

## Abstract

Recent results from cognitive psychology suggest that human behavior can be, in some situations, better described by laws known from physical quantum theory. This work responds to this development and seeks to answer the question of how quantum models of cognition and decision-making can contribute to our understanding of the social world. We introduce the approaches to the application of quantum theory in social sciences – quantum consciousness, quantum reasoning and quantum metaphor and further develop the second, in the context of strategic interaction in game theory. We show that the quantum model corresponds to both the psychological intuition and many empirically known anomalies such as the order effect, disjunction effect, or context effect.

In this work, we derive a specific model of strategic interaction between two players, and we test it in the experimental Prisoner's Dilemma game. The model is based on the rational choice theory, which is nevertheless re-defined when it is shown how the strategic choice is changed if the quantum probability ( $C^*$ -algebra) is used as the underlying theory instead of classical probability ( $\sigma$ -algebra). The results obtained support the quantum model and showed a different representation of the game among various groups of players. The quantum model of strategic interaction is also tested on the example of a hypothetical poll on Czexit, showing how the expectation of the outcome changes the respondents' electoral behavior. The model is further generalized to the case of the Security Dilemma and the general model of the agent/social structure interaction.