The Amazing Way Big Moments Reshape Your Everyday Memories (M)

How your brain rewrites memory around pivotal events.

Momentous events — in both our private and public lives — rewrite everyday memories, strengthening certain mundane experiences simply by association.

One of the most famous examples, though now dated, being that almost everyone alive at the time can remember where they were and what they were doing when U.S. President John F. Kennedy was shot in 1963.

For those born in the 60s or later, though, the more modern equivalent is the 9/11 terrorist attacks.

According to a Pew Research survey, 97 percent of Americans aged over 8-years-old in 2001 could still remember, a decade later, exactly where they were or what they were doing when the news broke.

Rescuing weak memories

Less globally important, but still personally relevant occurrences have a similar power over our memories.

Authors of a paper examining this phenomenon give the example of being at Yellowstone National Park and coming upon a herd of bison.

Not only would this sight be imprinted on the mind for years to come, but also many other more run-of-the-mill events that accompany it — perhaps a formation of clouds, the look on a friend's face or an unusually shaped rock.

Dr Robert M.G. Reinhart, study co-author, said:

"The question is, What are the mechanisms for that?

That's what we tried to uncover, how the brain selectively strengthens those fragile memories."
Their research included almost 650 people in 10 separate studies designed to determine how mundane memories are enhanced or otherwise by their attachment to a prominent event.

Broadly, the results demonstrated that weaker memories can be enhanced after the event has occurred.

Dr Reinhart said:

"Memory isn't just a passive recording device: Our brains decide what matters, and emotional events can reach back in time to stabilize fragile memories.

Developing strategies to strengthen useful memories, or weaken harmful ones, is a longstanding goal in cognitive neuroscience.

Our study suggests that emotional salience could be harnessed in precise ways to achieve those goals."

What happened next

The findings help explain why some events lodge in our memories while others are lost.

One important factor is when the more mundane memories occurred: the studies showed that it is mainly the things that happen in the period after an important event whose memory trace is strengthened.

It also depends how strongly related these weak memories are to the strong event: the more powerful the connection, the more likely they are to be recalled later.

Mr Chenyang (Leo) Lin, the study's first author, said:

"For the first time, we show clear evidence that the brain rescues weak memories in a graded fashion, guided by their high-level similarity to emotional events.

It's not just timing that matters, but also conceptual overlap."
The finding has practical implications in a range of areas, said Dr Reinhart:

"In education, pairing emotionally engaging material with fragile concepts could improve retention.

In a clinical setting, we could potentially rescue memories that are weak, way back in the recesses of our mind because of normal aging, for example.

You can flip it, too, for people with trauma-related disorders—maybe you don't want to rescue a distressing memory."