

# The Impact of Group Membership on Cooperation and Norm Enforcement: Evidence Using Random Assignment to Real Social Groups

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Because it is difficult to fully control behavior with incentives and contracts (Canice Prendergast, 1999), the success of organizations depends on members' willingness to take unselfish, efficiency-enhancing actions, or on what George A. Akerlof and Rachel E. Kranton (2005) call "motivational capital" (if, for example, workers may put in extra effort even if it is not rewarded, and sanction selfish behavior by others even when it is costly to do so, this may fill the breach left by regular incentive schemes). Another important feature of organizations is that they constitute a group or social network determining with whom an individual interacts.

This paper investigates whether this second aspect of organizations has an important benefit, fostering nonselfish cooperation and punishment of norm violation within the group. Although the traditional unit of analysis for studying organizations in economics has been the individual, our hypothesis is in line with an alternative view, which holds that membership in a social group transforms individuals, leading to internalized roles, norms, and values that affect behavior. This view has been advanced in social identity theory (see Alexander Haslam,

2001), in work on the economics of identity (Akerlof and Kranton, 2005), and in the literature on social capital (Robert D. Putnam, 1993). We also test a related, long-standing conjecture in sociology and social psychology—that group assignment may have a dark side, leading to hostility toward outsiders in the form of vindictive punishment (see Steven N. Durlauf, 1999).

By using random assignment to real social groups, this paper provides the first unfounded evidence on the impact of group membership on cooperation and punishment. One type of previous evidence comes from existing social groups. For example, Peter Kollock (1998) finds that members of college fraternities are more willing to cooperate with a member of their own fraternity in a hypothetical prisoner's dilemma game. Kollock also finds vindictive punishment of outsiders. Helen Bernhard et al. (2006) study tribes in Papua New Guinea and do not find hostility, but do find greater willingness to punish norm violation if the victim of the violation is from the punisher's tribe. Because these groups are not randomly assigned, and differ strongly in terms of demographics and culture, it is difficult to attribute these findings to mere membership in a group. A second type of evidence comes from laboratory experiments in which subjects are members of "minimal" groups. The group is a label, assigned based on some seemingly irrelevant characteristics, such as a preference for paintings by different artists. These studies find that subjects favor their own group, but find inconclusive evidence on the presence of hostility (e.g., Henri Tajfel and John C. Turner, 1979). While assignment may be random, groups in these studies lack any history of within-group social interaction, which may be crucial for the nature and strength of group effects.

We exploit the fact that individuals are randomly assigned to platoons during a four-week phase of officer training in the Swiss Army.

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During this training, officers interact almost exclusively with members of their own platoon. This aspect of our design is similar to the classic Robbers Cave Experiment (Muzafer Sherif et al., 1961), in which 11-year-old boys were randomly assigned to one of two groups in a summer camp and initially kept apart. The difference is that this study focused on how the groups treated each other, once they were brought together to compete or cooperate in various games. By contrast, there is no institutionalized competition or cooperation between platoons in our study, and we conduct choice experiments that allow us to measure cooperation and punishment within and between groups.

In a simultaneous prisoner's dilemma game, we find significantly more cooperation when subjects interact with a member of their own platoon. This finding is striking given that the groups are randomly assigned, have existed for only three weeks, and will be dissolved one week later. The finding is consistent with in-group favoritism but also with out-group hostility. Subjects may defect more against the out-group simply because they are selfish in this case or because they actively dislike the out-group.

We conduct a second experiment in which a third party can punish one of the players in a prisoner's dilemma game. We find that group assignment heightens the willingness to enforce a norm of cooperative behavior toward fellow group members: punishment is especially high when the victim of defection is from the third party's group. We find no evidence of vindictive punishment, i.e., third parties punishing outsiders more, regardless of their actions.

### I. Random Group Assignment

*Institutional Background.*—All Swiss males are required to perform at least 300 days of military service, beginning with 21 weeks of basic training. In week seven, about one-fourth are selected to go through ten weeks of officer-candidate training. Of these, one-fourth are promoted to officers and continue on to the Joint Officer Training Program (JOTP). Whereas officer-candidate training is specific for each branch of service and occurs in separate locations, the JOTP brings new officers from all

branches of service together, to the same location, for four weeks. Officers are randomly assigned to a platoon at the beginning of the JOTP and spend virtually all day with their platoon. Training involves mainly coursework on principles of security, combat in large military units, logistics, and leadership. At the end of the JOTP, the platoons are dissolved and officers are sent to separate locations for further, advanced training specific to each branch of service.

We use this assignment as our manipulation of social groups. Assignment to platoons is random and stratified according to the different branches of service. The army intentionally does this to promote exchanges of perspective among different branches of service.

The assignment mechanism is ideal, in several ways, for investigating the impact of group membership on behavior. First, trainees know that platoon composition is identical and that nobody could choose which platoon to join. Statistical tests reveal no significant differences in platoon composition by branch of service, education, or age. Second, there is no competition between the groups (or trainees) for evaluations or other resources. Relative performance evaluations were completed previously in candidate training. Third, despite random assignment to platoons, social ties form very quickly. In a questionnaire, officers in our study indicate that they spend significantly more time off duty with members of their own platoon. This is remarkable in itself, given that 79.8 percent of the trainees know people in other platoons, mostly from earlier stages of their training. Yet, they choose to spend most of what little off-duty time they have with members of their newly assigned group.<sup>1</sup>

### II. The Experimental Design

We conduct two experiments to examine the impact of random assignment to real social groups on cooperation and norm enforcement.

*Experiment 1 (Cooperation):* The game is a simultaneous prisoner's dilemma. The players, labeled A1 and A2, are each endowed with 20

<sup>1</sup> Results in this section are detailed in the working paper version of this study: Goette et al. (2006).

points. They simultaneously decide whether to keep the points or pass all of them to the other player. Passed points are doubled. Thus, keeping the points equals defection and passing the points equals cooperation.

Experiment 1 involved two treatments. In the in-group treatment, subjects interacted anonymously, except for being informed that the other player was a member of their platoon. The out-group treatment was the same, except subjects were informed that the other player was a member of another (specified) platoon. Group affiliation was clearly marked on the decision sheets. These treatments allow us to examine how group affiliation of the second player affects cooperation. In-group favoritism and intergroup hostility both predict less cooperation in the out-group treatment than in the in-group treatment.

*Experiment 2 (Norm Enforcement):* In Experiment 2, we add players B1 and B2, each endowed with 70 points. B1 can assign up to ten deduction points to A1, and B2 to A2. Each deduction point subtracts three points from the A-player. The B-players can condition their choices on the actions of A1 and A2. Thus, Experiment 2 incorporates the possibility of third-party punishment (Ernst Fehr and Urs Fischbacher, 2004) and is suited for examining how norm violations (i.e., defection) are punished and what the determinants of punishment are.

To examine the impact of group membership on norm enforcement, we vary the composition of players in each game. For the remainder of the paper, we refer to the group composition in Experiment 2 from B1's perspective. Thus, A1 always refers to the player that the B-player can punish, while we refer to the other A-player as A2.

Varying the group membership of A1 allows us to look for evidence of intergroup hostility. In the case of hostility, we should see more punishment when B1 is punishing an A1 player from a different platoon. We also study how punishment varies with the group affiliation of A2, the person affected by A1's actions. If B1 and A2 are from the same platoon, then B1 might punish A1 more harshly for defection against A2.

*Procedures.*—The experiment was conducted with paper and pencil in a large auditorium, three platoons at a time. Subjects were

ordered into the auditorium and did not know about the experiment in advance. Different platoons were seated in separate areas. In each session, if a subject was in an out-group treatment, the other player was from a platoon not present in the room. The experiment lasted 45 minutes and the subjects earned on average 17.10 Swiss francs (approximately \$13). There was no show up fee.

Overall, 228 subjects participated in the experiments. Of those, 116 were assigned the role of A-players and participated in Experiment 1. Half were assigned to the in-group treatment, and half to the out-group treatment. After participating in Experiment 1, these same subjects participated as A-players in Experiment 2. This procedure introduces a possible order effect for the A-players, but choices of the A-players in Experiment 2 are not of interest for our purposes. One hundred and twelve subjects were assigned the role of B-players. They participated only in Experiment 2 and were assigned to one of four treatments. We elicited B-player's deduction points using the strategy method, i.e., they specified how many points to deduct from their associated A-player for each possible combination of actions by A1 and A2.

After Experiment 2, we elicited beliefs about other players' behaviors in the treatments in which the subjects had participated. Finally, the subjects filled in a short questionnaire.

Special care was taken to ensure anonymity. Payoffs were mailed to home addresses ten days after the experiment, so subjects did not learn the outcome of the experiment until after the JOTP was over and they were no longer with their platoons.

### III. Results

We first present results from Experiment 1, showing the impact of randomly assigned groups on cooperation, and then present results of Experiment 2, on the effect of group membership on punishment.

*RESULT 1: Cooperation and expected cooperation of others is significantly higher in the in-group compared to the out-group treatment.*

While 69 percent cooperate if they are paired with an in-group member, only 50 percent do so

when playing with an out-group member. The difference is statistically significant (Fisher's exact test,  $p < 0.05$ ). Thus, in otherwise anonymous interactions, random assignment to real social groups leads to higher cooperation between members of the same group, compared to interaction between members of different groups.

This treatment difference is also reflected in subjects' beliefs. On average, subjects in the in-group treatment expect 57 percent of their own platoon members to cooperate, whereas subjects in the out-group treatment expect only a 41-percent cooperation rate from members of another platoon ( $t$ -test;  $p < 0.001$ ). In fact, the differential in cooperation is fully reflected in subjects' beliefs. Regressing the decision to cooperate on a dummy variable for the in-group treatment and also the expected cooperation rate, the in-group dummy becomes small and insignificant, whereas beliefs are strongly associated with the decision to cooperate.

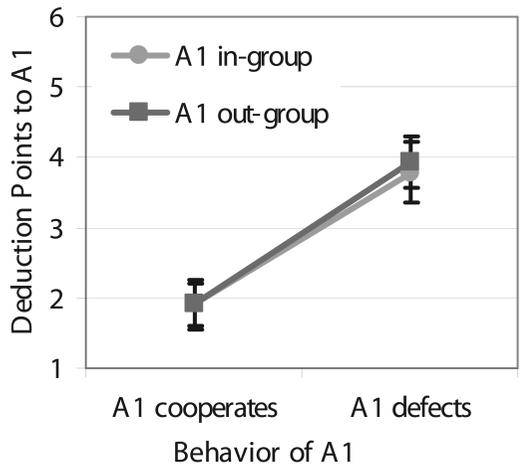
The evidence from Experiment 1 is consistent with either stronger prosocial preferences toward one's own group or hostility toward other groups. These two motives can be more easily separated in Experiment 2.

**RESULT 2:** *There is no difference in punishment of in- and out-group members.*

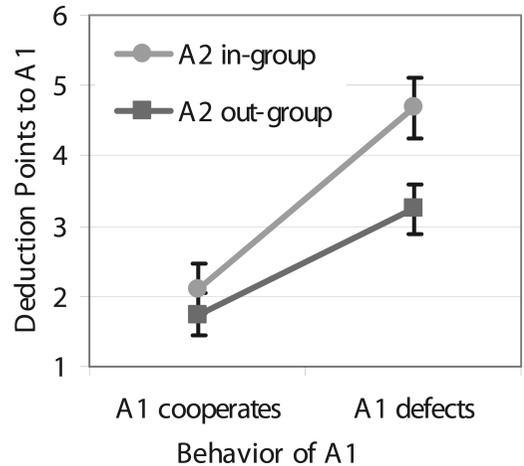
Figure 1, panel A, shows the punishment behavior of Bs in Experiment 2 as a function of A1's identity. The point estimates show that B1s assign the same deduction points, independent of A1's group affiliation. This holds whether A1 defects or cooperates.<sup>2</sup> Thus, we find no support for the conjecture that strong group ties, resulting from random assignment to groups, lead to hostility toward outsiders. Instead, our results point toward a different impact of group membership on punishment.

**RESULT 3:** *Punishment is stronger when defection affects an in-group member as opposed to an out-group member.*

<sup>2</sup> As is typical, cooperation is punished more strongly than defection ( $p < 0.001$ , standard errors adjusted for clustering of individuals). There is also some punishment of cooperation, possibly reflecting a desire to equalize the payoffs between players A and B.



Panel A: Norm Enforcement and the Identity of A1



Panel B: Norm Enforcement and the Identity of A2

FIGURE 1. THE IMPACT OF GROUP MEMBERSHIP ON THIRD-PARTY PUNISHMENT

Figure 1, panel B, shows punishment behavior of B1s as a function of A2's identity. B1 assigns significantly more punishment points to A1 for defection if A2 is from B1's platoon. This difference is statistically significant ( $p < 0.05$ , standard errors adjusted for clustering on individuals). Thus, group assignment increases willingness to enforce a norm of cooperative

behavior toward fellow group members, regardless of whether the defector is an in- or out-group member.

#### IV. Discussion and Conclusions

This paper tests whether mere membership in a group affects individuals' willingness to cooperate unselfishly, enforce norms, and punish outsiders vindictively. Our experimental design uses random assignment of individuals to real social groups, providing some of the first evidence without the confounding effects of selection into groups based on individual characteristics. It also provides a stronger group manipulation than in laboratory experiments using artificial groups without social content.

After only three weeks, random assignment to a group leads to the formation of social ties, and significantly higher cooperation rates within groups than between groups. In an experiment with third-party punishment, we find no evidence that group membership leads to vindictive punishment of outsiders, in contrast to a long-standing conjecture in sociology and social psychology (Durlauf, 1999) that mere membership in a group leads to between-group hostility. We do find that group membership increases willingness to enforce a norm of cooperative behavior toward fellow group members similar to what Bernhard et al. (2006) observe in Papua New Guinea. This shows that the behavior can arise even in very different cultural settings and in randomly assigned groups.

Our results imply that the group aspect of organizations has an important, additional benefit, fostering efficient behavior in the absence of, or in spite of, purely selfish incentives. Interesting questions for further research include: determining the optimal size of an organization or subgroups within an organization; and investigating whether demographic differences alone can explain the hostility observed in previous studies, or whether it takes the additional presence of strong social ties.

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