

# MEMORY

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## HOW THE BRAIN WORKS

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MEMORY

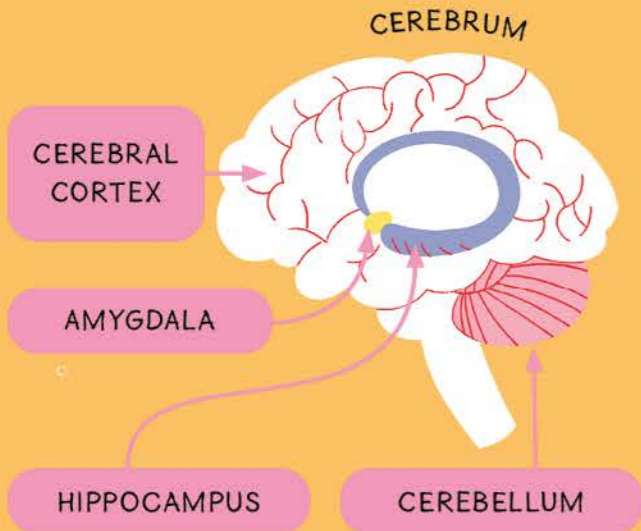
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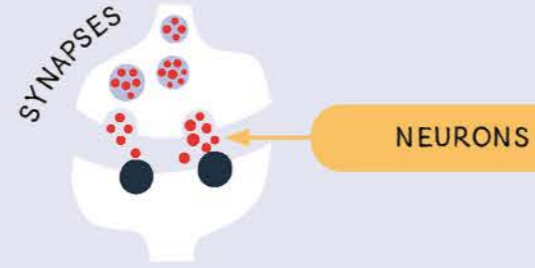


# INSIDE THE BRAIN

The brain part that works most with memories is the **hippocampus**. It is assisted by the **amygdala**. Sometimes the **cerebellum** and the cerebrum get involved. Science is only now figuring out the complex processes that go on here.



- ➔ Sensory stimuli (**impulses**) reach the brain from different parts of the body.
- ➔ Each impulse is evaluated and processed by the **hippocampus**, the memory's HQ. Hippocampus is Latin for "seahorse" (just look at its shape!). The hippocampus compares each newly arrived impulse with what it knows and, where possible, orders it with similar impulses from the past.
- ➔ The **amygdala** helps the brain store what you experience as strong **emotion**, such as pain, fear, elation and tenderness.
- ➔ The **cerebellum** enables us to remember kinds of **movement**, such as walking. Without it, we would have to learn all activities of motion over and over again!



Stimuli in the brain travel between cells called neurons. Places where **neurons** meet to communicate are called synapses. **Synapses** are like bridges—without them, no information would reach its destination. The more stimuli cross them, the stronger the synapses become.

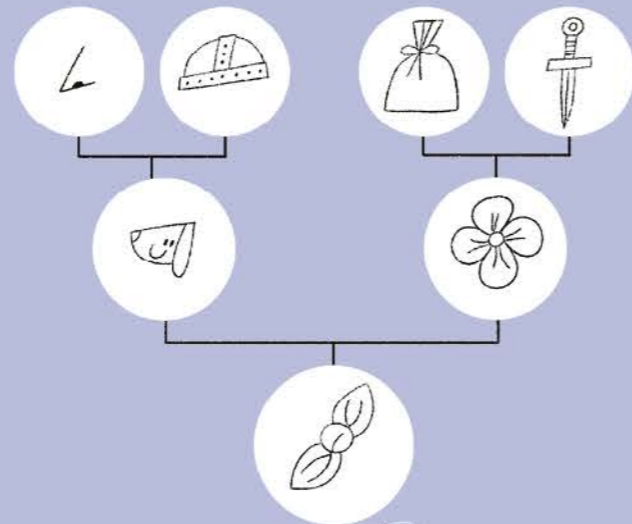




# ADULTS AND MEMORY

And after you grow up? Will you be a master of memory? Will you become forgetful? The adult brain is **worse than the child's at storing information** that lacks associations. It is better at **working with logic**, easily storing things that connect with what it already knows. The adult brain is also **better with topics** it is used to: a physicist has no problem remembering a physics formula, a dancer a new routine, a class teacher the names of his new first-years.

WHEN AN ADULT WISHES TO MEMORIZE A SUCCESSION OF MEDIEVAL RULERS, FOR EXAMPLE, THEY ATTACH AN INTERESTING PIECE OF INFORMATION TO EACH. HEY, THIS KING WON A FAMOUS VICTORY! AND THIS PRINCE SHARES HIS NAME WITH OUR DOG!



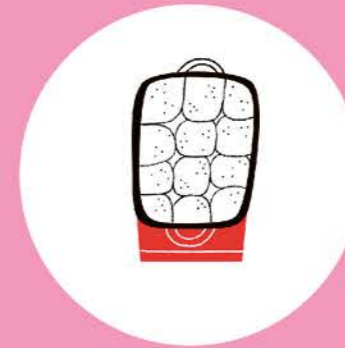
TOO MUCH STRESS MAKES IT DIFFICULT FOR THE BRAIN TO STORE FACTS IN THE MEMORY.



FOR A PERSON'S MEMORY TO KEEP WORKING WELL IN ADULTHOOD, THEY MUST GET ENOUGH SLEEP.

The adult brain loves to make **associations**—connections between different thoughts that are based on similarities. One thought leads to another, the second to a third. Eventually, the mind may form an endless chain of ideas. The sight of a little wooden train in a shop window

may put a man in mind of his grandmother, who once gave him such a toy. Straight after that, he remembers the trays of buns his granny used to bake. This is followed by a memory of Ally the dog, who stole buns right off the tray.

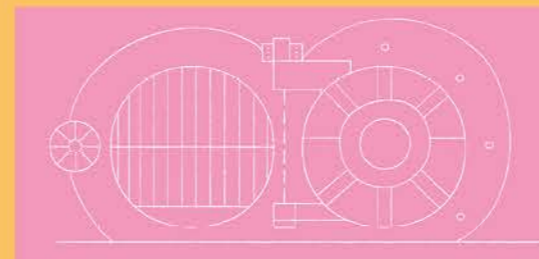


# MEMORY IN OLD AGE

Like the rest of the human body, the brain gradually ages and becomes less reliable and efficient. Although an old person's memory tends to work more slowly, this needn't mean that the person is unwell. A day that passes slowly and calmly can be perfect for a nice walk followed by a cup of hot tea in a comfortable chair.



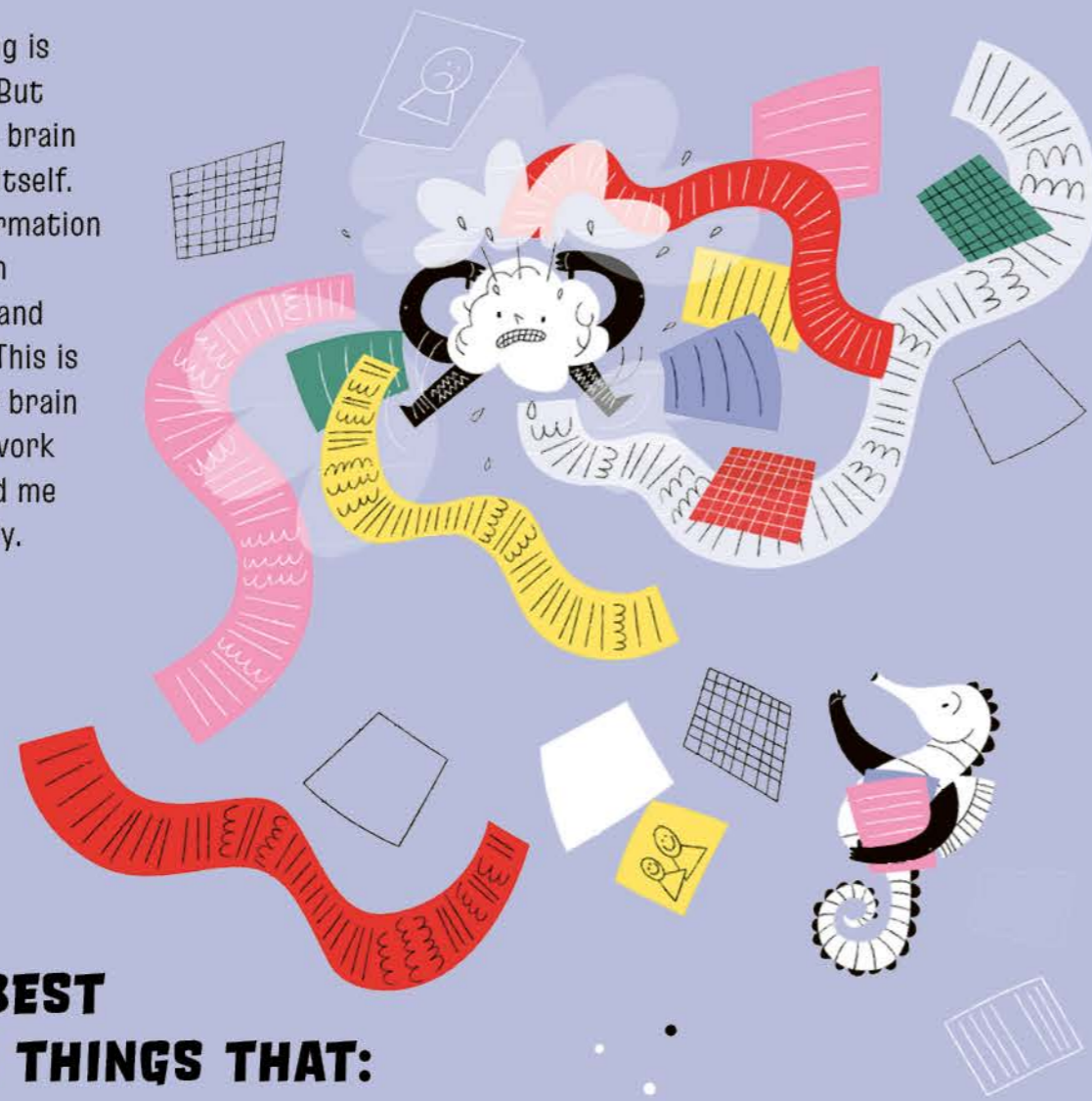
An old man's memory can spring a surprise. Out of the blue, he recalls a thing that happened to him many years ago! Deeply embedded memories are often childhood ones. It's as though the brain throws open a window that has been locked for decades!



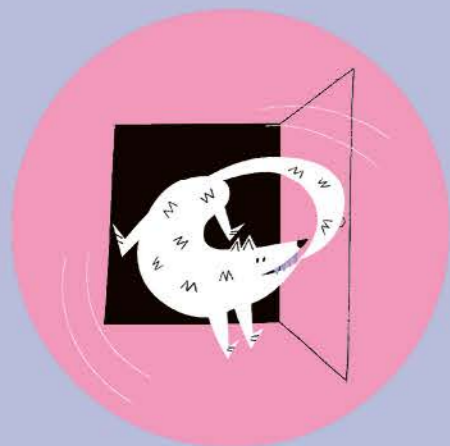


# WHAT YOU REMEMBER

Remembering everything is sometimes impossible. But nor is it necessary. The brain knows not to overload itself. The more data and information you attempt to store in it, the more memories and information it lets go. This is a form of protest. Your brain might be telling you: I work wonders only if you load me with memories gradually.



## THE BRAIN BEST REMEMBERS THINGS THAT:



—REPEAT. (BUT EVERY REPETITION REQUIRES YOU TO CONCENTRATE!)



—ARE UNUSUAL. (EVER SEEN A DANCING PIG WITH A PARASOL?)



—ARE CONNECTED WITH POWERFUL EMOTIONS. (REMEMBER HOW HAPPY YOU FELT ON THE WINNERS' PODIUM?)

## BOOST YOUR MEMORY

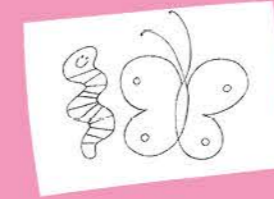
There are things you want and need to remember, like study material or the present your granny would like for her birthday. How can you help your memory?



SPEAK IT ALOUD. THIS WILL ENGAGE YOUR ECHOIC MEMORY.



EAT AND DRINK WELL, AND GET LOTS OF REST. THIS WILL KEEP YOUR MEMORY IN GOOD SHAPE!



KEEP A PICTORIAL RECORD. THE HUMAN BRAIN LOVES PICTURES.



WRITING INFORMATION DOWN MAKES IT EASIER TO REMEMBER.



USE MNEMONICS. THERE ARE RHYMES THAT CAN HELP YOU REMEMBER HOW TO TIE YOUR LACES.

## MEMORY TRACKS

You don't have to be a detective to follow memory tracks. They are made at places where you have particular thoughts in the course of a day. Sometimes they get left behind. Everyone knows what it's like to head for the kitchen, reach it, then forget what they went there for.



AS TONY WALKED INTO THE KITCHEN, HE REALIZED HE'D FORGOTTEN WHY HE'D GONE THERE ...



SO HE WENT BACK TO HIS ROOM, WHERE HE'D BEEN PLAYING.



OF COURSE! HE'D WANTED TO FEED THE PARROT AND HE NEEDED A BOX OF BIRDSEED.



We have recently learned, for instance, that neurons in the brain react specifically to individuals. The reaction occurs every time we see a particular person, hear their name or see their image.

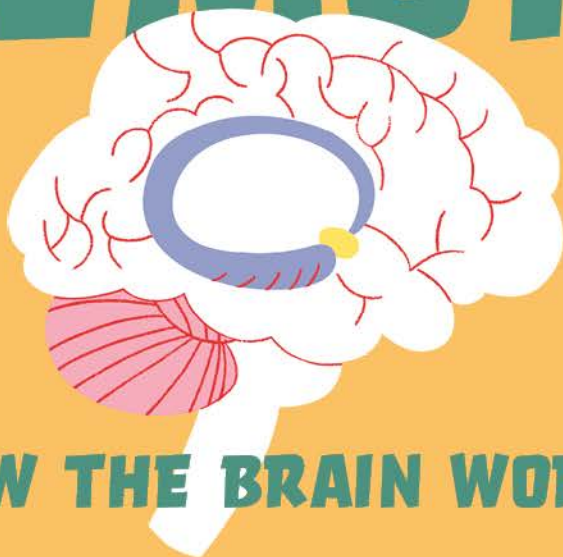
Although the brain remains largely unexplored, scientists come up with new discoveries every year.

We also now know that very strong memories (e.g. related to a trauma) are hereditary—i.e. pass from one generation to the next. We don't know yet how this happens ...

Are you interested in the memory and how it works in the brain? One day you might be a scientist yourself and solve some of its mysteries ...



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Have you always wondered how come it's a piece of cake for the brain to memorize some information, while it fails to remember others? Why is it that we don't remember what it was like when we were babies, but old people can often recall in detail experiences that are, say, eighty years old? Take a look into the fascinating world of the human brain and uncover the secrets of human memory. Witty illustrations and simple texts in this book will help you understand why memory is so important to each of us, how it changes and develops over the course of a lifetime, and what we can do to make it as strong and reliable as possible.

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