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Group membership, team preferences, and expectations☆

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ABSTRACT

Group membership is a powerful determinant of social behaviour in a variety of experimental games. Its effect may be channelled primarily via the beliefs of group members, or directly change their social preferences. We report an experiment with a prisoner's dilemma with multiple actions, in which we manipulate players' beliefs and show that group identity has a consistent positive effect on cooperation only when there is common knowledge of group affiliation. We also test the robustness of the minimal group effect using three different manipulations: one manipulation fails to induce group identity, and we observe an unsystematic effect of group membership when knowledge of affiliation is asymmetric.

1. Introduction

There is currently a revival of interest among economists in the effect of group membership on individual decision-making.[1] It is well known that people tend to behave more pro-socially when they interact with members of their own group, but become less generous, less trusting, and less cooperative towards individuals who belong to different groups. However, there is less agreement about why this happens, and in which conditions group membership has a significant effect.

The experiment described in this paper extends research on group membership in two directions. (1) Using a two-person public goods game (or multiple-action prisoner's dilemma), it tries to discriminate between two alternative explanations of group identity effects. Does group membership change people's *goals* (by, for example, modifying the argument of their utility function) or does it change people's *expectations* concerning what other individuals will do? (2) The experiment probes the robustness of group effects comparing three different versions of the classic minimal group paradigm (Tajfel et al., 1971).

While the answer to the first question appears rather straightforward – the effect of group membership is channelled mainly through people's expectations – the results on the second front are less univocal. Minimal group manipulations appear to be fragile, and have unsystematic effects when knowledge of group membership is asymmetric. In some sessions group identity increases transfers to fellow group members, in some it decreases transfers, and in others it has no effect at all.

The paper is organised as follows: Section 2 sketches the theoretical background and briefly reviews the experimental literature. The design of the experiment is illustrated in Section 3, while Section 4 describes and discusses critically the main results. Section 5 concludes with a summary and general comments.

2. Literature review

In the classic minimal group experiment Tajfel et al. (1971) divided subjects in two groups using an irrelevant and arbitrary criterion. Subjects then allocated money between random in-group and out-group members, and on average gave more to the former than to the latter. It is noteworthy that subjects sometimes sacrificed resources to increase the difference between in-group and out-group payoffs, that is, they behaved spitefully towards out-group members.[2]

It remains unclear, however, *how* exactly the minimal group design generates higher levels of transfer towards in-group members. Possible explanations can be divided in two broad categories: according to *preference*-based models, group identity transforms the utility functions of individuals who are engaged in a collective task; according to *belief*-based models the group identity manipulation changes their expectations, and via this route modifies behaviour.

The simplest preference-based models introduce other-regarding concerns in the utility function of each individual player. "Social preferences" may be altruistic, egalitarian, reciprocal, spiteful, or may reflect a combination of different motives (Fehr and Fischbacher, 2002; Cooper and Kagel, in press). Group identity may change the weight of other-regarding relative to self-interested motives, inducing differential treatment of in-group and out-group members. According to an alternative, less orthodox hypothesis, group identity may cause individuals to focus on the maximisation of a single *team preference* function (Sugden, 2000; Bacharach, 2006). An advantage of this framing effect is that some strategic problems are transformed into parametric decisions, where each individual simply pursues the group's goal by choosing a profile of strategies that maximises collective utility.

Belief-based models in contrast explain the effect of group membership as a manipulation of expectations. In public goods games, for example, individuals with an underlying preference for conditional cooperation must be reassured that others are also willing to contribute. Information about group membership may work as a signal or correlation device that individuals use to coordinate their choices (Bicchieri, 2006; Gintis, 2009). It is crucial however that group affiliation is common knowledge among players. Suppose for example that *i* believes that *j* does not expect her to contribute to the public good. The minimal group paradigm may change *i*'s behaviour by manipulating her beliefs concerning *j*'s expectations. But *i*'s beliefs can change only if *i* learns that *j* knows that *i* knows that they are fellow group members.[3]

A substantial body of evidence confirms the importance of expectations in sustaining pro-social behaviour (Kagel et al., 1996; Haley and Fessler, 2005; Dana et al., 2007; Bicchieri and Xiao, 2009; Ellingsen et al., 2012). None of these experiments, however, focuses specifically on groups. Notable exceptions are Yamagishi and Mifune (2008) and Güth et al. (2009), who have tested the importance of mutual beliefs in dictator's games with group identity. They report significant differences between in-group and out-group allocations *only* when group affiliation is common knowledge.[4] Jin and Yamagishi (1997) similarly studied asymmetric knowledge of group membership in a prisoner's dilemma game. They report higher rates of cooperation only with mutual knowledge of affiliation, but we do not know the details of their design because the original paper was published in Japanese.

In this paper we describe an experiment based on a prisoner's dilemma, that in addition probes different manipulation devices and checks their robustness using post-experimental questionnaires. We manipulate players' *beliefs* and compare conditions with common knowledge of group membership vs. conditions with asymmetric knowledge. In the latter, all players are aware of *their own* group affiliation, but some players do not know the affiliation of the other player (who, in turn, knows that the first player ignores this piece of information). If beliefs are crucial, the difference between in-group and out-group cooperation should be larger in the common knowledge than in the asymmetric knowledge condition. As we shall see, our results confirm the hypothesis that beliefs matter: group membership does not affect cooperation systematically,

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[2] Subsequent work in social psychology has explored various alternative methods to induce group identity. See e.g. Tajfel (1982), Brewer and Kramer (1986), Isaac and Walker (1988), Orbell et al. (1988), Dawes et al. (1990) and Kerr and Kauffmann-Gilliland (1994); the social psychology literature is surveyed in Brown (2000) and Hogg and Abrams (2003). We will use the term "minimal group" rather broadly, to include a number of experiments that differ in some respects from Tajfel's. There are various degrees of "minimality", and our experiment probes the robustness of the effect to changes in the manipulation device. Notice also that while Tajfel's subjects engaged in a task that had no payoff consequences for themselves, we follow the experimental economics tradition and study situations where pro-social behaviour has a cost for the decision-maker.

[3] For imagine that only *i* knows about the common group affiliation: since *j* does not know whether she is playing with an in-group or an out-group member, she is unable to infer the correct rule for that situation, and she cannot do better than play randomly. Player *i* as a consequence is also unable to predict the contribution of *j*, and cannot do better than play randomly. The minimal group paradigm should have no significant effect on the average behaviour of experimental subjects in one-shot games with asymmetric information of group membership.

[4] Interestingly, Güth and co-authors report a significant difference between the asymmetric and the common knowledge conditions only when the dictator's beliefs concerning the recipient's expectations are elicited *in advance* of making her decision. When the dictator's attention is not focused on mutual beliefs, in contrast, the asymmetry of information does not seem to matter.