Do social norms impede optimal learning?

While norms often act as a useful heuristic facilitating cohesive interpersonal dynamics, norms sometimes prevent the exploration of valuable courses of action. In the current study we used computational modeling and a behavioral ultimatum game experiment to determine under what circumstances social norms impede optimal decision-making. The ultimatum game is a dyadic paradigm in which one player, the proposer, decides how much of an endowment to offer to a responder, who decides whether to accept the offer, in which case the endowment is divided as proposed, or to reject the offer, in which case both parties receive nothing for that trial. Two psychological phenomena have been offered as competing explanations of why proposers often make “fair” 50/50 offers: adherence to a fairness norm, and fear that an “unfair” offer will be rejected. In the current experiment, we were able to tease apart these two phenomena. Specifically, we examined the behavior of proposers playing against groups of individuals with different acceptance functions as well as computer generated lotteries programmed to mimic human behavior. Our goals were (i) to assess whether or not proposer behavior could be captured with a reinforcement learning framework, and (ii) to see if this learning process differed between social and non-social conditions. Using a novel reinforcement learning model, we found proposer behavior to be governed by subjective representations of the opponents’ acceptance thresholds. Specifically, we found that proposers learned the slope and intercept of each opponent’s acceptance logistic function, which mapped the investment amount into a victory or a defeat. We furthermore found that learning differed between the social and the non-social conditions, with subjects learning faster in the non-social condition, and exhibiting an apparent reluctance to explore the acceptance range of the opponents in the social condition. We are currently running a follow-up fMRI experiment in order to examine the neural correlates accompanying the intriguing behavioral results of this study.