00:04

Thinking about the past week, did any of you forget where you put your phone? Did you have a word stuck on the tip of your tongue, you couldn't remember the name of an actor or that movie a friend recommended? Did you forget to take out the trash or move the laundry from the washer to the dryer or to pick up something from the grocery store you meant to buy? What is going on here, is your memory failing?

00:31

It's not. It's doing exactly what it's supposed to do. For all its miraculous, necessary and pervasive presence in our lives, memory is far from perfect. Our brains are not designed to remember people's names, to do something later or to catalogue everything we encounter. These imperfections are simply the factory settings.

00:56

Even in the smartest of heads, memory is fallible. A man famous for memorizing over 100,000 digits of pi can also forget his wife's birthday or why he walked into the living room. Most of us will forget the majority of what we experienced today by tomorrow. Added up, this means we actually don't remember most of our own lives. Think about that. So what determines what we remember and what we forget? Here are two examples of supercommon memory failures and why they're totally normal.

01:35

Number one, where did I put my phone, my keys, my glasses, my car? The first necessary ingredient in creating a memory that lasts longer than the present moment is attention. Your memory is not a video camera recording a constant stream of every sight and sound you're exposed to. You can only remember what you pay attention to.

02:00

Here's an example that will probably feel familiar. I often drive from Boston to Cape Cod. About an hour into this trip I cross the Sagamore Bridge, a really big, four-lane, cannot-miss-it structure. And then about 10 miles and a mere 10 minutes later, I'll suddenly wonder, wait, did I already go over the bridge? I can't recall going over the bridge because that memory was never created in the first place. It's not enough for my senses to perceive information. My brain can't consolidate any sensory information into a lasting memory without the neural input of attention. So because I've driven over that bridge countless times and because I was probably lost in

thought or listening to an audio book, so my attention pulled elsewhere, the experience of driving over it slipped out of my brain within seconds, gone without a trace.

02:59

The number one reason for forgetting what someone said, the name of a person you just met, where you parked your car and whether you already drove over a really big bridge is lack of attention.

03:14

Number two, "Oh, what is his name?" One day I couldn't come up with the name of the actor who played Tony Soprano in the HBO series "The Sopranos." I knew his name was stored somewhere in my brain, and I could tell you all kinds of things about him, but I could not produce his name. I eventually gave up and googled it. "Actor who played Tony Soprano." James Gandolfini. Yes, that's it. Blocking on a word, also called tip of the tongue, is one of the most common experiences of memory failure. You're trying to come up with a word, most often a proper noun, but you cannot, for the life of you, retrieve it on demand. Why does this happen?

04:00

Blocking on a word can occur when there's only partial or weak activation of the neurons that connect to the word you're looking for.

04:09

We often come up with a loosely related word instead, something similar in sound or meaning. These obliquely related words are rather unfortunately called the ugly sister of the target. And even more unfortunately, zeroing in on an ugly sister will only make the situation worse. These decoys lead your brain activity down neural pathways that go to them and not to the word you're looking for. So now when you try to retrieve the word in question, all you can come up with is the ugly sister.

04:42

Here's an example. I recently asked my boyfriend, "What's the name of that famous surfer? Lance? No, it's not Lance." He knew who I was talking about, but he couldn't come up with it either. We were both stumped. And turns out my blurting out the wrong name set my boyfriend's brain to Lance Armstrong, the ugly sister. Now, he was stuck in the wrong neural neighborhood and couldn't get out.

05:10

The ugly sister also explains this phenomenon. Much later, once you've stopped trying to find the word, it suddenly bubbles to the surface, seemingly out of nowhere. Laird Hamilton. Yes, that's it. Why does that happen? By calling off the hunt, your brain can stop perseverating on the ugly sister, giving the correct set of neurons a chance to be activated.

05:36

Tip of the tongue, especially blocking on a person's name, is totally normal. Twenty-five-year-olds can experience several tip of the tongues a week, but young people don't sweat them, in part because old age, memory loss and Alzheimer's are nowhere on their radars. And unlike their parents, they don't hesitate in outsourcing the job to their smart phones.

05:59

Which brings me to an important point. Many of you are worried that if you use Google to look up your blocked words then you're cheating and contributing to the problem, weakening your memory. You're worried that Google is a high-tech crutch that's going to give you digital amnesia. This belief is misinformed. Looking up the name of the actor who played Tony Soprano doesn't weaken my memory's ability whatsoever. Likewise, suffering through the mental pain and insisting on coming up with his name on my own doesn't make my memory stronger or come with any trophies for doing so. You don't have to be a memory martyr. Having a word stuck on the tip of your tongue is a totally normal glitch in memory retrieval, a byproduct of how our brains are organized. You wear glasses if your eyes need help seeing, you have my permission to use Google if a word is stuck on the tip of your tongue.

06:55

Memory is amazing and is essential for the functioning of almost everything we do, but it will also forget to call your mother, where you put those glasses, and what you ate for lunch last Tuesday. Frustrating, but not a cause for diagnosis, panic or shame. Most of what we forget is just a normal part of being human.

07:19

Thank you.

07:21

David Biello: I will stand in for the audience to give you my own personal standing ovation. I personally feel so much better. So thank you for that. I think we all get a little concerned about our memories, particularly after this pandemic. And I see that we already have some questions from the audience. But before we get into that, I have to ask one very important personal question, which is, should I be worried, because every time I get up and go to another room, I forget why I've gone there. Is that is that troubling? Should I be nervous?

07:53

LG: No, you should not be nervous. And that's one of the big take-homes of why I wrote the book I just wrote, there's so many people, especially over the age of 40, who experience normal moments of forgetting but now we are keyed into it and we think, "Oh, my God, does this mean I'm losing my mind, I'm going to get Alzheimer's." So here's what happens when you have that -- so you're in your bedroom and you're getting ready to read a book, it's bedtime, that's what you do before bed. And you realize you've forgotten your glasses. And you're like, they're probably in the kitchen. So you go walk down to the kitchen and you created the memory, the intention of what you plan to do later. That's called your prospective memory. So it's like, I intend -- we do this all the time, right? "When I go to the grocery store later, I need to buy milk." "I need to remember to call my mother." "I need to remember to pick up the dry cleaning," right? These things that we plan to do in the future. Our brains are terrible at them, like, inherently terrible. So people feel like they're cheating if they create to-do lists, checklists, put it in their phone. No, this is just good practice, right? So pilots don't rely on their prospective memories to remember to put down the wheels before landing the plane. They outsource the job. Don't use your brain, use the checklist, right? So, like, using a checklist is sound practice.

09:07

So anyway, you made this intention, this memory of, like, when I get to the kitchen, I'm going to look for glasses. You show up in the kitchen, you're like, "I don't know why I'm here." Part of the reason is prospective memory sucks. But we've only asked it to remember something for 10 seconds. It's not like, "Oh, I need to remember to go to my Zoom meeting at four o'clock." So what's going on? The other key in this situation has to do with context.

09:32

So memory is very much influenced by context. The cues, the associations, the sensory information, the emotional information, our mood, anything that is linked to the thing we're trying to remember. So context helps us form a memory and context helps us retrieve that memory because memory is the connected neural network of associations. So in the bedroom, all the cues for what you needed were there, right? The bookcase, the book you're reading, the time

of day, it's bedtime, "Oh, I need glasses." You show up in the kitchen and you're like, "Am I hungry? Am I thirsty?" Because, right, the cues are signaling, "Is it a meal? Is it what?" And not the glasses that you didn't notice.

10:14

So when you walk into the room and you're like, "I don't know why I'm here," you're not going crazy, you're not getting Alzheimer's, your memory isn't terrible. It's, go back to the room you were in before you landed in this one, either in your mind's eye or physically do it and imagine the cues that were there and it will instantly deliver what you were completely befuddled by a moment ago.

10:37

DB: So a question that's come in from a number of our audience members, including Mel and Lorraine, is the flip side of this. So when would you consider, or what kinds of memory cues would be signs of abnormality or you should get further testing and checking?

10:57

LG: Oh, I love this question, too, because I think that for too long there's been this disconnect with, you know, people are comfortable thinking about having an influence over their health from the neck down, right? So especially with heart health, a lot of us count our number of steps or we'll go to the doctor and get blood pressure taken. And do we have high cholesterol? How can I influence these factors, right? How can I influence the likelihood that I'll get a heart attack later? But most people don't think they have any influence over their brain health. And so this question is great because it's like, well, what can I notice? And then what do I do with that information, right? So, like, don't just panic and don't tell anyone. There's so much shame and stigma attached to anything going on with the brain and particularly memory. But this becomes information that you can be in conversation with your doctor about. So what is your cognition? What is your memory today and what does it look like a year from now? Is it changing? And so what are the differences?

11:59

So forgetting people's names, totally normal. Names sort of, live in, like, little neurological cul de sacs like, ultimately lots of things connected to them, but really hard in the end to just produce the words, you've got to get to that house at the end of that street, there's only one way in. Whereas common names, common nouns are like, in the intersections on Main Street, USA, like, you can get, there are a number of different ways, and it's super easy to get in and out. If you start forgetting common words frequently -- so if I'm like, "Oh, what's the name of the thing you

write with? The thing you write with. What's that" "Pen?" "Yeah" -- if that starts happening, that could be something. Doesn't have to be Alzheimer's. There are lots of reasons for having issues with retrieving memories making new memories. It can be sleep deprivation, it could be B12, it can be lots of things. So you don't have to just jump to Alzheimer's. But it is something that you can hopefully address. Again, be involved in your brain health.

12:59

The other has to do with understanding how things work, what things are for. So, like, my friend Greg O'Brien has Alzheimer's and he uses the example which I love and I used in my book is, a lot of people say I can't remember where I parked my car. That happened to me the other day. I was in the mall, I got out, I couldn't remember where in the garage I parked the car. I've certainly done this. For Greg, who has Alzheimer's, it's he drives somewhere, back when he used to drive, parks his car, gets out, like, does something for a minute. So his example's the dump. "I went to the dump, threw the trash out, turned around standing in front of my car. Don't recognize it as mine." So that's a semantic memory. That car is my yellow jeep and I don't recognize it. And then B, forgets that he drove there. So that's an episodic memory, a memory for what happened. So just a few minutes ago, I drove to the dump and now I don't remember that I did that. And so that's not the same as, like, "Did I park on level four or five?"

14:00

DB: Yeah. So George Weiss, in the helping-us-remember-better vein, wants to know can diet help us to avoid memory loss and can you, kind of, exercise your neurons into better memory through crossword puzzles or deeper relationships or anything like that? You're shaking your head no, so that's the short answer.

14:23

LG: Yes and no. Again, I love this question, so thank you. Yeah, so I tell folks, like, there's no real gimmick to this, like there's no supplement I can give you that's going to keep you from experiencing a tip of the tongue or help you memorize your next TED Talk. Like, there's no supplement, the crossword puzzles are not the thing, I don't know who started that one. So crossword puzzles are going to -- think about what you're doing -- you're retrieving words you already know. So you're going to get better at remembering those words. But it's not cross-training. It doesn't then help you in your day-to-day life remember what happened that day or again, if you have a presentation, what you have to say. It doesn't work that way. It's also not building new neural roads. So retrieving information you already know doesn't lend itself toward neuroplasticity, which is in building something called a cognitive reserve.

15:19

So every time we learn something new, we're actually building new neuroanatomical and neurochemical connections. And so if you imagine -- your brain isn't just this pink blob in your skull, in this little black box in your head, it's a very dynamic organ and it's changing constantly. And your genes are interacting with what happens. It's interacting with what you do and experience and feel, and it changes. And the more we learn, the more connections we build. And this is important because if you do start to experience some pathology, that is sort of, pre-Alzheimer's, or if you start to get Alzheimer's, you actually have a lot of reserve. You have back-up connections that can dance around any problems or detours.

16:06

So learning new things is one way. Exercise has been shown to decrease your risk of dementia by up to a half. Just day-to-day, we know that sleep is massively important, both for preventing Alzheimer's and for your memory today. So the memories that I make today become long-term, stable memories, become long-term, stable alterations and neural connections while I sleep. And it's during certain phases of sleep that this process happens. So sleep is not this passive state of doing nothing. It's a very busy biological state. And so it's locking in the information and experiences you learn today. And so that's superimportant. Then tomorrow, if I didn't get enough sleep tonight, I'm going to -- my frontal lobe's not going to want to drag itself into its day job and do the work of paying attention today, right? You feel sluggish, like, "Ah, I can't pay attention. What?" If I can't pay attention, what's not going to happen today? Making new memories. So I'm not going to remember yesterday, I'm not going be able to make new memories today, I have a form of amnesia just from not getting enough sleep.

17:20

DB: Right.

17:22

LG: So seven to nine hours a night has been shown -- the science is superclear that this is what we need minimally as a human species.

17:32

And then in terms of what you eat, again, there's no perfect study, and there's no rabbit-out-of-a-hat I can pull for you, or of, like, if you eat this or this nutrient, this antioxidant, this recipe, it's going to save your memory. It's like, no, but we know there's been enough to show us that being on a Mediterranean diet, a mind diet so these leafy vegetables, the brightly-colored foods, the

whole foods, fatty fishes, olive oil, nuts, beans, these are the kinds of foods that really fuel and support heart health, brain health and memory. And it doesn't have to be 100 percent, folks, right? You're not going to be perfect at this, and that's OK. Try to do it overall, right? Today, what did I eat overall? This week, how did I do overall? Because I think we need to have realistic expectations.

18:26

So exercise, the diet, sleep and stress and learning new things. And learning new things is also -- it's this, it's being around people. If you're in conversation, that conversation's never happened before. So if you're present and paying attention, your brain is getting a lot of stimulation that's superhelpful.

18:46

DB: So Bob wants to know about our capacity, our brain capacity. Do we have like a lifetime capacity and we hit it and then that's kind of it, or is that why children seem to remember things better than maybe folks of my age? Or is that just, I don't know, an urban myth?

19:08

LG: Yeah, it's myth. This idea that like, oh, you only use 10 percent of your brain or you only use five percent of your brain, someone's making it smaller. I don't know who started that one, either. That's not true. So, you know, at any given moment, I'm using certain parts of my brain, right? So I'm not in a rage right now, so my amygdala is kind of chilling. Like, I'm not grief-stricken, so my amygdala is kind of relaxed, and I have my eyes open, so my visual cortex is lit up, and neurons there are firing. And if I were to close my eyes, that part of my brain goes quiet. But all of my brain is being used at some point throughout the day, probably, or certainly capable of accessing it. There aren't parts of my brain that I just can't seem to use and I'm only squirreled away into certain domains. That is a fallacy. And no, you don't run out of room.

20:02

So, you know, there's a man, I use his example in the book, Akira Haraguchi, a retired engineer from Japan who at the age of 69, he's the guy who memorized over 100,000 digits of pi, right? So at an age where we associate, like, you know, senior discounts and retirements, like, he's doing something that is kind of completely mind-blowing. And we can all do this if we wanted to.

20:32

So no, at any age, you're capable -- So as you grow older, you don't lose the information of stuff you've learned. So the stuff, your semantic memory. So this is why you've accumulated a body of knowledge and you've got wisdom now, right? Because now you know how it all fits and you can use that wisdom you've collected. You've got that. It's not that that starts to go away. You accumulate that. And you might think like, "Oh, I don't remember much from childhood. I can't really think about," like, "I can't tell you what happened when I was 10." This has more to do with context. It's still in there. So if, you know, if you live in New York and you're, you know, you're surrounded by skyscrapers and city life and you grew up in rural Vermont, "And I can't remember what happened when I was 10." Go back to your neighborhood and drive around and, there's the willow tree, and there's Ms. Richards house, and there's Ms. Molansen, oh, that's where, like, Joey broke his leg, and like, it all will come back, because, again, it's like going from your kitchen to your living room, your bedroom to your kitchen to look for the glasses. It's like, all that context will reveal memory that you have in your head. you didn't realize you have. You've got trillions of possible connections. And no, you will not run out. You can learn to juggle when you're 80. You can learn to play piano. You can learn a new language. You can listen to a new TED Talk and learn and remember something to share with someone else. Like, it's unlimited. There's no reason to think there's a limit to it.