

Encoding

Encoding refers to the experience of gaining information.

Principles of encoding

- selective: We pay attention to some things in our environment and we ignore others.

- prolific: We are always encoding the events of our lives and trying to understand them.

Psychologist pinpointed **distinctiveness**—having an event stand out as unusual from a background of similar events—as a key to remembering events.

Example: we might not remember the exact details of how our walk to work was a few weeks after it happened, as it is a mundane and routine event. But, if there was a car crash that happened on that day, we are more likely to remember the details of the event on that particular day.

In addition, when vivid memories are influenced by strong emotional content, they often leave a permanent mark on us.

The term **flashbulb memory** is used to describe this phenomenon. It refers to how some memories seem to be captured in the mind like a flash photograph; because of the emotionality of the news and seem to become permanently etched in the mind compared to other memories.

As noted above, the process of encoding is selective. In complex situations, very few details are noticed and encoded. The process of encoding always involves recoding—that is, taking the information from the form it is delivered to us and then converting it in a way that we can understand.

In conclusion, encoding is essential in the learning and memory process. However, just because an event is encoded (even if it is encoded well), there's no guarantee that it will be remembered later.

Storage

In order to store memories, the brain biochemically alters itself.

For psychologists, the term *memory trace* simply refers to the physical change in the nervous system that represents our experience.

Memory traces are not like videos or audio recordings. We often have errors in our memory, which would not exist if memory traces were perfect recordings of information. Memory is a creation of what you actually recall and what you believe happened. In a phrase, remembering is reconstructive (we reconstruct our past with the help of memory traces), not reproductive (a perfect recreation of the past). Psychologists refer to the time between learning and testing as the **retention interval**. Memories can consolidate during that time, aiding retention. However, experiences can also occur that undermine the memory.

Retroactive interference is one of the main causes of forgetting. Retroactive interference refers to new activities during the retention interval that interfere with retrieving the specific, older memory. For example, if you witnessed a car crash but hear people describing it from their own perspective, this new information may disrupt your own personal memory of the crash.

Retrieval

Available information is the information that is stored in memory, but we don't know how much and what types are stored. All we can know is what information we can retrieve—**accessible information**.

Retrieval (cont)

Accessible information represents only a tiny slice of the information available in our brains. Most people have had the experience of trying to remember some fact or event, giving up, and then it comes to them at a later time, even after they've stopped trying to remember it. Similarly, if we are given several choices (as in a multiple-choice test), we are easily able to recognize the thing we are trying to remember. The general principle that underlies the effectiveness of **retrieval cues** is the **encoding specificity principle**, which is an occurrence when retrieval cues overlap the memory trace of an experience. However, for a retrieval cue to be effective, a match must exist between the cue and the desired target memory. To produce the best retrieval, the cue-target relationship should be distinctive.



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