

A sense of control, even if illusory, eliminates emotion-driven distortions of time

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We humans have a fairly erratic sense of time. We tend to misjudge the duration of events, particularly when they are emotional in nature. Disturbingly negative experiences, for example, seem to last much longer than they actually do. And highly positive experiences seem to pass more quickly than negative ones.

Researchers say they have found a way to lessen these emotion-driven time distortions. Having a sense of control over events reduces the influence of emotions on [time perception](#), the researchers report. This is true even for highly reactive emotional individuals and even if one's sense of control is an illusion.

The researchers describe their findings in a paper in *Frontiers in Psychology*.

Previous studies have found that highly arousing [emotional experiences](#) lead to the time distortions described above. Most people report that highly arousing positive images (erotic pictures, for example), viewed briefly on a computer monitor, flash by more quickly than disturbingly negative ones (of a dismembered body, for instance), even when the images are viewed for the same length of time. In contrast, low arousing positive or [negative images](#) (of a flower or mop, for example) tend to have the opposite effect: Most people report that mildly positive images seem to last longer than mildly negative ones do.

"We imagine that we're perfect at judging time, but we're not," said

University of Illinois [postdoctoral researcher](#) Simona Buetti, who conducted the study with [psychology professor](#) Alejandro Lleras. "If you see a disgusting image, like a photo of a mutilated body, you will perceive this image lasting longer than if you see a picture of people on a [roller coaster](#), or an erotic image. The major contribution of this study is to show that when you give participants a feeling of control, even if it's not perfect and even if it's totally illusory in an experiment, then you can make all these time distortions vanish."

Previous studies also exposed participants to positive and negative images to determine their effect on cognition, Lleras said.

"But in these previous studies, participants never had a sense of control over the experimental events. Images were just presented and participants simply reacted to them as they appeared," he said. "What is novel in our study is that participants are for the first time being given a sense that they can control the emotional events that they are witnessing in the lab."

In a series of experiments, the researchers asked participants to press keys on a keyboard to try to increase the frequency with which positive (or, in one experiment, negative) images appeared on a [computer monitor](#). In reality, the participants had no control over the images; the researchers manipulated the ratio of positive to negative images to give them the impression that they were controlling – or failing to control – the emotional content of the images.

The researchers also tested a subset of participants who had a strong aversion to spiders. Buetti and Lleras reasoned that if control could alter the way people experienced emotional events, a particularly rigorous and useful test of this hypothesis would be to see if this held true in subjects who had very strong emotional reactions to images of spiders.

As in previous studies, when participants experienced low levels of control over experimental events, they tended to overestimate the amount of time they looked at highly arousing negative images (including photos of spiders) in relation to the amount of time they viewed highly arousing positive images. Buetti and Lleras also discovered that the more a person feared spiders, the more he or she tended to overestimate the duration of spider images.

"For spider-fearful individuals, it's as if time slows down when they are confronted with spiders," Lleras said.

But when the researchers induced a high level of perceived control in participants, the time distortions associated with the emotional content of the images went away.

"Even among spider-fearful participants, images of spiders no longer slowed time," said Lleras, who also is an affiliate of the Beckman Institute for Advanced Science and Technology.

"Across experiments, we found that the same images, the same horrible or positive images are actually treated differently if you give a sense of control to participants," Buetti said. "All of a sudden, they're looking at the world differently; they're reacting to the world differently."

Some time distortions returned, however, when in a final experiment participants were made to feel in control of negative events (the viewing of mostly negative images). When they pursued a goal that violated their basic instincts and desires for well-being, Lleras said, their sense of control "failed to inoculate them from the time distortions associated with viewing very disturbing negative images."

The new findings have implications for future studies, the researchers said.

"We now know that experiments on emotion processing can lead to dramatically different outcomes depending on whether participants are offered a sense of control over experimental events or not," Buetti said.

More information: [www.frontiersin.org/Emotion_Sc ...
psych.2012.00337/full](http://www.frontiersin.org/Emotion_Sc...psych.2012.00337/full)

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