

[Dialogues Clin Neurosci.](#) 2006;8(4):397-406.

Behavioral control, the medial prefrontal cortex, and resilience.

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Source

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Abstract

The degree of control that an organism has over a stressor potently modulates the impact of the stressor, with uncontrollable stressors producing a constellation of outcomes that do not occur if the stressor is behaviorally controllable. It has generally been assumed that this occurs because uncontrollability actively potentiates the effects of stressors. Here it will be suggested that in addition, or instead, the presence of control actively inhibits the impact of stressors. At least in part, this occurs because (i) the presence of control is detected by regions of the ventral medial prefrontal cortex (mPFCv); and (ii) detection of control activates mPFCv output to stress-responsive brain stem and limbic structures that actively inhibit stress-induced activation of these structures. Furthermore, an initial experience with control over stress alters the mPFCv response to subsequent stressors so that mPFCv output is activated even if the subsequent stressor is uncontrollable, thereby making the organism resilient. The general implications of these results for understanding resilience in the face of adversity are discussed.

PMID:

17290798

[PubMed - indexed for MEDLINE]

PMCID:

PMC3181837

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