

Effects of uncertain reward predictors on attentional capture.

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Keywords: Attention, reward.

Motivational value yields attentional salience in reward-predicting cues. However, the reward prediction associated to a cue can be defined by two parameters: reward expectation and reward uncertainty. Both parameters depend on the probability that links a certain cue to a reward: while expectation increases monotonically as the cue-reward probability increases, reward uncertainty is maximal at $P = 0.5$, and decreases for smaller and larger probabilities.

The present study addressed whether the attentional salience of reward-predicting cues varies as a function of reward probability or reward uncertainty.

Thirsty participants learned stimulus-reward associations under three different cue-reward contingency probabilities (20%, 50%, 80%) by means of an instrumental task. Then, participants performed a visual search task where target and distractor letters were presented within the previously reward-predicting stimuli.

Results showed that the advantage in reaction times for targets within the reward-predicting stimuli increased with the cue-reward probability. Moreover, when participants were split in two groups as a function of the efficacy of the first conditioning phase, the attentional capture effect was present in the conditioned group but absent in the non-conditioned group.

The attentional bias in favor of the highest reward-predicting stimulus during the visual search task was obtained despite the fact that in the training phase we did not instruct or reinforce participants to actively search for the cue-reward stimuli in between other elements.