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The role of the lateral occipital area in the visual processing of object size, shape, and orientation within and outside conscious awareness

ABSTRACT:

What is and what is not processed outside of conscious awareness is currently being increasingly investigated as the field begins to appreciate and understand more the involvement of different visual pathways in the brain. Our project aimed to determine the degree to which different object characteristics and objects are processed subconsciously relative to when they are processed consciously and to determine the contribution of the lateral occipital complex (LOC) during these processes. Several behavioural experiments were carried out. The experiments used continuous flash suppression (CFS) and more traditional visual masking paradigms to examine if the form, size, and orientation of objects, as well as words and emotionally salient stimuli, could be processed outside of conscious awareness. These experiments revealed that words and emotionally salient stimuli are processed outside of conscious awareness but not the most basic feature of objects, including their form, size and orientation, at least within the context of visual perception. Our functional magnetic resonance imaging (fMRI) experiment further revealed that LOC contributes to the processing of these features during conscious awareness. Taken together, our findings indicate that it is unlikely that it does so outside of conscious awareness. It seems that consciousness awareness is required for processing the basic features of objects, such as their form, size, and orientation, for perceptual purposes.

Keywords

Object features, Vision, Consciousness, Psychophysics

Published Work:

Cox, E. J., Sperandio, I., Laycock, R., & Chouinard, P. A. (2018). Conscious awareness is required for the perceptual discrimination of threatening animal stimuli: A visual masking and continuous flash suppression study. *Consciousness and Cognition, 65*, 280-292. doi: 10.1016/j.concog.2018.09.008

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Peel, H. J., Sperandio, I., Laycok, R., & Chouinard, P. (2018). Perceptual discrimination of basic object features is not facilitated when priming stimuli are prevented from reaching awareness by means of visual masking. *Frontiers in Integrative Neuroscience, 2*: 13. doi: 10.3389/fnint.2018.00013

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