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Are groups really more dishonest than individuals?

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Abstract

Groups are often found to be more rational than individuals. In lying games, this implies that groups are more dishonest. We scrutinise this conclusion in a setup where there are true moral concerns associated with dishonest behaviour. In contrast to prior studies, we do not find groups to be more dishonest than individuals when a passive third party, such as a charity, is harmed by the dishonest behaviour. Instead, we find that groups can help to moderate the extent of dishonest behaviour.

JEL-classification: *C91, C92, D71.*
Keywords: *dishonesty, group decisions, communication, social norms.*

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1 Introduction

Recently much has been written about dishonesty in the laboratory (Fischbacher and Föllmi-Heusi, 2013; Gneezy, 2005; Mazar et al., 2008). One of the common findings in this literature is that groups are more dishonest than individuals (Kocher et al., 2018).[1]

In most of these studies, dishonesty implicitly only ever harms the experimenter since the extra earnings subjects receive by acting dishonestly come from the experimenters' budget. Outside the laboratory, however, dishonesty often explicitly harms a third-party, such as the company one works in; and, if groups were really more dishonest than individuals, decision-making groups would not be so widespread around us.

In our experiments we make explicit the third-party harmed by subjects' dishonesty: a local charity. We observe that, as soon as we introduce this charity, groups stop being more dishonest than individuals. In fact we find that groups even help reduce the extent of the dishonesty. One of the reasons is that, with the charity, groups stop being echo-chambers for opinions in favour of dishonesty.

We base our experimental design on Kocher et al. (2018), itself a variant of the Fischbacher and Föllmi-Heusi (2013) die-rolling task.[2] In this task subjects roll a die and must truthfully report the number they saw, but their payoff only depend on their report, not on the number actually seen. One of the innovations of Kocher et al. (2018) is to use a video of a die roll; since the experimenter knows which video a subject saw it is possible to study dishonesty at the individual level. They compare individual and group behaviour and allow group members to chat to coordinate on a number to report.

We first replicate their experiment in our *Base* treatments and find the same result: we observe that, while individuals and groups both report dishonestly, groups are much more dishonest than individuals.

We then introduce two extensions to this basic design: the *Charity* and *CharityR* treatments. Subjects' monetary incentives remain identical across all treatments. In the *Charity* and *CharityR* treatments, however, subjects' decisions also affect the amount of money that the experimenter will anonymously donate to a local charity. In doing so, we establish an environment where dishonest behaviour harms a third-party. The *CharityR* treatments differ from the *Charity* only in that subjects' decisions are revealed to the charity.

[1] See also Conrads et al. (2013); Gino et al. (2013); Chytilová and Korbel (2014); Muehlheusser et al. (2015); Weisel and Shalvi (2015); Soraperra et al. (2017).

[2] SeeAbeler et al. (2019) for an extensive review of the literature using this task.

Our first main result is that, once we introduce the charity, we see that groups are no more likely to act dishonestly than individuals. In fact, if we look at the intensive margin, we find that dishonest groups cheat to a lesser extent than dishonest individuals. Our second main result is that group dishonesty can be contagious: subjects who were previously members of a dishonest group are more likely to act dishonestly in the future.

To understand why the introduction of the charity has such a dramatic impact, we study how individuals and groups adjust their decisions when we introduce the charity and thus change the incentives for acting (dis)honestly. We find that individual dishonesty is stable across treatments and does not respond to the introduction of the charity. This finding is consistent with Fischbacher and Föllmi-Heusi (2013) who observe that changing the consequences of dishonesty has little influence on individual dishonesty.

On the other hand, we find that groups are more dishonest in the *Base* treatments than in the *Charity* and *CharityR* treatments. To explain the difference between individuals and groups we look at the chat data and find that groups in the *Charity* and *CharityR* treatments make lesser arguments for dishonesty than groups in the *Base* treatment.

One possible explanation is that, when there are little incentives for being honest, as it is the case in the *Base* treatments, dishonest group members may find it relatively easy to express preferences for dishonesty. Those who would have otherwise acted honestly if they had made the decision alone may readily acquiescence to the preferences of a minority of dishonest group members if it helps the group to quickly arrive at a collective decision. By contrast, it is more difficult to express preferences for dishonesty if the incentive for honesty or the consequences of dishonesty are more salient, as it is the case in the *Charity* and *CharityR* treatments. Social norms and social image concerns drive what is acceptable and what is repugnant to share with the group, thus leading to voicing different arguments. In such situations, "moral reminders" (e.g., Pruckner and Sausgruber, 2013) by honest members can help drive the group towards the honest outcome.

Taken together, our findings suggest that the interplay between individual and group dishonesty depends less on subjects' own perceptions about dishonesty but rather on the social norms that affect communication about dishonest behaviour. It is hence possible that the prior experimental findings with regards to individual and group dishonesty are due the fact that subjects' not only perceive dishonesty to be innocuous but also the nature of the group interaction which encourages

Table 1: Payoffs to each player and the donations to the charity.

Die	⚀	⚁	⚂	⚃	⚄	⚅
Points	0	1	2	3	4	5
Payoff to player	0 €	2 €	4 €	6 €	8 €	10 €
Donation to charity (*Charity* and *CharityR* treatments only)	10 €	8 €	6 €	4 €	2 €	0 €

them to coordinate on the dishonest outcome.

In the next Section we present our experiment design. Section 3 reports our results. Finally, Section 4 concludes.

2 Experimental design

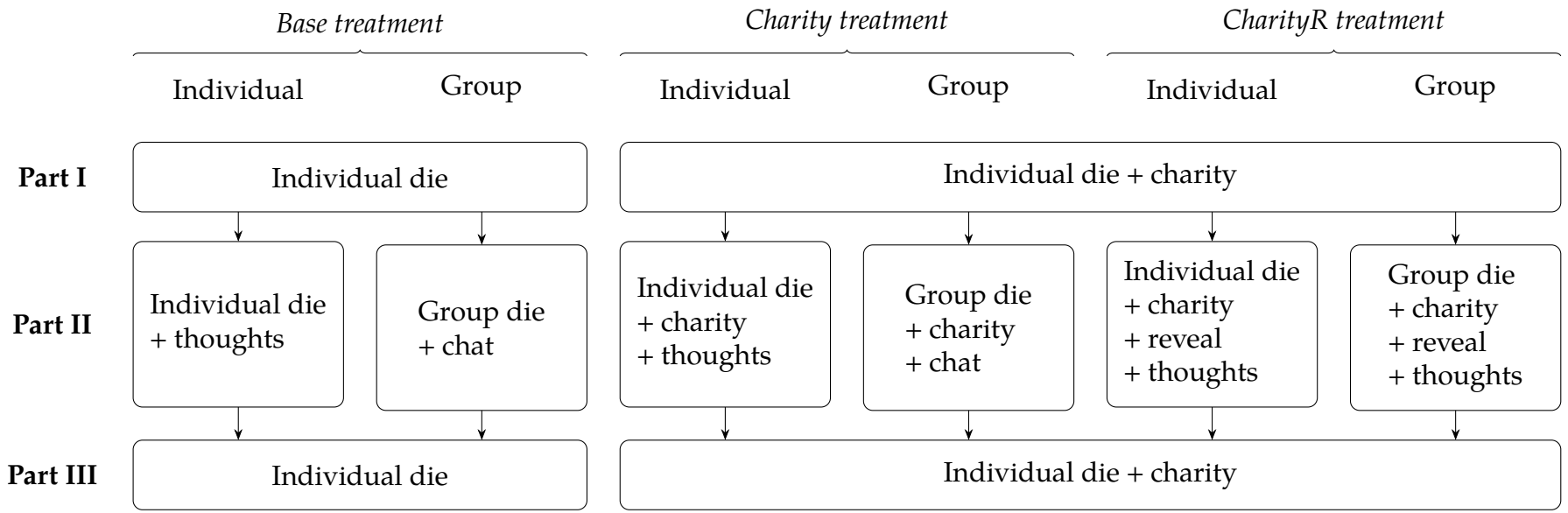
2.1 Treatments

Our experiment involves six treatments, grouped into three categories: *Base*, *Charity* and *CharityR*. Figure 1, which we will use throughout, summarises our design.

***Base* treatments.** To the left of the Figure are our *Base* individual (*I-Base*) and group (*G-Base*) treatments, which replicate the "Individual" and "GroupPC" treatments of Kocher et al. (2018).

There are three Parts to each treatment. In Parts I and III, subjects watch a video of a die roll and are asked to *truthfully* report the result of the roll—subjects earn points depending on their report. The observed roll can be ⚁, ⚂, ⚃, ⚄, ⚅ or ⚀ with equal probability. The top part of Table 1 shows that the reported die roll number is converted into points so that ⚀ corresponds to 0 points, ⚁ to 1 point, ⚂ to 2 points, and so on. Each point is worth 2 €.

What differs between the *I-Base* and *G-Base* treatments is the second part. In the *I-Base* treatment, subjects do the same **i**ndividual task as in Parts I and III. In the *G-Base* treatment, however, subjects form **g**roups of three, all observe the same die roll video, and then independently report what they observed. Group members each receive the points shown in Table 1 if they all reported the same number, and 0 points otherwise. For example, each group member receives 3 points (6 €) if all three report ⚃. On the other hand, each group member receives 0 points (0 €) if they fail to report the same die roll number.



Note. The design involves 6 treatments each consisting of 3 independent parts. We recruited 30 subjects for each of the individual (*I-Base*, *I-Charity* and *I-CharityR*) treatments and 90 subjects for each of the group (*G-Base*, *G-Charity* and *G-CharityR*) treatments.
+ charity: Subjects are informed that their decisions also affect the amounts that the experimenter donates to a local charity.
+ thought: The possibility (max 5 minutes) for subjects to write their thoughts about their decision.
+ chat: The possibility (max 5 minutes) for subjects of the same group to chat.
+ reveal: Subjects' decisions are revealed to the charity.

Figure 1: Summary of experiment design.

To coordinate, the group members can chat anonymously for up to 5 minutes through the experimental software. To keep the treatments comparable, subjects in Part II of the *I-Base* treatment are allowed 5 minutes to, if they wish, type their thoughts about the experiment.

***Charity* treatments.** The *Charity* individual (*I-Charity*) and group *(G-Charity)* treatments are identical to the respective *Base* treatments, except that they make explicit that a passive third-party, a local charity, is hurt by the report of a large number: each extra Euro given to the subject as a result of their report is not given to a local charity. For example as shown on Table 1, if a subject reports ⚄, the subject gets 6 € and the charity gets 4 €. In Part II of the *G-Charity* treatment, group members and the charity receive 0 € if the group members do not report the same die number.

***CharityR* treatments.** In the *CharityR* treatments, we revealed to the charity the die number observed and reported in Part II of the individual (*I-CharityR*) and group (*G-CharityR*) treatments, as well as the written thoughts (*I-CharityR*) and chat logs (*G-CharityR*). All of this information was anonymous. Parts I and III remain unchanged.

2.2 What can be expect?

Since our *Base* treatments replicate Kocher et al. (2018), and since they observed more dishonesty with groups than with individuals, we can expect that too. In the *Charity* and *CharityR* treatments, however, dishonesty affects a named third-party, the charity. We purposely use a charity and not another experimental subject to bring pre-existing “homegrown norms" (Schram and Charness, 2015) into the laboratory. Changes in psychological disutility stemming from social image concerns, and in social norms potentially shared in group communication, can shift the results across treatments.

In the individual treatments, subjects who observe less than 5 points face a trade-off between a monetary gain and the psychological disutility stemming from reporting more points than observed. For each point that the player over-reports, the treatments hold the monetary gain constant. Only the psychological disutility varies in part II of the respective treatments; it is arguably low in the *I-Base* treatment, moderate in the *I-Charity* treatment, and, since the charity is informed of the subjects' decisions, high in the *I-CharityR* treatment.

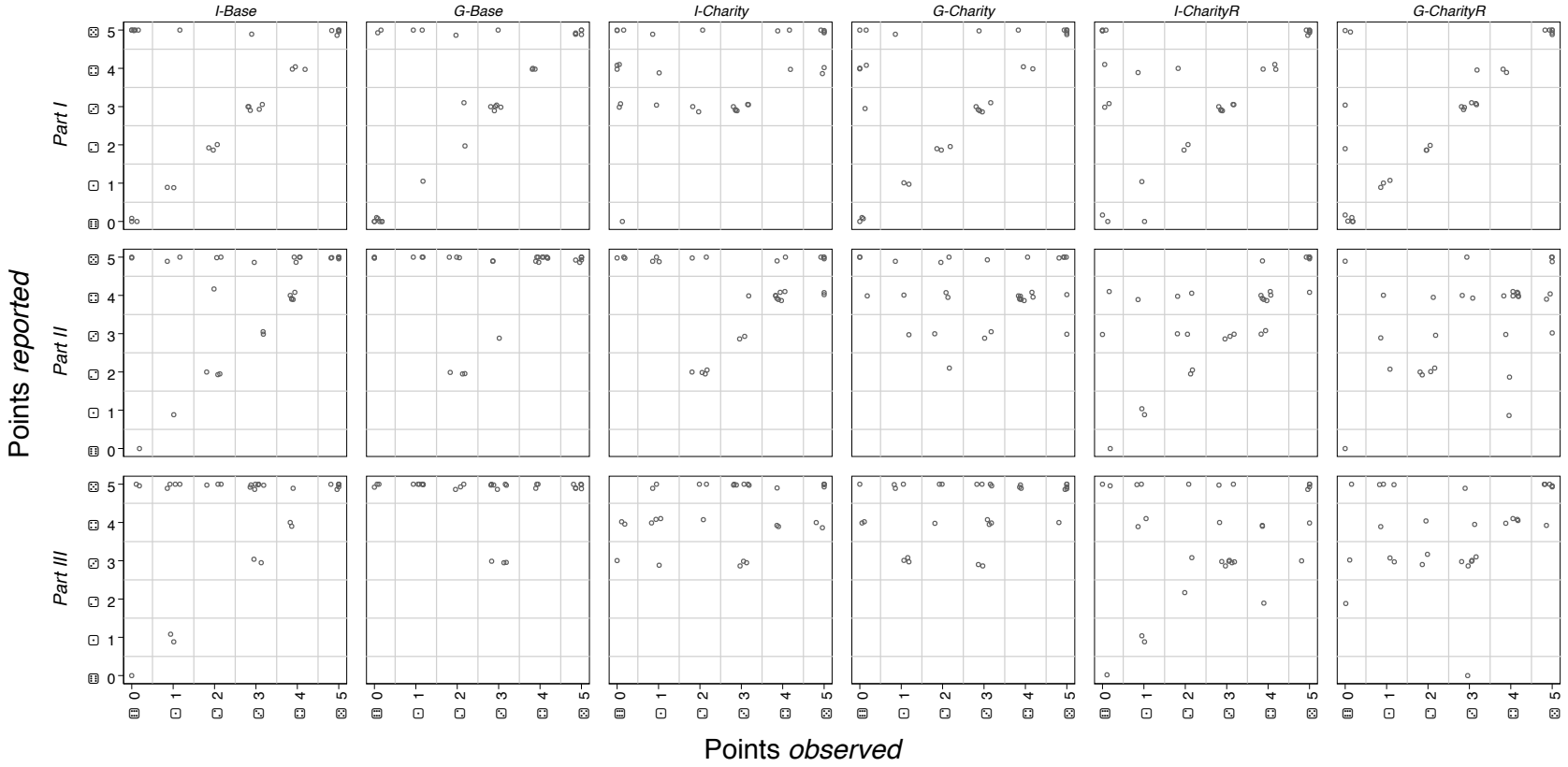
The group treatments differ from the individual treatments in the necessity for group members to coordinate their decisions in part II. When studied as a coordination game, there are multiple equilibria, some of which can be more focal than others. For groups in the *G-Base* treatment who observe less than 5 points, the equililbria where all report honestly and all report the maximum possible 5 points are intuitively focal. This is less clear in the *G-Charity* and *G-CharityR* treatments where groups may still be dishonest but report less than 5 points in order to ensure that the charity receives something—the equilibria in between the extrema where all report honestly and all report the maximum points can also be focal. Even if all group members privately prefer to report the maximum possible points, social norms can make it difficult for any member to express such preferences. In this case, the group's decision may be honest even when the majority of group members would have over-reported when making the decision alone. Hence, groups may be more honest than individuals in the *Charity* and *CharityR* treatments.

2.3 Procedures

When the experiment started, subjects were told that the experiment was made of three independent parts. At the beginning of each part they received specific instructions and answered some control questions where we made sure that subjects understood how their report could affect them and, if applicable, the charity. In particular the control questions made clear that, even if their stated task is to truthfully report the die roll, their payoffs and the donations to the charity only depended on their report.

The charity we used is a small local organisation whose members perform as clowns in nearby hospitals to entertain sick children. In the initial instructions of the *Charity* and *CharityR* treatments, we gave subjects a broad description of the charity; they were then given 5 minutes to visit its website and Facebook page to learn about its activities. In the *CharityR* treatments, in which we revealed to the charity the subjects' decisions in Part II, we also gave subjects a sample of the information we would send to the charity and we told them they would be included in blind carbon copy to the email, which we did.

The experiment was conducted at the LERN of the University of Erlangen-Nuremberg between June 2018 and March 2019. Subjects were recruited via ORSEE (Greiner, 2015). We recruited 30 and 90 subjects for each of the individual and group treatments, respectively. The experiment was programmed with zTree (Fischbacher, 2007). The instructions are presented in Appendix C.2.



Note. Each observation for the individual treatments refer to the reported and observed points for a subject. Each observation for the group treatments refer to the median reported and observed points of a matching group—subjects of the same matching group observed the same die roll number in all parts.

Figure 2: Scatterplot of observed and reported points.

Following Kocher et al. (2018) we randomly generated in the first session one sequence of die rolls for each group and used the same sequences in the next sessions. We can therefore directly compare the die reports across treatments. This procedure also ensured that subjects of the same group also observed the same die roll in Parts I and III.

At the end of each session, one of the three parts was selected at random to determine subjects' earnings and the donations to the charity. The donations were made immediately and anonymously; subjects were encouraged to witness the process.

Each experimental session lasted approximately 60 minutes. The mean earnings for subjects in the *Base*, *Charity* and *CharityR* treatments, including a show-up payment of 4 €, are 13.45 €, 12.06 € and 10.84 €.

3 Results

Figure 2 shows, for all treatments and for all parts, the numbers reported (y-axis) as a function of the numbers seen (x-axis). We organise the Figure in terms of points but also indicate the corresponding die numbers; the axis thus start with ⚃ = 0 points. In the group treatments, for ease of comparability we follow Kocher et al. (2018) and look at the median of the points reported in each group.

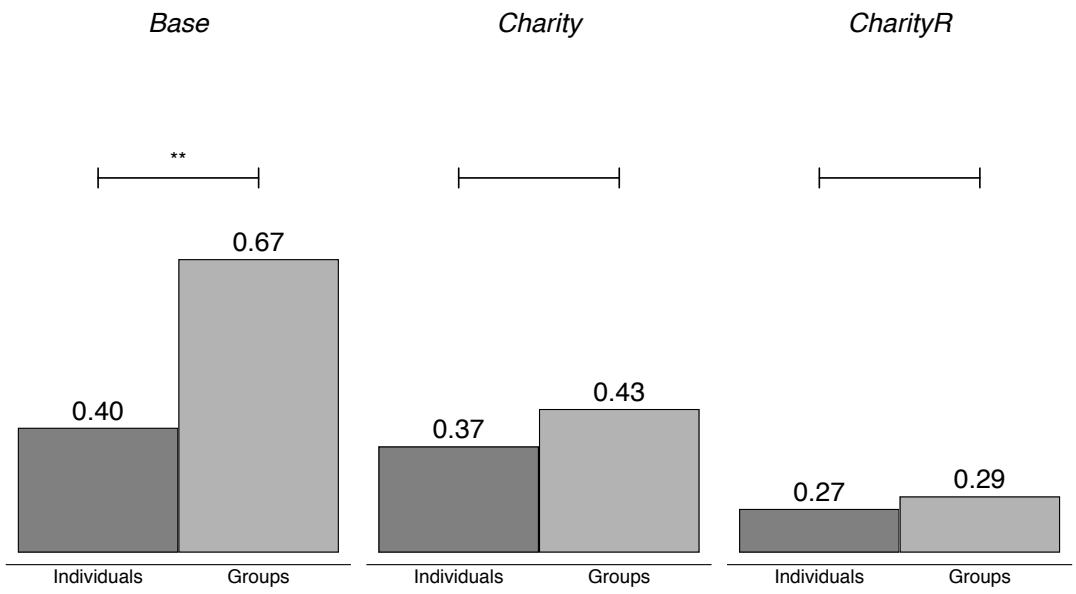
3.1 Groups are not always more dishonest than individuals

For the time being, we focus on Part II.[3] We say that individuals or groups *over-report* if their report gets them more points than if they had reported honestly.[4] Figure 3 shows the proportion of individuals and groups who over-report in Part II of each treatment.

As Kocher et al. (2018) we find that in the *Base* treatments groups over-report more than individuals: 67% of groups over-report compared to 40% of individuals ($\chi^2(1) = 4.286$, $p = 0.038$).[5] Note that our die sequences are different from the ones used by Kocher et al. (2018) (see Appendix C.1 for a comparison), which further strengthens the replicability of their finding:

[3] There group members reported the same number in 100%, 93% and 97% of the groups in part II of the *Base*, *Charity* and *CharityR* treatments.

[4] All subjects made individual decisions in part I. Here, we do not find any significant differences in the proportion of individual and group treatments subjects who over-report in the *Base* ($\chi^2(1) = 0.054$, $p = 0.815$) and *CharityR* ($\chi^2(1) = 0.742$, $p = 0.389$) treatments. There is, however, some differences in the *Charity* ($\chi^2(1) = 2.963$, $p = 0.085$) treatments. Our analysis of behaviour



Note. There are $n = 30$ observations in each bar. We also use the Pearson $\chi^2(1)$ to compare the proportion of over-reporting groups and individuals.
***, ** and * denote $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively.

Figure 3: Proportion of individuals and groups that over-report in part II.

Observation (Replication of Kocher et al., 2018)**.** *Groups over-report more frequently than individuals when dishonest behaviour harms the experimenter.*

In the treatments involving the charity, however, we do not find that groups over-report more frequently than individuals. Figure 3 shows that the proportions of over-reporting groups and individuals in the *Charity* treatments are 43% and 37% ($\chi^2(1) = 0.617$, $p = 0.432$), and, in the *CharityR* treatment, 30% and 27% ($\chi^2(1) = 0.0821$, $p = 0.774$). The differences remain insignificant ($\chi^2(1) \leq 0.753$, $p \geq 0.386$) even if we exclude instances where subjects observed a die number corresponding to 5 points, for which they could not have over-reported.

If we look, not at the proportion of individuals or groups who over-report, but at the reported points, a similar picture emerges: groups report significantly higher points than individuals in the *Base* treatments (Mann-Whitney $U = 324.5$, $p = 0.019$), but there are no significant differences in the reported points of individuals and groups in the *Charity* (Mann-Whitney $U = 423$, $p = 0.668$) and *CharityR* (Mann-Whitney $U = 438$, $p = 0.853$) treatments. These observations lead us to our first result:

in Part II will also control for behaviour in Part I.

[5]All the statistical tests we use are two-sided.

Result 1. *Groups over-report as frequently as individuals when dishonest behaviour harms a passive third party such as a charity. This holds independently of whether the third party is informed of the groups' or individuals' decisions.*

Focus now on these over-reporting individuals or groups. There are no significant differences in the points they observed in the *Base* (Mann-Whitney U = 106.5, p = 0.583), *Charity* (Mann-Whitney U = 71.5, p ≈ 1.00) and *CharityR* (Mann-Whitney U = 32.5, p = 0.727) treatments, so we can concentrate on the points they report.

Figure 4 shows the histogram of the reported points of these over-reporting individuals or groups. In the *Base* treatments, they report the same points (Mann-Whitney U = 110, p = 0.196): almost always the maximum possible. In the *Charity* treatments, however, over-reporting groups report significantly lower points (Mann-Whitney U = 44, p = 0.045) than over-reporting individuals. The difference remains significant (Mann-Whitney U = 32, p = 0.060) even after excluding instances where over-reporting individuals or groups observe 4 points, for which they could only report 5 points. In the *CharityR* treatments the effect is in the same direction but it is not significant (Mann-Whitney U = 34, p = 0.835). Hence our second result:

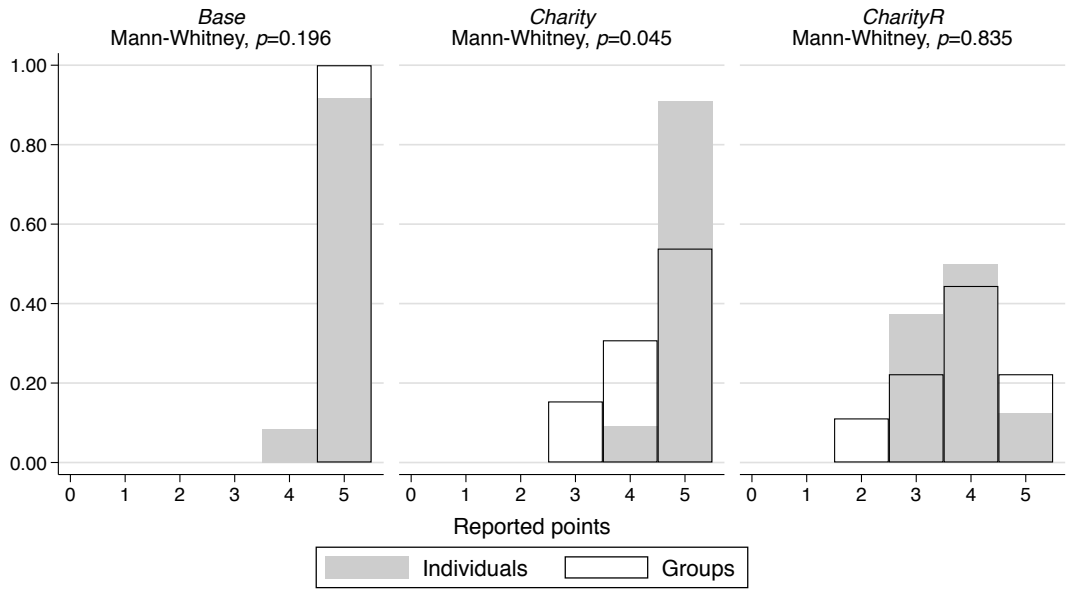
Result 2. *Groups over-report less than individuals when group members know that a third-party, the charity, is harmed by over-reporting.*

In Appendix A.1, we report regressions corresponding to Results 1 and 2 where we further control for the die roll observed in Part II, the behaviour in Part I, and gender. All the results carry through.

As expected, we observe no under-reporting in the *Base* treatments. In the treatments involving the charity, where under-reporting would allow subjects to allocate more to the charity than if they had reported honestly, we observe some under-reporting, but there are no differences between individuals and groups: the proportion of individuals and groups who under-report are 6.67% and 6.67% ($\chi^2(1) = 0.000$, p = 1.000), respectively, in the *Charity* treatments and 10% and 20% ($\chi^2(1) = 1.177$, p = 0.278), respectively, in the *CharityR* treatments.

3.2 Why are groups not more dishonest than individuals when a charity is harmed?

We have established that groups stop to over-report more than individuals when we introduce a charity. It is clear from Figure 3 that it is not because individuals



Note. The grey and white bars denote the relative frequencies of reported points by individuals and groups who over-reported in part II, respectively. We also report the two-tail Mann-Whitney p-values for comparisons of reported points by over-reporting individuals and groups.

Figure 4: Histogram of reported points by over-reporting individuals and groups in part II.

increase their over-reporting with the charity: the proportion of over-reporting individuals in the *Base* treatment is not significantly different from those in the *Charity* ($\chi^2(1) = 0.070$, p = 0.791) and *CharityR* ($\chi^2(1) = 1.200$, p = 0.273) treatments.[6]

Instead, Figure 3 shows that the proportion of over-reporting groups in Part II falls sharply when we introduce a charity: the proportion of over-reporting groups in the *Base* treatment is significantly higher than those in the *Charity* ($\chi^2(1) = 3.299$, p = 0.069) and *CharityR* ($\chi^2(1) = 8.075$, p = 0.004) treatments. We replicate both observations in the regression of Appendix A.2.

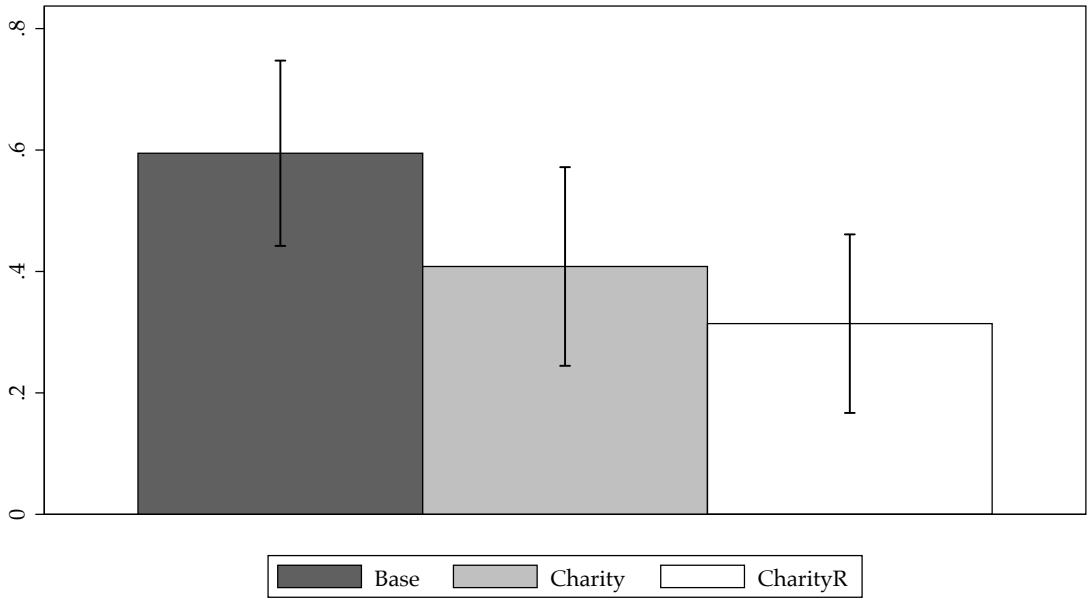
These observations lead us to the next result:

Result 3. *Groups, but not individuals, are affected by the knowledge that their over-reporting affects a third-party, the charity.*

To better understand why, we look at chat data. For each group, we compute the proportion of statements for dishonesty used in the chat.[7] As can be expected,

[6]We observe the same in Part I: the proportion of over-reporting individuals in the *Base* treatment is 28%, compared to 32% for the *Charity* and *CharityR* treatment ($\chi^2(1) = 0.527$, p = 0.468), which we pool since at this point subjects faced the exact same task.

[7]The content analysis of the chat data was performed independently by a student assistant.



Note. There are $n = 30$ observations in each bar.

Figure 5: Mean and 95% interval of the proportion of statements for dishonesty in part II of the group treatments.

there is a positive and significant correlation between the proportion of statements for dishonesty and over-reporting for groups in the *Base* (Spearman $\rho = 0.841$, $p < 0.001$), *Charity* (Spearman $\rho = 0.909$, $p < 0.001$) and *CharityR* (Spearman $\rho = 0.862$, $p < 0.001$) treatments.

Figure 5 details the mean and 95% confidence interval of the proportion of statements for dishonesty for groups in the different treatments. We observe that this proportion is higher in the *Base* treatment relative to the *Charity* (Mann-Whitney $U = 364.5$, $p = 0.188$) and *CharityR* (Mann-Whitney $U = 294.5$, $p = 0.0169$) treatments. In Table 2, we use a fractional logit model (e.g., Papke and Wooldridge, 1996, 2008) to further control for the die number observed in Part II as well as the proportion of group members who over-reported in Part I. The regressions show that the proportion of statements for dishonesty is significantly higher for groups in the *Base* treatment than in the *Charity* ($p = 0.023$) and in *CharityR* ($p = 0.009$) treatments. There are no significant differences between groups in the *Charity* and the *CharityR* treatments ($p = 0.640$). This leads us to the next result:

We looked for statements in which subjects made recommendations for the group decision or for statements in which subjects agreed with a previous recommendation. We then looked at the proportion of instances for which the recommended number of points was below the one observed. We provide a more detailed explanation in Appendix B.

Table 2: Fractional Logit regression estimates: How the proportion of dishonesty for over-reporting differs across groups in the group treatments.

Dependent Variable: Proportion of statements for dishonesty		
Regression	(1)	(2)
Reference group: Groups in the *G-Base* treatment.		
G-Charity	-1.02**	-1.14**
	(0.50)	(0.53)
G-CharityR	-1.26***	-1.48***
	(0.55)	(0.57)
Points observed (part II)		-0.57***
		(0.14)
♯ of members over-report (part I)		0.55**
		(0.15)
Constant	1.06***	2.20***
	(0.34)	(0.69)
n	72	72
Pseudo R^2	0.064	0.168
$\chi^2(1)$: *G-Charity* = *G-CharityR*	0.89	0.22

Note. Instances where groups observed 5 points were omitted.
***, ** and * denote $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively.

Result 4. *Group members make significantly less arguments for dishonesty when they know that a third party, such as a charity, is harmed by the dishonesty.*

These results suggests that individuals' preference for over-reporting is relatively insensitive to the psychological disutility associated with dishonest behaviour. Groups, on the other hand, over-report more than individuals in the *Base* treatments but not the *Charity* and *CharityR* treatments because group members stop voicing arguments for dishonesty when the charity is involved.

Note that revealing subjects' behaviour to the charity has little influence: the proportion of over-reporting individuals in Part II of the *I-Charity* and *I-CharityR* treatments are not significantly different ($\chi^2(1) = 0.693$, $p = 0.405$). Similarly, the proportion of over-reporting groups in part II of the *G-Charity* and *G-CharityR* treatments are not significantly different ($\chi^2(1) = 1.148$, $p = 0.284$).

3.3 Spillovers of dishonesty

Finally, we study behaviour across parts to see whether dishonesty can spillover from one part to the next.

3.3.1 Do dishonest individuals make groups more dishonest?

We first study whether over-reporting individuals make groups over-report more. We do not find any significant between-treatment differences in the number of group members who over-reported in Part I for groups in the *G-Base*, *G-Charity* and *G-CharityR* treatments (Kruskal-Wallis, $p = 0.280$), so the above results cannot be explained by different group compositions.

Table 2 already showed us that there is a positive and significant relationship between the number of group members who over-reported in Part I and the proportion of statements for dishonesty in the chat.

This relation, however, does not seem to translate to actions: we find no significant correlation between the number of over-reporting group members (part I) and over-reporting in Part II for groups in the *G-Base* (Spearman's $\rho = 0.235$, $p = 0.210$), *G-Charity* (Spearman's $\rho = 0.147$, $p = 0.438$) and *G-CharityR* (Spearman's $\rho = 0.147$, $p = 0.438$) treatments. The regression in Appendix A.3 confirms this result while further controlling for points observed in Part II.

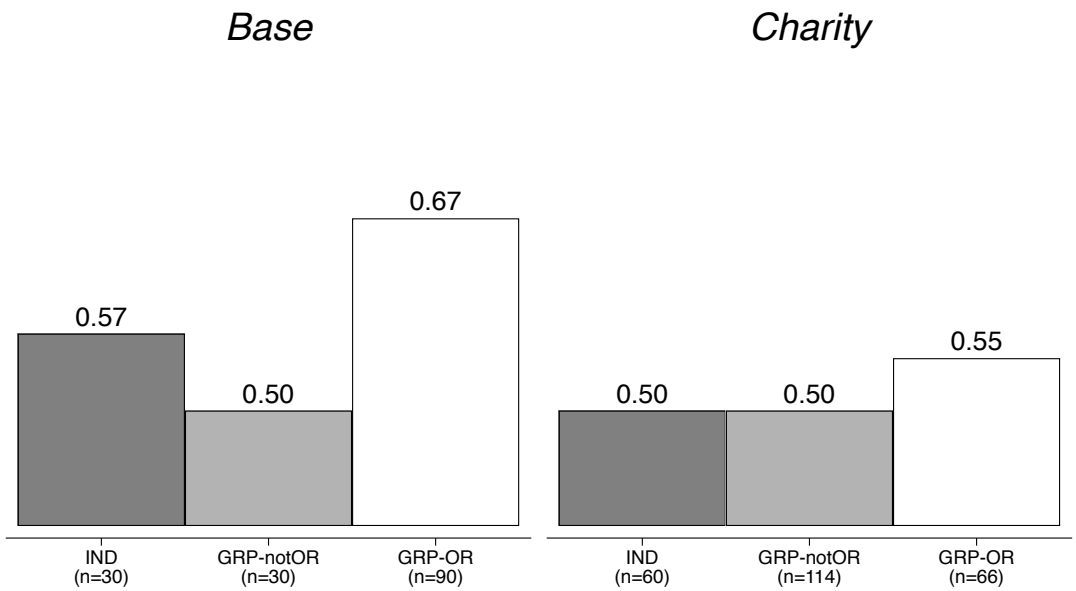
We therefore have the following result:

Result 5. *The number of over-reporting individuals within the group has only limited influence of the group's decision to over-report. The same is true even when the charity is involved.*

3.3.2 Do dishonest groups make individuals more dishonest?

Finally, we look at whether subjects who were in a group that over-reported in Part II over-report themselves in Part III. For this we compare subjects who were in a group that over-reported in Part II (GRP-OR subjects) to subjects who were in a group that did not over-report in Part II (GRP-notOR subjects) and to subjects who were not in a group in Part II (IND subjects).

Figure 6 shows the proportion of IND, GRP-notOR and GRP-OR subjects who over-report in Part III. We pool the *Charity* and *CharityR* treatments together since subjects in these treatments faced the same situation in Part III. We see that the proportion of over-reporting GRP-OR subjects is only marginally higher that of the IND and GRP-notOR subjects.



Note. All subjects make individual decisions in part III. The IND subjects are those who made individual decisions in part II. The GRP-notOR (resp. GRP-OR) subjects are those who made group decisions in part II and whose group hadn't (resp. had) over-reported.

Figure 6: Proportion of IND, GRP-notOR and GRP-OR individuals who over-report in part III.

The regressions in Table 3 look at the impact of being in an over-reporting or a non-over-reporting group in Part II on the likelihood of over-reporting in Part III, controlling for behaviour in Part I, gender and points observed in Part III. The estimates show that GRP-OR subjects are significantly ($p < 0.001$) more likely to over-report in Part III relative to IND and GRP-notOR subjects in the *Base* and *Charity* treatments. Also, we do not find the likelihood of over-reporting to be significantly higher for GRP-notOR relative to IND subjects—it is instead lower ($p = 0.019$) for subjects in the *Base* treatment. This leads us to our final result:

Result 6. *Individuals are more likely to over-report if they were previously in a group that over-reported. This holds independently of whether the third party, such as a local charity, is harmed by the dishonest behaviour.*

4 Conclusions

We report the results of a laboratory experiment testing whether groups are more dishonest than individuals. We replicate the study by Kocher et al. (2018) but also add the fact that dishonest behaviour harms, not the experimental budget, but a

Table 3: Logit regression estimates: The spillovers from membership of dishonest groups.

Dependent Variable: Over-report in part III.	BASE		CHARITY	
Regression	(1)	(2)	(3)	(4)
Reference group: IND subjects				
GRP-notOR	-0.66	-0.96**	0.41	-0.18
	(0.58)	(0.40)	(0.47)	(0.38)
GRP-OR	1.19**	1.48***	0.87**	1.46***
	(0.65)	(0.49)	(0.40)	(0.52)
Points observed (part III)		-0.42*		-0.40***
		(0.17)		(0.13)
Male		-0.42		-0.14
		(0.41)		(0.37)
Over-report (part I)		-2.44***		2.78***
		(0.67)		(0.51)
Constant	0.88*	2.02**	0.51*	1.94***
	(0.45)	(0.78)	(0.29)	(0.42)
n	96	96	192	192
Pseudo R^2	0.097	0.255	0.029	0.311
$\chi^2(1)$: GRP-DIS = GRP-notDIS	11.11***	24.57***	9.24***	8.82***

Note. Instances where subjects observed 5 points were omitted. Standard errors are clustered at the matching group levels.
***, ** and * denote $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively.

local charity. Our results show that once this incentive for honesty is introduced, groups are no more dishonest than individuals. In fact, groups can even help moderate the extent of dishonesty.

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Online Appendix

A Additional regressions

A.1 Individuals vs. Groups

In Table A1, we use the Logit regression model to study subjects' likelihood of over-reporting in part II controlling for points observed in part II, gender and whether they had over-reported in part I—standard errors clustered at matching group level.[8] The estimates find that subjects in the *Base* treatment are significantly ($p \leq 0.027$) more likely to over-report in part II when they make decisions in a group. In contrast, subjects in the *Charity* ($p \geq 0.346$) and *CharityR* ($p \geq 0.568$) are NOT significantly more likely to over-report when they make decisions in a group.

We find no significant influence of gender ($p \geq 0.193$). Subjects are more likely to over-report in part II if they had also done so in part I. However, the effects are only significant in the *Base* treatments ($p = 0.047$) but not the *Charity* ($p = 0.219$) and *CharityR* ($p = 0.249$) treatments. There is a negative correlation between points observed in part II and over-reporting in part II. However, the correlation is only significant in the *Charity* ($p < 0.001$) and *CharityR* ($p = 0.004$) treatments and not the *Base* ($p = 0.873$) treatments. This discrepancy seems to be primarily driven by subjects in *G-Base* treatments whose decisions are insensitive to the observed points.[9]

In Table A2, we use the Ordered Logit regression model to study the reported points (part II) by over-reporting groups and individuals. We find no significant differences in the reported points of over-reporting **g**roups and **i**ndividuals in the *Base* ($p \geq 0.998$) and *CharityR* ($p \geq 0.834$) treatments. In contrast, we find reported points to be significantly lower ($p \leq 0.064$) for over-reporting **g**roups relative to **i**ndividuals in the *Charity* treatments.

A.2 Over-reporting over the individual and group treatments

Regressions (1) and (2) of Table A3 show that there are no significant differences in the likelihood of over-reporting between **i**ndividuals in the *I-Base* treatment and those in the *I-Charity* ($p \geq 0.753$), and between subjects in the *I-Base* treatment

[8] Subjects in the group treatments reported their decisions independently.

[9] We regressed over-reporting in part II on points observed in part II for subjects in the *G-Base* treatment. Whilst not significant ($p = 0.530$), the Logit model estimated coefficient is positive.

Table A1: Logit model regression estimates: Over-reporting in part II by subjects in the individual and group treatments.

Dependent Variable: Over-reporting in part II						
	Base		Charity		CharityR	
Regression	(1)	(2)	(3)	(4)	(5)	(6)
Reference group: Subjects in the individual treatments.						
Group Treatment	1.61**	1.63**	0.33	0.75	0.12	0.41
	(0.69)	(0.74)	(0.57)	(0.79)	(0.60)	(0.72)
Over-report (Part I)		1.36**		0.73		0.64
		(0.68)		(0.59)		(0.56)
Male		-0.01		0.97		0.12
		(0.59)		(0.74)		(0.46)
Points Observed (Part II)		-0.03		-1.67***		-0.88***
		(0.19)		(0.40)		(0.30)
Constant	-0.01	-0.24	-0.16	3.40***	-0.69	1.07
	(0.42)	(0.64)	(0.41)	(1.13)	(0.43)	(0.88)
n	96	96	96	96	96	96
Clusters	48	48	48	48	48	48
Pseudo R^2	0.09	0.13	0.01	0.44	0.01	0.20

Note. We exclude instances where 5 points were observed due to perfect collinearity. Standard errors are clustered at the matching group levels.
***, ** and * denote $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively.

Table A2: Ordered Logit model regression estimates: Reported points in part II by over-reporting individuals and groups.

Dependent Variable: Reported points in part II (by individuals or groups)						
	Base		Charity		CharityR	
Regression	(1)	(2)	(3)	(4)	(5)	(6)
Reference group: Subjects in the individual treatments.						
Group Treatment	17.97	17.92	-2.19*	-2.20*	0.19	-0.11
	(5913.23)	(5868.03)	(1.18)	(1.19)	(0.91)	(0.94)
Points Observed (Part II)		0.12		-0.03		0.62
		(0.71)		(0.39)		(0.46)
n	32	32	24	24	17	17
Pseudo R^2	0.27	0.23	0.12	0.12	0.01	0.05

Note. We exclude instances where 5 points were observed due to perfect collinearity.
***, ** and * denote $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively.

Table A3: Logit model regression estimates: Over-reporting in part II by individuals and groups.

Dependent Variable: Over-reporting in part II				
	Individual treatments		Group treatments	
Regression	(1)	(2)	(3)	(4)
Reference group: Subjects in the *Base* treatment.				
Charity	-0.16	-0.19	-1.27*	-1.52**
	(0.57)	(0.63)	(0.68)	(0.75)
CharityR	-0.69	-0.82	-2.12***	-2.47***
	(0.59)	(0.65)	(0.69)	(0.78)
Points observed (part II)		-0.61***		-0.80***
		(0.19)		(0.22)
Constant	0.01	1.52**	1.60***	4.02***
	(0.40)	(0.68)	(0.55)	(1.01)
n	72	72	72	72
Pseudo R^2	0.02	0.132	0.11	0.25
$\chi^2(1)$: *Charity* = *CharityR*	0.76	0.92	2.06	1.98

Note. We exclude instances where 5 points were observed due to perfect colinearity. ***, ** and * denote $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively.

and those in the *I-CharityR* treatment ($p \geq 0.208$).[10] We also find no significant differences in the likelihood of over-reporting ($p \geq 0.338$) for **i**ndividuals in the *I-Charity* and *I-CharityR* treatments. Regressions (3) and (4) of Table A3 show that **g**roups are significantly more likely to over-report in the *G-Base* treatment relative to the *G-Charity* ($p \leq 0.064$) and *G-CharityR* ($p \leq 0.002$) treatments—no significant differences in the *G-Charity* and *G-CharityR* treatments ($p \geq 0.151$).

A.3 Influence of dishonest members on group's decision.

In Table A4, we use the Logit regression model to study the likelihood of **g**roups over-reporting in part II controlling for the points observed in part II and the number of group members who over-report in part I—we omit the proportion of statements for dishonesty as a covariate as it predicts the outcome perfectly. We find that the number of group members who over-reported in part I has no significant ($p \geq 0.293$) influence on the **g**roup's likelihood over-reporting in part II for all treatments.

[10]We did not control for behaviour in part I since subjects in the *Base* and *Charity* treatments face different dilemmas. Nevertheless, the conclusion will not change if we also controlled for such behaviour.

Table A4: Logit model regression estimates: Over-reporting in part II by number of dishonest group members—group treatment only.

Dependent Variable: Over-reporting in part II (Group treatment)			
	G-Base	*G-Charity*	*G-CharityR*
♯ of group members over-report in part I	0.91 (0.86)	0.88 (0.89)	0.66 (0.72)
Points observed (part II)	0.09 (0.39)	-2.08*** (0.78)	-1.00** (0.42)
Constant	0.71 (1.13)	5.14** (2.34)	1.61 (1.15)
n	24	24	24
Pseudo R^2	0.07	0.56	0.24

Note. We exclude instances where 5 points were observed due to perfect colinearity. ***, ** and * denote $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively.

Table B1: Example 1. Extract of chat from a group in the *G-Charity* treatment.

Member	Points observed	Statement	x	time	label
1	4	number 4	4	9	Active
3	4	number 4	4	15	Active
2	4	number 4	4	23	Active
2	4	or highest payment number 5	5	38	Active
3	4	I would prefer number 4	4	53	Active
1	4	lets keep it 4	4	62	Passive
2	4	ok	4	67	Passive
3	4	is this okay for everyone?	4	74	Passive
2	4	yep	4	78	Passive
1	4	yes	4	79	Passive
3	4	ok than I will leave the chat :)			NA

B Analysis of chat data

The analysis of chat data was independently perform by a student assistant. The chat data was sorted by matching groups and time. The assistant followed the following steps.

- **Step 1.** Assign the label "active" to all statements where a subject makes a recommendation (i.e., points to report). Let $x \in \{0, 1, ., 5\}$ points be the recommendation made. If the statement refers to 2 or more possible recommendations, use the lowest recommedation.
- **Step 2.** Assign the label "passive" to all statements where a subject does not make a new recommendation but agrees with the previous recommendation. Let $x \in \{0, 1, ., 5\}$ be the most up to date recommendation points
- **Step 3.** Assign the label "NA" to all statements that are irrelevant to the reporting decision – we do not generate x for the NA statements.
- **Step 4.** Derive the proportion of statements for dishonesty, the frequency that x is less than the observed points for the matching group.

Tables B1 and B2 are two examples of the chat extracts. In the former, the proportion is $1/10 = 0.10$. In the latter, the proportion is $7/7 = 1$.

Table B2: Example 2. Extract of chat from a group in the *G-Base* treatment.

Member	Points observed	Statement	x	time	label
2	1	Hi		2	NA
3	1	Hi		7	NA
1	1	Hi		8	NA
2	1	You guys want to go for 5 points?	5	11	Active
1	1	Yes	5	22	Passive
3	1	ok	5	31	Passive
2	1	Alright its decided then	5	39	Passive
3	1	So we have to type 5 right?	5	44	Passive
2	1	Correct		49	NA
3	1	Ok		55	NA
3	1	So shall we leave the chat		63	NA
3	1			65	NA
1	1	Did you also have a 1 in the video?		68	NA
3	1	yes		74	NA
2	1	Yeah me too		82	NA
2	1	If you guys dont want to chat we can leave the chat		98	NA
3	1	So what exactly should we type in the box?		119	NA
2	1	Which box?		132	NA
1	1	I want to leave the chat open for the remaining time		132	NA
3	1	the Answer bo		143	NA
3	1	*box		151	NA
2	1	Type 5	5	152	Passive
3	1	ok	5	156	Passive
3	1	i would say we can leave the chat		182	NA
2	1	I guess Member 1 wanted to leave it open		216	NA
3	1	ok fine then		223	NA
2	1	Out of curiosity, what did you guys answer in Part 1?		229	NA
1	1	I just wanted to ask that		242	NA
1	1	I had a 1 in the video and I typed in 5		262	NA
3	1	me too		284	NA
2	1	I guess I was the only one with a 1 lol		298	NA

Table C1: Frequencies that points are observed.

	Part I		Part II		Part III	
Points seen.	Our	KSS2018	Our	KSS2018	Our	KSS2018
0 points	30%	31%	10%	15%	10%	31%
1 point	10%	08%	10%	23%	20%	15%
2 point	10%	38%	20%	23%	10%	23%
3 point	20%	08%	10%	15%	30%	23%
4 point	10%	00%	30%	23%	10%	00%
5 point	20%	15%	20%	00%	20%	08%
$\chi^2(5)$	11.45^{**}		10.60^{**}		11.42^{**}	

***, ** and * denote $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively.

C Details on the experiment

C.1 Die-rolls

We pre-generated 10 sequences of die-roll. Table C1 details the frequencies of points observed in our data. For completeness, we also report the frequencies of points observed in Kocher et al. (2018) data (KSS2018).

C.2 Instructions

The experiments were conducted in English and the instructions were both printed and projected on the computer screens—the "general procedures" were printed and the instructions for parts I, II and III were projected. Where relevant, the parts of the instructions that are unique to the *Charity* and *CharityR* treatments will be marked as "text". In addition, the instructions that are unique to *CharityR* treatments will be marked as "text". Finally, we will also refer to the charity as the XX charity.

C.2.1 Instructions: General procedures

Please switch off your electronic devices and remain silent. Also, do not talk with the other participants. For showing up on time you will receive a participation fee of 4 euros. You may also earn more during the experiment. The experiment consists of 3 parts (Part 1, Part 2 and Part 3). The three parts are independent: choices made in one part do not affect the other parts. At the beginning of each part you will see the detailed instructions for that part on your computer screen. If you have any questions, please raise your hand and an experimenter

will come to your desk to answer them. During the experiment, you and the other participants will make decisions. You may also interact with other participants, in which case your own decisions and the decisions of the others may determine your earnings. The onscreen instructions will clearly show whether you interact with other participants. They will also explain how exactly your earnings will be determined.

Payment. In some part of the experiment, and depending on your decisions, you will earn points for yourself or for a charity. We will provide further information about this charity in a minute. At the end of the experiment, only the points from one of the 3 parts will be used to determine the payment to you and to the charity. Your points and the charitys points in this part will be converted into euros at the exchange rate of:

1 point = 2 Euros

To select the part for payment, the computer will randomly ask one participant to roll a die:

- If the die shows a ⚀ or ⚁, then points from Part 1 will be used for payment;
- If the die shows a ⚁ or ⚂, then points from Part 2 will be used for payment;
- If the die shows a ⚂ or ⚃, then points from Part 3 will be used for payment.

After converting points into euros, we will pay you your total earningsyour earnings from the selected part and the participation fee of 4 Euro. No other participant will learn about your earnings and you will not learn about the earnings of others.

We will also pay the charity via online transfer. We will do so from the experimenter room, and you are welcome at this stage to come monitor the payment and verify how much we donate.

Anonymity. We will never link your name with the decisions you will make in this experiment. You will not learn the identity of the other participants, and the other participants will not learn your identity. At the end of the experiment we will ask you to sign a receipt to confirm the payments you received and the payments for the charity that are determined by your decisions. We only use this receipt for accounting and it is not linked to your decisions.

The XX charity Your decisions during the experiment will affect XX, a local charity based in Nuremberg. In the next few lines, we wish to give you more information about this charity and its goals.

XX is a group of clowns that travel to the hospitals of the Franconian region to visit sick children and brighten their day. They visit children who have been hospitalized for a short time, as well as children who are seriously or chronically ill and in intensive care, oncology, cardiology or dialysis.

The clowns visit the hospitals-Klinikum Nuremberg-Süd, Klinikum Fuerth, and the University Hospital in Erlangen – at least once every two weeks and sometimes every week. During their visit they do not perform a rehearsed program but instead interact spontaneously with each child in their room. They are also in close contact with physicians, nurses, educators and psychologists, in order to adapt their visit to the needs of every children.

At the moment there are 9 clowns in the charity and they are all volunteers. 100% of the donations they receive go directly to their work as clowns in the hospitals. For example, the donations pay for the red noses, the makeup, the transportation costs to the hospitals, the flyers, and the website. XX was founded in 1999 and is recognized by the tax office of Nuremberg as a non-profit organization particularly worthy of promotion.

As a result of your decisions XX will receive some points. How many exactly will be detailed in the instructions that will appear on your computer screen at the beginning of each Part. At the end of the experiment and before paying you your earnings we will add all the points received by XX and convert them to euros. As explained above we will donate this amount to XX via online transfer.

Before we start the experiment, you will see appear on your computer screen the webpage of XX. We will give you 5 minutes to check their website. It is only in German but you can see the pictures of the clowns in "Wir Clowns" and of their visits in "Clown Nachrichten". At the top of the page you will also find links to their Facebook and Youtube, where you can see more news, pictures, and videos.

C.2.2 Instructions: Part I

In Part 1 of the Experiment, you will see a video of a die roll showing ⚀, ⚁, ⚂, ⚃, ⚄ or ⚅. The video you will see is randomly selected by the computer and each of the 6 possible videos is chosen with equal probability.

Your task. Your task is to remember the number of the die roll in the video and to type it into a field showing up later. The die number you enter determines

	⚀	⚁	⚂	⚃	⚄	⚅
Die number entered	1	2	3	4	5	6
Points for you	1 point	2 points	3 points	4 points	5 points	0 points
Points for the charity	4 points	3 points	2 points	1 point	0 points	5 points

Table C2: Points Table in Parts 1, 2 and 3.

YOUR points and the points for the CHARITY as explained by the table below (see Table C2). For example, if you enter the die number to be "4", you will receive 4 points and the charity will receive 1 point.

Comprehension questions. **remark: Subjects had to correct answers the questions to begin part 1. The correct answer is underlined.**

1. What is your task in this part?
   - To enter the number that you have seen and memorised.
   - To enter a number different from the number you have seen and memorised.
   - To enter an arbitrary number.

2a. Suppose that you see a ⚂ and enter a "3". How many points will YOU receive? 3 points.

2b. How many points will the CHARITY receive? 2 points.

3a. Suppose that you see a ⚂ and enter a "2". How many points will YOU receive? 2 points.

3b. How many points will the CHARITY receive? 3 points.

4a. Suppose that you see a ⚂ and enter a "4". How many points will YOU receive? 4 points.

4b. How many points will the CHARITY receive? 1 point.

C.2.3 Instructions: Part II (individual treatments)

Part 2 of the experiment is similar to Part 1, except that now you have the opportunity to record your thoughts BEFORE making your decision.

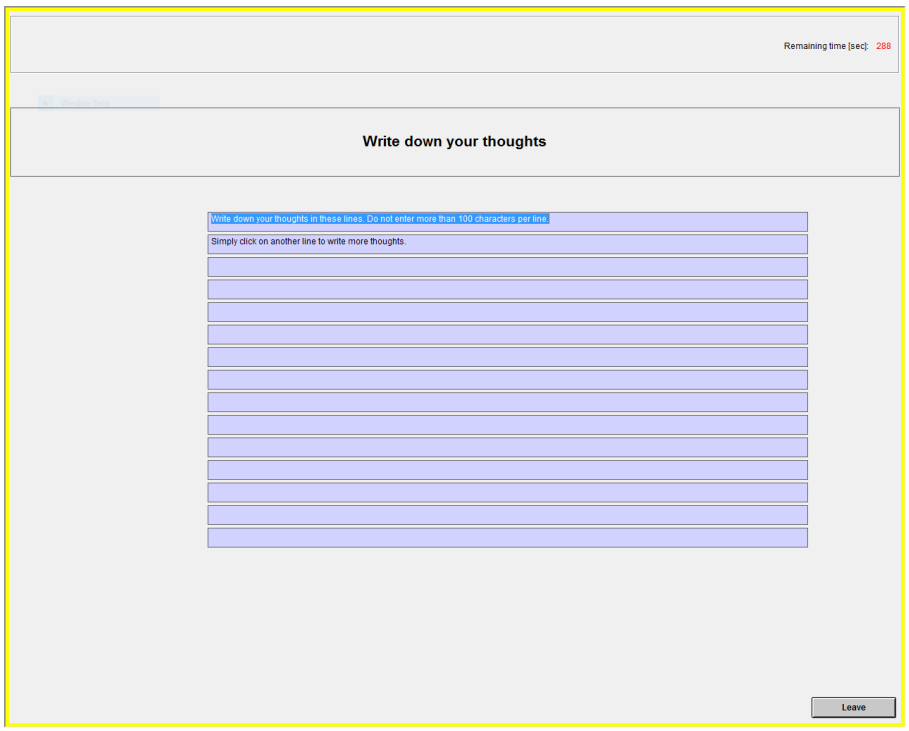

Figure C1: How subjects entered their thoughts.

In Part 2 of the Experiment, you will see a video of a die roll showing ⚀, ⚁, ⚂, ⚃, ⚄ or ⚅. The video you will see is randomly selected by the computer and each of the 6 possible videos is chosen with equal probability.

Your task. Your task is to remember the number of the die roll in the video and to type it into a field showing up later. The die number you enter determines YOUR points and the points for the CHARITY as explained by the table below (see Table C2). For example, if you enter the die number to be "4", you will receive 4 points and the charity will receive 1 point. The next screen will describe how you can record your thoughts.

Comprehension questions. **remark: Subjects had to correct answers the questions. The questions are exactly the same as in part I.**

How you input your thoughts. You have the possibility to record your thoughts about the number you will enter. You have 5 minutes to write down your thoughts. After 5 minutes the possibility will end. If you have finished before the 5 minutes are over, you can click on the "Leave" button (subjects see Figure C1).

After the experiment we will send a copy of what you wrote to the charity. We are distributing an illustration of the copy for you to check what kind of

information we will send to the charity. As you will see, we will send the number you saw, the number you reported, and what you wrote. Note that, since the experiment is anonymous, the copy is anonymous as well: only the participant ID appears and it cannot be traced to you. We will send the transcript to the charity via email and we will add the email addresses of everyone who participated to today's experiment in blind carbon copy (so they will not see your email address) for you to verify that we are really sending the copy.

C.2.4 Instructions: Part II (group treatments)

Part 2 of the experiment is similar to Part 1, except that now you decide in a group. We will randomly match you with 2 other participants such that you form a group of 3.

In Part 2 of the Experiment, you will see a video of a die roll showing ⚀, ⚁, ⚂, ⚃, ⚄ or ⚅. The video you will see is randomly selected by the computer and each of the 6 possible videos is chosen with equal probability. ALL MEMBERS OF YOUR GROUP WILL SEE THE SAME RANDOMLY CHOSEN VIDEO.

Your task. Your task is to remember the number of the die roll in the video and to type it into a field showing up later. YOU and the CHARITY will receive points from this task only when all group members enter the same number. In contrast, YOU and the CHARITY will receive 0 points if any group member enters a different number. If all group members enter the same number, the number entered determines the points for YOU and the CHARITY as described by the table below (Table C2). For example, if all group members enter the number 4, then each group member will receive 4 points. In addition, the CHARITY will receive 1 point from each group member (the charity receives a total of 3x1=3 points). If any group member enters a different number, each group member receives 0 points and the charity also receives 0 points from each group member (the charity receives a total of 3x0=0 points). You will be able communicate with the other group members. How you do so will be explained on the next screen.

Comprehension questions. **remark: Subjects had to correct answers the questions to proceed. The correct answer is underlined.**

1. What is your task in this part?
   - To enter the number that you have seen and memorised.

- To enter a number different from the number you have seen and memorised.
- To enter an arbitrary number.

2. Suppose that you see a ⚄ and enter a "3". The others also enter "3".
   (a) Points YOU receive. 3 points.
   (b) Points the Charity receives from YOU 2 points.
   (c) Points the Charity receives from your GROUP 6 points.
3. Suppose that you see a ⚄ and enter a "2". The others also enter "3".
   (a) Points YOU receive. 2 points.
   (b) Points the Charity receives from YOU 3 points.
   (c) Points the Charity receives from your GROUP 9 points.
4. Suppose that you see a ⚄ and enter a "4". Someone enters "5".
   (a) Points YOU receive. 0 points.
   (b) Points the Charity receives from YOU 0 points.
   (c) Points the Charity receives from your GROUP 0 points.

Group interaction. You have the possibility to communicate with the other two group members via a chat box to clarify the number each group member will enter. You have 5 minutes to communicate. The group discussion ends after the 5 minutes or as soon as all 3 members of the group have pressed the "leave chat" button. If only 1 or 2 members of the group press the button, the discussion will continue. The group discussion will only end if all members press the button or if time runs out. If you have pressed the button "leave chat" but you do not want to leave the chat, you can press the button "back". After the group discussion, each member of the group enters a number on the screen.

Generally, the course of communication is up to you. You may chat in any language as long as all group members understand the language. However, you are not allowed to make threats or to agree upon side payments within your group. If you are breaking these rules, you will be excluded from the experiment and you will not receive any payment from the entire experiment.

Within the given time, you can send as many messages to the other group members as you like. The messages you send appear automatically on the screens

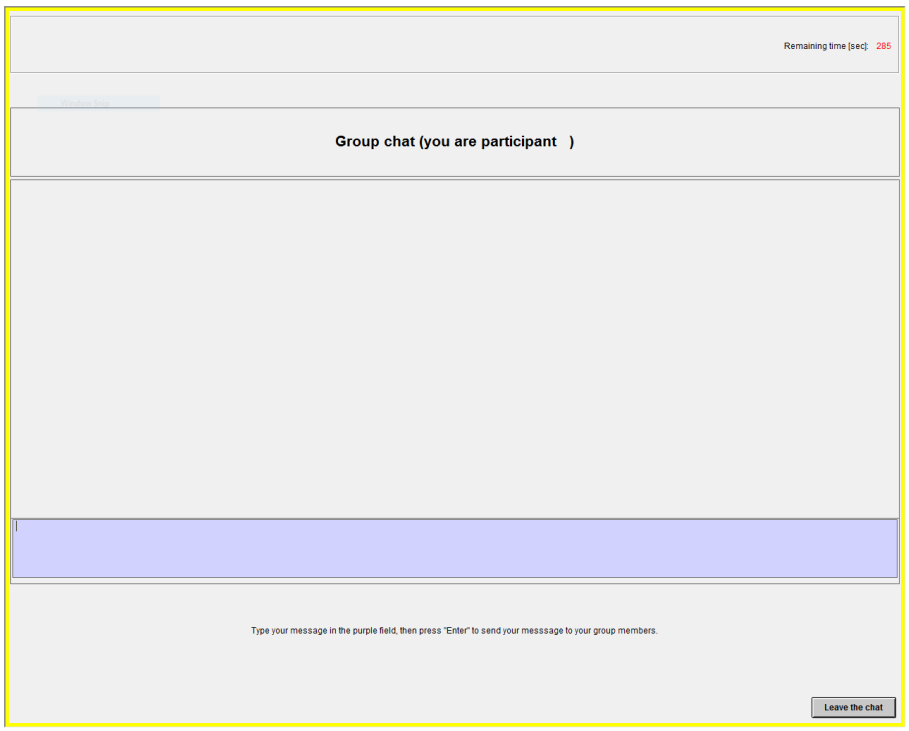

Figure C2: How subjects chat.

of your other group members. You cannot send a message to one member in particular.

The screen of the chat will look like this: (subjects see Figure C2) To write a message, click on the purple field, enter your message and press "Enter". Then, your message appears in the grey field above the purple field. You can send as many messages as you want using the same procedure. The other participants will see your message only when you have pressed "Enter".

After the experiment we will send a copy of the chat to the charity. We are distributing an illustration of the copy for you to check what kind of information we will send to the charity. As you will see we will send the number your group saw, the number you reported, and the chat messages you sent. Note that, since the experiment and the chat are anonymous, the copy is anonymous as well: only the participant and group ID appear and these cannot be traced to you. We will send the transcript to the charity via email and we will add the email addresses of everyone who participated to today's experiment in blind carbon copy (so they will not see your email address) for you to verify that we are really sending the copy.

C.2.5 Instructions: Part III

Part 3 of the experiment is the same as Part 1. That is, your task in Part 3 is exactly the same as in Part 1.

In Part 3 of the Experiment, you will see a video of a die roll showing ⚀, ⚁, ⚂, ⚃, ⚄ or ⚅. The video you will see is randomly selected by the computer and each of the 6 possible videos is chosen with equal probability.

Your task. Your task is to remember the number of the die roll in the video and to type it into a field showing up later. The die number you enter determines YOUR points and the points for the CHARITY as explained by the table below (see Table C2). For example, if you enter the die number to be "4", you will receive 4 points and the charity will receive 1 point.

Comprehension questions. *[Note: Subjects had to correctly answers the questions. The questions are exactly the same as in part I.]*