td>Formally detached and depressed, little time or energy for child raising</td>
<td>Anxious, poor communication skills, antisocial behavior</td>
</tr>
</tbody>
</table>
Adolescence

• Physical development and puberty
  – Development of primary and secondary sex characteristics
  – Primary sex characteristics-ones that are part of the reproductive system (ovaries, penis and testes)
  – Secondary sex characteristics-ones that are non-reproductive but important to gender identification (deepening of voice, breasts)

Adulthood

• Why do we age?
  – Cellular clock theory-aging is built into their cells.
  – Wear and tear theory-the more mileage we put on our body, the quicker they wear out.
  – Free radical theory- we get more free radicals in our system causing more damage and aging to our bodies.