Cognition, language and learning

Supported GRE teaching and original transfer practice

Cognition, language and learning

- Separate classical from operant conditioning, and reinforcement from punishment, including **negative reinforcement** 负强化.
- Describe working memory and long-term memory, and compare recall with **recognition** 再认.
- Name the levels of language, such as the phoneme and the **morpheme** 语素.
- Recognise heuristics and obstacles in problem solving.

Learning

- Classical conditioning: a cue comes to predict an event and produces a response. A tune that always comes before lunch comes to cause salivation.
- Operant conditioning: a consequence changes how often an action happens.
- Positive means adding, negative means removing. Reinforcement increases behaviour; punishment decreases it.
- Negative reinforcement removes something unpleasant and increases behaviour. It is not punishment.

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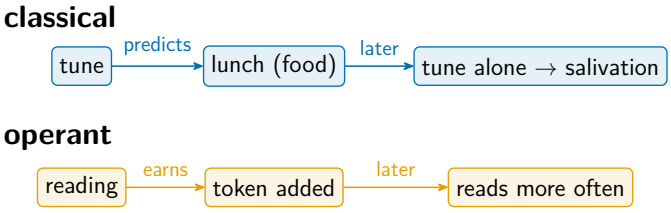
Figure: Learning



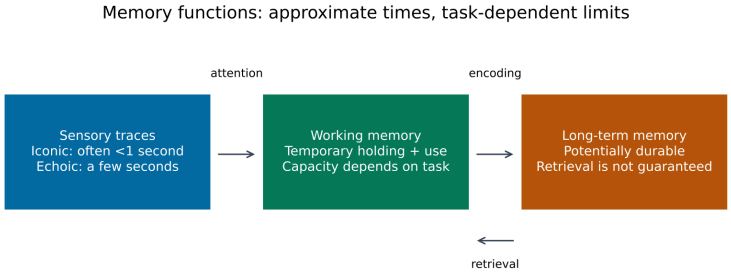
ask what changes: a response to a cue, or the frequency of an action

- Classical: a cue predicts an event. Operant: a consequence changes an action's frequency.
- Match each part of the diagram to the text.

Memory

- Sensory memory holds input for under a second to a few seconds; working memory holds a few items while we use them; long-term memory is lasting.
- Explicit memory is deliberate recall of events and facts; implicit memory appears in skills and priming.
- Recognition gives the answer as a cue, so it is usually easier than free recall. A failure to recall does not show that the memory is gone.

Figure: Memory



- Attention moves information into working memory, encoding into long-term memory; retrieval is never guaranteed
- Match each part of the diagram to the text.

Language

- Phonemes are sound units that change meaning (/b/ versus /p/); morphemes are the smallest units of meaning ("un-", "happy", "-ness").
- Syntax is word order and structure; semantics is meaning; pragmatics is meaning in context.
- Identify which level a task uses, rather than treating language as one ability.

Thinking

- Algorithms guarantee a solution; heuristics are fast shortcuts that can fail.
- Availability judges by ease of recall; representativeness judges by similarity and ignores base rates.
- Functional fixedness and mental set block new solutions.

Worked example: classifying learning

- A seat-belt alarm stops when the belt is fastened, and fastening becomes more frequent: negative reinforcement.
- A fine reduces speeding: positive punishment (something is added, behaviour falls).
- A child salivates when the lunch tune plays: classical conditioning.
- A child earns a token for reading and reads more: positive reinforcement. A pleasant event counts as reinforcement only if the behaviour increases.

Worked example: recall and recognition

- The memory was stored; the problem was retrieval without a cue.
- The first letter acted as a retrieval cue.
- Compare free recall, cued recall and recognition for the same items to separate storage from retrieval.

Common errors

- Calling negative reinforcement punishment.
- Treating recognition and recall as the same measure.
- Confusing phonemes with morphemes.

Common errors (2)

- Calling every heuristic an error.
- Naming a learning process before identifying what changed.

Key terms

- **negative reinforcement**: Increasing a behaviour by removing something unpleasant.
- **recognition**: Identifying a previously learned item when it is presented again.
- **morpheme**: The smallest unit of language that carries meaning.

Check yourself

- A child stops whining after losing screen time for it. What kind of consequence is this?
- Why is a multiple-choice test usually easier than a short-answer test on the same material?
- How many morphemes are in "teachers"?