

Cognition

AP Psychology ■ Unit 2

AP Psychology



Cognition

What we will cover

- 1 Perception
- 2 Depth, Constancy, and Movement
- 3 Thinking and Problem-Solving
- 4 Memory Systems
- 5 Encoding and Storing
- 6 Retrieving and Forgetting

1 Perception

Perception

Unit 1 ended with **sensation**, the detection of a stimulus. **Perception** 知觉 is what the brain does next: it organises and interprets that information. The same signal can be perceived in more than one way.

- **Bottom-up processing** 自下而上加工 starts from the raw sensory information and builds upwards.
- **Top-down processing** 自上而下加工 starts from what you already expect and know.
- **Selective attention** 选择性注意 focuses on one input. The **cocktail party effect** 鸡尾酒会效应 is hearing your own name across a noisy room.
- **Inattentional blindness** 无意视盲 is failing to see something visible because attention was elsewhere; **change blindness** 变化盲视 is failing to notice that something has changed.

Perception, continued

Internal filters shape perception. A **schema** 图式 is a mental framework built from past experience. A **perceptual set** 知觉定势 is a readiness to see something in a particular way.

External filters matter too: **context** 情境 and cultural expectations change what people report seeing.

2

Depth, Constancy, and Movement

Depth, Constancy, and Movement

To perceive a three-dimensional world from a flat retinal image, the brain uses **depth cues** 深度线索.

Depth cues: cover one eye

BINOCULAR — needs both eyes

retinal disparity — the two images differ
convergence — how far the eyes turn inward
both fail beyond a few metres

MONOCULAR — one eye is enough

interposition — what blocks what
relative size, texture gradient
linear perspective, motion parallax
these are what a flat picture uses

The test is mechanical: **cover one eye**. Whatever still works is monocular, and that is the half a painting can use

3

Thinking and Problem-Solving

Thinking and Problem-Solving

Two ways to solve a problem:

- An **algorithm** 算法 tries every possible solution and is guaranteed to work, but is slow.
- A **heuristic** 启发式 is a mental shortcut. It is fast but can lead to error – the **representativeness heuristic** 代表性启发式 judges by how well something matches a prototype, and the **availability heuristic** 可得性启发式 judges by how easily examples come to mind.

Thinking and Problem-Solving, continued

Thinking can also get stuck. A **mental set** 心向 is the tendency to repeat a solution that worked before. **Functional fixedness** 功能固着 is seeing an object only in its usual use.

The **gambler's fallacy** 赌徒谬误 (believing a run must end) and the **sunk-cost fallacy** 沉没成本谬误 (continuing because of what is already spent) both hinder good decisions.

Heuristics, and the error each makes

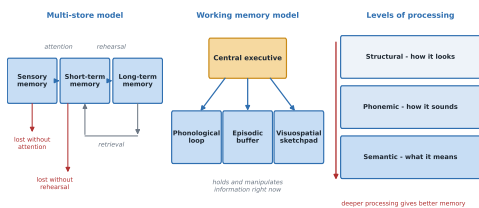
THE SHORTCUT	WHAT IT SUBSTITUTES	SOUNDS LIKE
AVAILABILITY	how easily an example comes to mind, for how common it is	"Plane crashes are everywhere — I saw two on the news."
REPRESENTATIVENESS	how typical it seems, for how likely it is	"He is quiet and reads a lot, so he must be a librarian."
ANCHORING	the first number heard, for a considered estimate	"It was listed at 900, so 700 is a bargain."
CONFIRMATION BIAS	evidence that agrees, for all the evidence	"Everything I have read supports it."

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Memory Systems

Three models of the same journey



Three models of one journey:
multi-store, working memory,
and levels of processing.

Memory Systems

Memory is divided by how information is processed.

- The **multi-store model** 多重存储模型 proposes **sensory memory** 感觉记忆 (including **iconic** 图像记忆 and **echoic** 声像记忆 stores), **short-term memory** 短时记忆, and **long-term memory** 长时记忆.
- The **working memory model** 工作记忆模型 treats the middle stage as active, not a waiting room. It has a **phonological loop** 语音回路, a **visuospatial sketchpad** 视空间模板, and a **central executive** 中央执行系统.
- The **levels of processing model** 加工水平模型 says deeper processing gives better memory: **shallow** processing of appearance, then sound, then **deep** processing of meaning.

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Encoding and Storing

Cognition
└ Encoding and Storing

Encoding and Storing

Storage differs by system. **Maintenance rehearsal** 保持性复述 repeats information to hold it; **elaborative rehearsal** 精细复述 links it to what you already know and works better.

- **Mnemonic devices** 记忆术 such as the **method of loci** 位置法 aid encoding.
- **Chunking** 组块 groups items into meaningful units, which raises how much short-term memory can hold.
- The **spacing effect** 间隔效应 shows that spreading study over time beats **massed practice** 集中练习 (cramming).
- The **serial position effect** 系列位置效应 means items at the start (**primacy** 首因效应) and end (**recency** 近因效应) of a list are remembered best.

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└ Encoding and Storing

Encoding and Storing, continued

A few people show **highly superior autobiographical memory** 超常自传体记忆, which suggests biological differences.

Storage can also be impaired: **Alzheimer's disease** 阿尔茨海默病 and **infantile amnesia** 婴儿期遗忘 both limit what can be stored or recovered.

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Retrieving and Forgetting

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└ Retrieving and Forgetting

Retrieving and Forgetting

Retrieval takes two forms: **recall** 回忆 (producing information without cues) and **recognition** 再认 (identifying it among options). Recognition is easier, which is why a multiple-choice question feels easier than an essay.

Practising retrieval helps too – the **testing effect** 测试效应 shows that testing yourself beats rereading.

Cognition
└ Retrieving and Forgetting

Four failures, all called forgetting

ENCODING FAILURE — it never got in, so it was never forgotten

STORAGE DECAY — the trace weakens over time

RETRIEVAL FAILURE — it is there, and the cue is missing

INTERFERENCE — another memory is in the way, from before or after

The tell is what happens with a **cue**. If a prompt recovers it, the memory was stored and the failure was retrieval

7 Intelligence and Testing

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└ Intelligence and Testing

Intelligence and Testing

- **Standardization** 标准化 – the test is given under consistent procedures and scored against a comparison group.
- **Validity** 效度 – it measures what it claims to. **Construct validity** 构念效度 and **predictive validity** 预测效度 are both examinable.
- **Reliability** 信度 – it gives similar results each time, checked by **test-retest reliability** 重测信度 and **split-half reliability** 分半信度.

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└ Intelligence and Testing

Intelligence and Testing, continued

Early tests produced an **intelligence quotient (IQ)** 智商 by dividing mental age by chronological age.

Modern scores are compared with a **normal curve** 正态曲线 of the population.

Exam tips

- Keep **sensation** and **perception** apart: detecting is sensation, interpreting is perception.
- **Bottom-up** starts with the stimulus; **top-down** starts with expectation. Say which the scenario shows.
- Learn the interference pair by direction: **proactive** means old material acts forward onto new.
- For **encoding** questions, name a specific strategy – chunking, spacing, elaborative rehearsal – not "studying harder".
- On testing questions, separate **reliability** from **validity**. A test can be reliable and still measure the wrong thing.
- When data are given, quote a figure before naming the concept. Findings-based parts award the link between the number and the term.

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Recap

Unit 2 – key takeaways

1

Sensation

detect; perception interprets

2

Processing

bottom-up from stimulus; top-down from expectation

3

Memory

proactive: old onto new; name a real encoding strategy

4

Tests

reliable $\neq$ valid – can measure the wrong thing well

Check yourself

- 1 Detecting a tone vs recognising a tune – which is perception?
- 2 Old French making new Spanish harder: which interference?
- 3 Can a test be reliable but not valid?
- 4 Name one encoding strategy other than “study harder”.

Answers: recognising the tune ▪ proactive ▪ yes ▪ chunking / spacing / elaborative rehearsal