
The role of the ventromedial prefrontal cortex in negative emotion: Implications for well-being

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Abstract

Recent data suggest that individual differences in well-being are reflected in distinct patterns of prefrontal and amygdalar functioning when regulating negative emotion, and that these differences predict diurnal patterns of the stress hormone cortisol. Our research also shows that depressed individuals fail to successfully recruit some of the same regions in prefrontal cortex to successfully downregulate activity in the amygdala, a key area involved in the generation of emotion. These data lead to the speculation that a specific medial subregion of the prefrontal cortex – the VMPFC - plays a vital role in well-being: People characterised by high psychological well-being are likely to effectively recruit this brain region when confronted with potentially aversive situations. As a consequence, they show reduced activity in subcortical regions such as the amygdala, and exhibit more adaptive bodily responses that may be important for longer-term health. I will present new data from a population with a large age range demonstrating that increasing age is associated with a prefrontal lateral-medial shift in processing of negative information. We further show that this shift is associated with cognitive decline and impacts psychological well-being. Furthermore, recent data suggest that the involvement of the VMPFC in processing of negative information could be the extent to which individuals spontaneously or deliberately employ "positive reappraisal" strategies. The implications of these findings to the empirical study of emotion regulation will be discussed.

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