

**Foveal vs. Peripheral emotional cues activate differently the amygdala
depending on the nature of the task**

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Much of relevant information comes from the periphery. The current study aimed to understand whether the network for processing of threatening signals differs when using foveal (0°) and peripheral (7.5°) vision. Four runs of 58 trials each were performed. Both stimulus type (fierce animal faces; non-fierce animal faces; natural displays without animals) and spatial location (central; peripheral left; peripheral right) were manipulated. Importantly, the participants (n=12) were asked to perform different tasks while fixating a cross at the center: they had to report (a) animal recognition (first 2 runs) or (b) detection of threat signals (last two runs) by means of a 2-button (Yes/No) response box. Picture duration was kept short (150 ms) to prevent visual saccades and the eye movements were recorded to ensure central fixation. The inter-trial interval varied randomly (7.5, 10, 12s). We found an inverted pattern for the amygdala (left) activity depending on the task performed: in the animal recognition task, the contrast target vs. control showed increased activation for the periphery but not for central locations; and for the center but not for the periphery in the threat detection task. Both orbitofrontal (OFC) and anterior insula activity was more prominent for the threat detection task. Our results suggest that when the task at hand is directed to threat features detection, the amygdala signals the sensory component and the orbitofrontal the value.

Keywords: Foveal and peripheral vision; emotion recognition; threat detection; faces; visual cognition.