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Social Status and Influence:
Evidence from an Artefactual Field Experiment on Local Public Good Provision

Giovanna d'Adda*

PRELIMINARY DRAFT

30 May 2011

Abstract

I look at the effect of social status on transmission of pro-social behavior. In an artefactual field experiment conducted in northern Colombia I observe contribution to local biodiversity conservation. The design varies whether choice is observable or not and social status of observing/observed individuals. Status is derived from a social ranking exercise identifying formal and moral leaders within the community. I find that leaders have higher valuation of the common good and that their giving is less volatile in the face of exposure to participants contributing lower amounts. Social information on others giving is particularly effective when low status participants are able to observe leaders' choices. I interpret the results as evidence in favor of preference-based altruism and upward social comparison theories. The findings confirm those of laboratory experiments on status in a field setting and with naturally occurring leaders. The study has relevant policy implications in terms of targeting of development programs and questions the commonly held negative view of elites in developing countries.

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1. Introduction

The question of how information on others' pro-social behavior influences one's own is the topic of an empirical and theoretical literature spanning different social sciences. In economics, studies of charitable giving find a positive relationship between one's contribution and what others donate. This positive correlation is stronger when observed donations are by high status individuals (Bracha et al., 2010; Kumru and Vesterlund, 2010). The effect of providing information on what high status individuals do is acknowledged by charitable organizations, who often publicize donations by the social elite and start fundraising campaigns with the announcement of large contributions by well-known donors.

This paper contributes to the literature on social status and giving through the method of artefactual field experiments (Harrison and List, 2004). It considers status in terms of naturally occurring leadership and proxies it using the results from a social ranking exercise (footnote: Status is defined as 'relative rank in a hierarchy of prestige' by the Merriam-Webster Dictionary.). The setting is a charitable giving experiment that raised funds for a local biodiversity conservation project. Participants, matched in pairs on the basis of their status in the ranking exercise, could revise their donations having observed each other's contributions. Each participant was randomly assigned different partners, so that relative ranking within the pair changed exogenously during the experiment.

The results show that both donation levels and the tendency to conform are correlated with one's absolute and relative ranking. Leaders contribute more, are less influenced by information on others' giving and exert greater influence on other's donations than lower status individuals. Leaders appear to be aware of their responsibility as role models, since they raise donations when observed by lower-ranked participants. These findings are consistent with those of conventional experiments and confirm in a real world setting the positive impact of targeting local leaders on the level of local public good provided.

The choice of using an artefactual field experiment is motivated by the desire to generate policy relevant insights and to fill a gap in existing research. While maintaining a controlled environment, the experiment allows testing the effect of leadership with actual local public good users in a setting where authority is naturally occurring, as opposed to one in which leadership is exogenously induced in the laboratory. Numerous studies look at the effect of exogenous status in a laboratory setting. No other experimental study, to the best of my knowledge, looks at the role of natural leadership on local public good provision in a field setting. The focus on naturally occurring leadership and the methodology through which it is measured are novel contributions of this paper. Thanks to these choices, this study can provide an assessment of the external validity and policy relevance of laboratory research on leadership.

I start by offering an overview of the relevant theoretical and empirical literature on social information, status and charitable giving, and discuss different predictions of competing models of social information (Section 2). Then I describe the setting and the main features of the experimental design (Section 3), and discuss the empirical results (Section 4). I structure the interpretation of the results by giving a formalization of individual preferences consistent with the experimental findings (Section 5). I conclude with a discussion of policy implications, limits to external validity and directions for further research (Section 6).

2. Related literature

2.1. Theory

2.1.1. Models of conformity

Two classes of models predict a positive correlation between own and others' choices in charitable giving: the first is built around the notion of preferences for conformity, the second on that of social learning¹.

Preference-based models of altruism start from the idea that the difference between one's own and others' actions enters individual utility directly. Benabou and Tirole (2006) model other-regarding behavior as originating from a mix of reputational motives, intrinsic motivation and self-image concerns. Reputation and signaling theories rely on the assumption that people care about what others' think about them, and choose to behave pro-socially in order to gain approval (Hollander, 1990; Ellingsen and Johannesson, 2008; Andreoni and Bernheim, 2009; Ariely et al., 2009). Related concepts at the basis of theoretical models of giving are the desire to gain social acclaim (Becker, 1974), prestige (Harbaugh, 1998), or to signal one's own wealth (Glazer and Konrad, 1996). Factors motivating pro-social choices are not only external. Intrinsic motivation to contribute to a good cause and the desire to have a positive self-image are common features of theoretical models of pro-social behavior².

Information-based models of conformity rely on the notion that, when facing choice outcomes of uncertain value, agents look at what others do as an indicator of the quality of each alternative. Potters, Sefton and Vesterlund (2001) shows that past contributions can inform potential donors about the quality of the charity. Individuals use these donations as signals on which they base their contribution decisions. Such information effect results in a positive correlation between own and others' giving. Outside the charity literature, theories of social learning and herd behavior argue that individuals infer positive outcomes from a certain behavior by observing others' decisions to adopt it (Banerjee, 1992).

In predicting conformity, preference and information-based theories are observationally equivalent. The two theoretical perspectives yield different predictions on the effect of social status on conformity.

2.1.2. Social status and conformity

Both preference and information-based models of conformity allow for a correlation between social status, altruism and conformity. Existing status may be correlated with altruism. Moreover, people may derive different utility from approval, or may trust differently the information conveyed by other' choices, depending on the latter's social status. In both cases, the theory predicts that the social status of observed individuals influences one's degree of conformity. In the presence of information on others' choices, the two models are observationally equivalent. Where the two models yield different predictions is in the absence of such information.

Models of conformity based on information cannot make any prediction on the correlation between one's relative status and one's level of pro-social behavior in the absence of information on others' choices,.

¹ A different class of models predicts a negative correlation between others' and own charitable contributions. For an overview of this literature and a test of the sign of the correlation between own and others' giving, see Shang and Croson (2009).

² For a review of giving motives, see Vesterlund (2006).

Hypothesis 1a: Absent information on others' choices, there is no correlation between one's relative status and one's contribution.

On the contrary, if the utility from approval depends on others' status and the relationship between status and giving is common knowledge, preference-based models of altruism predict a correlation between relative status and giving even absent information on others' choices.

Hypothesis 1b: Absent information on others' choices, there is correlation between one's relative status and one's contribution.

I will test the alternative hypotheses 1a and 1b on the correlation between relative status and altruism absent information using experimental data. I am not aware of other empirical or experimental evidence testing these hypotheses using data on naturally occurring leadership.

The relationship between relative status and the degree of conformity assumes that social status enters the definition of individuals' reference group³. Sociological research argues that individuals compare themselves with those of others of similar social status. According to this perspective, social influence is decreasing in social distance. Vickrey (1962) discusses extensively the role of neighborhood effects on contributions. Outside of the literature on charitable giving, a number of studies uses the notion of reference group to model the relationship between one agent's choices and those of individuals in their social space (Duesenberry, 1949; Yitzaki, 1982; Frank, 1985; Manski, 1993). This class of models predicts that:

Hypothesis 2a: People compare themselves against same-status others.

Sociological research on upward social comparison and economic theories of relative deprivation claim instead that individuals look upward on the status ladder when making social comparisons (Frank, 1985; Wood and Taylor, 1991). A similar prediction is made on the basis of different mechanisms by research on leadership and pro-social behavior. There, leaders influence others' giving through their role as belief managers, as their donation choices shape followers' beliefs on others' contribution levels (Gaechter and Renner, 2005)⁴. The literatures on leadership and relative deprivation thus predict that:

Hypothesis 2b: People compare themselves against higher-status others.

I will test the alternative hypotheses 2a and 2b on social comparison using data on the relationship between conformity and relative status within the experiment.

2.2. Evidence

Three field experiments on social information in charitable giving are particularly close to this study. Using a fundraising campaign for a public radio station, Shang and Croson (2009) show a positive correlation between others' contributions and one's own. In a similar study, Frey and Meyer (2004) find that the share of people contributing to a charitable fund has a small and positive relationship with participation in the fundraising campaign. Finally, Alpizar and Martinsson (2010) use contributions to a National Park in Costa Rica to show the stronger effect of social information in increasing donation levels, relative to directly suggesting a contribution amount. In this study, I take the positive correlation between own and others'

³ A reference group is defined as 'any group that individuals use as a standard in evaluating themselves and their own behavior' (McGraw Hill online Sociology Glossary).

⁴ One mechanism through which this effect occurs is reciprocity. I will discuss this mechanism more in detail in Section 5.

contributions as starting point and explore the interaction between social status and the effect of social information on giving.

The empirical evidence on status and giving comes mainly from laboratory studies. Experiments find a positive effect of leadership in coordinating behavior, regardless of the way in which they induce status. Arbak and Villeval (2007) use a two-stage public good game to explore the effect of voluntary leadership. In their experiment, participants self-select as leaders by volunteering to contribute first to the public good. Voluntary leaders are more socially motivated. Their high contributions encourage imitation by followers and therefore support more efficient outcomes. Kumru and Vesterlund (2008) induce status in the laboratory by having participants perform a task and attributing status on the basis of performance. Aggregate contributions are higher when high status donors are followed by low-status partners: low-status followers are likely to imitate high-status leaders' actions. High status leaders appear to be aware of their influence as role-models and contribute more. Gaechter et al. (2009) design a two-stage voluntary contribution game in which leaders are randomly selected. They find a positive correlation between leaders and followers contributions, both when leaders are altruistic and when they are selfish.

The present study takes a different approach at studying leadership: instead of inducing leadership or status in the laboratory, the experimental design maintains a formal equality of participants' roles, but makes salient the different degree of authority which they are endowed with outside the experiment. This choice of design allows investigating how the influence of formal leadership compares to that of naturally occurring authority.

3. Setting and design

3.1. Setting

A total of 251 individuals from 8 villages took part in the study. The villages are located in different municipalities of the province of Monteria, in the Northern Coast of Colombia. They are similar in terms of economic and environmental characteristics. Farming and fishing are the main economic activities. Rice, maize, yam, beans and plantain are grown across the region. Flooding and droughts are both frequent causes of harvest loss. Health posts and primary schools are present in 4 and 6 of the villages respectively. Access to other types of infrastructures differs across the sample. In particular, the largest village is reached by paved road and piped water, while the others are not. Regardless of the type of infrastructure, participants from all the communities mention contamination of drinking water as a major issue.

A local farmers' cooperative, ASPROCIG, acted as entry point to the communities. Representatives of ASPROCIG delivered invitations to their fellow community members. Since no show-up fee was paid to encourage attendance⁵, the invitation process followed a series of guidelines in order to reduce selection biases. Participants had to be at least 18 years old and responsible for financial decisions within the household. We invited preferably the household head or the spouse and tried to limit participation to 1 person per family. An average of 20 individuals, from a minimum of 18 to a maximum of 27, participated to 12 experimental sessions.

⁵ ASPROCIG requested that no show-up fee should be paid. They were afraid that being paid to participate to a community meeting, which involved a decision about a common project, may lead people to always expect a private return from engaging in public initiatives.

Table 1 shows participants' average characteristics. Their age and education attainments are in line with country averages. Almost 40% of participants are women. The majority are smallholder farmers, earning an average of 17.5 USD over the previous week. Almost 80% of them reports having suffered income losses due to environmental shocks over the previous year, mostly flooding, droughts and water contamination.

[Insert Table 1 here]

3.2. Design

Each session involved a ranking exercise, a decision stage and an individual survey. An experimenter conducted the session, read out the instructions and answered questions from participants. Two assistants helped with the logistics and made sure that participants followed the experimental instructions. Sessions took on average three and a half hours.

3.2.1. Ranking participants' social status

The ranking exercise was aimed at isolating three dimensions of authority within the village: formal, moral and traditional. By formal authority I mean the dimension of social status associated with formal leadership roles and political power. Moral authority is related to respect and trust in one's ethical judgment. Finally, traditional authority refers to the qualities that anthropologists associate with leadership among indigenous societies in Latin America: the ability to speak in public and tell stories (Clastres, 1974). By isolating these three types of authority, I investigate whether protection of local common resources is subject to formal rules of behavior, ethical concerns or traditional norms.

In order to isolate the different dimensions of authority, I presented participants with three hypothetical situations. The starting point for the formal authority ranking was the following: "The mayor has accepted to meet representatives from the village to discuss the most serious problems it faces (e.g. roads and drinking water). Who among you should go to talk to the mayor?". The moral authority ranking presented participants with the following choice instead: "There is a village member who is harming everybody with his behavior (e.g. contaminating the water with waste and chemicals). Who among you should go to talk to him about the harm he's doing to the community?". Finally, the traditional authority ranking was based around a third situation: "There is a municipal fair in which people from all villages are invited to tell stories, jokes and sing. Who among you should represent the community at the municipal fair?".

For each ranking, participants selected their representatives together. Each person could name someone else as representative and the group would approve or reject the candidature. The approved candidates would stand in front of the others. As soon as the number of candidates reached one-third of participants, the experimenter interrupted the process. She asked whether everyone agreed with the selection or whether more deserving candidates had been left out, and made changes according to participants' answers. This group represented the first choice as village representatives. Then the experimenter told participants that this first group would not be able to go to the meeting, and asked them to select a second group as substitutes. The process was repeated. The remaining participants went to form a third group. The

ranking exercise resulted in three equally sized groups for each hypothetical situation. The experiment assistant recorded the composition of each group before moving on to the next.

The ranking process was conducted three times, once for each hypothetical situation. Their order was randomized across sessions⁶. At the end of the exercise, the experimenter led a group discussion on the qualities of top-ranked individuals, for each ranking type, and recorded the answers. Finally, one between the formal and the moral authority ranking was randomly drawn to be implemented⁷. Participants were then divided into groups according to it, seated in three different rows and given colored cards to mark their group assignment. First choices - participants in the top group - received Orange cards; the substitutes - participants in the middle group - received Blue cards; and the rest - bottom-ranked individuals - received Coffee-colored cards. Before proceeding to the decision stage, the experimenter reminded everyone of the ranking used to divide them into groups.

3.2.2. Contribution decision

During the decision stage, participants repeated the same choice a total of 13 times, divided across 5 decision rounds. The first round involved 1 decision only, taken by each participant in private. Round 2 to 5 were made of 3 decisions each. Each decision was still taken individually, but participants were given a partner. Pairs changed each round, and nobody had the same partner twice. The only information given about one's partner was her ranking, i.e. the color of the group she belonged to. Pairs were formed on the basis of participants' rankings.

The experimental design varied exogenously pair composition on the basis of participants' ranking. I describe here the pair formation process and illustrate it through an example. In round 2, one possible group combination was randomly drawn to be implemented. In round 3, couples changed by drawing a second combination. In round 4 pairs were formed according to the combination still left to implement. Finally, in round 5 the color combination of round 2 was repeated with different partners. A possible sequence was the following: in round 2 each member of the Orange group was paired with one member of the Blue group, while members of the Coffee group were paired among themselves; in round 3 members of the Orange group were paired with members of the Coffee group, while participants in the Blue group were paired among themselves; in round 4, members of the Blue and Coffee groups were paired to each other, and members of the Orange group were matched among themselves on the other; finally, in round 5, the round 2 combination was repeated. The random draws in round 2 and 3 decided which sequence of group combinations would be implemented.

The design introduced a second variation. Within each round, decisions differed in terms of their observability and of the information available on partner's preferences at the time of choosing. When taking the first decision of the round, participants knew only their partner's ranking, which appeared as a colored square on their decision sheets. They also knew that their choice would be shown to their partner and that, in turn, they would observe their partner's contribution. Before taking the second decision, each participant was

⁶ The randomization was between the formal and the moral ranking, while the traditional ranking was always conducted second. This choice was motivated by the desire to separate the moral and formal rankings, one of which would be implemented in the following stage of the experiment.

⁷ Issues of statistical power forced me to leave out the traditional authority ranking from the draw and focus on the dimensions of authority which I expected to be more salient in the study area.

shown her partner's contribution in the first decision. Then the experimenter asked everyone to write again their contribution choice on the decision sheet, reminding them that the second decision would also be observed by their partners. Finally, before taking the third decision, again each participant was shown her partner's contribution in the second decision and asked to write her choice a third time. The third decision differed in that participants knew that it would not be observed by their partner. Throughout the round, the experimenter reminded participants that they were free to contribute whatever they wished, regardless of their previous choices. This process was repeated from the second to the fifth round, for a total of 12 decisions.

Each participant had to decide how to allocate a sum of 20,000 Pesos⁸ between herself and a biodiversity conservation project. Participants would keep the difference between contribution and endowment. To ensure that each of the 13 decisions of the session would be taken seriously, the experimenter made clear that each choice had the same chance of being paid. A random draw at the end of the session decided which one would be implemented.

Participants' contributions financed the establishment of a tree nursery in a primary school. A random draw at the end of the study determined which of the schools serving the sample villages received the funds. Tree nurseries help biodiversity conservation in different ways. First, native trees grown there are used to reforest endangered ecosystems, such as canal banks, where they prevent soil erosion. Second, these ecosystems used to be habitats for endangered animal species, which left following deforestation. Restoring them would bring back native fauna in the area. Third, schools use tree nursery to teach environmental education to kids. Children learn about native species and how they can help preserve the soil and limit the use of chemicals. Finally, everyone in the community can plant trees from the nursery on their own land.

4. Empirical strategy and results

This section presents empirical results. A preliminary remark on methodology is needed. All the regressions shown in this section assume that the observations are clustered at the experimental session level. I correct for clustered observations in the regressions using cluster-robust standard errors. In doing this, I face the issue of having too few clusters, since I conducted only 12 experimental sessions. Having few clusters leads to under-estimating the coefficients' standard errors⁹. I check the robustness of the results to different specifications suggested in the literature to address this issue: bootstrap and jack-knife estimation clustering at the session level and, whenever possible, two-way clustering at the individual and partner's level¹⁰. The bootstrap and jack-knife specifications are not immune to the issue of under-estimating standard errors either, due to the small number of observations within clusters. In the main text, I generally show regressions with cluster-robust errors, since this is the specification that generates the larger standard errors. I point out all instances in which other methodologies yield different results, although results are by and large robust to the different specifications used. When results across specifications differ in a meaningful way, I report the most conservative estimation in the main text and alternative specifications in the Appendix.

⁸ About 10 USD, one and a half times the daily farm laborer's wage.

⁹ For a discussion of the 'too few clusters' issue and on how to address it, see Cameron et al. (2008) and Cameron and Miller (2010).

¹⁰ I tend to trust the two-way clustered results somewhat less than the ones from other specifications, because they hinge on the assumption that decisions within a session are uncorrelated if taken by two individuals who were not paired nor shared a partner.

The empirical analysis in this session follows a series of steps. First, I examine individual characteristics correlated with ranking and giving (Section 4.1). Then I focus on Hypothesis 1 by looking at how relative status affects giving with and without information on others' altruism levels (Section 4.3). I then confirm the presence in the data of a positive correlation between own and others' choices, as shown by previous studies on the effect of social information, and test Hypothesis 2 by analyzing how this relationship depends on status (Section 4.2).

4.1. Demographic and socioeconomic correlates of status and giving

Participants ranked themselves according to three different criteria, as described in Section 3.2.1. The goal of the formal, moral and traditional authority rankings was to isolate corresponding dimensions of authority. During the discussion, participants listed the main qualities of top-ranked individuals for each ranking. A qualitative assessment of the results from the discussion shows that the three rankings were able to isolate different leadership profiles: individuals at the top of the formal authority ranking are strongly engaged in the life of the community, with a track record of solving common problems and with good links with municipal authorities; those at the top of the moral authority one are good speakers, patient, diplomatic, honest and in good relationships with fellow community members; finally, top-ranked individuals in the traditional authority classification are joyful, funny, talented, charismatic and full of enthusiasm. The three rankings are correlated but not collinear. 50% of top-ranked individuals in the formal ranking are also in the top group in the moral ranking. Pairwise correlation between the formal and moral ranking is 34.9%, between the formal and traditional ranking is 13%, and between the moral and traditional ranking is -14.2%. All correlations are significant at the 10% level. This preliminary overview is reassuring of the ability of the three rankings to distinguish between different leadership profiles¹¹.

Table 2 explores individual characteristics correlated with the different rankings. It shows results from the following ordered logit regression:

$$Prob (AbsStatus_i) = \beta_1 + \beta_2 X_i + \beta_3 Vill + \varepsilon_i \quad (1)$$

where $AbsStatus_i$ is 3 if i is in the top group, 2 if she's in the middle group and 1 if she's in the bottom group, $Vill$ are village fixed effects, and X_i is a vector of individual characteristics: age, gender, marital status, household dependency ratio, a dummy equal to 1 if i has no kids, education, per capita household income over the previous week, roles in community associations and ASPROCIG membership. The regression is run for the formal, moral and traditional rankings in Columns 1, 2 and 3 respectively. Column 4 presents the same regression with average rank as dependent variable.

Age and education are positively correlated with status in the formal and moral rankings. Having roles in associations increases the probability of being ranked high in terms of formal authority. The coefficient on being a woman is negative throughout, and significant for moral and average ranking. Only

¹¹ Table A1 reports for each ranking the top five qualities of top group members mentioned.

roles in associations show a significant, and positive, correlation with status in traditional ranking¹². Overall, regression results are consistent with the purpose of the different rankings. Being educated and occupying positions in community organizations is more relevant to gain status in the formal than in the moral authority ranking, while age matters more for moral authority. The fact that almost no proxy of socioeconomic status is significantly correlated with traditional ranking is hardly surprising. The qualitative assessment conducted above shows that traditional authority is associated with being funny and enthusiast, qualities for which observable proxies are hard to find. Age, gender, education, roles in community associations and ASPROCIG membership are significant correlates of average ranking.

[Insert Table 2 here]

Now I explore which characteristics are correlated with giving in the experiment. Table 3 shows results from the following regression:

$$Contrib_i = \beta_1 + \beta_2 X_i + \beta_3 Vill + \varepsilon_i \quad (2)$$

where X_i is the same vector of individual variables used above. The dependent variable is contribution in the private decision in Column 1 and average contribution over round 2 to 5 in Column 2. ASPROCIG members contribute significantly more in both specifications. This result is easily explained: ASPROCIG is a farmers' cooperative whose mission is pursuing income growth through the protection and enhancement of traditional crops and farming techniques. ASPROCIG considers biodiversity conservation as a necessary condition for development, not as a constraint. The ratio between the number of kids and the number of adults living in a household affects contribution negatively: the variable is significantly correlated with private giving under all estimation techniques, and with average contribution under bootstrap and jack-knife ones only. The effect of the dependency ratio is a likely result of its impact on household needs. However, having no kids is negatively correlated with giving, both in private and on average, though the correlation is significant only under the bootstrap and jack-knife specifications¹³. This result may be due to the nature of the biodiversity project, which directly benefits kids. Having kids may also increase people's concern for the future in general, and environmental sustainability in particular (Dupont, 2004).

[Insert Table 3 here]

4.2. Status and altruism

This subsection analyzes the presence of preference and information-based altruism in the data. Testing Hypotheses 1a and 1b - on the relationship between relative status and giving in the absence of information on others' choices- requires two steps. First, I show that absolute status and altruism are correlated. Second, under the assumption that the sign of such correlation is common knowledge, I demonstrate that the

¹² The coefficients on the female, married and no kids dummies are significant in the formal ranking regression with bootstrap clustered errors; the coefficient on the female dummy is significant in the formal ranking regression with jack-knife clustered errors. For regression results under different specifications, see Table A2.

¹³ See Table A3 for regression results under different specifications.

relationship between giving and relative status, absent social information, is consistent with it. In what follows, I test these relationships in the data, in order to assess whether preference-based mechanisms are at work in the study setting.

Figure 1 shows contribution over time by ranking group. Giving by all three groups is high in the first decision and then diverges, decreasing for middle and, even more, low status participants. Status appears to matter as soon as it is made salient within the decision environment, i.e. from decision 2 onwards. The absence of correlation between status and giving in the private decision may be due to other factors besides salience. In particular, confusion and experimenter demand effects may play a role, since the private decision was always the first one to be taken. Indeed, the variance of contributions is higher in the private than in later decision rounds. On the other hand, we should assume that confusion and experimenter demand effects influence participants differently depending on their status in order to explain the fact that low status participants give significantly less when part of a pair than in private, while high status ones giving is quite stable over time. In order to abstract from potential confounding factors, in what follows I will look at average giving by status group excluding the first decision of the session.

[Insert Figure 1 here]

Average giving in rounds 2 to 5 is significantly different across status groups. When contributions are not observed, top-ranked participants give on average 7562 Pesos (sd. 341) middle-ranked ones 6856 Pesos (sd. 304), and bottom group members 5699 Pesos (sd. 275). The differences in giving across groups persist when choices are observable and are all significant at the 1% level, apart from the one between top and middle groups when choices are observable (p -value = .061). In general, making choices observable results in higher and more homogeneous average contributions by all groups¹⁴.

Contribution levels within each status group do not significantly differ depending on whether choices are observable. This result is confirmed by regression analysis, focusing on the second and third decisions of each round and controlling for the effect of observed partner contribution¹⁵. This exercise allows comparing observable to unobservable decisions, holding constant the salience of status. Participants increase giving relative to higher-ranked members when observed, but not significantly. Whether choice is observable seems to matter only for bottom group participants when the formal ranking is used, possibly hinting to the fact that low status participants are more concerned about sanctions from formal than moral leaders. The presence of significant differences in giving across status groups, regardless of whether choices are observed or not, suggests that intrinsic motivations to contribute, related to status, are at work in this setting¹⁶.

¹⁴ Table A4 reports mean and sd of giving by group when choice is private, observable and unobservable.

¹⁵ The results are shown in Table A5. The regression main independent variables are i 's rank, a dummy equal to 1 if the decision is observed and the amount contributed by partner in the previous decision. Controls are included for private contribution, individual characteristics, round and village fixed-effects. Columns 1 and 2 pool all sessions together, Columns 3 and 4 consider only sessions where the formal ranking was used, Columns 5 and 6 only those where the moral ranking was used.

¹⁶ Examples of intrinsic motives consistent with the theoretical framework adopted here are valuations of biodiversity conservation and self-image concerns. Unfortunately, the data available do not allow testing whether absolute ranking is positively correlated with preferences for conservation, or whether the contribution level required to preserve self-image positively depends on status.

The correlation between absolute status and behavior within the experiment may be due to members of different ranking groups having different unobservable characteristics and preferences; or to ranking itself having a direct effect on behavior. For instance, top-ranked participants may feel obliged to substitute for their lower-ranked partners, and bottom-ranked participants may feel morally entitled to give little, regardless of their individual preferences¹⁷. In order to test whether ranking or characteristics associated with it are behind the experimental results, I exploit the fact that participants were ranked along 3 dimensions, that only one ranking was randomly chosen to be implemented, and that participants' status differed across rankings.

I find that participants in the top group contribute higher amounts, regardless of ranking type and of whether ranking is salient or not¹⁸. The result holds also for top-ranked participants in the traditional ranking, which was never made salient in the decision stage of the experiment. Making status salient is associated with an increase in giving, but the effect is not significant. This result supports the idea that status is correlated to giving through individual qualities.

I have shown the presence of a positive relationship between status and altruism: the higher one's ranking, the more she donates, regardless of whether choices are observable or not, and of whether status is salient or not. In order to verify the presence of preference-based altruism, I now need to show that participants give more when paired with higher-ranked partners than with partners of lower or equal ranking, even before knowing the partners' contribution level. Recall that the alternative hypothesis of information-based conformity does not predict any relationship between relative status and giving when others' choices are not known.

In order to test whether the preference mechanism is at work in this setting, I use data from the first decision of each round, when participants knew their partners' status, but not their previous contributions. In particular, at the start of a round participants did not know what their partner gave in previous decisions. I test for the presence of correlation between relative status and giving at the beginning of a round through the following regression:

$$Contrib_i = \beta_1 + \beta_2 RelStatus_i + \beta_3 PrivContrib_i + \beta_4 X_i + \beta_5 Rd + \beta_6 Vill + \varepsilon_i \quad (3)$$

where $RelStatus_i$ is the set of dummy variables capturing pair composition: top with middle, top with top, middle with top, and so on. Bottom with bottom is the omitted category. $PrivContrib_i$ is individual donation in the private decision, a proxy for individual intrinsic valuation of the outcome. Rd and $Vill$ are round and village fixed-effects respectively. I also control for individual fixed-effects or individual characteristics in the regressions to isolate the effect of changing relative status on giving at the start of a round. The set of individual controls X_i – age, gender, education and organization membership- will be included in regressions

¹⁷ Recall that the absolute status variable used so far in the analysis does not simply capture ranking. Being in the top, middle or bottom group was associated to other events which may have had an effect on behavior. According to the ranking selected to be implemented in the experiment, participants were given a colored card and instructed to sit in a row with other members of the same group, separated from other groups.

¹⁸ In Table A6 i's contribution - and probability to conform, which will be discussed below- are regressed on i's status in the formal, moral and traditional rankings, interacted with variables equal to 1 if the formal and moral rankings are implemented respectively. The regression controls for lag partner contribution, private contribution and the usual individual controls in Column 2.

throughout this section in order to control for individual traits related to status. Table 4 presents regression results. The specification in Column 1 controls only for private giving, Column 2 replaces it with individual fixed effects, while Column 3 controls for private giving and individual characteristics.

Absolute status matters in general: top-ranked participants give more than participants in the middle group, who in turn give more than participants in the bottom group. Relative status matters too, although not for everyone. Wald tests of pairwise differences between coefficients show that bottom group individuals behave differently depending on their partner's status. They give more when their partner is in the top than in the bottom group. Although the difference is only marginally statistically significant (p-value of Wald test of equality of coefficients: .105), it represents a sizeable amount: mean contribution by low status participants is about 4280 Pesos when they have a top-ranked partner, while it is 3550 Pesos when the partner is a fellow bottom group member¹⁹.

[Insert Table 4 here]

An interpretation of the results consistent with the theoretical framework adopted here is the following. Giving may send a positive signal on one's qualities, and individuals may be more eager to impress high than low status peers. The common knowledge that high status people are more generous in their donations would thus lead one to increase giving in the presence of a higher-ranked partner in order to gain her approval. The fact that contributions differ depending on relative status in the absence of social information suggests the validity of Hypothesis 1b. The evidence presented here does not directly test the presence of information-based conformity. However, we can infer that preferences and information mechanisms concur to determine the effect of status on peer effects from the fact that the magnitude of the correlation between relative status and giving is higher when social information is present than when it is not (as shown in Section 4.3 below). Information-based models, such as learning ones, are certainly relevant in this setting. However, this subsection has shown that preference-based mechanisms are also at work.

4.3. Social information and social status

Preference and information-based models of altruism predict a positive correlation between own and others' contributions. Previous studies on social information show the empirical relevance of this relationship. I check whether this finding is confirmed in the experimental data by looking at how participants adjust their contribution after receiving information on partners' choice. We expect to observe participants revise contributions downwards after giving more than their partners in the previous decision, and vice versa.

Contribution revisions respond to the sign of lag relative donation²⁰. Almost 61% of upward revisions (386 cases) occur when participants gave less than their partners in the previous decision, while the corresponding figure is 27% (172 cases) when participants gave more than their partners in the previous decision. These figures are reversed when we consider downward revisions, 60% of which follow positive lag relative contributions. Participants thus appear to react similarly to positive and negative lag relative

¹⁹ Top group members' behavior is consistent with their function as role-models: they give on average 500 Pesos more when paired with a lower-ranked partner than when their partner is a fellow top-group member. The difference is not statistically significant: the p-value of the one-sided t-test is .211.

²⁰ Table A7 summarizes the results reviewed in this paragraph.

contributions. The sign and magnitude of the relationship between contribution revision and lag relative giving is not driven by individual characteristics²¹. Figure 2 presents the result graphically: it shows the share of participants who increase, decrease or keep constant their donations depending on whether they gave more, less or the same as their partners in t-1. The figure confirms that the majority of participants indeed behave in a reciprocal manner. It also shows the presence of a sizable minority whose behavior is opposite. Below I test whether such heterogeneity in reciprocity is linked to participants' status.

[Insert Figure 2 here]

If the effect of social information depends on a participant's absolute or relative status, we expect participants to react differently to their partners' choices depending on their relative status. In particular, Hypotheses 2a and 2b make different predictions on the magnitude of the social information effect depending on relative status. Hypothesis 2a, based on reference group theory, predicts that conformity will be stronger towards others with similar status level. Hypothesis 2b instead predicts the tendency to conform to be stronger towards higher-ranked others, since theory claims that people look up when making social comparisons. I test these behavioral predictions through the following regressions, presented in Table 5:

$$\begin{aligned}
 Prob(Y_{it}) = & \beta_1 + \beta_2 RelStatus_i + \beta_3 Gavemore_{it-1} + \beta_4 Gaveless_{it-1} + \beta_5 Status_i * Gavemore_{it-1} + \beta_6 \\
 & Status_i * Gaveless_{it-1} + \beta_7 X_i + \beta_8 Rd + \beta_9 Vill + \varepsilon_{it}
 \end{aligned} \tag{4}$$

where the dependent variable Y_{it} is the probability to revise contributions upwards in Columns 1, 2 and 3, and to revise them downwards in Columns 4, 5 and 6. $Gavemore_{it-1}$ is equal to 1 if i gave more than partner in the previous decision, $Gaveless_{it-1}$ is equal to 1 if i gave less than partner in the previous decision. $RelStatus_i$ is relative ranking, which I proxy through a variable equal to -1, 0 or +1 if i 's status is respectively lower than, equal to, or higher than j 's status. I interact this variable with the $Gavemore_{i,t-1}$ and $Gaveless_{i,t-1}$ dummy variables. The omitted category in all regressions is lower relative ranking, which allows me to focus on the behavior of higher-ranked participants, consistent with the focus on leadership of this study. Round and village fixed-effects are included in all specifications. Columns 2 and 5 control for individual fixed-effects, in order to examine the effect of changing relative status on contribution revision by the same individual. Columns 3 and 6 use the same set of individual controls described above.

The tendency of individuals to conform to partners' decisions is confirmed: participants are more likely to revise donations upwards after giving less than their partners, downwards after giving more. The opposite signs of the $Gavemore_{i,t-1}$ and $Gavemore_{i,t-1} * Higher_i$ coefficients imply that the tendency to conform is weaker for individuals with higher than lower relative status. The result does not hold for upwards revisions, as the coefficient on the interaction term $Gaveless_{i,t-1} * Higher_i$ is never significant. This outcome is consistent with a scenario in which low-ranked participants are ready to revise giving when they realize that

²¹ Table A8 in the Appendix shows results from a regression of the probability to increase and decrease giving on lag relative contribution, round and village fixed effects, and individual controls. The results are robust to different estimation techniques and there are no significant differences in behavior depending on the ranking used. In Table A8 relative lag contribution is interacted with dummies for the type of ranking used. The tendency to conform is not stronger under any specific ranking.

approval by high-status partners can be bought more cheaply than they thought, but are probably less able or willing to sustain higher prices for it.

The result observed is not a by-product of the effect of absolute status on the tendency to conform. Although the effect of social information depends on absolute rank²², regressions including individual fixed-effects show the independent role of relative status: given absolute ranking, changing an individual's relative status affects her tendency to conform to others' choices. Bottom-ranked participants, for instance, behave differently when paired with higher-ranked partners than with fellow bottom group members. Moreover, the relationship between relative status and conformity appears driven by individual characteristics associated with status, and not by experimenter demand effects, as demonstrated by the regression analysis exploiting the salience of one dimension of status within the experiment²³.

[Insert Table 5 here]

The results shown in Table 5 support Hypothesis 2b: behavior change is stronger when social information concerns the choices of leaders. The small and insignificant coefficient of $Gavemore_{i,t-1} * Same_i$ leads to rejecting Hypothesis 2a: social information on equally-ranked others has no effect on choice revision.

Disaggregating relative ranking into pair specific dummies yields similar results, presented in graphical form by Figure 3²⁴. The blue (red) bars in the graph map the net effect of being in a certain pair, facing a positive (negative) lag relative contribution and their interaction. For instance, the blue bar corresponding to the Bottom-Top pair on the x-axis represents the sum of the $Gavemore_{i,t-1}$, $Bottom-Top_i$ and $Gavemore_{i,t-1} * Bottom-Top_i$ coefficients on the probability to decrease giving from t-1 to t. Its size relative to that of the blue Bottom-Bottom bar means that bottom group individuals are more likely to revise their contribution downwards after giving more than the partner if the latter is in the top group than if she's in the bottom group.. The highest level of reciprocity is displayed by bottom-ranked participants facing higher-ranked partners. The increasing size of the blue bars as we move to the right, i.e. towards pairs formed by lower-ranked individuals, confirms negative correlation between status and degree of reciprocity. A similar trend can be observed for the red bars. Their smaller size confirms the lower frequency of upwards revisions observed above.

²² Table A9 shows logit regressions of the probability to increase (Column 1 and 2) and decrease (Column 3 and 4) giving on absolute status. It shows results from the cluster-robust specification, with and without controlling for individual controls X_i . The likelihood that participants in the top group increase giving after donating more than their partner is higher compared to that of bottom-ranked participants doing the same. However, top-ranked individuals are still less likely to react to a positive lag relative contribution by increasing their own donation. A similar conclusion can be reached by looking at Columns 3 and 4. These results are robust to the inclusion of individual characteristics correlated with status.

²³ See Table A6. For a description of the regression equation and variables, see footnote 18.

²⁴ The graph is based on a regression similar to (4), where the relative status variables are replaced by a set of dummy variables, one for each type of pair that was formed: bottom with bottom, bottom with middle, bottom with top, and so on. Table A10 shows regression results for the probability of revising donations downwards. Top group participants are less likely to decrease contribution when paired with middle or bottom-ranked partners who gave less than they did in the previous decision. The coefficient on the interaction term is not significant in all specifications. Top group participants' level of reciprocity appears to be particularly low towards lower-ranked partners, while bottom group participants are responsive to the choices of higher-ranked partners.

[Insert Figure 3 here]

The results from this section are consistent with research on leadership and relative deprivation, showing how individuals tend to compare themselves with others placed higher on the status ladder. Upward social comparison translates in this study in the tendency of low status participants to look up to high status ones to judge the appropriateness of their choices, and in high status participants' failure to adjust to the choices of lower-ranked partners.

5. Individual preferences

The evidence presented in the previous section proves that the relationship between social status and charitable giving is at least in part based on individual preferences for conformity. The models of pro-social behavior reviewed in Section 2 offer various formalizations of such preferences. The goal of this section is to present one formalization consistent with the empirical results, which relies on the notion of reciprocity.

Reciprocity is defined as the conditional obligation to be kind in return to kind actions, and unkind in return to unkind ones (Fehr and Gaechter, 2000). If this concept extends to charitable giving, then it causes one's contributions to be positively correlated with those made by others (Potters et al., 2001). A simple formalization of reciprocity in individual preferences is given by Levine (1998). There, agents value others' wellbeing depending on their own and on others' perceived level of altruism, which is revealed through their actions.

Consistent with the experimental design, let the setting be one in which individuals interact in pairs. Each individual in a pair derives utility directly and indirectly from a given action. Direct utility depends on one's intrinsic valuation of the action. Indirect utility depends on the partner's utility. Following Levine's notation, i 's adjusted utility can be expressed as:

$$v_i = u_i + [(a_i + \lambda a_j)/(1 + \lambda)] u_j \quad (5)$$

where $-1 < a_i < 1$ and $0 \leq \lambda \leq 1$. The parameter a denotes individual altruism level: if $a_i > 0$, i is altruistic; if $a_i = 0$, i is selfish; and if $a_i < 0$, i is referred to as spiteful. The parameter λ reflects the fact that an individual may view her partner differently depending on the latter's level of altruism. If $\lambda = 0$ an individual is purely altruistic, selfish or spiteful. If $\lambda > 0$, i 's utility incorporates an element of fairness: i is willing to be more altruistic towards j if j is more altruistic towards her. The bounds on the size of a and λ are sufficient conditions to ensure that nobody has higher regard for the other than for herself.

Individuals are drawn independently from a population where altruism is distributed according to the function $F(a_i)$. One's own altruism coefficient is private information, whereas the distribution F is assumed to be common knowledge. Levine consequently models the situation as a Bayesian game augmented by private information about types, i.e. altruism levels. Individuals convey information about their own type through their actions. If individuals are not purely altruistic ($\lambda > 0$), one's actions may change her partner's attitude towards her.

I introduce status into individual preferences in two ways, consistent with the empirical results. First, altruism depends on social status: $a_i = a(s_i)$. If status and altruism are linked, then also the distribution

function of altruism will depend on status: $F(a_i) = F(a(s_i))$. Second, the regard that one has towards her partner depends on one's own and the partner's status: $\lambda = \lambda(s_i, s_j)$. This equals to saying that the same choice may trigger different reactions depending on the chooser and observer's status. Within the setting of this study, we have found that the function a is increasing in s and that the function λ is decreasing in the difference between i and j 's status.

I now suggest one way in which preferences could generalize if we considered an N agents setting. This generalization is necessary because, in a setting such as the one analyzed in this study where N agents interact and contribute to a charitable cause, it is restrictive to assume that an individual will compare herself only to the person she is currently interacting with. Each individual will rather consider the information coming from the choices of all the agents she observes and will weigh this information differently depending on the social status of every observed agent. λ will thus come to denote the vector of weights given by i to the actions of each of the other N agents' choices. Generalizing (5) to a N agents setting yields the following specification of individual preferences:

$$v_i = u_i + \sum_{j=1}^N [(a_i + \lambda_j a_j)/(1 + \lambda_j)] u_j \quad (6)$$

These preferences yield predictions consistent with the empirical results through a simple and parsimonious specification. Alternative formulations of individual preferences are obviously possible. Similar behavioral predictions derive from signaling models of altruism (Benabou and Tirole, 2006), or models of conformity (Clark and Oswald, 1998). Status could also enter preferences differently, for instance as a parameter of the direct utility function. Nevertheless, the goal of this study is assessing whether social status influences behavior transmission, not distinguishing between different forms of status-related heterogeneity or psychological motives behind interpersonal influence. The formalization of individual preferences sketched here is therefore adequate to give structure to our thinking about the issue and the empirical results.

6. Conclusions

This article has shown that status has a role in behavior transmission. The main findings are that low status individuals conform to their high status partners, and that top group members give more and are less likely to revise their contribution downwards when they observe low status partners giving less. The presence of a high status person leads to an increase in total contribution by a pair: mean total donation is over 14,300 Pesos when at least one of the pair's members is in the top group, and 12,700 Pesos otherwise. This difference is statistically significant at the 1% level. My findings are consistent with the ones of laboratory experiments on leadership and status (Kumru and Vesterlund, 2008; Gaechter et al., 2009). The key difference with respect to traditional laboratory studies is that here status captures actual dimensions of authority within the community.

It is an established fact in sociology that innovation processes take off when opinion leaders and highly connected individuals decide to adopt (Rogers, 1962; Katz and Lazarsfeld, 1955). In practice, identifying these key individuals in unfamiliar settings may be challenging and costly. This study presents two solutions to the targeting problems. First, it shows that a simple ranking exercise can help identify

natural leaders within a community. The effectiveness of this methodology could be interestingly tested in different settings. Second, by showing that formal leaders can foster diffusion of behavior through their example to community members, this study suggests that policy makers can reach the broader population through interventions targeted to local leaders.

The results from this study go against conventional wisdom in development economics. The literature on community driven development warns against the risk of elite capture of development programs and looks at the power of local elites as a negative factor. I show instead that elites can play a positive role. The results may depend on the way leaders are selected or on other social and cultural features of the study area. The external validity of my results could be interestingly investigated by repeating the experiment in settings with different leadership selection processes and characteristics.

Generalizability of my results could be interestingly explored along two other dimensions, which would address potential limitations of this study. First, the positive role played by local leaders in the experiment may depend on the design of the study. Before deciding how much to contribute, participants discussed the qualities of top group members for each ranking. By spelling out what was expected of them, the discussion may have influenced top group members' behavior. The notion that placing responsibility for the common good in the hands of local elites could have a positive effect on their conduct has great policy relevance and deserves further empirical testing.

Finally, the study shows that social status affects choices when individuals face a decision with a strong normative content. The 'right' choice there depends more on ethical concerns than on objective considerations. Still, the experiment faces participants with a decision whose outcomes are uncertain. Under this respect, the decision environment within the experiment is similar to the one confronting farmers when they take information-based choices, such as technology and innovation adoption. One could interestingly explore whether social status still affects transmission of behavior when individual choices have stronger informational contents and, if so, which leadership profiles appear to be relevant in these other settings.

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Tables and figures

Table 1. Participants' characteristics

	Mean n = 251	Std. Dev.
Age	41.94	[14.93]
Female (%)	39.84	[.49]
Household size	5.16	[2.11]
No education (%)	10.36	[.31]
Primary school (%)	41.83	[.49]
Secondary school (%)	40.64	[.49]
More than secondary school (%)	7.1	[.26]
Individual income, previous week (Pesos)	35,146	[56,397]
Farming main source of income (%)	65.74	[.48]
Farm size (he)	2.34	[6.55]
Owns livestock (%)	10.44	[.31]
Suffered income loss due to environmental shock, previous year (%)	78.09	[.41]
Member of ASPROCIG (%)	56.97	[.49]

Table 2. Characteristics correlated with status

	Prob (AbsStatus _i)			
	(1) Formal ranking	(2) Moral ranking	(3) Traditional ranking	(4) Avg ranking
Age	0.034** (0.014)	0.062*** (0.019)	0.021 (0.014)	0.060*** (0.015)
Female	-0.833 (0.508)	-0.654* (0.368)	-0.154 (0.321)	-0.905** (0.441)
Married	0.366 (0.325)	-0.132 (0.426)	-0.321 (0.412)	-0.073 (0.312)
HH dependency ratio	0.214 (0.189)	0.235 (0.213)	-0.068 (0.220)	0.214 (0.189)
No kids in HH	0.356 (0.314)	-0.374 (0.405)	-0.338 (0.369)	-0.058 (0.301)
Primary school	1.650*** (0.504)	1.294** (0.573)	-0.585 (0.521)	1.137*** (0.337)
Secondary school	2.692*** (0.684)	1.852*** (0.688)	-0.063 (0.593)	2.308*** (0.457)
More than secondary school	3.858*** (0.905)	3.675*** (1.020)	-1.299 (1.184)	2.912*** (0.871)
HH income per capita	0.014 (0.010)	0.012 (0.016)	0.007 (0.015)	0.015 (0.015)
Roles in community associations	1.141*** (0.269)	0.374 (0.314)	0.437** (0.209)	1.130*** (0.264)
ASPROCIG member	-0.608** (0.305)	-0.495 (0.388)	-0.016 (0.293)	-0.663** (0.325)
Constant	4.587*** (1.442)	4.500*** (1.432)	1.091 (1.231)	2.012 (1.376)
Village fixed-effects	Yes	Yes	Yes	Yes
Number of Obs	251	251	251	251
Pseudo R-squared	0.153	0.105	0.034	0.107
Number of Clusters	12	12	12	12

Note: Ordered logit regression. Std. errors in parenthesis. Robust std. errors clustered at the session level. Dependent variable in Column 1, 2 and 3 is equal to 1 if i is in bottom group, 2 if in middle group, 3 if in top group. Dependent variable in Column 4 is discrete and takes values from 1 to 3. Variable description: dependency ratio = no.kids in hh/no.adults in hh; hh income per capita = hh income over previous week/no.people in hh; roles in community associations = no.associations in which i has roles. * p<0.10, ** p<0.05, *** p<0.01.

Table 3. Characteristics correlated with contribution

	Contribution	
	(1) Private decision	(2) Avg. over all other decisions
Age	2.258 (31.928)	26.186 (36.070)
Female	-171.678 (431.306)	-344.829 (391.959)
Married	433.409 (792.818)	520.032 (483.640)
HH dependency ratio	-1073.451* (520.570)	-775.488 (463.661)
No kids in HH	-2074.560 (1179.364)	-878.987 (784.038)
Primary school	-1031.653 (1202.097)	287.241 (956.927)
Secondary school	-297.066 (1689.530)	1694.413 (1668.254)
More than secondary school	972.702 (2656.988)	2866.080 (2466.599)
HH income per capita	6.611 (25.361)	11.803 (15.129)
Roles in community associations	300.136 (583.117)	369.353 (307.111)
ASPROCIG member	1505.460* (723.513)	1595.872*** (489.949)
Constant	5004.137 (3041.674)	1008.818 (3037.604)
Village fixed—effects	Yes	Yes
Number of Obs	251	251
R-squared	0.208	0.260
Number of Clusters	12	12

Note: Marginal effects shown. Std. errors in parenthesis. Robust std. errors clustered at the session level.

Variable description: dependency ratio = no. kids in hh/no.adults in hh; hh income per capita = hh income over previous week/no.people in hh; roles in community associations = no.associations in which i has roles. * p<0.10, ** p<0.05, *** p<0.01.

Table 4. Regression of contribution on relative status, first decision of round

	Contribution		
	(1)	(2)	(3)
Bottom-Middle	217.302 (366.309)	-362.666 (453.958)	214.183 (379.305)
Bottom-Top	617.075 (350.207)	40.295 (409.137)	617.688 (367.994)
Middle-Bottom	1683.357** (560.207)	7320.249*** (502.115)	1445.573** (572.602)
Middle-Middle	1271.735** (504.198)	6951.711*** (269.337)	1040.977* (553.321)
Middle-Top	1600.852** (628.524)	7167.067*** (576.749)	1370.584* (676.486)
Top-Bottom	1543.771** (542.185)	274.945 (322.144)	900.945 (680.401)
Top-Middle	1695.489*** (468.896)	740.951** (257.107)	1087.458 (660.016)
Top-Top	1662.065** (551.937)	427.083 (331.409)	992.072 (686.397)
Private contribution	0.666*** (0.063)		0.653*** (0.058)
Constant	21.869 (485.383)	-1280.268*** (377.887)	-1902.966 (2040.245)
Individual Controls ^a	No	No	Yes
Individual fixed-effects	No	Yes	No
Round fixed-effects	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes
Number of Obs	1004	1004	1004
R-squared	0.491	0.800	0.500
Number of clusters	12	12	12

Note: Std. Errors in parenthesis. Robust std. errors clustered at the session level. Variable description: first term of variable name denotes i's rank, second term denotes j's rank. ^aIndividual controls include: Age, Female, Primary School, Secondary School, More than Secondary School, Number of Roles in Community Associations. * p<0.10, ** p<0.05, *** p<0.01.

Table 5. Probability to conform on relative status

	Prob(Increase _{it})			Prob(Decrease _{it})		
	(1)	(2)	(3)	(4)	(5)	(6)
Same status as partner	0.072 (0.071)	0.102 (0.111)	0.076 (0.079)	0.023 (0.078)	0.005 (0.097)	0.038 (0.075)
Higher status than partner	-0.039 (0.054)	-0.054 (0.068)	-0.033 (0.057)	0.043 (0.060)	0.090 (0.068)	0.062 (0.062)
Gave more than partner in previous decision	-0.118** (0.048)	-0.274*** (0.062)	-0.131*** (0.047)	0.232*** (0.048)	0.381*** (0.048)	0.228*** (0.046)
More*Same	-0.012 (0.064)	-0.047 (0.088)	-0.007 (0.066)	-0.093 (0.061)	-0.071 (0.093)	-0.097* (0.059)
More*Higher	0.161** (0.076)	0.204** (0.094)	0.177** (0.076)	-0.140*** (0.037)	-0.195*** (0.066)	-0.136*** (0.036)
Gave less than partner in previous decision	0.208*** (0.046)	0.344*** (0.059)	0.206*** (0.050)	-0.111** (0.050)	-0.182*** (0.059)	-0.111** (0.050)
Less*Same	-0.049 (0.069)	-0.098 (0.083)	-0.052 (0.074)	-0.049 (0.082)	-0.067 (0.098)	-0.059 (0.076)
Less*Higher	0.010 (0.070)	-0.057 (0.065)	0.020 (0.065)	-0.023 (0.077)	-0.093 (0.083)	-0.023 (0.078)
Individual Controls ^a	No	No	Yes	No	No	Yes
Individual fixed-effects	No	Yes	No	No	Yes	No
Round fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Obs	2008	1632	2008	2008	1664	2008
Pseudo R-squared	0.079	0.222	0.091	0.082	0.205	0.088
Number of Clusters	12	12	12	12	12	12

Note: Probit regression. Marginal effects shown. Std. Errors in parenthesis. Robust std. errors clustered at the session level.

^aIndividual controls include: Age, Female, Primary School, Secondary School, More than Secondary School, Number of Roles in Community Associations. * p<0.10, ** p<0.05, *** p<0.01.

Figure 1. Average contribution by group over time

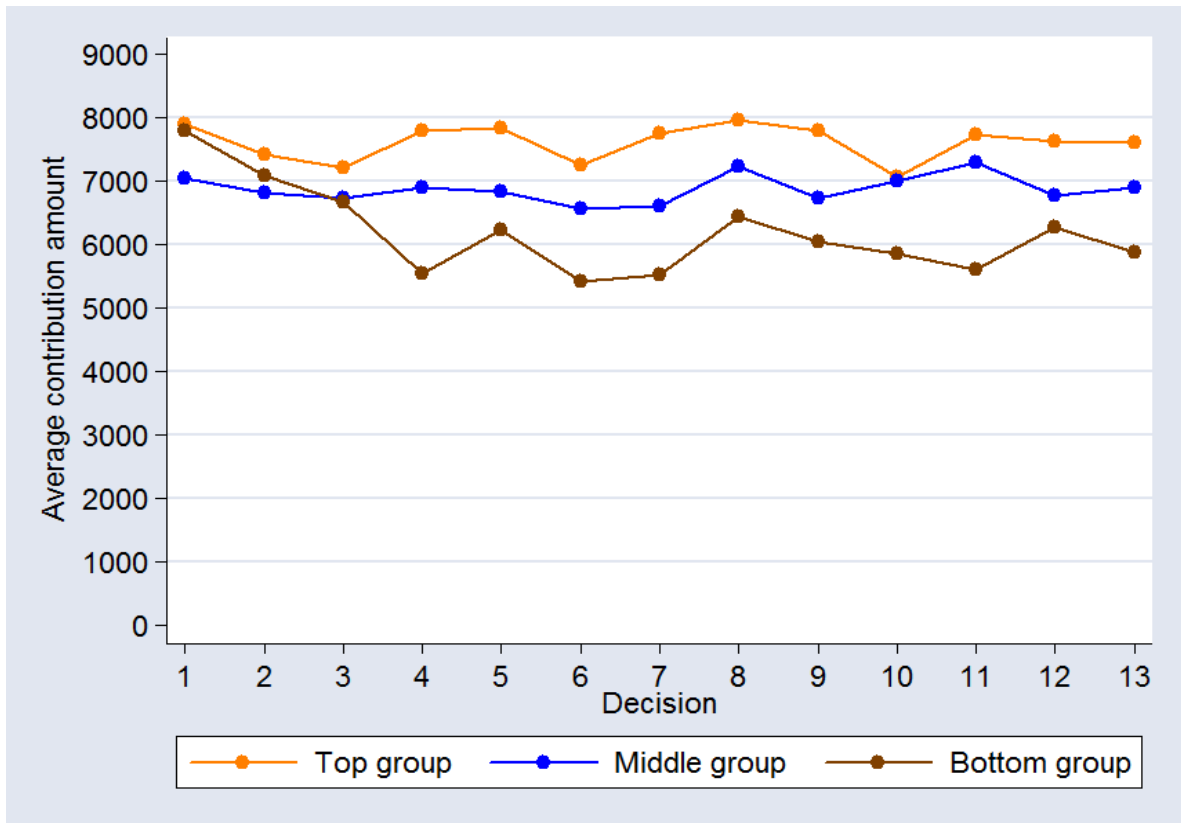


Figure 2. Direction of contribution change depending on lag relative contribution

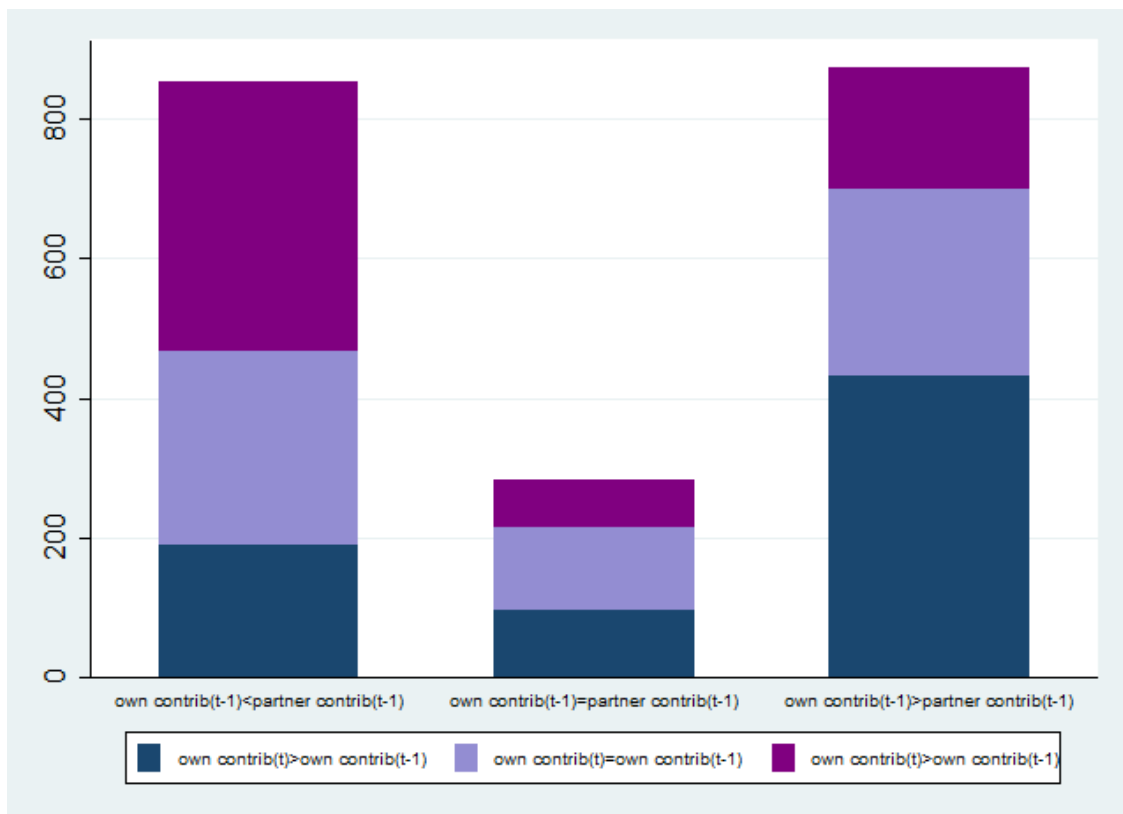
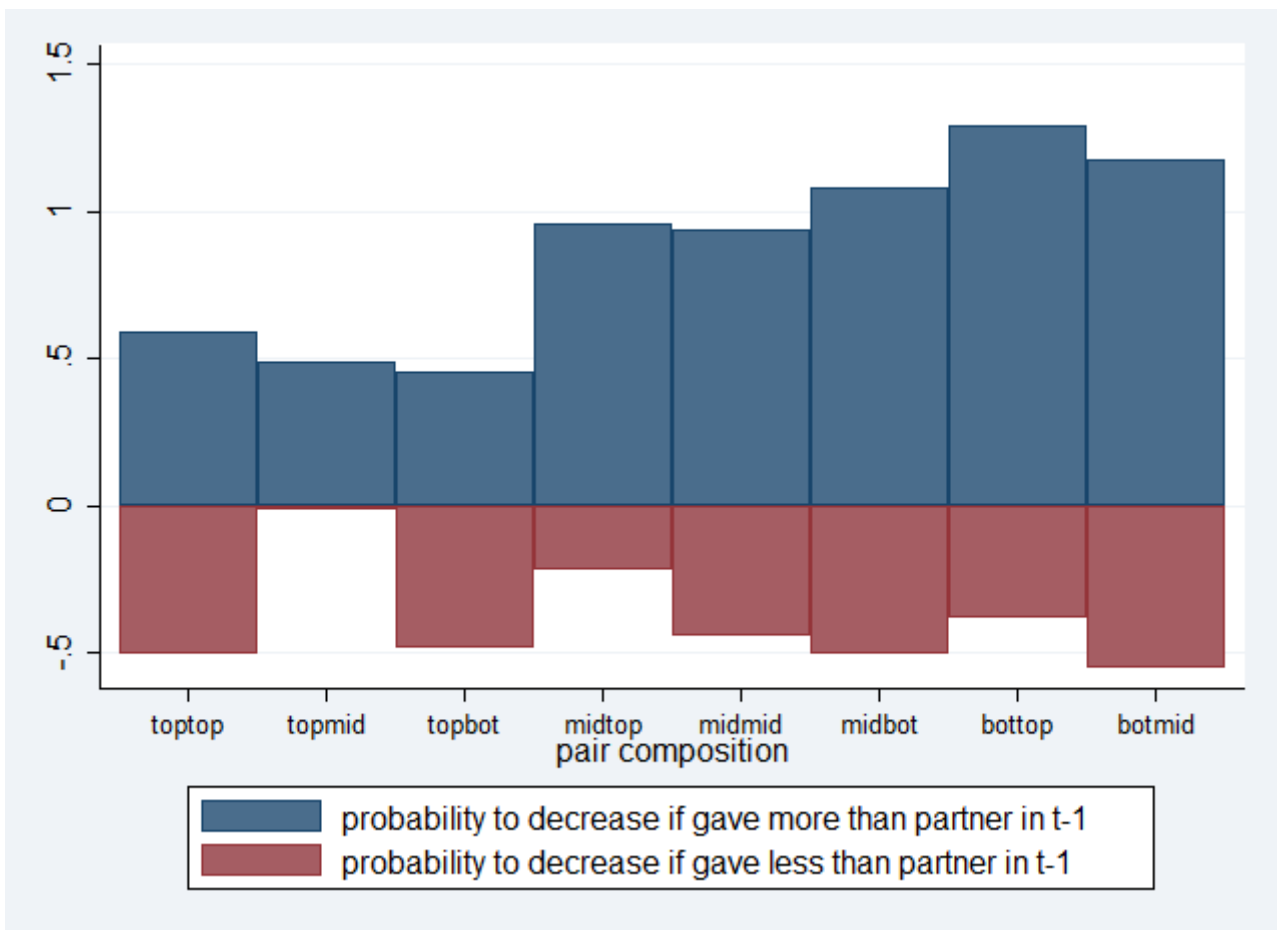


Figure 3. Change in probability to decrease giving depending on pair composition, by lag relative contribution



Appendix

Table A1. Top 5 qualities of top-ranked individuals, by ranking type

<i>Formal authority ranking</i>	
Are active in the community, think about the common good	22%
Have experience, knowledge and capacity to solve community problems	15%
Are in good relationships with the mayor	13%
Are leaders, influential people in the community	8%
Are trusted, respected	8%
Know the problems of the community	8%
<i>Moral authority ranking</i>	
Speak well, have good argument, are persuasive	23%
Are diplomatic, pacific, conciliatory	21%
Have moral qualities: responsible, serious, honest, determined	12%
Are in good relationships with community members	11%
Have experience, knowledge, capacity to solve community problems	10%
<i>Traditional authority ranking</i>	
Are happy and funny	24%
Are talented, have charisma	19%
Are extroverted and enthusiastic	15%
They have experience and skills, know many stories	14%
They are dynamic and creative	10%

Note: Percentages are derived from the ratio between the number of times a certain quality was mentioned in the discussion and the total number of qualities mentioned.

Table A2. Characteristics correlated with status, alternative estimation techniques

	Dependent variable: Prob (FormalRank _i)		Dependent variable: Prob (MoralRank _i)	
	(1)	(2)	(3)	(4)
	Bootstrap	Jack-knife	Bootstrap	Jack-knife
Age	0.034** (0.013)	0.034* (0.016)	0.062*** (0.011)	0.062** (0.022)
Female	-0.833** (0.410)	-0.833* (0.399)	-0.654** (0.280)	-0.654* (0.292)
Married	0.366* (0.197)	0.366 (0.308)	-0.132 (0.261)	-0.132 (0.283)
HH dependency ratio	0.214 (0.172)	0.214 (0.198)	0.235 (0.146)	0.235 (0.234)
No kids in HH	0.356** (0.173)	0.356 (0.279)	-0.374 (0.381)	-0.374 (0.372)
Primary school	1.650*** (0.335)	1.650*** (0.344)	1.294*** (0.358)	1.294** (0.490)
Secondary school	2.692*** (0.623)	2.692*** (0.660)	1.852*** (0.445)	1.852** (0.698)
More than secondary school	3.858*** (0.922)	3.858*** (0.903)	3.675*** (1.191)	3.675** (1.074)
HH income per capita	0.014 (0.011)	0.014 (0.010)	0.012 (0.013)	0.012 (0.017)
Roles in community associations	1.141*** (0.244)	1.141*** (0.188)	0.374* (0.193)	0.374 (0.204)
ASPROCIG member	-0.608** (0.238)	-0.608* (0.263)	-0.495 (0.310)	-0.495 (0.283)
Constant	4.587*** (1.535)	4.587** (1.583)	4.500*** (0.764)	4.500** (1.572)
Number of Obs	251	251	251	251
Pseudo R-squared	0.153	0.153	0.105	0.105

Note: Ordered logit regression. Std. errors in parenthesis. Column 1 and 3: bootstrap estimation of standard errors, clustered at the session level. Column 2 and 4: jack-knife estimation of standard errors, clustered at the session level. Variable description: dependency ratio = no.kids in hh/no.adults in hh; hh income per capita = hh income over previous week/no.people in hh; roles in community associations = no.associations in which i has roles. * p<0.10, ** p<0.05, *** p<0.01.

Table A3. Characteristics correlated with contribution, alternative estimation techniques

	Dependent variable: Private decision		Dependent variable: Avg. over all other decisions	
	(1)	(2)	(3)	(4)
	Bootstrap	Jack-knife	Bootstrap	Jack-knife
Age	2.258 (24.658)	2.258 (40.115)	26.186 (38.302)	26.186 (52.230)
Female	-171.678 (292.904)	-171.678 (376.597)	-344.829* (193.274)	-344.829 (322.318)
Married	433.409 (545.368)	433.409 (570.987)	520.032 (396.577)	520.032 (364.792)
HH dependency ratio	-1073.451** (528.630)	-1073.451** (414.002)	-775.488** (322.861)	-775.488** (314.506)
No kids in HH	-2074.560** (956.889)	-2074.560** (814.101)	-878.987* (516.331)	-878.987 (510.532)
Primary school	-1031.653 (827.202)	-1031.653 (1072.075)	287.241 (796.102)	287.241 (964.962)
Secondary school	-297.066 (1150.434)	-297.066 (1756.026)	1694.413 (1311.947)	1694.413 (1852.628)
More than secondary school	972.702 (2189.975)	972.702 (3219.282)	2866.080 (2341.966)	2866.080 (3216.918)
HH income per capita	6.611 (17.589)	6.611 (19.664)	11.803 (9.177)	11.803 (11.530)
Roles in community associations	300.136 (434.098)	300.136 (377.046)	369.353 (270.800)	369.353 (195.445)
ASPROCIG member	1505.460*** (538.586)	1505.460** (629.326)	1595.872*** (335.375)	1595.872*** (446.374)
Constant	5004.137** (2169.585)	5004.137 (3453.901)	1008.818 (2562.845)	1008.818 (3629.815)
Number of Obs	251	251	251	251
R-squared	0.208	0.208	0.260	0.260

Note: Ordered logit regression. Std. errors in parenthesis. Column 1 and 3: bootstrap estimation of standard errors, clustered at the session level. Column 2 and 4: jack-knife estimation of standard errors, clustered at the session level. Variable description: dependency ratio = no.kids in hh/no.adults in hh; hh income per capita = hh income over previous week/no.people in hh; roles in community associations = no.associations in which id has roles. * p<0.10, ** p<0.05, *** p<0.01.

Table A4. Mean contribution by group and observability

	(1)	(2)	(3)
	Private	Not observed	Observed
Top group	7912 (5865) [6631, 9193]	7562 (341) [6890, 8233]	7613 (228) [7164, 8061]
Middle group	7038 (4772) [5990, 8087]	6856 (304) [6257, 7454]	6872 (207) [6464, 7281]
Bottom group	7791 (5099) [6697, 8884]	5699 (275) [5156, 6241]	6224 (189) [5853, 6596]

Note: Std. Deviations in round parenthesis. 95% confidence interval in square parenthesis.

Table A5. Regression of contribution on status, observed decision dummy and interaction

	Contribution					
	All Sessions		Formal rank used		Moral rank used	
	(1)	(2)	(3)	(4)	(5)	(6)
Top group	1810.442*** (552.189)	1397.027* (710.652)	2407.303** (830.528)	2592.155 (1457.291)	1127.166* (470.744)	456.167 (467.125)
Middle group	1602.963*** (467.821)	1446.920** (488.800)	2281.158*** (220.981)	2306.684*** (391.360)	850.501 (799.391)	516.557 (755.419)
Decision observed by partner	347.028 (220.672)	349.243 (221.262)	580.198* (273.381)	580.183* (274.297)	142.564 (330.642)	145.301 (331.939)
Top group*Observed	-473.955 (318.364)	-474.574 (318.869)	-721.307 (544.048)	-721.223 (545.832)	-234.661 (335.757)	-236.010 (337.826)
Middle group*Observed	-553.145 (404.888)	-554.239 (406.807)	-839.607* (373.532)	-839.535* (375.107)	-266.698 (728.655)	-270.897 (736.831)
Partner's lag contribution	0.183*** (0.033)	0.176*** (0.029)	0.100* (0.044)	0.099* (0.040)	0.152*** (0.034)	0.148** (0.039)
Private contribution	0.576*** (0.057)	0.570*** (0.053)	0.487*** (0.073)	0.480*** (0.068)	0.580*** (0.070)	0.572*** (0.056)
Constant	-827.466* (420.054)	-2375.087 (1605.276)	-118.563 (545.624)	1504.159 (2223.279)	-596.904 (640.445)	-2726.856 (1531.891)
Individual controls ^a	No	Yes	No	Yes	No	Yes
Round fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Obs	2007	2007	992	992	1015	1015
R-squared	0.472	0.475	0.462	0.467	0.528	0.541
Number of Clusters	12	12	6	6	6	6

Note: Std. Errors in parenthesis. Robust std. errors clustered at the session level. ^aIndividual controls include: Age, Female, Primary School, Secondary School, More than Secondary School, Number of Roles in Community Associations. * p<0.10, ** p<0.05, *** p<0.01.

Table A6. Experimental outcomes on rankings and salience

	Contribution		Prob(Conform _{it})	
	(1)	(2)	(3)	(4)
Top formal	755.486* (353.964)	373.189 (355.181)	-0.136** (0.054)	-0.123* (0.064)
Mid formal	864.075** (345.954)	678.427 (425.902)	-0.103*** (0.039)	-0.102*** (0.038)
Formal ranking salient	-673.029 (959.028)	-787.288 (966.225)	-0.074 (0.066)	-0.081 (0.070)
Top formal*Salient	868.936 (665.466)	924.192 (656.478)	0.078 (0.074)	0.073 (0.071)
Mid formal*Salient	848.581 (565.672)	880.046 (612.468)	0.119** (0.058)	0.119** (0.059)
Top moral	1351.013* (741.752)	1325.041 (740.891)	-0.026 (0.051)	-0.020 (0.061)
Mid moral	-259.314 (641.165)	-370.541 (609.970)	-0.050* (0.026)	-0.044* (0.025)
Moral ranking salient
Top moral*Salient	-685.725 (847.425)	-955.126 (688.028)	-0.014 (0.061)	-0.005 (0.075)
Mid moral*Salient	1053.964 (924.409)	997.467 (899.681)	0.023 (0.066)	0.020 (0.067)
Top traditional	667.454* (361.143)	695.593 (425.688)	0.012 (0.039)	0.015 (0.047)
Mid traditional	-95.219 (628.672)	-220.762 (592.346)	0.029 (0.031)	0.031 (0.028)
Lag partner contribution	0.180*** (0.029)	0.176*** (0.026)		
Private contribution	0.583*** (0.059)	0.581*** (0.056)		
Lag relative contribution			0.024 (0.017)	0.023 (0.017)
Constant	-800.372 (861.367)	-1239.406 (1732.308)		
Individual Controls ^a	No	Yes	No	Yes
Round fixed-effects	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes
Number of Obs	2007	2007	2008	2008
(Pseudo) R-squared	0.487	0.490	0.037	0.039
Number of Clusters	12	12	12	12

Note: Std. Errors in parenthesis. Robust std. errors clustered at the session level. ^aIndividual controls include: Age, Female, Primary School, Secondary School, More than Secondary School, Number of Roles in Community Associations. 'Moral ranking salient' dropped because of collinearity. * p<0.10, ** p<0.05, *** p<0.01.

Table A7. Lag relative contribution: summary statistics

	(1)	(2)	(3)
	Overall	Increase	Decrease
Gave more than partner in t-1	872 (43.43%)	172 (27.39%)	433 (60.22%)
Gave same amount as partner in t-1	284 (14.14%)	70 (11.15%)	97 (13.49%)
Gave less than partner in t-1	852 (42.43%)	386 (61.46%)	189 (26.29%)

Note: the cells report the number (percentage) of participants who gave more, the same as, or less than partner in t-1. Column 1 reports the total number (percentage). Column 2 reports the number (percentage) only for those cases in which i's contribution at t is higher than i's contribution at t-1. Column 3 reports number (percentage) only for those cases in which i's contribution at t is lower than i's contribution at t-1.

Table A8. Regression of probability of contribution change on relative lag contribution

	Prob(Increase _{it})			Prob(Decrease _{it})		
	(1)	(2)	(3)	(4)	(5)	(6)
Gave more than partner in t-1	-0.067** (0.031)	-0.221*** (0.043)	-0.072** (0.030)	0.146*** (0.037)	0.295*** (0.034)	0.143*** (0.035)
Gave less than partner in t-1	0.193*** (0.033)	0.292*** (0.042)	0.195*** (0.035)	-0.134*** (0.029)	-0.227*** (0.036)	-0.138*** (0.029)
Individual Controls ^a	No	No	Yes	No	No	Yes
Individual fixed-effects	No	Yes	No	No	Yes	No
Round fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Obs	2008	1632	2008	2008	1664	2008
Pseudo R-squared	0.075	0.216	0.086	0.079	0.202	0.085
Number of Clusters	12	12	12	12	12	12

Note: Probit regression. Marginal effects shown. Std. Errors in parenthesis. Robust std. errors clustered at the session level.

^aIndividual controls include: Age, Female, Primary School, Secondary School, More than Secondary School, Number of Roles in Community Associations. * p<0.10, ** p<0.05, *** p<0.01.

Table A9. Probability to conform on absolute status

	Prob(Increase _{it})		Prob(Decrease _{it})	
	(1)	(2)	(3)	(4)
Top Group	-0.002 (0.044)	0.011 (0.054)	0.062 (0.105)	0.085 (0.111)
Middle Group	0.078 (0.067)	0.065 (0.062)	-0.002 (0.057)	-0.002 (0.057)
Gave more than partner in t-1	-0.108** (0.045)	-0.121*** (0.042)	0.226*** (0.062)	0.221*** (0.060)
More*Top	0.091* (0.054)	0.103* (0.056)	-0.182*** (0.061)	-0.177*** (0.058)
More*Middle	0.020 (0.077)	0.033 (0.074)	-0.024 (0.080)	-0.022 (0.083)
Gave less than partner in t-1	0.219*** (0.048)	0.214*** (0.048)	-0.136*** (0.053)	-0.140*** (0.052)
Less*Top	-0.022 (0.069)	-0.016 (0.068)	-0.013 (0.107)	-0.010 (0.107)
Less*Middle	-0.061 (0.057)	-0.046 (0.056)	0.033 (0.069)	0.037 (0.071)
Individual Controls ^a	No	Yes	No	Yes
Round fixed-effects	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes
Number of Obs	2008	2008	2008	2008
Pseudo R-squared	0.078	0.089	0.085	0.090
Number of Clusters	12	12	12	12

Note: Probit regression. Marginal effects shown. Std. Errors in parenthesis. Robust std. errors clustered at the session level. Private decision excluded from regressions. ^aIndividual controls include: Age, Female, Primary School, Secondary School, More than Secondary School, Number of Roles in Community Associations. * p<0.10, ** p<0.05, *** p<0.01.

Table A10. Probability to decrease giving on relative status

	Dependent variable: Prob (Decrease)			
	(1) Cluster-robust	(2) Bootstrap	(3) Jack-knife	(4) 2-way cluster
Gave more than partner in t-1	0.895** (0.382)	0.895*** (0.329)	0.895*** (0.195)	0.895** (0.409)
Gave less than partner in t-1	-0.660 (0.436)	-0.660*** (0.203)	-0.660** (0.267)	-0.660 (0.441)
Bottom-Middle	-0.102 (0.597)	-0.102 (0.360)	-0.102 (0.509)	-0.102 (0.620)
Bottom-Top	0.350 (0.445)	0.350* (0.202)	0.350 (0.281)	0.350 (0.458)
Middle-Bottom	0.175 (0.331)	0.175 (0.218)	0.175 (0.326)	0.175 (0.523)
Middle-Middle	0.161 (0.316)	0.161 (0.146)	0.161 (0.200)	0.161 (0.545)
Middle-Top	0.020 (0.645)	0.020 (0.372)	0.020 (0.443)	0.020 (0.615)
Top-Bottom	0.287 (0.544)	0.287 (0.276)	0.287 (0.392)	0.287 (0.549)
Top-Middle	0.520 (0.513)	0.520* (0.314)	0.520 (0.298)	0.520 (0.546)
Top-Top	0.395 (0.529)	0.395 (0.417)	0.395 (0.402)	0.395 (0.533)
More*Bottom-Middle	0.381 (0.696)	0.381 (0.378)	0.381 (0.573)	0.381 (0.683)
More*Bottom-Top	0.049 (0.477)	0.049 (0.282)	0.049 (0.244)	0.049 (0.517)
More*Middle-Bottom	0.008 (0.510)	0.008 (0.391)	0.008 (0.392)	0.008 (0.589)
More*Middle-Middle	-0.117 (0.521)	-0.117 (0.300)	-0.117 (0.247)	-0.117 (0.584)
More*Middle-Top	0.045 (0.649)	0.045 (0.575)	0.045 (0.468)	0.045 (0.698)
More*Top-Bottom	-0.726 (0.541)	-0.726* (0.374)	-0.726** (0.266)	-0.726 (0.550)
More* Top-Middle	-0.929 (0.603)	-0.929** (0.425)	-0.929* (0.418)	-0.929 (0.599)
More* Top-Top	-0.701 (0.507)	-0.701 (0.533)	-0.701* (0.325)	-0.701 (0.619)
Less*Bottom-Middle	0.206 (0.824)	0.206 (0.519)	0.206 (0.745)	0.206 (0.718)
Less*Bottom-Top	-0.077 (0.625)	-0.077 (0.359)	-0.077 (0.432)	-0.077 (0.573)
Less*Mid-Bottom	-0.021 (0.714)	-0.021 (0.547)	-0.021 (0.783)	-0.021 (0.709)
Less*Mid-Mid	0.056 (0.529)	0.056 (0.234)	0.056 (0.299)	0.056 (0.620)
Less*Mid-Top	0.416 (0.744)	0.416 (0.421)	0.416 (0.520)	0.416 (0.681)
Less*Top-Bottom	-0.114 (0.575)	-0.114 (0.323)	-0.114 (0.513)	-0.114 (0.622)
Less*Top-Middle	0.122 (0.496)	0.122 (0.267)	0.122 (0.315)	0.122 (0.609)
Less*Top-Top	-0.244 (0.476)	-0.244 (0.356)	-0.244 (0.372)	-0.244 (0.666)
Constant	-0.490 (0.347)	-0.490*** (0.182)	-0.490* (0.250)	-0.490 (0.414)
Number of Obs	2008	2008	2008	2008
Pseudo R-squared	0.088	0.088	0.088	
Number of Sessions	12	12	12	12

Note: Logit regressions. Std. Errors in parenthesis. Column 1: robust std.errors, cluster(session). Column 2: bootstrap std. errors, cluster(session). Column 3: jack-knife std.errors, cluster(session). Column 4: robust standard errors clustered at the individual and partner level. All regressions include round and village fixed-effects. Variable description: first term of variable name denotes i's rank, second term denotes j's rank. * p<0.10, ** p<0.05, *** p<0.01.