

# Self-Knowledge Dim-Out: Stress Impairs Metacognitive Accuracy

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**PLoS ONE**

10(9), 2015 : [e0138260](https://doi.org/10.1371/journal.pone.0138260)

<http://dx.doi.org/10.1371/journal.pone.0132320>

## Abstract

Modulation of frontal lobes activity is believed to be an important pathway through which the hypothalamic-pituitary-adrenal (HPA) axis stress response impacts cognitive and emotional functioning. Here, we investigate the effects of stress on metacognition, which is the ability to monitor and control one's own cognition. As the frontal lobes have been shown to play a critical role in metacognition, we predicted that under activation of the HPA axis, participants should be less accurate in the assessment of their own performances in a perceptual decision task, irrespective of the effect of stress on the first order perceptual decision itself. To test this prediction, we constituted three groups of high, medium and low stress responders based on cortisol concentration in saliva in response to a standardized psycho-social stress challenge (the Trier Social Stress Test). We then assessed the accuracy of participants' confidence judgments in a visual discrimination task. As predicted, we found that high biological reactivity to stress correlates with lower sensitivity in metacognition. In sum, participants under stress know less when they know and when they do not know.

Keywords: Cognitive Sciences