

## Original Article

# Social influence and the adaptation of parochial altruism: a dictator-game experiment on children and adolescents under peer influence

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## ABSTRACT

Humans tend to treat the ingroup more favorably than the outgroup. The phenomenon of parochial altruism is commonly observed in experimental studies on the division of valuable goods among people from children to adults in modern and indigenous societies. Relatively little known is how parochial altruism evolves in the presence of social influence. We conducted a dictator-game experiment on children and adolescents in different school classes to assess parochial altruism. Subjects divided an endowment of valuable goods with an ingroup and an outgroup person. We then manipulated the social information of how the ingroup and the outgroup person shared their endowments with each other. Our experiment shows that subjects would modify their giving to the two recipients when receiving the information, suggesting that parochial altruism—the difference in how much the ingroup and the outgroup receive—is subject to modification under social influence. Parochialism, in particular, is reduced when social influence is exerted from the ingroup. Our study suggests the research to take into account the social dynamics of interpersonal influence to understand how norms of parochial altruism evolve.

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## 1. Introduction

The propensity to behave more favorably to people of the same social group—ingroup favoritism—is deeply rooted in human nature. Experimental research shows that people tend to be more generous to ingroup members when dividing valuable goods with others (Ben-Ner, McCall, Stephane, & Wang, 2009; Bernhard, Fischbacher, & Fehr, 2006; Bigler, Jones, & Lobliner, 1997; De Dreu et al., 2010; Fehr, Bernhard, & Rockenbach, 2008; Tajfel, Billig, Bundy, & Flament, 1971; Yamagishi & Mifune, 2008, 2009), not only to those sharing salient social identity, such as nationality and ethnicity (Rand et al., 2009; Whitt & Wilson, 2007), but also to peers in the minimal groups despite the ephemerality of the group identity (Dunham, Baron, & Carey, 2011; Goette, Huffman, & Meier, 2012; Jordan, McAuliffe, & Warneken, 2014; Tajfel et al., 1971). People, on the other hand, possess less favorable attitudes to others outside the group—outgroup discrimination. The discrimination against the outgroup people could lead to conflicts with a different group (Choi & Bowles, 2007; Halevy, Bornstein, & Sagiv, 2008; Yamagishi & Mifune, 2009).

The emergence of parochial altruism—the combination of ingroup favoritism and outgroup discrimination—has attracted proliferating

interests in the behavioral sciences. Mathematical models are proposed to account for the selection of it by nature, linking its evolutionary advantage to the increase of the collective welfare shared exclusively by group members (Choi & Bowles, 2007; Fu et al., 2012; García & van den Bergh, 2011; Konrad & Morath, 2012). Experimental studies on children and adults conducted in modern and indigenous societies investigate how parochial altruism develops across time and cultures (Ben-Ner et al., 2009; Bernhard, Fehr, & Fischbacher, 2006; Bigler et al., 1997; De Dreu et al., 2010; Fehr et al., 2008; House et al., 2013; Jordan et al., 2014; Tajfel et al., 1971; Yamagishi & Mifune, 2008, 2009). Despite the progress, little is known how parochial altruism adapts across individuals and to what extents it is shaped by social influence: Would parochialism be reinforced or weakened when people are exposed to the information of how others—the ingroup and the outgroup—behave towards each other?

Human history and daily-life experiences provide examples of how parochial altruism adapts under social influence. The benevolent relationship of our ingroup members with the outgroup may motivate us to extend our friendliness to the outgroup. One of the strategies to form political alliances is to have marital relationships between two groups. Political marriages, documented in both the east and west societies (Fisher, 1983; Yihong, 1997), work to shorten the social distance between two states. On the other hand, we treat an outgroup person differently depending on how s/he treats our ingroup members. Research shows that people reward those who are generous to others (Milinski, Semmann, & Krambeck, 2002). The reward is expected to be even

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stronger when the beneficiary is an ingroup person (Jones & Rachlin, 2006). On the contrary, hostility to a rival group can be reinforced when seeing that ingroup members are being unfairly treated by the rival. According to the empirical research, a large proportion of incidents of murder are caused by gangsters' retaliation against a different gang for exploiting their ingroup member (Papachristos, 2009).

These examples suggest that people's relationships with the ingroup and the outgroup are interdependent: The status of one relationship is expected to influence the other. Fig. 1a illustrates the triadic relationships: Actor E (ego) and actor I (ingroup) belong to the same group, while actor O (outgroup) belongs to a different one. In the experiments on the division of valuable goods, altruism can be measured by the amount of the goods a person shares with others. Accordingly, the discrepancy of E's generosity to the ingroup I ( $E \rightarrow I$ ) and to the outgroup O ( $E \rightarrow O$ ) is an indicator of E's parochial altruism. The question we raise in the paper is: Would  $I \rightarrow O$  and  $I \leftarrow O$  influence  $E \rightarrow I$  and  $E \rightarrow O$ ?

If parochial altruism is immune to social influence, how I and O treat each other would have no impact on how E treats I and how E treats O. However, if social influence has an effect, we would expect actor E to adjust  $E \rightarrow I$  and  $E \rightarrow O$  when knowing how I treats O and/or how O treats I. The adjustment of  $E \rightarrow O$  reflects how I's behavior influences E's, whereas the adjustment of  $E \rightarrow I$  addresses how E evaluates I's behavior. Parochial altruism suggests that  $E \rightarrow I$  is greater than  $E \rightarrow O$ , but the discrepancy could change when the social influence of  $I \rightarrow O$  and  $I \leftarrow O$  makes actor E adjust both  $E \rightarrow I$  and  $E \rightarrow O$  accordingly.

We conduct a dictator game experiment to test the triadic relationships shown in Fig. 1. Following prior experiment (Fehr et al., 2008), we implement the game on students of different classes of a school, thereby forming an ingroup–outgroup contrast. Given an endowment of some valuable goods, subjects decide how much to share with a same-class and a different-class person respectively. We then manipulate the information of how the same- and the different-class person share their endowments with each other. Receiving the information, subjects update their giving decisions to the two recipients. We found strong evidence for the social influence effect: People would modify their giving to the two recipients after knowing how much one gives to the other, suggesting that parochial altruism is influenced by how others behave in the sharing game.

## 2. The experiment

### 2.1. Theoretical motivation

Research on parochial altruism has a long history in the social sciences. A recent endeavor attempted to link the emergence of parochial altruism to culture norms (Bernhard, Fehr, et al., 2006; Bernhard, Fischbacher, et al., 2006; Choi & Bowles, 2007; Jordan et al., 2014; Schiller, Baumgartner, & Knoch, 2014; Shinada, Yamagishi, & Ohmura, 2004). Accumulating work has shown how cultural norms can serve as a mechanism for the selection of group-beneficial behavior, such as cooperation, fairness and reciprocity (Chudek & Henrich, 2011; Richerson & Boyd, 2008). Governed by norms, how one treats an ingroup versus an outgroup person is subject to public surveillance and norm enforcement, including the positive measure—reward, and the negative one—punishment.

Norm enforcement, however, provides only a partial view of how parochial altruism adapts. As shown in Fig. 1a, in a triadic relational structure, the status of one relationship could simultaneously influence the other two (Heider, 1933). For example, when seeing an outgroup person treat an ingroup person unfairly, one can choose to punish the outgroup actor, help the ingroup actee, or do both. Each move of the choices would reformulate one's treatment of the ingroup and the outgroup person. As a consequence, parochial altruism—the difference in how the ingroup and the outgroup are treated—is subject to modification. While past research focuses on norm enforcement on the actor, our study supplements the literature by considering the alternative relationship of how one treats the actee. In fact, the experiment design described below allows us to assess the two effects at the same time, providing a complete assessment of how parochial altruism adapts in three-personal interactions.

### 2.2. Experiment design

We implemented a dictator-game experiment on students of different school classes (Fehr et al., 2008). Subjects made two independent decisions in the beginning of the experiment: Endowed with 10 stickers

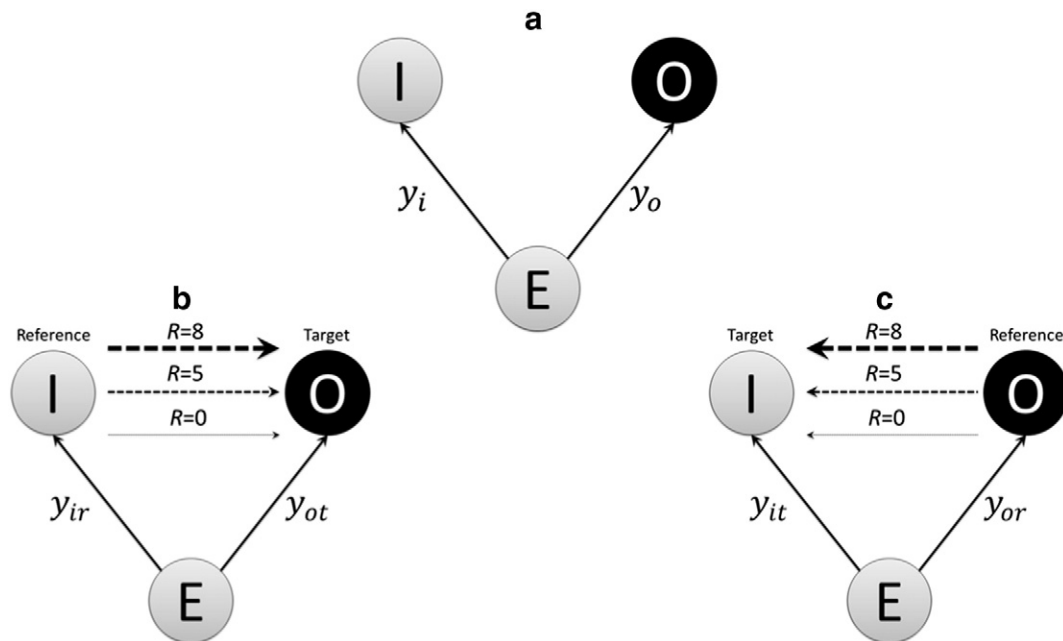


Fig. 1. Schematic illustrations of the conceptual framework and experiment design: (a) initial giving to an ingroup and an outgroup recipient; (b) three scenarios where the reference is ingroup and the target is outgroup; (c) three scenarios where the reference is outgroup and the target is ingroup.

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