

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

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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.

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