

# Study: Mild stress can make it difficult to control your emotions

December 12 2013, by James Devitt

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Even mild stress can thwart therapeutic measures to control emotions, a team of NYU neuroscientists has found.

Their findings, which appeared in the journal *Proceedings of the National Academy of Sciences*, point to the limits of clinical techniques while also shedding new light on the barriers that must be overcome in addressing afflictions such as [fear](#) or anxiety.

"We have long suspected that [stress](#) can impair our ability to control our emotions, but this is the first study to document how even [mild stress](#) can undercut therapies designed to keep our emotions in check," says Elizabeth Phelps, a professor in the Department of Psychology and Center for Neural Science and the study's senior author. "In other words, what you learn in the clinic may not be as relevant in the real world when you're stressed."

In addressing patients' emotional maladies, therapists sometimes use cognitive restructuring techniques—encouraging patients to alter their thoughts or approach to a situation to change their emotional response. These might include focusing on the positive or non-threatening aspects of an event or stimulus that might normally produce fear.

But do these techniques hold up in the real world when accompanied by the stress of everyday life? This is the question the researchers sought to answer. To do so, they designed a two-day experiment in which the study's participants employed techniques like those used in clinics as a

way to combat their fears.

On the first day, the researchers created a fear among the study's participants using a commonly employed "fear conditioning" technique. Specifically, the participants viewed pictures of snakes or spiders. Some of the pictures were occasionally accompanied by a mild shock to the wrist, while others were not. Participants developed fear responses to the pictures paired with shock as measured by physiological arousal and self-report.

After the [fear conditioning](#) procedure, the participants were taught cognitive strategies—akin to those prescribed by therapists and collectively titled cognitive-behavioral therapy—in order to learn to diminish the fears brought on by the experiment.

On the next day, the participants were put into two groups. In the "stress group," participants' hands were submerged in icy water for three minutes—a standard method for creating a mild stress response in psychological studies.

In the control group, subjects' hands were submerged in mildly warm water. To determine that the participants in the stress group were, in fact, stressed, the researchers gauged each participant's levels of salivary cortisol, which the human body is known to produce in response to stress. Those in the stress group showed a significant increase in cortisol following the stress manipulation, whereas there was no change in the control group.

The researchers then tested the [participants' fear response](#) to the same pictures of snakes or spiders in order to determine if stress undermined the utilization of the cognitive techniques taught the previous day.

As expected, the [control group](#) showed diminished fear response to the

images, suggesting they were able to employ the cognitive training from the previous day. However, even though the stress group received identical training, they showed no reduction in fear, indicating they were unable to use these cognitive techniques to reduce fear on the second day.

"Our results suggest that even mild stress, such as that encountered in daily life, may impair the ability to use cognitive techniques known to control fear and anxiety," says Candace Raio, a doctoral student and the study's lead author. "However, with practice or after longer intervals of cognitive training, these strategies may become more habitual and less sensitive to the effects of stress."

Provided by New York University

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