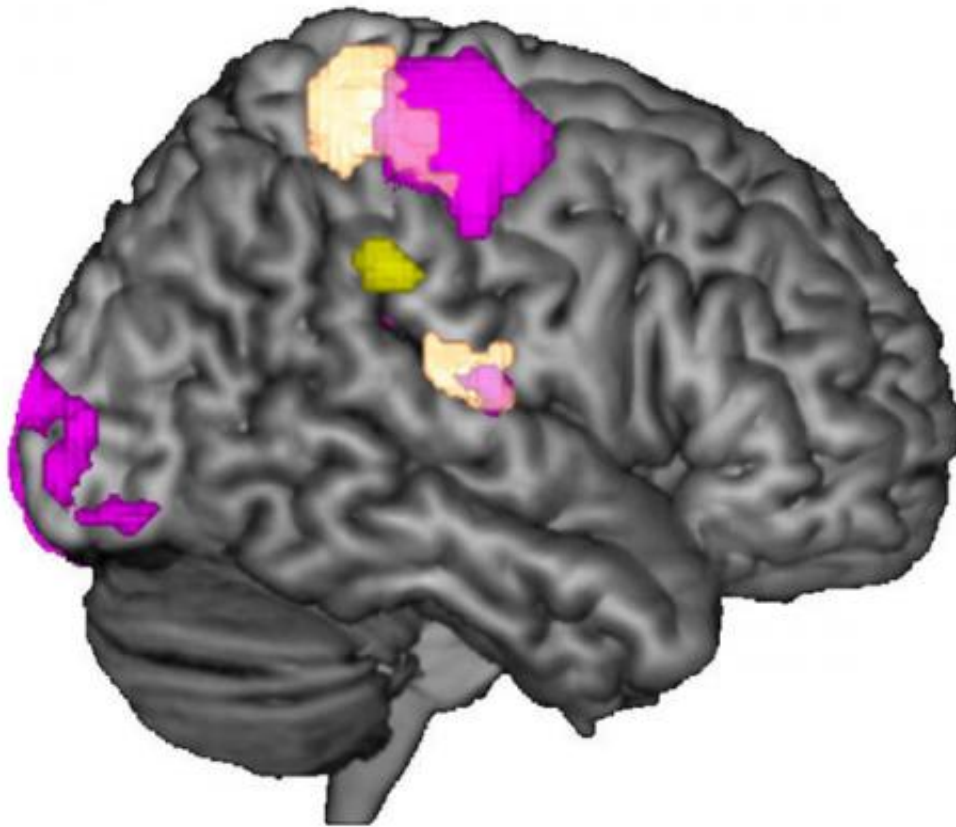


Merely observing stressful situations can trigger a physical stress response

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Credit: © MPI f. Human Cognitive and Brain Sciences/Silani et al., *The Journal of Neuroscience* 2013

(Medical Xpress)—Stress is contagious. Observing another person in a

stressful situation can be enough to make our own bodies release the stress hormone cortisol. This is the conclusion reached by scientists involved in a large-scale cooperation project between the departments of Tania Singer at the Max Planck Institute for Cognitive and Brain Sciences in Leipzig and Clemens Kirschbaum at the Technische Universität Dresden. Empathic stress arose primarily when the observer and stressed individual were partners in a couple relationship and the stressful situation could be directly observed through a one-way mirror. However, even the observation of stressed strangers via video transmission was enough to put some people on red alert. In our stress-ridden society, empathic stress is a phenomenon that should not be ignored by the health care system.

Stress is a major health threat in today's society. It causes a range of psychological problems like burnout, depression and anxiety. Even those who lead relatively relaxed lives constantly come into contact with stressed individuals. Whether at work or on television: someone is always experiencing stress, and this stress can affect the general environment in a physiologically quantifiable way through increased concentrations of the [stress hormone cortisol](#).

"The fact that we could actually measure this empathic stress in the form of a significant hormone release was astonishing," says Veronika Engert, one of the study's first authors. This is particularly true considering that many studies experience difficulties to induce firsthand stress to begin with. The authors found that empathic stress reactions could be independent of ("vicarious stress") or proportional to ("stress resonance") the stress reactions of the actively stressed individuals. "There must be a transmission mechanism via which the target's state can elicit a similar state in the observer down to the level of a hormonal stress response."

During the stress test, the test subjects had to struggle with difficult

mental arithmetic tasks and interviews, while two supposed behavioural analysts assessed their performance. Only five percent of the directly stressed test subjects managed to remain calm; the others displayed a physiologically significant increase in their cortisol levels.

In total, 26 percent of observers who were not directly exposed to any stress whatsoever also showed a significant increase in cortisol. The effect was particularly strong when observer and stressed individual were partners in a couple relationship (40 percent). However, even when watching a complete stranger, the stress was transmitted to ten percent of the observers. Accordingly, emotional closeness is a facilitator but not a necessary condition for the occurrence of empathic stress.

When the observers watched the events directly through a one-way mirror, 30 percent of them experienced a stress response. However, even presenting the [stress test](#) only virtually via video transmission was sufficient to significantly increase the cortisol levels of 24 percent of the observers. "This means that even television programmes depicting the suffering of other people can transmit that stress to viewers," says Engert. "Stress has enormous contagion potential."

Stress becomes a problem primarily when it is chronic. "A hormonal [stress response](#) has an evolutionary purpose, of course. When you are exposed to danger, you want your body to respond with an increase in cortisol," explains Engert. "However, permanently elevated [cortisol levels](#) are not good. They have a negative impact on the immune system and neurotoxic properties in the long term." Thus, individuals working as caregivers or the family members of chronically stressed individuals have an increased risk to suffer from the potentially harmful consequences of empathic stress. Anyone who is confronted with the suffering and stress of another person, particularly when sustained, has a higher risk of being affected by it themselves.

The results of the study also debunked a common prejudice: men and women actually experience empathic stress reactions with equal frequency. "In surveys however, women tend to assess themselves as being more empathic compared to men's self-assessments. This self-perception does not seem to hold if probed by implicit measures"

Future studies are intended to reveal exactly how the [stress](#) is transmitted and what can be done to reduce its potentially negative influence on society.

More information: Engert, V., Plessow, F., Miller, R., Kirschbaum, C., & Singer, T. "Cortisol increase in empathic stress is modulated by social closeness and observation modality." *Psychoneuroendocrinology*, 17 April 2014. [dx.doi.org/10.1016/j.psyneuen.2014.04.005](https://doi.org/10.1016/j.psyneuen.2014.04.005).

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