Equality over Intentionality: the normative social preferences of neutral third-parties*

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Abstract

This paper studies whether intentionality is more prevalent than fairness in social preferences. We do this by introducing a new three-player game in which the choices of decision-makers are isolated from any monetary or strategic concerns. This allows us to study the normative preferences of subjects, and to compare the relative weight they give to intentions and inequality. The results are clear; decision-makers are mainly concerned with inequality, while others' (selfish) intentions seem to play only a minor role in their preferences. This result is robust to a series of experimental designs, suggesting that the role of intentions in social preferences is smaller than suggested by the previous literature.

Keywords Ultimatum game · Experiment · Fairness · Intentions · Third-party

JEL Classification C91 · D71 · D63 · D31

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1 Introduction

> "How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it." *The Theory of Moral Sentiments*, Adam Smith (1759)

Social preferences are relevant in many research fields, from economics, philosophy (Aguiar et al., 2013) and conflict resolution (Leibbrandt and López-Pérez, 2011), to anthropology (Henrich et al., 2001) and evolutionary biology (Silk and House, 2016). Some authors even consider social preferences to be one of the main pillars of legal studies (Konow and Schwettmann, 2016). A better understanding of social preferences is therefore not only relevant to refine models of fairness and cooperation, but can help understand many other fundamental questions about human behavior.

Yet, surprisingly, while it has been well established that both fairness and intentions are important factors in social preferences (Falk et al. (2008)), it is not clear whether one of the two principles dominates. On the one hand Fehr and Fischbacher (2004), Falk et al. (2008), and Stanca et al. (2009) claim that intentions are the main driver behind the behavior of third (and second) party decision-makers, on the other Offerman (2002) defends that intentions only matter in the negative domain of reciprocity, while Charness (2004), Bolton et al. (1998) and Leibbrandt and Lopez-Perez (2008) show that subjects respond more to outcomes than to intentions.

In this paper we contribute to this literature by introducing a three-player ultimatum game in which a proposer makes an offer on how to split $10 with a receiver (who plays no active role in the game), while a decision-maker fills in a strategy profile accepting or rejecting every potential offer the proposer can make. If the offer is accepted by the decision-maker, then the split takes place as suggested; if rejected, then both proposer and receiver get $0. The decision-maker is paid a "flat fee" independent of the outcome of the game.

This new design has several advantages over previous ones: First, we introduce a third-party with no strategic or monetary skin in the game, allowing us to study the "true" distributional preferences of decision-makers. This takes care of the concern raised by Croson and Konow (2009) that in most experimental setups the self-interest of decision-makers can obscure the measures of social preferences, allowing us to observe what Fehr and Fischbacher (2004) call "truly normative standards of behavior." Second, any rejection by decision-makers leaves both proposer *and* receiver with a $0 payoff. This means that any rejection is a strong signal of disapproval by the decision-maker (a concern that Falk et al. (2008) had about some of the previous treatments in the literature). Finally, our design expands the set of possible offers to include hyper-generous offers allowing us to study how decision-makers react to inequality deriving from generous intentions, something that has not been discussed in the literature.[1]

Our main result is that neutral decision-makers have strong preferences for equality over intentions as they reject *both* selfish and generous offers to avoid inequality.[2] Our result is robust to a series of modifications to the decision-maker's payoffs, such as different "flat fee" payoffs or the introduction of a monetary cost to rejecting offers. Such a result is consistent with Erkut et al. (2015) who report that neutral third-parties (in dictator games) state that hyper-generous offers are significantly less "appropriate" than even splits. However, it is at odds with some previous results that point to intentions as one of the main drivers behind social preferences (e.g., Falk et al. (2008)).

2 Experimental Design

As subjects arrived to the lab, they were seated randomly in front of a terminal and the initial instructions were read aloud. In these instructions we announced that:

1. The experiment had three rounds and instructions for each round would be read immediately before the beginning of each round.

2. Each subject would be assigned a player type (A, B or C) which they would keep through the experiment.

3. Each round, subjects would be randomly assigned to a different group of three players (that always included one subject of each type).

[1] All previous reports generous offers being rejected were in field experiments with subjects either from rural old Soviet Union regions (Bahry and Wilson (2006)) or in small-scale societies in New Guinea (Henrich et al. (2001)). These results always came from two-player games, and were considered anomalies by the authors. For example, Bahry and Wilson (2006) dismiss rejections of generous offers because of Soviet education, while Henrich et al. (2001) hypothesize that these rejections could be the result of a gift-giving culture, in which accepting large gifts establishes the receiver as a subordinate. Güth and van Damme (1998) also mention a small number of generous offers being rejected.

[2] From now on we will denote any offer of more than $5 as a "generous offer".

4. Only one of the rounds, randomly chosen by the computer, would be chosen for the final payoffs.

5. No feedback on other subject's choices or payoffs would be given before the end of the session.

A time-line of the experiment is shown in Table 1.

Step 1	Step 2	Step 3	Step 4
Read general instructions	Read instructions for Round 1	Round 1	Read instructions for Round 2
Assign player type	Assign players to group	No feedback	Assign players to new group

Step 5	Step 6	Step 7	Step 8
Round 2	Read instructions for Round 3	Round 3	Info on results for all games
No feedback	Assign players to group	No feedback	Final payoff info

Table 1: Steps of the experiment.

2.1 Baseline

In the baseline design, A players are assigned the role of proposer and must make a suggestion on how to split $10 with player C who is a "passive" receiver and has no active role in the game. In the meantime (and without knowing the proposal made by the proposer) B players are assigned the role of decision-makers and have to fill in a strategy profile (screen-shot in Figure 1) accepting or rejecting all potential offer that proposers could make. Decision-makers get paid a "flat fee" for their decision whatever the outcome of the game, while the payoff of both proposer and receiver depend on the decision-maker's choices and the offer made by the proposer. If the offer from the proposer is accepted, the split goes as suggested, if rejected, then both proposer and receiver get $0 for the round. This payoff structure is known by all subjects when making their decisions. For the decision-maker we have three different "flat fee' payoffs; a low (L) payoff of $3, a normal (N) payoff of $5, and a high (H) payoff of $12.

The reason for these three different payoffs is to test whether decision-makers take into account their relative payoff when making their decision. If there are no difference across treatments, then we can be certain that we are observing the truly normative standards of behavior of subjects free of any strategic or monetary concerns.

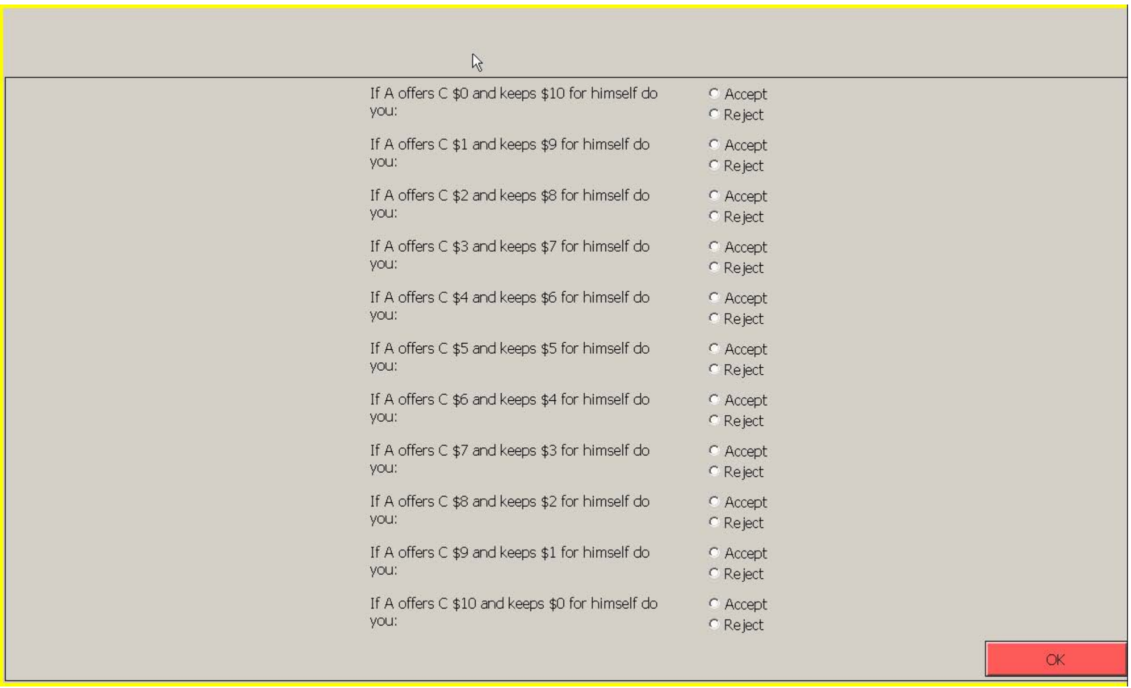

Figure 1: Decision-Maker Screen-shot.

2.2 Robustness Check

In addition to the different flat-fee payoffs to decision-makers, we introduce a "Costly Rejection" treatment as a robustness check to our results. This treatment has the same structure as the Baseline, but now decision-makers are penalized with $1 if the game ends in a rejection. The objective of this penalization is to study the relative "fragility" of subjects' aversion to selfish intentions and inequality. If the concern for selfish intentions is stronger (weaker) than that for inequality, then we should observe a relatively larger (smaller) drop in the rejection rate of generous offers than of selfish offers.

In other words, once we put a price on rejecting offers we can study the reaction of subjects to a change in prices and infer how strong is the relative aversion of subjects to selfish intentions and inequality. To make this robustness test more stringent, we only introduce it in the High or Low payoff format. So, the payoffs for the Costly Rejection robustness check are:

- Low Payoff (L-1) : decision-maker gets paid $3 if the proposer's offer is accepted and $2 if rejected.
- High Payoff (H-1) : decision-maker gets paid $12 if the proposer's offer is accepted and $11 if rejected.

2.3 2UG

Finally, in all sessions, one of the rounds will be a 2UG game. This is a regular ultimatum game but with the 3-player group structure. In it, A makes two independent suggestions on how to split $10; one to B, the other to C. As in the baseline, we use the strategy method to elicit B and C's preferences over the offers made to them. If B (C) rejects the offer that A made *to him*, then B (C) gets $0 for the round. If, instead B (C) accepts the offer, then the split goes as suggested. A's payoff is randomly chosen from one of the two outcomes. If the selected game turns out to be a rejection, then A gets $0 for the round, if accepted, then A gets her part of the proposal. The purpose of randomizing A's payoffs is to prevent portfolio effects and to make payoffs fair across all subject types.

The 2UG game is introduced in our sessions for three reasons. The first one is to create, in most sessions, a "break" between our treatments of interest allowing us to recreate a "first-shot" scenario in the third round of the session. Secondly, we use the 2UG as a control, to verify whether or not our subjects understand the strategy method interface. Finally, the results of the 2UG game should help to confirm that decision-makers took seriously the possibility of generous offers when filling their strategy profiles.

3 Results

The experiment was run with a total of 234 undergraduates from both Universitat Pompeu Fabra (UPF) in Barcelona, and the University of California Santa Cruz (UCSC) in Santa Cruz, California. Each session had 3 rounds and lasted on average 30 minutes. The mean earnings at UCSC were of $4.5 and at UPF of €4.35 plus a show-up fee ($5 and €3)[3] that was announced only at the end of the experiment.[4] Subjects were recruited through the ORSEE systems of each university (Greiner (2004)), and were required not to have any previous experience in bargaining games. Details on ordering and number of observations for each session can be found in Appendix A.

We begin the analysis of our data by looking at the baseline treatments in section 3.1, and then move to the analysis of the Costly Rejection in section 3.2. The 2UG outcomes can be found in Appendix B.

[3]From now on, we will use the dollar sign to include both euros and dollars.

[4]While most subjects are aware of the rule of a "show-up fee" not announcing it until the end of the experiment adds pressure to the decision-makers would their decisions result in a rejection.

3.1 Baseline

Figure 2 presents the percentage of acceptances for each potential offer. From top to bottom we see the acceptances rates for treatment N, the comparison between H and N, the comparison between L and N, and finally that between H and L. Two things immediately stand out: The first one is that there is a significant number of generous offers being rejected; the second one is that the results in all treatments look very much alike despite the big payoff differences of decision-makers. Indeed, using a pairwise Epps-Singleton test we see no statistical differences between the distribution of acceptances in High and Low (p-value=0.600), High and Normal (p-value=0.579), or Low and Normal (p-value=0.999). A two-sided Fisher test comparing individual acceptance rates for each potential offer confirms this result (Table 2).

Furthermore, when we look at decisions at the individual level we observe that subjects do not significantly change their behavior across the different payoffs. A within subject Wilcoxon matched-pairs signed-rank test shows that the preferences of subjects are robust across the different payment level ($p\text{-}value = 0.375$, $p\text{-}value = 0.161$, and $p\text{-}value = 0.082$ when comparing N to L, N to H, and L and H respectively). This indicates that decision-makers are not considering their payoff or relative payoff standing when making decisions, suggesting that we are observing the normative preferences of subjects, free of any strategic or monetary concerns.

	\$0	\$1	\$2	\$3	\$4	\$5	\$6	\$7	\$8	\$9	\$10
L=H	1.000	0.775	0.596	1.000	1.000	0.141	0.550	1.000	1.000	0.810	1.000
H=N	0.355	0.280	0.202	0.808	0.604	0.250	0.759	0.792	0.226	0.469	0.636
L=H	0.329	0.227	0.089*	0.789	0.768	1.000	1.000	0.768	0.269	0.412	0.787

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Two-Sided Fisher p-values

- **Result 1:** *In the Baseline setup we observe no statistical differences in rejection patterns across treatments.*

To check whether or not intentions play a role in the preferences of decision-makers we define "absolute inequality" as the absolute value of the difference between A and C's payoff if the offer were accepted. We then run a Probit model with the binary accept/reject outcome as dependent variable, and dummies for order (First), treatment (High, Low), location (Where), and distance to the fair split. The coding for the distance dummies includes the distance to the even split and the direction of this distance. So, for example, Dist3l is the dummy for the \$2

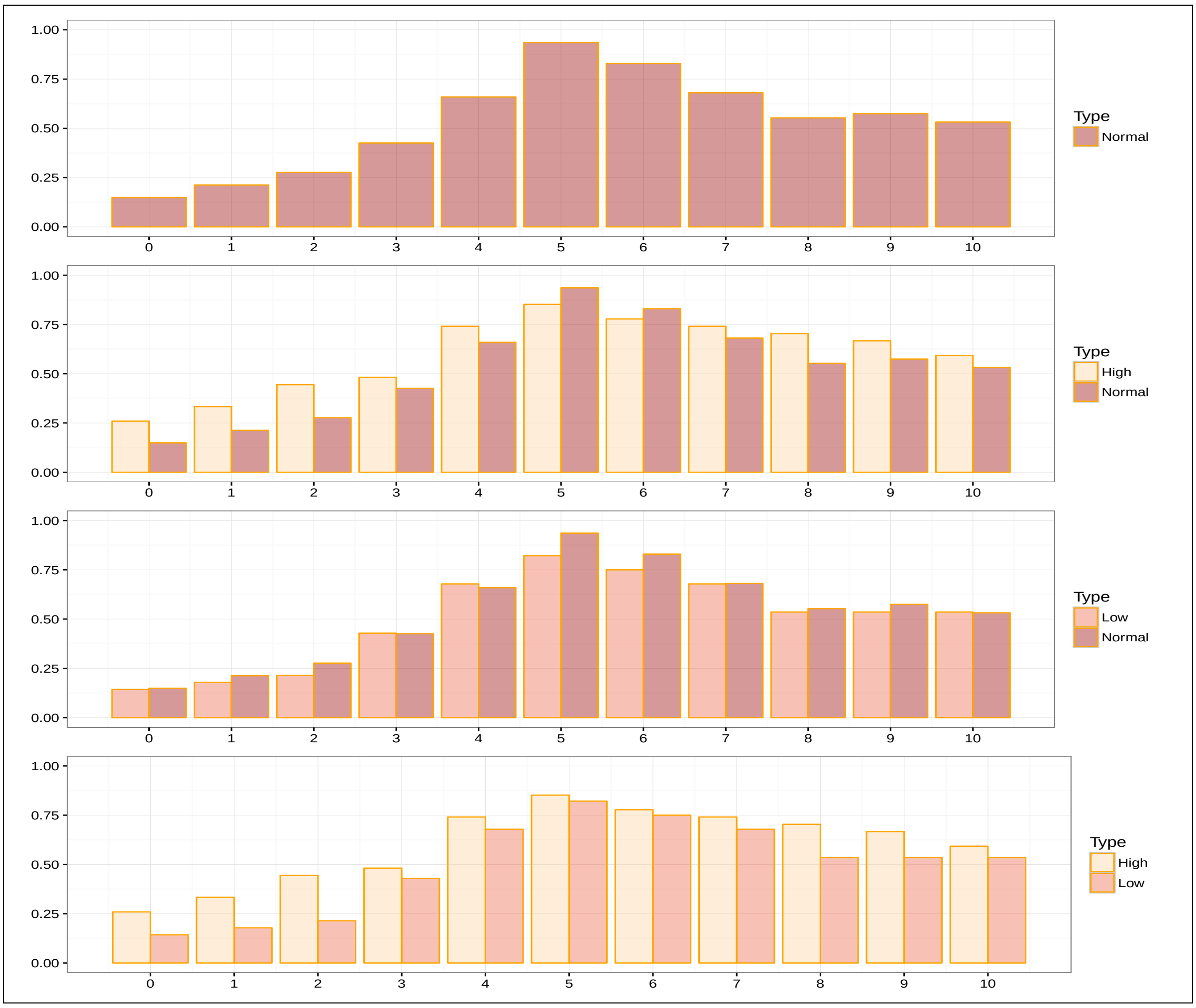

Figure 2: Acceptance Rates for Baseline Treatments. For each graph, in the vertical axis we plot the percentage of acceptances, in the horizontal axis, the offer.

offer (which is 3 dollars to the left of $5) and Dist2r is the dummy for an offer of $7 (which is 2 dollars to the right of $5). The results can be found in Table 3 where Column 3 has the full specification of the Probit model, and column 4 includes the interactions between treatment and distance (See Appendix E for the interactions). In all models the errors are clustered at the individual level.

The results show that the dummies for distance are not only negative and highly significant, but that their coefficients follow an (almost) perfectly monotonic pattern. The further away an offer is from $5 the lower the probability of being accepted.

- **Result 2:** *The greater the absolute inequality, the lower the probability of the proposal being accepted.*

However, in Figure 2 we see that the rejection patterns are not perfectly symmetric around

Table 3: Probit model of Accepted Offers.

	(1) Accept	(2) Accept	(3) Accept	(4) Accept
Low	-0.0752	0.0411	0.0414	-0.455
	(0.137)	(0.170)	(0.201)	(0.306)
High	0.176	0.330	0.380	-0.299
	(0.159)	(0.213)	(0.249)	(0.396)
First		0.237	0.277	0.277
		(0.153)	(0.178)	(0.179)
Where		-0.0632	-0.0802	-0.0781
		(0.226)	(0.264)	(0.265)
Dist1l			-0.704***	-1.109***
			(0.174)	(0.280)
Dist2l			-1.346***	-1.713***
			(0.216)	(0.305)
Dist3l			-1.719***	-2.116***
			(0.237)	(0.319)
Dist4l			-1.931***	-2.324***
			(0.238)	(0.330)
Dist5l			-2.141***	-2.569***
			(0.256)	(0.349)
Dist1r			-0.367**	-0.564*
			(0.132)	(0.238)
Dist2r			-0.679***	-1.053***
			(0.174)	(0.276)
Dist3r			-0.971***	-1.390***
			(0.184)	(0.292)
Dist4r			-0.971***	-1.336***
			(0.202)	(0.290)
Dist5r			-1.072***	-1.444***
			(0.211)	(0.294)
Cons	0.0752	-0.0923	0.975***	1.330***
	(0.104)	(0.188)	(0.239)	(0.315)
N	1122	1122	1122	1122
Interaction	No	No	No	Yes

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

the fair split as, for the same amount of absolute inequality, generous offers are more likely to be accepted than selfish ones. The difference is significant (see p-values of Two-sided Fisher test in Table 4) and points towards an effect of selfish intentions on decision-makers.

Treatment	\$4=\$6	\$3=\$7	\$2=\$8	\$1=\$9	\$0=\$10
L	0.768	0.106	0.026**	0.011**	0.004***
H	1	0.093*	0.098*	0.029**	0.027**
N	0.048**	0.011**	0.006***	0.001***	¡0.001***

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Two-sided Fisher Test p-values.

- **Result 3:** *In the baseline treatments, decision-makers are less willing to tolerate inequality when it is the result of a selfish offer.*

3.2 Costly-Rejection

In Figure 3 we present the results of the costly-rejection treatments and compare them to their baseline counterparts; H-1 and H in the top panel, and L-1 and L in the middle, and H-1 and L-1 at the bottom.

As in the Baseline treatments, *both* selfish and generous offers continue to be rejected in all costly treatments. But more surprising is that H-1 and L-1 look almost identical. A Two-sided Fisher test finds no differences across individual offer acceptance rates (Appendix E), nor does an Epps-Singleton test find any differences when comparing the whole distribution (p-value=0.907).[5] Moreover, when comparing the acceptances within subject using a Wilcoxon matched pairs sign-rank test we see no differences at the subject level (p-value = 0.617). So, even when the relative costs of rejecting offers are wide apart, decision-makers behave in a similar manner under both costly treatments. This confirms Result 1; our game structure allows us to observe the normative standards of behavior of decision-makers.

- **Result 4:** *Even with widely different relative rejection costs, there is no significant difference across treatments in the Costly-Rejection setup.*

On the other hand, we do see some differences when comparing the Costly Rejection treatments and their Baseline counterparts. These differences arise mostly in the left of the distributions; that is, where the selfish offers are. As can be seen, once we introduce a cost to rejecting offer, decision-makers are less willing to punish selfish behavior (especially in the L-1 treatment), but continue to reject generous offers at the same rate than in the Baseline treatment (see Table 5 for the p-value of one-sided Fisher tests comparing treatments).

	\$0	\$1	\$2	\$3	\$4	\$5	\$6	\$7	\$8	\$9	\$10
L = L-1	0.01**	0.01**	0.01**	0.01**	0.05*	0.37	0.16	0.30	0.09*	0.09*	0.33
H = H-1	0.07*	0.08*	0.20	0.08*	0.25	0.17	0.23	0.14	0.37	0.27	0.06*

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: One-sided Fisher p-values comparing total acceptances per treatment.

It appears that introducing a cost to rejecting offers wipes out the concerns of decision-makers for “intentions”, while maintaining their concerns for inequality. This indicates the relative fragility that concerns for selfish intentions have relative to concerns for inequality. A

[5] An identical result happens when we use only first round data points (p-value=0.969). In this case we have 11 subjects playing H-1 in the first round and 16 subjects playing L-1

Figure 3: Acceptance rates of L-1 and H-1 plotted against their Baseline counterparts, along a comparison of L-1 and H-1. For each graph, in the vertical axis we plot the percentage of acceptances, and in the horizontal axis the offer.

two-sided Fisher-test confirms the symmetry in the distributions of acceptance rates in both costly treatments (see Table 6).

	\$4=\$6	\$3=\$7	\$2=\$8	\$1=\$9	\$0=\$10
L-1	1.000	1.000	0.766	0.559	0.275
H-1	1.000	0.175	0.241	0.148	0.021**

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Two-Sided Fisher p-values.

- **Result 5:** *The introduction of a cost to rejecting offers wipes out the role of intentions in the acceptance pattern of decision-makers, leaving the payoff inequality between proposer and receiver as the only reason for rejecting an offer.*

Finally, to offer an overall picture of the whole experiment and its different treatments, Table 7 presents a Probit model comparing N to the High and Low payoff treatments for both Baseline and Costly Rejection. The results show that treatments are not really significant, but that, in all cases, the distance from the fair split is highly significant, and the probability of acceptance decreases as absolute inequality increases. All models includes interactions between treatment and absolute distance, with no systematic significant results (see Appendix D).

	(1) Baseline	(2) Costly
first	0.277	0.0805
	(0.179)	(0.191)
where	-0.0781	-0.0495
	(0.265)	(0.293)
low	-0.455	
	(0.306)	
high	-0.299	
	(0.396)	
L-1		0.333
		(0.594)
H-1		-0.249
		(0.487)
dist1r	-0.564*	-0.568*
	(0.238)	(0.236)
dist2r	-1.053***	-1.054***
	(0.276)	(0.272)
dist3r	-1.390***	-1.390***
	(0.292)	(0.287)
dist4r	-1.336***	-1.336***
	(0.290)	(0.285)
dist5r	-1.444***	-1.444***
	(0.294)	(0.290)
dist1l	-1.109***	-1.112***
	(0.280)	(0.275)
dist2l	-1.713***	-1.712***
	(0.305)	(0.300)
dist3l	-2.116***	-2.117***
	(0.319)	(0.314)
dist4l	-2.324***	-2.321***
	(0.330)	(0.325)
dist5l	-2.569***	-2.564***
	(0.349)	(0.344)
Cons	1.330***	1.475***
	(0.315)	(0.290)
N	1122	1111
Interaction	Yes	Yes

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Probit model comparing each treatment to baseline N treatment

4 Conclusion

From conflict resolution to evolutionary biology, social preferences are an object of study in many different research areas. A complete understanding of how they operate should be a priority, yet the results we have on the relative importance of selfish intentions versus inequality aversion appear inconclusive; while Falk et al. (2008), and Stanca et al. (2009) claim that intentions are the main driver behind the actions of third parties, Leibbrandt and Lopez-Perez (2008) show that subjects respond more to outcomes than to intentions.

Our contribution to this literature consists in designing a game to observe the truly normative preferences of neutral third-parties. By paying decision-makers a fixed amount whatever their decision we can observe the social preferences of subjects free of any strategic or monetary concerns.

The results show that decision-makers, in order to reduce the inequality of payoffs between participants, are willing to reject a significant amount of both selfish and generous offers. This is a striking result since rejecting an offer implies leaving both proposer and receiver with a payoff of $0, suggesting that their decisions show a strong preference for equality. And, while, selfish offers are more likely to be rejected than generous ones, the introduction of a cost to rejecting offers makes aversion to selfish intentions disappear, to such an extent that only inequality aversion can explain the rejection patterns of subjects. A secondary result of our experiment is that decision-makers are not efficiency seekers, as they are willing to leave all subjects with a payoff of $0 rather than accepting an uneven offer, even if this uneven offer is a generous one.

We interpret our results as evidence that inequality aversion plays an important role in social preferences beyond that suggested by the previous literature.

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Appendix:

A Details on session structure

The treatment ordering for each session as well as the total number of subjects per session in Table 8

Table 8: Treatment ordering and number observations for all type (A,B,C) of subjects.

Treatment Order/Town	Barcelona	Santa Cruz
N2H	18	21
N2L	18	21
(H-1)2(L-1)	-	33
(L-1)2(H-1)	-	48
L2H	-	12
2NL	18	-
2NH	18	-
H2N	15	-
L2N	15	-

In Table 9 we present the total number of actual decision-maker observations for each treatment:

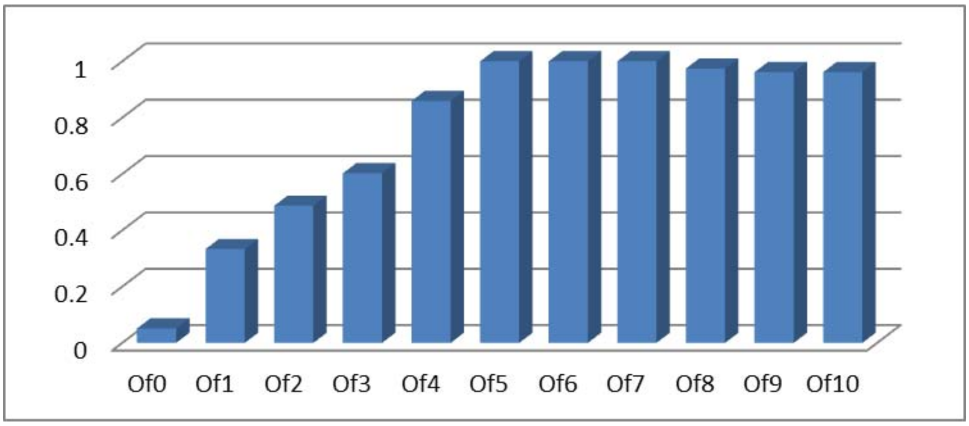
Table 9: Total number of B subject observations per treatment

	Barcelona	Santa Cruz	Total
N	33	14	47
H	21	7	28
L	20	7	27
H-1	-	27	27
L-1	-	27	27

B 2UG Results

We summarize all of B subject's observations in Figure 4. In it we present the percentage of decision-makers accepting each potential offer from the proposer to the receiver (e.g. almost 60% of decision-makers accept a hypothetical offer of $3 while only 30% accept one of 1). The acceptance results are slightly higher than those reported in the literature (see Camerer and Thaler (1995)), but still within the range of what would be expected. The average offer was of $3.59, which is also what would be expected in an experiment like this. These results validate both our subject pool and the software interface, but most importantly, they show that decision-makers act consistently when deciding about hyper-generous offers (i.e., subjects do not randomize or "experiment" within this range of offers).[6] We take this as an indication that decision-makers take seriously the possibility of a generous offer.

Figure 4: Acceptances of 2UG



C Ordering Effects

Due to a miscommunication between the Barcelona and Santa Cruz labs we have a very unbalanced amount of first round H treatment (5) compared with third round H treatment (22). This unfortunately pollutes the ordering effects for the H treatments as a 2 tailed Fisher Test comparing first round treatments against other rounds in the experiment shows.

Table 10: Two-Sided Fisher P-values Comparing First Round Treatments to all Other Treatments

	\$0	\$1	\$2	\$3	\$4	\$5	\$6	\$7	\$8	\$9	\$10
N	0.752	0.890	0.344	0.671	0.174	1.000	0.767	0.492	0.357	0.923	0.628
H-1	0.704	1.000	1.000	0.090*	0.621	1.000	1.000	1.000	1.000	1.000	1.000
H	0.091*	0.030**	0.010**	0.165	0.238	1.000	1.000	1.000	1.000	0.136	0.060*
L	0.574	1.000	0.352	0.687	0.407	1.000	1.000	1.000	0.435	1.000	0.435
L-1	1.000	0.448	0.692	1.000	0.056*	0.549	0.549	1.000	0.662	0.662	0.448

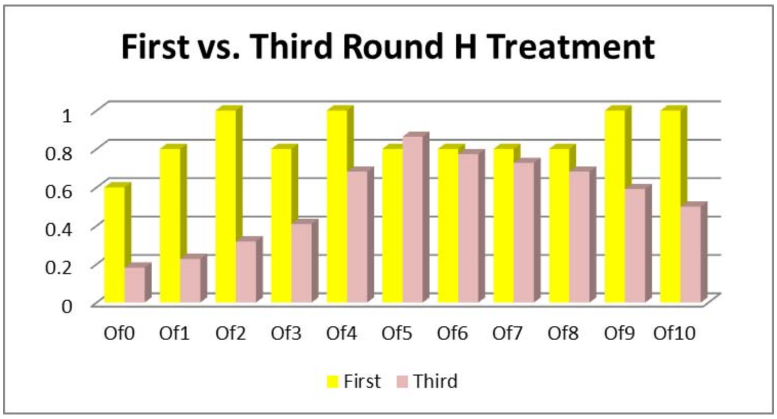
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

While most treatments have no ordering effects, the LHT of the H treatment seems to be significantly affected by ordering. If we look at Graph 5, we can see that while last round pattern of acceptances does look like those in the rest of treatments, first round H acceptances looks

[6] Three subjects that rejected offers of \$8 or more yet accepted all smaller offers. We believe that these subjects misunderstood the interface and were trying to reject offers smaller than \$2.

pretty random. As mentioned, we believe that this is due to the low number of observations of H in the first round, and that if we had more observations we would see no ordering effects.

Figure 5: Acceptance Rates for H for First (n=5) and Third (n=22) Round



D Interactions

	(1) Accept	(2) Accept	(3) Accept	(4) Accept
Dist1l*Low				0.134
				(0.0840)
Dist2l*Low				0.118
				(0.0904)
Dist3l*Low				0.0524
				(0.101)
Dist4l*Low				0.0805
				(0.110)
Dist5l*Low				0.109
				(0.109)
Dist1r*Low				0.0350
				(0.0687)
Dist2r*Low				0.112
				(0.0814)
Dist3r*Low				0.0973
				(0.102)
Dist4r*Low				0.0760
				(0.109)
Dist5r*Low				0.119
				(0.103)
Dist1l*High				0.165
				(0.0945)
Dist2l*High				0.140
				(0.0959)
Dist3l*High				0.252*
				(0.0995)
Dist4l*High				0.205*
				(0.0967)
Dist5l*High				0.195*
				(0.0881)
Dist1r*High				0.0323
				(0.0597)
Dist2r*High				0.144*
				(0.0679)
Dist3r*High				0.235**
				(0.0800)
Dist4r*High				0.177
				(0.0973)
Dist5r*High				0.145
				(0.106)
N	1122	1122	1122	1122

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Interactions of Table 3

Table 12: Interactions for Table 7

(a) Baseline

Dist1r*Low	0.312
	(0.278)
Dist2r*Low	0.586*
	(0.290)
Dist3r*Low	0.549
	(0.328)
Dist4r*Low	0.494
	(0.356)
Dist5r*Low	0.602
	(0.342)
Dist1l*Low	0.637*
	(0.294)
Dist2l*Low	0.600*
	(0.300)
Dist3l*Low	0.382
	(0.370)
Dist4l*Low	0.465
	(0.433)
Dist5l*Low	0.559
	(0.470)
Dist1r*High	0.286
	(0.260)
Dist2r*High	0.655*
	(0.282)
Dist3r*High	0.881**
	(0.318)
Dist4r*High	0.726
	(0.372)
Dist5r*High	0.635
	(0.386)
Dist1l*High	0.718
	(0.375)
Dist2l*Hight	0.617
	(0.346)
Dist3l*High	0.925*
	(0.380)
Dist4l*High	0.837*
	(0.389)
Dist5l*High	0.865*
	(0.385)
N	1122

(b) Costly

dist1r*H-1	-0.001
	(0.446)
dist2r*H-1	0.484
	(0.631)
dist3r*H-1	0.364
	(0.619)
dist4r*H-1	0.310
	(0.618)
dist5r*H-1	0.549
	(0.623)
dist1l*H-1	0.367
	(0.489)
dist2l*H-1	0.458
	(0.537)
dist3l*H-1	0.559
	(0.556)
dist4l*H-1	0.669
	(0.565)
dist5l*H-1	0.726
	(0.582)
dist1r*L-1	0.568
	(0.368)
dist2r*L-1	0.593
	(0.428)
dist3r*L-1	0.810
	(0.445)
dist4r*L-1	0.756
	(0.389)
dist5r*L-1	0.550
	(0.416)
dist1l*L-1	1.116**
	(0.399)
dist2l*L-1	1.133*
	(0.453)
dist3l*L-1	1.322**
	(0.471)
dist4l*L-1	1.427**
	(0.484)
dist5l*L-1	1.200**
	(0.517)
N	1111

E Two Sided Fisher Tests

Two-Sided Fisher test comparing treatments for the Costly Rejection setup.

	\$0	\$1	\$2	\$3	\$4	\$5	\$6	\$7	\$8	\$9	\$10
L-1 = H-1	1.000	0.782	0.779	1.000	1.000	0.610	1.000	0.467	1.000	1.000	0.224

Table 13: Two-Sided Fisher p-values

F Instructions L2H

Welcome! This is an economics experiment. You will be a player in many periods of an interactive decision-making game. If you pay close attention to these instructions, you can earn a significant sum of money. It will be paid to you in cash at the end of the last period. It is important that you remain silent and do not look at other people's work. If you have any questions, or need assistance of any kind, please raise your hand and we will come to you. If you talk, laugh, exclaim out loud, etc., you will be asked to leave and you will not be paid. We expect and appreciate your cooperation today.

This experiment has three different rounds. Before each round the specific rules and how you will earn money will be explained to you. In each round there will always be three types of players: A, B and C. You will be assigned to a type in Round 1 and will remain this type across all three rounds. Only one of the three rounds will be used for the final payoffs. This round is chosen randomly by the computer. The outcomes of each round are not made public until the end of the session (i.e. after round 3). Each round the groups are scrambled so you will never make offers or decide for the same player in two different rounds.

Round 1:

The first thing that you will see on your screen is your player type.

You will then be assigned to a group consisting of three players: an A type, B type and C type.

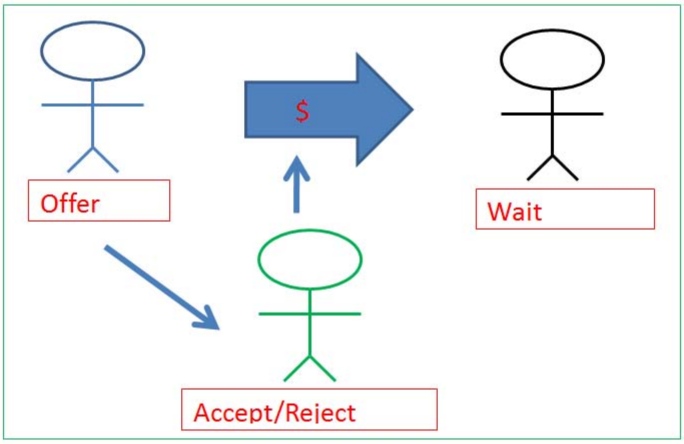
Player A will be endowed with $10 which he will split with player C. In order to do so Player A will have to input the amount he is willing to offer Player C. Player A will only be able to make integer offers (full dollars), so A will not be able to break its offer into cents.

While player A is deciding how much to offer player C, player B will be filling out a binding "strategy profile". The strategy profile has an "accept or reject" button for each potential offer from A to C (from $0 to $10). Player B's binding decision to accept or reject A's offers to C will be done before he knows the actual offer made by A.

A's decision: How to split an endowment of $10 with Player C by making him an offer between $0 and $10. If the offer is of $X, A will be keeping for himself 10-X.

B's decision: Before knowing the offer from A to C, B will fill a binding "strategy profile" deciding whether he accepts or rejects every potential offer from A to C. This decision is made without knowing the offer from A to C.

Figure 6: Diagram 3UG



It is very important for A to realize that he is going to write the amount he wants to offer C and not how much he wants to keep.

Payoff for Round 1:

If B accepts the offer from A to C, then they split the $10 as suggested by A.

If B rejects the offer from A to C, then both (A and C) get $0.

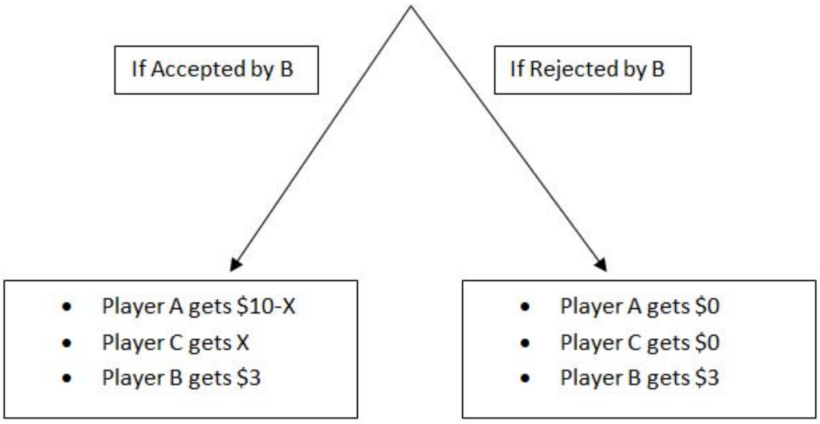
B will get paid $3 no matter what is the outcome.

Timing and Payoffs:

1. B fills a strategy profile with all potential offers from A to C.

2. A decides how much to offer C (say X)

Figure 7: Diagram of Payoffs



<u>Round 2</u>:

As mentioned at the beginning of the experiment you will keep your player type across the whole session. So A players are still A, B are B and C are C.

In this round type A players will be endowed with $20 and will have to make TWO offers:

1. How to split $10 with player B.
2. How to split $10 with player C.

As in Round 1 a binding "strategy profile" will be filled by B and C players before they know the offer made to *them*.

It is very important to notice that B and C players are making decisions concerning their own payoffs.

<u>A's decision</u>: How to split $10 with B and how to split $10 with A.

Each offer is independent. So the outcome of the offer to B has no effect on the outcome of the offer to C.

Payoffs for A will be as in Round 1 (if he offers X and the offer is accepted he gets $10-X, if the offer is rejected both him and the rejecting player get 0).

B and C players will get paid X or 0 depending if the accepted or rejected the offer made directly to them.

In order to make payoffs equitable for this round, A's payoff for this round will be chosen at random between one of the two outcomes (offer to B and offer to C). B and C's decision: Before knowing the offer made to them by Player A, B and C will fill a binding "strategy profile" deciding if they accept or reject *every potential offer made directly to them.*

If the offer from A is accepted, then the split is done as proposed by A. If the offer is rejected both the receiver and A get $0 as the outcome for this round.

<u>Timing and Payoff for Round 2</u>:

1. Each receiver fills a strategy profile with all potential offers that A could make them.
2. A decides how much to offer C and B (say X)
3. Payoffs for B and C will be the outcome of their particular game with A.
4. To make outcomes equitable, the computer will choose randomly one of the two outcomes to be A's payoff for the round.

For each offer made from A to the other members of his group:

Figure 8: 2UG Diagram

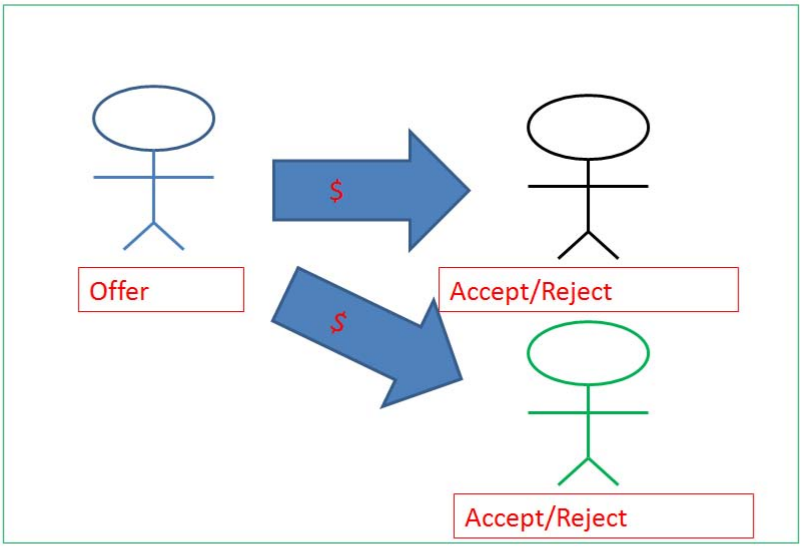
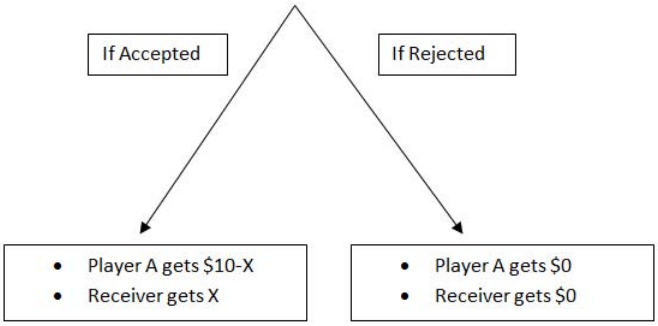


Figure 9: 2UG Payoffs



<u>Round 3</u>:

As mentioned at the beginning of the experiment you will remain your player type across the whole session.

This round is very similar to round 1. You will now be re-scrambled into groups of three subjects (one A, one B and one C subject).

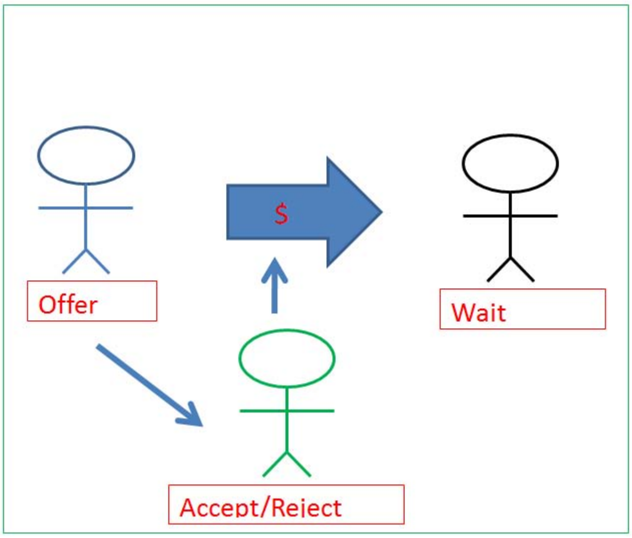
A will be endowed with $10 and must decide how to split them with C.

B's role is exactly the same as that in round 1: Before knowing the offer from A to C, B will fill a "strategy profile" deciding whether he accepts or rejects *every potential offer from A to C.*

If the offer from A to C is accepted by B, then the split is done as proposed by A. If B rejects the offer, then both A and C receive $0 for this round.

B's payoff in this round is a flat $12 fee, whatever his decision and outcome of the round. So, the only change between Round 1 and Round 3 is that player B, is getting paid a different amount.

Figure 10: 3UG (H) Diagram



Timing and Payoffs:

1. B fills a strategy profile with all potential offers from A to B.

2. A decides how much to offer C (say X)

Figure 11: Payment Diagram 3UG (H)