Discussion paper

Leadership and incentives

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Abstract

We study how leader compensation affects public goods provision. We report from a lab experiment with four treatments, where the base treatment was a standard public goods game with simultaneous contribution decisions, while the three other treatments allowed participants to volunteer to be the leader in their group and make their contribution before the others. In the three leader treatments, we manipulate the level of compensation given to the leader. Our main finding is that a moderate compensation to the leader is highly beneficial, it increases the average contribution by 63% relative to a situation where the leader is not compensated and by more than 90% relative to a situation without a leader. A further increase in the leader compensation, however, is detrimental to public goods provision; it attracts less morally motivated leaders and creates a social crowding-out effect that makes it harder to lead by example. Finally, we report from a survey showing that the social crowding-out effect is also present in the population at large. We argue that the main findings of the paper are important in many real life settings where we would like to use economic incentives to encourage people to lead by example.

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1 Introduction

The possibility to lead by example is potentially important in many public goods settings. In the household, at the workplace, in the local community, in business and politics, it is often possible for agents to take the lead and announce their contribution to the public good before others do. Since many people are conditional contributors in public goods contexts (Fischbacher and Gächter, 2010), first movers can potentially inspire others to contribute. But how can people be motivated to take the lead and when is leading by example likely to be effective?

Evidence from economic experiments with the public goods games suggests that leading by example has the potential to increase the contributions of the followers (Moxnes and van der Heijden, 2003; Arbak and Villeval, 2007; Haigner and Wakolbinger, 2010; Rivas and Sutter, 2011).[1] The same studies, however, also find that leaders typically end up worse off than their followers, since followers tend to contribute less than the leader. Thus, in contexts where it is a voluntary decision to become a leader, one may face the challenge that no one steps up and show leadership.[2]

This problem is familiar in many real life settings. At the work place, people may hesitate to take the leading role in organizing valuable social activities, fearing that their co-workers will not contribute to the same extent. Similarly, parents may avoid taking the lead in organizing a school activity for the children, worrying that the other parents will not follow up. More generally, whenever there is the possibility of taking the lead in a public goods setting, people may hesitate to be the first mover.

The classical solution suggested by economists to the problem of undersupply is to strengthen economic incentives. By now it is well recognised, however, that the introduction of economic incentives may undermine the intrinsic motivation of individuals, and that the net effect may be a reduction of the overall motivation (Frey and Oberholzer-Gee, 1997; Gneezy and Rustichini, 2000; Fehr and Falk, 2002; Bénabou and Tirole, 2003; Gneezy, Meier, and Rey Biel, 2011). Thus, it is not obvious that offering leader compensation would strengthen people's willingness to volunteer as leaders; the economic incentive may crowd out any intrinsic motivation to step up and show leadership. In the public goods context, however, there is a further concern regarding the introduction of economic incentives for the leader; it may crowd out the intrinsic motivation of the other members of the group. We coin this the social crowding-out effect. This effect may work through different channels; leader compensation may make the others less motivated to contribute because they care about

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[1]The first paper to study voluntary leadership experimentally is Arbak and Villeval (2007), now published as Arbak and Villeval (2013). Leadership has many important aspects that are not investigated in the present paper, including granting the leader the authority to reward or punish (Gürerk, Irlenbusch, and Rokenbach, 2009; Güth, Levati, Sutter, and van der Heijden, 2007), asymmetric payoff structures (Gächter, Herrmann, and Thoeni, 2010; Glöckner, Irlenbusch, Kube, Nicklisch, and Normann, 2011; Levati, Sutter, and van der Heijden, 2007; van der Heijden and Moxnes, 2013) and asymmetric information (Potters, Sefton, and Vesterlund, 2007).

[2]See Arbak and Villeval (2013) for evidence on the characteristics of voluntary leaders.

inequality in the group or because they envy the leader or feel disappointment at not themselves being the leader.

To study the effect of leader compensation we designed a lab experiment with a sequence of one-shot public goods games with random rematching. In addition to a treatment without a leader, we had three treatments where the participants could volunteer to be the leader whose contribution would be announced before the other members of the group decided on their contribution. The three treatments differed only in the compensation given to the leader (zero, moderate and high). This design allows us to study whether leader compensation represents a promising approach to public goods provision in settings where it is possible for an agent to move before others, and allows us to shed light on whether leader compensation creates a social crowding-out effect. Further, to study the generality of the social crowding-out effect, we also conducted a large-scale survey on a representative population. In the survey, we asked the participants to make a hypothetical choice of how much to contribute to a public good in a situation where someone else had been selected to be the leader for the group. Also in the survey, we introduced three treatments that differed only in the compensation paid to the leader (zero, moderate, and high).

The paper offers four main findings. First, we show that leader compensation does indeed improve public goods provision. Second, we find that the optimal strategy is to pay leaders a moderate compensation. In the lab experiment, moderate leader compensation increased average contribution by more than 90% compared to the base treatment without a leader. A further increase in the leader compensation, on the other hand, causes a considerable drop in contributions. Third, we show that a high leader compensation is detrimental because it attracts less morally motivated leaders and creates a social crowding-out effect that makes it harder to lead by example. Finally, we show by a large-scale survey that the social crowding-out effect is present in the population at large; people are less willing to contribute to a public good in a hypothetical choice situation when they are told that the leader is highly compensated. In sum, the paper shows that leader compensation may be a viable strategy for increasing public goods provision, but also that it may initiate selection and social crowding-out effects that make it optimal to keep the compensation at a moderate level.

The structure of the paper is as follows: Section 2 presents the design of the lab experiment, Section 3 reports treatment effects, Section 4 investigates potential mechanisms through which leader compensation affects cooperation, Section 5 reports from the survey, and Section 6 provides some concluding remarks.

2   The lab experiment

The lab experiment consisted of four treatments of a repeated public goods game with random rematching. The base treatment was a standard public goods game with simultaneous contribution decisions, while the three other treatments allowed participants to volunteer to be an "early contributor" in their group. Being an early contributor meant

that one's contribution would be announced to the other group members before they made their contribution decision. We shall in the following refer to the "early contributor" as the "leader," though the word "leader" was never used in the experiment.

2.1 The participants and procedures

We recruited participants among students at the NHH Norwegian School of Economics. A total of 508 subjects participated in 13 sessions.[3] Each session lasted approximately 90 minutes and the average payment was 365 NOK (about 60 USD) not including a show up fee of 100 NOK. The experiment was conducted in a computer lab using a web-based interface and was double blind.

Upon arrival the participants were informed about the rules of conduct, given an overview of how the experiment would proceed, and introduced to the general public goods game. The participants were also informed that they would remain anonymous throughout the experiment. A copy of the instructions was available on the desk of each participant. After the introduction, the participants were given a set of control questions in order to ensure that they had understood the nature of the public goods problem. All ten control questions had to be answered correctly before a participant could proceed to the actual experiment. After the experiment was conducted, the participants were asked some questions about what motivated their contribution decision and whether they felt envious or disappointed if they volunteered, but were not selected, to be the leader.[4]

All payments were made in cash immediately after the experiment. Special care was taken so that the payment procedure ensured anonymity. The computer assigned a payment code to each of the participants, and a group of assistants who were not present in the lab during the experiment prepared envelopes containing the payments corresponding to each payment code. After bringing the envelopes to the lab the assistants left immediately, and the envelopes were handed out in accordance with the payment codes. This procedure was explained to all participants at the start of the experiment.

2.2 The treatments

All four treatments consisted of ten rounds of a public goods game with random rematching of groups after each round. The participants were randomly assigned to groups of four and in each round they received 20 points (1 point = 1 NOK) that they

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[3]We conducted ten sessions with 272 participants in 2011 and three sessions with 236 participants in 2013. The participants were randomly allocated to treatments within sessions in 2013, whereas we randomly allocated sessions into treatments in 2011. To accommodate suggestions by referees, there are also some other small design differences between the sessions in 2011 and 2013, explained in more detail below. The results are strikingly similar for the two rounds of the experiment, see also Appendix 1. The instructions and screenshots are provided in Appendix 2.

[4]These questions were only asked in the 2013 sessions, inspired by comments from a referee.

could either keep or invest in a public good. Each participant's return from the public good was 0.4 times the group's total investment in the public good. After each round the participants were informed about their payoff in this round and about their group's total contribution to the public good.

Our base treatment (B-treatment) was a standard public goods game where all group members simultaneously chose their contribution to the public good. This treatment was a replication of the experiment presented in Fischbacher and Gächter (2010). In the three leadership treatments the participants could volunteer to be the leader. If more than one group member volunteered, the leader was randomly chosen among the volunteers and asked to state his contribution. The leader contribution was announced to the three other group members before they decided on their contribution.[5] The participants were not informed about the number of volunteers. If no one volunteered to be the leader, the round was played with simultaneous contribution decisions. The only difference between the three leadership treatments was the level of compensation given to the leader. In the "no compensation" treatment (NC-treatment) the leader received no compensation.[6] In the "medium compensation" treatment (M-treatment) and the "high compensation" treatment (H-treatment), the leader received four and twelve points respectively to his private account as compensation for being the leader. Importantly, the leaders in the M-treatment and the H-treatment could not use the leader compensation to contribute to the public good. Thus, the payoff structure in the public goods game itself was identical in the four treatments.

To summarize, a participant's payoff in each round can be represented in the following way,

$$\pi_i = 20 - c_i + 0.4 \sum_{j=1}^{4} c_j + d_i \cdot f_t, \tag{1}$$

where $c_i \in [0, 20]$ is participant i's contribution to the public good, d_i is a binary variable indicating whether the participant was a leader, and f_t indicates the compensation paid to the leader (which depended on the treatment).[7]

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[5]In the 2011 sessions, we imposed time limits to avoid unnecessary delays. The participants were given 60 seconds to decide whether they wanted to be leaders and 90 seconds to decide how much to contribute. Ten points were subtracted if they did not decide within the time limit. This was made clear to the participants before starting and the time spent was visible on the screen during the experiment. The penalty was only effected in 1.2% of the situations (33 times). One referee was concerned, however, that the time limit might give the impression that the participants had to rush to get the high payoff in the high compensation treatment, without thinking about what leading a group means. To accommodate this concern, there were no time limits in the 2013 sessions. See the instructions in Appendix 2 for further details.

[6]The NC-treatment is related to the design in Rivas and Sutter (2011), who also study voluntary leadership without compensation. There are two important differences between their study and our NC-treatment; first, they consider a repeated game with partner matching, and second they let subjects go ahead as leaders if they entered a contribution more quickly than others. These differences may explain why they find a stronger effect of voluntary leadership without compensation than what we observe in the present study.

[7]After making their contribution decision participants were also asked what they believed the other

2.3 A conditional contribution experiment

All participants took part in a second experiment similar to the P-experiment in Fischbacher and Gächter (2010).[8] In this P-experiment, the participants first decided on how much they wanted to contribute in a one-shot public goods game. The public goods game was the same as in the base treatment (except that in this case 1 point = 5 NOK). After deciding on the contribution in the one-shot game, all participants were asked to fill out a conditional contribution table. For each possible average contribution level of the other three participants (rounded to whole integers), the participant was asked to specify how much he would want to contribute to the public good. When all participants had made their decision, three of the four participants in a group (randomly selected) contributed according to their decision in the one-shot unconditional game. The contribution of the fourth participant was determined by his conditional contribution table and the average of the three other participants.

The P-experiment provides us with an independent measure of the social preferences of the participants. In the following, we classify a participant as a freerider if he did not want to contribute for any level of the average contribution of the others in the group, otherwise he is classified as an other-regarding participant.

3 Results

Figure 1 shows how the contributions to the public good evolved in the experiment. We observe that in all treatments, there is a declining trend in contributions in later rounds. In the B-treatment, the average contribution is 31.7% of the endowment in the first round but falls to 9.9% of the endowment in the last round, which is very similar to the pattern observed in Fischbacher and Gächter (2010). The introduction of the possibility to volunteer to be the leader without any compensation (NC-treatment) slightly increases average contributions in most rounds compared to the B-treatment. Offering a leader compensation, however, significantly increases average contributions

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participants would do. Leaders were asked what they believed the average contribution of the followers would be, given their own contribution. Followers were asked what they believed the average contribution of the two other followers would be, given the leader's contribution. Participants in situations without a leader were asked what they believed the average contribution of the three other participants would be. The questions were incentivized and the participants received three points for each correct answer, two points if their answer deviated with one point from the correct answer, and one point if the answer deviated with two points. The beliefs data confirm almost exactly the analysis in Fischbacher and Gächter (2010), where it is shown that declining cooperation in a public goods game is driven by people being imperfect conditional cooperators. We also find that the beliefs of followers about others' contribution are strongly correlated with the leader's contribution. It is, however, not possible to identify whether the underlying mechanism in this case is that the follower is inspired by the leader's contribution and is therefore prone to a false consensus effect, or that the follower is not himself inspired but believes that others are so.

[8]The P-experiment was conducted after the main experiment in 2011, but, to test for robustness, before the main experiment in 2013.

relative to the B-treatment in all rounds (with the exception of the last round for the H-compensation treatment). A moderate leader compensation is particularly productive; the average contribution in the M-treatment is above the average contribution in the H-treatment in all rounds (with the exception of the ninth round).

[Figure 1 about here]

Figure 2 presents the treatment effects on the average contribution to the public good across rounds.[9] We observe that the introduction of a moderate compensation to the leader substantially increases contributions; the average contribution in the M-treatment is 63% higher than in the NC-treatment ($p < 0.01$).[10] A further increase in leader compensation, however, is detrimental to the public good provision; the average contribution in the H-treatment is significantly lower than in the M-treatment ($p < 0.01$), but still higher than in the NC-treatment ($p = 0.012$). Finally, we observe that the average contribution in the NC-treatment is slightly above the average contribution in the B-treatment, but this difference is not statistically significant ($p = 0.30$).

[Figure 2 about here]

In sum, this analysis provides three important insights. First, the introduction of leader compensation substantially increases contributions to the public good; second, a too high leader compensation can be counterproductive; third, the reliance on participants volunteering to be leaders without receiving any compensation is not a viable strategy for ensuring public goods provision.

4   Mechanisms

In this section, we investigate potential mechanisms through which leader compensation affects cooperation. We first look at how the level of leader compensation affected the recruitment of leaders, before we discuss how it affected leader and follower behavior.

4.1   Recruitment of leaders

As shown in the left panel in Figure 3, the level of compensation had a significant positive effect on the participants' willingness to be leaders.[11] In the NC-treatment,

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[9]Figure A1 in Appendix 1 presents the treatment effects separately for the 2011 sessions and the 2013 sessions, where we observe that the pattern is strikingly similar in the two rounds. Figure A2 in Appendix 1 shows that we have this pattern in the first round in the experiment, before any interaction has taken place, and Table A1 in Appendix 1 shows that the result also holds if we consider rounds 1-5 and 6-10 separately. See also Tables A2-A4 in Appendix 1 for more detailed descriptive statistics.

[10]Throughout the paper, reported p-values are from t-tests of equality, where standard errors have been corrected for clustering on individuals where appropriate.

[11]In Figure A3 in Appendix 1, we provide disaggregated data by round.

participants volunteered to be a leader in only 23% of the situations, whereas they did so in 63.4% and 94.4% of the situations in the M-treatment and the H-treatment, respectively.[12] As shown in the right panel, this implied that there was almost always a leader in the group in the treatments with leader compensation (97.1% of the groups in M-treatment, 99.7% of the groups in the H-treatment). In contrast, we only had leaders in 64.4% of the groups in the NC-treatment.[13]

[Figure 3 about here]

The introduction of leader compensation thus largely solved the problem observed in many of the groups in the NC-treatment, that no one stepped up and made the first move to contribute to the public good.

4.2   Leader behavior

We now turn to a discussion of how leader compensation affected leader behavior. As shown in Figure 4, the average leader contribution in the H-treatment was significantly lower than in the M-treatment ($p = 0.04$) and NC-treatment ($p = 0.17$), whereas we do not find a statistically significant difference between the M-treatment and the NC-treatment ($p = 0.70$).

[Figure 4 about here]

Leader compensation may affect both the selection of leaders and the motivation of those who become leaders.[14] A high compensation may attract more freeriders to volunteer, as indeed we observe in Figure 5.[15] In the NC-treatment, a very small share of the freeriders volunteered to be leader (9.7%), whereas almost all of them did so in the H-treatment (92.6%). Thus, the introduction of leader compensation changed the composition of leaders, with a larger share of less morally motivated leaders (as measured by the P-experiment) in the M-treatment and the H-treatment. This may partly explain the lower level of leader contribution observed in the H-treatment.

[Figure 5 about here]

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[12]Thus, in the present experiment, the economic incentive appears to have been sufficiently strong to create a positive net effect on the supply of leaders. This is consistent with the crowding-out literature (Gneezy and Rustichini, 2000), which typically finds that a sufficiently strong economic incentive dominates a crowding-out effect of intrinsic motivation.

[13]In all pairwise comparisons of the treatments, the difference in the share of participants that volunteered to be leaders and the difference in the share of groups with a leader are statistically significant ($p < 0.01$).

[14]See also Gächter, Nosenzo, Renner, and Sefton (2012).

[15]We observe the same pattern if we consider the share of freeriders that volunteered to be leaders on the share of other-regarding participants, see Figure A4 in Appendix 1.

Leader compensation may, however, also affect the motivation of any given leader. If a leader believes that the leader compensation makes it harder to lead by example, then he may become less motivated to contribute. At the same time, leader compensation may also introduce a reciprocal motive, where morally motivated leaders may feel a stronger moral obligation to contribute to the public good.

Overall, as shown in Figure 4, the net effect of leader compensation on leader contribution is slightly positive for the M-treatment compared to the NC-treatment, but negative for the H-treatment.

4.3   Follower behavior

How did the followers respond to the presence of a leader in the group? Figure 6 reports the correlation between the leader's contribution and the followers' contribution, where we observe a positive relationship in all treatments; a higher contribution by the leader is, on average, followed by a higher contribution by the followers.[16] We also observe that it is very rare that the followers contribute with more than the leader, this happened only in 6.1% of the situations. The leader's contribution thus appears to have served as a an upper ceiling for the followers.

[Figure 6 about here]

A further analysis of the follower behavior is challenging since the composition of followers varied across treatments (in terms of the share of free-riders). To shed more light on the extent to which followers' motivation was affected by the leaders being compensated in the M-treatment and in the H-treatment, we therefore conducted a short questionnaire at the end of the experiment. In the questionnaire, we asked whether the payment to the leader affected their willingness to the contribute to the public good as follower, whether they were concerned about inequality in the group when making a contribution, whether they felt envy towards the leader, and whether they were disappointed not themselves to be the leader. Since all participants were follower in at least one group in the M-treatment and H-treatment, there are no composition effects when comparing these responses for the two treatments. Thus, average differences in responses cleanly identify the causal effect of leader compensation both on the overall motivation to contribute and on potential underlying mechanisms.

Figure 7 reports the responses in the questionnaire, where we observe that there are systematic differences between the M-treatment and the H-treatment. In particular, we find that the leader compensation in the H-treatment made the followers significantly less motivated to contribute than in the M-treatment ($p = 0.04$). The discouraging effect of a high leader compensation appears partly to be driven by envy ($p < 0.01$) and disappointment ($p < 0.01$) being stronger in the M-treatment than in the H-treatment,

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[16]The correlation coefficients are 0.44, 0.49 and 0.52 for the NC-treatment, M-treatment, and H-treatment, respectively.

whereas we do not see any treatment difference in the concern for inequality ($p = 0.72$).

[Figure 7 about here]

The questionnaire responses thus suggest that there is a social crowding-out effect of high leader compensation. We now turn to a discussion of whether this effect also is present in the population at large.

5 Survey evidence

To shed further light on the effect of leader compensation on follower behavior, we conducted a survey in collaboration with Norstat, one of the leading data-collection agencies in Europe. We surveyed 1952 respondents from Norstat's subject pool, where the subjects were chosen such that the respondents would constitute a representative sample of the Norwegian adult population (18 years or older).[17]

The participants were presented with the following hypothetical choice situation:

> "You live in an apartment building with 20 apartments where six times a year the residents volunteer for maintenance work - the last Saturday in each month. The work done is painting, gardening and similar tasks. Each volunteer day lasts 5-6 hours. Several residents, you included, volunteered to lead the planning and execution of the initiative. Using a simple lottery, another resident ended up with the leadership responsibility. The leader will receive no/moderate/high monetary compensation for doing the job, while the other residents taking part are not compensated.
>
> Assuming that you are not prevented from participating on any of the six days that are scheduled for volunteer work in your building, on how many of the days do you think that you would participate?"[18]

The participants were randomly allocated into one of three treatments, where the only difference between the treatments was the announced amount of leader compensation (no/moderate/high). Thus, in line with the lab experiment, the survey design captured a public goods situation where a voluntary leader is given no or some compensation. An advantage of the survey design is that it ensures that all participants

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[17]Table A5 in Appendix 1 provides sample characteristics.

[18]The survey was conducted in two rounds, where we used slightly different formulations to test for robustness. In particular, we varied how we stated the monetary compensation and the choice set. In one round, we used "no/a small/a very high" monetary compensation and a choice set of zero to six days, in the other round we used actual sums in NOK when stating the monetary compensation and a choice set of zero to four days. The responses were strikingly similar in the two rounds and we thus only report the aggregate results. For simplicity, we here refer to the treatment variation in the same way as in the lab experiments (no/moderate/high compensation).

face a situation with a leader, including the participants in the no compensation treatment. The survey design can therefore cleanly identify the effect of introducing leader compensation on the followers' self-reported motivation for contributing.

[Figure 8 about here]

Figure 8 shows average reported participation in voluntary work by treatment. In line with the lab findings, we observe that a high leader compensation causes a significant drop in the willingness to contribute to the public good, both in a comparison with the no compensation treatment ($p < 0.001$) and with the moderate compensation treatment ($p = 0.002$). The survey thus provides clear evidence of a social crowding-out effect in the population at large. A moderate leader compensation also causes a decrease in public goods provision, but this effect is not statistically significant ($p = 0.27$).

6   Concluding remarks

We have shown that monetary compensation to leaders can be used to increase public goods provision, but also that it may create a social crowding-out effect of moral motivation. We believe that these insights may be of great importance in a wide range of real life situations.

It has been estimated that nearly a billion people are involved in voluntary work throughout the world, and the voluntary sector has increasingly been recognised to play a fundamental role in society, and particularly in the provision of public goods (Salamon, Sokolowski, and Haddock, 2011). A crucial question in the organization of voluntary work is how to motivate people to take the lead and inspire others to follow. An example from daily life is the question of how to organize a youth soccer team, which typically requires input from many parents. How can we make sure that someone is willing to take the responsibility of being the first mover in getting the team established? The present paper has investigated one possibility, namely to provide a monetary compensation to the leader of the team. Our experiment suggests that such a compensation may be beneficial for the effort put into the organization of the soccer team. It may make it more likely that someone steps up, and the presence of a leader will most likely generate more effort from the other parents. But this strategy must be implemented with care. A too high compensation to the leader of the team may backfire, both by weakening the power of the example and by attracting the wrong leaders.

Similar examples abound in the public and the private sector. For example, how should we think of monetary compensation to the department head at a university? A high level of compensation will probably attract many candidates to the job (including candidates with the wrong qualities), but it may also undermine the willingness of the rest of the department members to contribute to the provision of public goods in the

department. The fact that the head of department works very hard to create a well-functioning department may not inspire others to make the same effort, if they know that he is highly compensated for taking the lead.

We find that compensating leaders involved in public goods provision may have both positive and negative effects, and the relative importance of these effects may depend on the level of compensation offered to the leader. In particular, we have shown that a high compensation to leaders may generate a significant social crowding-out effect of moral motivation that may be detrimental for public goods provision. Further research, however, is needed to understand how these effects work in different types of settings, where also other aspects of leadership are potentially involved.

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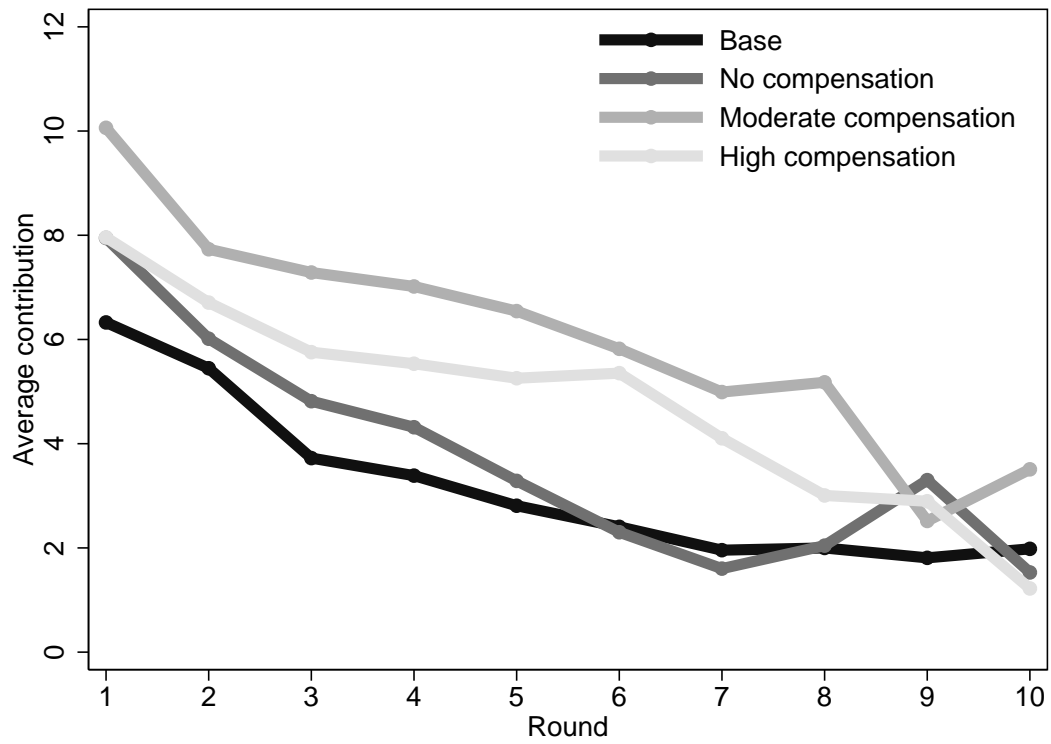
Figure 1: Contributions

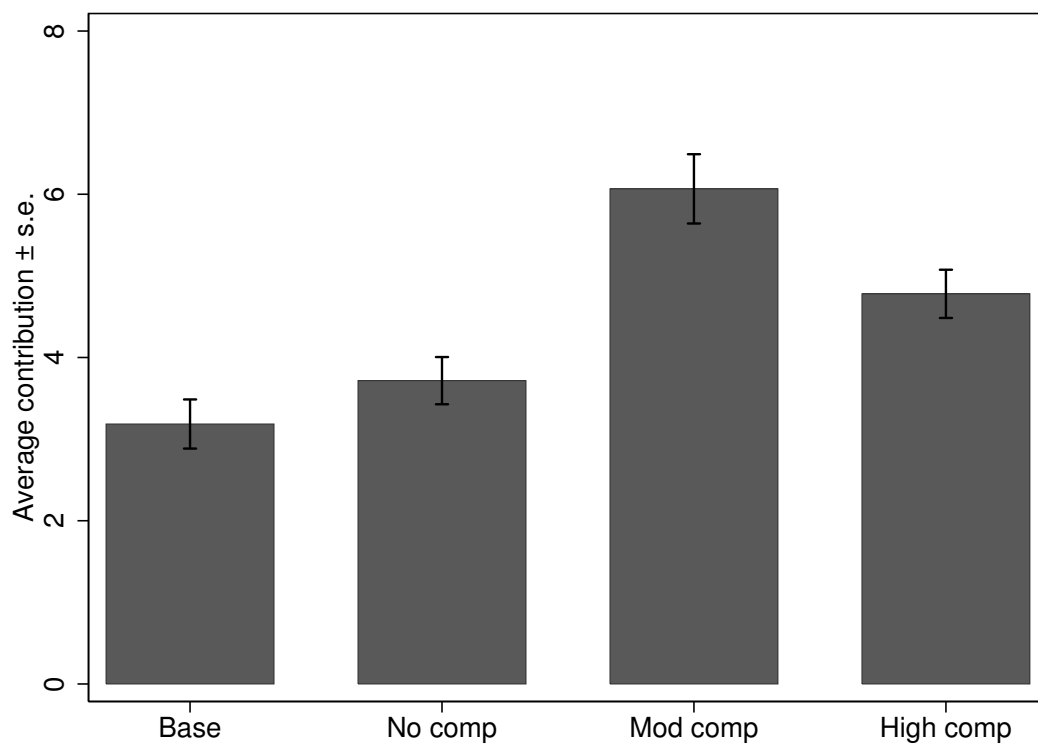*Note*: The figure shows average contribution over the ten rounds by treatment.

Figure 2: Average contributions

Note: The figure shows average contribution by treatment. Both leaders and followers are included. The standard errors are also indicated.
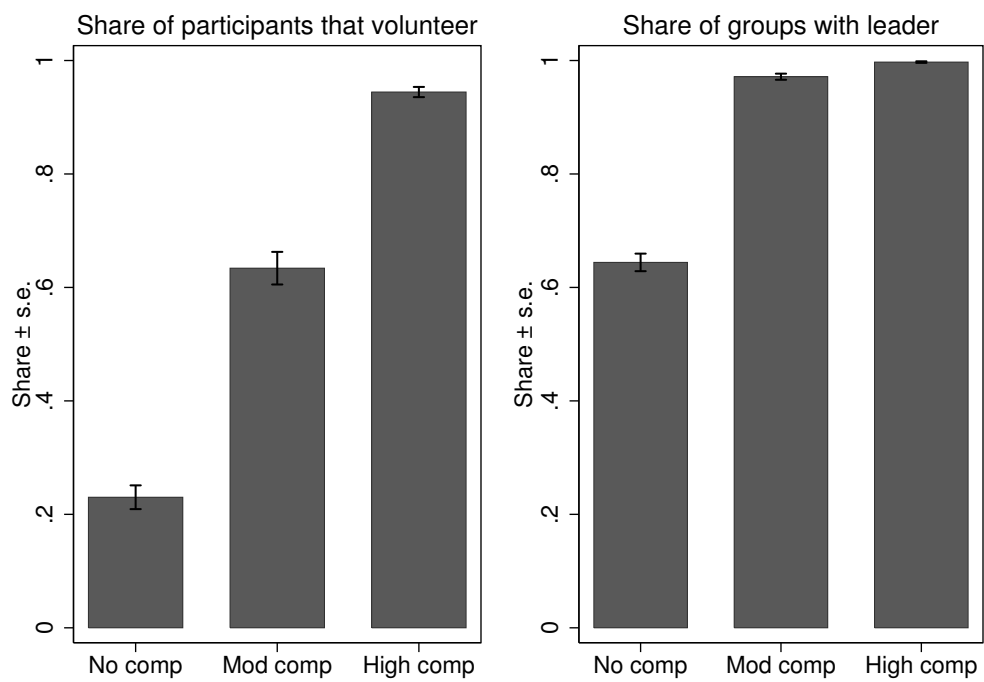
Figure 3: Recruitment

Note: The left panel shows the share of situations where a participant volunteered to be a leader by treatment. The right panel shows the share of groups with a leader by treatment. The standard errors are also indicated.
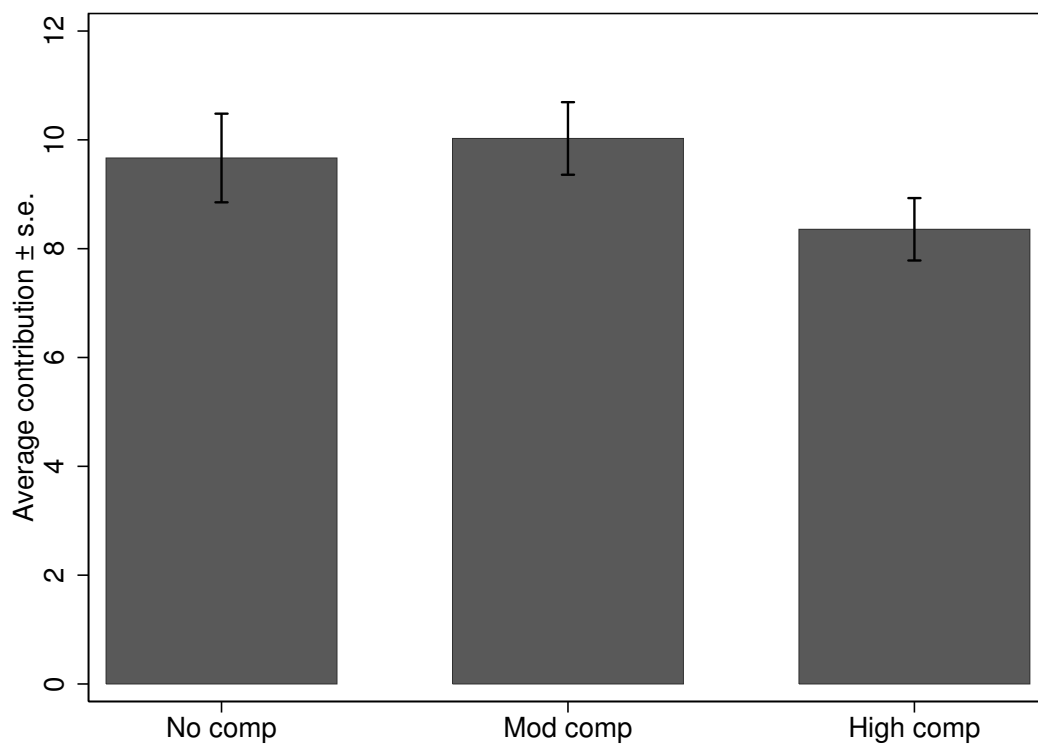
Figure 4: Leader contribution

Note: The figure shows the average leader contribution by treatment. The standard errors are also indicated.
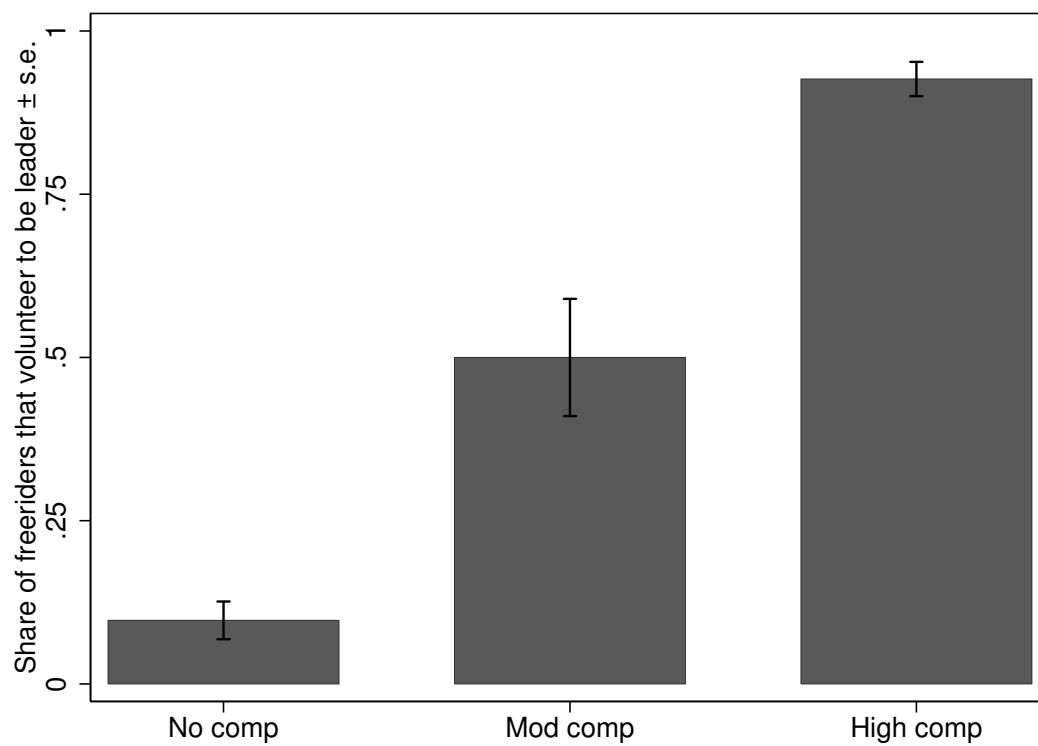
Figure 5: Leader composition across treatments

Note: The figure shows the share of freeriders (classified by the P-experiment) that
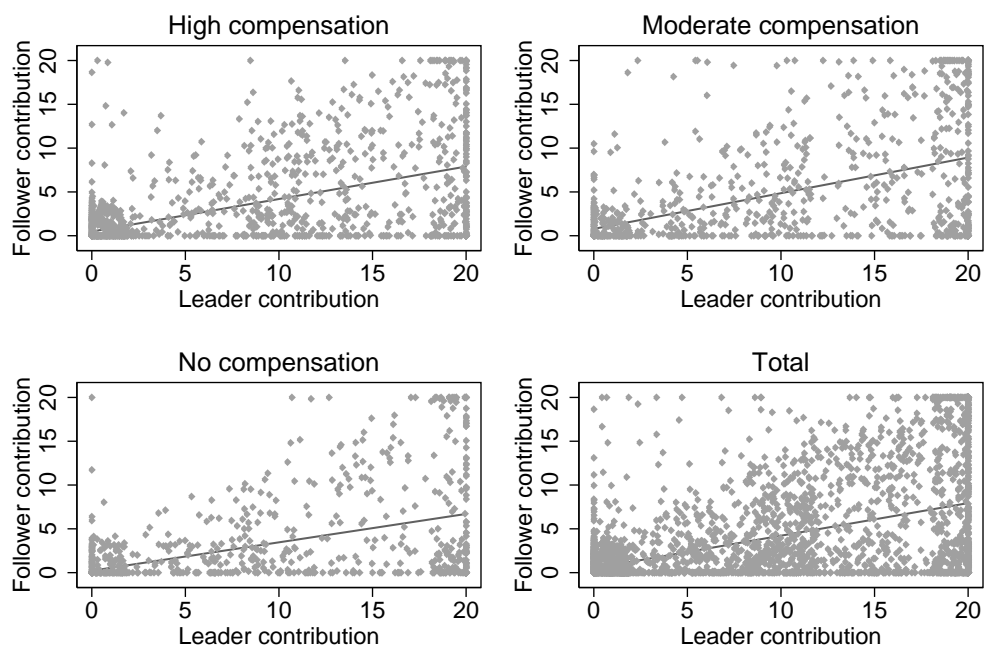volunteered to be leader. The standard errors are also indicated.

Figure 6: Follower contribution as a function of leader contribution

Note: The figure shows a scatter of follower contribution plotted against the leader's contribution by treatment and pooled. The line shows the linear fit.
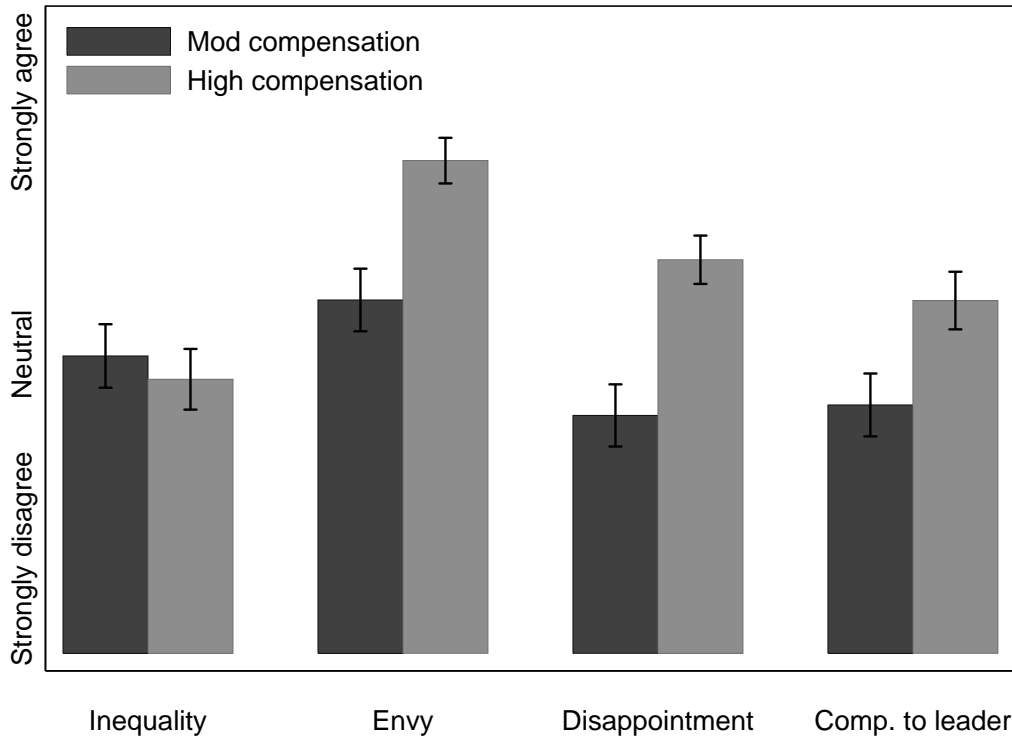
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Figure 7: Questionnaire

Note: The figure reports the average response from 1-5 indicating the extent to which the participant agreed with different statements about the motivation for the choices made in the experiment for moderate and high compensation. These questions were only given in the 2013 fall sessions. The bars show the following: **Inequality**: "For my contribution, considerations of inequality within the group was very important for my decision of what to contribute.", **Envy**: "When I attempted to become an early contributor and was not selected I envied the leader.", **Disappointment**: "When I attempted to become an early contributor and was not selected I was very disappointed." and **Compensation to leader**: "When there was an early contributor, the fact that he was compensated for being an early contributor made me less motivated by his contribution.".
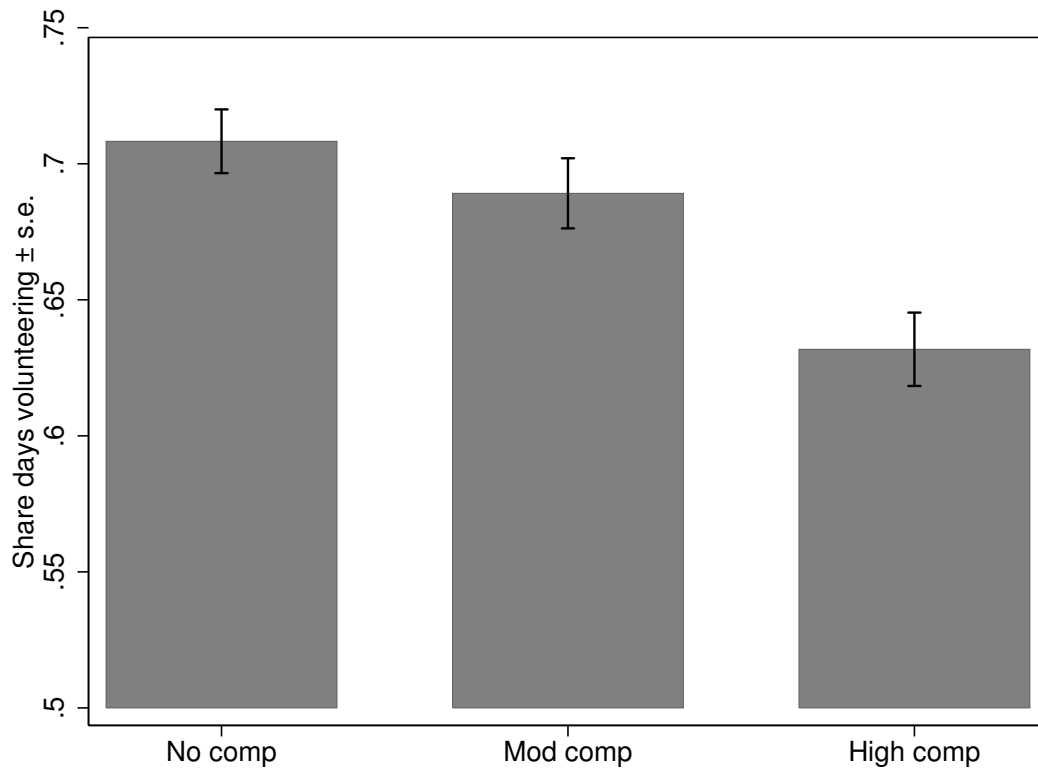
Figure 8: Survey response: volunteer work

Note: The figure reports survey responses by treatment, where, for simplicity, we refer to the treatment variation in the same way as in the lab experiments (no/moderate/high compensation). In one round of the survey, the choice set was zero to four days. We show the average share of days (out of four/six) that the respondent said that he would have participated in voluntary work. Standard errors are also indicated.

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