

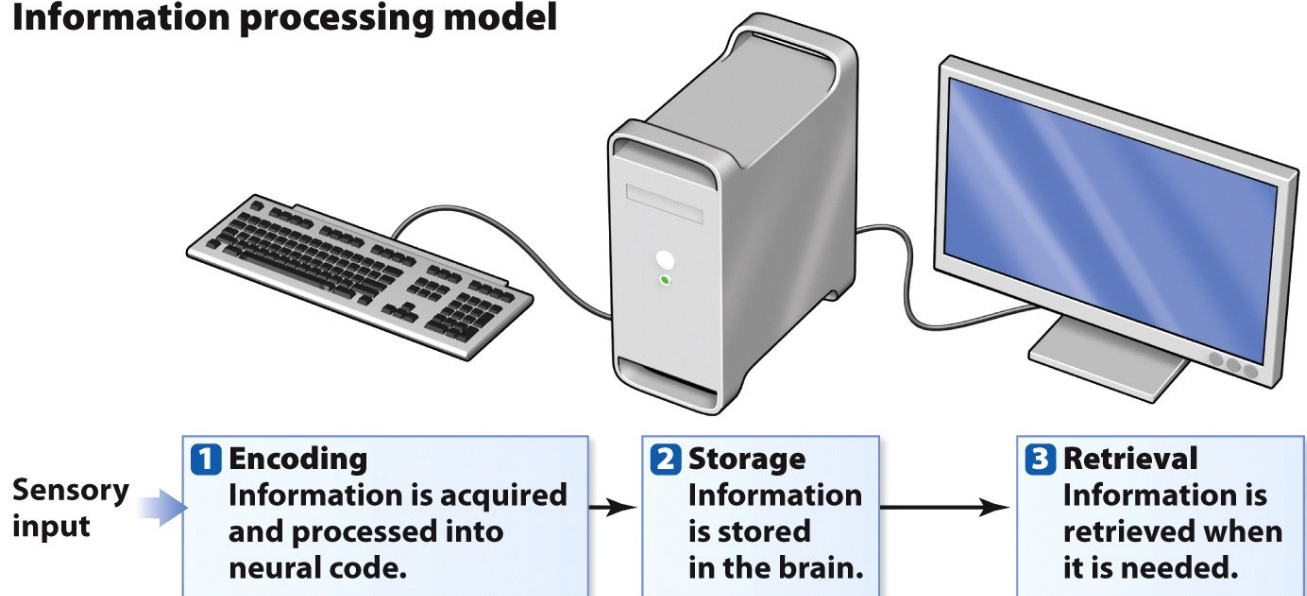
Memory as Information Processing

Psychologists use the *metaphor* that the mind is an information processor that

- encodes,
- stores and
- retrieves

information. A *rough* analogy is that memory is like computer processes.

Information processing model



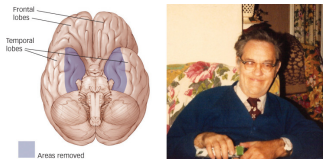
Forgetting: Amnesia

Type of amnesia	Definition
Retrograde	<p>A condition in which people lose past memories, such as memories for events, facts, people or even personal information (page 339). <i>Backward-acting memory loss</i>; especially for episodic memory. It is believed that the process of memory consolidation is impaired with severe blows to the head.</p> <ul style="list-style-type: none">• Trevor Reese Jones (Princess Diana's bodyguard) has retrograde amnesia.
Anterograde	<p>A condition in which people lose the ability to form new memories (page 339); <i>forward acting memory loss</i>.</p> <ul style="list-style-type: none">• H.M. could not form new explicit memories (episodic and semantic), but could learn and form new procedural memories.
Infantile	<p>The inability to remember experiences during childhood. This is generally attributed to the lack of organization about the world and information is quickly lost as well as an immature hippocampus that prevents us from encoding explicit memories.</p>



Photograph courtesy of the artist. © 2011 W. W. Norton & Company, Inc.

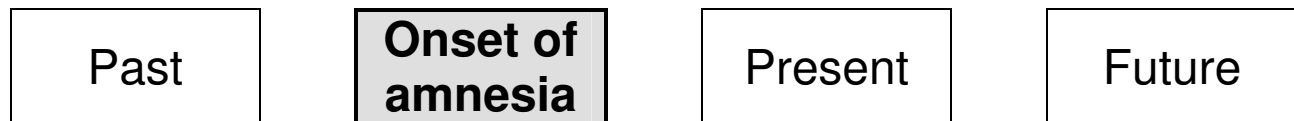
Anterograde



Infantile

Retrograde Amnesia

Retrograde amnesia: A condition in which people lose past memories, such as memories for events, facts, people or even personal information (page 339). Backward-acting memory loss; especially for episodic memory. It is believed that the process of memory consolidation is impaired with severe blows to the head.



e.g. an accident

What occurred a few moments before the accident

The accident



Later memories are intact



Psychological Science, 41e Figure 7.24a
© 2013 W. W. Norton & Company, Inc.

Anterograde Amnesia

Anterograde Amnesia: A condition in which people lose the ability to form new memories ([page 339](#)); forward acting memory loss.

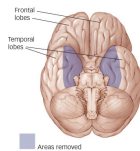
Past

Onset of amnesia

Present

Future

Has long term memories

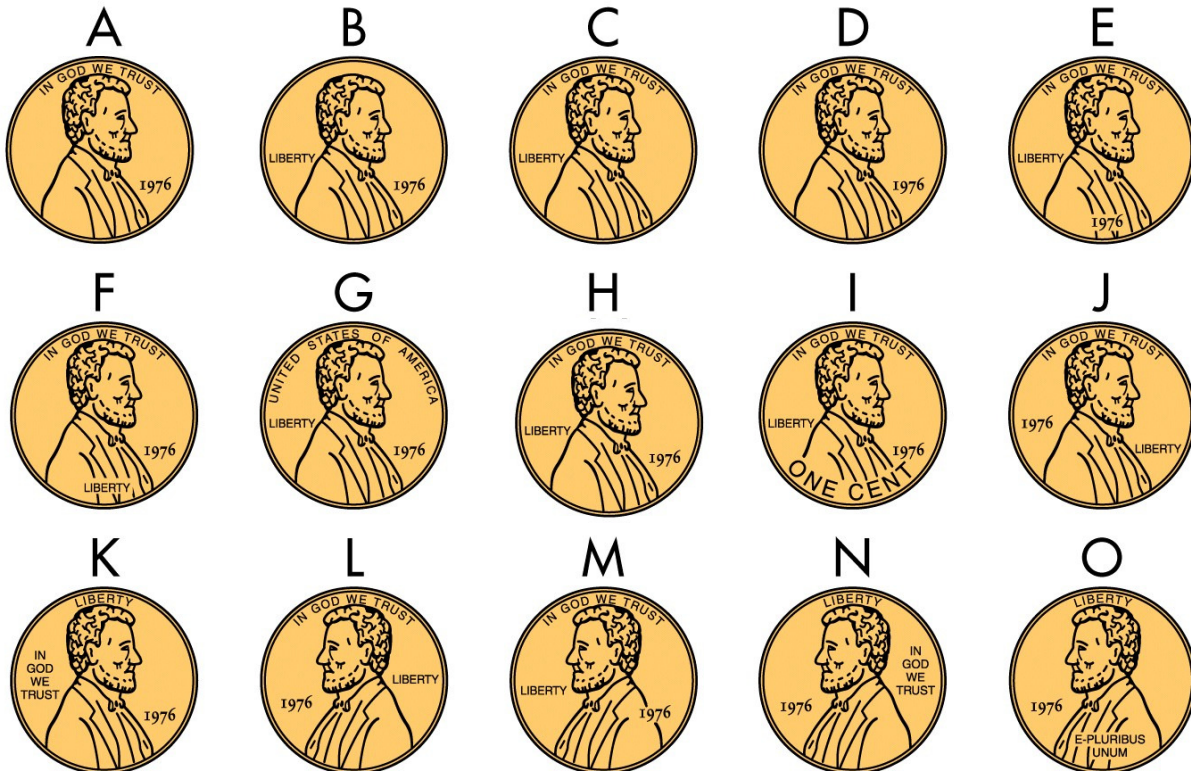


Can't form new long-term declarative (explicit) memories, but can form new procedural memories



Forgetting: Encoding Failure

Which coin portrays a real penny?



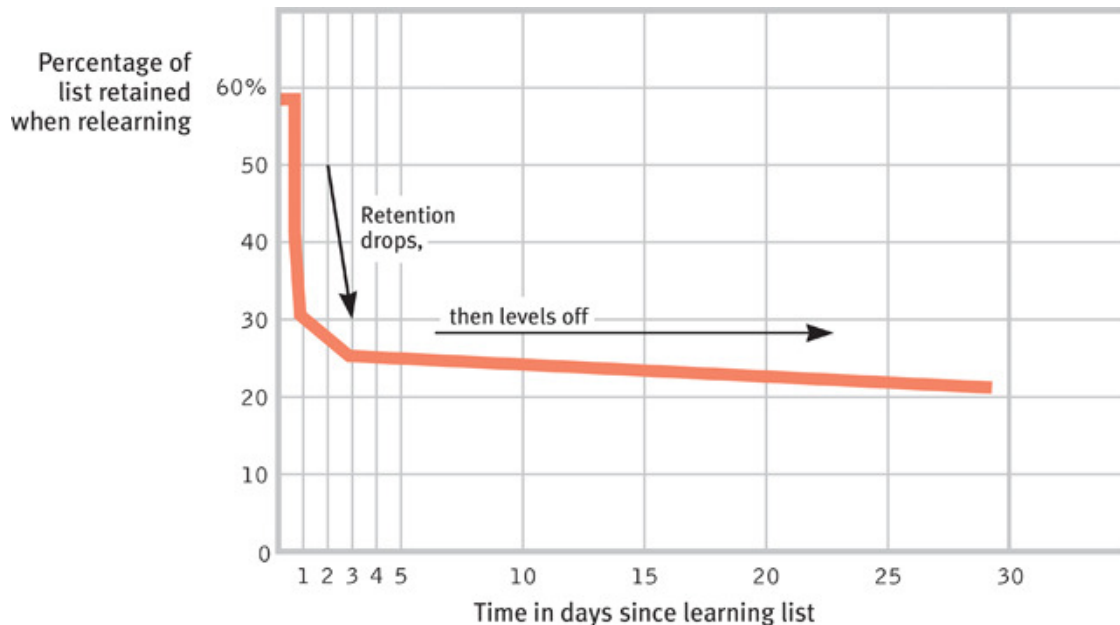
The reason why most people can't pick out the correct penny is due to encoding failure—the tendency to not encode ALL the features of the penny.

We might not be paying attention to all the details for a variety of reasons. We may not care about the specific details, we may be anxious, tired, unable to concentrate or distracted (e.g. texting).

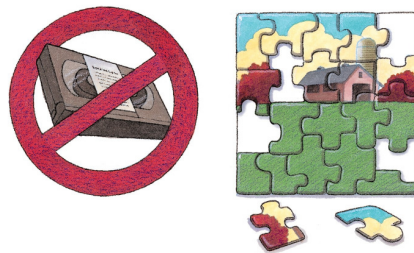
If we know in advance what details we are expected to pay attention to, we are more likely to pay attention to it, encode it, and remember it.

Forgetting: Storage Decay

Storage Decay: Forgetting what occurs with the passage of time.



Our memories are not exact replicas of what we experienced. Transience affects all of our memories to some degree. Most forgetting occurs soon after an event. Details were crisp minutes and hours after the event. However, as days, weeks and months pass, details are forgotten. What we remember generally what occurred and reconstruct the details.



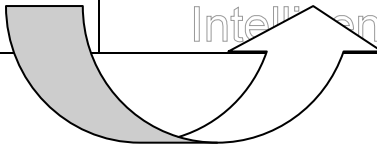
One piece of information that tends to be lost is the source of information (whether it was bad or good).

Forgetting: Interference

The details of our memories fade as time passes. As our lives move forward, new memories can interfere with old ones.

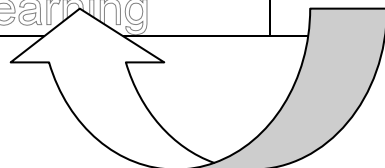
- Proactive Interference: The forward-acting disruptive effect of prior learning on the recall of new information. ([page 341](#)).

Information yesterday	Information today	Information tomorrow
Psychology of Learning	Psychology of Memory	Thinking and Intelligence



- Retroactive Interference: The backward-acting disruptive effect of new learning on the recall of old information ([page 341](#)).

Information yesterday	Information today	Information tomorrow
Psychology of Learning	Psychology of Memory	Thinking and Intelligence



Proactive or Retroactive Interference?

A person you meet casually for baseball introduces himself to you as Bruce. After getting to know you, Bruce tells you that he really identifies as a woman and calls herself Caitlyn. Every time you meet Caitlyn, you incorrectly refer to her as a him and call her Bruce.

Is this proactive or retroactive interference?

Information yesterday	Information today	Information tomorrow

Why would learning about interference important in explaining this error?

Sleep and Memory

REM sleep (short periods in which we dream) is thought to restore mental and brain functions.

- Both animal and human studies have shown that REM sleep increases after learning a novel task and
- deprivation of REM sleep following training disrupts learning when compared to those who are not deprived of REM sleep.

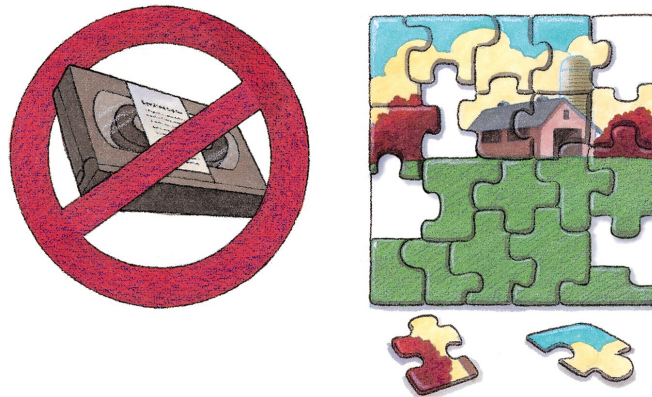
Being deprived of sleep can impair your ability to form new long-term memories

Why is it important to know about the relation between sleep and memory?

Memory as Information Processing

The analogy doesn't capture other features of memory such as that people forget and distort information and sometimes remember events in a way that is different than how the event actually occurred.

Memory is NOT like a video tape that records everything. It is more like a jigsaw puzzle where we remember certain events and reconstruct the missing pieces.



What memories are real?

It is very difficult to distinguish between “actual memories” and reconstructed memories. Reconstructed memories are potentially inaccurate.

A student example:

In middle school I was asked to write a paper on the earliest memory I could recall. I whacked my brain for hours trying to remember something from my early childhood, when suddenly it came to me: I was running along the coast on a very cold and drizzly day, wearing an aqua green quilted jacket, and I could see my long hair escaping on both sides of the hood, flying in the wind.



Reconstructed Memories



When you picture yourself taking a recent walk on the beach, do you see yourself as an outside observer would (an “observer memory”)? If so, such a recollection provides compelling evidence that memory can be reconstructive.

Memory Distortions: Misinformation

In one experiment by Elizabeth Loftus, she showed an accident involving two cars.

To find out if the language used to question witnesses had an effect on memory, she asked different groups of people to estimate the speed of the cars using different questions.

Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.



A week later, she asked the participants "Was there any glass?"

Those who were asked

- 32% reported seeing glass in the "smashed into" version
- 14% reported seeing glass in the "contacted" version

There was no glass.

Memory Distortions: Source Amnesia

Memory misattributions are one of the primary causes of eyewitness misidentifications. Eyewitnesses can identify people based on familiarity. They recognize that they have seen the person before, but can't remember the source of that recognition (when, where or the context of the information). Since they are being asked about the crime and the person seems familiar, eyewitnesses can unconsciously infer that that was the person. Eyewitness testimony tends to be persuasive because people exude confidence in what they saw. In [chapter 12](#), Social Psychology, this can be especially troubling when members of an out-group tend to look the same (out-group homogeneity effect).

Is what we
remember
something we saw
on TV?



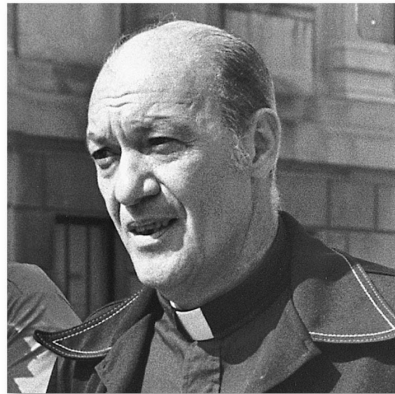
OR

Is what we
remember an
actual
experience?

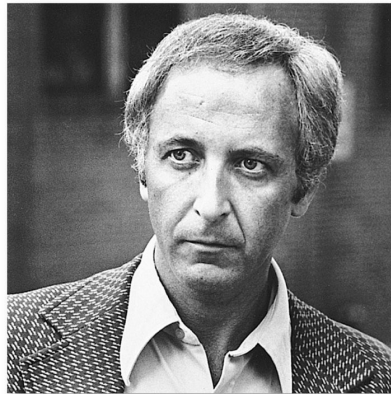


Memory Distortions: Source Amnesia

In addition to the examples in your textbook (the misidentification of Donald Thompson as a rapist and Todd Bunting as Terry Nichols, in the 1970s, one of these men was misidentified as “the Gentleman Bandit”.



© 2007 Thomson Higher Education



© 2007 Thomson Higher Education

Eyewitness confidently identified “the Gentleman Bandit” (he was dubbed the Gentleman Bandit because he was so nice when he robbed them). However, it appears that the reason they were confident was that they were familiar with the suspect’s face because his picture was shown on the evening news. This memory was confused with the actual memory.

Is what we remember a picture we saw on TV?



OR

Is what we remember an actual experience of being robbed?



Memory Distortions: Source Amnesia

Mistaken for a terrorist: Homeland Star only plays one on TV.

