



**University of
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Department of Economics – Neuroeconomics Seminar

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Functionally Dissociable Roles of the Medial Prefrontal Cortex Sub-regions in Social Decisions

The medial prefrontal cortex (MPFC) has been strongly implicated in a wide range of social decisions, although distinctive functional roles played by each specific sub-regions of MPFC remain largely unknown at this point. Several recent studies, including those from our lab, have demonstrated that the dorsomedial prefrontal cortex (DMPFC) plays a key role in computing values of decisions for others, and its activity can be even predictive of higher accuracy in the estimation of preferences of others. In addition, we recently observed that, when people learn to maximize benefits of themselves or others, activity in the ventromedial prefrontal cortex (VMPFC) encoded more self- than other-regarding values, while the opposite was true for DMPFC. Interestingly, such a spatial segregation along the ventral-dorsal midline axis in MPFC was more prominent among selfish than prosocial people, suggesting that DMPFC activity is not necessarily associated with altruistic/prosocial decisions, but rather with a functional role for regulating intuitive social valuation processed by VMPFC. Another line of research from our lab has also investigated distinctive roles of MPFC sub-regions in social decisions under observation by others. For example, during the self-referential task, the pregenual anterior cingulate cortex (pACC) activity was shown to reflect self-serving bias promoting one's reputation, especially under observation by others, potentially through its intimate communication with VMPFC, which may intuitively compute social valuation of trait adjectives presented in the task. Consistent with this finding, we recently demonstrated that both anatomical and functional features of the pACC can be predictive of increased prosocial behavioral tendency during ethical consumption task, when one's reputation is at stake. At the end of my talk, I will combine these findings and discuss a hierarchical model of MPFC function in social decision.