# Cognition

AP Psychology

## 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.

Two directions of processing work together:

- **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.

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.

**Gestalt psychology** 格式塔心理学 described how the brain groups parts into wholes: **closure** 闭合 (filling in gaps), **figure and ground** 图形与背景 (separating an object from its background), **proximity** 邻近性 (grouping things that are close), and **similarity** 相似性 (grouping things that look alike).

**Attention** 注意 sits between sensation and perception. It is limited, so some information is lost:

- **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.

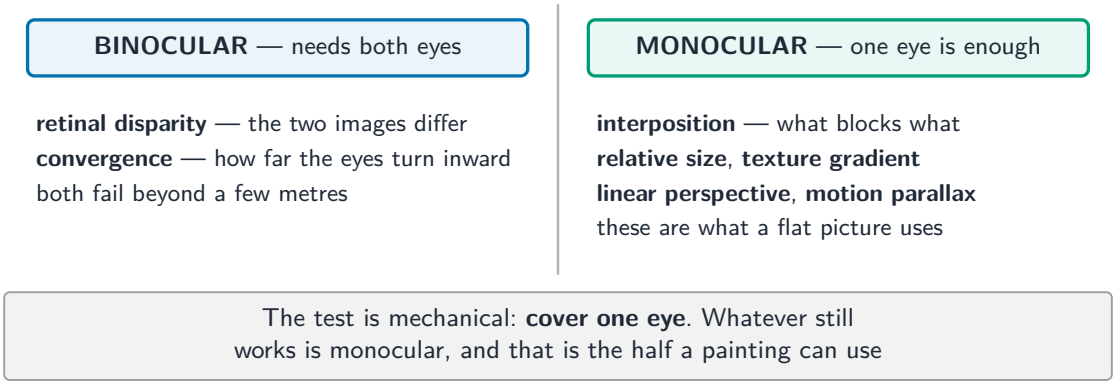
## Depth, Constancy, and Movement

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

**Binocular cues** 双眼线索 need both eyes. **Retinal disparity** 视网膜像差 is the small difference between the two images; the greater the difference, the closer the object. **Convergence** 辐辏 is the inward turn of the eyes for near objects.

**Monocular cues** 单眼线索 work with one eye: **relative clarity** 相对清晰度, **relative size** 相对大小, **texture gradient** 纹理梯度, **linear perspective** 线条透视, and **interposition** 遮挡 (a nearer object blocks a further one).

**Perceptual constancy** 知觉恒常性 keeps an object looking the same even when its retinal image changes - a door stays rectangular as it swings open. The brain can also perceive **apparent movement** 似动 when nothing actually moves, which is why a series of still frames looks like a film.




# Thinking and Problem-Solving

**Concepts** 概念 are the basis of thought, and a **prototype** 原型 is the best example of a concept. People build and change schemas through **assimilation** 同化 (fitting new information into an existing schema) and **accommodation** 顺应 (changing the schema to fit new information).

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 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.

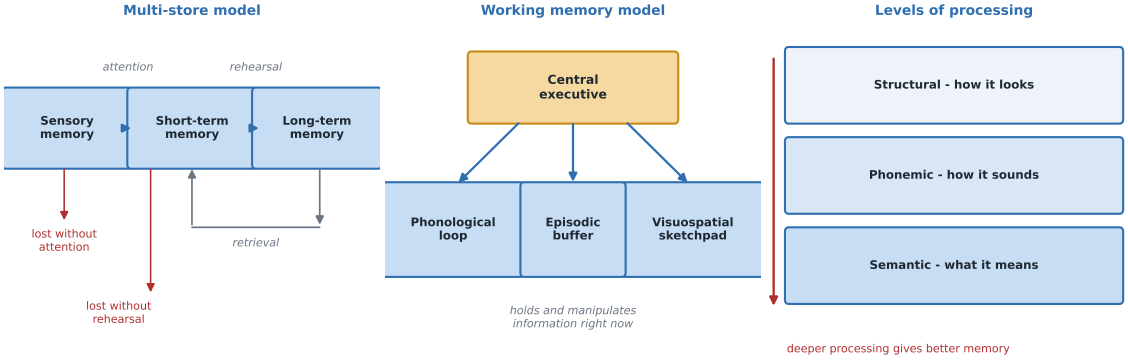
**Executive functions** 执行功能 let people generate, organise, plan, and carry out

goals. **Creativity** 创造力 involves **divergent thinking** 发散思维 (generating many ideas) rather than **convergent thinking** 聚合思维 (narrowing to one answer).

| 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."* |

Every one of them swaps a **hard** question for an easy one.
Naming the swap is what identifies the heuristic in a scenario

# Memory Systems




*The three examinable memory models: information flows through stores, is actively held in working memory, and is remembered better when processed deeply*

Memory is divided by how information is processed.

**Explicit memory** 外显记忆 can be described to others. It splits into **episodic memory** 情景记忆 (personal events) and **semantic memory** 语义记忆 (facts). **Implicit**

**memory** 内隐记忆 is harder to describe, and includes **procedural memory** 程序性记忆 (skills such as riding a bike). **Prospective memory** 前瞻记忆 is remembering to do something later.

**Long-term potentiation** 长时程增强 is the biological basis: synaptic connections grow stronger with repeated use.

Three models are examinable:

- 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.

# Encoding and Storing

**Encoding** 编码 gets information into memory, and how you encode changes how well you remember.

- **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.

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.

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.

# Retrieving and Forgetting

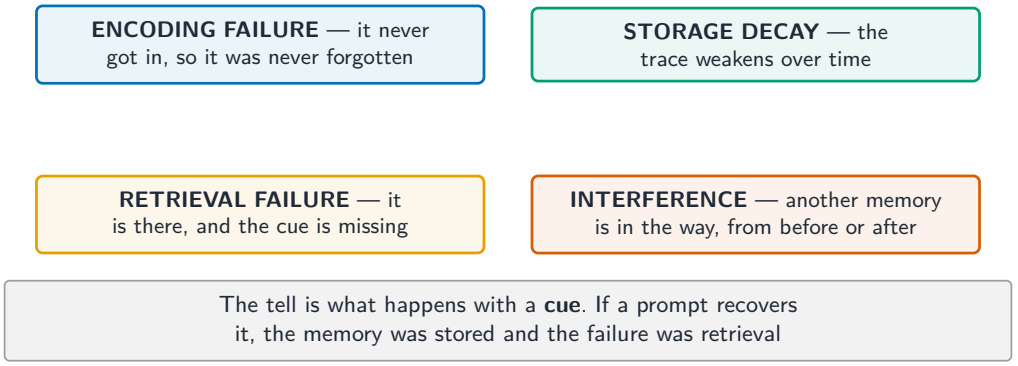
Retrieval takes two forms: **recall** 回忆 (producing information without cues) and **recognition** 再认 (identifying it among options). Recognition is easier, which is why a multiple-choice question feels easier than an essay.

Retrieval improves with matching conditions. **Context-dependent memory** 情境依存记忆 works better in the same place; **state-dependent memory** 状态依存记忆 works better in the same physical state; **mood-congruent memory** 心境一致性记忆 recalls material matching your current mood. Practising retrieval helps too - the **testing effect** 测试效应 shows that testing yourself beats rereading.

Forgetting has several causes. The **forgetting curve** 遗忘曲线 shows loss is fastest right after learning. **Encoding failure** 编码失败 means it never got in. **Interference** 干扰 can be **proactive** 前摄干扰 (old learning blocks new) or **retroactive** 倒摄干扰 (new blocks old). **Retrieval failure** 提取失败 includes the **tip-of-the-tongue phenomenon** 舌尖现象.

Memory is also **reconstructive** 重构的, not a recording. The **misinformation effect** 错误信息效应 occurs when later information changes what a person remembers. **Source amnesia** 来源遗忘 is remembering the information but not where it came from.

**Worked example (a real AP exam question).** The 2025 Article Analysis Question presented a study in which participants read a summary containing 20%, 50% or 80% misleading sentences, then answered questions about a video. Correct responses fell from 74% (low misinformation) to 63% (high). One part asked students to *"Explain how at least one of the research findings supports or refutes the misinformation effect."* A full-mark answer states the finding **and** connects it to the concept: *"Participants in the high misinformation condition answered 63% correctly compared with 74% in the low condition. Because exposure to more misleading detail lowered accuracy, the finding supports the misinformation effect, in which information received after an event changes the memory of it."* Notice the shape: quote the data, then name the concept the data supports. A restated definition with no number does not answer **Explain**.



# Intelligence and Testing

Psychologists still disagree about how to define **intelligence** 智力. **Spearman's g** 一般智力因素 proposes one general ability; other theories propose several, including **fluid intelligence** 流体智力 (reasoning with novel problems, which declines with age) and **crystallised intelligence** 晶体智力 (accumulated knowledge, which does not).

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.

Any psychological assessment must meet **psychometric principles** 心理测量学原则:

- **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.

**IQ** scores have risen worldwide over generations (the **Flynn effect** 弗林效应), which points to societal rather than biological causes. Scores vary more *within* groups than *between* them, and **stereotype threat** 刻板印象威胁 can lower performance when a person fears confirming a negative stereotype about their group.

# 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.