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THE IMPACT OF ANTICIPATED DISCUSSIONS ON COOPERATION IN A SOCIAL DILEMMA

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The impact of anticipated discussion on cooperation in a social dilemma

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Abstract:
We study the impact of anticipated face-to-face discussions among group members after they have made an anonymous contribution to a public good in an experimental setting. We find that the impact of anticipated discussions depends on how we frame the public good game. When framed in non-evaluative language, anticipated ex post discussions lead to a sharp reduction in contributions to the public good. This effect reversed when evaluative language was used to underscore normative expectations. In contrast, there was no framing in the no-discussion baseline version of our game. We offer an explanation that centres on the idea that the announcement of ex post discussions reinforces both normative and predictive expectations.

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1 Introduction

In political life and elsewhere, decision makers often encounter situations where the best action for individual group members is detrimental to the group as a whole. A situation where individuals voluntarily contribute to a public good is a classic example of such a social dilemma. Everyone is better off if they cooperate and contribute to the public good, but each individual serves her own material interests best by not contributing.

Numerous experiments have shown that pre-play discussions have a positive impact on average contributions to a public good. Suppose, however, that subjects are told that they have to discuss appropriate behaviour in social dilemmas *after* having made an anonymous contribution to a public good. How does the mere knowledge that discussions following play affect the degree of cooperation in a social dilemma? We conducted an experiment to shed light on this question.

Our research question is interesting for at least two reasons. First, choices in most real life social dilemmas are not preceded by face-to-face communication, and our design enables us to capture the effect of deliberation *foro interno*, within each individual's head. Hence, by measuring the impact of *ex post*, anticipated discussions, we can isolate the impact of the cognitive aspect of deliberation on cooperation in social dilemmas. When individuals discuss before they play it becomes difficult to isolate the impact of communications since this effect can be confounded by the emotional and relational processes that are evoked when individuals mingle before they contribute to a public good. Second, our research of social dilemmas is of practical interest as it can be used to moderate collective action problems. Assessing how different conditions change the degree of cooperation in a public good game can facilitate our understanding of *why*

individuals cooperate in such situations. A firmer grip on the motivations that underlies pro-social behaviour can help us architect a choice environment that fosters cooperation, Thaler and Sunstein (2008).

We find that the impact of ex post discussions depended on the description of the public good game. When presented in non-evaluative language, the contributions to the public good *fell* with the announcement of face-to-face communication. Compared with the no-discussion control, individuals gave an average of 23% less when they anticipated participation in a discussion with group members after having made anonymous contributions to the public good. When we changed the framing of the game and used evaluative language to underscore the appropriateness of contributing to the public good (not contributing was described as "free-riding"), we found that ex post discussions led to an 18% *increase* in average donations to the public good.

Comparing the controls (no-discussion treatment), we found no difference between the evaluative and non-evaluative description of the game, but—as can be deduced from the numbers above—there was a large and significant difference when ex post discussions were anticipated. Using the word free-riding as a pejorative to influence normative expectations led to a 65% increase in average donations *if* it was known that discussions would follow play.

Explanation of our data is not straightforward, but here is a plausible account. Instructing subjects to engage in ex post discussions will, we suggest, increase the salience of interpersonal aspects of their decisions. This is entirely independent of the words that are used to describe the game. However, the evaluative framing of the game has an impact on *which* social aspects are brought to the forefront. When not contributing is deemed to be "free riding", announcing ex post

discussions reminds the subjects that they violate a (cooperative) norm by not contributing. When a less evaluative description is used, the right course of action is not obvious, or at least is less so. Moreover, when normative expectations are less clear, it is plausible that an announcement of ex post discussions will draw attention to the impact of individual donations on the relative income of group members. If we assume that individuals dislike losing relative income (dislike being "suckers") and dislike deviation from a cooperative norm, we can account for our findings.

The paper is organized as follows. We start with an outline of the design and procedures of the experiment. Thereafter, we present our results and relate them to earlier studies. In section five, we discuss the mechanism we believe can explain our result. Section six concludes.

2 Experimental design and procedures

2.1 Experimental design

Each session gathered 25 subjects that were randomly divided into groups consisting of five members. Each group made a single voluntary contribution to a public good game. At the outset, each group had a NOK 1250 endowment in a community box.[1] Each person in the group received NOK 250 (five NOK 50 notes) from the community box and decided how much to "leave" in the box and how much he/she would keep. Individual decisions were anonymous, and made behind a screen. The total amount remaining in the community box was doubled and divided equally

[1] NOK = Norwegian Kroner, at the time of the experiment one US dollar bought approximately 5.5 Norwegian kroner.

between the members of the group. Hence, if subject *i* left $c_i \in \{0,50,100,150,200,250\}$ in the community box, the payoff would be:

$$\pi_i = (250 - c_i) + \tfrac{2}{5} \sum_{j=1,2...5} c_j$$

The subjects did not receive any additional payments, thus their earnings could range from 100 to 650 kroner. In our experiment, aggregated over all sessions, the average payoff was 402 kroner (N = 125), which is very good compensation for one hour of work.[2]

Our experiments have two main treatments. The baseline is a standard private contribution to a public good game. The treatments are to (i) include ex post discussions and (ii) use an evaluative framing of options: see Table 1.[3] In the discussion treatment, we instructed subjects to engage in discussions with their group members *after* making their contribution to the public good, and *after* receiving their payment from the game. It was emphasized that individual contributions would remain anonymous in the discussion phase. Our next treatment was to describe the game and the options available to individuals in evaluative language that strongly indicated that it was appropriate to contribute to the public good. The group subjects belonged to was described as a "social group", and "keeping money for yourself" was phrased as "free-riding". The instructions can be found in Appendix 1.

[2] The hourly wage for a teaching assistant was 130 kroner at time of the experiment.

[3] In addition to the results we report here, we conducted one session with out-group discussions and one session in which we announced that the subjects should sit in silence and reflect on the game in which they had participated. We do not report these results here because they do not add any insight into the issue we explore and they make the exposition of our findings more convoluted.

(Table 1 about here)

2.2 Procedures

The subjects were enrolled undergraduate students at the University of Bergen in Norway. We recruited from many different disciplines in order to reduce the social ties between participants. We conducted seven experimental sessions with 25 subjects in each session in November 2007 and May 2008. In each session, subjects were gathered in a lecture hall. They were welcomed, instructed not to talk to each other and divided into smaller groups.[4]

Each "community" of five subjects went to an assigned classroom. Subjects were seated and asked to respond to a set of self-report questions designed to measure psychological predispositions and self-regulatory focus. It took approximately 10 minutes to answer the questions. When that was completed, the instructions for the public good game were distributed. For details of instructions, see Appendix 1. The basic instructions informed subjects about the structure of the situation and provided different examples of how individual choices would affect the distribution of income within the group.

After everyone had read the instructions and all questions had been answered, the experimenter called one subject at a time to approach him (or her). Each subject received NOK 250 (five NOK 50 bills) and two envelopes marked "mine" and "community box" in the non-evaluative treatment and "free-rider" and "community box" in the evaluative treatment. Subjects were

[4] To have a complete session of 25 subjects, we recruited more than 25 people. They were randomly drawn to participate further in the experiment, and persons not selected to participate received 100 kroner.

instructed to go behind a screen to make their decisions. They were told to put the self-report form together with their contribution to the public good in the envelope marked “community box” and place this envelope in a sealed box. They took the other envelope back to their seat.

When all group members had made their decisions, a second experimenter came into the room to collect the box. The box was taken to a separate room where individual contributions were written on the self-report form. After all necessary information was registered, the amount in the community box was doubled, and it was returned to the group room and divided equally among subjects in the group. For the no-discussion treatments, the experiment ended at this point, while in the discussion treatment subjects discussed the dilemma as instructed.

3 Results

Figure 1 and Table 2 summarize our main findings. Figure 1 clearly indicates that contributions differ systematically across treatments. This difference is also confirmed by a Kruskal–Willis test, as the hypothesis that the contributions are the same in all four treatments is rejected at 5% significance level ($p = 0.026$).

(Figure 1 and Table 2 about here)

The most surprising result from our study is the negative impact of ex post discussions on cooperation when the game was described in non-evaluative language. Anticipating discussions

then led to a sharp *decrease* in donations to the public good. In the discussion treatment the average donation was 44.0% of the maximum contribution (NOK 250), compared with 62.8% of the maximum at the no-discussion baseline. The difference is statistically significant at the 5% level, $p = 0.021$ according to a non-parametric Mann–Whitney two-tail test. In the no-discussion trial, 47% of the subjects contributed NOK 200 or 250, while only 16% gave at these high levels in the discussion treatment.

When evaluative language was used to sway normative expectations in the direction of cooperation, announcing ex post discussions had the opposite impact on cooperation. Average contributions now increased from 61.8% at the no-discussion baseline to 72.8% in the discussion treatment, and the fraction that gave NOK 200 or 250 increased from 48 to 68% in the discussion treatment. However, these differences are not significant at reasonable levels of significance ($p = 0.148$ for a Mann–Whitney one-tail test and $p = 0.126$ in a one-sided exact Fischer test, respectively).

Finally, when we compare contributions to the public good across the language framing of the game, we find dramatic effects. When discussions are anticipated, the impact of using evaluative language to describe options is substantial: mean contribution in the discussion treatments increased from 44.0% with non-evaluative framing to 72.8% in value-laden framing ($p < 0.01$ in a two-tail Mann–Whitney test). In the no-discussion case, there was absolutely no effect of using evaluative language to describe the options that were available.

4 Comparable studies

Literally thousands of social dilemma experiments have shown that subjects do not maximize their own material payoff in these games. On average, subjects give a substantial fraction of their endowment to the public good. Our findings are certainly in line with this general rule. In this section, we relate our results to other studies that measure the impact of discussions and framing on social interaction.

To our knowledge, we are the first to study the impact of anticipated ex post discussions in a one-shot collective action problem. Gächter and Fehr (1999) introduce discussions at the end of a 10-period repeated public good game. In their study, individuals first reveal and then discuss their contributions within the group. They find no significant effect of the social approval/discussion treatment on individual contributions. However, in a repeated public good game, the dynamics of conditional cooperation and retaliation are so strong that they completely overshadow the impact of ex post discussions. A repeated public good game is therefore not the right environment to test the impact of anticipated face-to-face communication.

Ellingsen and Johanneson (2008) show that anticipated verbal feedback reduces selfishness in a Dictator Game. On average, a dictator anticipating a written message from his/her recipient gives significantly more than a dictator who does not expect any feedback. Although we study a different game and another type of ex post communication, it is noteworthy that the result from our non-evaluative framing goes counter to their finding.

Rege and Telle (2005) study the impact of lifting the anonymity of individual contributions ex post. They show that subjects who have to write their contribution to the public good on a blackboard in front of other group members give significantly more to the public good than those that can retain their anonymity. Our study differs markedly from that of Rege and Telle (2005) because we examine another kind of ex post interaction (face-to-face communication) and we retain the anonymity of individual contributions.

Although there are no other studies of ex post discussions in a one-shot social dilemma game, there are numerous studies that address the impact of ex ante discussions in similar situations. This research shows that pre-play discussions enhance cooperation, especially when subjects can communicate face-to-face and can talk about the public good game. In a meta-analysis of the effect of various conditions on cooperation in social dilemmas, Sally (1995) finds that ex ante face-to-face communication is the single treatment that most raises contributions to the public good (by an average of 45%). For a more thorough discussion of the literature on ex ante discussions and cooperation in social dilemmas, and for a more complete list of references to this literature, refer to Ostrom (1998) and Camerer (2003).

There is also literature on the impact of framing in social dilemma games. A well known framing result is that subjects tend to be more cooperative in a prisoners' dilemma game if it is called "the community game" than if it is called "the Wall Street game" (Liberman et al (2004)). Others have shown that the reference point matters for decisions in a public good game; subjects tend to give more if it is stressed that giving to the public good induces a positive externality than if it is emphasized that taking from the public good imposes a negative externality on others (Andreoni (1995) and Park (2000)). However, although these studies indicate that the framing of the game

matters for individuals behaviour, there is also research that reports small or no effects an evaluative framework that puts the act of contributing in a more positive light: see Brandts and Schwieren (2007), Cubitt et al (2007) and Dufwenberg et al (2006). This is in line with our finding that using evaluative words to indicate the appropriateness of contributing to the public good had no impact on contributions in the no-discussion treatment. What is surprising in our study is that the effect of the framing was so massive when subjects anticipated ex post discussions.

5 Analysis

Our most surprising result, especially seen in the light of the consistent and strong positive impact of ex ante communication, was the decline in cooperation induced by ex post discussions when the public good game was framed in non-evaluative language. However, to what extent it is reasonable to expect the impact of ex ante discussions to carry over to situations with announced ex post discussions of course depends on which cooperative motivation one believes is augmented by pre-play discussions.

There are many different kinds of other-regarding concerns that can enhance cooperation in social dilemmas. They range from concerns for anticipated self and social evaluation of one's conduct to concerns for the wellbeing of others and for acting according to a fairness principle. What further complicates matters in a social dilemma is that individual choices will be a compromise between different concerns, both selfish material concerns and different kinds of other-regarding concerns.

Because individuals can cooperate in social dilemmas for many different reasons, pre-play communication among group members can affect individual contributions via different routes. Based on the experimental literature, Ostrom (1998) suggests four processes that can make face-to-face communication before play efficacious in collective action dilemmas: (i) mutual commitments; (ii) enhanced trust; (iii) development of group identity; and (iv) creation and reinforcement of norms. The first alternative, exchanging mutual commitments, is not relevant when individuals discuss after rather than before the game. However, the other three processes may also be influenced by anticipated ex post discussions.

Informing subjects that they must engage in face-to-face communication after having made their contribution to the public good induces them to think harder about interpersonal aspects of their decisions. Hence, the presence of other group members becomes more salient and their interests and judgements more germane when subjects foresee post-play discussions within the group. This can affect the extent to which each subject trusts others to contribute to the public good.[5] However, thinking harder about the interests and choices of other group members does not necessarily lead to *more* trust within the group. Epley et al (2006) found that in social dilemma situations perspective taking increased individual taking. In their "perspective taking" treatment, subjects are explicitly instructed to consider the interests of those with whom they interact and this leads them to become more cynical and to act more selfishly. One could imagine that announcing ex post discussions would have a similar effect in our experiment.

[5] Fishbacher et al (2001) show that reciprocity is an important factor in these games; they find strong evidence that an individual's contributions in a public good game are positively correlated with what they believe others will contribute.

It is also possible, but not very likely, that anticipated discussions within a group will increase group identity and altruism.[6] It is more probable that the foreshadowing of face-to-face communication will evoke and reinforce normative expectations. Theorists of deliberative democracy think there is a link between communication and impartiality. The presumption is that communication between individuals demands justification. In justifying a distributive choice to others, one cannot appeal to strict self-interest but is drawn to argue from a collective or public point of view: see, for example, Nino (1996: 121–26), Elster (1998). Hence, if morality (impartiality) compels individuals to contribute to the public good, it should be expected that the announcement of post-play discussions would draw attention to this norm and have a positive impact on cooperation.

The mechanisms we have outlined above square well with our findings. Framed in relatively neutral language, normative expectations in the social dilemma are vague; it is not obvious that it is morally right to contribute to the public good. Is it, for example, right to contribute if no one else does? When normative expectations are vague, the announcement of ex post discussions highlights predictive expectations: what will the others do, and how will my choice fare given these expectations? Hence, the competitive element of the game and the unpleasantness of being outsmarted by group members become more pressing when subjects think about ex post discussions, and we predict that this will induce individuals to contribute less to the public good in this condition. If, however, the public good game is framed in language that emphasizes the inappropriateness of not contributing to the public good, this should, according to our argument,

[6] Based on a series of experiments Dawes et al (1990) argue that ex-ante communication enhances cooperation *because* it creates a group feeling among subjects and a motivation to contribute to a benefit for "us" (not the giver or his/her conscience). Their explanation is contested: see Bateson (1995). Without taking a stand in that debate, we believe it is clear that enhanced group identity seems much less plausible in a situation with ex post discussions.

make a difference. In this case, the normative expectations are made more salient by the announcement of ex post discussions and we predict enhanced cooperation.

We believe we have a plausible explanation for individual contributions falling when discussions were announced with non-evaluative framing, and why this effect was reversed when we used valance framing that put the act of not contributing in a negative light. The compressed version of our explanation is as follows. Announcing ex post discussions in a public good game puts the spotlight on the social consequences of individual choices; this is true irrespective of the framing of the public good game. The framing matters as it determines which interpersonal aspect of a choice becomes more salient. If normative expectations are clear-cut, we suggest that the costs of deviating from the norm are made more salient by telling subjects that they must participate in post-play discussions. If normative expectations are more blurred, we suggest that the prospect of becoming an outsmarted “sucker” is made more pressing in a post-play discussion treatment. Hence, the impact of anticipated post-play discussions will depend on the framing of the experiment.

6 Conclusion

Social dilemmas are prevalent in social interaction and it is important to discover how cooperation can be enhanced in these situations. We have studied the cooperative impact of anticipated face-to-face communication when information on individual contributions remains private in the discussion phase. This design enables us to isolate the cognitive aspect of

communication from the emotional and relational processes that are evoked when individuals talk before making decisions in a social dilemma.

The strong framing effect we find, and the fact that cooperation was seriously hampered by the prospect of face-to-face communication in the non-evaluative description of the game is, we believe, of some significance. Our interpretation of these findings is that even though the prospect of engaging in face-to-face communication probably stimulates reflection and perspective taking it does not, per se, breed impartiality and cooperation. If normative expectations are vague, our hypothesis is that the announcement of ex post discussions induces subjects to focus more closely on the interests and expected decisions of other subjects and this draws their attention to the competitive aspect of the game. However, we have also shown how easy it is to create normative expectations that dramatically change individual behaviour. If the decision not to contribute is described as free-riding and the subjects recognize, when the prospect of ex post discussions induces them to look in that direction, that they have a moral obligation to contribute to the public good.

The fact that individuals are so sensitive to the framing of their deliberations implies that they can be nudged in the direction of making cooperative decisions through relatively subtle means. Hence, there seems to be ample scope for improving the choice architecture of social dilemmas.

References

Andreoni, J. (1995): Warm-Glow versus Cold-Prickle: The Effects of Positive and Negative Framing on Cooperation in Experiments, *Quarterly Journal of Economics,* 110, 1–21.

Bateson, C. D. (1995): Prosocial Motivation: Why do We Help Others? A. Tesser (Ed.) *Advanced Social Psychology,* (pp. 333–383) McGraw-Hill, Inc.

Brandts, J. and C. Schwieren (2007): Frames and Games, Discussion Paper, Instituto de Análisis Econòmico (CSIC), Barcelona, and University of Heidelberg.

Camerer, C. (2003): *Behavioural Game Theory*. Princeton: Princeton University Press.

Cubitt, R. P. , M. Drouvelis, and S. Gächter (2007): Framing and Free Riding: Moral Judgments, Emotional Responses, and Punishment in Social Dilemma Games, mimeo University of Nottingham.

Dawes, R. M., J. C. Alphons van de Kragt, and J. M. Orbell (1990): Cooperation for the Benefit of Us—Not Me, or My Conscience. In J.J. Mansbridge (Ed.), *Beyond Self Interest* (pp. 97–110). Chicago: University of Chicago.

Dufwenberg, M., S. Gächter, and H. Hennig-Schmidt (2006): 'The Framing of Games and the Psychology of Strategic Choice', *CeDEx Discussion Paper No. 2006-20*

Ellingsen, T. and M. Johannesson (2008): Anticipated Verbel Feedback Induces Altruistic Behaviour, *Evolution and Human Behavior*, forthcoming.

Elster, J (1998): Introduction. In J. Elster (ed.), *Deliberative Democracy*, Cambridge: Cambridge University Press.

Epley, N., E Caruso, and M. H. Bazerman (2006): When Perspective Taking Increases Taking: Reactive Egoism in Social Interaction. *Journal of Personality and Social Psychology*, 91(5), 872–889.

Fischbacher, U., S. Gachter, and E. Fehr (2001): Are People Conditionally Cooperative? Evidence from a Public Goods Experiment. *Economics Letters,* 71, 397–404.

Gächter, S. and E. Fehr, (1999): Collective Action as a Social Exchange. *Journal of Economic Behavior and Organization,* 39, 4, 341–369.

Liberman, V., S. Samuels, and L. Ross (2004): The Name of the Game: Predictive Power of Reputations vs. Situational Labels in Determining Prisoner's Dilemma Game Moves. *Personality & Social Psychology Bulletin,* 30, 1175–85.

Nino, C.S. (1996): *The Constitution of Deliberative Democracy*. New Haven, Conn., Yale University Press

Ostrom, E. (1998): A Behavioural Approach to the Rational Choice Theory of Collective Action. *American Political Science Review*, 92(1), 1–22.

Park, E. (2000): Warm-Glow versus Cold-Prickle: A Further Experimental Study of Framing Effects on Free-Riding, *Journal of Economic Behavior & Organization*, 43, 405–21.

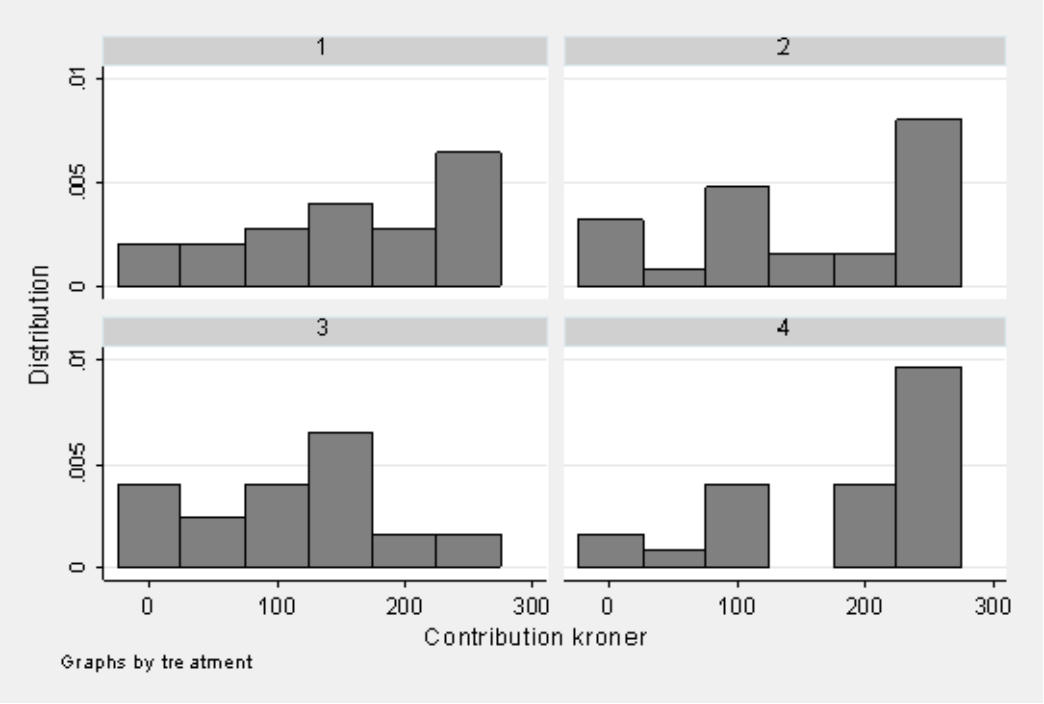
Rege, M. and K. Telle (2004): The Impact of Social Approval and Framing on Cooperation in Public Goods Situations, *Journal of Public Economics*, 88, 1625–44.

Sally, D. (1995): Conversation and Cooperation in Social Dilemmas. A Meta-Analysis of Experiments from 1958 to 1992. *Rationality and Society*, 7(1), 58–92.

Thaler, R.H. and C.R. Sunstein (2008): *Nudge. Improving Decisions About Health, Wealth, and Happiness*. New Haven and London: Yale University Press.

Figure and Tables

Figure 1 Distribution of contributions to public goods by treatment groups.



Note: Treatments: 1: No discussion/Non-evaluative, 2: No discussion/Evaluative
3: Discussion/ Non-evaluative, and 4: Discussion/Evaluative.

Table 1. The four treatments and numbers of subjects (N).

	Non-Evaluative	Evaluative
No discussion	N = 50	N = 25
Discussion	N = 25	N = 25

Table 2. Mean and median contribution in percentage of maximum contributions, row and column differences, and p-values of a Mann–Whitney mean comparison two-tail test.

	Non-evaluative	Evaluative	Column differences
No discussion	Mean = 62.8% Median = 60.0% N = 50	Mean = 61.6% Median = 60.0% N = 25	Mean = –1.2 Median = 0.0 p = 0.986
Discussion	Mean = 44.0% Median = 40.0% N = 25	Mean = 72.8% Median = 80.0% N = 25	Mean = 28.2 Median = 40.0 p = 0.003
Row differences	Mean = –18.2 Median = –20.0 p = 0.021	Mean = 11.2 Median = 20.0 p = 0.347	

Appendix: Instructions

EXPERIMENTAL INSTRUCTIONS

The original instructions were in Norwegian. This appendix contains a translation.

INSTRUCTION (Non-evaluative framing)

The experiment has started, and we ask you kindly to be silent. Talking is prohibited! You and the four others in this room comprise a group.

Your group will have 1250 kroner in a community box. One-by-one, you will be asked to come forward to a screen. Here you will receive two envelopes. One is marked COMMUNITY BOX and the second is marked MINE. We will then remove NOK 250 (five 50 kroner notes) from the community box and give it to you. Take these 250 kroner behind the screen where you, with **full anonymity,** decide how much you will return to the community box. You can choose to return 0, 50, 100, 150, 200 or 250 kroner to the community box by putting the amount into the envelope marked COMMUNITY BOX. Put the amount you choose to keep for yourself into the envelope marked MINE, which again you can either put in your pocket or hide in other ways. **No one will ever know how much you gave to the group and how much you kept for yourself.**

After each of you has made your choice, we will count the money in the community box and double the amount. That amount will be divided equally between all five members of your group. Thus, the amount you receive in this experiment equals the amount you put into envelope marked MINE plus one fifth of the total amount in the community box (after the contribution of all players has been multiplied by two).

For every 50 kroner bill you put into the community box, you will only receive 20 kroner. The 50 kroner you put into the community box will be multiplied by two and thereafter split equally between the whole group; you will receive one fifth of 100 kroner, which is 20 kroner. For the group as a whole, the income increases by 100 kroner for every 50 kroner bill you put into the community box. Thus, for your group it is best if everybody puts the total amount (250 kroner) into the community box, even though each person earns the most money if he or she returns nothing to the community box. This type of decision situation is called a social dilemma.

> *Examples*
>
> If all the other members of your group return 250 kroner to the community box but you keep the money and put all 250 kroner into the envelope marked MINE, then there is 1000 kroner in community box. This amount is doubled and shared equally between all members of your group. Everybody receives 400 kroner from the community box. Therefore, you will receive a total of 650 kroner (your share of the community box plus the amount you put into the envelope marked MINE) while the others in your group will receive 400 kroner because they put no money into their envelope marked MINE.
>
> You put 250 kroner into the community box while the others in your group keep all for themselves (put 250 kroner in the envelopes marked MINE). After doubling, there is 500

kroner in the community box. Everybody receives 100 kroner from the community box plus the amounts they have put into their respective envelopes marked MINE. You will leave the experiment with 100 kroner while the other members of your group will receive 350 kroner.

If everybody returns 100 kroner to the community box, it will contain 500 kroner. After the amount is doubled, there will be 1000 kroner, which will be divided equally between all the members of your group. This means that every one of you will receive 200 kroner from the community box. Everyone will receive 350 kroner in total.

If no one returns anything to the community box (everybody puts 250 kroner into the envelope marked MINE), then there will be nothing in community box. This means that everyone will receive the amount they have put into envelope marked MINE, a total of 250 kroner.

As soon as each of you have been behind the screen and made your respective choices, you will return to your seat. Talking is still prohibited. When everyone has been behind the screen, someone will pick up the community box and leave the room. The amount in the community box will be counted and doubled. Then the total amount in the box will be shared equally by the members of your group. After you have receive your share of the community box, the experiment is completed, and you can leave the room. **We emphasize that whatever decision you make behind the screen is totally anonymous; no one will ever know how much you put into the community box.**

[Discussion treatment only:]
Discussion
After each person has received their share of the community box, members of your group are going to discuss the type of decision problem in which you have participated. The discussion will take about 10 minutes. You are going to discuss the following:

1. Relevance of the type of decision problem in which you have participated.
2. What is reasonable behaviour in such decision process?

The person organizing this experiment will not participate actively in the discussion. Also in this discussion process, there will be full anonymity about how much each of you put into the community box behind the screen. **We stress that the decision you make behind the screen is anonymous; no one will ever know how much you put into the community box.**

INSTRUCTION (Evaluative framing)

The experiment has started, and we ask you kindly to be silent. Talking is prohibited! You and the four others in this room comprise a social group.

Your social group will have 1250 kroner in a community box. One-by-one, you will be asked to come forward to a screen. Here you will receive two envelopes. One is marked with COMMUNITY BOX and the second with FREE RIDER. We will then take NOK 250 (five 50

kroner notes) out of the community box and give it to you. You take these 250 kroner behind the screen where you with **full anonymity** decide how much you will return to the community box. You can choose to return 0, 50, 100, 150, 200 or 250 kroner to the community box by putting the amount into the envelope marked COMMUNITY BOX. Put the amount you choose to keep for yourself into the envelope marked FREE RIDER, which again you can either put in your pocket or hide in other ways. **No one will ever know how much you gave to the social group and how much you kept for yourself.**

After each of you has made your choice, we will count the money in the community box and double the amount. That amount will be divided equally between all 5 members in your social group. Thus, the amount you will receive in this experiment is equal the amount you put into envelope marked FREE RIDER plus one fifth of the total amount in community box (after the contribution of all players has been multiplied by two).

For every 50 kroner bill you put into the community box, you will only receive 20 kroner. The 50 kroner you put into the community box will be multiplied by two and thereafter split equally between the whole group; you will receive one fifth of 100 kroner, which is 20 kroner. For the group as a whole, the income increases by 100 kroner for every 50 kroner bill you put into the community box. Thus, for your group it is best if everybody puts the total amount (250 kroner) into the community box, even though each person earns the most money if he or she returns nothing to the community box. This type of decision situation is called a social dilemma.

Examples

If all the other members of your group return 250 kroner to the community box but you free ride, keep the money and put 250 kroner into the envelope marked FREE RIDER, then there is 1000 kroner in community box. This amount is doubled and shared equally between all members in your group. Everybody receives 400 kroner from the community box. Therefore, you will receive a total of 650 kroner (your share of the community box plus the amount you put into the envelope marked FREE RIDER) while the others in your group will receive 400 kroner because they put no money into their envelopes marked FREE RIDER.

You put 250 kroner into the community box while the others in your group keep all of it for themselves (put 250 kroner in the envelope marked FREE RIDER). After doubling, there is 500 kroner in the community box. Everybody receives 100 kroner from the community box plus the amounts they have put into their respective envelopes marked FREE RIDER. You will leave the experiment with 100 kroner while the other members of your group will receive 350 kroner.

If everybody returns 100 kroner to the community box, it will contain 500 kroner. After the amount is doubled, there will be 1000 kroner, which will be divided equally between all the members of your group. This means that every one of you will receive 200 kroner from the community box. Everyone will receive 350 kroner in total.

If no one returns anything to the community box (everybody puts 250 kroner into the envelope marked FREE RIDER), then there will be nothing in community box. This means that every one receives the amount they have put into envelope marked FREE RIDER, a total of 250 kroner.

As soon as each of you have been behind the screen and made your respective choices, you will return to your seat. Talking is still prohibited. When everyone has been behind the screen, someone will pick up the community box and leave the room. The amount in the community box will be counted and doubled. Then the total amount in the box will be shared equally by the members of your group. After you have receive your share of the community box, the experiment is completed, and you can leave the room. **We emphasize that whatever decision you make behind the screen is totally anonymous; no one will ever know how much you put into the community box.**

[Discussion treatment only:]
Discussion
After each person has received their share of the community box, members of your social group are going to discuss the type of decision problem in which you have participated. The discussion will take about 10 minutes. You are going to discuss the following:

3. Relevance of the type of decision problem in which you have participated.
4. What is reasonable behaviour in such decision process?

The person organizing this experiment will not participate actively in the discussion. Also in this discussion process, there will be full anonymity about how much each of you put into the community box behind the screen. **We stress that the decision you make behind the screen is anonymous; no one will ever know how much you put into the community box.**

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