

An Experimental Study of Prisoner's Dilemmas from the Perspective of Inductive Game Theory*

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Abstract

We conduct an experimental study on behavior and cognition in prisoner's dilemmas with and without role-switching from the perspective of inductive game theory (IGT). It is basic for our study that subjects have no prior knowledge about any payoffs, even their own; they may learn them by repeated play. Without role-switching, many subjects learned relevant payoffs successfully and played a dominant strategy consistent with predictions of IGT. With role-switching, IGT makes two behavioral predictions: one is a Nash equilibrium, and the other is maximization of the sum of payoffs. These two alternatives were observed for many matched pairs of subjects. We study subjects' understandings of payoffs by analyzing their answers to a questionnaire given after the experiment, and look into the relations to behaviors; we find that behavior is often determined by the learned payoffs. We show some history-independence of subjects' behavior. Our study not only supports but also sharpens the basic postulates of IGT.

JEL Classification Numbers: C72, C79, C91

Key words: Inductive Game Theory, Knowledge of Payoffs, History-Independence, Dominant Strategy, Intrapersonal Coordination Equilibrium

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