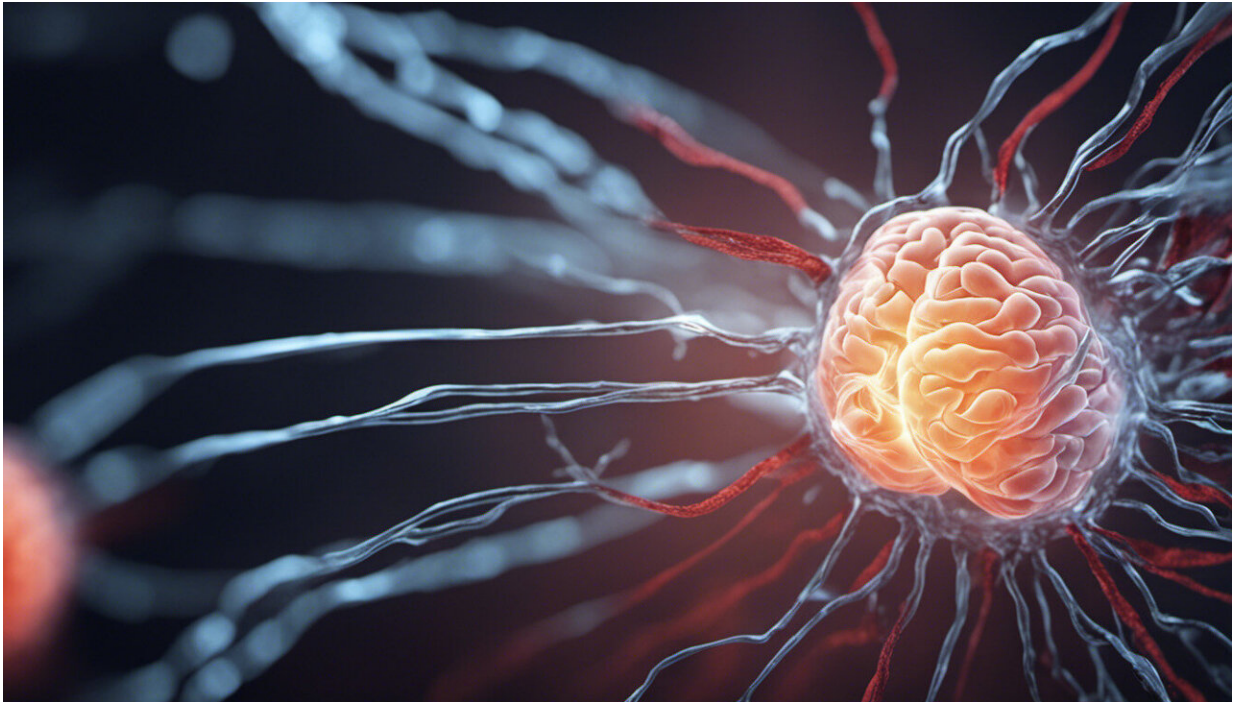


How your brain decides what to think

February 21 2023, by Valerie van Mulukom



Credit: AI-generated image ([disclaimer](#))

You're sitting on the plane, staring out of the window at the clouds and all of a sudden, you think back to how a few months ago, you had a heart-to-heart with a good colleague about the pressure you experience at work. How do thoughts seemingly completely unrelated to the present pop into our heads? Why do we remember certain things and not others? Why does our mind go off on tangents and why do we have daydreams?

Underlying these processes is a shared pattern of common [brain](#) activity, in regions which together make up the [default mode network](#), discovered and named by neurologist Marcus Raichle in the early 2000s. It's engaged when we are daydreaming, thinking about ourselves or others, recalling memories, or imagining future events.

The [default mode network](#) becomes engaged when people appear to be doing "nothing" (hence the term "default"). This is usually when we are in a relaxed state and not focusing on a task or goal—think, sitting on a plane, staring out the window.

When the default mode network is engaged, other networks in the brain are down-regulated or become less active, such as the executive control network and other [brain regions](#) involved in attention, working memory, and decision-making. This is what allows the brain to wander.

Why some memories over others?

Some memories are more likely to be spontaneously recalled, such as those that are more recent, highly emotional, highly detailed, frequently repeated, or central to our identity. They capture our attention—and for good reason. These types of memories were likely pivotal for engaging with our physical and social environments at the time, and so helped to contribute to our survival.

It's [thought](#) that the brain stores memories in a reconstructive, associative way, [storing memory details in a distributed manner](#) and bringing them together upon retrieval—rather than in a strictly reproductive way, with video replays of whole events stored in chronological order.

This means that memories may be associated with each other through different sensory, emotional and contextual details. So each of these bits

of information can serve as a cue to trigger another memory. Such as when we encounter a smell, sound or image—even if we sometimes don't consciously know what the trigger was.

Indeed, much of our [cognitive processing](#) happens without [conscious awareness](#). The brain [holistically and unconsciously](#) deals with all kinds of sensory information that comes in all at once.

As a result, it may feel like we are not in control of our thoughts, but much of this perceived control may be an illusion anyway. It might be that our consciousness is not in control of very much at all, but rather tries to explain and rationalize the [unconscious cognitive processing](#) of our brains after the fact.

In other words, the brain is constantly processing information and making connections between different pieces of knowledge. This means that it's normal for thoughts and associations to come to mind when our conscious control mechanisms are switched off.

When thoughts turn bad

The spontaneous nature of thoughts and memories brought up through the default mode network is what supports imagination and creativity. This is why we might have an "Aha!" moment in the shower and come up with a creative solution to a work problem we may have been stuck with. The brain was allowed to rest and wander, so it was able to make associations between different bits in memories that our conscious working memory was not able to reach and bring together.

Spontaneous thoughts are not always good, however. [Intrusive memories](#) are unwanted memories, that are often vivid and disturbing or at least strongly emotionally charged and can take the form of flashbacks or ruminations. Not only can they bring with them feelings of anxiety, fear

and shame, but they can sometimes also consist of disturbing content that the person does not want to remember or think about.

For example, in [postpartum anxiety and depression](#), new mothers can start having [intrusive thoughts](#) of harming their infant, without actually wanting to follow through with them. This is understandably a highly disturbing experience and if it happens to you, please rest assured that such thoughts are unfortunately common.

But it's always best to try and seek [help](#) or at least support at the earliest possible moment. [Cognitive behavioral therapy](#) (CBT) can help with techniques to deal with unwanted thoughts.

For all of us though, it's worth remembering that many thoughts enter our minds seemingly spontaneously and that this is a normal part of human [memory](#) and thought processes. But by allowing ourselves and our brains to take a rest, we allow it to generate creative thoughts and solutions to problems. And when unwanted [thoughts](#) pop up, it might be best to take a mindful approach: observe the thought and let it go, like clouds in a passing storm.

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