Trust your memory? Maybe you shouldn't

By Jacque Wilson, CNN
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Life’s Work

STORY HIGHLIGHTS
Editor's note: This is part of CNN's "Life's Work" series, which features innovators and pioneers who are making a difference in the world of health and medicine.

(CNN) -- You probably feel pretty attached to your memories -- they're yours, after all. They define who you are and where you came from, your accomplishments and failures, your likes and dislikes.

Your memories help you separate friends from enemies. They remind you not to eat too much ice cream or drink cheap tequila because you remember how horrible it felt the last time you indulged.

Or do you?

One conversation with Elizabeth Loftus may shake your confidence in everything you think you remember. Loftus is a cognitive psychologist and expert on the malleability of human memory. She can, quite literally, change your mind.

Her work is reminiscent of films like "Memento" and "Eternal Sunshine of the Spotless Mind," where what you believe happened is probably far from the truth -- whether you're the eyewitness to a crime or just trying to move past a bad relationship.

"She's most known for her important work on memory distortion and false memories," says Daniel Schacter, a psychology professor at Harvard University who first met Loftus in 1979 and describes her as energetic, smart and passionate. "It's made people in the legal system aware the memory does not work like a tape recorder."

In fact, Loftus' research shows your memory works more like a Wikipedia page -- a transcription of history created by multiple people's perceptions and assumptions that's constantly changing.

**Eyewitness testimony**

One of Loftus' first experiments, published in 1974, involved car accidents. In the lab she played videos of different incidents and then asked people what they remembered seeing. Their answers depended greatly on how she phrased the question.

For instance, if she asked how fast the cars were going when they "smashed" into each other, people estimated, on average, that the cars were going 7 mph faster than when she substituted the word "hit" for "smashed." And
a week after seeing the video, those who were asked using the word "smashed" remembered seeing broken glass, even though there was none in the film.

Even a preposition can make the difference in an eyewitness account, Loftus found. In a subsequent study she asked people if they saw "a broken headlight" or "the broken headlight." Those who were asked about "the" broken headlight were more likely to remember seeing it, though it never existed.

Police officers' biggest mistake is talking too much, Loftus says. "They don't, you know, wait and let the witness talk. They are sometimes communicating information to the witness, even inadvertently, that can convey their theory of what happened, their theory of who did it."

This is particularly troubling when witnesses are identifying a perpetrator in a lineup. One of Loftus' studies found even facial recognition can be "contagious" -- if a witness overhears another witness or police officer describe a misleading facial feature, they are more likely to describe the criminal with that feature.

It's not all the cops' fault. "Misinformation is out there in the real world, everywhere," Loftus says. "Witnesses talk to each other ... they turn on the television or read the newspaper if it's a high-publicity event. They see other witnesses' account. All of these situations provide opportunities for new information to supplement, distort or contaminate their memories."

Loftus has testified in and consulted on hundreds of trials over the past several decades, usually for the defense. Many were high-profile cases, including those of the Hillside Strangler, Michael Jackson, Martha Stewart, Oliver North and Phil Spector.

She's not bothered by defending people others sometimes see as vicious criminals.

"DNA testing ... has revealed that there are hundreds and hundreds of people who have been convicted in crimes, and they're completely innocent," she says, noting that they're often convicted because of unreliable eyewitness testimony.

**Repressed memories**

Perhaps Loftus' most powerful -- and controversial -- work came in the 1990s when she first began manufacturing false memories.
In 1990, Loftus got an intriguing call from the defense attorney for
George Franklin, father of Eileen Franklin. In her mid-20s, Eileen
Franklin claimed she remembered seeing her father rape and murder
her best friend as a child. The prosecution said she had repressed
the memory up until that point.

Loftus testified at the trial about the fallibility of memories but could
not say whether she had ever studied repressed memories such as
Eileen Franklin was maintaining. George Franklin was convicted, and
Loftus went back to the lab.

After doing some research, she became convinced a therapist might
have led Eileen Franklin to suspect her father in the murder.
Therapists were essentially guiding patients to remember false
events, Loftus believed -- asking leading questions and telling their
patients to imagine an event that might have happened.

For example, if a woman came in with an eating disorder, her
therapist might say "80% of patients with an eating disorder were
abused. Were you?" Then the therapist might ask the patient to think
about who might have abused her and when.

While Loftus couldn't definitively prove that repressed memories
weren't real, she could show that it was possible to implant a memory
of a traumatic event that never happened.

Loftus recruited 24 students and their close family members for her
1995 study "The Formation of False Memories." She asked each
family member to provide her with three real childhood memories for
their student, and then sent these memories in a packet, along with
one false memory, to the study participants. The false memories
were about getting lost on a shopping trip and included real details,
such as the name of a store where they often shopped and siblings
they were likely with.

The students were told all four memories were real and had been
supplied by their family member. After receiving the packet, the
students identified whether they remembered each event and how
confident they were that it had happened to them. In follow-up
interviews the researchers asked them to recall details from the
events they remembered.

Seven of the 24 students "remembered" the false event in their
packets. Several recalled and added their own details to the memory.
"It was pretty exciting to watch these normal, healthy individuals pick up on the suggestions in our interviews, and pick up the false information that we fed them," Loftus says.

Loftus continued her experiments, convincing study participants they had broken a window with their hand, witnessed a drug bust, choked on an object before the age of 3 and had experienced other traumatic events. And she continued to testify in cases involving repressed memories.

"I don't think there's any credible, scientific support for this notion of massive repression," Loftus says. "It's been my position that, you know, we may one day find (the evidence), but until we do, we shouldn't be locking people up."

**Unhealthy habits**

Loftus soon began to wonder if she could influence other behaviors. What if she could convince people they had a negative experience with unhealthy food as a child? Would they eat less of it as an adult?

Using her finely tuned "recipe" for memory implantation, she guided study participants to believe they had gotten sick eating strawberry ice cream as children.

A week later, researchers asked about the ice cream incident. Many participants had developed a detailed memory -- what Loftus calls a "rich false memory" -- about when they had gotten sick. Subsequent studies showed this memory affected the participant's actual eating behavior.

It seemed obvious to Loftus that there was potential here to fight obesity. Therapists couldn't lie to their patients, but parents could convince kids that they didn't like ice cream or other fattening foods. Critics raged that she was advocating lying to children.

"Which would you rather have?" Loftus replied simply. "A kid with obesity, heart problems, shortened lifespan, diabetes -- or maybe a little bit of false memory?"

Schacter, who also studies memory, objects to the term "playing around" with someone's mind. He, Loftus and others like them are simply trying to understand what's going on in our memories, he says. "We're assessing the limits of memory, the accuracy of memory. ... Almost by definition we think we're remembering accurately, even though we're not."
Already this year Loftus has co-authored studies on false memories related to alcohol, politics and stressful events. In one, called "Queasy Does It," Loftus' team took the same methods they used to persuade people to eat less ice cream and applied them to vodka or rum. Loftus says this research could potentially be used to help addicts in the future.

Her lab at the University of California Irvine is also working to identify the individual differences that make people more or less susceptible to memory alteration.

Sometime Loftus worries about crossing into unethical territory -- like when she created false memories in military personnel who were training to survive as prisoners of war. When the study published, she feared "we were going to basically be giving (our enemies) a recipe for how to do bad things to other people and then contaminate their memory."

But as a scientist, she says sharing how to implant memories -- so we can potentially learn how to protect against it -- is better than burying the information.

**Walking the line**

In 2006, Loftus attended a talk by legal scholar Adam Kolber on the legal and ethical implications of memory-dampening drugs. According to Kolber, neuroscientists had made significant strides in creating medications victims could take after a traumatic event to dampen the intensity of their memories. Kolber contended that while those drugs could hamper legal proceedings, "We have a deeply personal interest in controlling our own minds that entitles us to a certain freedom of memory."

Loftus was fascinated. "I thought to myself, 'I would want (the drugs),'' she says. Her colleague disagreed. So like any good experimental psychologist, Loftus started a study.

She asked people if they were the victim of a vicious crime, would they want to take the drug? Eighty percent said no. Well, maybe they want to be able to testify against the perpetrator, Loftus thought. So she ran it again -- this time asking if they would take the drug after seeing their military buddy blown up by an IED overseas. Eighty percent refused.

"I thought, maybe I need to explain to them just how bad post-traumatic stress disorder is," she remembers. So she did. "And they still don't want the drug."
The results taught Loftus just how much people cherish their memories.

"Even if it's going to be a harmful memory, they don't want to let it go," she says. "(This is) why sometimes I get such resistance to the work I do. Because it's telling people that your mind might be full of much more fiction than you realize. And people don't like that."

But you don't need a psychological researcher to distort your memory in a lab, Loftus says. People distort their own memories all the time -- they remember getting better grades than they did, voting in more elections than they did, having kids that walked or talked earlier than they actually did. Loftus calls this "prestige-enhancing memories."

We all want to remember ourselves as just a little bit better than we really are, Loftus says, and that's not necessarily a bad thing. Scientists call it "depressive realism," and say depressed people may just remember things more accurately than the rest of us.

"A little bit of memory distortion might be good for people," Loftus says.

This from the woman who has the power to make us remember traumatic childhood events that never happened. Hey, at least we still like ice cream.
"A" and "the" are not prepositions. They're articles.

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