

Development of human behaviour

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1 Life-span development: heredity, environment, stages, attachment and developmental tasks

Developmental psychology studies how people grow and change from conception to death; change comes from heredity (genotype) interacting with environment to give the visible phenotype, runs through life-span stages up to old age, is helped or harmed by early experience in critical or sensitive periods, is marked by developmental tasks (Havighurst) and, socially, starts with attachment (Bowlby, Ainsworth, Harlow). This note adds to the education notes; it does not repeat them. Growth vs development, principles of development and the basic heredity–environment facts are in EDU-DV-01; childhood stages, play and language in EDU-DV-02; Piaget and Vygotsky in EDU-DV-03; Freud, Erikson and Kohlberg in EDU-DV-04; individual differences and intelligence in EDU-ID-01.

Core facts

- **Developmental psychology** = the branch that studies how people **grow and change** across the life span (physical, cognitive, social-emotional). **Nature** = largely our **genetics** (heredity); **nurture** = environment and experience.
- **Development** (Hurlock) = a progressive series of **orderly, coherent changes** leading towards maturity.
- **Life-span perspective** (Paul **Baltes**): development is **lifelong, multidimensional, multidirectional** (gains and losses), **plastic, contextual** (history, culture) and studied by many disciplines.
- **Genotype** = the genetic make-up a person inherits; **phenotype** = the observable traits (height, eye colour, intelligence, personality) that result from the genotype **and** the environment.
- **Dominant** gene shows its effect when only one copy is present; **recessive** gene shows only when both copies are recessive. Most psychological traits are **polygenic** (many genes).
- **Heritability** = the share of the **differences among people in a group** that is due to genetic differences (0 to 1). It describes a population, **not one individual**.
- **Twins: monozygotic (identical)** come from one fertilised egg and share about **100%** of genes; **dizygotic (fraternal)** come from two eggs and share about **50%**, like ordinary siblings.
- **Twin study logic**: if MZ twins are more alike (higher **concordance**) than DZ twins on a trait, genes matter for that trait.
- **Adoption study logic**: compare adopted children with their **biological** parents (shared genes) and their **adoptive** parents (shared home). Likeness to biological parents points to heredity; likeness to adoptive parents points to environment.
- **Minnesota Study of Twins Reared Apart** (Thomas **Bouchard**, from 1979): identical twins raised in different homes were still strikingly alike in IQ and personality.
- **Life-span stages** (NCERT order): prenatal → infancy → childhood → adolescence → adulthood → old age.

- **Prenatal sub-stages: germinal** (conception to 2 weeks), **embryonic** (2 to 8 weeks: organs form, most sensitive to harm), **foetal** (9 weeks to birth). **Teratogens** = outside agents that harm the unborn child (alcohol, drugs, smoking, infections like rubella, radiation).
- **Critical period** = a fixed window when an experience **must** occur for normal development (imprinting, **Konrad Lorenz**, goslings, 1935). **Sensitive period** = an **optimal** but not absolute window (language, attachment).
- **Robert J. Havighurst: developmental tasks** (*Developmental Tasks and Education*, **1948**); success brings happiness and success with later tasks, failure brings unhappiness, social disapproval and difficulty later. He also used the term **teachable moment**.
- **Attachment** = a lasting emotional bond between a child and a caregiver. **Attachment theory** studies close relationships across the **whole lifetime**.
- **John Bowlby** (British psychiatrist): father of **attachment theory**; *Attachment and Loss*, Vol. 1, **1969**; **maternal deprivation** hypothesis (WHO report *Maternal Care and Mental Health*, **1951**); study of **44 juvenile thieves** (**1944**).
- **Mary Ainsworth: Strange Situation** test (*Patterns of Attachment*, **1978**); types **secure**, **insecure-avoidant**, **insecure-resistant (ambivalent)**; **disorganised** was added later by **Main and Solomon**.
- **Harry Harlow**: infant **rhesus monkeys** preferred a soft **cloth mother** to a **wire mother** that gave milk; attachment rests on **contact comfort**, not feeding (*The Nature of Love*, **1958**).

Explained

1. Genotype, phenotype and how genes act

Term	Meaning	Example
Genotype	inherited set of genes	genes for tallness
Phenotype	what is seen	actual adult height
Polygenic trait	many genes add up	intelligence, height
Heritability	share of group differences due to genes	about 0.5 for IQ in many studies

The same genotype can give different phenotypes: a child with genes for tallness stays short if badly fed. Genes set a **range**, and environment decides where in the range a person ends up.

2. Twin and adoption methods

Method	Compares	Points to heredity if	Weakness
Twin study	MZ vs DZ twins	MZ more alike than DZ	MZ twins are also treated more alike
Twins reared apart	MZ twins in different homes	they stay alike	homes are often similar
Adoption study	child vs biological and adoptive parents	child resembles biological parents	selective placement, prenatal effects

Method	Compares	Points to heredity if	Weakness
Family study	relatives of different closeness	likeness rises with shared genes	families share homes too

The usual findings: IQ, temperament and the risk of some mental disorders (schizophrenia, bipolar disorder) show clear genetic influence; language, religion, values and most attitudes come mainly from the environment.

3. Interaction, not addition. Genes and environment work **together**:

- **Reaction range** (Irving **Gottesman**): genes fix the upper and lower limits; environment decides the point reached.
- **Canalisation** (C.H. **Waddington**): some traits (walking, babbling) are so strongly guided by genes that only extreme environments can change them.
- **Gene–environment correlation** (Sandra **Scarr** and Kathleen **McCartney**, 1983): **passive** (parents give both genes and a matching home), **evocative** (a child's traits draw certain responses from others), **active** or **niche-picking** (older children seek settings that suit their genes).
- **Epigenetics**: experiences such as stress or poor nutrition can switch genes **on or off** without changing the genes themselves.

4. Life-span stages to old age

Stage	Approximate age	Key changes
Prenatal	conception to birth	germinal, embryonic, foetal; teratogens
Infancy	birth to 2	reflexes, motor milestones, attachment
Early childhood	2 to 6	language, play, self-control, gender roles
Middle and late childhood	6 to 12	school skills, peers, logical thinking
Adolescence	12 to 18–20	puberty, identity, abstract thinking
Early adulthood	20 to 40	career, intimacy, marriage, parenthood
Middle adulthood	40 to 60–65	generativity, career peak, menopause, empty nest
Late adulthood (old age)	60–65 onwards	retirement, health, loss, life review

- **Hurlock's eleven stages**: prenatal, infancy (birth to 2 weeks), babyhood (2 weeks to 2 years), early childhood (2–6), late childhood (6–10/12), puberty (10/12–13/14), early adolescence (13/14–17), late adolescence (17–18), early adulthood (18–40), middle age (40–60), old age (60 onwards).
- **Adolescence**: growth spurt and puberty; **adolescent egocentrism** (David **Elkind**): the **imaginary audience** (feeling watched by everyone) and the **personal fable** (feeling unique and invulnerable, which feeds risk-taking, including delinquency); the search for identity (Erikson).
- **Adulthood**: choosing work and partner, raising children, caring for ageing parents; **mid-life** review of goals.
- **Old age**: slower reaction time, weaker senses and memory for new material; **fluid intelligence declines** but **crystallised intelligence** (knowledge, vocabulary) holds up or rises; adjustment to

retirement, the **empty nest**, widowhood and illness; social support and activity protect well-being.

- **Facing death:** Elisabeth **Kübler-Ross** (*On Death and Dying*, **1969**) described five reactions: **denial**, **anger**, **bargaining**, **depression**, **acceptance**. Not everyone goes through all five or in this order.

5. Early experience and critical / sensitive periods

- **Imprinting:** newly hatched goslings follow the first moving object they see (Lorenz), only within a short period after hatching.
- **Vision:** David **Hubel** and Torsten **Wiesel** showed that a kitten with one eye kept closed in the first months never gained normal vision in that eye (Nobel Prize 1981).
- **Language:** children cut off from language until late (the case of **Genie**, found in California in 1970 at age 13) never fully mastered grammar; second-language accents are easier to avoid when learnt early (Lenneberg's critical period, in EDU-DV-01).
- **Prenatal:** each organ has its own critical period; most damage from teratogens happens in the **embryonic** stage (weeks 3–8).
- **Social:** children raised in poor institutions (for example orphanages without a steady caregiver) show delays; those adopted early recover better than those adopted late. Michael **Rutter** separated **deprivation** (a bond formed and then broken) from **privation** (no bond ever formed), the latter being more harmful.
- **Application:** early screening of hearing and sight, early childhood care (Anganwadi / ICDS), early intervention for disabilities, stable foster or family care instead of long institutional care, and family-based care for children in need of care and protection.

6. Havighurst's developmental tasks. A developmental task arises at about a certain period of life; it comes from three sources: **physical maturation** (learning to walk), **cultural pressure of society** (learning to read, behaving as a responsible citizen) and the **person's own values and aspirations** (choosing a career).

Period	Age	Examples of tasks
Infancy and early childhood	0–6	walk, take solid food, talk, control elimination, learn sex differences, tell right from wrong
Middle childhood	6–12	physical skills for games, get along with peers, reading, writing, arithmetic, conscience and values, personal independence
Adolescence	13–18	mature relations with peers of both sexes, accept one's body, emotional independence from parents, prepare for a career and marriage, socially responsible behaviour, a set of values
Early adulthood	19–30	select a partner, start a family, rear children, manage a home, start an occupation, civic responsibility
Middle age	30–60	adult civic and social responsibility, help teenagers become adults, satisfactory career, adjust to physical changes and ageing parents
Later maturity	60+	adjust to declining strength and health, retirement and lower income, death of spouse, affiliate with one's age group, satisfactory living arrangements

Use: teaching and counselling are most effective at the **teachable moment**, when the body is ready, society expects the task and the person wants it.

7. Attachment theory

- **Bowlby (ethological view):** attachment is an **inborn, evolved** system that keeps the infant close to the caregiver for safety. Ideas: **monotropy** (one main attachment figure), a **sensitive period** in the first two to three years, and an **internal working model** (the child's mental picture of self and others that guides later relationships).
- **Bowlby's phases:** **pre-attachment** (birth to about 6 weeks), **attachment in the making** (6 weeks to 6–8 months), **clear-cut attachment** (6–8 months to about 18–24 months: **stranger anxiety** and **separation anxiety** appear), **formation of a reciprocal relationship** (from about 18–24 months).
- **44 juvenile thieves (1944):** 14 of the 44 young thieves Bowlby studied showed **affectionless psychopathy** (no guilt or concern for others), and 12 of those 14 had suffered long early separation from their mothers; among 44 non-delinquent children attending the same clinic, only 2 had such a separation. This is why the topic matters in work with delinquents.
- **Ainsworth's Strange Situation:** a 12- to 18-month-old child, the mother and a stranger go through **eight short episodes** (about 3 minutes each) of separation and reunion in an unfamiliar room. Observed: willingness to explore, stranger anxiety, separation distress, behaviour at **reunion**.

Type	During separation	At reunion	Caregiver style
Secure (B, about 60–70%)	some distress	seeks comfort, soon settles	sensitive, responsive
Insecure-avoidant (A)	little distress	ignores or avoids mother	distant, rejecting
Insecure-resistant / ambivalent (C)	very upset	seeks and resists contact (angry)	inconsistent
Disorganised (D)	confused	dazed, contradictory	frightening or abused, neglected

- **Harlow's monkeys:** baby monkeys fed by the wire mother still spent most time clinging to the cloth mother and ran to it when frightened. This rejected the "cupboard love" (feeding) explanation of attachment. Monkeys reared in total isolation later showed fear, aggression and poor parenting.
- **Rudolph Schaffer and Peggy Emerson** (Glasgow, 1964): infants attach most strongly to the person who is most **responsive**, not the one who feeds most, and many form **multiple attachments**.

8. One-page comparison of the four stage theories

Approx. age	Piaget (cognitive)	Erikson (psychosocial)	Kohlberg (moral)
0–1½	sensorimotor (0–2)	trust vs mistrust	—
1½–3	sensorimotor ends; preoperational (2–7) begins	autonomy vs shame and doubt	—
3–6	preoperational	initiative vs guilt	preconventional (to about 9): punishment, then exchange

Approx. age	Piaget (cognitive)	Erikson (psychosocial)	Kohlberg (moral)
6-12	concrete operational (7-11)	industry vs inferiority	preconventional moving to conventional
12-18	formal operational (11+)	identity vs role confusion	conventional: good-boy/good-girl, law and order
18-40	formal operational	intimacy vs isolation	conventional; a minority postconventional
40-65	—	generativity vs stagnation	postconventional (few): social contract, universal principles
65+	—	ego integrity vs despair	—

Vygotsky gives **no fixed age stages**: development comes from **social interaction and culture**; learning leads development through the **zone of proximal development**, with **scaffolding** by a more knowledgeable other; speech moves from social to **private** to **inner speech**.

Theorist	Number of stages	Driving force	Span
Piaget	4	the child's own activity, equilibration	to adolescence
Vygotsky	none fixed	social interaction, culture, language	whole childhood
Kohlberg	3 levels, 6 stages	cognitive growth, moral conflict	childhood to adulthood
Erikson	8	psychosocial crisis at each stage	whole life

Common traps

✗ "Phenotype is the genetic make-up." ✓ That is the **genotype**; the **phenotype** is the observable trait (genes + environment).

✗ "Fraternal twins share all their genes." ✓ **Identical (MZ)** twins share about 100%; **fraternal (DZ)** about 50%.

✗ "Heritability tells how much of one person's IQ is genetic." ✓ It describes **differences within a group**, not an individual.

✗ "Bowlby devised the Strange Situation." ✓ **Ainsworth** devised it; **Bowlby** gave attachment theory.

✗ "Harlow showed that attachment comes from feeding." ✓ He showed it comes from **contact comfort** (cloth mother).

✗ "Imprinting was studied by Harlow." ✓ Imprinting = **Lorenz** (goslings); Harlow = rhesus monkeys.

✗ "Developmental tasks were proposed by Erikson." ✓ **Havighurst** (1948); Erikson gave **psychosocial crises**.

✗ "Generativity vs stagnation belongs to old age." ✓ It is **middle adulthood**; old age is **ego integrity vs despair**.

✗ "Vygotsky gave four stages." ✓ **Piaget** gave four stages; Vygotsky gave **no fixed stages** (ZPD, scaffolding).

✗ "Critical and sensitive periods are the same." ✓ A **critical** period is a strict window; a **sensitive** period is the best time, but later learning is still possible.

Quick revision

- Genotype = genes; phenotype = genes + environment, the visible trait.
- MZ twins about 100% shared genes, DZ about 50%; twin, twins-reared-apart and adoption studies separate nature and nurture.
- Life-span view: Baltes; lifelong, multidirectional, plastic, contextual.
- Prenatal: germinal 0–2 weeks, embryonic 2–8 weeks (most sensitive), foetal 9 weeks to birth.
- Old age: fluid intelligence falls, crystallised holds; Kübler-Ross: denial, anger, bargaining, depression, acceptance.
- Critical period: Lorenz imprinting; Hubel and Wiesel kittens; Genie and language.
- Havighurst (1948): developmental tasks, six periods, teachable moment.
- Bowlby: attachment theory, monotropy, internal working model, 44 juvenile thieves (1944).
- Ainsworth: Strange Situation; secure, avoidant, resistant; disorganised (Main and Solomon).
- Harlow: cloth mother over wire mother = contact comfort.