Lesson 01: Definition and Nature of Developmental Psychology

Definition

Developmental Psychology is a subfield of psychology that studies human growth from conception to death. It examines physical, cognitive, emotional, and personality development throughout the lifespan.

Hurlock's Definition: It is the study of intraindividual changes (within one person) and interindividual differences (between people) in these changes.

Objectives

Developmental Psychology aims to:

1. Study how individuals evolve over time.
2. Collect data on behavior across different ages and backgrounds.
3. Build theories to explain development and behavioral changes.

Aspects of Development

Four interconnected domains of development:

1. **Physical Development** – Body, brain, sensory, and motor skills. E.g., hearing loss can affect language development.
2. **Intellectual Development** – Changes in thinking, memory, reasoning, and language. E.g., a baby's memory relates to anxiety or behavioral restraint.
3. **Personality Development** – Emotions, traits, and how individuals express themselves.
4. **Social Development** – Interpersonal relationships and social functioning.

Principles of Development

1. **Similar Pattern for All:** Development follows a universal sequence (e.g., standing before walking).
2. **Varying Rates:** Everyone develops at different speeds.
3. **Continuity:** Development is lifelong and cumulative.
4. **General to Specific:** Responses progress from broad movements to refined skills.
5. **Individual Differences:** Each person develops in a unique way due to genetics and environment.
6. **Direction of Development:**
    - **Cephalocaudal** – Head to toe development.

- **Proximodistal** – Center to extremities.

7. **Stage-Specific Traits:** Each life stage has typical challenges and milestones.
8. **Maturation & Learning:** Development results from both biological maturation and life experiences.
9. **Predictable Pattern:** Development follows a regular biological timeline.
10. **Goal is Self-Realization:** Development aims at fulfilling one's potential.

Arnold Gessel's Principles

1. **Cephalocaudal:** Head develops before lower body.
2. **Proximodistal:** Internal systems before limbs.
3. **Differentiation:** Structures evolve from simple to complex.
4. **Bilateral:** Body parts develop symmetrically.

Growth vs. Development

Growth	Development
Quantitative (size, height)	Qualitative (skills, behavior)
Physical changes	Cognitive, emotional, and social maturity

Both occur together and are interdependent.

Periods of the Human Life Span

1. **Prenatal (Conception to Birth)** – Rapid physical growth; high vulnerability.
2. **Infancy & Toddlerhood (0–3 yrs)** – Sensory/motor development; attachment; early learning.
3. **Early Childhood (3–6 yrs)** – Motor skills improve; creativity, self-care, early logic.
4. **Middle Childhood (6–12 yrs)** – Peer influence grows; logical thinking; self-concept develops.
5. **Adolescence (12–20 yrs)** – Puberty; identity formation; abstract thinking.
6. **Young Adulthood (20–40 yrs)** – Career and relationship decisions; peak physical health.
7. **Middle Age (40–65 yrs)** – Decline in physical strength; role shifts; life meaning explored.
8. **Late Adulthood (65+)** – Health decline; coping with loss; life review.

Human development is studied using two broad types of research methods:

I. Non-Experimental Methods

These methods involve observation and analysis without manipulating variables.

1. Case Study Method

- Focuses on a single individual or case.
- Provides rich, in-depth data through observations and interpretations.
- Early sources of developmental information included **baby biographies**, like those by **Charles Darwin** and **Jean Piaget**.
- **Notable example**: The case of *Genie*, a severely abused child.
- **Advantages**:
    - Detailed, qualitative data.
- **Disadvantages**:
    - Cannot establish cause-effect relationships.
    - Subject to **observer bias**.
    - Limited generalizability to the wider population.

2. Naturalistic Observation

- Involves observing behavior in real-life settings (e.g., homes, schools).
- No interference or manipulation of the environment.
- **Time sampling** is a common technique (e.g., recording how often a child cries).
- **Advantages**:
    - Realistic and authentic behavior is observed.
- **Disadvantages**:
    - Cannot determine cause and effect.
    - Observer presence may alter behavior.

3. Laboratory Observation

- Takes place in a controlled environment.
- Participants are placed in standardized settings to observe their responses.
- **Advantages**:
    - Better control over variables.

    - Can establish cause-effect relationships.
- **Disadvantages**:
    - May not reflect real-life behavior (**problem of generalizability**).
    - Risk of **demand characteristics** and **experimenter bias**.
    - Ethical/moral limits on what can be studied.

4. Interview

- Researchers ask participants about their thoughts, attitudes, or past behavior.
- Can be structured or unstructured.
- **Advantages**:
    - Gathers self-reported information.
- **Disadvantages**:
    - Memory errors and distortion.
    - Social desirability bias.
    - Question phrasing may influence responses.

5. Correlational Studies

- Examines the relationship between two or more variables.
- Example: Studying the relationship between parental intelligence and child's vocabulary.
- **Correlation Coefficients**:
    - Range from **-1.00 to +1.00**.
    - **+1.00** = perfect positive correlation.
    - **-1.00** = perfect negative correlation.
    - **0** = no relationship.
- **Advantages**:
    - Helps in predicting outcomes.
- **Disadvantages**:
    - Cannot establish **causality**.
    - Relationships may be influenced by a third variable.

II. Experimental Methods

These involve manipulation of variables to determine cause-and-effect relationships.

Types of Experiments

1. **Laboratory Experiments**:
    - Conducted in a controlled setting.
    - Subjects experience different conditions designed by the researcher.
    - **Advantages**:
        - High control.
        - Easy to replicate.
    - **Disadvantages**:
        - Artificial setting may affect behavior.
2. **Field Experiments**:
    - Conducted in real-world settings (e.g., homes, schools).
    - Example: Testing new reading routines at home.
    - **Advantage**: More natural behavior than lab experiments.
    - **Disadvantage**: Less control over variables.
3. **Natural Experiments**:
    - Involves studying naturally occurring situations.
    - Example: Comparing twins separated at birth.
    - **Advantages**:
        - Can study unethical/unfeasible variables.
    - **Disadvantages**:
        - No control over conditions.
        - Not true experiments.

III. Methods of Data Collection

1. Cross-Sectional Studies

- Involves assessing people of different ages at a single point in time.
- Example: Testing cognitive ability across various age groups.

- **Advantages**:
    - Fast and cost-effective.
    - No dropout issues.
- **Disadvantages**:
    - Shows age **differences**, not **changes**.
    - Affected by **cohort effects** (generational differences).
    - Cannot track individual development.

2. Longitudinal Studies

- Involves following the same individuals over a long period.
- Measures developmental **changes** over time.
- Example: Terman's study on gifted children tracked from childhood to old age.
- **Advantages**:
    - Tracks individual growth and change.
    - Avoids cohort effects within a study.
- **Disadvantages**:
    - Expensive and time-consuming.
    - High dropout rate.
    - Sample bias (more educated/wealthy participants likely to stay).
    - Practice effects from repeated testing.

3. Sequential Studies

- Combines cross-sectional and longitudinal methods.
- Different age groups are followed over time and compared.
- **Advantages**:
    - More accurate and realistic than either method alone.
    - Helps separate age effects from cohort effects.

Lesson 02: Difficulties in Studying Human Development & Prenatal Development

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PART I: Difficulties in the Study of Developmental Psychology

According to Hurlock, researchers face several **challenges** while studying human development:

1. Representative Sample of Subjects

- Difficult to obtain subjects from all age groups.
- Parental objections often hinder the study of newborns and infants.
- Elderly adults are also hard to recruit due to health and accessibility issues.

2. Establishing Rapport

- Essential for accurate data collection.
- Harder with certain age groups who may feel uncomfortable sharing personal information.
- Without rapport, participants may not provide genuine or complete responses.

3. Methodological Obstacles

- No single method works across all age levels and domains.
- Some borrowed methods (from medicine, sociology, etc.) may not be ideal.
- Laboratory vs. naturalistic settings present trade-offs.
- Retrospective and introspective methods often lack scientific validity.

4. Accuracy of Data

- Biased sampling or unreliable methods can lead to inaccurate conclusions.
- Self-reporting (especially among the elderly) may be distorted.
- Measurement of intelligence in very young children is controversial.
- Subjective traits like happiness are difficult to measure accurately.

5. Ethical Considerations

- Increasing emphasis on informed consent and participant rights.
- Parental/guardian consent needed for children.
- Confidentiality and data privacy are also significant ethical concerns.

PART II: Perspectives on Human Development

Different psychological theories offer various explanations for development:

1. Psychoanalytic Perspective (Freud)

- Views human behavior as driven by unconscious motives and conflicts.

Freud's Psychosexual Theory

- Belief: Personality develops through resolving conflicts between biological urges and societal demands.
- Psychic energy is focused on erogenous zones at different stages.

Stages of Psychosexual Development:

Stage	**Age Range**	**Focus/Key Traits**
Oral	Birth – 12-18 months	Pleasure from sucking/eating (mouth)
Anal	12-18 months – 3 yrs	Control of elimination (anus)
Phallic	3 – 6 years	Sexual energy; Oedipus/Electra complexes
Latency	6 years – puberty	No sexual development; same-sex peer focus
Genital	Puberty – adulthood	Mature sexual intimacy and relationships

Fixation: Over or under-gratification may cause personality issues later.

Structure of Personality

- **Id**: Instinctual desires, seeks immediate gratification.
- **Ego**: Rational part, mediates between id, superego, and reality.
- **Superego**: Moral conscience, internalized societal values.

PART III: Prenatal Development

Key Characteristics of the Prenatal Period (Hurlock)

1. **Hereditary Endowment**: Fixed at conception; environmental influence is quantitative, not qualitative.
2. **Maternal Environment**: Can either nurture or hinder genetic potential.
3. **Sex Determination**: Fixed at conception; unaffected by maternal conditions.
4. **Rapid Development**: Growth from a single cell to a fully formed baby in 9 months.
5. **Hazardous Period**: High risk of physical and psychological disruptions.
6. **Social Attitudes**: Parents' attitudes impact maternal health and future treatment of the child.

PART IV: Body Systems of the Newborn

1. Circulatory System

- Before birth: Umbilical cord connects to placenta for blood cleansing.
- After birth: Heartbeat irregular; blood pressure stabilizes by day 10.

2. Respiratory System

- Oxygen via umbilical cord in womb.
- Post-birth: Breathing must begin within 2–5 minutes to avoid brain damage.
- Fewer air sacs make infants more prone to respiratory issues.

3. Gastrointestinal System

- Umbilical cord provides nourishment in womb.
- Newborns have a strong sucking reflex and can digest milk.
- Meconium is passed in the first two days.
- Jaundice is common due to immature liver; usually not serious.

4. Temperature Regulation

- Fat layer formed before birth helps maintain body temperature.
- Infants also respond to cold by increasing activity.

PART V: Fertilization and Conception

- Fertilization typically occurs 14 days after menstruation begins.
- Ovum + sperm = zygote (single cell that will divide and grow).
- Female: Born with ~400,000 immature ova; ovulates once per cycle.
- Male: Produces millions of sperm daily.
- Only one sperm fertilizes the ovum.
- Fertile window: ~48 hours during each cycle.

PART VI: Heredity vs. Environment

- Ongoing debate: Are traits shaped more by genes or environment?
- **Clearly Inherited Traits**: Eye color, blood type.
- **Complex Traits**: Intelligence, health, personality – influenced by both.
- Genes may set limits, but environment determines how potential is expressed.
- The same gene may result in different outcomes depending on environmental context.

LESSON 03 – METHODS OF PRENATAL ASSESSMENT

1. Amniocentesis

A sample of amniotic fluid is withdrawn and analyzed to detect genetic defects. The fluid contains fetal cells. This procedure is typically done between the **15th and 16th week** of pregnancy, and results take about **two weeks**.

- Also reveals the sex of the fetus—important for detecting **sex-linked disorders** like hemophilia.
- Recommended for:
    - Women aged **35 or older**
    - Known carriers of **Tay-Sachs** or **sickle-cell disease**
    - Family history of **Down syndrome**, **spina bifida**, **Rh disease**, or **muscular dystrophy**
- Considered **safe and accurate**, but some studies show a **slightly higher risk of miscarriage**.

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2. Chorionic Villus Sampling (CVS)

Involves taking tissue from the **villi**, projections of the embryonic membrane made of fetal cells.

- Can be performed earlier than amniocentesis (in the **first trimester**)
- Results available within **one week**
- Carries **higher risk** of procedural failure and fetal loss compared to amniocentesis

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3. Maternal Blood Tests

Blood taken from the mother between the **14th and 20th weeks** can be tested for **alpha-fetoprotein (AFP)**.

- **High AFP** may indicate **neural tube defects** like **anencephaly** or **spina bifida**
- **Low AFP** may suggest **Down syndrome**
- Results may be followed up with **ultrasound** or **amniocentesis**

Blood tests can also:

- Identify carriers of **sickle-cell disease**, **Tay-Sachs**, and **thalassemia**
- Reveal the **sex of the fetus** (useful for detecting sex-linked disorders)

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4. Ultrasound

Used to:

- Measure **head size**, determine **gestational age**, and detect **multiple pregnancies**
- Evaluate **uterine abnormalities** and detect **structural defects**
- Guide other procedures (e.g., amniocentesis)

Note: Long-term effects are still uncertain. The **National Institute of Health (1984)** recommends ultrasound only for **specific medical reasons** due to potential risks.

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5. Umbilical Cord Assessment

A needle is threaded into the **umbilical cord's blood vessels** under ultrasound guidance to obtain a **fetal blood sample**.

- Tests for **infections**, **anemia**, **metabolic disorders**, **immune deficiencies**, and **heart failure**
- Risks include **bleeding**, **early labor**, and **infections**

NEONATAL PERIOD

The **neonatal period** refers to the **first four weeks** after birth, during which the newborn adapts to life outside the womb.

Physical Characteristics of the Neonate

1. Average length: **18–22 inches**, weight: **~7.5 pounds**
2. **Initial weight loss** (up to 10%) due to fluid loss; regained by **day 10–14**
3. Skin: **Thin, ruddy**, sometimes with white bumps or bluish patches
4. Body appears **frail** and **awkward**; lacks fatty tissue
5. **Eyes**: Puffy lids, dull color, possible **blood spots**
6. **Nose and head** may be temporarily distorted due to delivery

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TYPES OF ADJUSTMENT

1. Adjustment to Temperature

- Uterus: ~100°F; external environment: ~68–70°F
- Newborn must regulate and adapt to this drop in temperature

2. Adjustment to Circulation

- **Umbilical cord** is clamped and cut
- Blood flow to and from the **placenta stops**
- **Lung circulation** begins; heart rate: **120–140 bpm**
- Blood is rich in **hemoglobin**

3. Adjustment to Breathing

- In womb: oxygen via **umbilical cord**
- After birth: baby breathes independently
- **Birth cry** initiates lung inflation; breathing stabilizes over time

4. Adjustment to Nourishment

- **Sucking and swallowing** are reflexes
- Takes time to master feeding, resulting in initial weight loss

5. Adjustment to Elimination

- Pre-birth: waste removed via **placenta**
- Post-birth: uses **own excretory system**

6. Adjustment to Infection

- Receives **maternal antibodies** (temporary protection)
- Begins developing **own immune system**
- Some maternal immunity lasts **up to 6–12 months**

Infancy

Definition of Infancy

- The term *infancy* is derived from the Latin word *infans*, meaning "not speaking".
- This period spans from **birth to two weeks after birth**.
- It is marked by **minimal developmental progress**, as the infant focuses on adjusting to life outside the womb.
- Development resumes **after the infant adapts to the external environment**.

Characteristics of Infancy

1. **Extreme Helplessness**
    - Infants are fully dependent on caregivers, primarily the mother.
    - Gradual independence begins as the infant adapts.
2. **Radical Adjustments**
    - Necessary adjustments include **breathing**, **temperature regulation**, and **elimination**.
3. **Weight Loss**
    - Infants lose some weight during this stage due to the stress of adjustment.
4. **Disorganized Behavior**
    - Irregular breathing, urination, and defecation are common.
    - Caused by underdeveloped autonomic nervous system and birth-related brain pressure.
5. **High Infant Mortality**
    - The first two days of life have a high risk of mortality due to various factors.
6. **Developmental Tasks**
    - Learning **locomotion**, eating **solid foods**, **toilet training**, **communication**, and forming **emotional bonds** with others.

Physical Growth and Development

1. **Rapid Physical Changes**
    - Increase in **height**, **weight**, **muscle size**, and **control**.

2. **Bone Hardening**
    - Skeleton evolves from soft cartilage to a sturdier frame.
3. **Brain Development**
    - Brain cells grow and specialize; **brain weight increases significantly**.
4. **Weight and Height**
    - Weight **doubles by 5 months**, **triples by 1 year**.
    - Length increases by **20% in 3 months**, **50% in 1 year**.
5. **Skeletal Growth**
    - At birth, bones are soft and flexible with low mineral content.
6. **Teeth Development**
    - All **20 baby teeth** and some permanent teeth begin forming.
    - First teeth appear between **4 to 12 months**, average at **7 months**.
7. **Voluntary Movement**
    - By **6 months**, infants gain voluntary motor control.
8. **Motor Development Direction**
    - Follows **cephalocaudal** (head-to-foot) and **proximodistal** (center-to-limb) patterns.
9. **Upright Locomotion**
    - Key milestone is learning to **walk**.
10. **Hand Use**
    - Improved motor ability leads to better **hand coordination**.
11. **Brain Growth**
    - Cerebral cortex enlarges, enhancing **sensory** and **motor control**.
    - Reflex actions diminish as **brain stem** influence decreases.
12. **Autonomic Nervous System**
    - Underdeveloped, contributing to **instability** and **high mortality**.
13. **Respiration Rate**
    - Starts at **40–45 breaths/minute**, drops to **35/minute** by end of first week.
14. **Sleep Pattern**
    - Sleep is **frequent**, with short waking intervals every 2–3 hours.

Perception in Infants

Sight

- Newborns can differentiate **light and dark**.
- Within a few weeks, they develop **visual coordination**.
- **Convergence** (eye movement toward an object) starts early but improves by 2 months.
- **Lens accommodation** begins in month 2, matures by month 3–4.
- Babies prefer **contour-rich** visual areas.
- They are naturally inclined to **scan their environment** for learning.

Perceptual Attention

- Early months: attracted to **movement**, **sound**, **sharp contrast**, and **patterns**.
- Too much novelty can reduce attention.

Depth Perception

- Demonstrated in the **visual cliff** experiment (Gibson & Walk, 1960).
- Most 6-month-olds avoided crossing the "cliff," showing depth awareness.

Motor Development in Young Infants

- Begins in the **womb** and becomes **voluntary** around the **4th month**.
- Follows three developmental principles:
    1. **Head to toe (cephalocaudal)**
    2. **Center to periphery (proximodistal)**
    3. **Simple to complex**
- Infants gradually develop:
    - **Motor control** over body parts.
    - **Precision grip** using thumb and index finger.

Emotional Development in Infants

Characteristics of Infant Emotions

- **Brief** and **intense**
- **Transitory**: Emotions change quickly (e.g., laughter to crying)
- **Frequent** and **easily noticeable**
- **Individual variability** in responses to stimuli
- **Change with age**: Anger becomes more verbal and less physical.

Expression and Types of Emotions

Crying

- Primary mode of communication.
- Four cry patterns:
    1. **Basic hunger cry** – rhythmic, not always hunger-related.
    2. **Angry cry** – forceful variation of rhythmic cry.
    3. **Pain cry** – sudden, loud, with possible breath-holding.
    4. **Distress cry** – louder, longer, and more irregular.

Smiling

- First appears spontaneously after birth.
- By **2nd week**, may respond to caregiver's voice.
- Around **1 month**, becomes **more social**.
- By **2nd month**, babies smile selectively at familiar people.
- Smiling fosters **bonding** and **positive relationships**.

Laughing

- Starts around **4 months**.
- Triggered by **playful actions**, **sounds**, or **silly behavior**.
- Some laughter may be linked to **fear**.
- Frequency and variety of laughter increase with age.