

from the editors of

health

How to
Improve
Your
Memory

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How to Improve Your Memory

There is not enough memory to open this application. Closing windows or quitting desk accessories can make more memory available. . . .

If only clearing our memory logjams were as easy as freeing up memory on our computers!

Making memories—which involves retaining and recalling information, experiences, or skills—entails complex electrical, chemical, and physical changes inside your brain. The brain is made up of about 100 billion nerve cells, called neurons, and it contains at least 50 neurotransmitters, the brain chemicals that help transmit the signals between neurons. These signals allow you to do everything from move to feel to remember.

Your memories take hold in a kind of brainy “handshake,” as axons (transmitters) reach out to dendrites (receivers), forming connections between neurons. At these meeting places, known as synapses, such neurotransmitters as acetylcholine add the chemical enhancements needed to help your brain form a memory.

Types of Memory

Although the brain defies cut-and-dried comparisons to a computer, there are some similarities between the two.

Storing and Retrieving Short-Term Information

Short-term, or “working” memory, is a bit like a computer’s RAM (random-access memory). It allows you to store information for seconds or hours, or to retrieve information that’s been in storage for longer. Short-term memories, such as telephone messages you need to remember long enough to pass on, reside in the part of the brain called the hippocampus. There, incoming data gets triaged: Sorted for immediate use, discarded, or transferred to long-term storage.

Retaining Information for Long-Term Use

Once learned, a memory is retained for days or years in long-term storage areas of the brain similar to a computer’s hard drive. Your friend’s telephone number, for example, is stored there because it’s information that you’ll need often. Long-term memories include facts that you make an effort to learn, such as birth dates (explicit memory); information used to drive (implicit memory); and embedded memories that require no effort to recall, such as the days of the week (semantic memory).

Memories required to perform certain skills are stored differently than those needed to recall facts: Your brain stores memories for skills in different “folders” throughout its structure, which may partly explain why you really never do forget how to ride a bicycle.

How Memories “Stick”

What accounts for a memory’s staying power? Genes have something to do with it. Some people simply remember better than others, but other factors also play a role: How important is a fact or experience to you? Is it associated with something familiar? Is it *really* holding your attention? Does it stir emotions in you? An event or thought with emotional significance gets replayed in your brain, increasing the chances of a long-term imprint and possibly even displacing other emotional memories. (Let that be a lesson for the pessimists among us.)

Repetition is the mother of retention. With repetitive replaying of a memory, a particular set of neural connections get strengthened, forging physical and chemical changes at the synapses. Without reinforcement, connections disappear, and the memory follows suit.

Periodic Upgrades Required: How Your Memory Changes Over Time

Somewhere around middle age, many people begin to notice subtle—yet annoying—changes in their memory: Not being able to recall that new neighbor’s name, for example, or having trouble memorizing strings of numbers, such as the sequence needed to access your new security system.

Short-term memory often goes by the wayside first. Why? Largely because an aging brain takes longer to learn new things, which prevents the memory from ever even reaching long-term memory “files.”

In some cases, head injuries or disease can lead to a sudden or severe loss of memory. More often, a lack of mental stimulation is a major culprit. But a number of other factors also contribute to deficits in short-term memory. Here’s what you need to know about them.

Cell-to-cell communication gaps interfere with memory.

Since poor communication can erode any relationship, poor connections at the synapses can break down your ability to reliably form memories. Maybe you’re lacking in neurotransmitters, which quickly process incoming and outgoing information, and act as the “glue” to get the memory “cemented” firmly in place.

Free radicals fog your memory. Your brain is dependent upon oxygen for its energy. Problems arise when your brain has little protection from the by-products that result from the metabolism of oxygen in the body, a process called oxidation. These by-products, called free radicals, are chemically reactive forms of oxygen. When free radicals bump around in the brain, they destroy brain-cell connections, causing more damage than the proverbial bull in a china shop. Oxidation also prompts plaque buildup in blood vessels, which limits blood flow to the brain and disrupts brain function, including memory. To add insult to injury, as you age, your body produces fewer and fewer antioxidants, substances that can help neutralize the ill effects of free radicals.

Complex lives clog memory banks. Just as your computer works more slowly when too many programs are open at

once, life distractions can interfere with your memory as you age, causing information to slip out of your working memory before it has a chance to “gel” and move to long-term memory. Although this usually screens out only extraneous information, the habitual and unconscious editing out of information can occasionally cause you to lose something vital, such as remembering a deadline at work.

Your everyday choices over your lifetime can affect recall.

A wide array of lifestyle factors—from poor nutrition to lack of exercise to stress—can contribute to memory loss as you age. Many of the things that effect your body in the aging process also harm your brain.

All these factors make it more challenging to learn new things as you get older. You might be a fountain of knowledge with a large store of long-term memories but find that learning new pearls of wisdom isn't as easy as it used to be. (By contrast, kids' brains are basically cleaner slates that have less competition for space in them, allowing children to remember details you may find astounding.)

Now for the Good News . . .

It's true that your brain loses approximately 1 percent of its neurons a year. Fortunately for us, though, the brain is not hard-wired. Scientists used to think that we had a set allotment of neurons, but recent studies have proven otherwise. In fact, research now shows that you *can* keep forming new neurons throughout life, which means these neurons can quickly be recruited to form memories.

Gone are the days where you must accept an inevitable, unenviable decline in mental function. An encouraging 10-year study of 6,000 older people showed that 70 percent maintained their mental abilities, a testament to the brain's ability to continually adapt throughout life.

So even if you've started to notice a lapse in memory now and then, all is definitely *not* lost—provided, of course, that you give yourself more time to learn new things. If you allow for more repetitions of the specific things you want to remember and try the tips in this book, you can continue to learn (and remember) new things throughout your life.

