

---

# Effects of mood and emotional content on visual word processing – an fMRI study

Johanna Kissler\*<sup>†1,2</sup>, Bianka Gerling<sup>3</sup>, Reka Daniel<sup>3</sup>, and Claus Tempelmann<sup>3</sup>

<sup>1</sup>University of Bielefeld – Germany

<sup>2</sup>Otto-von-Guericke University Magdeburg – Germany

<sup>3</sup>Otto-von-Guericke University Magdeburg – Germany

## Abstract

Compared to neutral words, processing of emotional words has been shown to be associated with distinct activity in the extended visual cortex as well as, less consistently, frontal cortices, the amygdala, insula and cingulate cortex. Some of the inconsistencies are likely due to task differences, others have been attributed to implicit effects of mood congruency. Here, we examine to what extent experimentally induced transient mood alters brain activation during processing of emotional and neutral words using a semantic monitoring task. Different mood states were induced following which participants were instructed to monitor sequences of positive, negative and neutral adjectives for occasional occurrences of color adjectives. Effects of mood and word content were analysed, excluding responses evoked by color words. Analyses revealed robust effects of emotion on extended visual cortex activity for both positive and negative compared to neutral words. Overall, mood affected cerebral activity in the cingulate gyrus and an interaction between mood and emotional content occurred in the left fusiform gyrus. Amygdala activity could only be identified using a region of interest approach and only following negative mood induction. Across different mood states, findings confirm enhanced extended visual cortex activity in response to emotional compared to neutral words, underscoring the robustness of these effects, but partially also interacting with mood states. Although amygdala activity was identified, it was considerably less consistent than visual cortex activity, casting doubt on the idea that back-projections from the amygdala are an obligatory driving source of visual cortex activity in emotional word processing.

---

\*Speaker

<sup>†</sup>Corresponding author: johanna.kissler@uni-bielefeld.de