

# FAQ.

## WHY CAN'T WE REMEMBER BEING BABIES?



Infants are constantly learning, but only a handful of people have memories from before the age of 2. That's because parts of the brain critical for longer-term memory are still immature. So babies can form memories - a 6-month-old can recall how to do certain tasks for up to three weeks - but holding onto them is tricky.

As the brain begins to mature, that neural machinery gets more efficient and memories start to stick - until the age of 7, when there's a sudden dip. Children recall far more about earlier events in their lives when asked before they are 7 than just a year later. This sudden erasure, known as "childhood amnesia" may be down to pruning, the brain's process of snipping away lesser-used connections to strengthen those that remain.

Although the slightly older children remember fewer things, their recollections are more detailed. "What's also developing is your ability to tell a good story," says Patricia Bauer at Emory University in Atlanta, Georgia. "You place it in context, you tell me what you did, highlight certain events and activity. All of those things are part of what we mean by autobiographical memory."

This points to a possible strategy for hanging onto more of those early memories, or at least attempting to influence which ones stick. In cultures where family storytelling is a cherished pastime, people are more likely to retain early childhood memories. Summoning and reviewing these memories, a process known as reconsolidation, can fortify them.

So if you want your child to remember a special trip to the beach, indulge in a little reminiscing, and get them to tell you the story. **Tiffany O'Callaghan**

# Can you choose what to forget?

**W**E ALL have memories we would rather forget - and it is possible, if you try hard enough.

It is easy to think of memories as something you can actively strengthen, whereas forgetting is a passive process. But we have started to discover it can be intentional too.

Perhaps the easiest way to forget something is simply to try to suppress a memory. Jeremy Manning at Dartmouth College, New Hampshire, has found that just telling people to "push thoughts out of their head" is enough to make them forget lists of words they have learned to associate with particular cues. "We don't know how, but people seem to know how to do it."

This seems especially paradoxical because we also know that rehearsing memories helps to strengthen them. Suppression has been linked to decreased activity in the hippocampus, so we may be unknowingly reducing our hippocampal activity by focusing on the present, says Justin Hulbert at Bard College, New York.

This won't work for everyone. Post-traumatic stress disorder (PTSD) involves intrusive memories that keep coming back - often suddenly and unexpectedly. Studies have found that people with this condition are less able to suppress memories, even those unrelated to traumatic incidents.

But other approaches for forgetting might help, including what are known as cognitive vaccines: interventions that can "inoculate" the brain against the onset of PTSD symptoms if administered soon after trauma.

Some computer games seem to do the trick. Playing Tetris after watching an upsetting film has been found to reduce flashbacks of that film, possibly because thinking about a visual task stopped the brain from processing the visual images of death and injury from the film. However, doing a non-visual task, such as playing a general knowledge game, actually increases flashbacks.



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Given the vital role of sleep in memory formation (see "What happens to your memories when you sleep?", page 34), this is also a prime time to intercept them.

Earlier this year, Katharine Simon at the University of Arizona and her colleagues found that they could train people to associate a particular sound with the instruction to forget something. They then taught the volunteers to associate other sounds with specific words.

Then, as the volunteers slept, the team reactivated the memories of some of these words using their associated sounds, while also playing the "forget" sound. A week later, the volunteers were worse at remembering these words than words that hadn't been targeted.

Being able to exert some control over what you remember probably helps to bolster your resilience in the face of adversity, says Hulbert.

Beware the downsides, however. Hulbert's team found that when you try to suppress a memory, you are later less likely to remember things that happened around the time you attempted suppression. It seems that quietening your hippocampus to block a memory causes an "amnesic shadow" that more generally impairs memory formation.

And good can come from holding on to even the most awkward of memories, Hulbert says. "For sure, bringing one to mind can be cringe-inducing, but it's important to reflect on the good that certain embarrassing memories can bring, as learning experiences that teach us what not to do again." Penny Sarchet