

# Development and Learning

AP Psychology ■ Unit 3

AP Psychology



# Why does the same observation allow different explanations?

## The teaching route

Describe the behaviour → identify the relevant concept → connect it to the specific evidence → state what the evidence cannot establish.

Scope: CED 3.1–3.9, with the October 2025 clarification on spontaneous recovery. Practice and numerical data are original unless explicitly identified.

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# Studying Development

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# Developmental psychology asks about patterns and influences

## Theme

## Question to ask

Continuous or discontinuous?

Does change occur gradually or through qualitatively different stages?

Stability or change?

Which characteristics persist, and which change across the lifespan?

Nature and nurture

How do inherited characteristics and experience interact?

A developmental theory organises observations; one example does not settle every question about a person's development.

## Cross-sectional and longitudinal designs answer different questions

### Cross-sectional study 横断研究

Compare different age groups at one time. A difference may reflect age, generation or other group differences.

### Longitudinal study 纵向研究

Follow the same participants across time. This reveals within-person change, but dropout and repeated testing can bias results.

Neither design alone establishes the cause of a developmental change. Cohort effects concern different generations' experiences.

## Your turn: separate age from cohort

### Original practice — attempt before the check

Researchers test 20-, 40- and 60-year-olds once on an unfamiliar digital task. Older groups score lower. Identify the design, give a cohort explanation, and explain what following the same people would add.

## Check: a group difference is not within-person change

### Worked reasoning

The study is cross-sectional. Different experience with digital technology across generations could contribute to the scores. Repeated testing of the same people would show their changes over time, but attrition and practice effects would still need attention.

Do not infer that every individual declined or that age caused the difference from these observations alone.

# 2

## Physical Development

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## Development before birth and early motor skills

### Teratogens 致畸物

Agents such as alcohol can affect prenatal development. Maternal illness, genetic mutations, hormonal and environmental factors can also matter.

### Fine and gross motor coordination

Grasping a pencil uses small coordinated movements; walking uses larger muscle groups. General sequences are similar, but timing varies.

A risk factor is not a guarantee of one outcome. A single classroom observation cannot establish a clinical judgement.

# Reflexes and the visual cliff

## Rooting reflex 觅食反射

A newborn turns towards a touch on the cheek. Reflexes provide information about early development.

## Depth perception

The visual cliff creates an apparent drop beneath a supported surface. Responses provide evidence about early depth perception.

Avoiding an apparent drop does not by itself prove fear is entirely innate. Experience and the task also matter.

## Critical periods and sensitive periods

### Critical period 关键期

A limited window when particular input is necessary for typical development of a function.

### Sensitive period 敏感期

A period of increased responsiveness when experience has a strong effect; learning can still occur later.

Some animals show imprinting in an early window. This does not make all human attachment an imprinting process.

## Physical development continues across the lifespan

| Development                         | Description                                                                                                                    |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Adolescence and puberty             | Growth spurt and development of reproductive ability; timing varies.                                                           |
| Primary / secondary characteristics | Reproductive organs and their development / changes such as voice and body hair.                                               |
| Menarche / spermarche               | First menstrual period / first ejaculation.                                                                                    |
| Adulthood                           | Mobility, flexibility, reaction time and sensory acuity can change at different rates; menopause concerns reproductive change. |

Physical change does not imply identical decline in every ability or the end of learning and social development.

# 3

## Gender and Sexual Orientation

## Distinguish related concepts

### Sex and gender

Sex concerns biological characteristics. Gender includes identity, roles and social expectations. Gender roles describe expected behaviour.

### Socialization and orientation

Family, peers, school and media influence expectations and opportunities. Sexual orientation describes an enduring pattern of attraction.

These concepts are distinct. Clothing, toys or one behaviour cannot establish a person's identity or orientation.

## Your turn: evaluate a socialization claim

### Original practice — attempt before the check

In a fictional school, adults encourage one group to practise construction tasks more often than another. The first group later performs better on a construction test. Explain a socialization mechanism and why the difference alone does not establish a biological cause.

## Check: opportunities can shape performance

### Worked explanation

Adult encouragement can increase practice, feedback and familiarity, contributing to later performance. The groups were not randomly assigned to all experiences; other influences may differ too. The score difference alone cannot identify a biological cause.

Describe the mechanism and research limitation without making assumptions about any individual's identity.

# 4

## Cognitive Development

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# Piaget: proposed stages and characteristic abilities

## Piaget's proposed stages: characteristic abilities

|                             |                                |                                             |
|-----------------------------|--------------------------------|---------------------------------------------|
| <b>Sensorimotor</b>         | infancy to toddlerhood         | object permanence                           |
| <b>Preoperational</b>       | toddlerhood to early childhood | symbols, pretend play (still egocentric)    |
| <b>Concrete operational</b> | early to late childhood        | conservation, logical about concrete things |
| <b>Formal operational</b>   | late childhood to adulthood    | abstract and hypothetical reasoning         |

Broad age descriptions, not universal deadlines or a diagnosis from one task

Use the task evidence as well as the proposed stage; one performance is not a diagnosis.

## Schemas: fitting experience or changing the framework

### Assimilation 同化

Fit a new experience into an existing schema: a child treats a round bead like a familiar bouncing ball.

### Accommodation 顺应

Revise the schema: after observing the difference, the child distinguishes beads from rubber balls.

Schemas organise experience. Both concepts describe a process, not simply the object's shape or the child's age.

## Preoperational reasoning includes specific difficulties

### Conservation and reversibility

A child may think a taller glass contains more after the same water is poured. Mentally reversing the pour helps conserve quantity.

### Egocentrism, animism and theory of mind

Difficulty taking another view differs from selfishness. Animism attributes life-like qualities to objects; theory of mind concerns others' beliefs and knowledge.

These patterns develop within a theory, not as a rule that every child fails every task in the same way.

## Your turn: connect three concepts to separate details

### Original practice — attempt before the check

Mei expects round play objects to bounce and tries bouncing a wooden bead. She then changes her category to distinguish beads from rubber balls. Later she holds a picture facing herself and assumes her friend can see it. Explain assimilation, accommodation and egocentrism.

## Check: identify the process, then the evidence

- 1 Treating the bead like a bouncing ball fits an existing schema: assimilation.
- 2 Revising the category after the mismatch changes the schema: accommodation.
- 3 Assuming the friend sees her own view reflects perspective-taking difficulty: egocentrism.

Simply calling Mei selfish would not explain the perspective error.

## Vygotsky: supported performance and independence

### Zone of proximal development 最近发展区

Tasks the learner cannot yet perform alone but can perform with appropriate help.

### Scaffolding 支架

Temporary, adjusted support is reduced as independent performance grows. Social and cultural contexts shape learning.

This does not mean Piaget ignored experience, that independent learning is impossible or that practice at a current level teaches nothing.

## Your turn: locate a task within the learning zone

### Original practice — attempt before the check

A learner solves one-step puzzles independently, solves two-step puzzles with a partner's hints, and cannot solve a four-step puzzle even with those hints. Identify which task is demonstrated to be within the zone of proximal development and give an appropriate scaffolding action.

## Check: supported success identifies the demonstrated zone

### Worked reasoning

The two-step puzzle is beyond current independent performance but achievable with help. The partner can model a first step or ask a targeted question, then reduce hints as the learner succeeds alone.

The four-step task is not shown to be achievable with this help; the one-step task already lies within independent performance.

# Adult cognition: trends and individual variation

## Fluid and crystallised abilities

Fluid reasoning tends to decline on average with age. Accumulated, crystallised knowledge remains relatively stable through much of adulthood.

## Dementia

Cognitive impairment beyond typical ageing differs from a single forgotten item or slower performance on one task.

Trends do not determine an individual's trajectory, and classroom scenarios cannot establish a diagnosis.

# 5

## Language Development

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## Language combines units and rules

| Component          | Meaning and example                                                              |
|--------------------|----------------------------------------------------------------------------------|
| Phoneme            | A distinctive sound unit; changing a sound can distinguish words.                |
| Morpheme           | Smallest meaningful unit: a word or a meaningful ending such as a plural marker. |
| Semantics          | Meaning conveyed by words and combinations.                                      |
| Syntax and grammar | Rules organise word order and combinations, enabling new messages.               |

Language uses shared, arbitrary symbols and productive rules; it is not merely a list of memorised phrases.

## Language development: sequence and overlap

### Form

### Example or feature

Gestures and cooing

Pointing communicates; early vocal sounds precede later speech.

Babbling

Repeated syllable-like sounds provide vocal practice.

One-word stage

A word can convey a larger message.

Telegraphic speech

Short combinations often omit function words: "more juice."

Gestures continue alongside speech; timing varies. Overgeneralization such as "goed" shows use of a rule beyond its exceptions.

# 6

## Social and Emotional Development

## Ecological systems: identify the route of influence

| System                     | Example                                                                     |
|----------------------------|-----------------------------------------------------------------------------|
| Microsystem                | Direct contact with a caregiver, peer or teacher.                           |
| Mesosystem                 | A relationship between direct settings: parent–teacher cooperation.         |
| Exosystem                  | An indirect influence: a caregiver's workplace changes its hours.           |
| Macrosystem / chronosystem | Broader cultural conditions / time, transitions and changing circumstances. |

A context can affect a person indirectly. Specify the route rather than treating every influence as immediate contact.

## Parenting styles describe patterns, not destinies

### **Demands and warmth**

Authoritarian: high demands, low warmth. Authoritative: high demands, high warmth. Permissive: low demands, high warmth.

### **Interpretation and culture**

Cultural context affects how practices relate to outcomes. One rule or one incident does not establish a whole caregiving pattern.

Observed associations do not prove that a parenting label alone caused every outcome.

# Attachment: use patterns across separation and reunion

| STYLE               | ON SEPARATION         | AT REUNION                                          |
|---------------------|-----------------------|-----------------------------------------------------|
| SECURE              | may show distress     | seeks contact, is comforted, returns to exploring   |
| ANXIOUS (resistant) | highly distressed     | seeks contact <i>and</i> resists it; not comforted  |
| AVOIDANT            | little distress shown | ignores or avoids the caregiver                     |
| DISORGANISED        | variable              | no consistent strategy — approach and fear together |

Temperament and context matter. A brief isolated observation cannot establish a permanent attachment label.

## Contact comfort and separation anxiety

### A bond and a response

Attachment is a caregiver bond. Separation anxiety is heightened distress away from the caregiver or around a stranger; the concepts are related but distinct.

### What monkey studies showed

Preference for a soft surrogate while feeding from another challenged food-only explanations of attachment.

This does not show nutrition is unnecessary or that every animal result transfers directly to human attachment.

## Your turn: avoid overinterpreting one observation

### Original practice — attempt before the check

A short report says a toddler cries when a caregiver leaves. It gives no information about reunion, repeated observations or the unfamiliar setting. Explain why secure, anxious, avoidant or disorganized attachment cannot be confidently assigned from that sentence alone.

## Check: seek the discriminating evidence

### Worked reasoning

Separation distress can occur in different patterns. Information about contact-seeking, comfort and exploration at reunion, together with context and observations across the procedure, helps distinguish them.

A theoretical pattern is not a permanent diagnosis from one cry. Do not infer a caregiver's entire history from this report.

# Peers and adolescent self-awareness

## Childhood play

Parallel play occurs alongside peers without the same coordinated activity. Pretend play uses imagined roles and situations.

## Adolescent egocentrism

Imaginary audience: feeling especially observed by others.  
Personal fable: treating one's experience as unique, sometimes with a sense of invulnerability.

Peer relationships often become more important, but individuals and contexts differ.

## Erikson: early psychosocial conflicts

### Conflict

Trust / mistrust

Autonomy / shame and  
doubt

Initiative / guilt

Industry / inferiority

### Developmental concern

Can care and the social world be relied upon?

Can I act independently?

Can I begin activities and pursue purposes?

Can I develop competence in valued tasks?

These are proposed psychosocial tasks, not clinical diagnoses or irreversible verdicts.

## Erikson: identity through later adulthood

### **Conflict**

Identity / role confusion

Intimacy / isolation

Generativity / stagnation

Integrity / despair

### **Developmental concern**

Explore a sense of self and future roles.

Form close, supportive relationships.

Contribute to others and the next generation.

Reflect on life with acceptance or regret.

A social clock concerns culturally shaped timing expectations. Emerging adulthood is recognised in some contexts, not a universal requirement.

## Identity: distinguish exploration and commitment

### Process

Achievement

Moratorium

Foreclosure

Diffusion

### Exploration and commitment

Explored possibilities and made a commitment.

Exploring without a settled commitment.

Committed without substantial exploration.

Little exploration and little commitment.

These processes can concern occupational, religious, ethnic, gender, sexual and family identities; do not infer a fixed lifelong status from one choice.

# Relationships and adverse childhood experiences

## Context and possible change

Adult families and other close networks can provide mutual care. Childhood attachment and adverse childhood experiences (ACEs) can influence later relationships, but support, culture and later experiences matter.

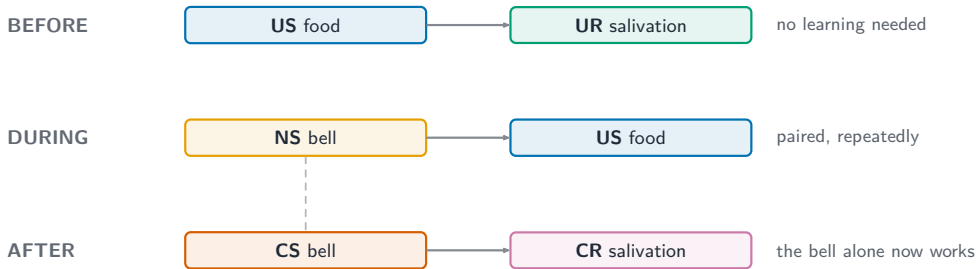
Risk and association do not make a future outcome inevitable. A person is not reduced to a childhood label.

# 7

## Classical Conditioning

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# Map unlearned and learned stimulus–response relations



The cue changes from neutral to conditioned through learning. UR and CR are defined by what elicits them, not guaranteed identical strength or timing.

# The behavioral perspective and acquisition

## Association between stimuli

Traditional behaviorism focused on observable behaviour and conditioning. In classical conditioning, a neutral cue is paired with an unconditioned stimulus and comes to elicit a conditioned response.

Order and timing matter for acquisition. This is distinct from learning that a chosen action produces a consequence.

## Your turn: map a complete conditioning sequence

### Original practice — attempt before the check

A harmless tone repeatedly precedes an air puff that naturally causes blinking. Later the tone alone causes blinking. Identify the UCS, UCR, CS and CR. State the tone's role before learning. This is a hypothetical example, not an experiment to carry out on classmates.

## Check: label each stimulus and its elicited response

- 1 Air puff: unconditioned stimulus (UCS); blinking to the air: unconditioned response (UCR).
- 2 Before learning, the tone is neutral with respect to this blinking response.
- 3 After learning, tone: conditioned stimulus (CS); blinking to tone: conditioned response (CR).

The same cue changes its label with learning. Similar responses need not be identical in magnitude or timing.

## Extinction differs from spontaneous recovery

### Extinction 消退

Present the CS without the UCS repeatedly; conditioned responding decreases.

### Spontaneous recovery 自发恢复

After a rest interval, the CS again elicits a reduced or previously extinguished response, without renewed UCS pairing.

Extinction does not necessarily erase the original learning. A new UCS pairing is not required for spontaneous recovery.

## Your turn: explain a return of blinking

### Original practice — attempt before the check

Repeated tones without air reduce blinking. After a rest, the tone alone again produces some blinking. Explain the first change and the later return, and why the return is not evidence that an air puff was newly delivered.

## Check: identify the change and its conditions

### Worked explanation

Tone without air reduces the learned response: extinction. Return after rest when the tone is presented alone is spontaneous recovery. The scenario explicitly gives no renewed air pairing.

Explain the rest interval and absence of a new UCS pairing rather than merely naming the two terms.

## Discrimination and generalization concern relevant differences

### Discrimination

Respond differently to cues associated with different outcomes; it does not require perfect physical identity every time.

### Generalization

A response learned to one cue occurs to sufficiently similar cues.

In higher-order conditioning, an established CS can support learning to a new cue; it does not become an originally unlearned stimulus.

## Biology, emotion and repeated exposure

### Taste aversion

One experience can support a food–illness association. Biological preparedness makes some associations easier to learn.

### Habituation and counterconditioning

Habituation: diminished response to repeated stimulation.

Counterconditioning: learning a response incompatible with a previously conditioned response.

Not every reduction in response is extinction; identify whether a learned CS–UCS relationship is involved.

# 8

## Operant Conditioning

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# Classify the contingency and the observed effect

|        |                                                                                              | BEHAVIOUR INCREASES                                                                        | BEHAVIOUR DECREASES |
|--------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------|
| ADD    | <div><b>POSITIVE REINFORCEMENT</b><br/>add something wanted<br/>— praise, a treat</div>      | <div><b>POSITIVE PUNISHMENT</b><br/>add something unwanted<br/>— a fine, extra work</div>  |                     |
| REMOVE | <div><b>NEGATIVE REINFORCEMENT</b><br/>remove something unwanted<br/>— the alarm stops</div> | <div><b>NEGATIVE PUNISHMENT</b><br/>remove something wanted<br/>— a phone taken away</div> |                     |

Reinforcement increases behaviour; punishment decreases it. Positive means addition and negative means removal. Intention alone does not establish the label.

## Your turn: classify two complete consequence sequences

### Original practice — attempt before the check

Fastening a seatbelt stops a buzzer and future prompt fastening increases. Separately, a learner loses game time after interrupting and future interruption decreases. Classify each using addition/removal and the observed change in behaviour.

## Check: removal can reinforce or punish

### Seatbelt fastening

Buzzer removed; fastening increases:  
negative reinforcement.

### Interrupting

Game access removed; interruption  
decreases: negative punishment.

If the behaviour did not change as stated, the intended consequence alone would not establish reinforcement or punishment.

# Law of effect, reinforcers and shaping

## Consequences and future behaviour

The law of effect relates consequences to repetition. Primary reinforcers meet biological needs; secondary reinforcers have learned value.

## Successive approximations

Shaping reinforces progressively closer forms of a target action. Instinctive drift occurs when species-typical behaviour interferes with a trained response.

The label depends on the functional relationship and observed behaviour, not just whether the consequence sounds pleasant.

## Reinforcement schedules: read the contingency

### Schedule

### Rule

Continuous

Reinforce each qualifying response.

Fixed-ratio / variable-ratio

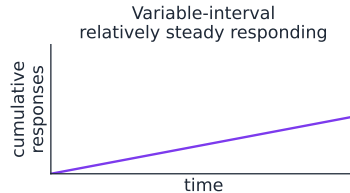
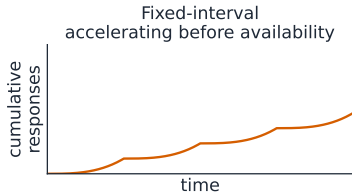
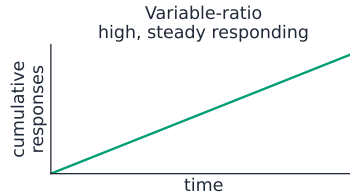
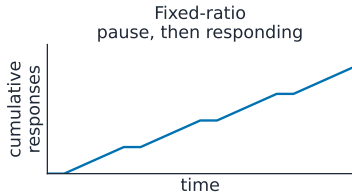
A fixed / changing number of responses is required.

Fixed-interval / variable-interval

Reinforce the first qualifying response after a fixed / changing time interval.

Interval does not mean automatic reward whenever time passes. Partial reinforcement can sustain responding during extinction.

# Read cumulative response patterns



Invented curves, not measured data. Steeper sections mean faster responding.

## Your turn: identify schedules from complete rules

### Original practice — attempt before the check

A rewards every fifth correct response. B rewards the first correct response after five minutes. C rewards a changing number of correct responses averaging five. Identify all three and explain why persistent responding alone would not establish C.

## Check: count, time and predictability

- 1 A is fixed-ratio: a fixed number of responses.
- 2 B is fixed-interval: the first qualifying response after a fixed time.
- 3 C is variable-ratio: a changing response count.

Variable-ratio commonly produces high, steady responding, but the programmed contingency determines the label. Persistence alone is insufficient.

# Superstition and learned helplessness

## Superstitious behavior

An unrelated action is repeated after coincidental reinforcement; the apparent contingency may be mistaken.

## Learned helplessness

Repeated experience of uncontrollable aversive events can reduce attempts to change the situation.

These describe learning relationships. They are not grounds to label a person from one action or to claim that later change is impossible.

## Evidence pack: learned discrimination

### Fictional task data

Training rewards responding to a blue signal but not a yellow signal. In equal 60-second test periods, mean responses are 8 for blue and 2 for yellow.

Original numerical example, not a published study. Describe the operational measure, interpret the result and explain a limit.

## Your turn: connect data to a psychological concept

### Original practice — attempt before the check

Use the evidence pack to explain how the result supports stimulus discrimination in operant conditioning. Explain why these means alone cannot establish statistical significance or prove every participant discriminated.

## Check: result plus concept, with an inference limit

### Worked interpretation

Response count per 60-second period is the operational measure. Greater responding to the rewarded cue is consistent with learned discrimination between signals.

$$\Delta \bar{x} = \bar{x}_{\text{blue}} - \bar{x}_{\text{yellow}}$$

$$\Delta \bar{x} = (8 \text{ responses}) - (2 \text{ responses}) = 6 \text{ responses}$$

Means alone give no test of significance or complete individual data, and do not eliminate all alternative explanations.

# 9

## Observational and Cognitive Learning

## Learning can occur without direct reinforcement

### Social learning theory

Observation and modeling can support learning. Seeing a model's consequences is vicarious conditioning; similarity and context affect imitation.

### Latent learning

Information can be learned without reinforcement and become evident when motivation changes. A cognitive map represents a location's layout.

Learning and its visible performance differ. Lack of immediate imitation does not prove no information was learned.

# Insight and learned expectations

## Insight learning

A solution appears suddenly rather than through an overt sequence of rewarded approximations. This need not mean the learner has no prior experience.

## A cognitive-map example

A child explores a building without reward, then uses its remembered layout to find an exit when needed.

Explain the mental representation and its later use, not simply “the child found the door.”

## Your turn: distinguish observation from latent learning

### Original practice — attempt before the check

Noor watches a peer demonstrate a puzzle strategy and later uses it. In a different situation, Noor explores an unfamiliar library without reward and later takes a shortcut to its exit. Explain one learning concept for each situation using the specific evidence.

## Check: identify how information was acquired

### Puzzle strategy

Observation and modeling: Noor sees a peer's actions and later reproduces the strategy.

### Library shortcut

Latent learning expressed through a cognitive map: earlier exploration supports a mental layout used when an exit is needed.

No direct reward was required during exploration. Successful performance reveals information that may have been learned earlier.

# 10 Exam tips

## Build an evidence-based application

- 1 Identify the relevant concept and the scenario detail that distinguishes it from alternatives.
- 2 Explain how the detail instantiates the concept; a label or definition alone is not an application.
- 3 For data, state a specific result and explain why it supports or qualifies the claim.

Follow the actual prompt and rubric. The 2024 concept-application paper is legacy format; current tasks also assess research methods, data and evidence-based reasoning.

# Sources and demand grounding

## Scope and paper checks

Local CED 3.1–3.9, PDF pp.81–95, plus College Board's October 2025 clarifications. Local 2024 set 1 Q1 and guidelines informed schema/perspective tasks; local 2025 set 2 AAQ and guidelines informed discrimination, measures and evidence interpretation.

Full links and exclusions are recorded in the handout. Practice/data are original; historical papers, bank entries and syllabus files were not changed.

## Check yourself

- 1 Explain a cohort alternative to an age-group difference.
- 2 Use one example to distinguish assimilation from accommodation.
- 3 Explain why removing a consequence can reinforce or punish.
- 4 Distinguish extinction from spontaneous recovery using the role of rest.
- 5 Explain why response patterns alone do not identify every reinforcement contingency.