Monetary incentives modulate internal signals of reinforcement

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Abstract

Exogenous rewards like foodstuffs and liquids play a pivotal function in animal learning and motivation (Schultz, 2002). Humans, however, have a more sophisticated cognitive system, and may find per se pleasurable and rewarding also the accomplishment of cognitive or perceptual tasks. This form of endogenously-driven rewards or positive reinforcers have been suggested to be fundamental for cortical plasticity regulation (Pascucci and Turatto, 2013). However, no direct manipulation of the amount of the endogenous reward has been so far conducted to confirm that this mechanism is involved in perceptual learning. To test this hypothesis, participants were engaged in a central discrimination task, while subliminal (and unattended) stimuli were peripherally presented. To differentially activate the endogenous-reinforcement mechanism during task execution, the central targets had two different incentive values. Participants were informed that high- and low-value targets recognitions led to different monetary rewards delivered only at the end of the experiment. The results showed that the degree of perceptual learning for the subliminal and task-irrelevant stimuli was modulated by the central target value. This sustains the hypothesis that, at least in humans, the accomplishment of some cognitive or perceptual task activates an endogenous-reinforcement mechanism that promotes cortical plasticity (Seitz and Watanabe, 2005).

References