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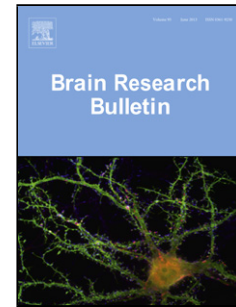
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Predictive coding of the statistical parameters of uncertain rewards by orbitofrontal neurons

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Highlights

- Statistical parameters of uncertain outcomes, namely expected value, risk and probability, are coded by single neurons in the orbitofrontal cortex
- Orbitofrontal neurons code an integrated expected value signal
- These parameters are predominantly coded by separate subpopulations of orbitofrontal neurons

Abstract

Uncertain reward outcomes are characterised by statistical parameters that capture the numerical values of the underlying probability distributions of reward values, including the expected value, risk (variance) and probability. Here we show coding of an integrated expected value signal by single orbitofrontal neurons in response to visual cues predicting uncertain rewards. Separate subpopulations of orbitofrontal neurons predominantly code the prediction of one statistical parameter with few neurons showing combined coding. These signals are likely combined with subjective value signals to inform learning and decision making under conditions of uncertainty.

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