

Distributed Mechanisms Supporting Information Search and Value-Based Choice in Prefrontal Cortex

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Submitter Laurence Hunt
Affiliation University of Oxford

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Presentation Abstract Summary Many neurophysiology studies implicate prefrontal cortex (PFC) in value-based choice. However, the unique contribution made by each PFC subregion remains unclear: several competing accounts have been proposed that are often considered mutually exclusive. Distinguishing between these accounts has proven challenging because few datasets directly compare neuronal activity across PFC subregions in naturalistic decision scenarios. Here we present one of the richest datasets on decision making in PFC to date, contrasting macaque orbitofrontal, anterior cingulate and dorsolateral prefrontal cortices during sequential reward-guided information search and choice. We find a strong triple dissociation of decision-related computations that emerge in parallel across these three subregions from initial decision onset. As further information is gathered, neural population analyses then reveal how subregion-specific computations evolve to support a categorical choice. Our findings demonstrate the co-existence of multiple signals within PFC and provide a synthesis of several competing accounts of PFC function during value-guided decision making.

Co-author Information

* Presenting Author

First Name	Last Name	Affiliation	E-mail
Laurence *	Hunt *	University of Oxford	laurence.hunt@psych.ox.ac.uk
Nishantha	Malalasekera	University College London	n.malalasekera@ucl.ac.uk
Archy	de Berker	University College London	archy.berker.12@alumni.ucl.ac.uk
Bruno	Miranda	University College London	bruno.a.miranda@gmail.com

Simon	Farmer	University College London	s.farmer@ucl.ac.uk
Tim	Behrens	University of Oxford	behrens@fmrib.ox.ac.uk
Steve	Kennerley	University College London	s.kennerley@ucl.ac.uk

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