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Feelings' sway over memory

New research suggests that emotions can strengthen and shape memory.

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Where were you during the terrorist attacks of 9/11? For most, recalling this information is easier than remembering, for example, the details of Wednesday morning last week. This phenomenon--along with more than two decades of experimental evidence--has led many psychologists to posit that emotions can enhance memory and recall. ([See May Monitor](#), page 10.)

However, new research suggests a more complicated picture, says Daniel Reisberg, PhD, a psychology professor at Reed College in Oregon. Some psychologists are finding that the stress associated with an emotion may affect how deeply an event is etched into memory, he notes.

Additionally, the type of emotion felt may determine what details people recall from an event, says University of California, Irvine, psychology professor Linda Levine, PhD.

"People don't just feel 'emotional.' They feel sad, scared, angry, happy," says Levine. "Those emotions have different functions, and they influence information processing and memory in different ways."

For example, people generally feel anger when something is keeping them from reaching their goals, she notes. As a result, angry people tend to focus on what they perceive to be the obstacle and may retain obstacle-related information particularly well, Levine says. In contrast, happiness signals that all is well, and happy people will perceive--and recall--a scene broadly without focusing in on particular details, found Levine and Susan Bluck, PhD, a University of Florida psychology professor, in a recent study in *Cognition and Emotion* (Vol. 18, No. 4, pages 559-574.)

In addition to adding to psychologists' understanding of the inner workings of memory, such research may also help judges and juries evaluate the testimony of eyewitnesses--who typically experience high levels of emotion when watching a crime, says Reisberg.

Tunnel memory

People who witness an armed robbery often demonstrate how negative emotion can narrow attention and memory, says Reisberg. Such witnesses tend to recall the gun in great detail, but not the particulars of the perpetrator's appearance.

"You focus your attention on the weapon because, quite obviously, whether or not it is pointing at you is very important," says Reisberg.

Even when not in immediate peril, people experiencing negative emotions tend to focus in on specific details, while happy people take in a situation more broadly, found Levine and Bluck in their 2004 study.

To test their hypothesis, the researchers took advantage of an unusual situation: the televised announcement of the 1995 O.J. Simpson murder trial verdict. The event offered a unique opportunity to study the effect of different emotions on memory because a large number of people witnessed the same footage, says Levine. Moreover, many people experienced strong positive or negative emotions, depending on whether they deemed the defendant guilty or innocent, she says.

Seven days after the verdict, the researchers asked 156 undergraduate students how they felt about the trial's result. About half of the students were angry or sad about the verdict, a quarter were happy and a quarter did not care. Fourteen months after the verdict, the researchers tested the participants' memory of the announcement by asking them which items on a list of events occurred during the announcement. Half of the events listed actually happened--such as Simpson mouthing the words "thank you" to the jury. The other half were made up by the researchers--such as the defendant giving a "thumbs up" to his lawyer.

As the researchers expected, the students who felt happy about the verdict tended to recall the entire scene better than the sad, angry or neutral students. However, the happy students also tended to make more errors of commission--saying that events happened that did not. Students flooded with negative emotions tended to recall less about the verdict announcement overall, but they also made fewer errors in which they recalled details that did not happen.

"The happy people and the people who felt negative made opposite types of errors, so there was no overall difference in accuracy," says Levine. However, the happier or angrier the person felt about the event, the more vivid their memory of it, she says.

The results suggest that happiness works like a broad-tipped highlighter, illuminating an event in memory and capturing many details, says Levine. However, unlike a highlighter, happy memories also can include events that did not occur but seem plausible, Levine says. Negative emotions tended to act like a narrow highlighter, accentuating particular details at the expense of others, she notes.

Memory illusions

Other researchers, such as David Rubin, PhD, have found that intensity of emotion matters more than an emotion's kind. In one study, published in *Memory & Cognition* (Vol. 32, No. 1, pages 1,118-1,132), Rubin--a psychology professor at Duke

University in North Carolina--and his collaborators found that when recalling episodes in their own lives, people tended to recall emotional memories equally vividly regardless of whether they were happy, sad, angry or fearful at the time. However, he notes, the detailed nature of such memories could be illusory.

"After an important event, you tell a story about it, and you eventually come to believe your own story," he says.

For example, many people talked for days or months after 9/11 about where they were and how they felt at the time of the attacks. As people fill in missing details, it can lead to a false sense of accuracy about a memory, notes Rubin.

However, if future studies support Levine's theory that strong emotions--happiness in particular--can lead to broadly remembered events, people may be able to harness their emotions to aid memory, says Bluck. However, such practices could go against memory's primary function, she says.

"People in the classroom and the courtroom are of course concerned with complete accuracy, but it is not clear that the memory system has accuracy as its primary goal in everyday life," she notes.

Specifically, memory helps people use their experiences to inform their future actions, says Bluck. By highlighting important information or even including things that did not happen, emotion-bound memory may allow us to make better decisions than a picture-accurate memory would, she notes.