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MIS01-3

Roles of the Medial Prefrontal Cortex Subregions in Social Decision-making

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How do we compute and update the value of our decisions across different social contexts? To address this question, this presentation first proposes a theoretical model that explains the functional distinctions and interactions among subregions of the medial prefrontal cortex (mPFC). According to this model, the ventral subregion of the mPFC is responsible for intuitive value computations triggered by signals of homeostatic imbalance arising from the body. When conflicting intuitive values are simultaneously activated, the resulting conflict engages the dorsal subregion of the mPFC. This dorsal region integrates additional information from the external environment to compute more complex and refined values. If the newly computed value successfully resolves the conflict initiated in the ventral subregion, it updates the intuitive value representations stored there.

This hierarchical model of the mPFC represents the neural mechanism underlying the allostatic regulatory function: the brain's capacity to constantly discover and internalize the most efficient rewards that can preemptively predict and prevent bodily imbalances using environmental information. The model ultimately aims to resolve the stability–plasticity dilemma, a fundamental challenge in all adaptive systems.

In this presentation, I will introduce recent neuroimaging findings that support this model across a variety of social situations, including self-defensive behaviors, moral decision-making, altruism, impression management, impression formation, and social conformity. I will conclude by discussing the relationship between individual differences in interoceptive sensitivity and social value computation.

Keywords: *Decision-making, Allostasis, Interoception, Morality, Altruism, Self-esteem, Conformity*