Organizational Behavior and Human Decision Processes 120 (2013) 260–271

Contents lists available at SciVerse ScienceDirect

Organizational Behavior and Human Decision Processes

journal homepage: www.elsevier.com/locate/obhdp

Is behavioral pro-sociality game-specific? Pro-social preference and expectations of pro-sociality

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ARTICLE INFO

Article history:
Received 22 December 2011
Accepted 6 June 2012

Keywords:
Social dilemma
Social value orientation
Social preference
Pro-social
Pro-self
Prisoner's dilemma game
Trust game
Faith game
Dictator game
Expectation

ABSTRACT

We observed the behaviors of the same people across five games – two prisoner's dilemma games, a trust game (in which the subject took on the role of both truster and trustee), a dictator game, and a faith game – any pair of which was separated by an interval of several months to reduce potential carry-over effects, and found strong consistency in behaviors among these games. We also found consistency between the expectations of other players' behaviors and the player's own behavior across games. We further found that the consistent behavioral pro-sociality observed across different games was related to the general measures of pro-social value orientation and perceiving the game situations. These findings suggest that individual and cultural differences in game behaviors can reflect both the ways in which people perceive game situations and their general social preferences.

Introduction

The goal of our study is to determine whether people behave consistently across different types of experimental games and, if so, what drives this behavior. To investigate this question, we observed individuals' behaviors across different games and found that these behaviors were fairly consistent. We first present the theoretical foundations used to predict why we should find such behavioral consistency and then present our research methods. Finally, we discuss the implications of our findings.

Social value orientation

One factor for which we expect behavioral consistency across different experimental games is the participant's social value orientation (SVO). In social psychology, efforts to identify the motivational bases of cooperation can be traced to earlier studies of decomposed games (Messick & McClintock, 1968). Over time, the decomposition methodology of identifying players' motivational bases developed into more comprehensive measures of SVO (Kuhlman & Marshello, 1975; Liebrand, 1984; Van Lange, Otten, De Bruin, & Joireman, 1997). Simply put, an individual's social value orientation (SVO) is defined by a combination of weights given to his/her own and his/her interaction partner's welfare in evaluating the desirability of a particular outcome in an interdependent relationship. Although nine prototypical SVOs can be produced by combining the positive, negative, and zero weights for one's own and one's partner's welfare, three major types of orientations have been studied extensively: cooperative,

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http://dx.doi.org/10.1016/j.obhdp.2012.06.002

individualistic, and competitive. Cooperators (sometimes called joint gainers) assign positive weights to both their own welfare and their partner's welfare when evaluating the desirability of a particular outcome. Individualists assign a positive weight to their own welfare and disregard their partner's welfare. Competitors give a positive weight to their own welfare and a negative weight to their partner's welfare. Because the proportions of competitors and altruists (who assign a positive weight to their partner's outcome but no weight to their own) are found to be relatively small, individualists and competitors are often categorized together as pro-selves, and cooperators and altruists are often grouped as pro-socials (Liebrand, 1984; van Lange & Kuhlman, 1994). While the distinction between pro-socials and pro-selves was originally proposed based on the relative weights they assign to the player's own outcome and his/her partner's outcome, more recent characterizations of these two types of players involves preferences for the equality of the two players' outcomes. In other words, pro-socials prefer equality of outcomes; they place a positive value on their partner's welfare (van Lange, 1999) and often prefer equality more than joint gain (Eek & Gärling, 2006). Previous studies have repeatedly demonstrated that a player's SVO is moderately correlated with his/her cooperative choices in social dilemmas. For example, Balliet, Parks, and Joireman (2009) conducted a meta-analysis of social dilemma studies and found that the effect size of the relationship between cooperation and SVO in those studies was $r = .30$.

Efforts to relate an individual's cooperative choices in social dilemmas and related games to his or her motivational bases are not unique to social psychologists. Some economists (e.g., Andreoni, 1990; Bolton & Ockenfels, 2000; Fehr & Gächter, 2002; Fehr, Hoff, & Kshetramade, 2008; Fehr & Schmidt, 1999; Rabin, 1993) use the concept of social preferences or non-self-regarding preferences in evaluating the outcome of choices of interdependent relationships. These social preferences include altruism, fairness, inequity aversion, reciprocity, strong reciprocity, and spite. Despite certain differences in the specific types of preferences or value orientations, the same basic idea is shared by economists and social psychologists: people evaluate the desirability of the outcomes of their own actions (in conjunction with the actions of their interaction partner) using both their own and their partner's welfare as criteria. Furthermore, both economists and social psychologists assume that the behavioral choices made in experimental games reflect the social preference and social value orientation in the minds of the game players.

Because game players are driven by internal traits, such as social value orientation and social preference, some level of consistency is to be expected across different game behaviors. Specifically, it is expected that those who have a pro-social value orientation will consistently behave in a pro-social manner in games in which social value orientation affects player choices. For example, players are expected to cooperate in the prisoner's dilemma game, provide a fair share in the dictator game, return a fair share of the entrusted money as trustees, and entrust some of their own money as trusters in the trust game.

The consistency prediction based on the player's SVO is straightforward for games in which players must share their own resources with their interaction partners. For example, the dictator in the dictator game gives some portion of the endowment he/she controls to his/her interaction partner. The prisoner's dilemma game can also be expressed in the exchange format (Yamagishi, Terai, Kiyonari, Mifune, & Kanazawa, 2007; Yamagishi et al., 2005) in which each player provides some portion of his/her resources to the partner. Similarly, the trustee in the trust game gives some portion of the entrusted money to the truster. In these games, giving can be regarded as a form of (unconditional or conditional) altruistic behavior. Trusting behavior in the trust game can also be regarded as a form of altruism because the trusting choice increases the total resources allocated to the two players.

However, the trusting choice in the faith game (FG; Kiyonari & Yamagishi, 1999; Kiyonari, Yamagishi, Cook, & Cheshire, 2006) involves no increase in the joint outcome or the partner's outcome. The faith game (FG) is played by two players – a dictator and truster. The dictator plays a dictator game in which he/she divides a sum of money between him/herself and a recipient. The dictator then receives the portion of the money he/she kept regardless of the choice of the recipient/truster. The truster knows that the dictator believes that he/she totally controls the resource allocated between the two, and decides whether to receive the unknown amount of money a randomly matched dictator allocated to a recipient or to receive directly from the experimenter a fixed amount of money that is known to be less than half of the amount that the dictator divided. The truster in the FG therefore has no control over the amount that the matched dictator receives. Unlike in the TG, even pro-social trusters in the FG who want to promote the dictator's outcome cannot do so by choosing to trust because the trusting choice might reduce the truster's (and the joint) outcome in cases where the matched dictator has chosen to take the full endowment. He/she does not know if the choice of trust (i.e., choosing to receive whatever the dictator allocated to a recipient) increases or decreases the inequality between the two. Thus, the truster's type of SVO or social preference cannot be used to predict his/her choice in the FG.

Prediction of the trusting choice in the FG based on the player's SVO requires the assumption that players project their own SVO onto the dictator, such that pro-socials expect the matched dictator to be similar to themselves and behave pro-socially, whereas the pro-selves expect the dictator to behave in a purely self-promoting manner and take all of the endowment he/she controls. This "projection hypothesis" seems reasonable considering the strong correlation between players' own choices and the expectations of the partner's choice often observed even in one-shot games (Acevedo & Krueger, 2005; Krueger, DiDonato, & Freestone, 2012; Watabe, Terai, Hayashi, & Yamagishi, 1996; Yamagishi & Sato, 1986).

Post-decisional and pre-decisional projection

Although the projection hypothesis appears to be straightforward and reasonable, what are actually projected is not as clear. One interpretation is that the player uses his/her own behavior as a sample of size one drawn from the population of game players (Dawes, 1989; Krueger et al., 2012). This type of "post-decisional" projection occurs after the player has made his/her choice and thus cannot explain the correlation between pre-decisional expectations and the actual choices (Messick et al., 1983). Furthermore, this type of prediction is expected to occur only within the same game. More specifically, the range of this type of prediction is limited to the choices in games that are similar to the one in which the player has already made his/her choice (i.e., the population corresponding to the sample of size one). Thus, we cannot use this type of post-decisional projection as a supplemental assumption to explain the consistency of behavior in the FG and other games. For example, this type of projection cannot explain the behavioral consistency between the trust choice in the FG and reciprocation of trust by the trustee in TG because there is no behavioral counterpart in the trustee's choice in the TG corresponding to the choice of trust in the FG.

One implication of the above argument is that a different type of projection is needed as a supplemental assumption to allow for the prediction of consistency between the FG and other games. What is needed is a "pre-decisional" projection, or an inference of other people's internal state (including their perception of the