

FOCUS ON VOCABULARY AND LANGUAGE

. . . *gold medal winners in a memory Olympics*. People with exceptional memories are being likened or compared to the top athletes in the Olympic Games. S, for example, would clearly receive the top prize (be the *gold medal winner*) in any competition in which remembering vast amounts of information was being tested (a *memory Olympics*). For example, he could accurately recall 70 numbers if they were read at 3-second intervals, whereas most people can only recite (*parrot back*) about 7 numbers.

How does our brain *pluck* information out of the world around us and *tuck* that information away for later use? **Memory** is the retention of learning over time. The question here is how does our brain select and pick (*pluck*) information from our environment and store (*tuck*) it away until we need it? We construct (*build*) memories through the processes of **encoding**, **storage**, and **retrieval**.

Studying Memory

An Information-Processing Model

Some information takes a *short-cut* on its way to long-term storage. Our mind works on two levels, the conscious level and the unconscious level (*the two-track mind*). Some material gets into **long-term memory** by a quicker and more direct route (it takes a *short-cut*) without our conscious awareness. Myers refers to this unconscious processing as *the show that goes on quietly behind the scenes*, or *information that gets into memory through the mind's back door*.

Two Memory Tracks

. . . *boost* . . . One way to improve and increase the power of our memory is to use **rehearsal**. Thus, actively repeating some new information (such as a stranger's name or new terminology) will help strengthen (*boost*) our ability to remember this material. As Myers notes it is important for effective retention to space out or distribute rehearsals over time (the **spacing effect**) rather than doing the repetitions all at once (*massed practice* or *cramming*). Repeatedly testing yourself also improves learning and memory (the *testing effect*).

Put yourself in Ebbinghaus' shoes. Myers is asking you to imagine how you might have solved the problem of creating novel stimulus material if you were Ebbinghaus (*put yourself in Ebbinghaus' shoes*). To avoid using meaningful words with prior associations, he invented three-letter words that made no sense and had no meaning (*nonsense syllables*). He did this by putting (*sandwiching*) a vowel between two consonants.

. . . they [people with *amnesia*] can learn new skills and can be *classically conditioned* . . . They can master *mirror-image writing*, *jigsaw puzzles*, and even complicated job skills. People who have lost the ability to remember new information (who have *amnesia*) may nevertheless be capable of learning through association (*classical conditioning*). They may also learn to solve problems (e.g., *jigsaw puzzles* and *mirror-image writing*) even if they are not aware of having done so. Myers notes that these findings suggest that memory is not a single, unified system. People with *amnesia* can learn how to do something (**implicit memory**) without any knowledge of this learning (**explicit memory**).

One day, after reaching for his hand, she *yanked* hers back, for the *physician* had *pricked* her with a *tack* in his *palm*. A patient with amnesia was unable to recognize her doctor (*physician*) even though he shook her hand and introduced himself every day. On one occasion, he concealed a small sharp

pin (*tack*) in the center of his hand (*palm*). It pierced her hand (*pricked her*) when they shook hands, causing her to quickly pull (*yank*) her hand away. She has no memory of this incident and cannot explain why she will no longer shake hands with him (*she has been classically conditioned without awareness*). This type of implicit memory involves a part of the brainstem called the cerebellum.

Building Memories

Encoding: Getting Information In

In making such mistakes, our minds are like theater directors who, *given a raw script*, imagine a *finished stage production*. With this statement, Myers suggests that what we remember is not an exact replica of reality. We construct a mental representation or model (a *finished stage production*) from the basic sensory information (the *raw script*) available to us. Thus, when we recall something, it is our own version (our *mental model*) that comes to mind and not the real thing.

Storage: Retaining Information

Sensory memory is truly *fleeting*—like *lightning flashes* in the brain. In his investigation of sensory storage, George Sperling showed his subjects an array of nine letters for a very brief period (for about the length of a *flash of lightning*). He demonstrated that this was sufficient time for them to briefly view all nine letters, and that an image remained briefly (*fleetingly*) for less than half a second before fading away.

. . . *Sherlock Holmes* . . . Mystery writer Sir Arthur Conan Doyle's most popular character was a very intelligent and logical private detective named *Sherlock Holmes*. *Holmes* believed, as did many others, that our memory capacity was limited, much as a small empty room or attic can hold only so much furniture before it overflows. Contemporary psychologists now believe that our ability to store long-term memories is basically without any limit.

(*Photo caption*) Among animals, one contender for *the gold medal for memory* would be a mere *birdbrain*—the *Clark's nutcracker*. The *Clark's nutcracker* is a small bird with a small brain (a *birdbrain*). Though its brain is small in size, it has a phenomenal memory for where it buries its food (it would get *the gold medal for memory*). It can **recall**, after a period of more than 6 months, 6000 different locations of hidden food (*caches*).

Arousal can *sear* certain events into the brain. When arousal level rises because of stress, so too do the levels of certain hormones, and these hormones signal the brain that something important has happened. The events that triggered the arousal make an indelible impression on the brain, much as a hot grill burns (*sears*) its shape on the surface of the meat placed on it. Following disturbing and painful events (*horrific or traumatic experiences*), very clear recollections (*vivid memories*) may occur repeatedly and spontaneously. The drug propranolol may help decrease or alleviate (*blunt*) such intrusive memories if taken soon after the traumatic event.

Retrieval: Getting Information Out

If put in a *great mood* . . . people recall the world through *rose-colored glasses*. Our memories are affected by our emotional states (*moods*). Thus, if we are happy (in a *great mood*), we are more likely to view the total situation in a more optimistic and hopeful way (through *rose-colored glasses*). And, if we are sad and unhappy, our memories are affected, or tainted, by our negative mood (*being angry or depressed sours memories*). Memory of events and people is influenced by

the particular mood we are in, whether it is good or bad, and we tend to remember the events accordingly.

When *teens* are *down*, their parents seem *inhuman*. As moods *brighten*, those *devil parents sprout wings and become angels*. Because our memories tend to be **mood-congruent**, we are likely to explain our present emotional state by remembering events and people as being consistent (*congruent*) with how we now feel. In one study, when young adolescents (*teens*) were in a bad mood (*down*), they viewed their parents as cruel and uncaring (*inhuman*); later, when they were in a much better (*brighter*) mood, their parents were described in much nicer terms. It seemed as though their parents had undergone an amazing change in character (*had changed from devils to angels*), but the change was simply in the teenagers' mood.

Forgetting

. . . we feel the name *on the tip of our tongue* but cannot get it out. The expression “*it's on the tip of my tongue*” refers to the feeling you get when you are trying to remember something such as a name or place but can't, even though you feel you know it and can almost say it (*it's on the tip of your tongue*). Given an appropriate **retrieval cue** (such as the first letter of the name or something it rhymes with), we can often remember the item. Thus, the problem is one of retrieval failure and not one of memories discarded.

Retrieval Failure

As you collect more and more information, your *mental attic* never fills, but it certainly gets *cluttered*. We may have an unlimited amount of space in our memory system or *mental attic* (a room at the top of a house) but, with a constant flow of new information coming in, the storage can become disorganized (*cluttered*). New information may get in the way of recalling old material, or old material may block or disrupt recall of new information (**interference**).

We *sheepishly* accepted responsibility for 89 cookies. Still, we had not come close; there had been 160. The Myers family obviously loves chocolate chip cookies, and the story of how all 160 were devoured (*scarfed, wolfed down, eaten, consumed*) within 24 hours (*not a crumb was left*) is not only quite funny but also makes an important point. Embarrassed, guilty, and feeling a little foolish (*sheepish*), they could only account for and remember eating 89 cookies; this illustrates the self-serving nature of memory and how, unknowingly, we change and revise our own histories.

Memory Construction

We don't just retrieve memories, we *reweave* them. Memories are sometimes altered or changed when they are formed (*we often construct our memories as we encode them*). They can also be modified or adjusted (*reweaved*) when we retrieve them (*as we withdraw them from our memory bank*). Thus, when we recall (“*replay*”) something, we may inadvertently revise (*reweave*) it, replacing the original with a slightly altered version—a process called *reconsolidation*. As Myers notes, in this context, all memories are false memories to some extent.

Misinformation and Imagination Effects

The human mind comes with built-in Photoshopping software. Digital images can be altered using appropriate computer software (e.g., Photoshop). In a similar manner, the human mind has an inborn ability to change memories (*it has built-in Photoshopping software*). In one experiment, researchers altered family photos to include an event that never happened. After viewing these fake images three times over two weeks, half the participants falsely remembered the experience and even described it in vivid detail. This is an example of the **misinformation effect** (a memory that has been corrupted by misleading information).

This research also explains why “*hypnotically refreshed*” memories of crimes often contain errors. Because of the tendency to manufacture events without being consciously aware of doing so (*memory construction*), people are likely to be influenced by suggestions and biased questions while under hypnosis. Their subsequent “*hypnotically refreshed*” recollections may therefore be a mixture of fact and fiction.

Children’s Eyewitness Recall

If memories can be *sincere*, yet *sincerely* wrong, how can jurors decide cases in which children’s memories of sexual abuse are the only evidence? Research evidence suggests that, under appropriate conditions, children’s memories can be reliable and accurate (*sincere*), but that they are also prone to the *misinformation effect* and can be misled by biased questions and suggestions. Later, the children are not able to reliably separate real from false (*sincerely wrong*) memories.

Repressed or Constructed Memories of Abuse?

. . . even if false, their *memories are heartfelt*. Some people recover memories in therapy through “memory work.” While they might be false memories, they feel very real and are often accompanied by strong and sincere emotions (*the memories are heartfelt*). Professional organizations, such as the American Medical Association, American Psychological Association, and American Psychiatric Association, have issued statements aimed at finding a solution (*a sensible common ground*) to the “memory war”—the controversial issues surrounding recovered memories.

Improving Memory

Sprinkled throughout this chapter and summarized here for easy reference are *concrete* suggestions that could help you remember information when you need it. This chapter on memory has many good ideas for memory improvement scattered or interspersed (*sprinkled*) throughout, and Myers has pulled them together in a summary that is easy to understand and follow. These are real and tangible (*concrete*) ways that will help you improve your memory. Use them!!!