

Is there such a thing as an emotional hangover? Researchers find that there is

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Credit: Rice University

Emotional experiences can induce physiological and internal brain states that persist for long periods of time after the emotional events have ended, a team of New York University scientists has found. This study, which appears in the journal *Nature Neuroscience*, also shows that this emotional "hangover" influences how we attend to and remember future experiences.

"How we remember events is not just a consequence of the external world we experience, but is also strongly influenced by our internal states—and these internal states can persist and color future experiences," explains Lila Davachi, an associate professor in NYU's Department of Psychology and Center for Neural Science and senior author of the study.

" 'Emotion' is a state of mind," Davachi continues. "These findings make clear that our cognition is highly influenced by preceding experiences and, specifically, that [emotional](#) brain states can persist for long periods of time."

We have known for quite some time that [emotional experiences](#) are better remembered than non-emotional ones. However, in the *Nature Neuroscience* study, the researchers demonstrated that non-emotional experiences that followed emotional ones were also better remembered on a later [memory test](#).

To do so, subjects viewed a series of scene images that contained [emotional content](#) and elicited arousal. Approximately 10 to 30 minutes later, one group then also viewed a series of non-emotional, ordinary scene images. Another group of subjects viewed the non-emotional scenes first followed by the emotional ones. Both physiological arousal, measured in skin conductance, and brain activity, using fMRI, were monitored in both groups of subjects. Six hours later, the subjects were administered a memory test of the images previously viewed.

The results showed that the subjects who were exposed to the emotion-evoking stimuli first had better long-term recall of the neutral images subsequently presented compared to the group who were exposed to the same neutral images first, before the emotional images.

The fMRI results pointed to an explanation for this outcome.

Specifically, these data showed that the brain states associated with emotional experiences carried over for 20 to 30 minutes and influenced the way the subjects processed and remembered future experiences that are not emotional.

"We see that memory for non-emotional experiences is better if they are encountered after an emotional event," observes Davachi.

More information: Emotional brain states carry over and enhance future memory formation, *Nature Neuroscience*, [nature.com/articles/doi:10.1038/nn.4468](https://doi.org/10.1038/nn.4468)

Provided by New York University

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