ENGLISH LEARNING FOR CURIOUS MINDS



Episode #644
The Science of Memory
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Transcript

[00:00:04] Hello, hello, hello, and welcome to English Learning for Curious Minds, by Leonardo English, the show where you can listen to fascinating stories and learn weird and wonderful things about the world at the same time as improving your English.

[00:00:20] I'm Alastair Budge, and today we are going to be talking about the science of memory.

[00:00:26] We'll meet a man who lost the ability to remember, find out why your brain is built to forget, ask whether you can really train your memory, and look at how that might apply, or might not apply, to learning a new language.

[00:00:42] OK then, let's not waste a minute and get right into it.

[00:00:48] It is September of 1953, and in a hospital in Hartford, Connecticut, a young man is being prepared for brain surgery.

[00:01:00] His name is Henry Molaison. He is 27 years old, polite, good with numbers, and desperately ill.

[00:01:09] Henry has severe epilepsy. He has suffered from **seizures**[1] since he was a boy, and by now they are so frequent and so violent that he cannot live any **semblance**[2] of a normal life.

[1] sudden attacks of illness that make the body shake uncontrollably
[2] the outward appearance or basic form

[00:01:24] He has tried medication, but it has done almost nothing.

[00:01:29] So his surgeon, a confident man named William Scoville, proposes something **radical**[3]. He will open Henry's **skull**[4] and remove the part of the brain where he believes the **seizures** begin.

[00:01:45] Specifically, he will remove a small, curved structure that sits deep inside each side of the brain. It is called the hippocampus, from the Greek word for seahorse, because that is roughly what it looks like.

[00:02:01] What the hippocampus does, back then at least, was a bit of a mystery.

[00:02:06] Still, in 1953, this is not considered reason enough to leave it alone.

[00:02:12] The operation, in one sense, works. The doctor opens up young Henry, removes the hippocampus, and **sews**[5] everything back together.

[00:02:23] Henry recovers well, he can walk and talk, his intelligence is untouched, and his personality is the same as ever.

[00:02:32] And importantly, the **seizures** become much less severe.

[00:02:37] But it soon becomes clear that something is terribly wrong.

[3] very new, different and extreme
[4] the bone that surrounds and protects the brain
[5] stitches with a needle and thread

[00:02:42] Henry can remember his childhood. He can remember his parents, the Great Depression, and the war.

[00:02:49] What he cannot do is make a single new memory.

[00:02:55] A doctor comes into his room, introduces herself, chats with him for half an hour, and leaves.

[00:03:02] Five minutes later she returns, and for Henry, it is the first time they have ever met.

[00:03:08] Henry can still hold a conversation. He can keep a number in his head for about half a minute, as long as he keeps repeating it to himself.

[00:03:18] The moment his attention moves on, it is gone.

[00:03:23] He reads the same magazines again and again, because he has no **recollection**[6] of ever having read them.

[00:03:30] He eats lunch, and twenty minutes later not only can he not tell you what he had for lunch, he cannot say for certain whether he has even had it. Every time he is told that his uncle has died, he **breaks down in tears**[7] as if hearing it for the first time.

[00:03:49] Henry Molaison lived like this for the next 55 years. Scientists studied him for the rest of his life, and he could not remember any of them.

[6] memory
[7] suddenly starts crying and cannot stop

[00:04:01] When he died in 2008, the world finally learnt his full name: he had been known in hundreds of scientific papers simply as H.M.

[00:04:13] It sounds like a tragedy, and it was. But what happened to Henry probably taught us more about memory than almost any other experiment in history.

[00:04:25] Before Henry, many scientists believed that memory was spread evenly throughout the brain, like a song sung by a **choir**[8]. Every singer knows every song. Take away a few singers, and you can still hear every song, just a little more **faintly**[9].

[00:04:44] Remove a bit of the brain, and you would lose a bit of everything.

[00:04:49] Henry proved this was wrong. Memory depended on specific structures, and the hippocampus was clearly one of the most important. Without it, new experiences simply could not be turned into **lasting**[10] memories.

[00:05:07] And there was a second, stranger discovery.

[00:05:12] A young researcher called Brenda Milner gave Henry a drawing task. He had to **trace**[11] a star shape while looking only at his hand in the mirror. It might sound easy, but it's surprisingly difficult.

[00:05:28] I promise. I tried it because I too thought it sounded easy, but it really isn't.

[8] a group of people who sing together
[9] quietly, in a way that is hard to hear
[10] continuing for a long time
[11] draw by following the lines of

[00:05:34] Henry was terrible at it, as everyone is in the beginning.

[00:05:39] But day after day, he got better, at exactly the rate a healthy person would. And every single day, he insisted he had never seen the task before in his life.

[00:05:52] His hands had learnt the skill, but he had no memory of learning it.

[00:05:58] So, this tells us something important: memory is not one single thing. There is the memory for facts and events, the kind Henry Molaison lost. And there is the memory for skills, for riding a bicycle or typing or **tracing**[12] a star in the mirror, which lives in different parts of the brain entirely.

[00:06:23] Now, let's talk about what is actually happening in your head when you remember something.

[00:06:30] When you experience something, your brain does not **file it away**[13] like a video recording. Instead, groups of brain cells, called neurons, **fire**[14] together in a particular pattern. Remembering is, roughly speaking, the brain recreating that pattern later on.

[00:06:52] The hippocampus acts as a kind of director. It **binds**[15] together the sights, sounds and feelings of an experience, and then, over time, it helps transfer the important bits into long-term storage across the brain.

[12] drawing by following the lines of
[13] store it neatly to keep for later
[14] send out electrical signals
[15] connects firmly

[00:07:08] A lot of that transfer happens while you sleep. When you sleep, your brain replays the day's experiences, strengthening some connections and letting others **fade**[16].

[00:07:20] This is one reason, it's thought, why students who sleep well before an exam tend to do better than students who stay up all night studying.

[00:07:32] And here is the remarkable thing: this system physically changes shape depending on how you use it.

[00:07:41] The best evidence for this comes from London taxi drivers.

[00:07:46] To drive a traditional black cab in London, not your **run-of-the-mill**[17] Uber, you must pass a test called The Knowledge. This requires you to memorise around 25,000 streets and thousands of **landmarks**[18]. It typically takes three to four years of study, and many people fail.

[00:08:10] In the year 2000, researchers at University College London scanned the brains of these taxi drivers. The back part of their hippocampus was larger than average. And the longer a driver had been doing the job, the larger it was.

[16] slowly become weaker and disappear
[17] ordinary; not special in any way
[18] famous or easily recognised buildings and places

[00:08:29] But that raised an obvious question. Perhaps people with a larger hippocampus were simply better at learning the map, and more likely to become taxi drivers in the first place.

[00:08:41] So in 2011, the same team followed a group of trainees over the years they spent studying. The ones who passed The Knowledge showed growth in their hippocampus. The ones who failed, or gave up, did not.

[00:09:00] Their brains had grown to fit the map, in the same way that someone who lifts weights every day gets bigger biceps.

[00:09:09] So if memory is this powerful, and this **adaptable**[19], why does it so often fail us?

[00:09:17] Why do you walk into a room and forget why you came in?

[00:09:21] Why can you not remember the name of someone you met an hour ago?

[00:09:26] The first person to study this scientifically was a late 19th-century German psychologist called Hermann Ebbinghaus.

[00:09:36] Ebbinghaus had no laboratory and no volunteers, so he experimented on himself. He invented thousands of nonsense syllables, meaningless combinations of

[19] able to change to suit new conditions

letters like "ZOF" and "KEB", and he memorised list after list of them, then tested himself at different **intervals**[20].

[00:10:00] It was possibly the most boring research project ever conducted.

[00:10:05] It was also one of the most important.

[00:10:09] Ebbinghaus found that forgetting follows a curve. You lose a huge amount very quickly, more than half within the first day, and then the curve flattens out. What survives the first few days tends to stick around much longer.

[00:10:28] He also found that reviewing helps, especially when the reviews are spread out. Each time you go back over something, the memory comes back stronger, and **fades**[21] more slowly the next time. Review it a few days later, then a week, then a month, and eventually it becomes almost permanent.

[00:10:50] If you've ever used a flashcard app to learn English vocabulary, and the app mysteriously decides when to show you each word, that is the ghost of Hermann Ebbinghaus, still setting the schedule almost a century and a half later.

[00:11:07] Now, it's tempting to see forgetting as a design fault, a bug, but scientists who study memory generally see it the other way around.

[00:11:20] Your brain is **bombarded**[22] with information every waking second: every face on the bus, every word of every conversation, every parked car on the street. If you kept

[20] lengths of time between one test and the next

all of it, finding the useful parts would be like finding one particular grain of sand on a beach.

[00:11:40] Forgetting is the filter. The brain keeps what seems important, what is repeated, what carries emotion, and then it just **discards**[23] the rest.

[00:11:53] There are, as you may know, a small number of people with a condition that lets them remember almost every day of their lives in detail, with a sort of perfect diary of their own lives.

[00:12:06] You might expect them to be **extraordinarily**[24] happy or **extraordinarily** successful. In interviews, many describe their memory as exhausting; old arguments and embarrassments stay as fresh and as painful as the day they happened.

[00:12:24] Forgetting, these people remind us, is a kind of **mercy**[25].

[00:12:28] Even the most annoying memory failures usually have a sensible explanation.

[00:12:35] For example, you might sometimes walk into a room and forget why you came in.

[21] slowly becomes weaker and disappears
[22] hit constantly with a large amount of
[23] throws away as unwanted
[24] unusually; much more than is normal
[25] a kindness that saves people from suffering

[00:12:41] Psychologists have actually studied this, and the answer seems to be the doorway itself.

[00:12:49] In experiments, people carrying out simple tasks became more forgetful the moment they passed through a door, even in a virtual building on a computer screen. The brain appears to treat each room as a separate scene, **filing away**[26] the old one as you cross the **threshold**[27], ready for whatever the new one brings.

[00:13:14] So when you stand in the kitchen wondering what you came for, your memory has not failed.

[00:13:20] It has just tidied up slightly too enthusiastically, like a waiter taking your plate before you have finished.

[00:13:29] There is one gap in your memory, by the way, that nothing can fill. Almost nobody can remember anything from before the age of about three, and the years up to six or seven survive only in **fragments**[28].

[00:13:45] Scientists call this infantile amnesia. The leading explanation is that the hippocampus, our director of memories, is still under construction, in development, in those years, and that without language, experiences are hard to **file**[29] in a form that the adult mind can find again.

[26] putting into storage as finished
[27] the entrance or doorway of a room
[28] small, incomplete pieces
[29] store in an organised way

[00:14:08] A study published in 2025, however, suggests there may be more to it.

[00:14:16] Researchers at Yale scanned the brains of babies as young as one, and found that the hippocampus was already storing memories. So what this suggests is that the memories may be made, but just become impossible to find.

[00:14:33] Whatever the cause, your first steps, your first words, the moment you first saw your parents: of course all of it happened, but you have no memory of it.

[00:14:44] OK, so far we have talked about memories **fading**[30].

[00:14:48] What is perhaps more **unsettling**[31] is how memories change.

[00:14:53] Remember that your brain does not store recordings; it recreates patterns.

[00:14:59] And every time you **recall**[32] a memory, you are rebuilding it, and the rebuilt version can **pick up**[33] errors. Details get borrowed from other memories, from photographs, from stories other people have told you.

[00:15:15] Then, to continue the **analogy**[34], the edited version gets saved in place of the original.

[00:15:23] In other words, every time you remember something, you are most probably remembering it slightly differently.

[30] slowly becoming weaker and disappearing
[31] making you feel worried or uncomfortable
[32] bring back into your mind
[33] gain or collect without meaning to
[34] a comparison between two things that helps to explain something

[00:15:32] The scientist who has done a lot of work to prove this is an American psychologist called Elizabeth Loftus.

[00:15:41] In one famous experiment in the 1970s, Loftus showed people films of car accidents and then asked them questions. Some were asked how fast the cars were going when they "hit" each other. Others were asked how fast the cars were going when they "smashed into" each other.

[00:16:04] As you probably know, the word "smash" has an **implication**[35] of high speed, whereas "hit" doesn't; it just means to come into contact with something else.

[00:16:15] So the people were shown the same film, but asked with one different word in the question. The "smashed" group estimated higher speeds, and a week later, they were far more likely to remember seeing broken glass in the film.

[00:16:34] There was no broken glass.

[00:16:36] Loftus then went further. In a study in the 1990s, she and her colleagues convinced adult volunteers that, as children, they had once been lost in a shopping centre and rescued by a kind stranger.

[00:16:52] The event was invented; the researchers had checked with the volunteers' families.

[35] a meaning that is suggested but not stated directly

[00:16:58] About one in four participants came to remember it anyway. Some added their own details: the old man's **flannel**[36] shirt, the feeling of panic, the **telling-off**[37] from their mother afterwards.

[00:17:13] They were not lying, they were not knowingly telling something false. They could see it. The memory felt exactly like a real one, because, as far as their brains were concerned, it was one.

[00:17:27] Loftus had a reason for this research.

[00:17:31] In the 1990s, some therapists were using techniques to help patients "recover" memories of childhood abuse, and some of those memories led to court cases. Her work showed how easily a false memory could be created, which, as you might imagine, made her one of the most controversial psychologists of her time.

[00:17:55] Even the people we met earlier, the ones who can remember almost every day of their lives, are open to this. When researchers tried similar experiments on them in 2013, they formed false memories at about the same rate as everyone else.

[00:18:13] And if you are thinking that this only applies to small, forgettable events, psychologists have tested that too.

[36] made of a soft, warm cloth
[37] angry words from someone because you have done something wrong

[00:18:23] The day after the space shuttle Challenger exploded in 1986, a researcher named Ulric Neisser asked his students to write down exactly where they were when they heard the news: who told them, what they were doing, how they felt, and so on.

[00:18:41] Two and a half years later, he asked them the same questions. The students were describing what are called flashbulb memories, the **vivid**[38], photograph-like memories of shocking events, the kind people describe as "burned in" forever.

[00:18:59] The students' new answers were full of confidence and full of errors.

[00:19:04] Some had changed the place, the messenger, even who they were with. One student, when she was shown her own handwritten account from the day after the disaster, she looked closely at it. She agreed that it was her handwriting, but insisted that this was not what had happened.

[00:19:24] She trusted the memory over the evidence.

[00:19:29] And this, of course, has consequences far beyond the laboratory, and beyond the world of the **theoretical**[39]. In a court of law, for example, most legal systems **put a premium on**[40] the **testimony**[41] of a confident **eyewitness**[42].

[38] very clear, bright and detailed
[39] ideas and theory, as opposed to real life
[40] treat as especially valuable or important
[41] a formal statement of what someone saw or knows, given in a court of law
[42] a person who saw an event, such as a crime, happen

[00:19:46] A witness points at the **defendant**[43] and says, "That is the man. I will never forget his face."

[00:19:52] The **jury**[44] believes them, and the **defendant** is **sent down**[45], at least partly **on the strength of**[46] this **testimony**.

[00:20:01] For a long time, **eyewitnesses**[47] were the best evidence.

[00:20:05] But then along came DNA.

[00:20:08] And since the late 1980s, DNA evidence has been used to re-examine old **convictions**[48] in the United States, and hundreds of innocent people have been released from prison.

[00:20:23] In around seven out of ten of those cases, mistaken **eyewitness** evidence had played a part in the original **conviction**[49].

[00:20:33] Those witnesses were rarely dishonest. They were confident, and **sincere**[50], and wrong.

[43] the person in a court case who is accused of a crime
[44] a group of ordinary people who decide in court whether someone is guilty
[45] sent to prison
[46] because of; based on
[47] people who saw an event, such as a crime, happen
[48] official decisions in court that people were guilty of crimes
[49] the official decision in court that someone was guilty of a crime
[50] honestly believing what they said

[00:20:40] Their memories had been gradually rewritten over time, by stress, by photographs of **suspects**[51], and by the pressures of the investigation itself.

[00:20:52] Researchers now think that a witness's very first identification is often fairly reliable, as long as it is made quickly and without pressure.

[00:21:02] The trouble comes afterwards. Every time a witness is told they picked the right person, or **goes over**[52] their story again before a trial, their confidence grows.

[00:21:14] By the time they reach the courtroom, they may be far more certain than they were on the day.

[00:21:20] So, your memory **fades**, and changes into something that might not have ever happened in the first place.

[00:21:27] And this brings us to perhaps the most obvious question: can we do anything about it? Can memory be trained?

[00:21:37] The ancient Greeks certainly thought so.

[00:21:41] The story goes that in the 5th century BC, a poet named Simonides was performing at a **banquet**[53] when he was called outside. When he was out of the room, the roof collapsed, killing everyone inside and crushing the guests so badly that their own families could not identify the bodies.

[51] people the police think may have committed a crime
[52] repeats or reviews carefully
[53] a large, formal meal for many people

[00:22:02] But Simonides found he could name every victim, because he could picture exactly where each guest had been sitting.

[00:22:12] From this **grim**[54] discovery, he is said to have invented a technique which the Romans later called the method of loci, and which we know today as the memory palace. The idea is simple: the human brain is not great at remembering **abstract**[55] information, but **superb**[56] at remembering places and images.

[00:22:37] So you convert the things you want to remember into **vivid** images, and place them, in your imagination, along a route you know well, like the rooms of your house.

[00:22:50] If this sounds like an ancient curiosity, it might surprise you to find out that almost every modern memory champion uses it.

[00:23:00] As you may know, there are international memory championships, where competitors memorise the order of a **shuffled pack of cards**[57] in under 30 seconds, or hundreds of random numbers.

[00:23:12] Brain scans of these champions show nothing unusual about their brains. What the scans do show is that while memorising, they activate the parts of the brain associated with places and **navigation**[58].

[54] unpleasant and shocking, connected with death
[55] based on ideas rather than real, physical things
[56] excellent; extremely good
[57] a set of playing cards mixed into a random order
[58] finding your way from one place to another

[00:23:28] They are not remembering numbers. They are walking through imaginary buildings, filled with strange pictures.

[00:23:36] In 2005, an American journalist named Joshua Foer went to report on one of these competitions, the US Memory Championship. The competitors told him that memory was a skill, not a gift, and that anyone could do what they did. He decided to test the claim on himself, and spent a year training with the memory palace technique.

[00:24:02] The following year, he returned to the competition. And he didn't just take part; he won the US Memory Championship.

[00:24:12] Research **backs this up**[59]. In a 2017 study, ordinary volunteers practised the memory palace technique for six weeks. Their scores on memory tests more than doubled, most of the improvement was still there four months later, and their brain activity had started to look more like that of the champions.

[00:24:35] Now, if you're thinking, "OK, great, maybe I can just use this memory palace technique for all of those English words I keep on forgetting", it can help, but only **up to a point**[60].

[00:24:47] These techniques are wonderful for lists, speeches, numbers and names. Turning a new word into a **vivid** picture can help you learn it in the first place. On its own, though, it will not keep the word in your head for long.

[59] supports this with evidence
[60] partly, but not completely

[00:25:05] For making words stick, the research points somewhere less **glamorous**[61].

[00:25:10] It points, in fact, straight back to Ebbinghaus, the 19th-century German psychologist.

[00:25:18] Space out your reviews rather than **cramming**[62]. Spaced repetition, you might have heard it called.

[00:25:24] Test yourself, because the effort of pulling a word out of your memory strengthens it far more than reading it again.

[00:25:33] Connect new words to **vivid** images or stories.

[00:25:38] And of course remembering a word's meaning is only part of learning it. You also need to recognise it in speech and find it quickly when you want to say something. A memory palace can help you make the first connection; but you still need to practise using the word.

[00:25:56] And **lest**[63] I forget, get enough good sleep, because that is when the day's learning is **stitched into place**[64].

[00:26:03] It's not magic, but it works.

[61] exciting and attractive
[62] studying a lot in a short time just before a test
[63] in case; so as to avoid the risk that
[64] firmly fixed in position, as if sewn

[00:26:07] When Henry Molaison went into surgery in 1953, nobody knew what the hippocampus did. Today, scientists can watch memories forming in the brains of mice, and they have even switched individual memories on and off in the laboratory.

[00:26:25] We know far more than we did even ten years ago, and **vastly**[65] more than anyone knew a century ago.

[00:26:33] And yet, a great deal about memory remains a mystery.

[00:26:38] Nobody can yet say exactly what a single memory is made of, or precisely where it is kept. Nobody fully understands why some memories last a lifetime while others are gone in minutes. And despite decades of research, there is, sadly, still no way to stop the memory loss caused by Alzheimer's disease.

[00:27:04] Every one of us carries a lifetime of memories around in our heads, and science cannot fully explain how it is done.

[00:27:14] Henry Molaison never remembered any of the scientists who studied him.

[00:27:19] After his death, his brain was carefully cut into more than two thousand thin slices, and it is still being studied today. Who knows what secrets it may yet contain...

[00:27:34] OK, then, that is it for today's episode on the science of memory.

[00:27:39] I hope it's been an interesting one and that you've learnt something new.

[65] very greatly; by a huge amount

[00:27:43] As always, I would love to know what you thought of this episode.

[00:27:46] Let me know in the comments below, if you're listening to this somewhere where you can comment, and for the members among you, you can head right into our community forum, which is at community.leonardoenglish.com and get chatting away to other curious minds.

[00:28:00] You've been listening to English Learning for Curious Minds by Leonardo English.

[00:28:04] I'm Alastair Budge, you stay safe, and I'll catch you in the next episode.

[END OF EPISODE]

Key vocabulary

Word	Definition
Seizures	sudden attacks of illness that make the body shake uncontrollably
Semblance	the outward appearance or basic form
Radical	very new, different and extreme
Skull	the bone that surrounds and protects the brain
Sews	stitches with a needle and thread
Recollection	memory
Breaks down in tears	suddenly starts crying and cannot stop
Choir	a group of people who sing together
Faintly	quietly, in a way that is hard to hear
Lasting	continuing for a long time

Trace	draw by following the lines of
Tracing	drawing by following the lines of
File it away	store it neatly to keep for later
Fire	send out electrical signals
Binds	connects firmly
Fade	slowly become weaker and disappear
Run-of-the-mill	ordinary; not special in any way
Landmarks	famous or easily recognised buildings and places
Adaptable	able to change to suit new conditions
Intervals	lengths of time between one test and the next
Fades	slowly becomes weaker and disappears
Bombarded	hit constantly with a large amount of

Discards	throws away as unwanted
Extraordinarily	unusually; much more than is normal
Mercy	a kindness that saves people from suffering
Filing away	putting into storage as finished
Threshold	the entrance or doorway of a room
Fragments	small, incomplete pieces
File	store in an organised way
Fading	slowly becoming weaker and disappearing
Unsettling	making you feel worried or uncomfortable
Recall	bring back into your mind
Pick up	gain or collect without meaning to
Analogy	a comparison between two things that helps to explain something

Implication	a meaning that is suggested but not stated directly
Flannel	made of a soft, warm cloth
Telling-off	angry words from someone because you have done something wrong
Vivid	very clear, bright and detailed
Theoretical	ideas and theory, as opposed to real life
Put a premium on	treat as especially valuable or important
Testimony	a formal statement of what someone saw or knows, given in a court of law
Eyewitness	a person who saw an event, such as a crime, happen
Defendant	the person in a court case who is accused of a crime
Jury	a group of ordinary people who decide in court whether someone is guilty
Sent down	sent to prison

On the strength of	because of; based on
Eyewitnesses	people who saw an event, such as a crime, happen
Convictions	official decisions in court that people were guilty of crimes
Conviction	the official decision in court that someone was guilty of a crime
Sincere	honestly believing what they said
Suspects	people the police think may have committed a crime
Goes over	repeats or reviews carefully
Banquet	a large, formal meal for many people
Grim	unpleasant and shocking, connected with death
Abstract	based on ideas rather than real, physical things
Superb	excellent; extremely good

Shuffled pack of cards	a set of playing cards mixed into a random order
Navigation	finding your way from one place to another
Backs this up	supports this with evidence
Up to a point	partly, but not completely
Glamorous	exciting and attractive
Cramming	studying a lot in a short time just before a test
Lest	in case; so as to avoid the risk that
Stitched into place	firmly fixed in position, as if sewn
Vastly	very greatly; by a huge amount

Language spotlight

1. Break down in tears

- **Meaning**: Suddenly start crying, often because you are overwhelmed by sadness or another strong emotion.
- **Synonyms**: burst into tears, dissolve into tears, start sobbing
- **Antonyms**: keep your composure, hold back your tears, stay calm
- **Examples**:
    - When she heard the news about her grandfather, she **broke down in tears**.
    - He tried to give a speech at the wedding but **broke down in tears** halfway through.

2. Run-of-the-mill

- **Meaning**: Ordinary, and not special or unusual in any way.
- **Synonyms**: ordinary, average, unremarkable
- **Antonyms**: exceptional, outstanding, one of a kind
- **Examples**:
    - It wasn't a luxury hotel, just a **run-of-the-mill** place near the station.
    - The film started as a **run-of-the-mill** thriller but had a brilliant ending.

3. Put a premium on

- **Meaning**: Treat something as especially important or valuable.
- **Synonyms**: place great value on, prioritise, attach importance to
- **Antonyms**: undervalue, disregard, play down
- **Examples**:
    - Our company **puts a premium on** clear communication.

- Many employers **put a premium on** experience rather than qualifications.

4. On the strength of

- **Meaning**: Because of, or based on, a particular fact, piece of evidence or recommendation.
- **Synonyms**: on the basis of, because of, based on
- **Antonyms**: in spite of, regardless of, despite
- **Examples**:
  - I bought the book **on the strength of** a friend's recommendation.
  - She got the job **on the strength of** an excellent interview.

5. Up to a point

- **Meaning**: Partly true or effective, but not completely.
- **Synonyms**: to some extent, partly, to a certain degree
- **Antonyms**: completely, entirely, in every way
- **Examples**:
  - I agree with you **up to a point**, but I think you are forgetting about the cost.
  - Working longer hours helps **up to a point**, but after that you just get tired.

Quiz

Listening Comprehension Multiple Choice Questions

1. Why did Henry Molaison have brain surgery in 1953?

a) To remove a tumour from his hippocampus

b) To reduce his severe epileptic seizures

c) To improve his poor short-term memory

d) To take part in an experiment on memory

2. What did Brenda Milner's mirror-drawing task show?

a) That Henry remembered doing the task the day before

b) That the operation had damaged Henry's intelligence

c) That Henry slowly began to recognise Brenda Milner

d) That memory for skills is separate from memory for facts and events

3. What did the 2011 study of trainee London taxi drivers find?

a) The trainees who passed The Knowledge showed growth in their hippocampus

b) People with a larger hippocampus were more likely to apply to become drivers

c) Every trainee's hippocampus grew, whether they passed or failed

d) The drivers' hippocampus shrank once they stopped studying

4. In Elizabeth Loftus's car accident experiment, what effect did the word "smashed" have?

a) People remembered the film more accurately

b) People were less confident about their answers

c) People estimated higher speeds and later remembered broken glass that was not there

d) People remembered the colour of the cars incorrectly

5. According to the episode, what helps most to make new words stick?

a) Using the memory palace technique for every new word

b) Reading the same list of words many times in one evening

c) Studying late at night instead of sleeping

d) Spacing out reviews, testing yourself and getting enough sleep

True or False

6. After the operation, Henry Molaison could still remember his childhood. (True/False)

7. Ebbinghaus found that people forget very little in the first day after learning something. (True/False)

8. In 2013, people who can remember almost every day of their lives formed false memories much less often than other people. (True/False)

9. Researchers at Yale found that the hippocampus of babies as young as one was already storing memories. (True/False)

10. Joshua Foer won the US Memory Championship after a year of training. (True/False)

Fill in the Blanks

11. Every time he is told that his uncle has died, he breaks ____ in tears as if hearing it for the first time.

12. To drive a traditional black cab in London, not your run-of-the-____ Uber, you must pass a test called The Knowledge.

13. In a court of law, for example, most legal systems put a _____ on the testimony of a confident eyewitness.

14. The jury believes them, and the defendant is sent down, at least partly on the _____ of this testimony.

15. And lest I forget, get enough good sleep, because that is when the day's learning is _____ into place.

Vocabulary Practice

16. What does "**recollection**" mean when the podcast explains why Henry reads the same magazines again and again?

a) A collection of old magazines

b) A feeling of boredom

c) A memory of something

d) A strong interest in something

17. What does "**bombarded**" mean when the podcast describes the information your brain receives?

a) Hit constantly with a large amount of something

b) Slowly filled with something

c) Protected from something

d) Confused by a small amount of something

18. What does "**threshold**" mean in the description of walking from one room to another?

a) The ceiling of a room

b) A light switch

c) The furniture in a room

d) The entrance or doorway of a room

19. In the podcast, what does "**sent down**" mean?

a) Moved to a lower court

b) Sent to prison

c) Released without charge

d) Asked to leave the courtroom

20. What does "**cramming**" mean in the advice about learning new words?

a) Studying a lot in a short time just before a test

b) Writing words on small cards

c) Reading slowly and carefully

d) Learning words in a group

Answers

1. b) To reduce his severe epileptic seizures
2. d) That memory for skills is separate from memory for facts and events
3. a) The trainees who passed The Knowledge showed growth in their hippocampus
4. c) People estimated higher speeds and later remembered broken glass that was not there
5. d) Spacing out reviews, testing yourself and getting enough sleep
6. True
7. False
8. False
9. True
10. True
11. down
12. mill
13. premium
14. strength
15. stitched
16. c) A memory of something
17. a) Hit constantly with a large amount of something

18. d) The entrance or doorway of a room

19. b) Sent to prison

20. a) Studying a lot in a short time just before a test