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Fear thou not: activity of frontal and temporal circuits in moments of real-life courage.

Nili U, Goldberg H, Weizman A, Dudai Y.

Source

Department of Neurobiology, Weizmann Institute of Science, Rehovot, 76100, Israel.

Abstract

How does the brain encode courage in a real-life fearful situation that demands an immediate response? In this study, volunteers who fear snakes had to bring a live snake into close proximity with their heads while their brains were scanned using functional magnetic resonance imaging (fMRI). Bringing the snake closer was associated with a dissociation between subjective fear and somatic arousal. Activity in the subgenual anterior cingulate cortex (sgACC) and the right temporal pole was positively correlated with such action. Further, activity in the sgACC was positively correlated with the level of fear upon choosing to overcome fear but not upon succumbing to it. Conversely, activity in a set of interrelated temporal lobe structures, including the amygdala, was attenuated as the level of fear increased when choosing to overcome fear. We propose how the internally reinforced fast representational shift, in which the courageous-response representation gains control over behavior, takes place.

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