Theory of Mind and Valuation during Cooperation

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Abstract: Societal progress requires humans to excel at cooperation over time. To sustain successful cooperation, people coordinate, especially about who is in the best position at any given moment to make the best decision or to take the best action for the team as a whole. We used a novel cooperation task between involving dynamic assignment of Teacher and a Learner under conditions of uncertainty both about reward and about who is the expert at any given time. The task is similar to Theory of Mind tasks but actually gives the participants a stake in the outcome. We found evidence for effortful representation of the preferences of others, and that successful prediction fosters cooperative success. Neural components and putative sources signaled changes in the role of expert in the task. Further, the task design allows novel applications of computational models to the cognitive dynamics and associated neural systems for cooperation.