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The Importance of Peers for Compliance with Norms of Fair Sharing

Abstract

A burgeoning literature in economics has started examining the role of social norms in explaining economic behavior. Surprisingly, the vast majority of this literature has studied social norms in asocial decision settings, where individuals are observed to act in isolation from each other. In this paper we use a large-scale dictator game experiment (N = 850) to show that "peers" can have a profound influence on individuals' perceptions of norms of fair sharing, which we elicit in an incentive compatible way. However, in contrast to these strong peer effects in social norms of fair sharing, we find limited evidence of the influence of norms and peers on actual sharing behavior. We discuss how these results can be explained by heterogeneity in normative views as well as in willingness to comply with norms.

JEL-Codes: A130, C920, D030.

Keywords: social norms, norm compliance, peer effects, fair sharing, dictator game, framing, experiments.

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1. INTRODUCTION

We study the driving forces underlying one of the fundamental principles of human social behavior: fair sharing. While earlier explanations have focused on the role of other-regarding preferences and preferences for equality (see, e.g., Camerer, 2003, Chap. 2), we investigate a more recent account of fair sharing that relies on the concept of *norm compliance*: many people have an intrinsic preference to conform to what is collectively perceived as "socially appropriate" and are willing to sacrifice material gain in order to comply with such norms.[1] In fact, social norms are thought to drive behavior in a variety of social contexts (e.g., Elster, 1989; Bicchieri, 2006; López-Pérez, 2008; Krupka and Weber, 2013). A number of recent experimental studies use a norm compliance framework to explain behavior across several settings, including dictator games (Krupka and Weber, 2013; Krupka et al., 2016; Kimbrough and Vostroknutov, 2016), third-party allocator games (Barr et al., 2015), gift-exchange games (Gächter et al., 2013), oligopoly games (Krupka et al., 2016), public good, trust and ultimatum games (Kimbrough and Vostroknutov, 2016).

However, nearly all of these studies of social norms focus on tightly controlled, but surprisingly *asocial* decision environments, where individuals face neutral and abstract decision situations, under full anonymity, and in complete isolation from other decision-makers. While the use of contextually sterile decision environments is one of the hallmarks of experimental control, we also notice that contextual variables – from the framing of the decision task to the presence and behavior of other decision-makers in the decision setting – play a crucial role in nearly every conceptual account of social norms. Minimal variations in the context can profoundly change individuals' perception of the nature of the decision situation and the underlying norms of conduct (Bicchieri, 2006). This highlights the importance of studying the interaction between contextual variables and norm compliance. In this paper we take a step in this direction by systematically studying the influence on norm compliance in fair sharing of one

[1] Another class of explanations for fair sharing and giving focuses on the role of self- or social-image concerns whereby individuals care about being perceived as fair (e.g., Andreoni and Bernheim, 2009; Ellingsen and Johannesson, 2011; Grossman and van der Weele, 2017). In our view this approach is complementary to the social norms approach in the sense that theories of image concerns often assume the existence of a norm of acceptable behavior (e.g. equal sharing) that individuals strive to adhere to in order to boost their image.

specific contextual variable: the presence of "peers", i.e. other decision-makers, in the decision setting faced by an individual.

We believe that understanding the influence of peers on individual decision-making is important for a number of reasons. First, information about peer behavior is typically available in many natural social settings, where individuals do not act in social isolation. On the contrary, people often have the opportunity to interact with others and observe their choices before making a decision. Thus, studying the influence of peers on individual decision-making is inherently relevant for understanding the general dynamics of human social interactions.

Second, the study of peer influence is of theoretical interest because peers are an important determinant of norm-driven behavior in most conceptual accounts of norm compliance across the social sciences. For instance, in economics, Sugden (1998) argues that observing instances of norm-compliance or norm-breaking can reinforce or weaken the expectations that the norm ought to be followed. In social psychology, Cialdini et al. (1990) contend that the behavior of peers exerts normative influence on individual behavior by shaping what individuals perceive as typical or normal behavior in a given situation (the "descriptive norm"). In philosophy, Bicchieri (2006) proposes that whether or not a norm will be followed depends partly on "normative expectations" (whether the individual expects that sufficiently many others expect him or her to comply), and partly on "empirical expectations" (whether the individual expects that sufficiently many others will comply). Sociologists Lindenberg and Steg (2013) argue that the behavior of others can shift the weights that individuals place on the normative-goal (following social norms) relative to the more self-centered hedonic and gain goals (need satisfaction and resource accumulation).

Despite the large theoretical literature on the importance of peers for norm-driven behavior, the empirical evidence is scant. In many of the settings where peer effects have been documented empirically (e.g., Keizer et al., 2008; Shang and Croson, 2009; Bicchieri and Xiao, 2009; Krupka and Weber, 2009; Gächter et al., 2012; Falk et al., 2013; Thöni and Gächter, 2015), other behavioral forces may explain the correlations between individuals' and peers' actions observed in the experiments.[2] Even in settings where the observed data patterns are difficult to reconcile with alternative explanations (e.g. McDonald et al., 2013) and results are strongly suggestive that

[2] For example, in some settings peer effects can arise if individuals are motivated by a desire to equalize material earnings between themselves and their peers. See Thöni and Gächter (2015) for a discussion of the possible behavioral mechanisms underlying peer effects.

the presence of peers affects norms, the lack of direct data on how peers affect normative considerations makes it difficult to identify whether the observed impact of peers' actions on behavior is mediated by corresponding shifts in the normative evaluation of actions.

In this paper we present a new set of dictator game experiments that measure the influence of peers on both *actual* sharing and *norms* of sharing using the incentive-compatible norm-elicitation task by Krupka and Weber (2013).[3] Our experiments set us apart from the existing literature on peer effects mentioned above, in that we are able to explicitly identify the linkages between peers' actions, normative views, and individual sharing behavior. In this aspect our paper is related to Gächter et al. (2013), who, however, study peer effects in norms and behavior in a gift exchange game. They find that peer effects in norms do not explain the observed peer effects in actual gift exchange. While these results cast some doubt on the importance of norms for peer effects, it would be premature to base judgment on the importance of norm following solely on the study of one specific decision setting and one specific social norm. It is indeed unclear whether the results from the gift exchange game may also extend to other settings and norms, as it may be the case that the influence of peer behavior is more decisive for norms of fair sharing than for reciprocal gift exchange.

Moreover, all the experiments reported in Gächter et al. (2013) are based on gift exchange games where the decision-makers observe the decisions of a peer before making their own choices. In this sense, it is not obvious that their experiments allow assessing the causal impact that the presence of peers may have on norms and behavior, because their study lacks a treatment without peers. In this paper, we study settings where the decision-maker is exposed to the influence of a peer as well as settings where the decision-maker acts in isolation from peers. This allows us to examine the causal influence that peers have on norms and behavior.

Specifically, in our PEER treatment subjects play a sequential three-person dictator game, where two dictators can transfer money to one recipient. The dictators move sequentially and thus the second dictator can observe the transfer made by the first dictator (the "peer") before making her own transfer decision. In contrast, our NOPEER treatment is based on a two-person dictator game where there is no peer and her role is replaced with Nature: in this game, Nature moves first and randomly determines an endowment for the recipient; the dictator observes this

[3] As we explain more in detail in section 3, in the Krupka and Weber (2013) task, participants in an experiment read the description of a scenario and are asked to evaluate the social appropriateness of each action available to the decision-maker in the scenario.

endowment and then transfers money to the recipient. The crucial difference between the two treatments is thus that, while in the PEER treatment the recipient's wealth (prior to the dictator's transfer) is determined by a peer, in the NOPEER treatment it is determined by chance and there is no decision-maker other than the dictator present in the decision context.

Furthermore, to systematically investigate the extent to which the influence of peers on normative considerations and behavior depends on the nature of the underlying norms, our study examines two payoff-equivalent, but differently framed, versions of the dictator game. In one version the dictator can give money to another player, while in the other version the dictator can also take money from the other player. Krupka and Weber (2013) have used similar versions of the dictator game to measure the influence of norms on dictator's behavior.[4] They have shown that these "give" and "take" versions of the dictator game produce stark differences in the amounts of money that dictators share with recipients. Moreover, they explain these differences by the fact that the norm that governs behavior in the "give" version of the game is substantially different from the norm that applies to the "take" game. Hence, we use give/take framing to study the extent to which the influence of peers depends on the nature of the norm (norm of giving vs. norm of taking).

To summarize, our study is based on four treatments, using a 2x2 factorial design where we vary the frame of the game (GIVE vs. TAKE) and whether a peer is present or absent (PEER vs. NOPEER). For each treatment, we conduct two types of experiments, a *norm-elicitation* experiment and a *behavioral* experiment. In the norm-elicitation experiment, we follow Krupka and Weber (2013) and measure in an incentive compatible way the extent to which the peer's behavior affects the perception of what constitutes socially appropriate behavior. In the behavioral experiment, we check how these variations in perceptions of social appropriateness translate into actual decisions. A total of 850 subjects participated in our experiments.

Our norm-elicitation experiments reveal that the presence of peers has a systematic and strong influence on the perceptions of social appropriateness. In the PEER treatment, ungenerous monetary transfers to the recipient are viewed as relatively more appropriate when the peer is

[4] However, in all games studied by Krupka and Weber (2013) there is only one dictator matched with one recipient and so they cannot study peer effects in fair sharing. See also List (2007) and Bardsley (2008), who compare a standard dictator game with a game where the dictator's choice set includes the option to take money from the recipient, and Goerg and Walkowitz (2010), who compare public good game experiments framed with positive externalities to those framed with negative externalities.

also ungenerous towards the recipient. However, when the *same* levels of recipient's wealth have been determined by chance (NOPEER treatment), the relation between recipient's wealth and appropriateness is *reversed*: ungenerous transfers are viewed as relatively more appropriate when the recipient is wealthier (i.e. when the recipient has randomly received a larger endowment). Interestingly, we also find that the strength of these effects varies considerably across our two versions of the dictator game. The norm that governs behavior in the TAKE game is much more stable and resilient to peer influence than the norm in the GIVE game.

Based on the results of the norm-elicitation experiment, we should expect to observe systematic differences in the influence of peers' actions (and hence recipient's wealth) on dictator's actual behavior across our experimental conditions. In particular, we should expect a positive relation between dictator transfers and recipient wealth in the PEER treatment, while a negative relation should emerge in the NOPEER treatment. Moreover, these treatment differences should be more pronounced in the GIVE than in the TAKE game.

The results of our behavioral experiments are only partially in line with these expectations. While we observe that dictators in the NOPEER treatment significantly reduce their transfers when the recipient possesses larger endowments, there is, on average, no relation between dictator and peer transfers in the PEER treatment. Moreover, we do not detect any differences in the magnitude of these effects between the GIVE and TAKE conditions.

The absence of a peer effect in the PEER treatment is consistent with the findings reported by Panchanathan et al. (2013). They also conduct a three-person dictator game experiment where two dictators decide sequentially how much to give to a recipient. They find that, on average, the amount given by the first dictator does not affect the second dictator's giving. At the individual level, they observe substantial heterogeneity in the second dictator's responses: while some dictators increase their giving in the amount given by the peer, others give less when the peer gives more, and others do not vary their giving with the peer's giving. We observe similar heterogeneity in our experiment. This suggests that a potential explanation for the limited support of the norm compliance model in our experiments may lie in the existence of conflicting views about what constitutes a norm in our setting. In section 5 we examine this possibility in detail and show that there is considerable heterogeneity in the extent to which participants agree on what a norm is in our experiments as well as in the extent to which they are prepared to comply with it.

2. THEORETICAL FRAMEWORK

To illustrate our empirical strategy to identify the importance of peers for norms of fair sharing, we start by sketching a simple theoretical framework based on the social norms model introduced by Krupka and Weber (2013, hereafter KW). We assume that decision-makers are motivated by both material self-interest and a preference for conforming to norms, i.e. collectively recognized rules of behavior that define which actions are viewed as socially appropriate (Elster, 1989; Ostrom, 2000). Thus, decision-maker *i*'s utility function is given by:

$$U_i = \pi_i + \gamma_i N(a_i|a_{-i})$$

where a_i and a_{-i} are the actions undertaken by the decision-maker and by others, respectively, and π_i represents the decision-maker's material payoff. The second term of the utility function captures the preference for norm compliance. The parameter γ_i measures the extent to which the decision-maker cares about conforming to norms. The social norms function $N(.)$ describes the mapping between utility and the collectively-recognized social appropriateness of the actions available to the decision-maker. Decision-makers who care about norm compliance ($\gamma_i > 0$) enjoy a positive utility by selecting actions that are viewed as socially appropriate (i.e., actions whereby $N(.) > 0$), whereas they suffer a disutility from actions that are inappropriate ($N(.) < 0$). Note that we do not specify, at this stage, what norms individuals may follow in their decision-making. Following KW, we instead measure these norms empirically, as we describe in detail in the next section.[5] Our only assumption regarding the norms function at this stage is that what constitutes appropriate behavior depends on social and contextual influences. In particular, we assume that the social appropriateness of an action a_i is influenced by a_{-i}, the actions of other decision-makers that *i* can observe.[6]

[5] This is one of the main advantanges of the social norms model relative to outcome-based models of social preferences like, e.g., Fehr and Schmidt (1999) model of inequality aversion. The norms model can in principle nest an outcome-based model of inequality aversion if, for example, the norms prescribes payoff equality. However, the norms model is able to capture the effect of contextual and social factors that may have no payoff consequences but yet profoundly change the perception of appropriantess of actions available to the decision maker, and hence their behavior.

[6] Of course, actions are not the only channel through which other decision-makers can influence norms. For instance, they may affect perceptions of appropriateness by providing advice about norms or simply through scrutiny of the decision-maker's actions (see e.g. Schram and Charness, 2015). We do not explicitly model these alternative channels in our utility function because the focus of our experiments will be on the effects of peers' actions on norms.

Our empirical strategy relies on two types of experiments: a norm-elicitation experiment that we use to measure the social norms function $N(.)$, and a standard behavioral experiment to examine how changes in the norms function translate into actual decisions. To explore the role of social influences, we systematically vary whether decision-makers observe the actions of another decision-maker (a "peer") before making a choice, or whether they instead observe a random "choice" made by Nature. We thus study how the norm functions $N(a_i|a_{-i})$ varies when the action a_{-i} observed by the decision maker is taken by a peer or by Nature. To explore the role of contextual influences, we study two distinct decision settings that are economically equivalent (i.e. in both settings the same actions produce the same material payoffs π_i), but differ in how actions are framed and thus in the norms $N(.)$ that potentially apply to each setting. The next section describes each experiment and each experimental condition in detail.

3. EXPERIMENTAL DESIGN AND PROCEDURES

All our treatments are based on dictator game experiments. The PEER treatment is based on a three-person sequential dictator game where two dictators (D_1 and D_2) are matched with one recipient (R). Dictators move sequentially: D_1 moves first and chooses a monetary transfer for the recipient; D_2 observes the transfer chosen by D_1 and then chooses a transfer. In the GIVE version of the game, D_1 and D_2 receive an initial endowment of £12 each, while the recipient is endowed with £0. Each dictator can then transfer an amount $g_{i\in\{D1,\,D2\}} \in \{£0, £1, £2, £3, £4\}$ from her endowment to the recipient. Monetary payoffs are computed as $\pi_i = £12 - g_i$ for a dictator, and $\pi_R = £0 + g_{D1} + g_{D2}$ for the recipient.[7]

We study how D_2's behavior is affected by information about their peer's (D_1) behavior, by comparing choices made in the PEER treatment with choices made in the NOPEER treatment, where the role of D_1 is replaced with Nature. Thus, the NOPEER treatment is based on a two-person dictator game, where one dictator is matched with one recipient. In the GIVE version of

[7] Note that we use a truncated action space relative to the standard dictator game. We did this because, as we describe later, in our norm-elicitation experiment subjects are asked to rate the appropriateness of all the actions available to dictators in all possible situations that they may face. With our truncated action space this already implies that subjects submit 25 ratings (5 actions x 5 possible situations). We thought that increasing the number of actions available to dictators might make the task difficult to manage for subjects in the norm-elicitation experiment. Also note that payoff equalization is possible in our dictator game, although this requires both dictators giving £4 to the recipient (which results in a payoff of £8 for each player). Dictators can always unilaterally minimize payoff inequalities between themselves and the recipient by choosing the most generous action in the set.

the game, the dictator receives an endowment of £12 while the recipient's endowment, E = {£0, £1, £2, £3, £4}, is randomly determined by Nature. After observing the value of the recipient's endowment, the dictator transfers an amount g ∈ {£0, £1, £2, £3, £4} to the recipient. Payoffs are computed as π_D = £12 – g for the dictator, and π_R = E + g for the recipient.

Note that in both treatments we observe decisions by dictators facing the same five possible situations, each corresponding to a different level of initial wealth of the recipient (£0, £1, £2, £3, or £4). The difference between the two treatments is that in the PEER treatment the recipient's wealth (prior to the dictator's transfer) is determined by the donation of another dictator, whereas in NOPEER the peer is absent and the recipient's wealth is determined at random.[8]

The corresponding TAKE versions of the games are analogously defined, except that the initial distributions of endowments differ relative to the GIVE version. In the PEER/TAKE game, D_1 and D_2 are endowed with £9 each, while the recipient is endowed with £6. Each dictator can give/take an amount $t_{i\in\{D1, D2\}} \in$ {-£3, -£2, -£1, £0, £1} to/from the recipient. Payoffs are computed as π_i = £9 – t_i for a dictator, and π_R = £6 + t_{D1} + t_{D2} for the recipient. Analogously, in the NOPEER/TAKE game the dictator is endowed with £9, while the recipient's endowment is randomly determined from the set E = {£3, £4, £5, £6, £7}. The dictator transfers an amount t ∈ {-£3, -£2, -£1, £0, £1} to the recipient, and payoffs are computed as π_D = £9 – t for the dictator, and π_R = E + t for the recipient. Thus, in both the GIVE and TAKE version of the games, dictators can implement exactly the same final payoff allocations between themselves and recipients. However, the GIVE and TAKE games differ in whether these allocations can be obtained through "giving to" or "taking from" the recipient.

For each treatment and each version of the game, we conducted two types of experiments: a norm-elicitation experiment and a behavioral experiment. The *norm-elicitation* experiment is based on the task introduced by KW. Subjects were given a description of the five possible

[8] Note that our focus is on comparing situations where the dictator can be affected by a peer with situations where the peer cannot by construction exert any influence on the dictator's choices. Thus, in our NOPEER treatment we remove the peer from the decision setting and transform the three-person dictator game used in the PEER treatment into a two-person dictator game. An implication of this is that, in principle, the two treatments differ along more than one dimension (whether or not the dictator can observe the choice of a peer and whether the situation is a two-person or three-person game). An alternative treatment to control for this would be one where a passive dictator is added to the NOPEER game. We did not run this additional control treatment because doing so while keeping the design balanced would have required an additional 500 subjects and we do not expect behavior in this treatment to differ from that observed in our NOPEER treatment. In section 5.3 we discuss possible implications of comparing treatments that involve three-player interaction with treatments involving two-player interaction, with particular reference to payoff comparison considerations.

situations faced by either D_2 in the PEER treatment or the dictator in the NOPEER treatment. We conducted separate sessions for the GIVE and TAKE versions of the games. In each case, subjects had to evaluate, for each of the five situations, the appropriateness of each of the five actions that were available to the dictator. For example, subjects in the PEER/GIVE condition read a description of a situation where D_2 observes that D_1 has given £0 to the recipient and must decide whether to give £0, £1, £2, £,3 or £4. For each of the possible five actions available to D_2, subjects were asked to rate, on a six-point scale, whether that action was "socially appropriate" and "consistent with what most people expect [a dictator] ought to do", or "socially inappropriate" and "inconsistent with what most people expect [a dictator] ought to do".[9] Similarly, subjects rated the appropriateness of each of the five dictator actions in the other four situations where D_1 had given £1, £2, £3 and £4 to the recipient.[10]

Similar to KW, subjects received a monetary reward if their appropriateness judgments matched the judgments provided by other subjects in their session. In particular, they were told that one of five possible situations, and one of the five actions available to the dictator in that situation, would be selected at random at the end of the session. Subjects were paid £7 (in addition to a £5 show-up fee) if their appropriateness rating for the selected action matched the rating of one other randomly selected subject in the session.[11] Thus, as in KW, subjects were given incentives to reveal what they perceived to be the collectively-shared judgment of appropriateness of the actions they evaluated, and not their own personal judgment. Hence, a subject in the norm-elicitation experiment plays 25 coordination games over appropriateness ratings (with no feedback between games) with another randomly selected participant.[12]

[9] This approach follows Krupka et al. (2016). The six possible levels of appropriateness were "very socially inappropriate", "socially inappropriate", "somewhat socially inappropriate", "somewhat socially appropriate", "socially appropriate" or "very socially appropriate". Note that we did not use the word "dictator" in the instructions, but we referred to the subjects in the role of the dictator as "Individual X" or "Individual Y". See Online Appendix A for a copy of the instructions.

[10] Similarly, in the NOPEER treatment participants were asked to rate the appropriateness of each of the five actions available to the dictator in each of the five possible situations corresponding to the five different levels of endowment of the recipient.

[11] This approach also follows Krupka et al. (2016). This incentivizes subjects to match the modal response of an individual randomly drawn from the population, rather than the modal response in the population as in KW.

[12] The material incentives used in the norm-elicitation task generate a coordination game with multiple equilibria. KW argue that collectively-shared norms create focal points in this game, which subjects may exploit to successfully coordinate. A similar approach has been applied to the classification of natural language messages by Xiao and Houser (2005) and Houser and Xiao (2011).

We conducted the *behavioral* experiments with subjects who had not participated in the norm-elicitation task. Subjects were randomly assigned to either the PEER or NOPEER treatment. In each treatment, half of the subjects participated in the GIVE game, and the other half in the TAKE game. In all cases, we paid subjects a £2 show-up fee in addition to any earnings made in the experiment.[13] At the beginning of the experiment we matched subjects randomly into groups and assigned a role. In the PEER treatment subjects were matched in three-person groups and assigned the role of D_1, D_2, or Recipient. In the NOPEER treatment, subjects were matched in two-person groups and assigned either the role of dictator or recipient. Subjects then played a one-shot version of the dictator game, either in the GIVE or TAKE frame. We elicited subjects' choices using the strategy method (Selten, 1967). That is, dictators in the role of D_2 in the PEER treatment and dictators in the NOPEER treatment were asked to make one decision for each of the five possible sub-games of the game, corresponding to situations where D_1 or Nature had endowed the recipient with £0, £1, £2, £3, or £4 (£3, £4, £5, £6, or £7 in the TAKE game).[14]

In total, we conducted 44 sessions with 850 subjects, recruited using ORSEE (Greiner, 2015). All sessions were conducted at the University of Nottingham using z-Tree (Fischbacher, 2007). Sessions lasted between 40 and 60 minutes. Table 1 summarizes the experiment design and reports the number of subjects who participated in each treatment and version of the game.

Table 1 – Treatment overview and number of subjects per treatment/game

	PEER treatment	NOPEER treatment
GIVE game	Norm-elicitation exp.: 36 Behavioral exp.: 216 (72 per role)	Norm-elicitation exp.: 30 Behavioral exp.: 142 (71 per role)
TAKE game	Norm-elicitation exp.: 36 Behavioral exp.: 216 (72 per role)	Norm-elicitation exp.: 32 Behavioral exp.: 142 (71 per role)

[13] Note that the show-up fee for the behavioral experiments is lower than the show-up fee used in the norm-elicitation experiments. These values of the show-up fees were chosen to ensure that average hourly earnings were approximately £10 in each experiment.

[14] Most of the experimental literature directly comparing choices elicited with the strategy method and the direct response method find that the two elicitation methods do not lead to qualitatively different results. See Brandts and Charness (2011) for a review.

4. RESULTS

We start by presenting the data from the norm-elicitation experiments, to examine whether the behavior of peers influences the norms of fair sharing in our setting. We then turn to the behavioral data, and examine whether any differences in norms across conditions translates into differences in sharing behavior.

4.1. Norm-elicitation experiments: The influence of peers on norms of fair sharing

Figure 1 reports the average ratings of appropriateness collected in the norm-elicitation experiments. We report the full distributions of appropriateness ratings in Online Appendix B and an analysis of the variation of ratings in section 5.1 (Figure 3 in particular). The average social appropriateness ratings of dictator transfers in the PEER treatment are shown in the top-left (GIVE game) and bottom-left (TAKE game) panels of the figure. The ratings of the NOPEER treatment are shown in the right panels of the figure. In each panel, we show ratings for each of the five possible situations faced by a dictator, corresponding to the five possible levels of wealth of the recipient determined either by D_1's transfers (PEER) or by chance (NOPEER).[15]

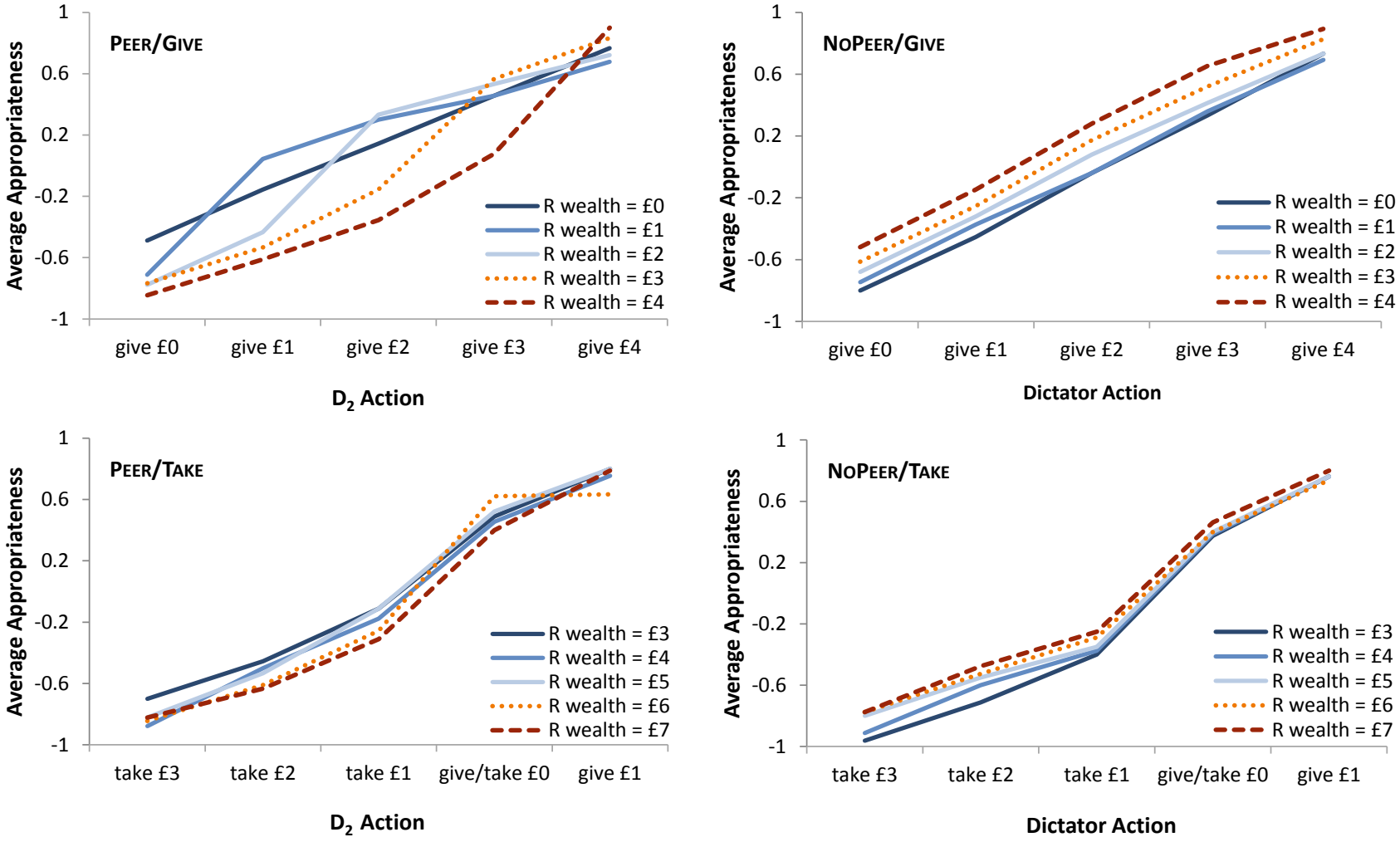
Several interesting patterns can be observed. First, in all five situations and in all treatments and versions of the game, the appropriateness of transfers increases in their generosity: sharing the highest amount available ("give £4" in GIVE; "give £1" in TAKE) is always considered the most appropriate option. Similarly, in all cases, the least appropriate choice is the level of sharing that maximizes the dictator's payoff ("give £0" in GIVE; "take £3" in TAKE).[16]

Second, the level of the recipient's wealth generally influences the perception of what constitutes an appropriate level of sharing. These differences are, however, much more marked in the GIVE than in the TAKE game. Thus, the norms of fair sharing in the GIVE game seem much more malleable than the corresponding norms in the TAKE game.

[15] For example, the dashed red line in the top-left panel of Figure 1 shows the average appropriateness ratings of D_2's transfers in the situation where D_1 has given £4 to the recipient. The dashed red line in the top-right panel of the figure shows instead the appropriateness of the dictator's transfers in the situation where the recipient was randomly endowed with £4. The interpretation of the bottom panels is similar, except that the games use a take frame.

[16] Moreover, as in KW, we observe consistent differences between the appropriateness ratings of transfers that involve giving relative to transfers that involve taking, with the latter being generally evaluated as less appropriate than the former. See Online Appendix B for further details.

Figure 1: Elicited norms (social appropriateness) across treatments



Notes: We transformed subjects' appropriateness ratings into numerical scores using the following scale: very socially inappropriate = -1; inappropriate = -0.6; somewhat socially inappropriate = -0.2; somewhat socially appropriate = 0.2; socially appropriate = 0.6; very socially appropriate = 1.

Third, and most importantly, the levels of the recipient's wealth influence ratings of appropriateness differently depending on whether these levels have been determined by the transfers of another dictator (PEER treatment) or by chance (NOPEER treatment). In the PEER treatment giving little to the recipient is generally viewed as less appropriate when the recipient's wealth is large (i.e., when the peer has been generous) than when a recipient's wealth is small (i.e., when the peer has also given little).[17] However, in the NOPEER treatment the relation between appropriateness and recipient's wealth is reversed: giving little to the recipient is viewed as *more* appropriate when the recipient's wealth is large (i.e. when Nature selects a large endowment) than when it is small.[18]

We examine these patterns more formally using OLS regressions, reported in Table 2. In Model I we use data from the PEER treatment only, whereas in Model II we use data from the NOPEER treatment only. In both regressions, the dependent variable measures the appropriateness of the dictator's transfers in the five different situations. We regress this on the amount that the dictator transfers to the recipient ("Amount transferred by Dictator"), the amount that the peer (PEER treatment) or Nature (NOPEER treatment) transfers to the recipient ("Amount transferred by Peer/Nature"), and an interaction between these two variables. Moreover, to gauge the extent to which the influence of peers varies across the GIVE and TAKE games, we also include a dummy variable taking value 1 for observations in the TAKE game, and an interaction between the TAKE dummy and the "Amount transferred by Peer/Nature" variable.

[17] For example, in the GIVE game (top-left panel of Figure 1), giving £2 to the recipient is viewed as socially inappropriate (an average rating of -0.36) when the peer gives £4 to the recipient (dashed red line), but as socially appropriate (an average rating of 0.14) when the peer gives £0 to the recipient (solid blue line). Wilcoxon signed rank test result: $p < 0.001$.

[18] For example, in the GIVE game (top-right panel of Figure 1), giving £2 to the recipient is viewed as socially appropriate (an average rating of 0.28) when the recipient receives an endowment of £4 (dashed red line), but as socially inappropriate (an average rating of -0.04) when recipient receives an endowment of £0 (solid blue line). Wilcoxon signed rank test result: $p < 0.001$.

Table 2: The influence of peers' behavior on social appropriateness

	Model I PEER treatment	Model II NOPEER treatment
Amount transferred by Dictator	0.359*** *(0.022)*	0.411*** *(0.015)*
Amount transferred by Peer/Nature	-0.117*** *(0.019)*	0.088*** *(0.013)*
Amount transf. by Peer/Nature * Amount transf. by Dictator	0.019*** *(0.006)*	-0.009* *(0.005)*
TAKE	-0.204*** *(0.056)*	-0.110* *(0.058)*
Amount transf. by Peer/Nature * TAKE	0.052** *(0.020)*	-0.037*** *(0.013)*
Constant	-0.521*** *(0.063)*	-0.895*** *(0.050)*
N.	*1800*	*1550*
R^2	*0.66*	*0.71*

Notes: OLS regressions. Dependent variable is the appropriateness of dictator's transfers. Standard errors in parentheses, adjusted for intragroup correlation (subjects are used as independent clustering units). Significance levels: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

The regressions reveal that in both the PEER and the NOPEER treatments more generous transfers by the dictator are viewed as more appropriate than ungenerous transfers. The effect of increasing the dictator's transfer on its evaluation of appropriateness is 0.359 + 0.019 * "Amount transferred by Peer" in the PEER treatment and 0.411 - 0.009 * "Amount transferred by Nature" in the NOPEER treatment. In both cases, the effect is positive for any possible amount transferred by the peer or Nature.

To gauge how changes in the recipient's wealth affect the judgments of appropriateness of the dictator's transfers, we need to inspect the coefficients of the variable "Amount transferred by Peer/Nature" and the interaction term "Amount transferred by Dictator * Amount transferred by Peer/Nature" (as well as the interaction with the TAKE dummy, for the TAKE game). In the PEER treatment, the peer's generosity negatively influences the judgments of appropriateness of the dictator's transfers. This effect is particularly marked for ungenerous dictator's transfers, while the influence of peers wanes for more generous dictator's transfers, as indicated by the

positive and significant coefficient of the interaction term between the "Amount transferred by Dictator" and "Amount transferred by Peer/Nature" variables. In contrast, in the NOPEER treatment the judgments of appropriateness of the dictator's transfers become more lenient the higher is the endowment that Nature transfers to the recipient. Again, this effect is particularly marked for ungenerous dictator transfers and it diminishes as dictators transfer more money to the recipient, as indicated by the negative and significant coefficient of the interaction term.

Finally, in both treatments, the impact of the recipient's wealth on norms is significantly weaker in the TAKE than in the GIVE game. This can be seen by noticing that, in both the PEER and the NOPEER treatments, the coefficient of the interaction term "Amount transferred by Peer/Nature * TAKE" takes an opposite sign relative to the "Amount transferred by Peer/Nature" variable. In both cases the effect is significant at least at the 5% level.

To account for the ordinal nature of the norms data, we ran additional ordinal probit regressions. The results are similar to those reported in Table 2. Moreover, we complement the regression analysis from Table 2 by a further specification in which we pool the data from the PEER and NOPEER treatment and include a PEER treatment dummy as well as all relevant interactions. The results show that the differences between the PEER and NOPEER treatment discussed above are highly significant. Both supplementary regression tables are presented in Online Appendix D.

Taken together, these results show that the behavior of peers can have a strong, systematic influence on the perception of what constitutes a norm of fair sharing in our setting. What are the behavioral implications of these results? Assume that, as in the model sketched in section 2, individuals trade off monetary payoff and norm-compliance utility, whereby individuals gain utility from choosing actions that are viewed as socially appropriate and suffer a disutility from choosing socially inappropriate actions. Within this framework, one would expect a negative effect of the recipient's endowment on giving in the NOPEER treatment: norm-compliant dictators should be more generous when the recipient possesses a small endowment because then ungenerous transfers are more inappropriate (and hence result in stronger disutility) than when the recipient has a large endowment. In contrast, one would expect a positive relation between the peer's and the dictator's transfers in the PEER treatment. In this case, ungenerous transfers are more appropriate when the recipient is poorer than when the recipient receives a larger transfer

from the peer. Moreover, we would expect these effects to be stronger in the GIVE than in the TAKE version of the game. We summarize these behavioral predictions as follows:

> ***Hypothesis 1:*** *In the NOPEER treatment, dictator's transfers correlate negatively with the recipient's initial wealth.*
>
> ***Hypothesis 2:*** *In the PEER treatment, dictator's transfers correlate positively with the amount that the recipient received from the peer.*
>
> ***Hypothesis 3:*** *These effects are stronger in GIVE than in TAKE games.*

In the next sub-section we present the data from our behavioral experiments to examine the extent to which the observed variations in social appropriateness of transfers translate in differences in behavior.

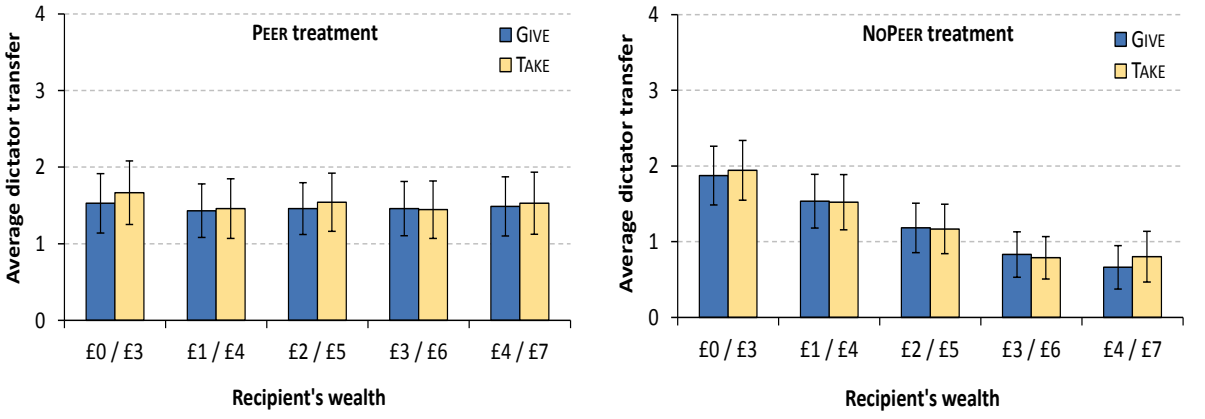
4.2. Behavioral experiments: The influence of peers on sharing behavior

Figure 2 shows the average monetary transfers made by dictators in the PEER (left panel) and NOPEER (right panel) treatments across the five possible sub-games of the game. In each panel the figure reports the average transfers made in the GIVE (dark bars) and TAKE (light bars) versions of the games. In the TAKE game, transfers have been rescaled to give a score between £0 and £4, to ease comparability with the GIVE game.[19]

The figure shows that there is on average no clear relation between the dictator's transfers and the recipient's wealth in the PEER treatment, both in the GIVE and TAKE versions of the games. Thus, whether or not the peer is generous with the recipient does not seem to affect the dictator's sharing decisions. In contrast, a negative relation between dictator's sharing and recipient's wealth seems to emerge in the NOPEER treatment, in both versions of the game. Thus, dictators seem to behave less generously towards recipients that have randomly received larger endowments.

[19] Since a transfer of -£3 (i.e., taking £3 from the recipient) in the TAKE game has the same consequences for final wealth as a transfer of £0 in the GIVE game, the transfer of -£3 has been rescaled to £0. Similarly, transfers of -£2, -£1, £0 and £1 in the TAKE game have been rescaled to £1, £2, £3 and £4, respectively.

Figure 2: Dictator's transfers across treatments



Notes: Bars indicate 95% confidence intervals.

Table 3 reports OLS regressions of dictator's transfers on a variable measuring the amount that the peer (PEER treatment) or Nature (NOPEER treatment) transfers to the recipient, a dummy variable taking value 1 for observations in the TAKE game, and an interaction between the two variables. Similar to Table 2, we run separate regressions for the PEER treatment (Model I) and the NOPEER treatment (Model II).

Table 3: The influence of peers' behavior on dictators' transfers

	Model I PEER treatment	Model II NOPEER treatment
Amount transferred by Peer/Nature	-0.006 *(0.052)*	-0.313*** *(0.040)*
TAKE	0.103 *(0.283)*	0.006 *(0.281)*
Amount transferred by Peer/Nature * TAKE	-0.024 *(0.067)*	0.011 *(0.063)*
Constant	1.483*** *(0.195)*	1.842*** *(0.197)*
N.	*720*	*710*
R^2	*0.001*	*0.086*

Notes: OLS regressions. Dependent variable is dictator's transfers. Standard errors in parentheses, adjusted for intragroup correlation (subjects are used as independent clustering units). Significance levels: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Model I confirms that there is on average no evidence of peer effects in the GIVE version of the PEER treatment: the amount transferred by the peer has no significant influence on the amount transferred by the dictator ($p = 0.914$). This similarly holds in the TAKE version, as indicated by the insignificant coefficient of the interaction term "Amount transferred by Peer/Nature * TAKE" ($p = 0.727$).

In contrast, the recipient's wealth is negatively related to the dictator's transfers in the GIVE version of the NOPEER treatment. Model II shows that increasing the recipient's wealth by £1 reduces the dictator's giving by about £0.30, and the effect is significant at the 1% level. This negative relation between recipient's wealth and giving is not different across the GIVE and TAKE versions of the game, as indicated by the insignificant coefficient of the interaction term ($p = 0.858$).

These results are only partially in line with the results of the norm-elicitation experiment. The negative relation between recipient's wealth and dictator's transfers in the NOPEER treatment is consistent with Hypothesis 1. However, the results of the norm-elicitation experiment also suggest that we should observe a positive relation between recipient's wealth and dictator's transfers in the PEER treatment (Hypothesis 2). Our data do not support this conjecture. Moreover, the norm-elicitation experiment suggests that the norm of fair sharing may be more malleable in the giving than taking setting (Hypothesis 3). However, we do not observe any difference between GIVE and TAKE games in the extent to which the recipient's wealth affects dictator's sharing. More generally, we see only small differences in dictator's behavior between the GIVE and TAKE games, and only in some subgames of the PEER treatment. This is interesting because KW have shown that using give/take frames in dictator games can produce strong differences in behavior. However, we cannot replicate this result: in our NOPEER treatment, which is most similar to the games used by KW, we do not observe any difference in dictator sharing between GIVE and TAKE games, despite the existence of differences in the norms that apply to these games (see Online Appendix C for further detail).

5. EXPLAINING THE EXPERIMENTAL DATA

What can explain the observed discrepancies between the norm-elicitation and behavioral experiments? One striking aspect of the behavioral data is that we observe substantial heterogeneity at the individual level in the extent to which dictators are influenced by the level of

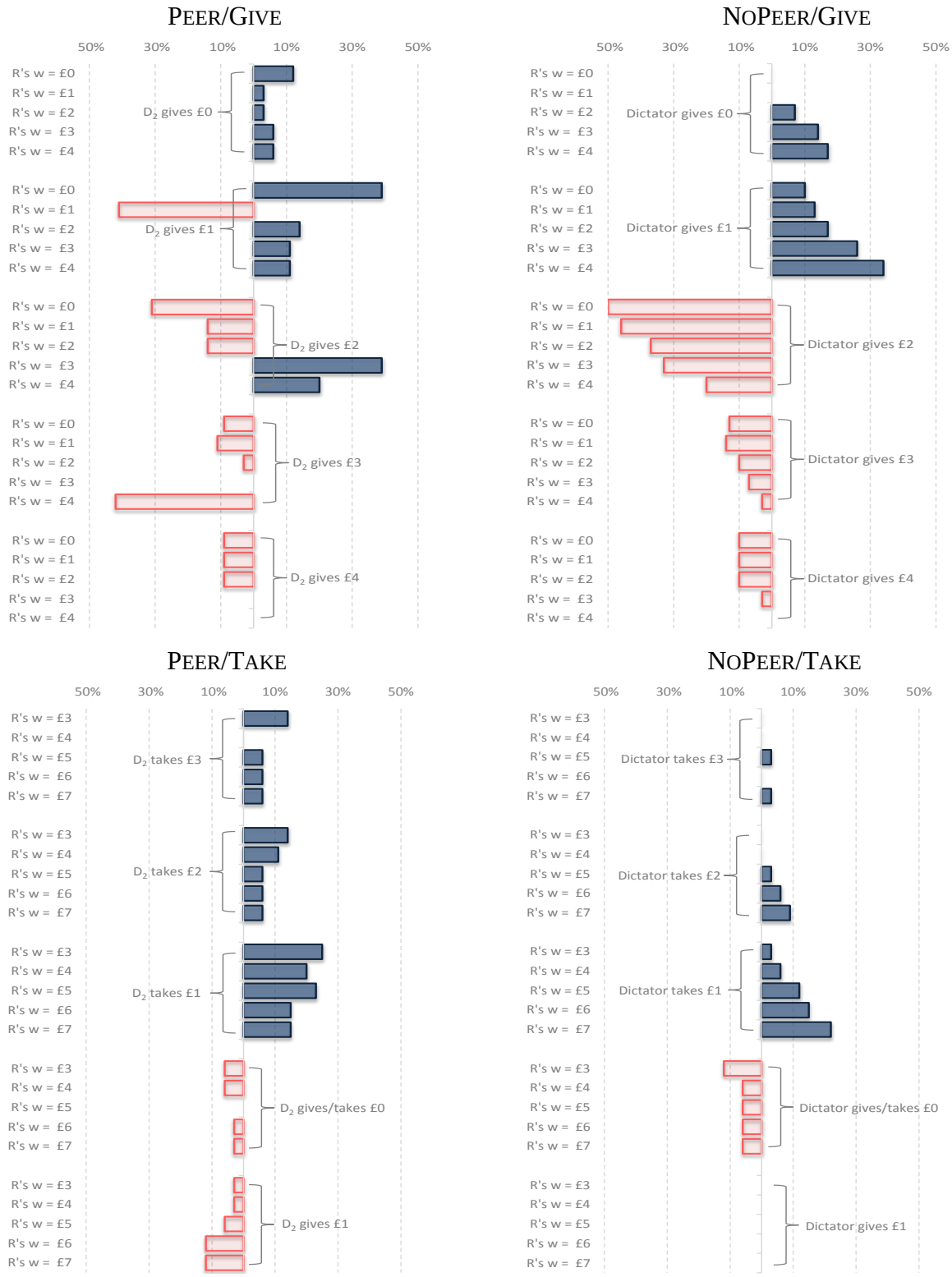
wealth of recipients (see Online Appendix D for more details). About half of the dictators are not affected by the recipient's wealth and opt for the same monetary transfer across all five sub-games. A third of dictators reduce their transfer as the recipient's wealth increases, whereas about a tenth of dictators respond positively to increases in the recipient's wealth. Our findings are similar to those reported by Panchanathan et al. (2013) in a three-person dictator game that is closely related to our PEER/GIVE treatment. They find that about half of dictators do not respond to variations in the peer's behavior, a third give more when the peer gives less, and thirteen-percent give more when the peer gives more.

This suggests that there may be substantial heterogeneity in the extent to which dictators are willing to comply with norms of fair sharing, or in the extent to which they recognize these norms as applicable. Alternatively, (at least some) dictators may be driven by other types of considerations (e.g. inequity aversion; guilt aversion), that may conflict with normative considerations and pull behavior away from compliance with norms of fair sharing. The next sub-sections investigate these potential explanations.

5.1. Norm ambiguity

A first possible explanation for our experimental results is that there may be substantial disagreement among subjects about what constitutes a norm of appropriate behavior in our experiments. As we discussed earlier (section 4.1), in the absence of peers, individuals seem to apply a Rawlsian norm of fair sharing in our experiments, whereby the appropriateness of giving depends in part on the level of need of the recipient. When the peer is present, a different normative consideration is introduced as individuals recognize that the appropriateness of giving also depends on the peer's behavior (what Cialdini, 2001 refers to as the "principle of social proof"). Our norm experiments show that *on average* the principle of social proof overrides the Rawlsian norm of sharing in the PEER treatments (see Figure 1). Nevertheless, it is conceivable that both norms remain active in our experiments, exerting divergent influences on behavior and potentially explaining the weak support for the norms model in the PEER treatments.

Figure 3: Disagreement on the appropriateness of actions across treatments



Notes: The bars show the percentage of subjects disagreeing with the majority view about the appropriateness of an action. Dark (blue) bars indicate that a minority of subjects rates an action as appropriate, when most subjects rate it as inappropriate. Light (red) bars show disagreement in the opposite direction.

To examine this, we take a closer look at the norms data. Recall that in the norm-elicitation experiment subjects could rate the appropriateness of actions on a scale with three levels of "inappropriateness" (very inappropriate, somewhat inappropriate, inappropriate) and three levels of "appropriateness" (very appropriate, somewhat appropriate, appropriate). Figure 3 shows the percentage of subjects disagreeing with the majority view about the appropriateness of each action across the various situations that they rated.[20] We say that a majority of subjects rate an action as appropriate (inappropriate) if the sum of the relative frequencies of the ratings "very appropriate", "somewhat appropriate" and "appropriate" is greater (lower) than 50%.The light (red) bars indicate that there is a minority of subjects assigning one of the three levels of "inappropriateness" to an action, while the majority rated the action as appropriate. The dark (blue) bars show disagreement in the opposite direction (the majority view the action as inappropriate and a minority rates it as appropriate). For instance, the first dark bar in the top left panel of the figure shows that in the PEER/GIVE treatment 12% of subjects rated the action "give £0" as appropriate in the scenario where the peer also gives £0, indicating that the remaining 88% of subjects rated it as inappropriate.[21]

To assess the presence of norm ambiguity, consider first the NOPEER/GIVE treatment (top right panel). In most cases, relatively few subjects (less than 20%) disagree on the social appropriateness of actions. The main source of disagreement among subjects is the action "give £2", which between one-fifth and one-half of subjects view as inappropriate in contrast with the majoritarian view that the action is appropriate. Nevertheless, apart from this action, the general picture emerging from the NOPEER/GIVE treatment is that there is a reasonably low degree of ambiguity about the social norm in this setting.

Consider now the PEER/GIVE treatment (top left panel). As in the NOPEER/GIVE treatment, there is little disagreement about the actions "give £0" and "give £4". Also as in NOPEER/GIVE, subjects tend to disagree on how to rate the action "give £2". However, relative to the NOPEER/GIVE treatment, subjects also disagree more on how to rate the actions "give £1" and

[20] The figure builds on Tables B1-B5 in Online Appendix B, which report the full distributions of appropriateness ratings across our treatments.

[21] Note that the lowest possible level of disagreement occurs when all subjects agree on rating an action as either appropriate, or inappropriate. This is the case, for example, for the action "give £0" when the recipient's wealth is £0 in the NOPEER/GIVE treatment: the absence of a bar in Figure 3 indicates that all subjects agreed on how to rate that action. On the other hand, the highest possible level of disagreement occurs when half of the subjects rate an action as appropriate and the other half rate it as inappropriate. This is the case for the action "give £2" when the recipient's wealth is £0 in the NOPEER/GIVE treatment.

"give £3". For both actions there are at least some scenarios where about 40% of subjects disagree with the majority view. Moreover, the source of disagreement seems to be related to the behavior of the peer. For example, when the peer gives £1 most subjects view the dictator action "give £1" as appropriate, presumably following the principle of social proof. However, 41% of subjects disagree and rate it as inappropriate, presumably following a Rawlsian norm similar to the one that subjects recognize in the NOPEER treatment. As another example, the dictator action "give £3" is generally viewed as appropriate by a majority of subjects. However, when the peer gives £4, 42% of subjects rate this action as inappropriate, again presumably because this action compares unfavorably with the peer's action. Overall, the observed patterns of disagreement suggest that observing what a peer has decided to do may introduce some ambiguity about the social norm.

Finally, Figure 3 corroborates our previous observation that the norm in the TAKE treatment (bottom panels) is substantially less malleable than the norm in GIVE. For all actions and in both the PEER and NOPEER condition, very few subjects disagree with the majoritarian view about the appropriateness or inappropriateness of actions. The degree of agreement seems somewhat stronger in the NOPEER condition, but again the differences are small.

To summarize, this qualitative analysis suggests that disagreement among subjects about what constitutes a norm of appropriate behavior can go some way in explaining the lack of support for the norm model in our experiments.

5.2. Heterogeneity in norm compliance

Another explanation for our experimental results is that there may be heterogeneity in preferences for norm compliance in the population of dictators we sampled for our experiment. Thus, even if norms of fair sharing were prominent and clear in the population, not all dictators would be willing to follow these norms. Moreover, the dictators' willingness to follow norms may itself vary across treatment conditions. To explore these possibilities, we follow the econometric methodology used by KW and related papers and investigate the extent to which elicited norms can predict actual behavior in our experiments. Differently from previous papers, we use a mixed logit model (see, e.g., Train, 2003) that allows for heterogeneity in the concerns for norm compliance and allows us to estimate, for each treatment, the share of dictators that are in fact guided by a desire to follow social norms.

In order to do so we follow the theoretical framework introduced in section 2 and assume that the utility that dictator *i* derives from choosing a monetary transfer *k* in situation *s* depends on the material payoff implied by the transfer and the social appropriateness of the transfer. We also assume that dictators are heterogeneous in their concerns for norm compliance. Thus, dictator *i*'s utility takes the form:

$$U_{iks} = \theta\pi_{iks} + \gamma_i N_{ks} + \varepsilon_{iks}$$

where π_{iks} is dictator *i*'s material payoff associated with transfer *k* in situation *s*, and N_{ks} is the average appropriateness rating of the transfer, as measured in the norm-elicitation experiment. The parameter θ measures the weight that dictators place on monetary payoffs, while γ_i is an individual-specific parameter measuring the extent to which the dictator cares about norm compliance. Note that we are assuming homogenous preferences for money across subjects, but we allow for heterogeneous preferences for norm compliance. The term ε_{iks} is a random error term, assumed to be i.i.d. extreme value distributed.

Conditional on γ_i, the probability that dictator *i* chooses monetary transfer *k* in situation *s* depends on the utility associated with that choice, U_{iks}, relative to the utility associated with the other alternatives:

$$L_{iks}(\gamma_i) = \frac{\exp\{U_{iks})\}}{\sum_{j=1,\dots,5}\exp\{U_{ijs}\}}, k = 1, \dots, 5.$$

Also conditional on γ_i, the probability of observing a given sequence of monetary transfers by dictator *i* across the five possible situations (i.e. the five sub-games of the game) is given by:

$$P_i(\gamma_i) = \prod_{s=1,\dots,5} L_{ik(i,s)s}(\gamma_i)$$

where $k(i,s)$ denotes the choice of dictator *i* in subgame *s*. The unconditional distribution of a sequence of monetary transfers involves integrating the conditional probability over the distribution of γ:

$$P_i = \int P_i(\gamma_i) f(\gamma|\omega) d\,\gamma$$

where $f(\gamma|\omega)$ is the density of γ and ω are the parameters of the distribution. We assume that γ follows a normal distribution with mean g and standard deviation h, $\gamma \sim N(g, h)$, and we estimate the parameters of the distribution using maximum simulated likelihood (Hole, 2007).

Table 4 presents the results of the estimation. We estimate four different models, one for each treatment/game combination.[22] In all models, the coefficient on own payoff is positive and highly significant, indicating that dictators are more likely to choose transfers that yield higher own payoffs.

Table 4: Mixed logit models

	Model I PEER / GIVE	Model II PEER / TAKE	Model III NOPEER / GIVE	Model IV NOPEER / TAKE
Own payoff	0.781***	0.654**	3.186***	0.890***
	(0.199)	*(0.268)*	*(0.988)*	*(0.299)*
Norm rating (mean)	0.182	-1.257	6.089**	-0.462
	(1.036)	*(1.166)*	*(2.747)*	*(1.119)*
Norm rating (st. dev.)	7.132***	7.288***	4.832***	3.986***
	(1.216)	*(1.278)*	*(0.715)*	*(0.664)*
N.	*1800*	*1800*	*1775*	*1775*
Log-likelihood	*-395.212*	*-370.768*	*-381.325*	*-398.907*

Notes: Mixed logit regressions. The dependent variable takes value 1 for the monetary transfer that was chosen by a dictator in a given sub-game, and value 0 for the other transfers that were not chosen. Standard errors in parentheses. Significance levels: *** p < 0.01; ** p < 0.05; * p < 0.1.

Turning to norm compliance, Table 4 reports the mean and standard deviation of the norm rating coefficients. Looking first at the estimates of the mean, the regressions confirm the limited success of the norms compliance model in explaining the behavioral data. In the PEER treatment (Models I and II) the average effect of norm ratings on the choice of monetary transfers is not significantly different from zero: on average, dictators do not choose transfers that are deemed more socially appropriate more often. In the NOPEER treatment (Models III and IV) the effect is positive and significant in the GIVE game, indicating that the average dictator is more likely to

[22] In Online Appendix D we report additional analyses of norm compliance where i) we perform the analysis using the median rather than the mean of the distribution of ratings in order to reduce the influence of outliers (normative disagreement) that we have discussed in the previous sub-section; ii) we address the issue of collinearity between the own payoff and average norm rating variable following an econometric approach suggested by Thomsson and Vostroknutov (2016), and iii) we estimate one model of norm compliance pooling data from the four different treatments. The results of this additional analysis support the conclusions discussed in the main text.

choose transfers that are more socially appropriate. The effect is, however, not significantly different from zero in the TAKE game.

Lastly, note that in all models the standard deviations of the norm coefficients are positive and highly significant, confirming that there is substantial heterogeneity in preferences for norm compliance in our sample. We can use the estimated means and standard deviations of the coefficients to make inferences on the share of dictators that place a positive weight on norm compliance. In particular, the share of dictators placing a positive weight on norm compliance is given by $\Phi(\hat{g}/\hat{h})$, where Φ is the cumulative normal distribution, and $\hat{g}$ and $\hat{h}$ are the mean and standard deviation of the norm ratings coefficients (Hole, 2007). In the PEER treatment and in the TAKE game of the NOPEER treatment, we calculate that between 51% and 57% of dictators place a positive weight on the norms rating, i.e. display a preference for norm compliance. Thus, only about half of our subjects seem to care about the appropriateness of actions when they make their choices. The fraction of norm-compliant individuals is comparably higher in the GIVE game of the NOPEER treatment: here the share of norm-compliant dictators is about 90%. Indeed, as discussed in the previous sections, the GIVE game of the NOPEER treatment is the one experimental condition where the observed behavioral patterns are most consistent with the elicited norms.

5.3. Other behavioral explanations: Inequity aversion and guilt aversion

So far we have considered explanations related to the existence of heterogeneity in norm compliance or in the understanding of what constitutes a norm. However, it is also possible that participants are motivated by other types of behavioral considerations instead of (or in addition to) normative concerns. Here we consider two popular behavioral motives that may have particular bite in the context of our dictator games.

First, distributional preferences may play a role, especially because our PEER and NOPEER treatments are based on three-person and two-person games respectively, and this affects the implications that choices have for the redistribution of payoffs across players. For example, when the recipient's wealth is £3 in the NOPEER/GIVE treatment, there is no action by the dictator that can equalize payoffs between the two players (dictator and recipient). However, when the recipient's wealth is £3 in the PEER/GIVE treatment, giving £3 to the recipient equalizes earnings between the dictator and the peer. Previous studies have found that payoffs of third

parties have strong influences on sharing behavior, even in settings where the payoff of the third party is completely exogenous and cannot be affected by players' decisions (e.g., McDonald et al., 2013). Thus, payoff comparison considerations may explain some of the differences between the PEER and NOPEER treatments.

In order to explore the extent to which payoff comparisons may explain our experimental results, we apply the Fehr and Schmidt (1999) model of inequity aversion to our games. In this model, the decision-maker *i*'s utility is given by:

$$U_i = \pi_i - \frac{\alpha_i}{n-1}\sum_{j \neq i} max\{\pi_j - \pi_i, 0\} - \frac{\beta_i}{n-1}\sum_{j \neq i} max\{\pi_i - \pi_j, 0\}$$

where π_i is the player's material payoff from the game and n is the number of players in the game (2 in NOPEER and 3 in PEER). The parameter α_i measures her aversion to disadvantageous payoff inequality, and the parameter β_i measures her aversion to advantageous payoff inequality. Fehr and Schmidt assume that $\beta_i \leq \alpha_i$ and $0 \leq \beta_i < 1$.

Can the Fehr and Schmidt model explain the patterns of choices in the behavioral experiments? It turns out that the model does not predict behavior in either of the treatments. In the NOPEER treatment, the model predicts no relation between the recipient's wealth and dictator's giving. This is because in our games the dictator is always at least as well off as the recipient, at all levels of the recipient's wealth and for all the actions available to the dictator. This implies that the model predicts that the dictator either gives nothing (if $\beta_i < 1/2$) or gives £4 (if $\beta_i \geq 1/2$), regardless of the wealth of the recipient. In contrast with this prediction, our data from the NOPEER treatments show that dictators reduce their giving as the recipient's wealth increases.

As for the PEER treatment, the Fehr and Schmidt model predicts that, if D_2 gives any money to the recipient (which occurs when $\beta_i \geq 2/3$), the amount given is positively correlated with the peer's giving. This is because, in the three-person PEER games, D_2 compares her payoff not only with the recipient but also with the peer. Thus, because of disadvantageous inequality aversion, D_2 is willing to give money to the recipient only to the extent that the peer also gives money, so that her payoff does not fall behind the peer's payoff. Our data do not support this prediction and show no relation between the two dictators' actions in the PEER treatment.[23]

[23] This prediction hinges on the assumption that both the recipient and peer are part of the dictator's reference group. However, the results in McDonald et al. (2013) suggest that whether third parties are part of one's reference group may partly depend on self-serving considerations: in their ultimatum games responders' minimum acceptable offers

A second potential motive that may play a role in our setting is guilt aversion (e.g., Charness and Dufwenberg, 2006). Guilt averse dictators suffer a disutility if they leave the recipient with less money than what the recipient expects to receive. Guilt aversion may predict differences in behavior between our treatments because in the PEER treatments dictators may adjust their beliefs about what the recipient expects to receive based on the giving of their peer. For instance, observing that the peer gives £4 to the recipient may induce dictators to adjust their beliefs upwards as they may interpret the peer's actions as a signal that the peer thinks that the recipient expects £4 from a dictator. This signal is instead unavailable to dictators in the NOPEER treatment.

In order to test models of guilt aversion, one needs second-order beliefs of dictators about what recipients expect to receive. This is particularly important if one wishes to test whether these models are observationally different from models of norm compliance (see, for example, Krupka et al., 2016). Because our design is already quite complex, we have not elicited beliefs and so we cannot perform a formal test of guilt aversion as a potentially distinct explanation of our data. Nevertheless, if one plausibly assumes a positive correlation between dictators' second-order beliefs and peer's giving (along the lines discussed above), then a positive relation between peer's and dictator's giving should emerge in the PEER treatments. At the aggregate level our data do not support this prediction. In this sense, we think that guilt aversion is an unlikely explanation of our behavioral results.

6. CONCLUSION

Our study shows that the behavior of others can have important effects on the way individuals perceive what constitutes socially appropriate behavior in a given situation. In our dictator game experiments, whether or not an action is viewed as socially appropriate partly depends on the extent to which another dictator (the "peer") is willing to take it. These strong effects of peer behavior on norms do not translate, however, into corresponding effects in actual behavior in the aggregate. In particular, we do not observe a positive correlation between the dictator's and peer's generosity in the treatment where dictators receive information about peer

(MAO) decrease in the payoff paid to a passive third party. However, when the third party's payoff is too low, responders disregard the comparison and their MAO are similar to those in a game without third parties.

behavior. Thus, generous peers do not breed more generosity, despite the strong impact of peer behavior on the average social acceptability of generous and ungenerous behavior.[24]

We discuss a number of possible explanations for the discrepancies between normative considerations and actual behavior observed in our experiments. We find evidence of heterogeneity in normative views that is related to the presence of peers: the peer's behavior introduces normative cues that are in contrast with the notion of fair sharing that subjects seem to hold when peers are absent (see McDonald et al. 2013 for related evidence). This conflict in normative views can explain why we find a large fraction of subjects unwilling to comply with the average view of appropriateness and why dictators fail to follow the example of peers. Thus, our results suggest that the extent to which peers reinforce or counteract pre-existing notions of appropriateness may be an important determinant of the strength of peer effects.

Our results raise a number of interesting questions regarding the existing approaches to norm compliance (e.g., Krupka and Weber, 2013). The current focus on normative consensus (the average or most frequent notion of what is appropriate) may be limiting in contexts where there are conflicting normative views: understanding the interplay between heterogeneous norms and norm compliance seems crucial in order to explain behavior in such situations.[25] In this sense, the use of within-subject experimental designs, where normative views and behavior are collected from the same subjects, may prove a useful research tool for further research in this area, since they would allow to correlate at the individual level behavior and beliefs about what constitutes a norm in a given situation.[26]

Another interesting question relates to the role of sanctions for norm compliance. Recent research has shown that individuals are willing to use direct and indirect punishment to enforce social norms at a cost to themselves even in one-shot interaction with strangers, and this can help explain why norms are adhered to (Balafoutas and Nikiforakis, 2012; Balafoutas et al., 2014). Punishment opportunities may also play a role in resolving norm heterogeneity, for instance if

[24] In practice there are other mechanisms through which one's generosity may breed further generosity, although these are excluded by design in our experiment. Leider et al. (2009) for instance show that generous people tend to have friends who are more generous, suggesting that either subjects match assortatively with those who have similar preferences or that preferences may be malleable and become more similar over time.

[25] See also Dreber et al. (2013) on the role of norm ambiguity in explaining the strength of framing effects.

[26] Of course, the use of within-subject designs raised concerns about potential response biases that may exist when the same subject participates sequentially in the norm-elicitation and behavioral experiments (e.g., self-serving biases in reporting normative judgments). Recent evidence, however, suggests that the impact of such biases are small in the context of the Krupka-Weber norm-elicitation method (Erkut et al., 2015; D'Adda et al., 2016).

subjects are willing to enforce only some of the conflicting normative views that are present in the population, but not others. In our setting there was no possibility of norm enforcement and so we cannot test this hypothesis in our data, but this could be an interesting avenue for further research.

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