Common Belief in Rationality in Psychological Games

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Belief-dependent motivations and emotional mechanisms such as surprise, anxiety, anger, guilt, and intention-based reciprocity pervade real-life human interaction. At the same time, traditional game theory has experienced huge difficulties trying to capture them adequately. Psychological game theory, initially introduced by Geanakoplos et al. (1989), has proven to be a useful modeling framework for these and many more psychological phenomena. In this paper, we use the epistemic approach to psychological games to systematically study common belief in rationality, also known as correlated rationalizability. We show that common belief in rationality is possible in any game that preserves optimality at infinity, a mild requirement that nests all previously known existence conditions. Also, we provide an example showing that common belief in rationality might be impossible in games where optimality is not preserved at infinity. We then develop an iterative procedure that, for a given psychological game, determines all rationalizable choices. In addition, we explore classes of psychological games that allow for a simplified procedure.

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