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Perception as Affective Process

Abstract:

Researchers explored perception as purely cognitive process that could be simulated with computational models. This talk introduces the hypothesis that perception is an inherently affective process in which stimuli obtain valence at very early stages of perception. In this talk, I show how studies using electromyography (EMG) have supported this view. The first studies were conducted with static stimuli that had an inherent Gestalt or were possible versus impossible shapes. In newer studies, we examined the claim that affective responses are inherent to sensory processes by looking into the dynamics of perception. In the first experiment, participants viewed bistable stimuli that suddenly change in viewpoint, such as the Necker cube, and had to press a button as soon as their viewpoint changed. Measurements of the Zygomaticus Major and the Corrugator muscles showed that changes in viewpoint were accompanied by positive affect. By contrast, there was no positive affect upon solving arithmetic problems or syllogisms. In the second study, nameable objects emerged from a pattern mask. Participants had to press a button as soon as they had identified the object. Identification was accompanied by positive affect. In a third study, participants solved mental rotation tasks. There was a sudden increase in Zygomaticus activity when participants arrived at a solution. The results for visual stimuli suggest that positive affect linearly decreases up until the point of disambiguation, followed by a rapid increase of positive affect. A similar, but reversed pattern was found in negative affect/cognitive effort. These studies support the notion that perception is inherently affective. Two challenges remain. First, to test the limits of this effect, which lies somewhere between solving mental rotation tasks and complex arithmetic tasks. Second, the question arises whether this inherent affective response is just an epiphenomenon or has some function in the perceptual process.