

Reward tunes up the representation of an oriented target, and it is not attention!

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The use of rewards in experimental task improves performance also in elementary psychophysical tasks. This enhancement is attributed to the involvement of attention driven by rewards (Della Libera and Chelazzi, 2006 *Psychological Science* Vol. 17 n. 3 222 – 227). Recently it was proposed that attention and the top-down effect of reward on sensation and perception could be dissociated, but the evidence are controversial (Maunsell J., 2004 *Cognitive Science* Vol. 8 n. 6 261 – 265). We performed a psychophysical dual task experiment in which the first task was aimed to summon attention centrally while the second task tested the effect of reward on orientation discrimination and response distributions. We found that rewards improve orientation thresholds and narrows the response distributions, and this happens with the same effect both with and without the central attentional task. In a further test we have excluded that this could be attributed by the residual effect of feature-based attention, obtaining the same results even when the rewarded feature was independent from the measured task. These data suggest that attention and reward add their effect independently as top down modulation factors of sensory precision.

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