Flashbulb memories of dramatic events aren't as accurate as believed

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Flashbulb memories of 9/11 are more vivid than ordinary memories, but no more accurate. Credit: Shannon Stapleton

Where were you on Sept. 11 when you first heard that a plane had hit the North Tower of the World Trade Center?

Many of us may have vivid memories of that day, recalling where we were and what we were doing when we first learned of the attack, perhaps even remembering seemingly irrelevant details. Chances are,

that memory isn't as accurate as you think it is.

This is called a flashbulb memory. Researchers coined the term in the 1970s as a metaphor for capturing an entire scene in one moment, from the most important to the most mundane details, and then being able to hold on to that memory indefinitely as if you had a photographic record of it.

Flashbulb memories have intrigued memory researchers like me for a long time. We know that they are a type of autobiographical memory – memories of personally experienced events. Like other autobiographical memories, we think we remember them accurately. In reality, we often don't.

While we know that flashbulb memories aren't perfect records, for a long time no one knew if these memories were more accurate than ordinary autobiographical memories. Since flashbulb memories are often formed after sudden, dramatic events, it's hard to create experiments to test this.

I was a graduate student at Duke University on Sept. 11, 2001. My adviser, David Rubin, and I instantly recognized the opportunity to conduct a study of flashbulb memories in response to the event.

On Sept. 12, we asked our undergraduates about their memories of how they learned about the terrorist attacks, as well as an ordinary autobiographical memory from the preceding weekend. In the months afterward, we were able to follow up with our undergrads to see if and how their memories changed.

You think you remember it exactly, but you don't

While the term "flashbulb memory" was introduced in 1977, the

phenomenon was known to researchers well before then. In fact, in 1899 psychologist F. W. Colegrove recorded vivid and detailed memories from people about when they learned of President Lincoln's assassination.

For a long time, researchers argued that flashbulb memories really were a complete and accurate snapshot of events.

Ulric Neisser, a pioneering cognitive psychologist, drew on a flashbulb memory of his own to suggest that this wasn't the case in 1982. Here is how he described his memory of learning about the attack on Pearl Harbor:

"I recall sitting in the living room of our house – we only lived in that house for one year, but I remember it well – listening to a baseball game on the radio. The game was interrupted by an announcement of the attack, and I rushed upstairs to tell my mother."

Years later, after reading scientific research on flashbulb memories, Neisser realized that this memory had to be wrong. Pearl Harbor was attacked on Dec. 7, and there is no baseball on the radio in December.

This realization led him to explore the accuracy of flashbulb memories.

In 1986, Neisser and his collaborator Nicole Harsch asked a group of undergraduates to recall how they learned of the Challenger space shuttle disaster the morning after it happened. Much like earlier reports, they found that almost all of the students had detailed memories of "exactly" where they were and what they were doing when they found out about the explosion.

Neisser and Harsch did something that other researchers hadn't done before. They asked participants to recall the same event a few years

later. They found that although everyone still had vivid and complete memories, some of the memories had changed quite remarkably. In fact, 25 percent of participants reported different memories altogether, such as first describing having learned from a fellow student in class, and years later saying they saw it on a TV news bulletin with their roommate.

This meant that the vividness and confidence that participants had shown were not related to the actual accuracy of their memories.

And the errors that flashbulb memories develops are not random. Our emotions and sense of belonging to a group can color them. For instance, Neisser was probably listening to a football game on the radio when he heard about Pearl Harbor. He argued that the switch from football to baseball served to emphasize his personal connection to the "national pastime" at a time when that nation, to which he was an immigrant, had been attacked.

And a 2005 study found that Danes remember the day when Denmark surrendered to Germany in World War II as being colder, cloudier, windier and rainier than it truly was and the day when Denmark was liberated from Germany as being warmer, sunnier, less windy and less rainy than it truly was.

While these studies demonstrate that flashbulb memories aren't completely accurate, they don't test whether flashbulb memories are more accurate than memories of everyday events.

That was the question that my colleague and I sought to address in the wake of the Sept. 11 attacks.

Flashbulb memories vs. ordinary memories

On Sept. 12, David Rubin and I asked a group of 54 undergraduates

questions about how they learned about the attacks. We asked questions about the memory like, "How did you learn the news?" "Where were you?" "What were you doing?" and "Who were you with?" We also asked questions about the feeling of remembering like, "How clearly can you see this event in your mind's eye?" and "How strongly do you believe that the event actually happened in the way that you are remembering it?"

We also asked participants the same questions about another memorable event from the weekend before the attacks. By doing so, we could directly compare how flashbulb memories and ordinary memories of life events change over time.

We then asked subgroups of our participants the same questions either one week, one month, or seven months later. By recruiting subgroups at each time point, each person only told us about their memories twice, but we were able to observe how memories changed over three distinct time points.

Flashbulb and ordinary autobiographical memories were very consistent over the course of one week. By one month and certainly by seven months, both memories showed fewer consistent details between the two reports. The rate of that forgetting was the same for both types of memories.

We also found that errors, like the introduction of new or contradictory information, were introduced at about the same rate in both types of memories.

So what is the difference between flashbulb memories and autobiographical memories? Our beliefs about those memories.

People believed that their flashbulb memories were more accurate than

the ordinary memory we asked them to recount. They felt that they remembered the flashbulb memory more vividly as well. And it's this difference in perception that makes flashbulb memories so remarkable.

We believe flashbulb memories are accurate

So why do we believe that these flashbulb memories are more accurate than other memories?

For our sample of American students, the attacks of 9/11 were highly emotional and dominated not just national discourse but also much of private conversation for days and weeks later. These processes serve to enhance the vividness of our memories and our subjective confidence in those recollections.

Furthermore, by virtue of having these long-lasting and detailed memories of significant events, we can demonstrate and reinforce our membership in these important social groups. In other words, community exhortations to "never forget" serve to maintain memories not just collectively, but individually.

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