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Cognitive modulation of emotion anticipation.

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Source

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Abstract

Anticipating salient emotions is a vital function related to attention, self control and other cognitive mechanisms. Expecting affective events can trigger regulatory processes that prepare an organism, for example, to cope with possible threat. However, there are situations, like waiting at the dentist's or preparing for a public appearance, in which down-regulation of especially negative emotions linked with the upcoming event is necessary or favorable. A strategy to achieve this is cognitive distraction, a process with up to now barely known neural mechanisms. We used graded cognitive distraction during the anticipation of subsequent negative emotions in order to induce down-regulation of the emotional response in an event-related fMRI design. Accordingly, we found down-regulation of anterior rostral medial prefrontal cortex and amygdala activation during anticipatory cognitive distraction with the anterior medial prefrontal cortex being negatively correlated with the lateral prefrontal cortex. Furthermore, we demonstrated that anticipatory distraction does not influence subsequent emotion processing, i.e. does not reduce subsequent activation in emotion-processing brain areas. We conclude that effortful anticipatory cognitive distraction effectively down-regulates emotion processing during anticipation but not subsequent emotion information processing. These results help in the understanding of general mechanisms of emotion regulation and have implications for applied fields like cognitive behavioral therapy.

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