It pays to be nice

Partner choice as an informal punishment mechanism

by

Nina Serdarevic

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Preface

This thesis is the final work of my Master`s degree at the University of Bergen. The person whose valuable comments and excellent guidance I could not have done this without is my supervisor Sigve Tjøtta. I also want to thank co-supervisor Eirik A. Strømland for programing the experiment and for sharing his knowledge of econometrics and the experimental literature with me. Thank you both for always making time to teach me how to improve my academic work, and for igniting my interest in the field of experimental economics. I thank Statoil`s Academia Agreement and the Norwegian Citizen panel for financial support.

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Nina Serdarevic

Nina Serdarevic, Bergen. June.01.2016

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Abstract

Two mechanisms that have been shown to facilitate cooperation are partner choice and punishment, but can partner choice be employed as an *informal* punishment mechanism? To examine this question I conduct two experiments. The first experiment studies a two-person repeated Prisoner`s Dilemma game. Each individual is allowed to choose one person from a fixed group of five subjects they wish to be paired with. The individual who fails to find a partner is *excluded* from the group. Moreover, and most importantly, I elicit individual cooperative dispositions *prior* to the two-person repeated Prisoner`s Dilemma game and examine how different types of individuals perform when allowed to choose a partner. Results show that partner choice does not increase the overall efficiency. However, there appear to be interesting differences in the performance of individuals who exhibit heterogeneous cooperative dispositions. Cooperative individuals outperform non-cooperators when allowed to choose a partner.

The second experiment is conducted in the Norwegian Citizen panel and attempts to distinguish between the social and the monetary cost associated with exclusion. I study a one-shot continuous Prisoner`s Dilemma game where exclusion is the consequence of being the lowest contributor in a group of three individuals. The monetary outside option is varied to examine which cost of exclusion individuals value the most. The results of the survey experiment show that the social cost of exclusion increases cooperation significantly, regardless of the size of the monetary cost linked to exclusion.

The lab experiment is computerized with the experimental program z-Tree 3.3.8 (Fischbacher, 2007). Results of both experiments are analysed with the statistical software STATA/IC 14.1 and Microsoft Excel 2016.

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Chapter 1: Introduction

"Your goal as an individual is to interact with someone who feels sympathy for your interests, in the hope that such a person will be internally motivated to cooperate, even though he could earn more by defecting" – Robert Frank (2004:10)

Many market interactions create a conflict between social and individual interests. However, as people often rely on reputation rather than courts to resolve such dilemmas, it might pay to be cooperative (Tullock, 1999). The untraditional emergence of the London stock exchange market illustrates this point very well. Only successful brokers were provided membership to coffeehouses that resembled private clubs. Those who could not conduct their dealings in an acceptable manner were labeled as "Lame ducks" and excluded from an environment that was worth being a part of, both in social and monetary terms (Smith, 1766: 538). Thus, honest individuals can use partner choice to solicit future partnerships while indirectly making cheaters worse off (Frank, 1987).

This thesis experimentally investigates how partner choice affects cooperation in an environment where having no partner may lead to exclusion. I make an attempt to unify the experimental literature on partner choice (Hauk & Nagel, 2001; Page et al., 2005) and punishment (Guala, 2012; Dreber et al., 2008). Moreover, I examine whether it pays to be predisposed to engage in cooperative behavior. That is, cooperative types may improve their relative performance when partner choice is possible.

The thesis yields three fundamental contributions to the experimental literature on cooperation. First, I link cooperative dispositions to performance by implementing a variant of the Strategy method in a one-shot continuous Prisoner`s Dilemma game (Selten, 1967). As the cooperative type measure is *independent* of the repeated game with partner choice, any cooperation in the one-shot game is assumed to have other-regarding motivations (Gintis, 2005). Second, as exclusion in the field rarely happens by explicitly excluding others, I examine if partner choice can work as an *informal* punishment mechanism (Guala, 2012). Third, exclusion might evoke different connotations to the actual cost of being the social outcast. The behavioural impact of being excluded can be better understood if an attempt is made to examine the distinction between the social and the monetary cost associated with exclusion.

Partner choice has been shown to positively influence cooperation and the efficiency in social dilemmas (Page et al., 2005; Cinyabuguma et al., 2005, Andreoni & Croson, 2008). However, the question of how partner choice affects the relative performance of cooperative individuals compared to free riders, has to my knowledge not yet been examined in the experimental literature. For example, brokers who cheat in environments which they cannot be excluded from, can increase their commissions at the expense of brokers who have attracted profitable clients by being honest. It is important to examine if *all* types of individuals increase their relative performance when partner choice may lead to exclusion, or if the overall efficiency increases at the expense of some types.

To address these essential questions, I conduct two experiments. The first experiment examines the effect of partner choice. Individuals play a two-person repeated Prisoner`s Dilemma game in fixed groups of five. Each individual can choose *one* person to produce a fictitious item with. The asymmetry between the supply and demand of partners makes it possible to study punishment as a function of partner choice. The individual with no partner is *excluded* from the interaction rather than randomly assigned to an available person (Strømland et al., 2016). The novelty of this experimental design is that I conduct a one-shot continuous Prisoner`s Dilemma game *prior* to the repeated partner choice game (Fischbacher et al., 2001; Fischbacher &

Gächter, 2010). This is done to elicit cooperative dispositions and to examine if cooperative individuals can outperform free riders when allowed to choose a partner.

The lab experiment yields the following findings. Partner choice does not increase the overall efficiency. However, when examining how different types of individuals perform when allowed to choose a partner, I find that cooperators are granted significantly higher payoffs than non-cooperators. Also, cooperators face a reduced estimated probability of being excluded. Thus, the results show that cooperative individuals with no intention to maximize their material payoff end up doing so anyway. The paradox is that in order to maximize payoff, one has to stop caring about it (Frank, 1987).

The second experiment is conducted in the Norwegian Citizen panel and investigates how exclusion is looked upon in both *social* and *monetary* terms. Related experimental studies have suggested that exclusion increases cooperation in social dilemmas (Rigaud et al.,2010; Feinberg et al.,2014; Cinyabuguma et al., 2005). However, what remains unclear is which cost of exclusion motivates individuals to cooperate more, the social or the monetary cost? I study a one-shot continuous Prisoner`s Dilemma game where exclusion is the consequence of being the lowest contributor in a group. Contrary to the controlled lab experiment, I vary the monetary outside option.

The results of the Norwegian Citizen panel experiment show that exclusion increases contributions significantly, and that the result is purely driven by the social cost of exclusion. One would expect individuals to act fully selfish in such an experimental environment. After all, they are granted full anonymity and the experiment is web-based. Nothing suggests that the interaction is repeated. However, being labelled as an outsider seems to motivate individuals to cooperate more, regardless of the monetary cost associated with exclusion.

The rest of this thesis proceeds as follows. Chapter 2 presents the related experimental literature. Chapter 3 provides the experimental design and procedures of the controlled lab experiment. The chapter finally summarizes the results. Chapter 4 contains the experimental design of the experiment conducted in the Norwegian Citizen panel. The main findings of this experiment are presented in the same chapter. Chapter 5 contains the summary and concluding remarks.

Chapter 2: Related literature

2.1 Cooperative types

Theoretical considerations

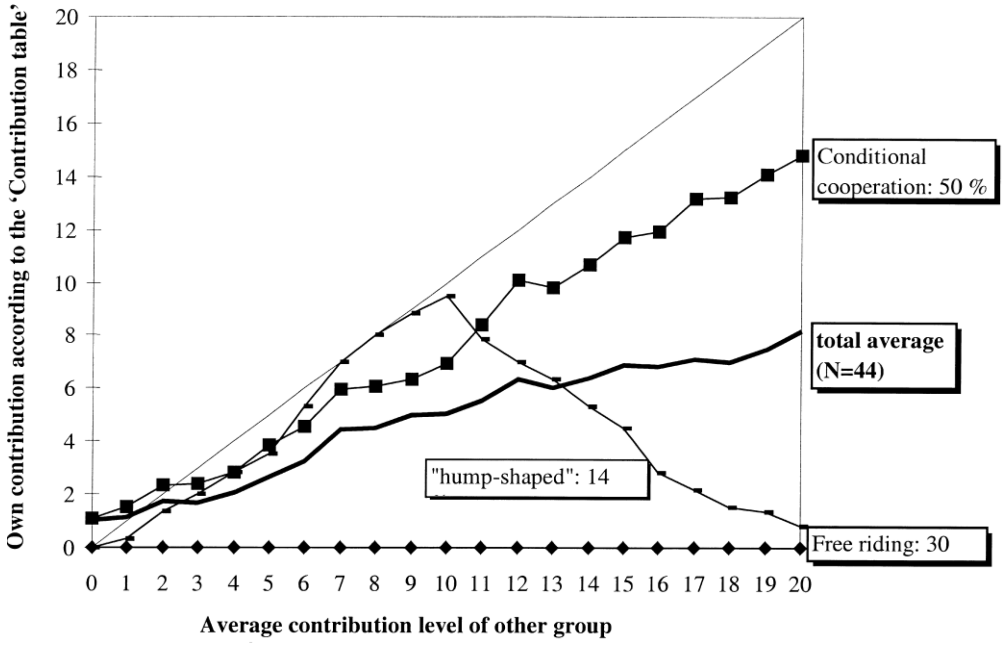
By establishing that individuals exhibit different cooperative dispositions one can better understand how different types of individuals perform in an environment where partner choice is linked to exclusion. The importance of differences in cooperative dispositions has been examined by Frank (1987). He attempts to answer the following question; what preferences would a selfish person choose with respect to long run maximization of payoff? In Frank`s (1987) model individuals are treated as if they were either honest or dishonest. To be honest means to refrain from cheating, even when cheating *cannot* be punished. A dishonest person on the other hand engages in reputational *mimicking* of honest individuals if there are incentives to do so. The model highlights that if the rules of the game provide an opportunity to *choose* whom to associate with, the honest individuals who signal cooperative intents will be preferred as partners. The dishonest types are often made worse off. Thus, the reason why individuals characterized as being selfish, often do act cooperatively, is because there are gains from acting non- selfishly under certain rules of the game. However, and most importantly, having cooperative preferences that yield no self-serving long run outcomes can be viewed as a beneficial *commitment device* (Frank, 1987).

Moreover, Alger and Weibull (2013) present a model suggesting that there exists a link between preference heterogeneity and assortative matching. On one end of the spectrum we find the theory of the *Homo economicus* who is assumed to be entirely selfish. On the other side we find individuals with altruistic preferences that always incentivise behaviour which minimize the inequality between them and others. In between these preference types, we find a preference type who is guided by moral, *Homo moralis*. Different circumstances might overthrow the morally guided person to one of the two extremes. The matching process in their model is exogenous. The model of Alger and Weibull (2013) predicts that individuals who seek to maximize their own payoffs do well in the absence of assortative matching.

However, deviations from *selfish* preferences are stable as long as the there is some degree of assortativity in the process whereby individuals are matched to interact.

Empirical estimation of cooperative types

Fischbacher et al. (2001) show empirically that individuals` cooperative preferences differ in a social dilemma. They perform an experiment that directly elicits subjects` willingness for conditional cooperation. They use a variant of the "Strategy method" (Selten, 1967) and design a public goods game where the subjects` main task is to choose for *each* average contribution level of other group members, how much to contribute to the public good. The degree of heterogeneity in their sample is presented in the figure below. One-third of the individuals are classified as free riders, whereas 50 percent are in some form conditionally cooperative. Their results suggest that the often observed decay of cooperation in repeated public goods games can be explained as a reaction to other individuals` contributions.



(Fischbacher et al., 2001)

In addition, Fischbacher and Gächter (2006) provide a direct test of the role of social preferences in voluntary cooperation. They test if individuals behave consistently with their elicited preferences. Two experiments are conducted. In the first experiment a variant of the Strategy method is applied (Selten, 1967). This is done to elicit people`s contribution preferences in a public goods game. In the second experiment subjects make actual contribution choices in a ten period Public goods environment. All subjects play both types of experiments, but not in the same sequence. The results show clear cut evidence of different "types" in the game. Moreover, expressed contribution preferences and actual contribution behavior are on average *consistent* with one another. They suggest that the interaction of heterogeneous types can explain a large part of dynamics of free riding.

Brandts and Charness (2011) compare two elicitation methods that are often used to elicit different types of behavior. They compare the Strategy method with the Direct response method. In the Strategy method the responder makes conditional contributions for each possible information set. In the Direct response method on the other hand, individuals learn the actions of the first mover and then choose a response. Their results suggest that the Direct response method may appear to be a more natural procedure, since individuals usually do not have to formulate complete strategies in everyday life. However, what they emphasize, is that in the Direct response method individuals might consult with peers and have more time to think in a *systematic* manner. Thus, this approach might not capture this kind of behavior. The Strategy method may be a more effective approach to model the *reflective* behavior in the laboratory, and it is very useful for gathering data at nodes that are only reached *occasionally* in the game. By analyzing individuals` complete strategies, one gains valuable insights into the motives underlying their decisions. The survey study of Brandts and Charness (2011) show that though the results are mixed, the Strategy method yields similar results to those induced by the Direct-response method.

2.2 Partner choice

Multiple experimental studies have empirically established that some form of influence over who one associates with increases cooperation (Page et al., 2005; Gunnthorsdottir et al., 2007; Hauk & Nagel, 2001). For instance, Page et al. (2005) links preference rankings to voluntary *group* formation, and show that this leads to an increase in contributions in a public goods game. They compare a group with fixed matching to a group with a regrouping treatment. In the regrouping treatment subjects express their preferences by *ranking* all preferred subjects on a scale from 1 to 15. A computer algorithm then matches the subjects together in groups of four based on these rankings. They also compare regrouping with punishment and find that regrouping is significantly more efficient than the punishment treatment. Moreover, the combined treatment yields the highest levels of contributions compared to all conditions. They find that cooperative individuals sort into partnerships with others who are cooperative, while non cooperators are left with non-cooperators.

Coricelli et al. (2004) provide participants the opportunity to select their future interaction partner in a two-person public good game. In the two control conditions partners are randomly determined, while in the treatment conditions partner matching is either done with a one-sided selection mechanism or a mutual selection mechanism. The one-sided selection mechanism works by giving a part of one`s endowment to have the right to *bid* on a preferred partner, whereas money that is not used for bidding is added to one`s payoff. The mutual selection mechanism on the other hand, works by allocating a part of the endowment according to the willingness of finding a partner. A computer maximizing mechanism then matches a pair when two participants allocate a substantial part of their available amount to each other. Results indicate an increase in cooperation, especially with one-sided partner selection compared to mutual partner selection and random matching. The monetary cost of choosing a partner is substantial, showing the importance of deliberately choosing a relationship with another individual.

In the study of Page et al. (2005) individuals rank preferred subjects they wish to interact with. The final matching of individuals into groups is however decided by an algorithm. Thus, individuals do have a saying in who they wish to associate with, buy they are not allowed to directly *choose* their preferred groups members. Furthermore, linking monetary costs to partner choice as in the study of Coricelli et al. (2004) might not only express preferences of preferred partners but also preferences for money. Individuals in these studies are allowed only *indirect* influence of who they interact with. Strømland et al. (2016) address these issues in more detail.

As a practical manner, instead of letting the experimenter "run" the matching process like in the studies presented above, I examine if nice guys *intentionally* pair with co-operators while avoiding free riders. The novelty of the experimental design is that cooperative dispositions are elicited *before* actually allowing individuals to choose a partner. This allows for a clean identification of the link between one`s type and who they wish to interact with in the game. Thus, this thesis puts the aspect of *mutual* partner choice into a sharper focus compared to related studies on partner choice.

2.3 Punishment mechanisms

The most important contribution which separates this thesis from other studies on punishment is that it examines if partner choice can work as an *informal* punishment mechanism. Individuals in the lab experiment are not instructed to exclude anyone *per se*, but only to choose a partner. Exclusion is thus the mere *consequence* of not being chosen by others.

The interesting thing with punishment mechanisms employed in most of the experimental literature is that they are of an *explicit* character. Individuals are informed that they can exclude others by voting (Feinberg et al., 2014; Rigaud et al., 2010). Individuals are thus only given *one* mean to attain their objectives. A majority of these studies report positive effects on cooperation. However, as Guala (2012) importantly points out, it is doubtful that costly punishment is the main mechanism through which cooperators discipline free riders in real-life social dilemmas. These points raise the further question of the external validity of experiments of this character. It also emphasizes the need to revisit the prevalence of explicit punishment mechanisms in the literature.

Would punishment result in a setting where there are other available options through which goals may be achieved? The experiment in this thesis supplements the argument of Guala (2012), because punishment is the *outcome* of an intentional process of partner choice. Punishment arises, but not because the experiment is constructed to provide punishment as the *only* way of disciplining defectors.

Comparable to Guala`s (2012) argument, Dreber et al. (2008) show that the option of costly punishment increases the amount of cooperation, but not the average payoff of the group. They find a strong *negative* correlation between total payoff and costly punishment. Individuals who gain the highest payoff do not use costly punishment. Costly punishment disfavors the individual who uses it. Thus, winners do not punish as punishment is found to be a maladaptive strategy.

Furthermore, Cinyabuguma et al. (2006) show that perverse punishment of high contributors is an important reason why experiments in which individuals have the opportunity to sanction one another, fail to increase efficiency. While endogenously imposed sanctions lead to higher contributions, the lack of efficiency gains can be attributed to the fact that costly punishment is at time misdirected towards high contributors.

Barclay and Raihani (2015) study a modified Prisoner`s Dilemma to examine cooperation and punishment when partner choice is possible and when it is not. They predict that punishment is more common when individuals cannot leave bad partners, whereas partner choice is useful when one can switch to a better partner. Results show that cooperation is higher when individuals can leave bad partners compared to when they cannot. Also, punishment levels are higher when switching partner is possible. The reason is that cooperators desert defectors they just had punished. Most importantly, punishment does not increase cooperation levels of defectors.

The findings of Dreber et al. (2008) and Barclay and Raihani (2015) support the claim that explicit punishment mechanisms are often maladaptive. When evaluating the external validity of explicit punishment mechanisms, it might be valuable to distinguish between the short and long run consequences of exclusion. Costly punishment has proven to increase contributions in the short run (Fehr & Gächter, 2002). However, as most interactions in the field are repeated, costly punishment might not yield efficient outcomes over time (Cinyabuguma et al., 2006).

Chapter 3: A lab experiment

3.1 Experimental design

This thesis examines three research questions. First, how does partner choice affect the payoff of different types of individuals? Second, can partner choice work as an informal punishment mechanism of the *least* cooperative individuals? Third, how does partner choice influence the overall efficiency and cooperation in a social dilemma? To address these three questions, I conduct a controlled lab experiment.

The experiment consists of two parts:

1) **The First part:** To elicit individuals` cooperative dispositions I conduct a one-shot continuous Prisoner`s Dilemma game. The essence of the elicitation procedure is a variant of the Strategy method that examines how individuals reciprocate others` contribution choices (Selten, 1967; Fischbacher et al., 2001). The anonymity and one-shot feature of this elicitation procedure allows me to isolate other regarding motivations.

2) **The Second part:** I examine if partner choice can work as an informal punishment mechanism by conducting a two-person repeated Prisoner`s Dilemma game. Individuals are assigned to *fixed* groups of five subjects. Only two pairs from each group can continue to a production stage. The individual with no partner is excluded from the game. Partner choice is thus *directly* linked to exclusion.

The core of both parts of the experiment is a Prisoner`s Dilemma game. Each individual is endowed with 10 *blue* (private good) experimental currency units (ECU) that can be used to produce a fictitious *red* unit (public good) with another person. The number of produced red units (i.e. the size of the public good) is given by the total amount of contributions x_i to it. The blue and red units are each worth 30 øre. The marginal payoff of a contribution to the production of red units is set to equal 0,7.

The payoff function for each individual is as follows:

$$\pi_i = 10 - x_i + 0{,}7(x_i + x_j) \qquad \textbf{[1]}$$

Hence, the standard behavioural baseline prediction assumes *complete* free riding by all individuals, provided they are selfish and rational.

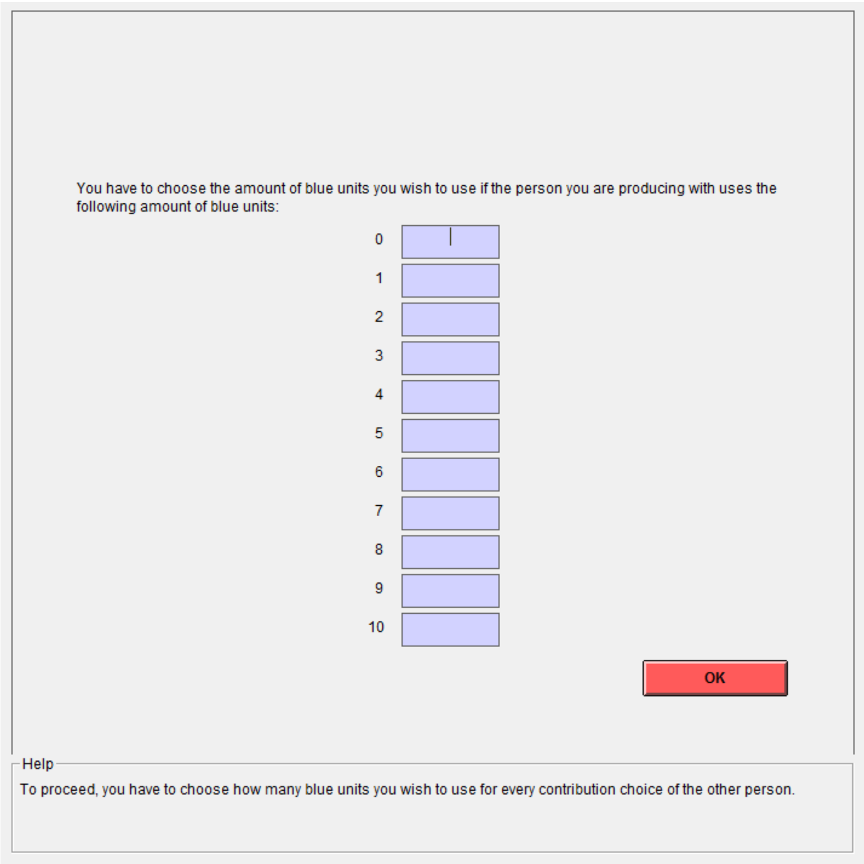
All subjects are fully informed about the rules of the game. Before the experiment starts they answer control questions to ensure that the payoff structure is understood. This is done to disentangle individual preferences from confusion. Individuals who fail to answer a control question correctly are provided with a help screen on the computer that gives them the correct calculation of the payoff.

3. 2 The First part: Elicitation of cooperative types

The decision situation of the continuous one-shot Prisoner`s Dilemma game is comparable to the study of Fischbacher et al. (2001). Individuals are asked to make two decisions without knowing the choices made by the other subjects. The first decision is to decide how much of the initial 10 blue units each individual wishes to contribute to a common pool, *unconditional* of others` contributions.

The second decision is to indicate how much of the initial 10 blue units one wishes to contribute *conditional* on others` contribution choices. A *contribution table* with eleven contribution entries is provided for the second decision. The contribution table yields contribution vectors for each of the 200 individuals in the sample. Figure 1 displays the layout for the second decision.

Figure 1: Conditional contribution table for the second decision.



To ensure that the unconditional and the conditional decision is weighed equally, I inform all subjects that a random mechanism will determine which of the two decisions will be relevant for their actual payoff. To understand how the decisions are incentivized, assume the following. Individual A contributes 5 experimental currency units in the *unconditional* decision. Individual B is randomly drawn to be the partner of individual A and contributes 10 experimental currency units in all eleven entries of the *conditional* contribution table. According to the payoff function [1], individual A earns 15.5 experimental currency units.

There are mainly two reasons why elicitation of cooperative dispositions is conducted prior to the two-person repeated Prisoner`s Dilemma game. First, there exists convincing theoretical and empirical evidence that individuals differ in their cooperative dispositions (Selten, 1967; Frank, 1987; Fischbacher et al., 2001). As one of the main research questions of this thesis is to examine how *different* types of individuals perform when allowed to choose a partner, eliciting cooperative dispositions is an essential part of the experimental design.

Second, elicitation of cooperative dispositions *after* being exposed to the treatment would potentially yield endogenous preference measures. In this case I could not use cooperative dispositions to control or to interact the treatment variable with.

3.3 The Second part: Partner choice in a repeated Prisoner`s Dilemma game

To examine if partner choice can work as an informal punishment mechanism, I conduct a two-person repeated Prisoner`s Dilemma game. The main features of the experimental design are displayed in Table 1.

Table 1: Main features of the lab experiment.

Treatments	
Choice	20 groups, 100 subjects, 10 sessions
Random	20 groups, 100 subjects, 10 sessions

In both the “Choice” and the “Random” condition individuals are randomly assigned to fixed groups of five subjects. Individuals in their respective groups are anonymous and identified with a number ranging from 1 to 5. They are informed that their identity and group composition is *fixed* throughout the entire experiment. The experiment consists of 20 periods in total.

In each period of the game individuals are endowed with 10 *blue* units (private good) that can be used in the production of *red* units (public good). The default choice is set to zero contributions.

Each individual can produce red units with *one* of the five persons from their group. However, only two pairs from each group can proceed to the production stage. This means that one individual will be left without a partner[1] in each period of the game. The individual with no partner to produce with faces the threat of *exclusion*. The individual that ends up being excluded loses the initial endowment of 10 blue units in both the “Choice” and “Random” condition. He also misses out on the opportunity to participate in the production stage.

All group members are informed that no communication is allowed, and that actions and choices can only be observed when two individuals are paired together. The only way of communicating is by signalling one`s type once paired with someone. Before each production stage individuals are informed about the identity number of their partner. When the production stage is over each individual views a private screen on the computer that contains their history of personal contribution choices and partnerships.

I have chosen a group size of five subjects. The optimal size of a group is an empirical question. If the group consists of too many subjects, individuals might get the impression that their actions are not identifiable. In this case the threat of exclusion might not be perceived as real. The study of Isaac and Walker (2006) shows that large groups experience more difficulties providing public goods than smaller groups, as free riding is more prominent in groups with many individuals.

A small group with only three or fewer subjects might have the opposite effect. In a group of three individuals there is a $\frac{1}{3}$ chance of being excluded. This leads to three important implications. First, one individual might get “stuck” as the one being constantly excluded. If the same person fails to find a partner throughout the game, then this provides little variation in *who* is being excluded and *why*. Second, this individual might get discouraged and not want to participate in future experiments. This could in turn harm the future recruitment of participants. Third, the possibility of learning the game is also easier if the group consists of few subjects.

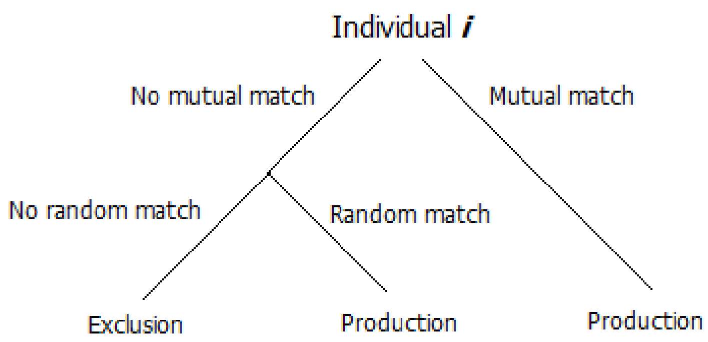
[1] I use the word person instead of partner in the instructions. This is done to avoid priming effects. See Appendix A for details about the instructions.

Some phenomena do not affect observations individually, but uniformly within each group (Wooldridge, 2009: 495). Although individuals in the lab experiment are randomly assigned to groups, data is unlikely to be independent across observations. It is therefore reasonable to assume that the data from the lab experiment is clustered on the *group* level. Considering the maximum number of clusters, three subjects in each group would produce more clusters than a group of seven or more subjects. However, given the design concerns mentioned above, one can think of a group consisting of five subjects as being enough to maximize the number of clusters.

The “Choice” condition

In the start of every period in the “Choice” condition each individual can *choose* one of the five persons from the group to produce with. This is done by entering a number between 1 and 5 in a field on the computer screen. As choices are made simultaneously, two individuals who *mutually* enter each other`s identity tags are successfully matched and can continue to the production stage. The default partner choice equals the individual`s own identity number. The mutual matching process is illustrated as the right branch in Figure 2 below.

Figure 2: The matching process in the "Choice" condition.



The partner choice stage lasts ten seconds. When the available time of ten second expires, the identity number entered is registered as the final choice of a partner. As no individual has the same identity number, the matching algorithm ensures that all partnerships consist of only two individuals who have mutually entered the identity number of one another.

Prior to the production stage individuals are informed if their preferred partner has chosen them or not, and also their partners identity number. As individuals cannot observe the contribution choices of others before actually being paired with another person, they are incentivized to signal cooperative intents to maximize the probability of attracting a partner.

Subjects in the “Choice” condition are not instructed to exclude anyone, but only to choose a partner. The individual that fails to find another person to produce with faces the threat of exclusion. If only *one* individual fails to mutually match with another person, then this individual is excluded from the game in the current period. Most importantly, only one individual is excluded from each period of the game. The message given to the excluded individual is as follows*: “The person you chose did not choose you. You have to pass on the production stage in this period.”*

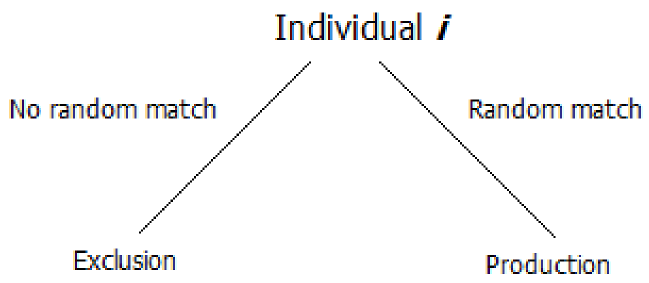
However, if *more* than one individual fails to mutually match with another person, each is either randomly paired with an available person from their respective group (they thus proceed to the production stage) or excluded from the game. Note that only one individual ends up being excluded if this situation arises. The left branch in Figure 2 illustrates this process in more detail.

There are two reasons why I employ random matching if more than one individual fails to find a partner. First, by randomly matching those who cannot find a partner I avoid *varying* the number of excluded individuals between the “Choice” and “Random” condition. Second, in the first periods of the game exclusion is expected to be random. If *all* individuals who fail to find a partner early on in the game are excluded, pairing with another person later on might be a coincidence rather than a real choice. Thus, by being randomly matched in the first periods one gains the opportunity to actively engage in signalling one`s type.

The “Random” condition

The “Choice” and “Random” condition are identical, except for how the matching process is implemented. In the start of every period in the “Random” condition pairs of two are *randomly* generated.

Figure 3: The matching process in the "Random" condition.



After being randomly matched with another person the participants continue to the production stage. The consequence of a random matching process in a group consisting of five individuals is that one subject is excluded in every period of the game. There is a 20 % chance of being randomly excluded each period. The baseline prediction is to act fully selfish, as one cannot influence the probability of being paired with a preferred partner. The message given to the excluded individual in the “Random” condition is as follows: “*You have not been assigned a person to produce with. You have to pass on the production stage in this period.*”

3.3.1 Sample selection bias

Twenty percent of the individuals in the sample are always excluded throughout the experiment in each experimental condition. If contribution is the dependent variable of interest, the experimental design yields a *selection bias* by construction. A sample selection bias refers to situations where the dependent variable is observed only for a restricted, nonrandom sample (Verbeek: 50, 2012). The consequence of a selection bias is that only contributions of individuals who have a partner are observed.

However, the matching process in the first period of the experiment is random as there is no available information to base one`s choice of partner on. I therefore also include the *first* period contributions in the analysis. Whereas contributions are observed only for individuals with a partner, the *payoff* is observed for all, including the excluded individuals. Individual payoffs are therefore the main object of the statistical analysis.

3.4 Experimental procedures

The experiment was conducted using the program z- Tree 3.8.8 (Fischbacher, 2007), and consisted of 20 sessions. A total of 200 students[2] participated, 100 in each condition. Each student could only participate in one session. The sessions were run over three days, November 9, November 10 and November 11 at a computer lab at the University of Bergen. One session consisted of 10 subjects who were randomly divided into two groups of five subjects. The sessions were run at the same times on each day. Moreover, both conditions were run in the same room on each day.

The recruitment of the participants was done through Expmotor[3]. An invitation mail was sent out to 5000 first and second year students that were registered for exams in Examen philosophicum at the University of Bergen ten days prior to the experiment. The invitation e-mail informed all participants that they would receive a show up fee of 100 NOK. This was done to incentivize the participants to show up for the experiment. The day prior to each experiment I sent a text message to remind all participants that they have signed up for an experiment and information about where to meet.

The randomization was done at an *individual* level within-session randomization by letting the participants draw a letter from A to J before entering the experimental lab. By doing this, the participants were unaware of which condition they participated in. The students were seated and separated by partition walls to ensure that subjects from the same condition could not see the screens of one another, and which treatment condition they belonged to.

The welcoming and recruitment of participants was conducted by a lab assistant. Each participant drew a paper from an urn with letters from A to J. Each of these letters corresponded to a client computer in the lab. This procedure was done to ensure the double blindness condition.

[2] Of the 200 students 61 % were women and 39 % were men.
[3] The recruitment platform Expmotor is provided by Erik Sørensen from the Norwegian School of Economics.

When the experiment was over, the participants filled out a questionnaire with their assigned letter so that the earnings could be linked to the right individual. After the entire experiment was completed and while the assistant prepared the earnings in a separate room, the experimenter gave the subjects a list that they could sign up on if they wanted to receive an e-mail after the master`s thesis was finished. This allowed the participants to read more about the research project and ensured that they knew the value of their participation.

After everything was ready the assistant knocked on the door and handed the envelopes with the earnings. Each individual handed in the paper with the assigned letter and received their earnings thereafter. On average, the entire experiment lasted 30 minutes and the participants earned 202 NOK (25.30 USD) in total. This equals an hourly pay of 404 NOK (48.6 USD) and is well above the average hourly pay of an undergraduate student in Norway.

3.5 Classification of types

Recall that all individuals in the sample made eleven *conditional* contribution choices in the First part of the experiment. Each individual decided how much to contribute given the contribution choices of another person, for values ranging from zero to ten experimental currency units.

To classify types, I use the *median* of the eleven conditional contribution choices of each individual, and create cut-off values that classify individuals into cooperative types[4]. The conditional contribution choices of all individuals fall into six distinct type categories. Under the assumption that the elicited preferences are stable (i.e. these do not change with experience) contributions in repeated interactions are still expected to deteriorate over time (Fischbacher & Gächter, 2006). The details of the classification procedure are described in Table 2 below.

Table 2: Classification of types with the median and the average conditional contributions.

Type	**Cut- off value**	**Median**	**Average**
Free rider	The median (average) is 0 ECU.	22 (11%)	9 (4.50%)
Imperfect Conditional cooperator	The median (average) is between 0 and 5 ECU.	21 (10.5%)	54 (27%)
Perfect Conditional cooperator	Conditional contributions perfectly match the eleven entries of the contribution table.	45 (22.5%)	45 (22.5%)
Others	The median (average) is 5 ECU, but the conditional contributions do *no*t perfectly match the eleven entries of the contribution table.	58 (29%)	24 (12 %)
Imperfect Unconditional cooperator	The median (average) is between 5 and 10 ECU.	26 (13%)	49 (24.5%)
Unconditional cooperator	The median (average) is 10 ECU.	28 (14%)	19 (9.5%)
N		**200 (100%)**	**200 (100%)**

Note: The *average* conditional contributions are considered as a robustness check of the classification procedure conducted with the median conditional contributions. See section 3.6.2 for details about the robustness check.

[4] For clarity, the median conditional contributions are used to classify all types except for perfect Conditional cooperators. The conditional contributions of perfect Conditional cooperators match the eleven entries of the contribution table precisely. They are therefore used as a reference of the willingness to deviate from perfect reciprocation.

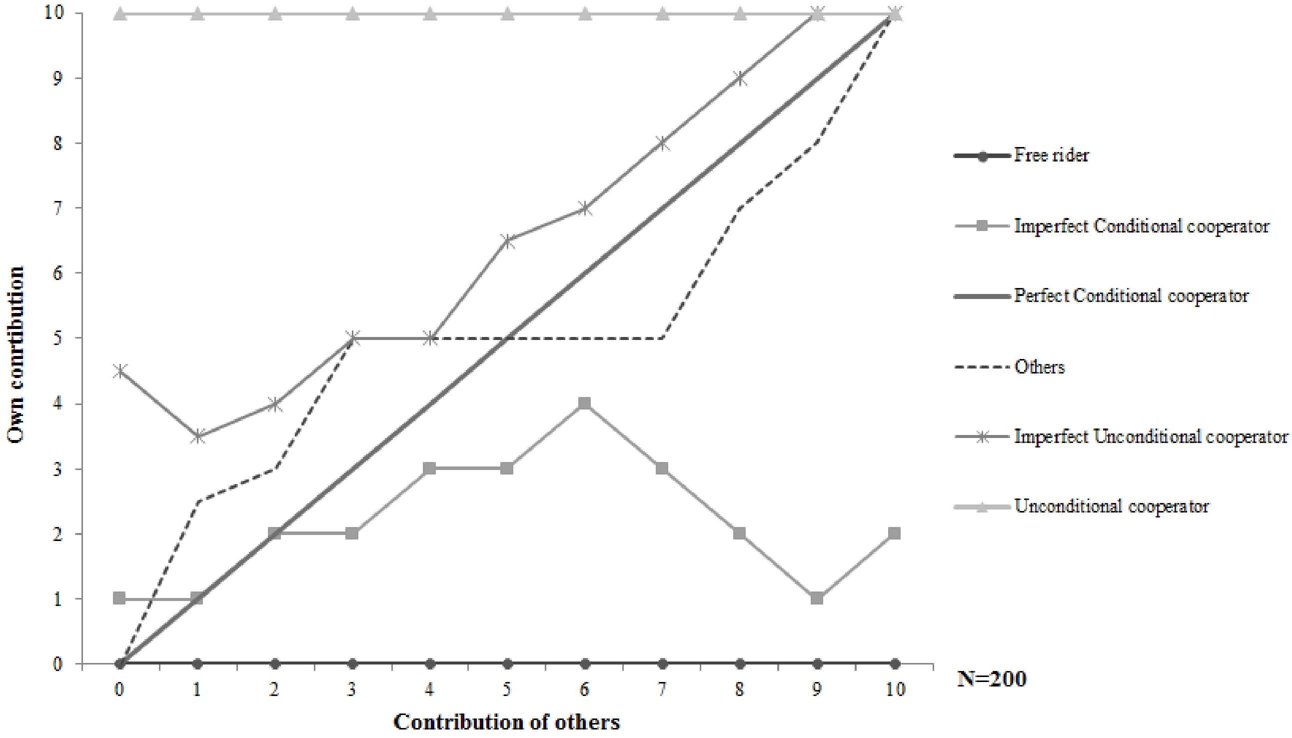
Some individuals in the sample have contribution preferences that resemble a *Homo economicus*, who always acts in a way that maximizes own expected utility. These individuals are classified as Free riders. Individuals in the sample who contribute more than Free riders but less than perfect Conditional cooperators are classified as Imperfect Conditional cooperators. These types of individuals display a bias towards selfish behavior.

Perfect Conditional cooperators are individuals in the sample who precisely match the contributions of others. In other words, they contribute more to the production of a public good the more others contribute. However, as some individuals in the sample have contribution vectors that resemble perfect Conditional cooperators, but not *perfectly*, I classify them as "Others". This is done to ensure to some degree that the conditional contributions of perfect Conditional cooperators are increasing and perfectly reciprocating others` contribution choices.

A number of individuals in the sample indicate that they would contribute higher amounts for each of the eleven entries of the contribution table. These types of individuals are assumed to have preferences for unselfish behavior and are thus classified as Imperfect Unconditional cooperators. Last, the most cooperative individuals in the sample are classified as Unconditional cooperators. They are willing to contribute their entire endowment regardless of how others behave. If their contribution behavior is applied as a general rule, this could maximize the social payoff.

Figure 4 provides a visual overview of the conditional contribution patterns of the classified types. The contribution patterns are based on the median of *each* of the eleven conditional contribution entries made by the six types. That is, if the contribution of another person is 6 experimental currency units, the median conditional contribution of Imperfect Conditional cooperators is expected to be 4 experimental currency units.

Figure 4: Conditional contribution patterns from the First part of the experiment.



Contrary to the study of Fischbacher et al. (2001) I also classify individuals whose conditional contribution entries lie above the 45° line in Figure 4. Although Chaudhuri (2011) shows that several experimental studies find that individuals with these cooperative dispositions do exist, little attention has been paid to the advantages and disadvantages of exhibiting such cooperative dispositions in social dilemmas.

Why is the *median* conditional contribution used to classify cooperative types? The first advantage of this classification procedure is that it facilitates simple replication. Second, it allows for some degree of randomness through a "trembling hand". The possibility of accidental monetary allocations is often not accounted for in experimental studies, although they frequently occur in everyday life (Crushman et al., 2009). An individual in the sample can i.e. contribute 0 experimental currency units in six of the eleven entries of the conditional contribution table. Although this person deviates from the preferences of a *perfect* free rider, the median conditional contribution is still zero. This person is thus classified as a Free rider.

3.6 Results

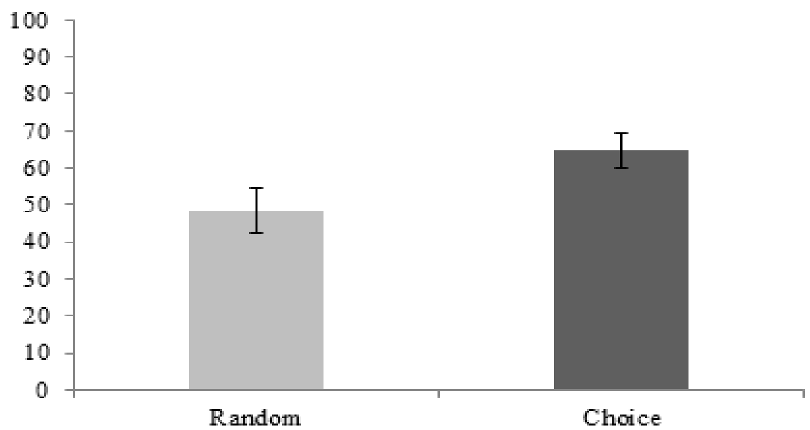
3.6.1 It pays to be nice

Result 1: *Partner choice does not increase the aggregate payoff and contribution levels.*

Related experimental results suggest that partner choice motivates individuals to cooperate in social dilemmas (Coricelli et al., 2004; Page et al., 2005; Brekke et al., 2011). Are these findings also present in the partner choice experiment? Without considering the cooperative type measure, the results show that partner choice does not increase the payoff on the aggregate level. The OLS[5] analysis in column 1, Table 3 indicates that partner choice increases the payoff by only 0.99 percentage points in the "Choice" condition (p=0.23). The payoff is nearly identical in both conditions. Thus, in this thesis I find no support for the hypothesis that partner choice increases the overall efficiency in social dilemmas.

Figure 5 illustrates, however, that the contribution levels in the first period of the game are 16 percentage points (p<0.01, robust standard errors) higher in the "Choice" condition compared to the baseline condition. Partner choice has an immediate effect on the willingness to signal cooperative intents.

Figure 5: Contribution (%) in the first period, by treatment.



[5] A Tobit model can be used as the dependent variable is limited (Wooldridge, 2009: 572). However, the data is likely to be clustered on the group level. The underlying assumption of homoscedasticity of a Tobit model will therefore demand a remodeling of the likelihood function. An OLS regression yields consistent and unbiased estimators regardless of the underlying distribution (Wooldridge, 2009: 98).

While multiple studies provide convincing evidence of a positive behavioral impact of partner choice, these results are not present when partner choice may lead to exclusion as in this thesis. Why is there a missing effect of partner choice when the cooperative type measure is not considered?

The OLS analysis in Table 11, Appendix B shows that individuals in the "Choice" condition who have been excluded in the previous period *reduce* their contributions by 1.17 percentage points ($p<0.05$) compared to the baseline. Individuals who have not been excluded in the "Choice" condition *increase* their contributions by 6.56 percentage points ($p=0.161$) compared to the baseline.

The puzzling results of partner choice might be attributed to the opportunity of retaliation[6] against individuals who have left a partnership. For instance, individuals in the "Random" condition might not be willing to retaliate as they initially cannot *influence* who they interact with. In the "Choice" condition on the other hand, individuals mutually choose one another. To be left by a partner may create distrust that drives individuals to contribute less after being excluded.

Figure 11 in Appendix B provides a descriptive overview of how exclusion in the previous period affects the contributions of different types of individuals. There exists an asymmetry in how exclusion in the previous period affects the most and least cooperative individuals in the sample. The most cooperative individuals *reduce* their contributions after being excluded in the "Choice" condition. The least cooperative individuals in the "Choice" condition *increase* their contributions after being excluded in the previous period. Thus, the results suggest that retaliation may arise even when punishment is of an *informal* character. As this is only an exploratory observation, I will not pursue it in more detail.

[6] Nikiforakis (2008) examines if punished individuals counter-punish. The results show that counter-punishment in social dilemmas is driven partly by strategic considerations and partly by a desire to reciprocate punishment. When counter-punishment opportunities exist, cooperators are less willing to punish free riders. This in turn leads to lower earnings in comparison to a treatment where free riding is dominant, but where punishment is not allowed.

Result 2: *Partner choice benefits cooperative individuals, whereas non-cooperators are made worse off.*

The experimental design has allowed a clean identification of the link between cooperative dispositions and mutual partner choice. Results show significant differences in earned payoffs between cooperative and non-cooperative individuals when they are allowed to choose a partner.

The maximum obtainable *individual* payoff in a pair of two subjects is 17 experimental currency units, while the minimum is 7 experimental currency units. Moreover, the maximum obtainable payoff for a *group* of five subjects is 11.20 experimental currency units (dashed line in Figure 6), while the minimum is 8 experimental currency units.

Figure 6: Average individual payoff (%) conditional on type, by treatment.

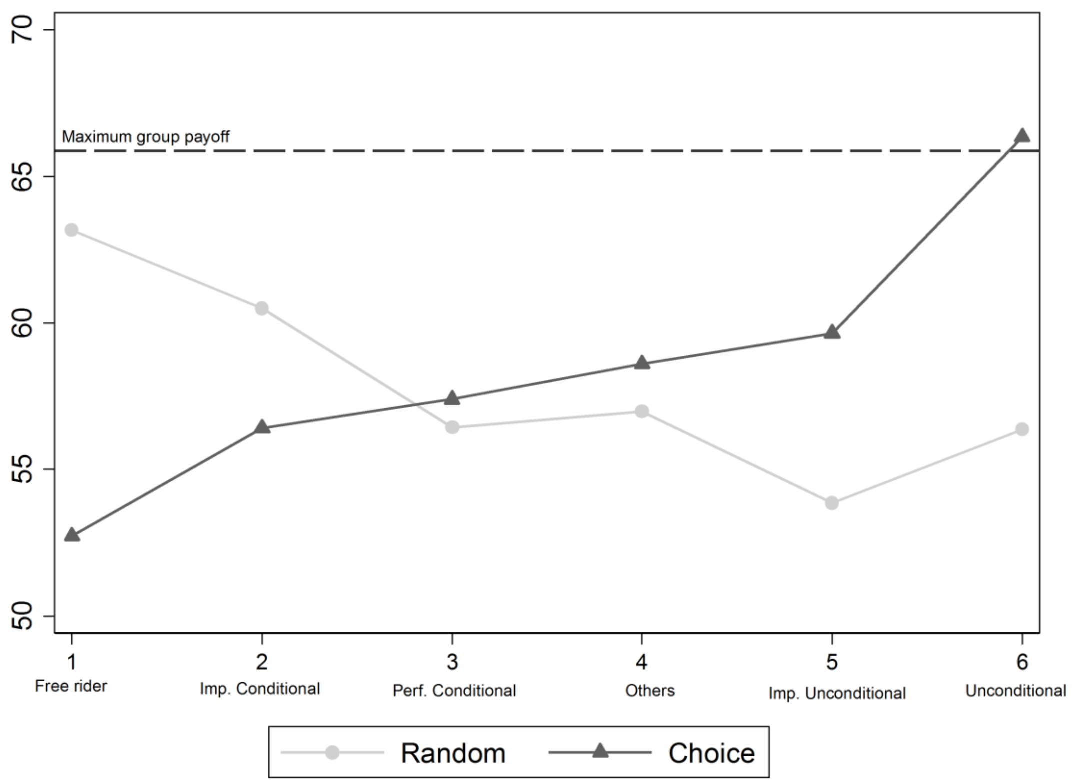


Figure 6 illustrates that Unconditional cooperators (Type 6), who are the most cooperative individuals in the sample, earn on average 67 percent of the maximum obtainable individual payoff in the "Choice" condition. The OLS analysis in column 3, Table 3 suggests that this is 9.98 percentage points ($p<0.05$)

more than in the baseline condition. Although not significant, Unconditional cooperators are also the only type of individuals who earn more than the maximum obtainable *group* payoff.

Individuals classified as Free riders (Type 1) earn on average 52.7 percent of the maximum obtainable individual payoff in the “Choice” condition, being worse off than any other type of individuals when allowed to choose a partner. Free riders earn 10.95 percentage points ($p<0.01$) *less* in the “Choice” condition compared to the “Random” condition.

Imperfect Conditional cooperators (Type 2), who are initially more cooperative than Free riders earn 56.4 percent of the maximum obtainable individual payoff in the “Choice” condition. This is 5.25 percentage points ($p<0.10$) *less* than in the baseline condition.

In the “Choice” condition where exclusion is a potential consequence of partner choice, it certainly pays to be the nice guy. Thus, in line with Frank`s (1987) suggestion, cooperative individuals have an *asset* that is beneficial when the rules of the game provide the opportunity to choose whom to associate with.

The payoff levels in the “Random” condition are highly different with the observations made in the “Choice” condition. The most cooperative individuals earn the lowest payoffs when partner choice is uniformly random. This may result from exploitation as cooperative individuals in the “Random” condition cannot do anything to *avoid* the free riding behavior of non-cooperators (Axelrod, 2009). It might therefore be easier for Free riders to increase their earnings at the expense of cooperative individuals. Free riders in the “Random” condition earn the highest payoffs and benefit from a “every man for himself” strategy.

Table 3: OLS regressions. Payoff (%) conditional on type, by treatment.

	(1) **All periods**	(2) **All periods**	(3) **All periods**	(4) **First five periods**	(5) **Last five periods**
Choice	0.998 (0.819)	9.981** (3.906)	9.981** (3.763)	3.225 (4.284)	16.69** (6.907)
Free rider		6.811** (3.144)	7.386** (3.118)	2.795 (6.145)	10.59* (5.525)
Imp.Conditional cooperator		4.139 (2.862)	6.153* (3.087)	3.931 (3.707)	6.343 (5.309)
Perf.Conditional cooperator		0.0672 (2.997)	1.762 (3.135)	-0.720 (5.148)	-1.517 (7.263)
Others		0.618 (2.874)	1.597 (2.772)	-0.695 (5.261)	4.605 (4.731)
Imp.Unconditional cooperator		-2.495 (2.796)	-1.248 (2.614)	-4.840 (4.576)	4.129 (4.926)
Freerider×Choice		-20.43*** (6.155)	-20.93*** (5.864)	-29.73*** (9.171)	-25.33* (14.05)
Imp.Conditional×Choice		-14.08** (6.806)	-15.23** (6.698)	2.425 (6.461)	-13.83 (8.814)
Perf.Conditional×Choice		-9.018 (5.359)	-9.316* (5.266)	-1.888 (6.600)	-10.84 (10.80)
Others×Choice		-8.360 (4.965)	-8.091* (4.778)	-0.0692 (7.034)	-17.86** (8.392)
Imp.Unconditional×Choice		-4.201 (6.378)	-4.690 (6.214)	1.263 (6.126)	-22.29* (12.59)
Woman	-4.098** (1.548)		-4.028** (1.543)	-5.152* (2.612)	-4.299 (2.823)
Period	-0.0200 (0.0320)		-0.0200 (0.0320)		
Constant	60.48*** (1.203)	56.36*** (2.326)	58.01*** (2.256)	61.30*** (3.885)	55.91*** (4.229)
N	**4000**	**4000**	**4000**	**800**	**1000**
Total periods	**20**	**20**	**20**	**5**	**5**
R^2	**0.0003**	**0.0099**	**0.0010**	**0.0329**	**0.0263**

Note: Cluster-robust standard errors in parentheses (clustered on 40 groups) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Reference category: *Unconditional cooperators*
(1) Overall estimation result, with controls.
(2) Estimation results conditional on type, with no controls.
(3) Estimation results conditional on type, with controls.
(4) Estimation results conditional on type in the first five periods, with controls.
(5) Estimation results conditional on type in the last five periods, with controls.

3.6.2 Robustness checks

Robustness check 1: Cooperative types based on the average conditional contributions

As a robustness check and as an attempt to examine if the classification procedure in the former analysis is responsible for some of the main results, I redefine the *measure* of cooperative types. Instead of using the *median* conditional contributions from the "First part" of the experiment to classify types, I now use the *average* conditional contributions. The cut-off values remain the same as in the previous classification procedure. Table 2 displays the composition of types in the sample when the average conditional contributions are used to classify types.

One drawback with classifying cooperative types by using the average conditional contribution is that it is *sensitive* to deviations. For instance, to contribute on average 0.18 experimental currency units clearly expresses that an individual is close to being a perfect Free rider. However, by using the same cut-off values as in the previous classification procedure, this individual will be categorized as an Imperfect Conditional cooperator. Still, as a robustness check of the previous results it is beneficial to alter the measure of cooperative types to examine if the main results hold.

Does it still pay to be the nice guy? The OLS analysis in Table 10, Appendix B yields highly comparable results to the previous analysis. Moreover, there appear to be higher differences in payoffs between the "Choice" and baseline condition when the average conditional contributions are used to classify cooperative types. Unconditional cooperators earn 14.8 percentage points ($p<0.01$) *more* in the "Choice" condition compared to the baseline condition. Non-cooperators still earn the lowest payoffs when they are allowed to choose a partner. More specifically, Free riders in the "Choice" condition earn 19.08 percentage points ($p<0.01$) *less* than in the "Random" condition. The results are comparable for the other classified types as well.

Robustness check 2: Continuous type measure

Instead of creating cut-off values to classify cooperative types, I now consider a median and an average continuous type measure. The median and average continuous type measure range from 0 to 10 experimental currency units. The OLS analysis in column 1, Table 4 shows that being cooperative yields significantly higher payoffs in the "Choice" condition compared to the baseline condition. The payoff increases by 2.74 percentage points (p<0.01) per units increase in the average continuous type measure. Column 2 shows that the payoff in the "Choice" condition increases by 2.09 percentage points (p<0.01) per unit increase in the median continuous type measure. Thus, the results are robust to both the median and the average cooperative type measure that has been used to classify cooperative types in the analysis.

Table 4: OLS regressions. Payoff (%) with a continuous type measure, by treatment.

	(1) **Payoff**	(2) **Payoff**
Choice	-13.09*** (3.846)	-9.734*** (3.218)
Average conditional contribution	-1.268*** (0.286)	
Average×Choice	2.740*** (0.673)	
Median conditional contribution		-0.900*** (0.284)
Median×Choice		2.088*** (0.570)
Woman	-4.003*** (1.386)	-4.252*** (1.451)
Period	-0.0200 (0.0320)	-0.0200 (0.0320)
Constant	66.72*** (2.050)	65.06*** (1.961)
N	**4000**	**4000**
Total periods	**20**	**20**
$\boldsymbol{R^2}$	**0.014**	**0.012**

Note: Cluster-robust standard errors in parentheses* (clustered on 40 groups) *$p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
(1) Estimation results with a continuous type measure based on the average conditional contributions, with controls.
(2) Estimation results with a continuous type measure based on the median conditional contributions, with controls.

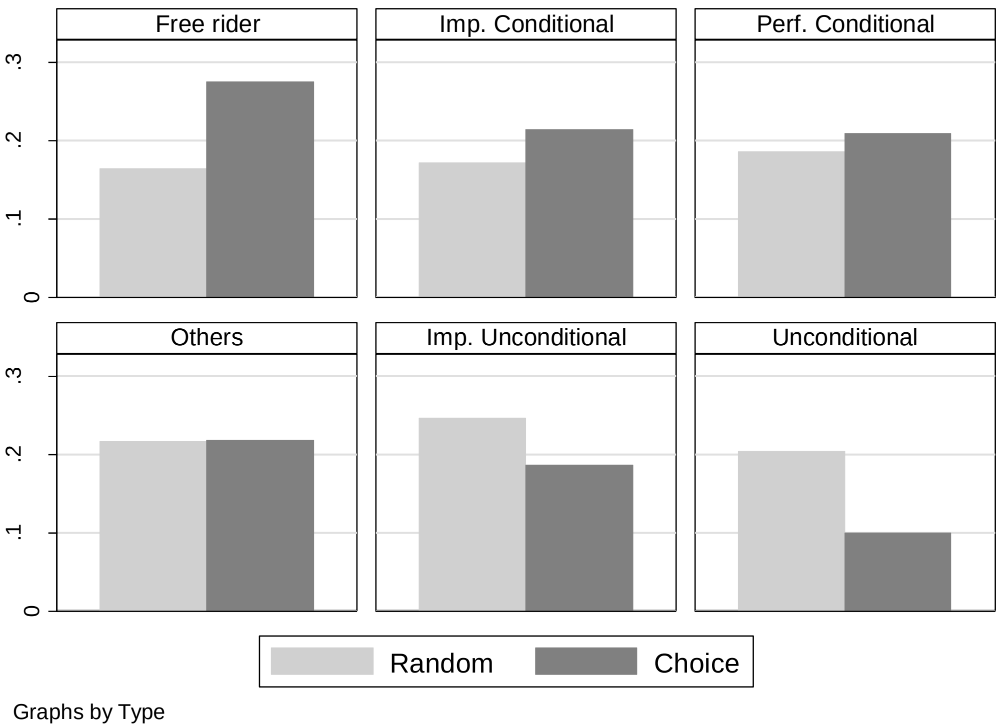
3.6.3 Excluding non-cooperators

Result 3: *Free riders in the "Choice" condition face a significantly higher estimated probability of being excluded compared to the baseline condition.*

Are some types of individuals more prone to exclusion than others? As Frank (1987) suggest, honest individuals are likely to weigh not only their own interests when deciding how to act, but also the interests of others. These types of individuals are therefore rarely avoided by others. On the contrary, when endowed with the opportunity to select whom to associate with, we avoid the dishonest types.

Remember that there are initially *five* subjects in each group in both the "Choice" and the "Random" condition. However, as only two pairs from each group can proceed to the production stage, *one* person must be excluded in each period in both conditions.

Figure 7: Frequency of exclusion conditional on type, by treatment.



The probability of exclusion in the “Random” condition is by construction 20 %, and is as Figure 7 above illustrates, quite evenly distributed. However, by observing exclusion in the “Choice” condition one can see that the least cooperative individuals face the highest probability of exclusion when partner choice is allowed. The results of the OLS analysis in column 2, Table 5 show that Free riders face a 11.8 percentage points ($p<0.01$) *higher* estimated probability of exclusion in the “Choice” condition compared to the “Random” condition. Thus, the results show that partner choice can work as an informal punishment mechanism for the least cooperative individuals.

Individuals in the sample who are classified as being cooperative experience a reduced estimated probability of exclusion when allowed to choose a partner. Unconditional cooperators in the “Choice” condition face a 10.4 percentage points ($p<0.01$) *lower* estimated probability of exclusion compared to the baseline condition. Individuals who are classified as Imperfect Unconditional cooperators are initially less cooperative than Unconditional cooperators. Still, this type of individuals also experiences a 5.3 percentage points ($p<0.05$) *lower* estimated probability of exclusion when allowed to choose a partner.

Table 5: OLS regressions. Estimated probability of exclusion conditional on type, by treatment.

	(1) **Exclusion**	(2) **Exclusion**
Choice	0.111***	0.118***
	(0.0372)	(0.0335)
Imp.Conditional cooperator	0.00714	-0.0146
	(0.0335)	(0.0275)
Perf.Conditional cooperator	0.0218	0.00494
	(0.0245)	(0.0232)
Others	0.0517	0.0456
	(0.0329)	(0.0281)
Imp.Unconditional cooperator	0.0824**	0.0722**
	(0.0360)	(0.0313)
Unconditional cooperator	0.0393	0.0480*
	(0.0296)	(0.0283)
Imp.Conditional×Choice	-0.0679	-0.0581
	(0.0758)	(0.0687)
Perf.Conditional×Choice	-0.0876*	-0.0907*
	(0.0482)	(0.0454)
Others×Choice	-0.109**	-0.120**
	(0.0522)	(0.0481)
Imp.Unconditional×Choice	-0.171**	-0.171**
	(0.0685)	(0.0663)
Unconditional×Choice	-0.214***	-0.222***
	(0.0665)	(0.0606)
Woman		0.0608***
		(0.0182)
Period		-3.219
		(2.2011)
Constant	0.164***	0.134***
	(0.0209)	(0.0213)
N	**4000**	**4000**
Total periods	**20**	**20**
R^2	**0.0086**	**0.0136**

Note: Clustered-robust standard errors in parentheses (Clustered on 40 groups) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Reference category: *Free riders*

(1) Estimation results conditional on type, with no controls.
(2) Estimation results conditional on type, with controls.

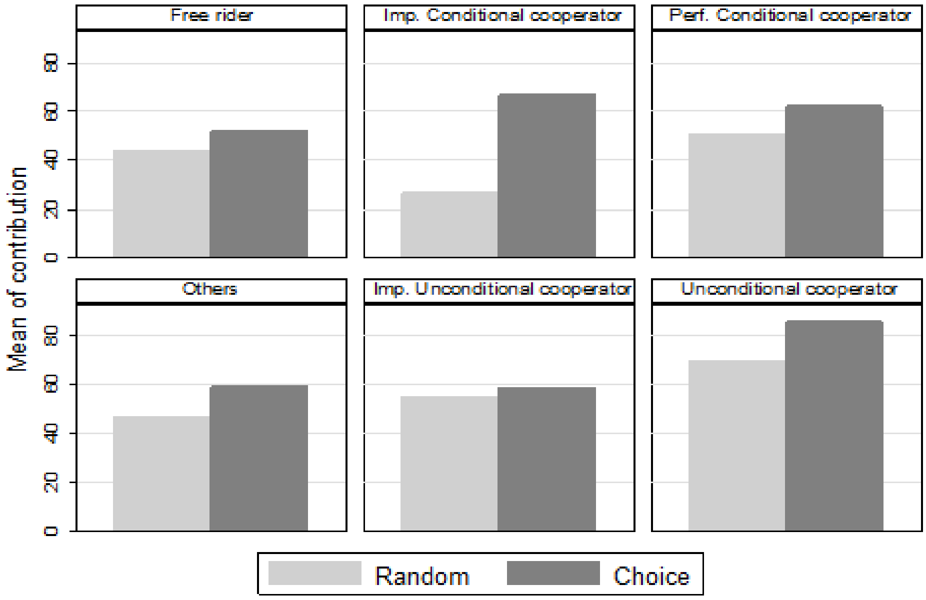
3.6.4 Mimicking cooperative behavior

Result 4: *Imperfect Conditional cooperators mimic cooperative intents in the first period of the game.*

Page et al. (2005) show that non-cooperators mimic cooperative intents to access profitable partnerships. If a selfish individual believes that others in the population are cooperative, an incentive to mimic generosity is thereby created. By engaging in mimicking behavior individuals increase the contribution willingness of others, while indirectly benefiting from it themselves.

Figure 8 below shows a roughly consistent pattern between the expressed *median* conditional contributions in the one-shot game from the First part of the experiment, and the *actual* contributions in the first period of the repeated game. According to a Spearman correlation test the expressed median conditional contributions in the "First part" of the experiment are positively correlated with the actual contributions in the first period of the repeated game (Spearman`s rho=0.2348, p=0.0028). This indicates that the revealed cooperative dispositions match the actual behavior regardless of the incentives that are built into the repeated game.

Figure 8: Contribution (%) in the first period conditional on type, by treatment.



However, the results of a Wilcoxon-Mann-Whitney test show that the rank sum is higher than expected in the "Choice" condition *only* for individuals classified as Imperfect Conditional cooperators (p=0.03, Two tailed). Other types of individuals seem to exhibit consistent contribution preferences[7].

Imperfect Conditional cooperators who initially have a bias towards selfish behavior are more prone to mimic cooperative intents when allowed to choose a partner. This type of individuals contributes 66.6 % of their initial endowment in the first period in "Choice" condition, compared to only 26.6 % of their endowment in the "Random" condition. The joint OLS analysis in column 1, Table 6 indicates that this is a 40 percentage points ($p<0.05$) *increase* compared to the baseline condition. The five other classified types increase their contributions by 12.4 percentage points ($p<0.10$) in the "Choice" condition compared to the baseline condition. Imperfect Conditional cooperators seem to be more sensitive to the treatment in the first period, compared to all other types. This contribution behavior can be attributed to mimicking cooperative intents as a way of attracting potential partners.

[7] As a robustness check I also test the correlation between the *average* conditional contributions in the one-shot game and the actual contributions in the first period of the repeated game. Results show a positive and significant correlation between one`s average contribution in the one-shot game and the contribution in the first period of the repeated game (Spearman`s rho= 0.2802, p=0.0003).

Table 6: Contribution (%) in the first period conditional on type, by treatment.

	(1) **Contribution**	(2) **Contribution**
Choice	40.00**	36.03**
	(15.67)	(16.87)
Other	25.39**	22.29*
	(12.28)	(12.26)
Other×Choice	-27.60*	-24.34
	(15.50)	(16.52)
Woman		-11.92
		(7.138)
Constant	26.67**	36.60***
	(11.96)	(12.96)
N	**160**	**160**
Total periods	**1**	**1**
R^2	**0.0687**	**0.0903**

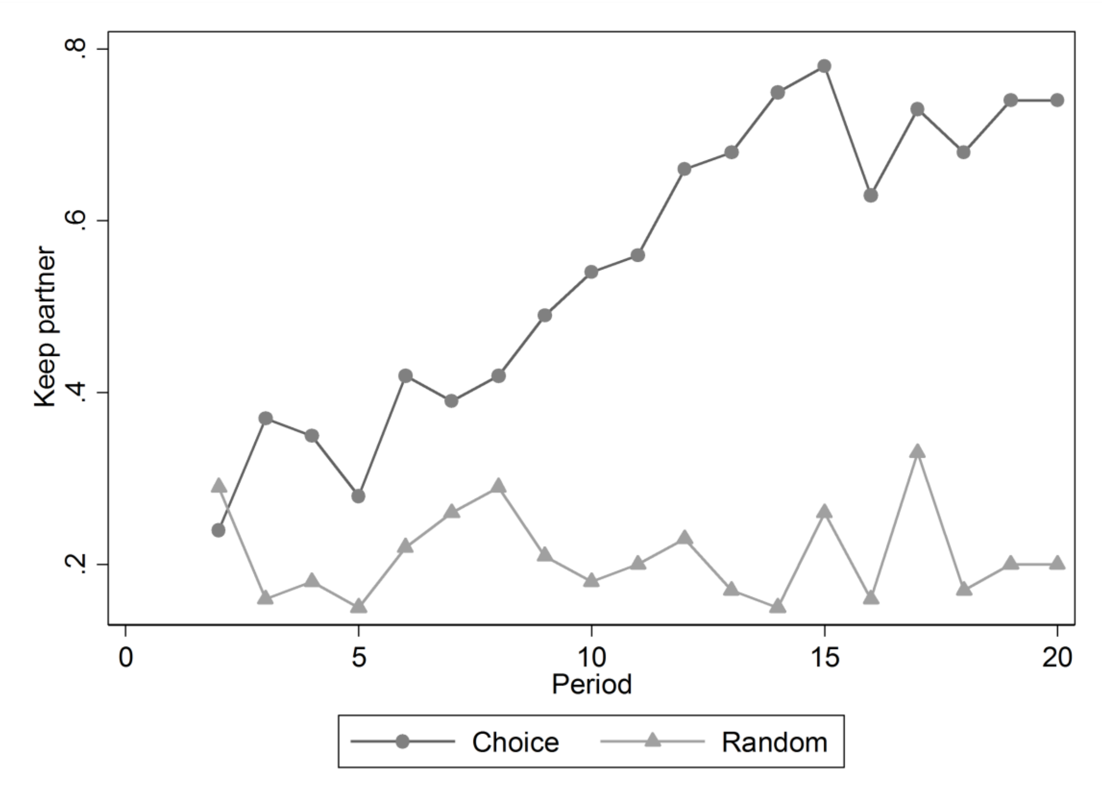
Note: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
The dummy variable "Other" refers to all other types except for Imperfect Conditional cooperators.
(1) Estimation results conditional on type, with no controls.
(2) Estimation results conditional on type, with controls.

3.6.5 Partner choice as a regrouping device

Result 5: *When provided with the opportunity to choose a partner, individuals sort into stable partnerships over time.*

Figure 9 displays that the frequency of keeping a partner from the previous period is steadily increasing in the "Choice" condition, while remaining stable in the "Random" condition. These observations confirm first and foremost that the matching procedure in the baseline condition works properly. Second, the observations illustrate that partner choice is efficiently applied as a regrouping device in the "Choice" condition.

Figure 9: Frequency of keeping partner from the previous period, by treatment.



Gunnthorsdottir et al. (2007) show in an experiment that when the formation of groups is based on others` previous contributions, individuals will want to engage in behavioral sorting and pair with those signaling cooperative intents.

Does one`s type affect the estimated probability of keeping a partner from the previous period? The OLS regression in column 1, Table 7 shows that Unconditional cooperators have a 41.1 percentage points ($p<0.01$) higher estimated probability of keeping their previous partner in the “Choice” condition compared to the baseline condition. Moreover, column 3 indicates that the estimated probability of keeping a partner from the previous period is 71.4 percentage points ($p<0.01$) higher in the “Choice” condition in the last five periods of the game.

Free riders have a 21.9 percentage points ($p<0.10$) higher estimated probability of keeping their previous partner in the “Choice” condition compared to the baseline condition. The estimated probability increases to 23 percentage points ($p<0.01$) in the last five periods of the game in the “Choice” condition.

In other words, when allowed to directly influence whom to associate with, the most cooperative individuals are remarkably better at *committing* to partnerships than the least cooperative individuals.

Table 7: OLS regressions. Estimated probability of keeping partner from the previous period conditional on type, by treatment.

	(1) **All periods**	(2) **All periods**	(3) **Last five periods**
Choice	0.411***	0.411***	0.714***
	(0.0695)	(0.0694)	(0.0765)
Free rider	-0.00357	-0.00179	0.0836
	(0.0376)	(0.0369)	(0.0767)
Imp.Conditional cooperator	-0.00357	0.00266	0.0211
	(0.0281)	(0.0297)	(0.0523)
Perf.Conditional cooperator	-0.0147	-0.00944	0.0191
	(0.0322)	(0.0332)	(0.0790)
Others	-0.0386	-0.0355	0.00265
	(0.0367)	(0.0373)	(0.0759)
Imp.Unconditional cooperator	-0.0319	-0.0280	0.0230
	(0.0269)	(0.0273)	(0.0853)
Freerider×Choice	-0.192*	-0.194*	-0.484***
	(0.108)	(0.107)	(0.172)
Imp.Conditional×Choice	-0.0214	-0.0250	-0.0100
	(0.0950)	(0.0963)	(0.0759)
Perf.Conditional×Choice	-0.110	-0.111	-0.206
	(0.0758)	(0.0755)	(0.131)
Others×Choice	-0.114	-0.114	-0.307**
	(0.0884)	(0.0891)	(0.115)
Imp.Unconditional×Choice	-0.0165	-0.0180	-0.180
	(0.0867)	(0.0859)	(0.143)
Woman		-0.0125	0.0150
		(0.0206)	(0.0330)
Period		0.0149***	
		(0.00345)	
Constant	0.229***	0.0769	0.180***
	(0.0290)	(0.0476)	(0.0625)
N	**4000**	**4000**	**1000**
Total periods	**20**	**20**	**5**
$\mathbf{R^2}$	**0.1198**	**0.1514**	**0.2768**

Note: Cluster-robust standard errors in parentheses (Clustered on groups of 40) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Reference category*: Unconditional cooperators*

(1) Estimation results conditional on type, with no controls.
(2) Estimation results conditional on type, with controls.
(3) Estimation results conditional on type in the last five periods, with controls.

Chapter 4: The Norwegian Citizen panel experiment

The main reason for excluding brokers from the private clubs of the London stock exchange market was to include reliable and exclude unreliable ones. Although excluded brokers could work and earn money outside the private clubs, membership was highly valued (Stringham, 2015). Which cost of exclusion motivated brokers to be more honest, the social or the monetary?

Kerr (1999) examines a similar question in a resource dilemma game. Individuals are in groups of five and they are fully identifiable. As only four individuals from the group can proceed to the next stage in the game, each individual can cast a vote on the individual they wish to exclude from the group. The individual with the most votes is excluded. The objective cost of exclusion is varied in both the treatment and control condition. One of the main results show that individuals who are excluded and who get to *keep* the average of others` payoff, maintain higher contribution levels compared to individuals who are randomly excluded in the baseline condition. Thus, individuals prefer not to pay the *social cost* associated with exclusion.

The social cost of exclusion is often highly valued because individuals care about the "shadow of the future" (Blake et al., 2015). Throughout our upbringing we are taught that if we are nice to others, good things will happen to us in the future. The important role of the future is incorporated in the way we think and behave. This might explain why myopic behaviour is challenging in everyday life. It might pay to gain a good reputation today as we cannot avoid subsequent interactions in the future.

To examine the distinction between the social and the monetary cost associated with exclusion, I conduct a survey experiment in the Norwegian Citizen panel[8]. The key question of this experiment examines if exclusion due to being the *least* contributor in a group increases cooperation in a social dilemma. The

[8] The Norwegian Citizen panel is a web based survey of Norwegians` opinions toward societal matters. The participants are randomly selected from the National Registry. The web survey is usually sent out every six months, and takes on average 20 minutes to complete.

outside option is varied to examine how exclusion is looked upon in both *social* and *monetary* terms. Contrary to the study of Kerr (1999), the experiment in the Norwegian Citizen panel provides no opportunity to engage in repeated interactions or to vote identifiable individuals out of the group. The main features of the survey experiment are displayed in Table 8.

Table 8: Main features of the survey experiment.

Treatments	*Lose 1000 NOK*	*Keep 1000 NOK*
Exclusion	293 participants	292 participants
Random	304 participants	301 participants

A between subject design is employed where a total of 1.190 random individuals from the panel are chosen to participate in the experiment. The observations are distributed over the four mutually exclusive experimental conditions. In the randomized representative sample 614 individuals are men while 576 are women. The distribution of age ranges from 18 to 76 plus.

The "Exclusion" and "Random" conditions

The experimental conditions are embedded in a one-shot continuous Prisoner`s Dilemma game. In the "Exclusion" conditions three individuals are randomly drawn from the sample and assigned to a group. All individuals are informed that they are anonymous and that they face the same payoff function. Each of the three individuals in the group is asked to distribute 1000 NOK between themselves and a common pool. The person who contributes the *least* amount x_i to the common pool is excluded from the group. The money in the common pool is to be split equally between the *two* remaining individuals. The payoff structure employed in all experimental conditions is as follows:

$$\pi_i = 1000 - x_i + \frac{1{,}5(x_j + x_i)}{2} \quad \textbf{[2]}$$

The decision situation in the baseline "Random" conditions is identical to the "Exclusion" conditions. However, in the "Random" conditions all participants face the *same* probability of being excluded. Individuals are informed that one of them will be randomly drawn and excluded from the group. As exclusion is uniformly random, individuals cannot influence the probability of exclusion by increasing their contribution levels.

The "Lose" and "Keep" conditions

I distinguish between a high and a low monetary cost associated with exclusion. In the "Lose" conditions the excluded individual loses the entire initial endowment of 1000 NOK. There is thus a *high* monetary cost associated with being excluded. In the "Keep" conditions the excluded individual keeps the 1000 NOK, but misses out on the opportunity to further participate in the group.

4.1 Results

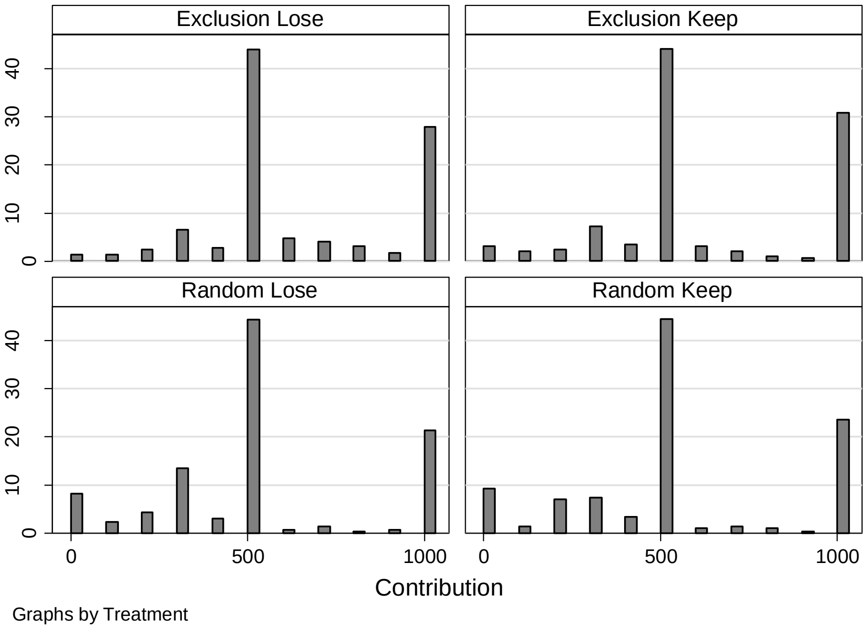
4.1.1 The aggregate effect of exclusion

Result 1: *Exclusion due to being the least contributor increases contributions significantly. The result is purely driven by the social cost of exclusion.*

Figure[9] 10 illustrates that individuals in the "Exclusion" conditions contribute higher amounts of the initial 1000 NOK than in the "Random" conditions, especially for values above 500 NOK. That is, individuals in the "Exclusion" conditions seem to be willing to sacrifice higher amounts of money to avoid being excluded.

[9] In total 60 individuals did not submit their answers to the experimental questions. In the "Exclusion Lose" conditions 0.3 % observations are missing, in the "Exclusion Keep" 0.3 % observations are missing, in the "Random Lose" 0.5 % observations are missing, while in the "Random Keep" conditions 0.2 % are missing.

Figure 10: Individual contributions in NOK, by treatment.



The results of the OLS analysis in column 2, Table 9 confirm these observations and show that contributions in the "Exclusion" conditions are 117 NOK ($p<0.01$) higher than in the "Random" conditions. This is a 24.5 % increase in contributions. The monetary cost of exclusion does not affect contributions significantly. Thus, the social cost associated with being the outcast increases cooperation *regardless* of the size of the monetary cost.

Why do individuals in the survey experiment care about the social cost of exclusion? The setting of the survey experiment neither indicates that the interaction is repeated, nor that individuals in the experiment are identifiable in any way. Moreover, participants are not *physically* excluded from the group as in the experiment of Kerr (1999). It is therefore interesting that the social cost of exclusion motivates individuals to contribute more in such an experimental environment.

The reason for why individuals in the survey experiment value the social cost of exclusion highly can be attributed to the negative connotations towards being socially marginalized. Being the *least* contributor in a group of people is often accompanied by the feeling of shame and guilt (Rigaud et al., 2010; Feinberg et al., 2014).

Table 9: OLS regressions. Individual contributions in NOK, by treatment.

	(1) **Contribution**	(2) **Contribution**
Exclusion	113.1***	117.0***
	(23.10)	(23.05)
Lose	-14.49	-15.64
	(24.67)	(24.82)
Exclusion×Lose	29.79	33.49
	(33.66)	(33.64)
Woman		-10.38
		(16.98)
Age group 18-25		146.2***
		(52.20)
Age group 26-35		70.60
		(43.55)
Age group 36-45		96.64**
		(39.41)
Age group 46-55		55.66
		(38.26)
Age group 56-65		46.08
		(37.58)
Age group 66-75		26.36
		(37.72)
Constant	520.7***	476.3***
	(17.11)	(42.81)
N	**1190**	**1190**
R^2	**0.026**	**0.032**

Note: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Reference category: *Age group 76 plus*

(1) Estimation results, with no controls.
(2) Estimation results, with controls.

Chapter 5: Concluding remarks

Partner choice as an informal punishment mechanism

In the game of life it pays to be the nice guy. The results of the lab experiment illustrate that partner choice can work as an informal punishment mechanism for the least cooperative individuals. Free riders are avoided and resemble the "Lame ducks" of the London exchange market. The cooperative individuals are preferred as partners and earn the highest payoffs in the game.

Contrary to other studies on partner choice, this thesis illustrates that partner choice can prevent non co-operators of profiting at the expense of cooperative individuals. The novelty of these results is that they show that it pays to be predisposed to cooperate, a question that has not received a lot of experimental attention before. I address this question by allowing individuals to choose a partner and examine if it helps cooperators gain an edge over free riders. Being nice to others without expecting anything back has proven to be a beneficial commitment device that pays in the long run (Frank, 1987). These results emphasize that doing *good* by engaging in prosocial behaviour can often be accompanied by doing *well* in social and monetary terms.

The social cost of exclusion

The Norwegian Citizen panel experiment has shed light on the distinction between the social and the monetary cost of exclusion. The survey experiment yields interesting results that show the importance of the social cost when faced with exclusion. When the threat of excluding non-cooperators is perceived as real, individuals are willing to refrain from material self-interested behaviour. These results echo experiences most of us have had as members of teams, organizations and families. In some rules of the game sustaining a good reputation and the feeling of belongingness is what matters the most.

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Appendix A: Instructions for the lab experiment

Page 1:

<u>Norwegian:</u> Dette eksperimentet handler om valg. Du er garantert **100 kroner** for oppmøtet. I tillegg tjener du **poeng** underveis i eksperimentet som omgjøres til kroner. Din totale gevinst utbetales i en lukket konvolutt når eksperimentet avsluttes. Dette gjøres **anonymt**. Vi ber deg først om å lese instruksjonene. Deretter gjennomføres et eksperiment bestående av **to deler**.

<u>English:</u> This is an experiment on decisions. You are guaranteed **100 kroner** as show up payment. In addition, you will earn **points** which will be converted into kroner. The total payoff in kroner will be paid out to you in a closed envelope at the end of the experiment. This will be done **anonymously**. We now ask you to read the instructions. An experiment consisting of **two parts** will thereafter be conducted.

Page 2:

<u>Norwegian:</u> Du og en annen person kan sammen produsere røde enheter. Dere mottar 10 blå enheter hver som kan brukes til å produsere røde enheter. Antall produserte røde enheter avhenger av antallet blå enheter du og den andre personen bruker til produksjon.

1 blå enhet = 1 poeng = 30 øre

1 rød enhet = 1 poeng = 30 øre

<u>English:</u> You and another person can produce red units together. Both of you will receive 10 blue units each which you can use in the production of red units. The number of produced red units depends on the number of blue units you and the other person use in the production.

1 blue unit= 1 point= 30 øre

1 red unit= 1 point= 30 øre

Page 3:

Norwegian: Etter du har mottatt 10 blå enheter skal du velge antall blå enheter du ønsker å bruke i produksjonen av røde enheter, og hvor mange du vil beholde selv.

Personen du produserer med skal også velge antall blå enheter vedkommende ønsker å bruke i produksjonen av røde enheter, og hvor mange som vil beholdes.

Beholdning av blå enheter = 10 blå enheter - det du bruker av blå enheter for å produsere røde enheter

Beholdning av røde enheter = 0,7 × (antall blå enheter du bruker + antall blå enheter den andre personen bruker)

Poeng totalt = Beholdningen av blå enheter + Beholdningen av røde enheter

English: After you receive 10 blue units you have to decide how many of the blue units you wish to use in the production of red units, and how many you wish to keep for yourself.

The person you are producing with will also decide on how many blue units this person wants to use in the production of red units, and how many this person wishes to keep.

Endowment of blue units= 10 blue units – the amount of blue units you use to produce red units

Endowment of red units= 0.7 × (number of blue units you use + the number of blue units the other person use)

Total amount of points = Endowment of blue units + Endowment of red units

Page 4:

Norwegian:

Noen eksempler:

1) Hvis både du og den andre personen bruker 0 blå enheter hver, vil begge motta:
   $10 - 0 + 0{,}7\ (0 + 0) = 10$ poeng
2) Hvis både du og den andre personen bruker 5 blå enheter hver, vil begge motta:
   $10 - 5 + 0{,}7\ (5 + 5) = 12$ poeng
3) Hvis både du og den andre personen bruker 10 blå enheter hver, vil begge motta:
   $10 - 10 + 0{,}7\ (10 + 10) = 14$ poeng

English:

Some examples:

1) If you and the other person use 0 blue units each, then both will receive:
   $10 - 0 + 0{,}7\ (0 + 0) = 10$ points
2) If you and the other person use 5 blue units each, then both will receive:
   $10 - 5 + 0{,}7\ (5 + 5) = 12$ points
3) If you and the other person use 10 blue units each, then both will receive:
   $10 - 10 + 0{,}7\ (10 + 10) = 14$ points

Page 5:

Norwegian: Vi ber deg nå om å svare på følgende spørsmål. Disse hjelper deg å forstå hvordan din totale poeng mengde avhenger av beholdningen av blå og røde enheter.

Spørsmål 1:

Du og den andre personen har 10 blå enheter hver. Anta at begge bruker 0 av de 10 blå enhetene for å produsere røde enheter.

1) Hva er beholdningen **din** av blå enheter?
2) Hva er beholdningen **din** av røde enheter?
3) Hva er beholdningen av blå enheter til den **andre personen**?
4) Hva er beholdningen av røde enheter til den **andre personen**?

English: We now ask you to answer the following questions. These questions will help you understand how the amount of total points is linked to the endowment of blue and red units.

Question 1:

You and the other person have 10 blue units each. Assume that both of you use 0 of the 10 blue units to produce red units.

1) What is **your** total endowment of blue units?
2) What is **your** total endowment of red units?
3) What is the total endowment of blue units of **the other person**?
4) What is the total endowment of red units of **the other person**?

Page 6:

Norwegian:

Spørsmål 2: Du og den andre personen har 10 blå enheter hver. Anta at begge bruker 10 av de 10 blå enhetene for å produsere røde enheter.

1) Hva er beholdningen **din** av blå enheter?
2) Hva er beholdningen **din** av røde enheter?
3) Hva er beholdningen av blå enheter til den **andre personen**?
4) Hva er beholdningen av røde enheter til den **andre personen**?

English:

Question 2: You and the other person have 10 blue units each. Assume that both of you use 10 of the 10 blue units to produce red units.

1) What is **your** total endowment of blue units?
2) What is **your** total endowment of red units?
3) What is the total endowment of blue units of **the other person**?
4) What is the total endowment of red units of **the other person**?

Page 7:

Norwegian:

Spørsmål 3:

Du og den andre personen har 10 blå enheter hver. Hvor mange røde enheter har du hvis du bruker:

1) 0 av blå enheter for å produsere røde, mens den andre personen bruker 10 blå enheter?
2) 10 av blå enheter for å produsere røde, mens den andre personen bruker 10 blå enheter?

English

Question 3:

You and the other person have 10 blue units each. How many red units do you have if you use:

1) 0 of the blue units to produce red units, while the other person uses 10 blue units?
2) 10 of the blue units to produce red units, while the other person uses 10 blue units?

Page 8:

Norwegian: **Del 1**

Dette er **første del** av eksperimentet, og består av kun **én periode**. Du er tilfeldig satt sammen med en annen person som du kan produsere med. Du skal ta følgende beslutninger:

1) Du skal velge hvor mange av dine 10 blå enheter du ønsker å bruke for å produsere røde enheter.

2) Du skal velge hvor mange av dine 10 blå enheter du ønsker å bruke, gitt antall blå enheter personen du produserer med velger å bruke.

Hvilken av beslutningene som gjelder for din totale poengsum, trekkes tilfeldig ut. Poeng fra denne delen av eksperimentet legges til dine poeng i andre del av eksperimentet.

English: **Part 1**

This is the **first part** of the experiment. This part consists of only **one period**. You are randomly paired with another person who you can produce with. We ask you to make the following decisions:

1) You have to choose how many of your 10 blue units you wish to use to produce red units.
2) You have to choose how many of your 10 blue units you wish to use conditional on the contribution choices of the other person.

A random draw will decide which of the two decision will be relevant for your final payoff. The points from this part of the experiment will be added to your points from the second part of the experiment.

Page 9:

Norwegian: **Del 2**

Dette er **andre del** av eksperimentet. Denne delen består av **20 perioder**. Produksjonen i hver periode er lik. I dette eksperimentet er du **person *i***. Du beholder dette tallet hele eksperimentet. Du er tilfeldig plassert i en gruppe bestående av deg og fire andre personer. Dere fem er i samme gruppe hele eksperimentet. De andre gruppemedlemmene har også fått et tall mellom **1** og **5**, og dette tallet tilhører dem hele eksperimentet.

English: **Part 2**

This is the **second part** of the experiment. This part consists of **20 periods.** The production is identical in each period. You are **person *i*.** This number belongs to you throughout the entire experiment. You are randomly assigned to a group which consists of you and four other people. The five of you will be in the same group the entire experiment. The other group members have also been given a number ranging from **1** to **5**, and this number belongs to them throughout the entire experiment.

Page 10:

Norwegian: Produksjonen varer i **10 sekunder**. På denne tiden må du velge hvor mange av dine 10 blå enheter du ønsker å bruke for å produsere røde enheter.

Dette gjør du ved å skrive inn valget ditt i det blå området på skjermen. Du må trykke på **Oppdater** når du har valgt hvor mange blå enheter du ønsker å bruke i produksjonen av røde enheter.

Produksjonen avsluttes automatisk etter **10 sekunder,** og antallet blå enheter du har skrevet inn i feltet regnes som din endelige avgjørelse.

I slutten av hver periode får du informasjon om din beholdning av blå og røde enheter, og hvem du har produsert med. Andre deltakere på din gruppe får også tilsvarende informasjon om sine respektive beholdninger, og hvem de har produsert med.

English: The production stage lasts **10 seconds**. By this time you have to choose how many of your 10 blue units you wish to use to produce red units.

This is done by entering your contribution choice in the blue area on the screen. You have to click the **Update** button when you have chosen how many blue units you wish to use to produce red units.

The production stage is automatically closed after **10 seconds,** and the number of blue units you have entered is registered as your final decision.

In the end of each period you will receive information about your total endowment of blue and red units, and also who you have produced with. The other participants in your group will also receive this private information about their endowments and production partner.

Page 11: Random condition

Norwegian: I hver periode tildeles du en tilfeldig person fra gruppen som du kan produsere med. Én person trekkes tilfeldig ut til å stå over produksjonen. Den personen som må stå over produksjonen, får poengsummen 0 denne perioden.

English: In each period you will be assigned to a random individual from your group that you can produce with. One person will be randomly drawn and this individual has to pass on the production stage. The person that has to pass on the production earns zero points in this period.

Page 11: Choice condition

Norwegian: I hver periode skal du velge hvem av de fire personene i gruppen du vil produsere med. Du kan kun velge én person. Personen du velger må også velge deg for at dere skal produsere sammen.

Dersom alle bortsett fra én person har funnet noen å produsere med, vil denne personen stå over produksjonen denne perioden. Dersom flere ikke finner en annen å produsere med, trekkes én person tilfeldig ut til å stå over produksjonen. Den personen som må stå over produksjonen, får poengsummen 0 denne perioden. Resten tildeles en tilgjengelig person i gruppen. Dette gjelder også hvis du velger deg selv.

English: In each period you have to choose which of the four people in the group you wish to produce with. You can only choose one person. The person you choose must also choose you for you to produce together.

If all but one person find another subject to produce with, then this person has to pass the production stage in this period. However, if more than one person fails to find another person to produce with, then one person will be randomly drawn and this person has to pass the production stage in this period. The person that has to pass the production stage earns zero pints in this period. This also applies if you choose yourself.

Appendix B: Supplementary regression results

Table 10: OLS regressions. Payoff (%) conditional on type, by treatment.

	(1) **All periods**	(2) **All periods**	(3) **All periods**	(4) **First five periods**	(5) **Last five periods**
Choice	0.998	14.51***	14.80***	8.888*	23.07***
	(0.819)	(5.222)	(4.807)	(4.504)	(8.278)
Free rider		12.49***	11.75***	13.20**	16.46***
		(4.107)	(3.410)	(5.695)	(4.586)
Imp. Conditional cooperator		7.590**	9.606***	7.381	14.33***
		(2.875)	(2.553)	(4.721)	(4.404)
Perf. Conditional cooperator		3.779	5.750**	4.003	5.739
		(3.274)	(2.830)	(5.284)	(6.184)
Others		4.456	5.195**	3.030	12.98***
		(3.439)	(2.423)	(7.039)	(3.436)
Imp. Unconditional cooperator		2.741	3.850*	1.548	12.37***
		(2.616)	(2.035)	(3.959)	(3.962)
Freerider×Choice		-34.33***	-33.88***	-51.10***	-43.32***
		(6.183)	(5.588)	(12.53)	(14.19)
Imp.Conditional×Choice		-17.25**	-18.51***	-10.48	-21.51*
		(7.064)	(6.612)	(6.372)	(10.95)
Perf.Conditional×Choice		-13.55**	-14.17**	-7.558	-17.28
		(6.654)	(6.296)	(6.538)	(11.83)
Others×Choice		-12.81*	-12.15*	0.511	-29.45**
		(6.841)	(6.267)	(8.989)	(11.25)
Imp.Unconditional×Choice		-10.01*	-10.59*	-8.602	-24.14**
		(5.857)	(5.530)	(5.330)	(10.09)
Woman	-4.098**		-4.434***	-5.237*	-5.015*
	(1.548)		(1.377)	(2.593)	(2.811)
Period	-0.0200		-0.0200		
	(0.0320)		(0.0320)		
Constant	60.48***	52.65***	54.33***	56.65***	49.21***
	(1.203)	(2.553)	(1.991)	(3.642)	(3.566)
N	**4000**	**4000**	**4000**	**800**	**1000**
Total periods	**20**	**20**	**20**	**5**	**5**
R^2	**0.003**	**0.0113**	**0.0153**	**0.0310**	**0.0304**

Note: Cluster-robust standard errors in parentheses (clustered on 40 groups) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Reference category: *Unconditional cooperators*

(1) Overall estimation result, with controls.
(2) Estimation results conditional on type, with no controls.
(3) Estimation results conditional on type, with controls.
(4) Estimation results conditional on type in the first five periods, with controls.
(5) Estimation results conditional on type in the last five periods, with controls.

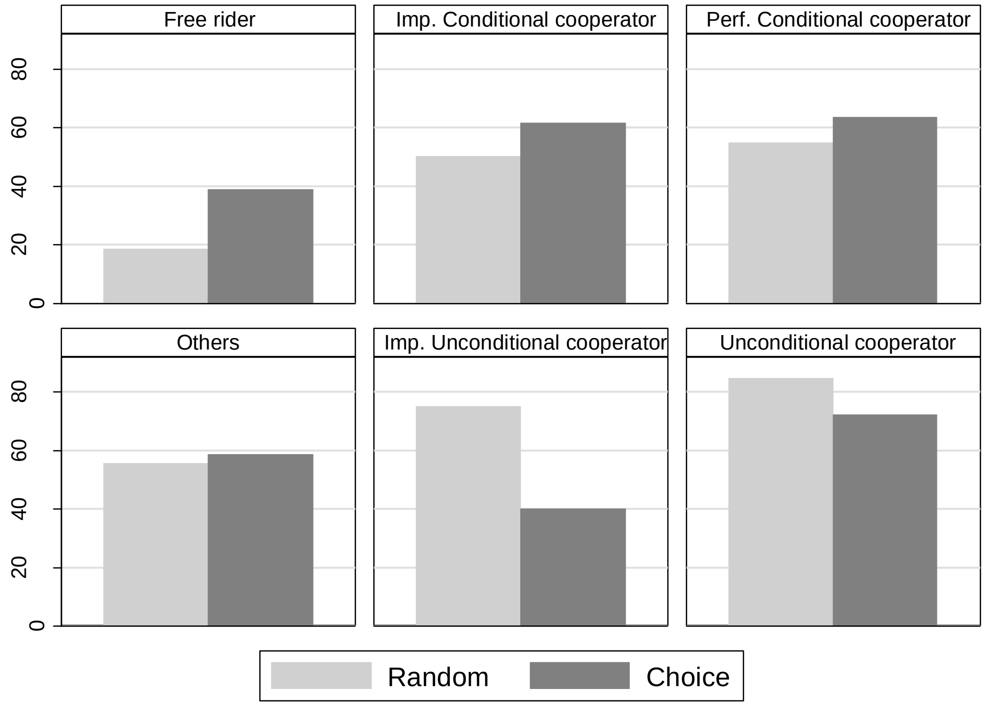
Table 11: Contribution (%) after exclusion in the previous period, by treatment.

	(1) **Contribution**	(2) **Contribution**
Choice	6.764	6.556
	(4.541)	(4.589)
l.Exclusion	0.892	1.093
	(1.987)	(1.964)
l.Exclusion×Choice	-7.594*	-7.722**
	(3.874)	(3.795)
Woman		-4.215
		(4.462)
Period		-0.201
		(0.172)
Constant	56.71***	61.50***
	(3.192)	(4.880)
N	**3040**	**3040**
R^2	**0.0075**	**0.0113**

Note: Cluster-robust standard errors in parentheses (clustered on 40 groups) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

(1) Overall estimation result, with no controls.
(2) Overall estimation result, with controls.

Figure 11: Contribution (%) after exclusion in the previous period conditional on type, by treatment.



Appendix C: Invitation mail

Hei,

Du er invitert til å delta i et eksperiment. Du vil motta 100 kroner for oppmøtet.

I tillegg til dette kan du tjene ytterliggere penger. Disse pengene utbetales til deg når eksperimentet er over. Eksperimentet utføres anonymt.

Eksperimentet går ut på å ta valg på en PC. Det kreves ingen forkunnskaper for å kunne delta.

Hele eksperimentet tar omtrent 35 minutter, og vil holdes på rom 305 på Ulrikke Pihls Hus (Professor Keyers gate 1) i tredje etasje.

Ved å klikke på linken under kan du velge dag og tidspunkt som passer for deg:
http://thomas.nhh.no/dj/expmotor/new_participant/84/

Vel møtt!

Hilsen Nina Serdarevic

Appendix D: Instruction for the Norwegian Citizen panel experiment

Norwegian: Random Lose (Keep)

Tre deltakere i Medborgerpanelet trekkes ut til å vinne en ekstra pengepremie. Disse tre blir satt sammen i en gruppe. Hver person i gruppen får i utgangspunktet 1000 kroner. Pengepremiens endelige størrelse avhenger av valget personene i gruppen tar i beslutningen under.

Hver deltaker skal velge hvor mye av sine 1000 kroner de vil bidra med til en felleskasse for gruppen. En tilfeldig person trekkes ut til å ekskluderes fra gruppen, og taper (beholder) sine 1000 kroner.

De to gjenværende personenes bidrag til felleskassen økes med 50 prosent, og deles deretter likt på de to. Den endelige pengepremien er den enkeltes andel av felleskassen og pengene som ble beholdt.
Spørsmål: Dersom du trekkes ut til å vinne 1000 kr, hvor mye vil du bidra med til felleskassen?

English: Random Lose (Keep)

Three participants of the Norwegian Citizen Panel are chosen to receive an additional money prize of 1000 NOK. These three participants are placed together in a group. Each person is initially endowed with 1000 NOK. The final size of the money prize depends on the group members` decisions in the task below.

Each group member has to choose how much of the 1000 NOK they want to contribute to the group common pool. One random person will be excluded from the group and lose (keep) their initial endowment of 1000 NOK.

The two remaining group members` contributions to the common pool will increase by 50 percent, and then be split equally between the two. The final cash prize is each subjects share from the common pool, and the money that was kept in the decision stage.

Question: If you are one of the three participants that receive the 1000 NOK, how much do you want to contribute to the common pool?

Norwegian: Exclusion Lose (Keep)

Tre deltakere i Medborgerpanelet trekkes ut til å vinne en ekstra pengepremie. Disse tre blir satt sammen i en gruppe. Hver person i gruppen får i utgangspunktet 1000 kroner. Pengepremiens endelige størrelse avhenger av valget personene i gruppen tar i beslutningen under.

Hver deltaker skal velge hvor mye av sine 1000 kroner de vil bidra med til en felleskasse for gruppen. Personen i gruppen som bidrar med minst ekskluderes fra gruppen, og taper (beholder) sine 1000 kroner.

De to gjenværende personenes bidrag til felleskassen økes med 50 prosent, og deles deretter likt på de to. Den endelige pengepremien er den enkeltes andel av felleskassen og pengene som ble beholdt.
Spørsmål: Dersom du trekkes ut til å vinne 1000 kr, hvor mye vil du bidra med til felleskassen?

English: Exclusion Lose (Keep)

Three participants of the Norwegian Citizen Panel are chosen to receive an additional money prize of 1000 NOK. These three participants are placed together in a group. Each person is initially endowed with 1000 NOK. The final size of the money prize depends on the group members` decisions in the task below.

Each group member has to choose how much of the 1000 NOK they want to contribute to the group common pool. The person in the group that contributes the least amount of money will be excluded from the group, and lose (keep) their initial endowment of 1000 NOK.

The two remaining group members` contributions to the common pool will increase by 50 percent, and then be split equally between the two. The final cash prize is each subjects share from the common pool, and the money that was kept in the decision stage.

Question: If you are one of the three participants that receive the 1000 NOK, how much do you want to contribute to the common pool?