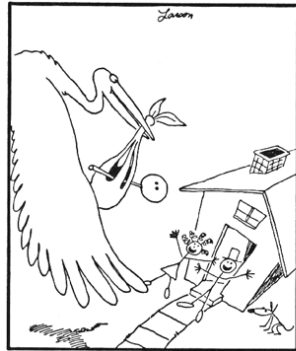


# Chapter 10: Human Development



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**TABLE 3-1 Developmental Stages Over the Lifespan**

Stage	Approximate Age
Prenatal	Conception to birth
Infancy	Birth to 2 years
Early childhood	2–6 years
Middle childhood	6–12 years
Adolescence	12–20 years
Young adulthood	20–45 years
Middle adulthood	45–60 years
Later adulthood	60 years to death

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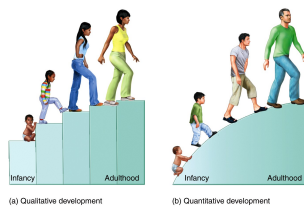
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## Major Questions

1. Nature vs. Nurture
2. Qualitative vs. Quantitative



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### 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

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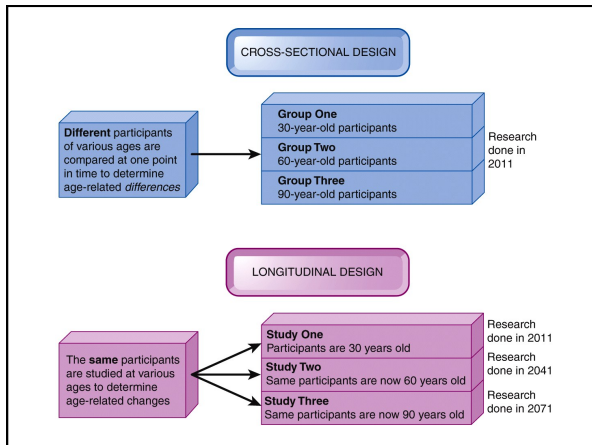
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### Pros & Cons of Each Design

- Cross-sectional design
  - Advantage: Quicker!
  - Disadvantage: Cannot control for outside variables
- Longitudinal design
  - Advantage: Eliminates outside variables
  - Disadvantages: Takes a very long time, \$\$\$\$\$

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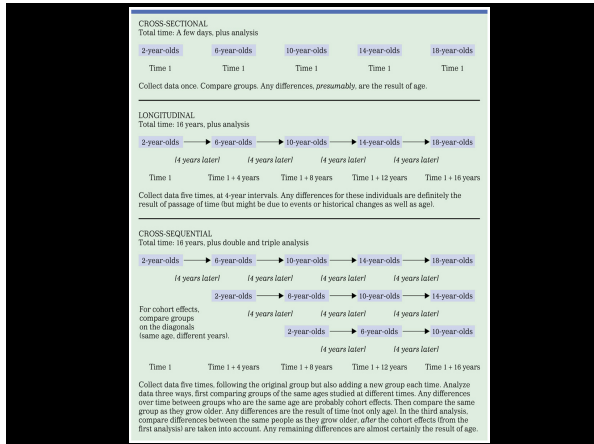
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### How We Develop

- DNA is the building blocks of our chromosomes
- We all have 23 pairs of chromosomes in each cell

About 3 billion base pairs  
(A-T, T-A, G-C, or C-G)

↓  
organized into

About 1 billion three-letter words

↓  
coding for

About 30,000 to 40,000 genes

↓  
located on

46 chromosomes

↓  
matched into

23 chromosome pairs

↓  
contained within

1 cell

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### 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

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### 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

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### 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

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### 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 polygenic

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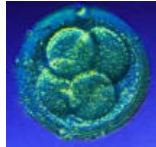
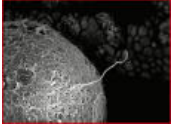
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## Stages of Prenatal Development

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



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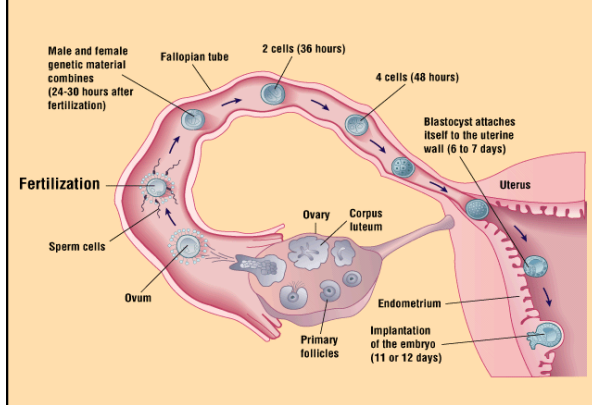
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### The Journey of the Ovum Toward the Uterus



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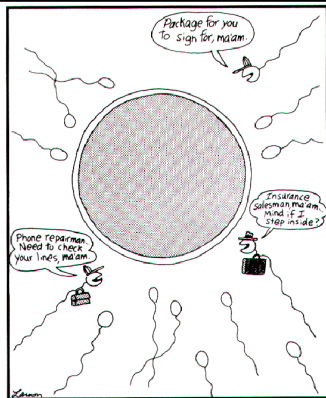
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How the human egg is often deceived.

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### Stages of Prenatal Development

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



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### Stages of Prenatal Development

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



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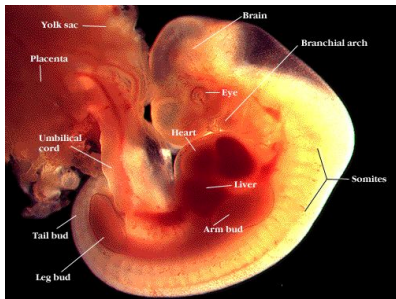
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### The Placenta

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



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## Teratogen

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




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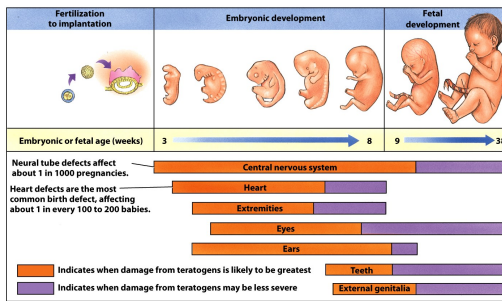
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## Critical Periods




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## 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)

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## Infant Motor Development

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

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

Motor Milestone	Average Age Achieved	Age Range
When prone, lifts chin up	2 months	3 weeks–4 months
Rolls over	2 months	3 weeks–5 months
Sits alone	7 months	5–9 months
Crawls	7 months	5–11 months
Stands holding furniture	8 months	5–12 months
Stands alone	11 months	9–16 months
Walks alone	11 months, 3 weeks	9–17 months
Walks up steps	17 months	12–23 months

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

Table 3-4  
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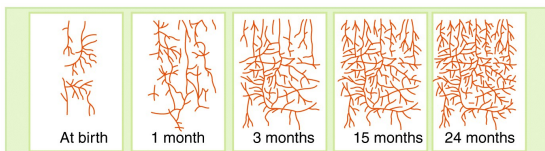
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## Infant Brain Development

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




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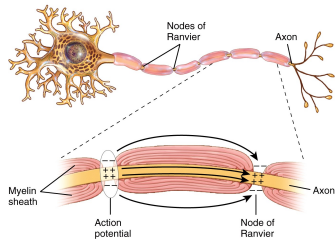
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### Infant Brain Development

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



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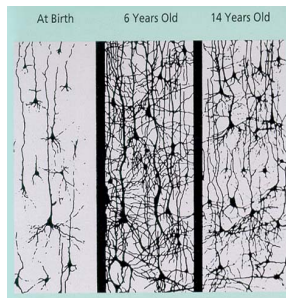
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### Infant Brain Development

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



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### 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)

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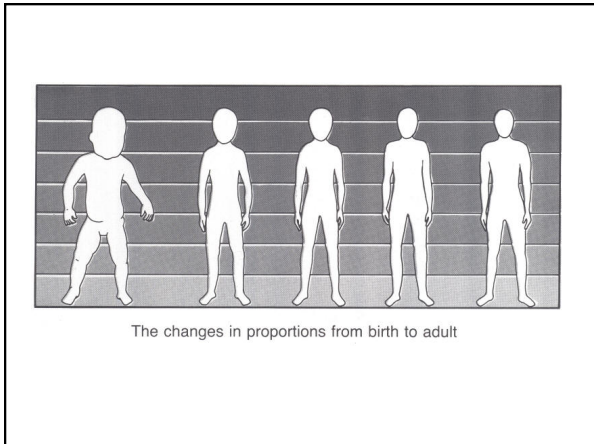
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### Piaget's Theory

- 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

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**TABLE 3-5 Piaget's Four Stages of Cognitive Development**

Stage	Age	Description
Sensorimotor	Birth to age 2	"Thinks" by using senses and motor skills; no thought beyond immediate experience
Preoperational	Age 2-7	Able to hold ideas of objects in imagination; unable to consider another's point of view or distinguish between cause and effect
Concrete operational	Age 7-11	Can think about complex relationships (cause and effect, categorization); understands conservation; unable to think abstractly or hypothetically
Formal operational	Age 11 on	Able to think abstractly and hypothetically

Table 3-5  
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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)

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TABLE 3-8 Erikson's Stages of Psychosocial Development

<b>Stage 1 Trust versus mistrust (birth –age 1)</b> Infants develop a basic trust in others. If their needs are not met by their caregivers, mistrust develops.
<b>Stage 2 Autonomy versus shame and doubt (ages 1–3)</b> Children exercise their new motor and mental skills. If caregivers are encouraging, children develop a sense of autonomy versus shame and doubt.
<b>Stage 3 Initiative versus guilt (ages 3–6)</b> Children enjoy initiating activities and mastering new tasks. Supportive caregivers promote feelings of power and self-confidence versus guilt.
<b>Stage 4 Industry versus inferiority (ages 6–12)</b> Children learn productive skills and develop the capacity to work with others; if not, they feel inferior.
<b>Stage 5 Identity versus role confusion (ages 12–20)</b> 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.
<b>Stage 6 Intimacy versus isolation (ages 20–30)</b> Young adults work to establish intimate relationships with others; if they cannot, they face isolation.
<b>Stage 7 Generativity versus self-absorption (ages 30–65)</b> Middle aged-adults seek ways to influence the welfare of the next generation. If they fail, they may become self-absorbed.
<b>Stage 8 Integrity versus despair (ages 65+)</b> 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.

Table 3-8  
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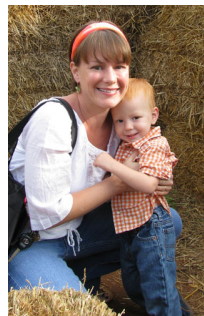
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### Attachment

- Emotional bond an infant feels towards their caregiver




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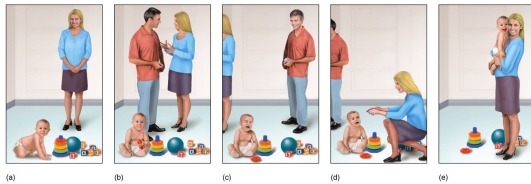
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## Attachment Measurement

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




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## 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.

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TABLE 3-6 Parenting Styles

Parental style	Parental behavior	Associated outcome in children
Authoritative	Warm, sensitive to child's needs, nurturing; makes reasonable demands and encourages appropriate autonomy	High self esteem, cooperativeness, self control, social maturity
Authoritarian	Cold, rejecting; makes coercive demands; frequently critical of child	Low self esteem, anxious, unhappy, often angry and aggressive
Permissive	Warm, accepting but overindulgent and inattentive	Impulsive, disobedient, overly dependent on adults, low initiative
Uninvolved	Emotionally detached and depressed; little time or energy for child rearing	Anxious, poor communication skills, antisocial behavior

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### 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)

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### 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.

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