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Tuning down the emotional brain: an fMRI study of the effects of cognitive load on the processing of affective images.

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Source

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Abstract

The present research examines whether cognitive load can modulate the processing of negative emotional stimuli, even after negative stimuli have already activated emotional centers of the brain. In a functional magnetic resonance imaging (fMRI) study, participants viewed neutral and negative stimuli that were followed by an attention-demanding arithmetic task. As expected, exposure to negative stimuli led to increased activation in emotional regions (the amygdalae and the right insula). Subsequently induced task load led to increased activation in cognitive regions (right dorsolateral frontal cortex, right superior parietal cortex). Importantly, task load down-regulated the brain's response to negative stimuli in emotional regions. Task load also reduced subjectively experienced negative emotion in response to negative stimuli. Finally, coactivation analyses suggest that during task performance, activity in right dorsolateral frontal cortex was related to activity in the amygdalae and the right insula. Together, these findings indicate that cognitive load is capable of tuning down the emotional brain.

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