Motivation effects on cognitive precision

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Résumé

To maximize long-term rewards and survival, humans and animals need to form accurate representations of the world. However, the precision of cognitive processes depends on the flexible allocation of limited neural resources. Motivation should play a crucial role in mediating this resource allocation, as agents balance the benefits and costs of precision for a given task. Here we study how motivation affects cognitive precision in humans through an incentivized perceptual task combined with computational modeling. We recruited 61 human participants, who identified the orientation of single gabor patches and classified multi-gabor sequences, with performance-contingent incentives varying across both tasks. We analyze the effect of incentives on respones, and apply computational models to differentiate what stages of cognitive processing may be affected, namely sensory, inference, and action selection. Preeliminary results suggest the presence of incentives increases performance primarily by reducing the noise of sensory and action selection processes.

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