

## **Emotional distraction: Contextual modulation of attentional capture**

### **ABSTRACT:**

#### **Background**

Several studies suggest that emotional cues activate cortico-limbic appetitive and defensive systems, which, in turn, enhance attention allocation. Attentional effects have been reported using a variety of visual and acoustic tasks, suggesting that, compared to neutral stimuli, emotional distractors draw more on attentional resources, leaving them less available for task processing.

#### **Aims**

The primary aims were to investigate how novelty affects electrocortical responses to emotional distractors.

#### **Method**

Peripheral task-irrelevant emotional or neutral pictures were presented while participants performed an orientation task. In Experiment 1, stimuli were repeated several times throughout a habituation phase, while in Experiment 2, distractors were presented in separate blocks at high (80%) or low (20%) frequency of occurrence.

#### **Results**

In both experiments, contextual factors (habituation, frequency of distractors occurrence) reduced or eliminated the effect of emotional interference induced by novel emotional (pleasant or unpleasant), compared to neutral stimuli. At the neural level (Late Positive Potential and alpha power) sustained emotional effects were observed despite the repetition or the high occurrence (vs. low) of emotional distractors.

#### **Conclusions**

The filtering mechanisms regulating emotional interference can be attenuated through a non-strategic learning mechanism mediated by (1) mere stimulus repetition and (2) the frequency of distractors occurrence. In both cases, however, neural measures of emotional processing (alpha-ERD) remained unaltered, suggesting that our perceptual system serves the mandatory adaptive function of identifying potential threats or rewards. This project might have important implications for the current society, where people are constantly bombarded by information that could ultimately cause psychological stress, a condition recently named technostress. Our data suggest that emotional information is continuously evaluated, even when 1) the task at hand does not require an explicit judgment on the visual stimuli and 2) there are no apparent behavioral markers that emotional distractors are affecting our performance.

#### **Keywords**

Emotion, Attentional capture, Late positive potential, Alpha

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