

How Does Group-Decision Making Affect Subsequent Individual Behavior? *

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Abstract

Do groups and individuals behave differently in dictator games with varying deservingness of the recipient? Does the involvement in group-decision making affect the decisions of group members in subsequent individual decisions? We address these questions using a controlled dictator-game experiment and find the following main results. First, groups and individuals are not different w.r.t. their dictator-game decisions and recipient deservingness does not have a different effect on groups than on individuals. Second, participants who were previously part of a group decision process are more generous in a subsequent individual-level decision than participants who previously made individual decisions. We exploit the chat protocols of group discussions to shed light on the mechanism behind this result. Consistent with moral balancing, we show that the effect of group-decision making on subsequent individual decisions is driven by subjects who intent to make good for the initial group decision.

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1 Introduction

Many (economic) decisions are made by groups. For example, management boards of firms and organizations, families, committees or political parties aggregate the individual preferences of their members to arrive at joint decisions.¹ In light of the prevalence and importance of group contexts, a growing strand of literature studies the nature of group-decision making and explores how group behavior is different from individual behavior (see Charness and Sutter 2012 and Kocher et al. 2020 for reviews and below for more references). Our paper adds to this literature by studying two aspects of group-decision making which are largely ignored in the existing literature: First, we study the difference between individuals and groups in dictator-game decisions with varying deservingness of the recipient. Second, we study if the involvement in group-decision making affects subsequent individual decisions. That is, we study if group decisions spill over to individual decisions.

Our first research question is motivated by the observation that the effect of recipient deservingness is well established for individuals, but not for group behavior. The social context of group decisions potentially implies that individuals and groups respond differently to variation in deservingness of the recipient. On the one hand, there is an increased level of social control in group decisions; for example, because groups members are observed by other group members and arguments/opinions have to be put forward and discussed within the group. This *social-control* aspect may keep group members from acting selfishly and make the groups more altruistic than individuals. On the other hand, social approval plays a role in group contexts; for example, once a group member promotes selfish behavior in the group discussion, other group members may be inclined to think that the selfish behavior is actually acceptable and support the suggestion. This *social-approval* aspect may make groups more selfish and less altruistic than individual decision makers.

The relative importance of these two social-context induced mechanisms is potentially related to the deservingness of the recipient. In the presence of a clearly deserving recipient, groups may be more inclined to act altruistically than individuals (e.g., because social control has more ‘bite’ if the recipient is clearly deserving and no group member dares to argue in favor of being selfish and others are also less likely to follow suggestions to behave selfishly), whereas groups may be less inclined to act altruistically in cases of unclear deservingness (e.g., because social control has less ‘bite’ and the bar for arguing in favor of acting selfishly and following such suggestions is lower).

The motivation for our second research question is based on the fact that group decisions require consensus and compromises. Group members are therefore not always able to enforce their preferred individual decision.² As a result, group members may wish to correct

¹Following most of the literature on group-decision making, we consider *unitary* groups that do not have a hierarchy and where ex-ante equal group members aggregate preferences into a single group decision (see, e.g., Charness and Sutter 2012 and Balafoutas et al. 2014).

²Group members do not enforce their preferred individual decision either because their individual opinion did not reflect the aggregated opinion of the group or because they did not want to express their preferred choice in the group discussion.

the consensus-based group decision in subsequent individual behavior, which would be consistent with moral balancing. The extent of this effect may also be related to the deservingness of the recipient as it likely affects the variance of judgments regarding 'correct' behavior (because the discrepancy between selfish and moral behavior increases with higher deservingness). A further possible mechanism for spillovers from group-decision making to subsequent individual decisions is that individuals learn arguments in favor or against a particular behavior in the course of the group decision. In a subsequent individual-choice context, they may then imitate the previous group behavior. Despite the reasonable intuition behind both these considerations, the literature on group behavior largely neglects the interaction between group decisions and subsequent individual choices. We use exogenous exposure to group-decision making to study the spillovers of group decisions to subsequent individual behavior.

We design a controlled laboratory experiment that allows us to address both research questions within one unified experiment. Our experiment is based on a take-frame dictator game with an external recipient. The external recipient is endowed with a fixed amount of money and decision makers have to decide how much they wish to take away from the recipient. We vary two dimensions: First, decisions are either made individually or in groups. Second, decision makers are exposed to a recipient that is either clearly deserving or to a recipient whose deservingness is less clear. Upon the end of the experiment, we implement an individual decision where all experimental participants are provided the opportunity to donate a share of their show-up fee to the recipient.

The group decision treatments follow the usual practice in the literature (e.g., Sutter 2009a, Kocher et al. 2017, Buffat et al. 2020): two participants are randomly assigned to form a group and have to find an agreement about the amount that each group member shall withdraw from the recipient (using a private chat). In the corresponding individual treatments, individuals have to decide alone how much to withdraw from the recipient.³

Treatments with clear recipient deservingness involve a recipient which the large majority of people plausibly considers to be deserving. Clear deservingness is achieved by communicating to decision makers that the recipient is a well-known local association that supports children with cancer.⁴ In the corresponding treatments with unclear deservingness, decision makers are left uncertain about recipient deservingness and they are not informed about the exact recipient. They are instead told that the recipient is some association (*Verein*) which remains unspecified. This set-up aims at establishing uncertainty about the deservingness of the recipient.⁵ Overall, this part of our design allows us to study if an exogenous change in perceived deservingness of

³To ensure that differences in the extent of engagement with the decision problem do not drive differences between groups and individuals and to hold time spent in the lab constant, participants in the individual treatments are given the opportunity to write a reflection essay in which they rationalize their decision.

⁴Experiments have shown that giving in dictator games increases if the recipient is a charity rather than a student (Eckel and Grossman 1996). To further emphasize the deservingness, we included an efficiency factor such that the recipient loses more than the dictator gets, and we reduced social distance by using a local charity. All contributions to the external recipient were of course truthfully donated.

⁵In order to underline that deservingness is not clear, we further informed decision makers about 'associations' (*Vereine*) in Germany and emphasized that they are highly diverse and devoted to many different types of objectives (Germany has more than 600,000 associations with a highly heterogeneous nature, e.g., culture, sports, hobbies (pigeon breeding), gun clubs, charity, etc.).

the recipient has a differential effect on groups than on individuals.⁶

To study the effect of recipient deservingness on group decisions (our first research question), we use the amount that is taken away from the recipient as the outcome variable. To explore the spillover effect of group-decision making on subsequent individual behavior (our second research question), we study if the subsequent individual decision to donate a part of the show-up fee depends on whether the individual had previously been part of a group or if she had made an individual decision before. The outcome of interest therefore is the individual-level donation amount. In addition, we use the protocols of the group discussions to shed light on the mechanisms behind the results of our second research question.

We find the following main results for our first research question. First, the amount that is withdrawn from the recipient is considerably and significantly lower in the presence of a clearly deserving recipient, relative to a situation where the deservingness is less clear. This is evidence that the exogenous manipulation of recipient deservingness worked well and as intended. Second, groups do not differ significantly from individuals in the dictator-game decision. Third, we do not find evidence that groups respond differently to variation in the deservingness of the recipient than individuals. That is, the interaction between the group decision and being exposed to a clearly deserving recipient is not significantly different from zero. Overall, we thus find for our first research question that recipient deservingness does not have differential effect on groups vs. individuals. In addition, we observe that the variance in individual withdrawing decisions is larger in case of the clearly deserving recipient; this suggests that the situation with a clearly deserving recipient has more potential to generate conflicts within groups. We discuss the potential explanation for our result below (in light of the existing literature) and in the Conclusion.

With regard to our second research question, which focuses on the subsequent individual-level donation decision, we find the following main results. First, donations are higher among participants who were assigned to one of the treatments with a clearly deserving recipient. Second, participants who were part of a group decision donate significantly more than participants who previously made an individual decision. This observation is particularly interesting as it provides novel evidence that being part of a group decision process affects subsequent individual behavior. Motivated by moral-balancing behavior, our theoretical assertion behind this finding is that former group members intend to make good for a prior group decision that does not reflect their individual preferences.

We analyze the chat protocols of the group discussions for an empirical test of this potential explanation. We focus on group decisions and identify group members who would have preferred to take an amount from the recipient that is lower than the amount that was agreed upon in the group discussion. That is, these subjects did not enforce their individual preference in the group discussion and had intended to take less from the recipient. We label these subjects *more generous group members*. We then analyze if subsequent individual-level donations are different between these *more generous group members* and other group members. The objec-

⁶See section 2 where we elaborate why we chose a design with uncertainty, rather than a design where the recipient is clearly *not* deserving.

tive of this approach is to investigate if participants who had preferred to give more than the group-consented amount intent to make good for the group decision through giving more in a subsequent individual decision. We find that subsequent individual-level donations are more than twice as high for *more generous group members* than for all other group members (and *more generous group members* even donate almost six times as much as group members who had intended to be less generous than the eventual group decision). We thus present empirical support for the assertion that group membership affects subsequent individual behavior because some individuals want to make good for the initial group decision in which they could not enforce their individual preference. In this respect, our results suggest that moral balancing is not only relevant in a stream of individual decisions, but that group decisions also induce subsequent balancing behavior of individuals (see below for more).

A further finding in the context of the second research question is that the effect of group-decision making on subsequent donation behavior is larger in the presence of a clearly deserving recipient. In particular, we find that the difference in subsequent donations between individuals and groups is larger if the recipient is clearly deserving (relative to unclear deservingness). Similarly, we also find that group discussions were less disputed if recipient deservingness was unclear; the share of groups that consist of a *more generous group members* is significantly larger with clear deservingness than with unclear deservingness. These findings are consistent with the observation that the variance in the first decision (withdrawal) is larger with the deserving recipient. The larger variance may then induce more balancing behavior of former group members in the second decision: the greater difference in preferences within groups induces more conflicts, which in turn causes more donations in the subsequent individual decision in group treatments with clear deservingness.

1.1 Contribution to the Literature

We view the results in the context of our second research question as the paper's main novelty; we particularly identify the following key contributions: i) Involvement in group-decision making spills over to subsequent individual-level decisions. ii) Moral-balancing behavior, which has been identified in streams of individual decisions, also exists in a stream of group and individual decisions. Below, we elaborate in more detail how our we relate to the literature.

Our key findings relate to two papers that study the interaction between individual and group behavior. Sutter (2009b) and Luhan et al. (2009) present studies where, in one treatment arm, participants take individual decisions throughout all rounds, whereas participants in another treatment arm first make individual decisions, followed by group decisions, and then again individual decisions. Both studies show that individuals imitate prior group behavior in subsequent individual choices. Their findings are thus related to our observation that the experience of group-decision making affects subsequent individual behavior. We contribute relative to these studies in that we present the finding that group-decision making has a positive effect on subsequent individual-level generosity. In addition, we provide evidence for a novel channel explaining why group-decision making spills over to individual-decision making: individuals who were not able to enforce their preference in the group discussion intent to make good for

the group decision in subsequent individual behavior.⁷

In this respect, our research is related to the literature on moral consistency or moral balancing. Whereas some previous studies suggest that people act consistently in their individual moral behavior (i.e., (im-)moral action induces subsequent (im-)moral decisions; see Gneezy et al. 2012), other studies have shown that individual behavior is often characterized by moral balancing: moral behavior is followed by immoral behavior (Mazar and Zhong 2010; Blanken et al. 2015), and immoral behavior is followed by moral behavior (Ploner and Regner 2013; Gneezy et al. 2014). In our paper, we observe that people wish to make good for the immoral behavior of the group to which they belonged. This suggests that moral balancing translates to contexts of group-decision making and thus adds to literature on moral balancing.⁸

More generally, our paper relates to the growing literature on group-decision making. This literature studies if and how group decisions are different from individual decisions.⁹ Our first research question relates to studies that examine group vs. individual behavior in dictator games. Whereas Cason and Mui (1997) find that groups are more generous than individuals in dictator-game decisions, Luhan et al. (2009) find that groups give less to the recipient than individuals. More recent studies observe no difference between groups and individuals in dictator decision making (Franzen and Pointner 2014; Ito et al. 2016). In light of these conflicting findings, a further contribution of our paper is to provide additional evidence on dictator-game behavior of groups vs. individuals and to put forward a potential underlying mechanism that might shed light on the conflicting findings in the literature.¹⁰ We do not find any differences between groups and individuals in the dictator game, which is consistent with more recent findings in dictator-game and public-good contexts.¹¹

⁷We further add relative to these two papers in that we use a different experimental design to identify the effect of group-decision making on subsequent behavior. Whereas the other two studies use a design where each participant in the group treatment makes both group and individual decisions before making another individual decision, participants in the group treatment of our experiment have only made a group decision before making a final individual decision. As a result, we isolate the effect of group-decision making on the subsequent individual decision, whereas the final individual decision in the other studies is driven by a combination of both previous individual and previous group-decision making.

⁸We also relate to a literature showing that individual behavior is affected by group *membership*, with group identity being the driving mechanism (Akerlof and Kranton 2000; Goette et al. 2006; Charness et al. 2007; Chen and Li 2009). We further relate to List and Momeni (2021) who show that firm-level corporate social responsibility (CSR) increases employee-level misbehavior. However, these papers do not study the effect of actual group-decision making (where the group has to agree on a joint decision) on individual behavior, but examine situations where individuals make individual decisions while being related to others via a previously assigned joint group membership, or, as in the case of List and Momeni (2021), where individuals belong to an entity that behaves in a certain way. Another related paper is Crawford and Harris (2018), who show that preferences (rather than behavior) change after group interactions (rather than group-decision making).

⁹One series of papers on group-decision making shows that groups make decisions which are more in line with game-theoretic predictions than individuals (see the overview and conclusions of Charness and Sutter 2012 and Sutter 2009b). For example, groups send and accept smaller amounts in the ultimatum game (Bornstein and Yaniv 1998) and perform better in intellectual tasks (Maciejovsky and Budescu 2007). However, some papers also find that groups behave less selfishly than individuals (Kocher and Sutter 2007; Mueller and Tan 2013) or that they do not differ from individuals in e.g. public-good contributions (Cox and Stoddard 2018a).

¹⁰Balafoutas et al. (2014, page 320) discuss the differences between groups and individuals in dictator games and state that *'given the inconclusiveness of existing results, additional evidence on the aggregation of social preferences within small teams seems desirable'*.

¹¹Some recent papers study differences in lying behavior between groups and individuals and find that group decisions are less honest than individual decisions (e.g., Sutter 2009a, Conrads et al. 2013, Chytilová and

Our paper further speaks to the literature that studies charitable giving using dictator games in which the deservingness of the recipient is varied between experimental conditions (Eckel and Grossman 1996; Fong 2007; Engel 2011). We confirm the findings of these papers that giving of *individuals* increases when the recipient is clearly deserving, and we add to the literature that groups behave similarly. We present the new finding that individual giving to an external recipient is affected by previous involvement in group-decision making. Our design differs from prior studies as we do not compare giving to a charitable organization to giving to a student. We instead vary the degree of recipient deservingness. Our experimental design therefore stands as a contribution for itself.¹²

The paper proceeds as follows. Section 2 describes the experimental design. Section 3 discusses theoretical considerations and predictions. Section 4 includes the empirical results, separately for our first (4.1) and second (4.2) research question. Section 4.2 also features the analysis of chat protocols. We provide a discussion of the empirical results in Section 5 and also conclude the paper in this last section.

2 Experimental Design

Overview. We use a laboratory experiment to address our research questions. The experiment is based on a dictator game with an external recipient. The recipient is assigned a fixed amount (endowment) for each participant of the experiment. The participants then decide how much they wish to take away from the recipient. That is, in contrast to most dictator games where participants decide how much to ‘give’ to the recipient, we opted for a take-frame variant where participants decide how much they wish to ‘withdraw’ from the recipient. Motivated by work such as List (2007) showing that fewer agents are willing to give money in dictator games when the action set includes taking rather than giving (also see Bardsley 2008), we chose the take frame in an effort to avoid a corner situation where subjects across all treatments do not give anything to the recipient. The amount that is assigned to the recipient is 6.00 EUR per experimental participant. The maximum amount that participants can take away from the recipient is 5.00 EUR: for each 1.00 EUR that participants take away from the recipient and keep for themselves, the recipient loses 1.20 EUR.

Participants keep the withdrawn amount for themselves and any money left for the recipient is later actually transferred to the recipient. In addition, each participant receives a show-up fee of 4.00 EUR. In a second decision, subjects are provided an opportunity to donate

Korbel 2014, Kocher et al. 2017). There are several potential reasons for why groups act more dishonestly than individuals; for example: diffusion of responsibility, and learning in the group discussion about arguments in support of lying (Behnk et al. 2020; Kocher et al. 2017).

¹²The varying degree of deservingness in our experiment likely manipulates the norm of behaving altruistically; with clear deservingness, it is more obvious to participants what is ought to be done and thus the ‘injunctive norm’ (Krupka et al. 2017) of giving to the recipient is altered. In this sense, our paper also adds to the social-norms literature. This literature has shown that (mostly descriptive) norms affect the behavior of *individuals* along many dimensions (e.g., Andreoni and Scholz 1998; List and Lucking-Reiley 2002; Fehr and Fischbacher 2004; Frey and Meier 2004; Allcott 2011; Danilov and Sliwka 2017; Feldhaus et al. 2019) and our paper sheds some first light on the role of norms for group-decision making.

a share of their show-up fee to the recipient. They keep the share of the show-up fee which they do not donate and the donated share is transferred to the recipient.

We use a fully crossed 2×2 between subjects design where we cross the following dimensions: group decision vs. individual decision, clear deservingness vs unclear deservingness. As a result, we have four treatment groups: i) individual decision / unclear deservingness, ii) individual decision / clear deservingness, iii) group decision / unclear deservingness, iv) group decision / clear deservingness. The total number of participants in our experiment is 282. One experimental session took 20-30 minutes in total. In the following, we describe the four experimental treatments.

The Group Decision. In treatments with group decisions, two participants are randomly matched to form a group (as in Sutter 2009a, Cox and Stoddard 2018a or Buffat et al. 2020). The group members remain mutually anonymous. The recipient is assigned 6.00 EUR for *each* group member. That is, the *per capita* endowment of the recipient is as high as in treatments with individual decisions (see below), making the withdrawal decisions comparable across treatments (Sutter 2009a also has the same per-capita payoffs in group and individual treatments; see Kocher et al. 2017 for a similar reasoning). The group decision is to decide how much each group member shall withdraw from the recipient. Both group members have to withdraw the exact same amount from the recipient. Otherwise – if the individual withdrawal decisions differ between group members – none of the group members nor the recipient receive any money. This design feature provides a strong incentive for group members to coordinate and reach a group agreement. These features of our experimental design are inspired by Sutter (2009a) and Kocher et al. (2017).

Coordination among group members is enabled through a free chat on the computer screen. This chat can be used for up to 5 minutes. We opted for communication via chat because it avoids potential problems of face-to-face communication; for example, that the group members know each other by chance or can make explicit agreements regarding side-payments.¹³ After exchange via chat, each participant declares individually how much she wants to withdraw from the recipient. This declaration is in private and cannot be observed by the other group member. The private nature of the withdrawal decision ensures that it is the individual responsibility of each participant to make the withdrawal decision and that participants cannot hide behind a group decision or delegate the decision to other group members.

Overall, the design of our group decision treatments closely follows the experimental design of Kocher et al. (2017). In particular, Kocher et al. (2017) also use anonymous group chats (that are open for five minutes) in which group members can discuss the group decision. After the chat discussion, the group members also type in their decision individually and in private. In order to incentivize group members to arrive at a group decision, all group members also have to make the same decision and there is no payoff for any group member or the recipients

¹³However, this anonymous form of communication likely entails a rather low degree of social control compared to a non-anonymous face-to-face discussion. Hence, any results that we find are likely to hold in situations where communication is not anonymous.

in situations where decisions differ.

The Individual Decision. In treatments with individual decisions, each participant decides individually how much she wishes to withdraw from the recipient. That is, there is no interaction with other participants. To avoid confounding factors and ensure comparability with the group decisions, each individual is given 5 minutes to write a short reflection essay about their withdrawal decision. This avoids that potential differences between group and individual decisions are driven by the possibility that group members have more time to reflect the decision and, in the chat discussion, write down their thoughts about it. It further avoids that participants in the individual-decision treatments spend less time in the lab than participants in the treatments with group decisions (as a result, hourly payments are the same for participants in all treatments).

Clear Deservingness of the Recipient. Our objective in treatments with clear recipient deservingness is to create a situation in which participants consider the recipient to be clearly deserving. That is, we aim to establish certainty among decision makers that the recipient is deserving. The most important steps in inducing this certainty about deservingness are to choose an external recipient which most people clearly perceive to be deserving, and to communicate to participants who the recipient is and what it stands for. The chosen recipient in our experiment is a regional non-profit association that supports children with diagnosed cancer and their families.¹⁴ We inform participants about the recipient and provide an information leaflet in which the goals and activities of the association are explained. Our design choice is inspired by a literature showing that giving behavior in dictator games increases when the recipient is a charity organization. For example, Eckel and Grossman (1996) show that dictators give more to the recipient when it is the Red Cross rather than another experimental participant.

In order to make the deservingness of the recipient as clear as possible, we implement additional design features. First, we apply an efficiency factor to the withdrawal decision: for every 1.00 EUR that participants take for themselves, the recipient loses 1.20 EUR. That is, if a participant wishes to take 5.00 EUR for herself, the money of the recipient is reduced by 6.00 EUR. Second, the dictator-game decision is framed as ‘withdrawing from the recipient’ rather than ‘giving to the recipient’. Third, by choosing an association that operates locally in the region where the experiment takes place, we minimize social distance towards the recipient.

Unclear Deservingness of the Recipient. The objective of treatments with unclear deservingness is to establish uncertainty among decision makers about the deservingness of the recipient. Uncertainty about deservingness is implemented by *not* informing participants who exactly the recipient is. Participants in these treatments are only informed that some unspecified association is the recipient. In Germany, there are many different associations – called

¹⁴The association is named *Foerderverein krebskranke Kinder e.V. Koeln*. Their website is here: <https://www.krebskrankekinder-koeln.de/>. The association operates in the city in which we run the laboratory experiments, Cologne. The choice of the recipient induces a situation that is plausibly considered to be deserving and where the contributions to the recipient stay local and are not attributed to some abstract association.

Verein – that are devoted to many different scopes, objectives or topical interests. A *Verein* may either be a registered association with a special legal form or a loose group of individuals with a common interest. We simply used the term *Verein* in the experiment, without specifying whether we mean a registered association or a loose club of people.

The usual association with the term *Verein*, however, is the registered association with a special legal status.¹⁵ All natural and legal persons in Germany, including entities such as municipalities, counties and other entities under public law, can form registered associations or be members. The time and effort to found such an association is very low. There are more than 600,000 registered associations in Germany. These are devoted to a broad set of scopes, objectives and topical interests, and the nature and types of these associations is very diverse and highly heterogeneous. Some common examples are associations devoted to sports, culture, guns and arms, different types of hobbies (such as pigeon breeding, collection of stamps, etc.), music, environmental protection or charity. In order to emphasize the heterogeneity of these associations, participants were provided an information leaflet with a description of different types of associations (the information are taken from Müller-Jentsch 2008). This design feature also contributes to comparability across treatments as participants in the treatments with clear deservingness were also provided an information leaflet.

As a result of the highlighted diverse nature of German associations, simply communicating to participants that some *Verein* would be the recipient plausibly induces uncertainty about the type and nature of the recipient. The charity in the clear-deservingness treatment (association for children with cancer) also has the legal form of a *Verein*, and in fact any money that was left for the recipient in the unclear-deservingness treatments was eventually donated to this association as well.

Why did we choose a design with uncertainty about the recipient? An alternative design option would have been to select a recipient which is clearly *not* deserving instead of having unclear deservingness. However, this is potentially difficult. Choosing recipients such as, say, a terrorist group or extreme right-wing party and transferring money to them does not stand on ethical grounds. Other less extreme, but ethically feasible recipients (e.g., another student, budget of the researchers or the university), would have caused the difficulty that we do not know if the recipient is really considered to be less deserving by the participants (e.g., maybe participants find their fellow students also to be deserving). With our design decision featuring unclear deservingness, we achieve that deservingness is plausibly considered to be higher in the one set of treatments than in the other ones, without having to transfer money to a clearly undeserving and thereby potentially unethical organization. The increase in deservingness across the treatments is also confirmed by the data which clearly show that contributions are higher in the treatments with clear deservingness relative to treatments with unclear deservingness.

Decisions, Outcomes of Interest, and Independent Observations. Throughout the experiment, participants in all treatments have to make two decisions. First, they have to

¹⁵This legal form is called *Eingetragener Verein* and described in the English Wikipedia: [https://en.wikipedia.org/wiki/Registered_association_\(Germany\)](https://en.wikipedia.org/wiki/Registered_association_(Germany)).

decide how much money they wish to take away from the recipient. Depending on treatment status, this is either an individual decision or a group decision (as described above). We use the withdrawn amount as the outcome variable when we address our first research question – the clarity of recipient deservingness on group behavior.

Second, once the withdrawing decision is made, each participant is provided the opportunity to also donate a share of their 4.00 EUR show-up fee to the recipient (depending on treatment status, the recipient was again specified or not). This donation decision was always an individual decision that was made in private without any interaction with other participants. We use this donation decision as the outcome variable when we address our second research question – the effect of group decision processes on subsequent individual behavior.¹⁶

The decisions of group members in the treatments with group-level decisions are not independent from each other. We therefore treat each group as one independent observation in our econometric analyses. For the non-parametric tests, bar graphs and summary statistics, the decisions of the group members are collapsed, implying that we have one observation *per group* in the group treatments and one observation *per individual* in the treatments with individual decisions. The unit of observation in the regression analyses is the individual participant, but standard errors are clustered on the group level. Our resulting data set has 187 independent observations (between 44 and 48 in each of the four treatment cells).¹⁷

Organization. The experiment was conducted in the Cologne Laboratory for Economic Research (CLER), University of Cologne, Germany. All subjects in the laboratory’s subject pool of approximately 4,000 persons were invited via email – using the recruitment software *ORSEE* (Greiner 2004) – to participate in an experiment. Potential participants could sign up on a first-come-first-serve basis. A total of 282 individuals participated in our experiment (see below for summary statistics). Neither the content of the experiment nor the expected payoff were stated in the invitation email. The computerized experiment was programmed with *z-tree* (Fischbacher 2007).

We conducted 12 sessions over a few days. All participants who were in the same experimental session belonged to the same experimental group. The treatment group was not mentioned in the invitation email so that selection of certain individuals into certain sessions is ruled out.

Upon entering the lab, participants were randomly assigned to an individual computer booth. All instructions were displayed on screen and participants first had the opportunity

¹⁶Another related research question would be to explore the reverse order; i.e., the effect of individual decision making on group processes. However, coming from the group literature and considering our hypotheses (see below), studying the effect of group decisions on individual decisions appears to be the natural first step to us. In particular, it appears natural to study how group-decision making, which is the center of a large literature and which requires that group members find an agreement, affects subsequent individual decisions, where subjects can decide freely without any group constraints.

¹⁷We naturally have twice as many individual participants in the group decision treatments than in the individual level treatments. We have the following number of independent observations in the four treatment cells (number of individual participants in parentheses): i) individual decision / unclear deservingness: 44 (44); ii) individual decision / clear deservingness: 48 (48); iii) group decision / unclear deservingness: 47 (94); iv) group decision / clear deservingness: 48 (96).

to ask clarifying questions (which was only rarely required). The English translation of the instructions is displayed in the Appendix.¹⁸ Treatment variation is between participants and participants were not informed about the other treatment groups. In treatments with group decisions, the group memberships were randomly assigned by the computer software. A session took 20-30 minutes. All the money that was not withdrawn from the external recipient in the first decision as well as all the money that was donated in the second decision were summed-up and donated to the charity that supports children with cancer.

Summary Statistics and Balance Across Experimental Groups. Table A.1 presents summary statistics for participants' characteristics, the two key outcome variables – withdrawn amount and donation – and the profit that participants made out of the experiment (all on the individual level of participants). Upon the end of the experiment, we surveyed a small set of characteristics (measurement in parentheses): Age (in years), gender (dummy for male), highest degree (dummies for no degree, Bachelor and Masters degree), and an indicator for whether a participant has previously taken a class in game theory (dummy for having taken game theory). As shown in Table A.1, the average age of the participants was almost 24 and 42% of them were male. 62% of the participants have no degree (yet), 23% have a Bachelor degree and 15% have a Master degree or higher. 38% of the participants have taken a game-theory class. Regarding the summary statistics of the outcome variables, Table A.1 shows that participants across all treatment groups on average withdrew 3.06 EUR from the recipient (where 5 was the maximal amount).

As depicted in Table A.1, the average donation across all groups was 0.43 EUR (the maximum possible value is 4 EUR which is the show-up fee). The Summary-Statistics Table A.1 further shows that participants ended up with an average profit of 6.58 EUR from the experiment (the maximum possible value was 9 EUR: withdraw 5 EUR from recipient and keep the entire 4 EUR donation).

Results of randomization checks are presented in Table A.2. For each covariate in our data (age, gender, degree and game theory), we conducted six t-tests which compare the four experimental groups against each other. Since the covariates are pre-determined and not affected by the experiment, the tests are executed on the individual level of participants. The resulting 24 p-values (two-sided tests) are depicted in the Table. None of the 24 tests is significant at the 5 percent level. This is reassuring and suggests that we do not have considerable differences between groups with respect to pre-determined characteristics.

3 Theoretical Considerations

In this section, we consider potential mechanisms behind our two research questions. 1) Why would the deservingness of a recipient affect groups differently than individuals? 2) Why would the involvement in group-decision making affect subsequent individual behavior?

¹⁸The original German instructions are available upon request and shall be made available in an online appendix upon publication.

1) Why would the deservingness of a recipient affect groups differently than individuals? We identify three channels that potentially explain why decision making in our context could differ between groups and individuals. First, groups might have more information because in the group discussion each member can put forward arguments and knowledge to inform the group decision. Groups could also be smarter on average, at least if the group members comply with the arguments of their smartest member. Second, groups have to arrive at a joint decision by exchanging and discussing ideas, information and opinions. This process potentially induces group members to reflect their decision more than individual decision makers.

These two channels do not matter in the set up of our experimental design (also see previous section). More information and smartness should not make a difference here because we chose a task that neither requires a lot of information nor is it intellectually demanding. More reflection of the decision problem should not make a difference either since we give participants in the treatments with individual decisions five minutes to reflect on their decision.

The third channel that we identify is based on the fact that group decisions have a social context: social interaction within the group evokes social control and social approval among group members. This third channel matters in our set up; in contrast to the first two channels, our design does not ‘shut’ this channel. As a result, it serves as the natural explanation for potential differences between groups and individuals.

What is the rationale behind this third channel? On the one hand, Haley and Fessler (2005) provide evidence that the mere feeling of being observed increases donations in a dictator game. Feldhaus et al. (2019) make a similar observation in a voluntary payment field setting where people give more when they are observed by others. These findings give rise to what may be called the *social-control* aspect of taking a decision in a social context. On the other hand, Luhan et al. (2009) and Kocher et al. (2017) show that groups are strongly affected by their most selfish member, suggesting that the more altruistic players are willing to conform with the more selfish group members. These findings give rise to what may be called the *social-approval* aspect of taking a decision in a social context.

Both mechanisms are potentially relevant in our context. First, the social-control aspect – through being observed by the other group member – implies that group members feel guilt or shame to communicate, support or follow selfish decisions. As a result, groups behave less selfishly and more altruistically than individuals. Second, the social-approval aspect implies that group members encourage each other that maximizing one’s own payoff is acceptable and provide mutual approval for acting self-servingly. As a result, groups behave more selfishly and less altruistically than individuals.

We argue that the relative bite of these two aspects is potentially related to the deservingness of the recipient. First, social control has more bite when the recipient is clearly deserving. With a clearly deserving recipient, it is clear what the appropriate behavior is and the taming effect of being observed is plausibly greater in situations in which the the appropriate behavior is clear. Likewise, a clearly deserving recipient makes it difficult to find arguments for acting selfishly and convincing others of doing so. Second, the social-approval aspect is particularly relevant when deservingness is less clear. With unclear deservingness of the recipient, there is

uncertainty among decision makers about the appropriate behavior. This uncertainty lowers the bar for arguing in favor of personal payoff maximization and following other group members' suggestion to behave selfishly.

2) Why would the involvement in group-decision making affect subsequent individual behavior? We identify two channels that potentially play a role in the context of our second research question. On the one hand, as shown by e.g. Luhan et al. (2009), the behavior of groups might be contagious: in subsequent individual decisions, individuals might make the same decision that was previously made by their group because they learned that it is legitimate to do so.

On the other hand, since group decisions require consensus and compromises, group members are not always able to enforce their preferred individual decision in the group process. As a result, group members may wish to correct the consensus-based group decision in subsequent individual behavior. This correction of the initial group decision is plausibly particularly relevant for those group members who had preferred to give an amount to the recipient that is different from the amount that was agreed upon in the group discussion. That is, such subjects were not able to enforce their individual preference in the group discussion and had intended to give a different amount to the recipient. It may then be that these subjects wish to correct the initial group decision in subsequent individual-level behavior. In particular, subjects who had intended to be more generous towards the recipient, but could not enforce this generosity in the group dynamics, might wish to make good for the group decision and give more to the recipient in the subsequent individual-level donation decision. Such behavior would be consistent with moral balancing (as for example shown for individuals by Ploner and Regner 2013 and Gneezy et al. 2014). This channel of correcting the initial group decision is potentially interdependent with the deservingness of the recipient as the deservingness could induce greater differences in the assessments of the correct behavior.

Overall, we thus expect to observe either consistent moral behavior (subsequent individual behavior is in accordance with prior group behavior) or moral balancing (subjects want to make good for the behavior of their group in subsequent individual behavior). We shed light on this research question using an analysis of subsequent individual donation behavior and a content analysis of the group chats (to identify which subjects had intended to give more in the group decision).

4 Results

This section presents the results of the laboratory experiments. We organize the presentation of the results along our two research questions: First, we study the role of deservingness in dictator games with group-decision making (section 4.1). The outcome variable of interest here is the withdrawal decision (either group or individual decision). Second, we study the impact of experienced group-decision making on subsequent individual decisions (section 4.2). The outcome variable of interest here is the donation of the show-up fee.

In each of these two subsections, we first discuss the effect of the exogenous shift in recipient deservingness on the respective outcome variable. We then go on and present differences between groups and individuals with respect to the outcome variables of interest. We finally explore whether recipient deservingness affects groups and individuals differently. In the context of the donation decision (second research question), we further leverage the chat protocols of group discussions to shed light on the mechanism behind our main finding.

As mentioned previously, all analyses account for the dependencies of individual decisions within a group:¹⁹ for the non-parametric analyses, we collapse the decisions of group members; the resulting data set has one observation per group and one observation per individual. The parametric regression analyses are on the individual level with standard errors clustered on the group level.²⁰ We use Tobit regressions that take into account that the withdrawal decision is bounded between zero and five and that the donation decision is bounded between zero and four.

We sometimes use the following abbreviations to describe the treatment groups:

- **GDUD**: Group-Decision making and Unclear Deservingness,
- **GDCD**: Group-Decision making and Clear Deservingness,
- **IDUD**: Individual-Decision making and Unclear Deservingness,
- **IDCD**: Individual-Decision making and Clear Deservingness.

4.1 The Withdrawal Decision

The Effect of Clear Deservingness. Figure 1 depicts the average withdrawn amount in treatments with clear and unclear deservingness (pooling together treatments with individual and group decisions). In treatments with clear deservingness, the average withdrawal was 2.29, whereas the average withdrawal was 3.80 in treatments with unclear deservingness. That is, across all treatment groups, average withdrawals were more than 65% higher in treatment groups with unclear deservingness, relative to the treatment groups with clear deservingness. This difference is highly significant (p-value ranksum test: 0.000; $N = 187$). Regression results, presented in Table 1, confirm the strong and significant effect of the clarity of the deservingness. The effect is robust to conditioning on covariates – see specifications (I) and (II) of Table 1.

These findings suggest that the exogenous manipulation of recipient deservingness has a strong effect on behavior; specifying that the external recipient is a charity considerably increases the amount that decision makers (i.e., groups or individuals) leave for the recipient relative to the case where the identity and deservingness of the recipient is unclear. This implies that the exogenous variation of recipient deservingness worked well and as intended.

¹⁹With the exception of the analyses in which we leverage the chat protocols to understand individual-level donation decisions; see the discussion in footnote 24 below for details.

²⁰Technically, the cluster variable is a unique number assigned to each respondent in treatments with individual decisions, and in treatments with group decisions two group members share the same value of the cluster variable.

Differences between Groups and Individuals. Average withdrawal amounts in treatments with individual decisions and treatments with group decisions are presented in Figure 2. The Figure shows that groups on average took slightly more from the recipient than individuals (3.12 vs 2.92), but the difference is not significantly different from zero (p-value ranksum test: 0.671; $N = 187$). The Tobit regressions in Table 1 confirm that there is no statistically significant difference between treatments with group and individual decisions with respect to the withdrawal decision. This result suggests that groups do not behave more selfishly in our dictator games than individuals, and hence relates to the ongoing debate in the literature about this question (see the discussion in our Introduction).

Differential Effects of Deservingness on Groups vs Individuals. Figure 3 presents average withdrawal amounts across all four treatment groups. The corresponding regressions are depicted in Table 2. Average withdrawals are highest in the treatment with group decision and unclear deservingness (GDUD, 3.87), followed by the treatment with individual decisions and unclear deservingness (IDUD, 3.73). The difference between these two groups is not statistically significant (p-value ranksum test GDUD vs IDUD: 0.997; $N = 91$). The treatments with clear deservingness overall have lower withdrawal amounts: 2.39 in the case of a group decision (GDCD) and 2.19 in case of individual decisions (IDCD). The difference between these two groups is not significant either (p-value ranksum test GDCD vs IDCD: 0.617; $N = 96$). The differences between treatments with clear deservingness and treatments with unclear deservingness are always highly significant.²¹ Table A.3 provides an overview of the means across all experimental groups.

One important aspect is whether clear recipient deservingness affects group decisions differently than individual decisions. In a first step towards the answer to this question, we compare the difference between group decisions with clear and unclear deservingness to the same difference in case of individual decisions. Among all treatments with group decisions, those groups confronted with an unclear deservingness withdrew 1.48 EUR more than those with a clear deservingness ($GDUD - GDCD = 3.87 - 2.39$). Among all treatments with individual decisions, those with unclear deservingness withdrew 1.54 EUR more than those with a clear deservingness ($IDUD - IDCD = 3.73 - 2.19$). The resulting ‘difference in difference’ is at 0.06 ($= 1.54 - 1.48$). Given the overall withdrawal average of 3.06, this ‘difference in difference’ seems very low.

To test the statistical significance of the ‘difference in difference’, we run regressions in which we include a dummy indicating group decisions and a dummy indicating clear-deservingness treatments, as well as the interaction between the group-dummy and the clear-deservingness dummy. The coefficient of the interaction term then displays the ‘difference in difference’, i.e., the differential effect of clear deservingness on group vs. individual decision. The corresponding regressions are shown in Table 3. The interaction coefficient is not statistically significant – which is what we expected in light of the small average difference of 0.06. This result sug-

²¹The p-values for the group-wise ranksum tests are as follows: GDCD vs GDUD: 0.000, $N = 95$); GDUD vs IDCD: 0.000, $N = 95$; GDCD vs IDUD: 0.000, $N = 92$.

gests that, in our context, a recipient’s deservingness does not affect groups differently than individuals.

Variance in Individual Decisions. Finally, we study whether the extent of heterogeneity in individual preferences depends on the deservingness of the recipient. To so, we investigate if the variance in individual withdrawal behavior differs between treatments with clear and unclear deservingness. The analysis shows that the variance in behavior is significantly and considerably larger in case of the clearly deserving recipient (standard deviations: 2.03 (IDCD) vs. 1.64 (IDUD); p-value Levene’s robust test for equality of variances: 0.007; $N = 92$). This observation suggests that the decision making situation with clear deservingness comes with more heterogeneity in individual preferences. As a result, the situation with clear deservingness has, on average, more potential for conflicts within groups.

4.2 The Donation Decision

The Effect of Clear Deservingness. The exogenous manipulation of recipient deservingness also affected behavior in the context of the subsequent individual-level donation decision. Figure 4 shows that donations are considerably higher among individuals who were in one of the treatments with clear deservingness, relative to individuals in treatments with unclear deservingness. The average donation was 0.60 EUR in the presence of clear deservingness, and 0.19 EUR in the presence of unclear deservingness. This difference is highly significant (p-value ranksum test: 0.001, $N = 187$). Tobit regressions, presented in Table 4, confirm that donations are significantly higher among individuals who were in a treatment condition with clear deservingness. The donation decision is likely to be affected by the previous decision of how much to leave for the recipient. Some of the regression specifications therefore include the previous withdrawal decision as a control variable (see specifications (II) and (IV)). As the table shows, the coefficients for the effect of the deservingness are somewhat smaller when conditioning on the withdrawal amount, but the sign and statistical significance are not affected.

Differences between Groups and Individuals. Figure 5 shows average donations among participants who previously were part of a group decision process and participants who previously made individual decisions. Average donations are about 63% higher for participants who were in the group decision treatments, relative to those who were in the treatments with individual decisions: 0.49 EUR vs 0.30 EUR. This difference is highly significant (p-value ranksum test: 0.000, $N = 187$). The regression results in Table 4 yield the same result: donations are significantly higher among those participants who were part of a group decision. Controlling for the previous withdrawal decision (specifications (II) and (IV)) does not change the sign or size of the group-dummy coefficient, but makes the coefficient somewhat more precise. Since the previous decision regarding the withdrawal could potentially be affected by whether a participant was part of a group or made an individual decision, specifications that control for withdrawal might be more meaningful.

The take-away result here emerges in all specifications and test types: donations are

considerably higher among individuals who were previously part of a group decision, compared to individuals who previously made an individual decision. We present an analysis of the chat protocols further below which sheds light on a potential mechanism behind this finding.

Differential Effects of Deservingness on Groups vs Individuals. Figure 6 shows average donation amounts across the four experimental treatments. We see the expected pattern that participants in the two treatments with clear deservingness donate more on average than participants confronted with unclear deservingness. Among the two treatments with clear deservingness, average donations were higher among those who were part of a group decision than those who previously made individual decisions (GDCD: 0.77; IDCD: 0.44). The difference between these two groups is highly significant (p-value ranksum tests: 0.000, $N = 96$). The two treatment groups with unclear deservingness have similar levels of average donations and the difference between them is not significantly different (GDUD: 0.22, IDUD: 0.16; p-value ranksum: 0.25, $N = 91$). These results show that the difference in subsequent donation behavior between groups and individuals is larger in the presence of a clearly deserving recipient. The differences between treatments with clear deservingness and treatments with unclear deservingness are mostly significant.²² The corresponding regressions are in Table 5. Relative to the IDUD group, the effect of GDCD is statistically significant throughout all specifications. Conditioning on the previous withdrawal decision (in specifications (II) and (IV)) makes the coefficient a little smaller, but leaves significance unchanged. Table A.4 provides an overview of the means across all experimental groups.

We again consider the ‘difference in difference’ to shed more light on the role of recipient deservingness. Among all treatments with group decisions, those with clear deservingness donated 0.55 EUR more than those with unclear deservingness ($GDCD - GDUD = 0.77 - 0.22$). Among all treatments with individual decisions, those with clear deservingness donated 0.28 EUR more than those with unclear deservingness ($IDCD - IDUD = 0.44 - 0.16$). The resulting ‘difference in difference’ then stands at 0.27 EUR ($= 0.55 - 0.28$). Considering that the average overall donation was 0.43 EUR, this ‘difference in difference’ is quite considerable. We test statistical significance in a regression model that includes an interaction between a group decision dummy and a clear-deservingness dummy. The results are displayed in Table 6. The interaction of interest is significant on the 10% level once we condition on the previous withdrawal amount (specification (II)), and if we include control variables (with or without conditioning on withdrawal – specification (III) and (IV)). Although basically identical in the size of the coefficient, specification (I) without any additional controls is slightly outside conventional levels of significance (p-value: 0.128). Specifications that control for withdrawal, however, are our preferred choices (for the reason discussed before). The results thus provide some evidence that the recipient’s deservingness affects subsequent individual behavior differently depending on whether the individual had previously made an individual decision or a group decision.

²²The p-values for the group-wise ranksum tests are as follows: GDCD vs GDUD: 0.000, $N = 95$); GDUD vs IDCD: 0.580, $N = 95$; GDCD vs IDUD: 0.000, $N = 92$.

Exploiting Chat Protocols to Shed Light on Mechanisms. We find that group-decision making affects subsequent individual behavior. One possible explanation behind this finding is that group members wish to correct for the earlier group decision when they make subsequent individual decisions (see the conceptual considerations in section 3). We exploit the chat protocols of the group discussions to shed light on this potential explanation (other papers that study chat protocols to shed light on the dynamics within groups for example include Kagel and McGee 2016, Cox and Stoddard 2018b, Cason et al. 2019, and Buffat et al. 2020).

The chat protocols are analyzed as follows. A research assistant (RA) manually goes through the chats of all groups. We ask the RA to indicate for each group member if her first proposal for a withdrawal amount was higher, lower or equal to the amount on which the group eventually agreed. If a group member did not propose an amount herself and just consents to the amount proposed by the other group member, this is treated as if her proposal was equal to the amount on which the group agreed. We label the resulting 3-point variable *Preference relative to Group Decision*. Relying on the support of an RA ensures that the chats are analyzed by an independent external person (though it should be noted that the chat analysis does not require discretionary interpretations because it entails a simple comparison of a group members' first proposal and the group decision).

The possible explanation that we test asserts that group members wish to make good for the group decision by donating more in a subsequent individual decision. The intention to make good for the group decision plausibly occurs among group members who had preferred to be more generous to the recipient in the initial group decision stage; i.e., group members who had preferred to withdraw less from the recipient, but who were not able to enforce their preference in the group. For reasons of brevity, we label these group members as *more generous group members*. Using this procedure, we find that, out of 190 group members, 29 classify to be *more generous group members*. 133 group members are ok with the decision made by their group, and 28 group members had preferred to withdraw more from the recipient.²³

To test our assertion that the *more generous group members* donate more in the subsequent individual-level donation than other group members decision in order to make good for the group-consented decision, we simply compare the subsequent individual-level donation decisions of these *more generous group members* to the other group members. The main take away from this exercise is presented in Figure 7. The average subsequent donation amount is more than twice as large for *more generous group members* than for the other group members. The mean donation among *more generous group members* is 1.05 EUR, while those who are ok with the decision of their group donate 0.44 EUR and those who had preferred to take more do-

²³Note that the number of *more generous group members* and the number of group members that had preferred to take more from the recipient are not mechanically balanced, because this variable is coded based on a simple comparison between a group member's initial proposal and the amount on which the group eventually agreed. Consider the following example to see this (and to further illustrate how the chats were coded): Subject A proposes to be very generous. Subject B does not accept that proposal and instead proposes a less generous amount. A then consents to B's proposal. The group thus agrees on B's proposal. In such an example, A would be classified to be a *more generous group member* because she initially had preferred to be more generous than the eventual group decision. B is classified to be in the middle category, and not as someone who would have preferred to take more, because B's first proposal was eventually equal to the group consensus.

nate 0.18 EUR. The differences between donations of *more generous group members* and other group members are highly significant (the ranksum p-values of the comparisons between *more generous group members* to the respective other group members both are at 0.000, $N=162$ and $N=57$). Regression analyses, reported in Table 7, show that this effect holds as we condition on the group-consented amount that was withdrawn by the group to which a group member belonged as well as demographic control variables.²⁴

Overall, these results clearly suggest that the difference in subsequent donation behavior between those who were initially part of a group decision and individual decision makers is driven by group members who, in the initial group stage, had the intention to be more generous towards the recipient, but were not able to enforce this preference in the group discussion. As a result, they wish to make good for the initial group decision by means of donating more in the subsequent individual decision.

It is interesting that we see the lowest donation amounts among those group members who, in the initial group stage, had preferred to be less generous towards the recipient than the eventual group decision (also see Figure 7). This result is also consistent with the notion that the relative difference between the individual preference and the group decision affects subsequent individual behavior.

Overall, our results thus consistently provide evidence for moral balancing in the context of group-decision making: those who wanted to act more morally in the group decision make good for the group decision in subsequent individual behavior, whereas those who wanted to act less morally in the group decision tend to give less subsequently.

In a next step, we study the role of recipient deservingness using the chat protocols and the procedure described above. We find that the share of *more generous group members* is considerably larger in treatments where the recipient is deserving compared to treatments with unclear deservingness. To test this, we perform group-level analysis and find that 17% of the groups in treatments with unclear deservingness had one *more generous group member*, while this fraction is at 44% if groups face clear recipient deservingness (p-value 0.005, $N=95$). Put differently, we see that 21 out of 29 *more generous group members* are in groups with clear deservingness, and only 8 are in groups with unclear deservingness. This finding is in line with our observation that the variance in individual decisions is larger in case of the clearly deserving recipient (see above) and suggests that group decisions are more often disputed if the recipient was deserving.

²⁴Note on statistical inference in the chat analyses: In all previous non-parametric analyses, we collapsed the decisions of group members to account for their dependency (which then implied one observation per group). Note that this would not be meaningful here because we are explicitly interested in the differential donation decisions of group members. To be consistent with the non-parametric procedure, the standard errors that we report in regression Table 7 are not clustered on the group level (which is what we do in all previous regressions). Note, however, that the levels of significance fully go through when we estimate the same regressions with standard errors clustered on the group level (95 clusters, results not reported). In particular, variable *Preferred to Take Less* remains significant on the 1% throughout all specifications, and variable *Preferred to Take More* even becomes more significant in specifications (II) and (IV).

5 Discussion of Results and Conclusion

This paper studies two novel questions in the context of group-decision making. First, what is the role of recipient deservingness in dictator-game decision making of groups? Second, does the involvement in a group decision process affect subsequent individual behavior? We use a unified lab experiment to study these questions. The experiment uses of a take-frame dictator game with an external recipient, and treatment variations along the dimensions of i) individual-decision making vs. group-decision making and ii) clear vs. unclear deservingness of the recipient.

We view the results in the context of our second research question as constituting the main novelty of our paper. We observe that participants who were previously part of a group-decision making process are more generous in a subsequent individual decision than participants who previously made individual decisions. We further see that this difference is larger in the presence of a clearly deserving recipient. This finding complements the literature in that it shows a novel kind of spillover from group-decision making to subsequent individual decisions. An analysis of the chat protocols of the group discussions suggests that this effect is explained by group members who wish to make good for the group decision and therefore exhibit a different donation behavior than those who could freely and individually decide already in the first decision. This behavior is consistent with moral balancing, and we thus show that moral balancing may not only be important in individual decision making, but also in the context of group decisions.

While the interpretation of these findings is intuitive, rationalizing the results in the context of our first research question requires somewhat more discussion. The theoretical idea behind this research question is that group-decision making differs from individual decision making through aspects of social control and social approval (see Section 3). We argue that social control is particularly relevant in the presence of clear deservingness of the recipient and that mutual approval for self-serving behavior is more relevant in case of unclear deservingness. However, our results provide no evidence for a difference between groups and individuals, neither when they are confronted with clear nor with unclear deservingness. Two of our design features might be related to this result. First, groups in our experiment consist of anonymous members. This anonymity may undermine the potential effect of social control. For example, Cason and Mui (1997) find more dictator-game giving in groups, relative to individuals, in a setting where the other group member is identifiable ex-post, whereas Luhan et al. (2009) find that groups are more selfish in an anonymous setting. Second, group decisions are usually made in situations where the individual members have to discuss their ideas with others to arrive at a joint decision. This discussion induces group members to reflect the decision at hand more compared to individuals who make the decision all by themselves without reflection possibility. In our experiment, we let individual decision makers write a short essay to reflect on the reasons for their decision. If the extent of decision reflection cause differences between groups and individuals, we would not see any differences between groups and individuals as we hold this factor constant.

It would in principle be possible to run experimental sessions with non-anonymous groups

and/or less reflection possibilities for individuals. However, it was our deliberate design choice to ‘shut’ these two potential channels and to investigate a situation where differences between groups and individuals are not driven by differences in the lack of anonymity in group decisions or in problem reflection. This design choice was motivated by the desire to isolate a pure social-interaction effect. We thus intended to avoid a situation where we are not able to disentangle whether potential differences are driven by anonymity, reflection issues or the actual aspects of social interactions.

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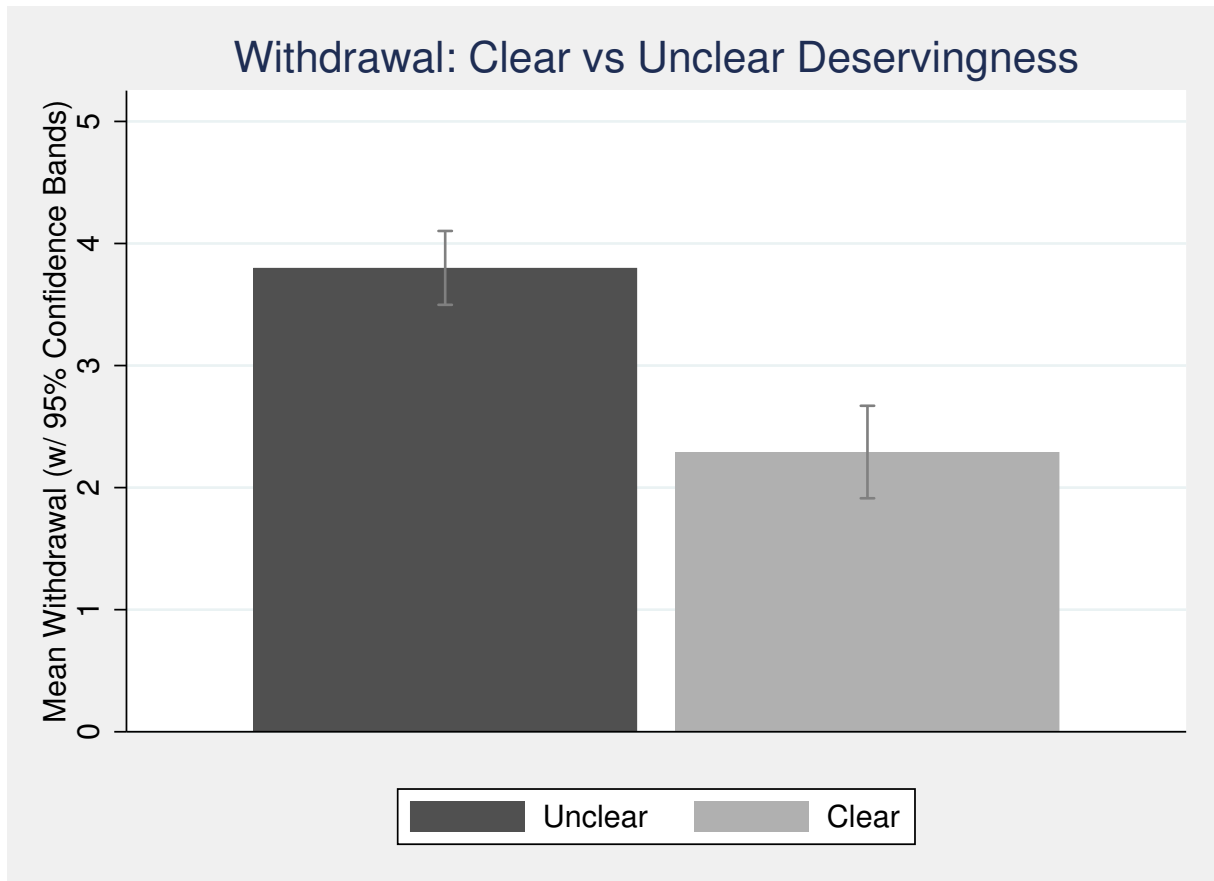
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Figures and Tables

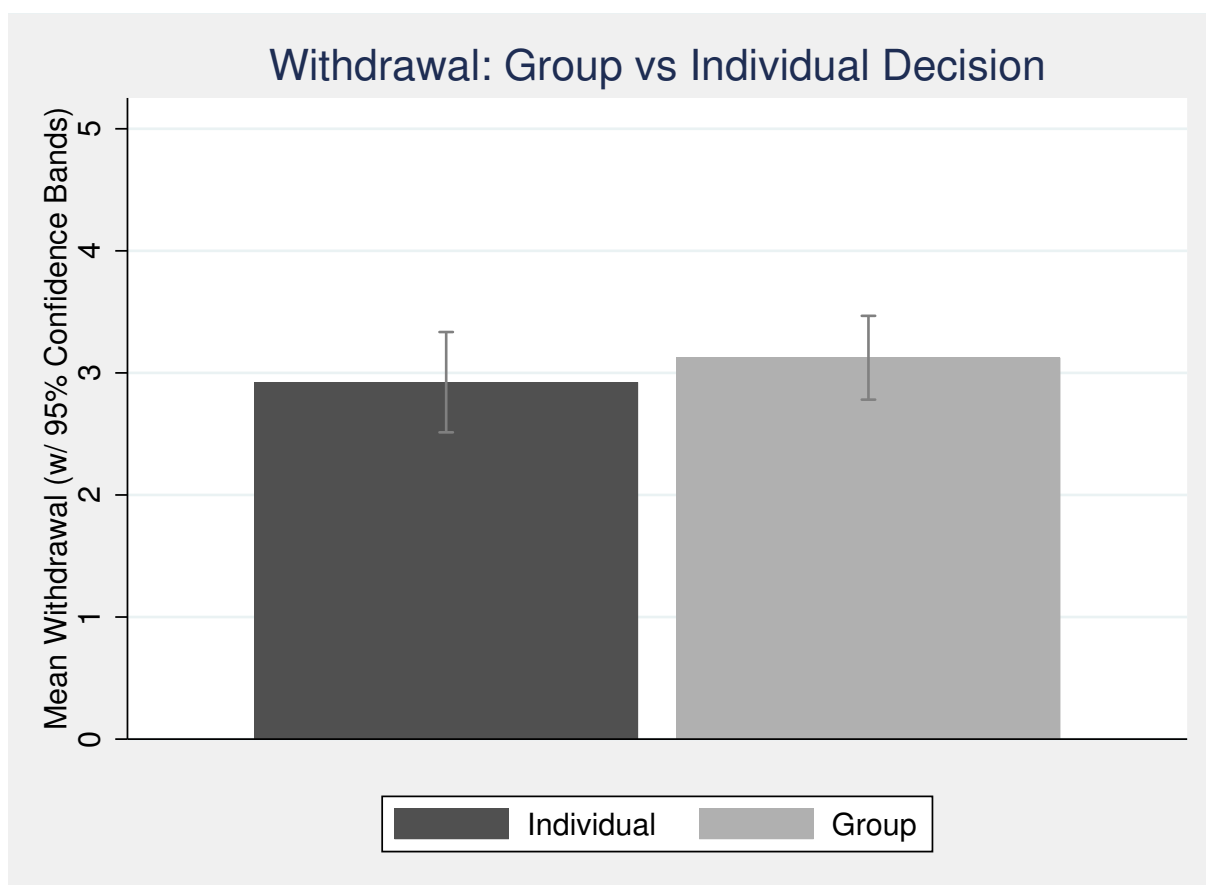
Figures

Figure 1: Withdrawal Decision: Clear vs Unclear Deservingness



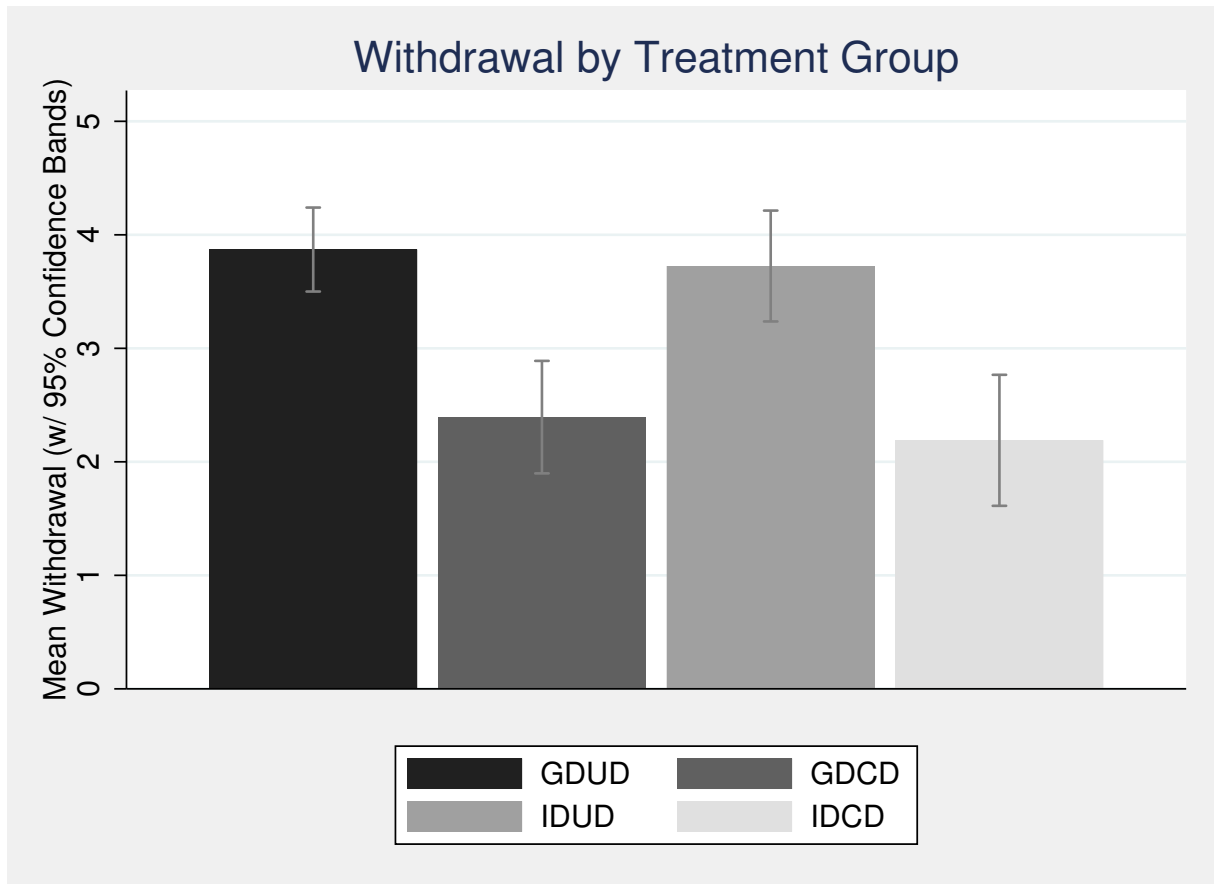
Notes: The Figure shows average Withdrawal amounts for treatments with clear and unclear deservingness, along with 95% confidence bands. Individual decisions of group members are collapsed on the group level to account for dependencies of group decisions; that is, there is one observation per individual in the treatments with individual decisions and one observation per group in the treatments with group decisions. $N = 187$.

Figure 2: Withdrawal Decision: Group vs Individual Decisions



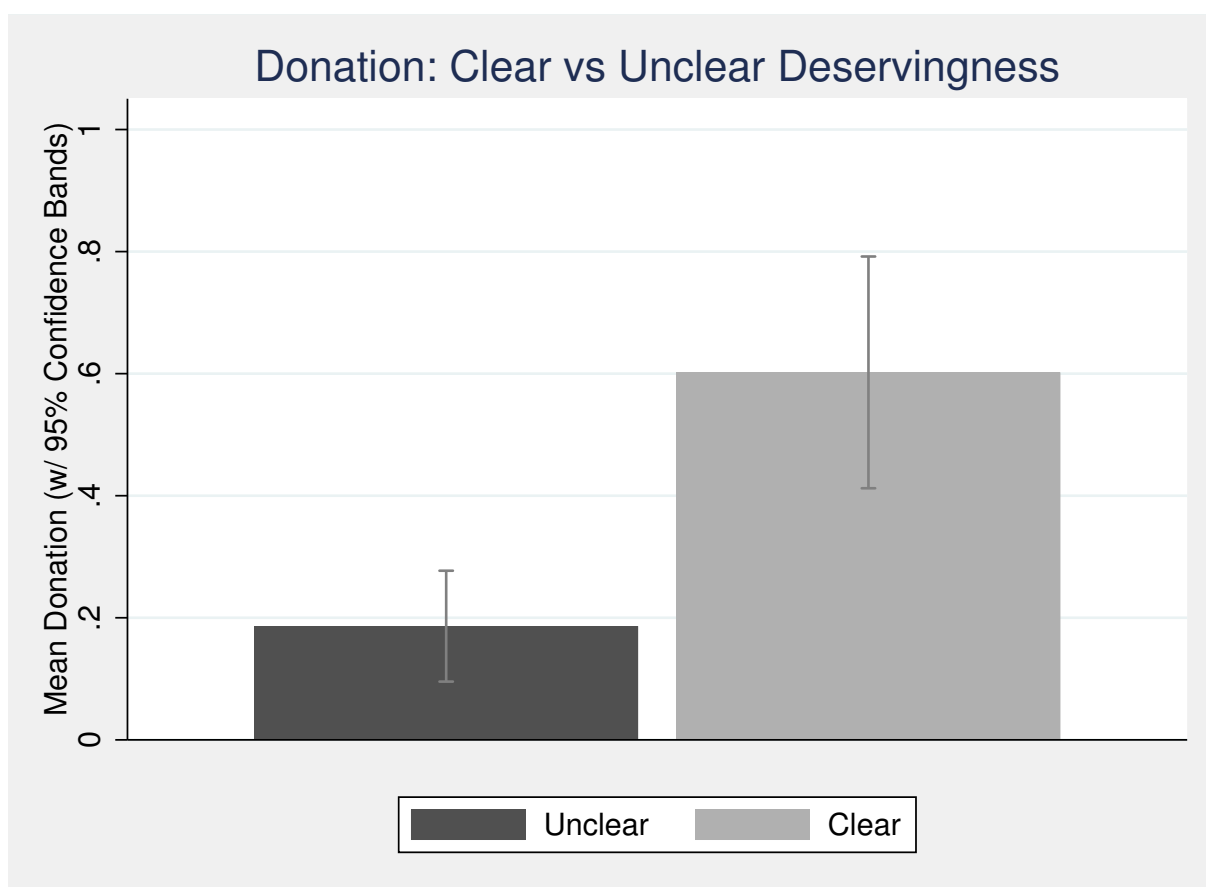
Notes: The Figure shows average Withdrawal amounts for treatments with individual decision making and group-decision making, along with 95% confidence bands. Individual decisions of group members are collapsed on the group level to account for dependencies of group decisions; that is, there is one observation per individual in the treatments with individual decisions and one observation per group in the treatments with group decisions. $N = 187$.

Figure 3: Withdrawal Decision Across Treatments



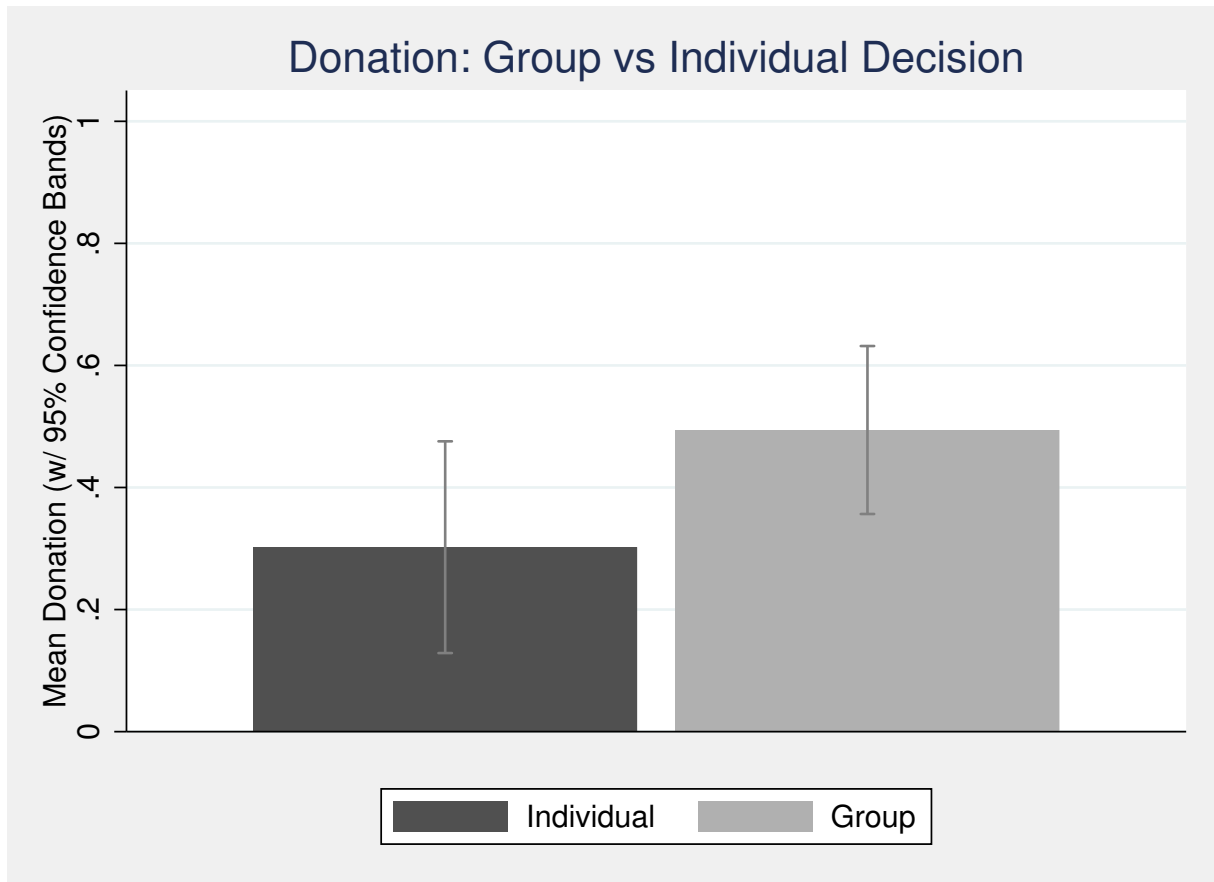
Notes: The Figure shows average Withdrawal amounts for all four treatments, along with 95% confidence bands. Individual decisions of group members are collapsed on the group level to account for dependencies of group decisions; that is, there is one observation per individual in the treatments with individual decisions and one observation per group in the treatments with group decisions. Abbreviations of the four groups: IDCD: individual-decision / clear deservingness; IDUD: individual-decision / unclear deservingness; GDCD: group decision / clear deservingness; GDUD: group decision / unclear deservingness. $N = 187$.

Figure 4: Donation Decision: Clear vs Unclear Deservingness



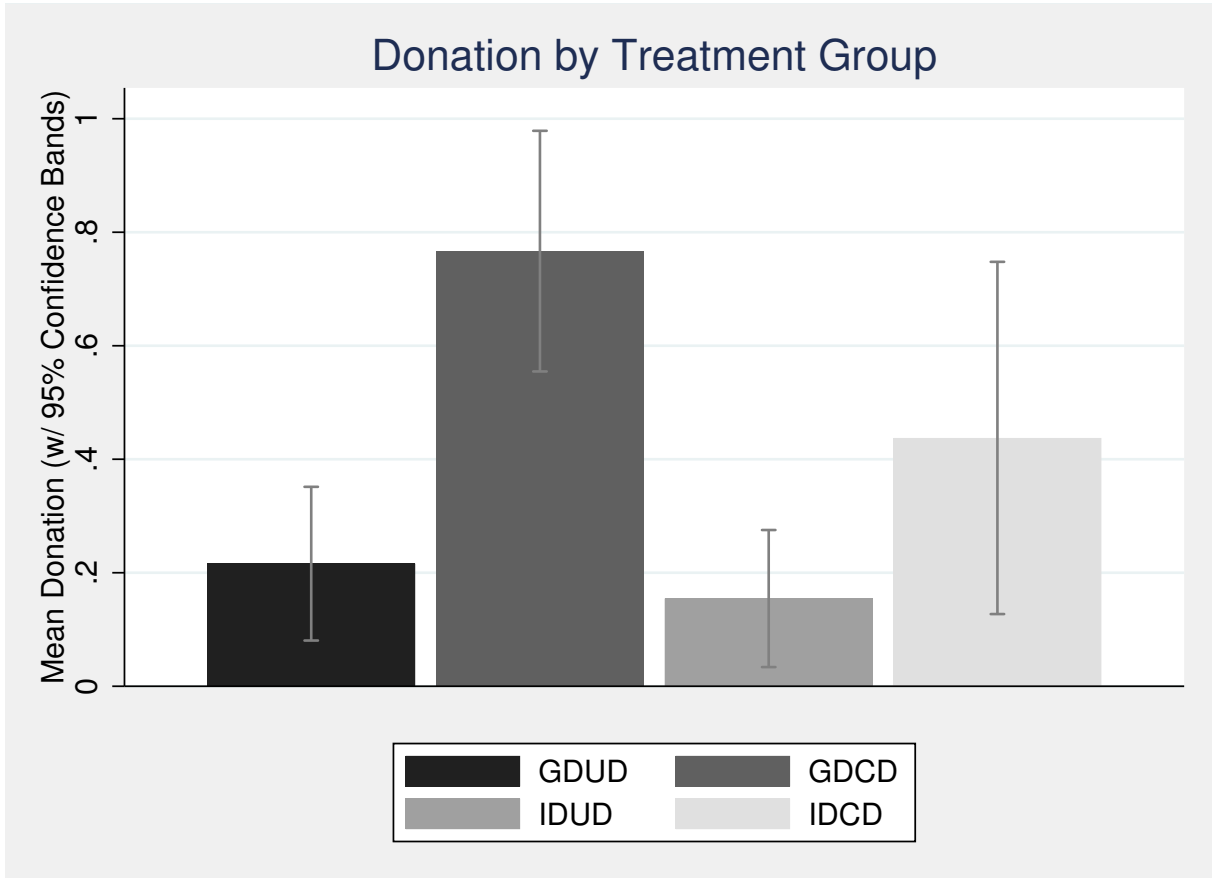
Notes: The Figure shows average Donations for treatments with clear and unclear deservingness, along with 95% confidence bands. Individual decisions of group members are collapsed on the group level to account for dependencies of group decisions; that is, there is one observation per individual in the treatments with individual decisions and one observation per group in the treatments with group decisions. $N = 187$.

Figure 5: Donation Decision: Group vs Individual Decisions



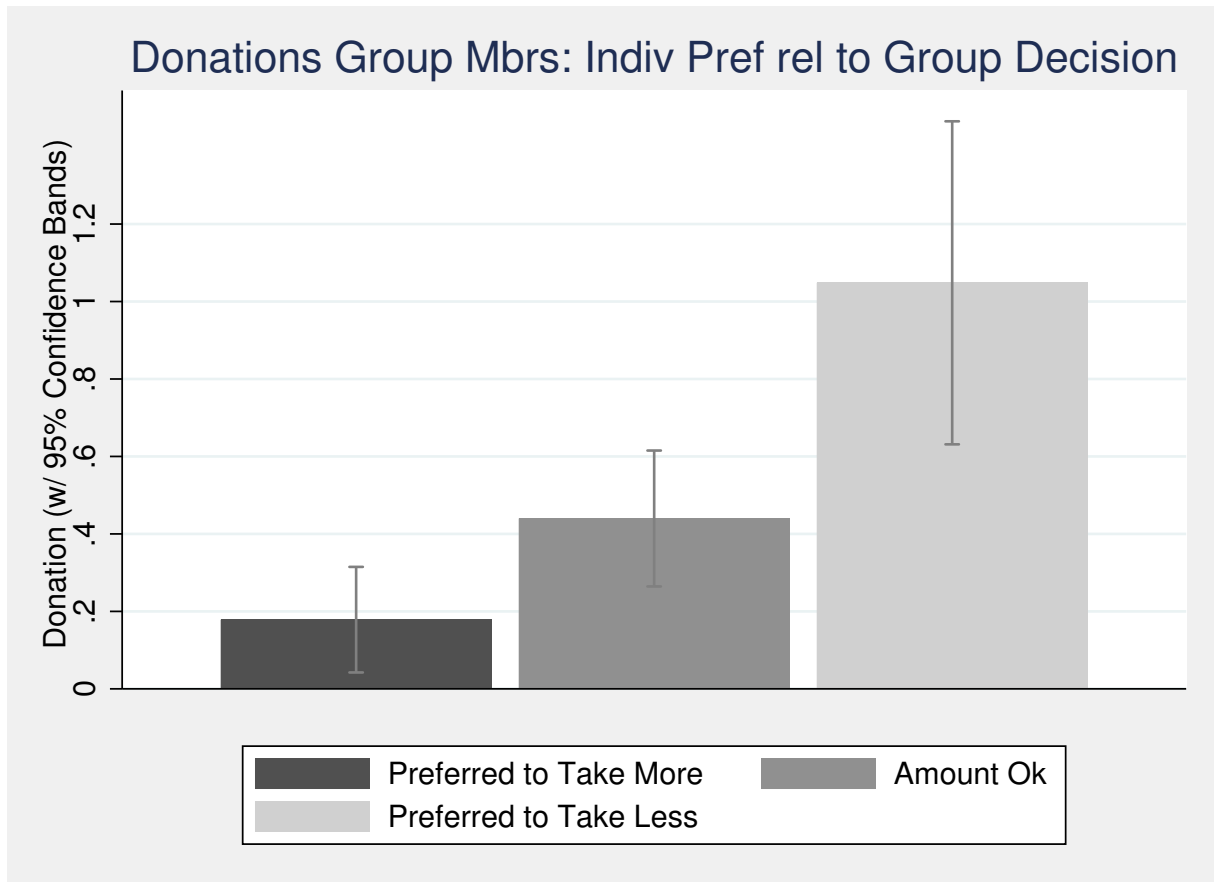
Notes: The Figure shows average Donations for individuals and groups who previously made Withdrawal decisions either individually or as part of a group, along with 95% confidence bands. Individual decisions of group members are collapsed on the group level to account for dependencies of group decisions; that is, there is one observation per individual in the treatments with individual decisions and one observation per group in the treatments with group decisions. $N = 187$.

Figure 6: Donation Decision Across Treatments



Notes: The Figure shows average Donation amounts for all four treatments, along with 95% confidence bands. Individual decisions of group members are collapsed on the group level to account for dependencies of group decisions; that is, there is one observation per individual in the treatments with individual decisions and one observation per group in the treatments with group decisions. Abbreviations of the four groups: IDCD: individual-decision / clear deservingness; IDUD: individual-decision / unclear deservingness; GDCD: group decision / clear deservingness; GDUD: group decision / unclear deservingness. $N = 187$.

Figure 7: Donation Decisions by Group Members: Role of Preference in Initial Group Decision



Notes: The Figure shows average subsequent donation amounts for group members, separately for group members who, in the initial group decisions, would have preferred to take less from the recipient, who were ok with the group decision and who would have preferred to take more from the recipient (along with 95% confidence bands). The assignment of group members to these categories is based on an analysis of chat protocols of the group discussions in the initial group stage (as described in the final part of section 4.2). Individual-level analysis. $N = 190$

Tables

Table 1: Effect of Deservingness and Group Decision on Withdrawal

	(I)	(II)
<i>Reference Group: Unclear Deservingness</i>		
Clear	-2.693*** (0.511)	-2.717*** (0.495)
<i>Reference Group: Individual Decision</i>		
Group	0.339 (0.484)	0.354 (0.467)
constant	4.629*** (0.458)	0.518 (1.383)
Controls	No	Yes
N	282	282

Notes: Tobit regressions. Outcome variable: Withdrawal from the recipient. Dummy variable *Clear* indicates experimental treatments groups with exposure to a clearly deserving recipient. Dummy variable *Group* indicates experimental treatments with group-decision making. Controls include covariates age, gender, degree and game theory. All variables as described in Section 2. Robust standard errors clustered on group level to account for dependency across group decisions. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2: Effect of Treatments on Withdrawal

	(I)	(II)
<i>Reference Group: IDUD</i>		
IDCD	-2.917*** (0.757)	-2.999*** (0.742)
GDUD	0.162 (0.671)	0.129 (0.647)
GDCD	-2.425*** (0.699)	-2.454*** (0.663)
constant	4.750*** (0.537)	0.615 (1.400)
Controls	No	Yes
N	282	282

Notes: Tobit regressions. Outcome variable: Withdrawal from the recipient. Independent dummy variables: IDCD: individual-decision / clear deservingness; IDUD: individual-decision / unclear deservingness; GDCD: group decision / clear deservingness; GDUD: group decision / unclear deservingness. Controls include covariates age, gender, degree and game theory. All variables as described in Section 2. Robust standard errors clustered on group level to account for dependency across group decisions. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3: Withdrawal: Interaction of Group and Clear Deservingness

	(I)	(II)
Group \times Clear	0.329 (0.958)	0.416 (0.931)
<i>Reference Group: Unclear Deservingness</i>		
Clear	-2.917*** (0.757)	-2.999*** (0.742)
<i>Reference Group: Individual Decision</i>		
Group	0.162 (0.671)	0.129 (0.647)
constant	4.750*** (0.537)	0.615 (1.400)
Controls	No	Yes
N	282	282

Notes: Tobit regressions. Outcome variable: Withdrawal from the recipient. Dummy variable *Clear* indicates exposure to a clearly deserving recipient. Dummy variable *Group* indicates experimental groups with group-decision making. *Group \times Clear* denotes an interaction between dummy *Group* and dummy *Clear*. Controls include covariates age, gender, degree and game theory. All variables as described in Section 2. Robust standard errors clustered on group level to account for dependency across group decisions. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Effect of Clear Deservingness and Group Decision on Donation

	(I)	(II)	(III)	(IV)
<i>Reference Group: Unclear Deservingness</i>				
Clear	2.081*** (0.552)	1.289** (0.520)	2.068*** (0.532)	1.372*** (0.496)
<i>Reference Group: Individual Decision</i>				
Group	1.038* (0.562)	1.170** (0.547)	0.964* (0.536)	1.079** (0.520)
withdrawal		-0.521*** (0.168)		-0.485*** (0.169)
constant	-3.978*** (0.812)	-2.035** (0.808)	-0.437 (2.088)	0.540 (2.018)
Controls	No	No	Yes	Yes
N	282	282	282	282

Tobit regressions. Outcome variable: Donation of show-up fee. Dummy variable *Clear* indicates experimental treatments with exposure to a clearly deserving recipient. Dummy variable *Group* indicates experimental treatments with group-decision making. Some specifications condition on the previous *withdrawal* decision. Controls include the following covariates: age, gender, degree and game theory. All variables as described in Section 2. Robust standard errors clustered on group level to account for dependency across group decisions. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Effect of Treatments on Donation

	(I)	(II)	(III)	(IV)
<i>Reference Group: IDUD</i>				
IDCD	0.925 (0.950)	0.071 (0.902)	0.809 (0.911)	0.089 (0.865)
GDUD	0.069 (0.784)	0.160 (0.754)	-0.091 (0.756)	0.008 (0.739)
GDCD	2.614*** (0.778)	1.918*** (0.727)	2.479*** (0.753)	1.876*** (0.707)
withdrawal		-0.528*** (0.168)		-0.490*** (0.169)
constant	-3.293*** (0.852)	-1.293 (0.817)	0.217 (2.134)	1.196 (2.057)
Controls	No	No	Yes	Yes
N	282	282	282	282

Notes: Tobit regressions. Outcome variable: Donation of show-up fee. Independent dummy variables: IDCD: individual-decision / clear deservingness; IDUD: individual-decision / unclear deservingness; GDCD: group decision / clear deservingness; GDUD: group decision / unclear deservingness. Some specifications condition on the previous *withdrawal* decision. Controls include covariates age, gender, degree and game theory. All variables as described in Section 2. Robust standard errors clustered on group level to account for dependency across group decisions. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6: Donation: Interaction of group decision and Clear Deservingness

	(I)	(II)	(III)	(IV)
Group \times Clear	1.620 (1.061)	1.688* (1.016)	1.761* (1.014)	1.778* (0.977)
<i>Reference Group: Unclear Deservingness</i>				
Clear	0.925 (0.950)	0.071 (0.902)	0.809 (0.911)	0.089 (0.865)
<i>Reference Group: Individual Decision</i>				
Group	0.069 (0.784)	0.160 (0.754)	-0.091 (0.756)	0.008 (0.739)
withdrawal		-0.528*** (0.168)		-0.490*** (0.169)
constant	-3.293*** (0.852)	-1.293 (0.817)	0.217 (2.134)	1.196 (2.057)
Controls	No	No	Yes	Yes
N	282	282	282	282

Notes: Tobit regressions. Outcome variable: Donation of show-up fee. Dummy variable *Clear* indicates exposure to a clearly deserving recipient. Dummy variable *Group* indicates experimental groups with group-decision making. *Group \times Clear* denotes an interaction between dummy *Group* and dummy *Clear*. Some specifications condition on the previous *withdrawal* decision. Controls include covariates age, gender, degree and game theory. All variables as described in Section 2. Robust standard errors clustered on group level to account for dependency across group decisions. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: Donation Decisions by Group Members: Role of Preference in Initial Group Decision

	(I)	(II)	(III)	(IV)
<i>Reference Group: Withdrawn Amount ok</i>				
Preferred to Take Less	2.275*** (0.613)	1.992*** (0.553)	2.407*** (0.596)	2.171*** (0.549)
Preferred to Take More	-0.685 (0.765)	-1.375* (0.744)	-0.961 (0.756)	-1.431* (0.744)
withdrawal		-0.738*** (0.204)		-0.688*** (0.208)
constant	-1.982*** (0.474)	0.516 (0.657)	4.913** (2.401)	5.514** (2.319)
Controls	No	No	Yes	Yes
N	190	190	190	190

Notes: Tobit regressions. Outcome variable: Donation of show-up fee. The explanatory variable of interest indicates group members who, in the initial group decisions, would have preferred to take less from the recipient, who were ok with the group decision and who would have preferred to take more from the recipient. The omitted category are group members who were ok with the decision of their group. The assignment of group members to these categories is based on an analysis of chat protocols of the group discussions in the initial group stage (as described in the final part of section 4.2). Controls include covariates age, gender, degree and game theory. All variables as described in Section 2. Individual-level analysis based on group members. Robust standard errors. Note that the significance levels remain in estimations where standard errors are clustered on the group level; i.e. 95 clusters (*Preferred to Take More* even becomes significant at 5% level in specifications (II) and (IV) with clustered standard errors). See footnote 24 for a brief discussion. * significant at 10%; ** significant at 5%; *** significant at 1%.

Appendix

A Additional Tables and Figures

Table A.1: Summary Statistics

Variable	N	mean	sd	min	max	p50
age	282	23.85	4.20	18.00	59.00	23.00
gender (male)	282	0.42	0.49	0.00	1.00	0.00
no third degree	282	0.62	0.49	0.00	1.00	1.00
Bachelor	282	0.23	0.42	0.00	1.00	0.00
Master (or higher)	282	0.15	0.35	0.00	1.00	0.00
game theory	282	0.38	0.49	0.00	1.00	0.00
withdrawn	282	3.06	1.81	0.00	5.00	3.00
donation	282	0.43	0.96	0.00	4.00	0.00
profit	282	6.58	2.29	0.00	9.00	7.00

Notes: Summary Statistics for all variables. Variables as described in Section 2. Individual-level statistics.

Table A.2: Randomization Checks

Variable	p-values of group-wise t-tests (two-sided)					
	1 vs 2	1 vs 3	1 vs 4	2 vs 3	2 vs 4	3 vs 4
age	0.4716	0.5197	0.6929	0.9972	0.8011	0.7924
gender	0.2251	0.0972	0.2173	0.4943	0.8141	0.6933
degree	0.6903	0.1432	0.7526	0.0651	0.5083	0.3122
game theory	0.2922	0.3805	0.6495	0.0886	0.1900	0.6999
N	190	138	142	140	144	92

Notes: Tests for balance in covariates across groups. The table presents p-values of two-sided t-tests which test for differences across the respective experimental groups. Number of observations in the group-wise comparisons in line N . Variables defined as in Section 2. Tests executed on the individual level (since covariates are not affected by group decisions). Treatment Groups: Group 1: group decision / unclear deservingness (GDUD), Group 2: group decision / clear deservingness (GDCD), Group 3: individual-decision / unclear deservingness (IDUD), Group 4: individual-decision / clear deservingness (IDCD).

Table A.3: Overview of Average Withdrawal Amounts Across Treatments

Exp. Condition	N	mean
Individual Decision	92	2.92
Group Decision	95	3.12
Unclear Deservingness	91	3.80
Clear Deservingness	96	2.29
GDUD	47	3.87
GDCD	48	2.39
IDUD	44	3.73
IDCD	48	2.19

Notes: Overview of mean withdrawal amounts across experimental treatments. All variables are defined as described in section 2. Group decisions are collapsed to account for the mutual dependence of the decisions of group members. Abbreviations: IDCD: individual-decision / clear deservingness; IDUD: individual-decision / unclear deservingness; GDCD: group decision / clear deservingness; GDUD: group decision / unclear deservingness.

Table A.4: Overview of Average Donation Amounts Across Treatments

Exp. Condition	N	mean
Individual Decision	92	0.302
Group Decision	95	0.494
Unclear Deservingness	91	0.186
Clear Deservingness	96	0.602
GDUD	47	0.216
GDCD	48	0.767
IDUD	44	0.155
IDCD	48	0.438

Notes: Overview of mean donation amounts across experimental treatments. All variables are defined as described in section 2. Group decisions are collapsed to account for the mutual dependence of the decisions of group members. Abbreviations: IDCD: individual-decision / clear deservingness; IDUD: individual-decision / unclear deservingness; GDCD: group decision / clear deservingness; GDUD: group decision / unclear deservingness.

B Experimental Instructions

This appendix displays the English translation of the experimental instructions. The original German instructions are available upon request from the authors and can be made available in an online appendix in the case of publication.

[All Groups]

Welcome to this experiment and thank you for participating.

You receive a lump-sum payment of 4.00 EUR for showing up to this experiment. In addition, you can earn money in this experiment. Please stop talking to other participants as of now. The instructions for this experiment will be displayed on your computer screen. Please raise your hand if you have a question. An experimenter will then come to your seat and answer your question.

[Group: group-decision making and clear deservingness (GDCCD)]

In this experiment, you decide, together with a randomly chosen other person in this room, if you want to take away money from Förderverein krebskrake Kinder e.v. Köln. You and the other person get to keep the money amount that is taken away for yourself. You find a short description of the association (Verein) at your seat.

The association receives a payment of 6.00 EUR from us for each participant of the experiment; that is, the association receives 6.00 EUR for you and 6.00 EUR for the other person together with whom you make the decision. The maximum amount that you can keep for yourself is 5.00 EUR, because the following applies: The association loses 1.20 EUR, respectively, for each EUR that each of you decide to keep for yourself (for example, if you keep 3.00 EUR for yourself, the association loses 3.60 EUR). Your choice can be any amount between 0.00 EUR and 5.00 EUR in steps of 10 Cents.

In order to make a joint decision on the amount that you take away from Förderverein krebskrake Kinder e.v. Köln, you and the other person can communicate for up to five minutes through a private chat which is on the next screen. In the screen that follows the chat, you and the other person have to enter the joint decision independently from each other. The two individually entered amounts that you and the other person choose will have to be identical. In the case that the two entered amounts are different from each other, then neither you, nor the other person, nor the Förderverein krebskrake Kinder e.v. Köln receives a payoff.

After the end of the experiment, we will, in random order, call all participants to the front in order to receive the payoff, and the Förderverein krebskrake Kinder e.v. Köln is granted its payment as well.

[Group: group-decision making and unclear deservingness (GDUD)]

In this experiment, you decide, together with a randomly chosen other person in this room, if you want to take away money from an association (Verein) that is not specified in further detail.

You and the other person get to keep the money amount that is taken away for yourself. You find a short description of the types of associations that exist at your seat.

The association receives a payment of 6.00 EUR from us for each participant of the experiment; that is, the association also receives 6.00 EUR for you and 6.00 EUR for the other person together with whom you make the decision. The maximum amount that you can keep for yourself is 5.00 EUR, because the following applies: The association loses 1.20 EUR, respectively, for each EUR that each of you decide to keep for yourself (for example, if you keep 3.00 EUR for yourself, the association loses 3.60 EUR). Your choice can be any amount between 0.00 EUR and 5.00 EUR in steps of 10 Cents.

In order to make a joint decision on the amount that you take away from the association, you and the other person can communicate for up to five minutes through a private chat which is on the next screen. In the screen that follows the chat, you and the other person have to enter the joint decision independently from each other. The two individually entered amounts that you and the other person choose will have to be identical. In the case that the two entered amounts are different from each other, then neither you, nor the other person, nor the Förderverein krebskrake Kinder e.v. Köln receives a payoff.

After the end of the experiment, we will, in random order, call all participants to the front in order to receive the payoff, and the association is granted its payment as well.

[Group: Individual-Decision making and clear deservingness (IDCD)]

In this experiment, you decide if you want to take away money from Förderverein krebskrake Kinder e.v. Köln. You get to keep the money amount that is taken away for yourself. You find a short description of the association (Verein) at your seat.

The association receives a payment of 6.00 EUR from us for each participant of the experiment; that is, the association also receives 6.00 EUR for you. The maximum amount that you can keep for yourself is 5.00 EUR, because the following applies: The association loses 1.20 EUR for each EUR that you decide to keep for yourself (for example, if you keep 3.00 EUR for yourself, the association loses 3.60 EUR). Your choice can be any amount between 0.00 EUR and 5.00 EUR in steps of 10 Cents.

On the next screen, you are given up to five minutes time to justify in writing your decision of how much you take away from the association. In the screen that follows afterwards, you have to enter your decision.

After the end of the experiment, we will, in random order, call all participants to the front in order to receive the payoff, and the Förderverein krebskrake Kinder e.v. Köln is granted its payment as well.

[Group: Individual-Decision making and unclear deservingness (IDUD)]

In this experiment, you decide if you want to take away money an association (Verein) that is not specified in further detail. You get to keep the money amount that is taken away for yourself. You find a short description of the types of associations that exist at your seat.

The association receives a payment of 6.00 EUR from us for each participant of the experiment; that is, the association also receives 6.00 EUR for you. The maximum amount that you can keep for yourself is 5.00 EUR, because the following applies: The association loses 1.20 EUR for each EUR that you decide to keep for yourself (for example, if you keep 3.00 EUR for yourself, the association loses 3.60 EUR). Your choice can be any amount between 0.00 EUR and 5.00 EUR in steps of 10 Cents.

On the next screen, you are given up to five minutes time to justify in writing your decision of how much you take away from the association. In the screen that follows afterwards, you have to enter your decision.

After the end of the experiment, we will, in random order, call all participants to the front in order to receive the payoff, and the association is granted its payment as well.