Push, don't nudge: Behavioral spillovers and policy instruments

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Abstract

Policy interventions are generally evaluated for their direct effectiveness. Little is known about their ability to persist over time and spill across contexts. These latter aspects can reinforce or offset the direct impacts depending on the policy instrument choice. Through an online experiment with 1,486 subjects, we compare four widely used policy instruments in terms of their ability to enforce a norm of fairness in the Dictator Game, and to persist over time (i.e., to a subsequent untreated Dictator Game) or spill over to a norm of cooperation (i.e., to a subsequent Prisoner's Dilemma). As specific policy interventions, we employed two instances of *nudges*: defaults and social information; and two instances of *push* measures: rebates and a minimum donation rule. Our results show that (i) rebates, the minimum donation rule and social information have a positive direct effect on fairness, although the effect of social information is only marginally significant, and that (ii) the effect of rebates and the minimum donation rule persists in the second game, but only within the same game type. These findings demonstrate that, within our specific design, push measures are more effective than nudges in promoting fairness.

Keywords: default, social norms, rebates, minimum donation rule, fairness, cooperation, spillover effects.

1 Introduction

Evaluation of policy instruments is widely recognized as a valuable tool to inform policy design. Among the variables that influence the evaluation of a policy intervention, the extent to which its effects persist over time and spill across contexts plays an important role. For example, a key question in the environmental economics literature is whether interventions that foster pro-social norms in the conservation of a specific environmental resource have positive or negative spillovers to other pro-environmental behaviors (Dolan & Galizzi, 2015; Truelove, Carrico, Weber, Raimi, & Vandenbergh, 2014).

The sign and magnitude of policy spillovers may depend on the instrument used to induce behavioral changes. Here, we focus on two instances of *nudges*, defaults and social information, and two instances of *push* measures, rebates and a minimum donation rule. Previous research has investigated the effect of defaults (Johnson & Goldstein, 2003; Pichert & Katsikopoulos, 2008), social information (Bryan & Test, 1967; Reingen, 1978), rebates (Andreoni & Payne, 2011; List, 2011), and regulation (Cardenas, 2004; Falk & Kosfeld, 2006) in several contexts. Previous studies have also compared the effectiveness of pairs of policy instruments (Ito, Ida, & Tanaka, 2015; Ferraro & Price, 2013; Ashraf, Bandiera, & Jack, 2014). However, little is known about how treatment effects would carry forward and outside the specific area they were designed for (Dolan & Galizzi, 2015; Peysakhovich & Rand, 2016). To the best of our knowledge, this is the first study comparing all these interventions within the same design both in terms of their direct effect on a Dictator Game and in terms of their ability to influence subsequent behavior within the same decision context (i.e., other Dictator Game) and across contexts (i.e., Prisoner's Dilemma).

2 Experimental design and procedure

We implemented a large scale experiment articulated in two stages in Amazon Mechanical Turk (AMT), using a pool of US workers. Overall, we recruited 1,486 participants: 738 as decision makers and 748 as recipients. From the sample of recipients we elicited beliefs on behavior of decision makers in the main experiment[1].

Subjects received \$0.50 as participation fee, in addition to the earnings from the tasks. They participated

[1]We also conducted a pilot study with 564 participants, consisting in a single DG with two treatments, differing in the size of the participation fee (\$0.50 and \$0.70). Pilot data are used in the social information treatment and to check for the presence of income effects in DG donations (see Section 3).

in a first stage DG (half in the role of dictators and half in the role of recipients), and subsequently played a second game, randomly chosen between another DG and a PD. Subjects playing a second DG kept the same role as in Stage 1.[2]

In the first stage, dictators had an endowment of \$0.20 and were asked to decide how much of it (in steps of 2 cents) they wanted to give to the recipient, if any. The recipient had no choice and only got the amount that the dictator allocated to her.

After reading the general rules of the dictator game, all subjects were asked two comprehension questions about the donation maximizing their own and the other participant's payoff. Subjects failing the comprehension questions were automatically excluded from the survey. Those who passed the comprehension questions (about 73% of the total) were randomly assigned to one of four different policy interventions, in addition to the baseline case.

As specific policy interventions, we implemented two instances of nudges (default and social information) and two instances of push measures (rebate and minimum donation rule), all of which with a focal donation point at 50% of the endowment. In the *default* case, donations were pre-set at 50% of the endowment by simply pre-marking the button corresponding to a 50% donation. This is a mild intervention, since the player could select a different donation with very limited effort. Under the *social information* treatment, we informed subjects of the behavior of the subjects who participated in the pilot study: in particular, subjects were told that roughly half of the previous donations were equal or above 50% (this was the actual outcome, no deception was used). The *rebate* treatment rewarded dictators who gave at least 50% of their endowment, by returning half of the donation to them. Finally, a *minimum donation rule*, set at 50% of the endowment, meant that dictators were not allowed to proceed if their donations were strictly below 50%.

The second stage game was either a standard DG or a PD, without any policy intervention. We clarified that the second stage was independent from the first one and played with a different partner. The instruction screen of the second stage DG was identical to the one of the first stage DG, thus no additional comprehension questions were asked. Subjects playing the PD in the second stage had an endowment of \$0.10, and were asked how much of it, if any, they wanted to give to the other person (in steps of 1 cent). The amount given would be multiplied by 2 and earned by the other person. Since the Prisoner's

[2]Full experimental instructions are reported in the Appendix.

Dilemma is different from the Dictator Game, subjects assigned to playing it were asked another set of comprehension questions (success rate of 70%).

While the DG is used to measure individuals' altruistic tendencies (Brañas-Garza, 2006, 2007; Charness & Gneezy, 2008; Engel, 2011; Rand, Brescoll, Everett, Capraro, & Barcelo, 2016), the PD is used to measure individuals' cooperative tendencies (Nowak, 2006; Perc & Szolnoki, 2010; Capraro, 2013; Rand & Nowak, 2013). Recent experiments have shown that Dictators' allocations are positively correlated with real life altruism in a number of situations (Franzen & Pointner, 2013; Peysakhovich, Nowak, & Rand, 2014). The PD is a reliable measure of cooperative tendencies (Englmaier & Gebhardt, 2016). Although positively correlated, altruism and cooperation are two different types of behaviors: Capraro, Jordan and Rand (2014) have shown that people who give in the DG also cooperate in the PD, but not the converse[3].

All subjects participating in the main experiment completed a demographic questionnaire at the end of the second stage.

Table 1 summarizes our treatments, and displays the number of participants for each of them. We adopted a series of checks on IP addresses and Turk IDs to ensure that no subject took the experiment more than once. The sample size in the second stage PD is smaller than in the second stage DG, because of the 30% of subjects assigned to this treatment who failed the additional comprehension questions on the PD (same success rate of the common set of questions). However, this differential attrition has not led to statistically significant differences between the two sub-samples along observable characteristics, as shown in Table 1 in the Supplementary Material.

For DG games, we recruited an equal number of subjects to act as receivers. Subjects assigned to the role of receivers in the main experiment faced two belief elicitation tasks. In each treatment, subjects were grouped with two other participants, person A (a dictator) and person B (a recipient). They were shown the screenshots of the instructions received by person A, and were asked to guess person A's donation to Person B. Stage 1 treatments mirrored the ones facing the dictators. Correct guesses were incentivized with a \$0.20 reward. This design allows us to elicit recipients' beliefs (Capraro & Kuilder, 2016) and to observe if beliefs on DG donation in stage 1 and 2 varied between subjects depending on how giving was encouraged in the first stage game.

[3]To confirm this claim, we compare the distribution of decisions in the two games in our sample and find them to be significantly different (Epps-Singleton, $p<.0000$).

Table 1: List of treatments and number of participants per treatment

	Stage 1	**Stage 2**	
	DG	**DG**	**PD**
Treatment			
Baseline	130	80	50
Default	162	96	66
Social information	153	92	61
Rebate	138	81	57
Min. donation rule	155	93	62
Total	738	442	296

3 Results

3.1 Direct effects

Column 1 of Table 2 summarizes the direct effects of policy interventions on Stage 1 behavior. Average giving in the first stage DG is 26.7% of the total pie in the baseline treatment, in line with Engel's (2011) meta-analysis of 616 dictator games (28.3%). Also the type of the distribution is in line with Engel's meta-analysis, being, in both cases, a bimodal distribution with one mode at giving nothing and one mode at giving half. Looking at the treatments, average donations are 28.2% of the total pie in the default case, 32.3% in the social information treatment, 46.1% under rebate, and 55.3% under the minimum contribution rule. Pooling together nudge and push interventions, we find that the average donation under nudge interventions is 30.2% while the average donation under push interventions is 50.9%.

Linear regressions show that setting a default does not significantly increase Dictator Game donations, while all other policy interventions have a significant positive effect on donations, although the effect of social information is only marginally significant (Column 1 of Table 2 in the Appendix). Pooling together nudge and push measures, we find that only the latter have a significant positive effect on donations (Column 2 of Table 2 in the Appendix)

We also observe that out of pocket donations by dictators in the baseline treatment and those in the rebate treatment are statistically the same, as the increase in donations in the rebate treatment turns out

Table 2: Average amount transferred by treatment

	(1) DG1	(2) DG2	(3) PD
Baseline	5.338	5.550	5.560
	(5.361)	(5.566)	(4.404)
Default	5.642	5.583	5.273
	(4.944)	(4.890)	(4.324)
Social information	6.458	6.543	5.623
	(5.018)	(5.313)	(4.340)
Rebate	9.217	7.111	6.070
	(6.947)	(6.317)	(4.511)
Min. donation rule	11.06	7.204	5.839
	(2.930)	(6.360)	(4.589)
Nudge	6.038	6.053	5.441
	(4.989)	(5.110)	(4.318)
Push	10.19	7.161	5.950
	(5.293)	(6.322)	(4.534)
Total	7.564	6.398	5.666
	(5.599)	(5.719)	(4.412)

Standard deviation in parenthesis. DG donations range from 0c to 20c and PD contributions range from 0c to 10c.

to be entirely paid by the institution. Precisely, subtracting the rebate from the actual donation, we find an average donation of 23.5% of the total pie, which is not statistically different from the amount given in the baseline (rank sum, p = 0.249). On the one hand, this shows that, in our experiment, rebates do not crowd out intrinsic motivations to give; on the other hand, this also shows that rebates do not increase net donations.

3.2 Spillover effects

Dictator Game

Moving on to the analysis of spillovers from Stage 1 Dictator Game to Stage 2 Dictator Game, Column 2 of Table 2 provides evidence that, by simple average comparison with baseline stage 2 behavior, the effects of the policy interventions tend to persist over time, albeit attenuated. Average DG donations increase from 27.7% of the total pie in the baseline to 32.7%, 35.5% and 36.0% in the social information, rebates and minimum donation rule treatments, mirroring qualitatively the effects of stage 1. However, linear regressions show that the increase of donations in Stage 2 Dictator Game compared to the baseline is significant or marginally significant only in case of the rebate and minimum donation rule treatments (Column 3 of Table 2 in the Appendix). Pooling the two nudge and the two push measures, average donations are 30.5% and 36% of the total pie, respectively. Only push interventions have a significant positive spillover effect on donations in Stage 2 Dictator Game (Column 4 of Table 2 in the Appendix)

Prisoner's Dilemma

Coming to the analysis of spillovers from Stage 1 Dictator Game to Stage 2 Prisoner's Dilemma, Table 2 provides evidence that Stage 1 policy interventions have no effect on Stage 2 Prisoner's Dilemma contributions. This is confirmed by the lack of statistical significance of the linear regression coefficients for all treatments (Columns 5 and 6 of Table 2 in the Appendix).

3.3 Subjects' guess of treatment effects

One potential explanation for the lack of direct and spillover effects of nudges is that our treatment manipulations were too weak. To address this issue, we ask whether individuals detect these interventions and correctly predict the observed effects. Figure 1 reports people's beliefs for each of the treatments, and provides visual evidence that they are not always accurate.

More in detail, comparison between baseline and treated beliefs shows that people incorrectly predicted a positive direct and spillover effect of the default treatment (see Column 1 and Column 3 of Table 3 in the Appendix). Regarding the social information treatment, subjects correctly predicted the existence of a direct effect, but incorrectly believed in the presence of a positive spillover effect (see Column 1 and Column 3 of Table 3 in the Appendix). These results on beliefs, especially the one about the default policy instrument, are reassuring, as they demonstrate that the design of these treatments was not as mild as to make them undetectable. Finally, observers correctly guessed the presence of direct effects of traditional interventions and their capacity to spill over (see Column 1 and Column 3 of Table 3 in the Appendix). Pooling nudges and push measures together, we find that observers overestimated both the direct and the spillover effects of the former, while correctly predicting the existence of direct and spillover effect of the latter (see Column 2 and Column 4 of Table 3 in the Appendix) [4]

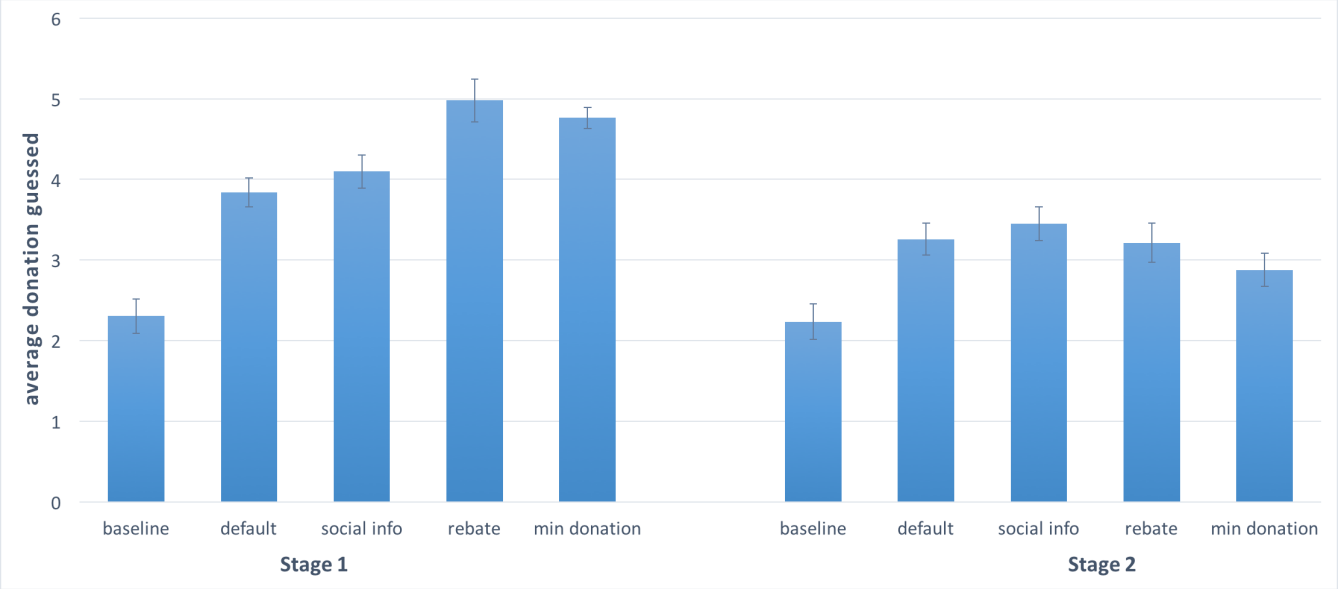

Figure 1: *Observers' guesses across treatments*

[4]The data on beliefs, while giving us a sense of the sign of the effects, does not allow us to say whether subjects correctly guessed also the magnitude of these effects. The main reason is that our experiment is based on a between-subjects design and we do not have a measure of untreated beliefs and donations for treated subjects. Quantifying the biases in beliefs, relative to the observed treatment effects on donations, would require a within-subjects design, where data on both donations and beliefs were collected for each individual.

4 Discussion

We investigated whether and how spillovers of altruistic behavior depend on (i) the type of policy instruments used to foster behavioral changes, and (ii) the behavioral context in which spillovers are measured.

Results show that, at least with our choices of policy interventions and contexts, push measures (rebates and minimum donation rules) are more effective than nudges (defaults and social information) in fostering DG giving directly, and in generating positive spillovers in terms of higher giving in a subsequent game, but only within the same context.

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References

Andreoni, J., & Payne, A. A. (2011). Is crowding out due entirely to fundraising? evidence from a panel of charities. *Journal of Public Economics*, *95*(5), 334–343.

Ashraf, N., Bandiera, O., & Jack, K. (2014). No margin, no mission? A field experiment on incentives for public service delivery. *Journal of Public Economics*, *120*, 1–17.

Brañas-Garza, P. (2006). Poverty in dictator games: Awakening solidarity. *Journal of Economic Behavior & Organization*, *60*(3), 306–320.

Brañas-Garza, P. (2007). Promoting helping behavior with framing in dictator games. *Journal of Economic Psychology*, *28*(4), 477–486.

Bryan, J. H., & Test, M. A. (1967). Models and helping: naturalistic studies in aiding behavior. *Journal of Personality and Social Psychology*, *6*(4p1), 400.

Capraro, V. (2013). A model of human cooperation in social dilemmas. *PLoS One*, *8*(8), e72427.

Capraro, V., Jordan, J. J., & Rand, D. G. (2014). Heuristics guide the implementation of social preferences in one-shot Prisoner's Dilemma experiments. *Scientific Reports*, *4*, 6790.

Capraro, V., & Kuilder, J. (2016). To know or not to know? Looking at payoffs signals selfish behavior, but it does not actually mean so. *Journal of Behavioral and Experimental Economics*, *65*, 79–84.

Cardenas, J.-C. (2004). Norms from outside and from inside: an experimental analysis on the governance of local ecosystems. *Forest Policy and Economics*, *6*(3), 229–241.

Charness, G., & Gneezy, U. (2008). What's in a name? Anonymity and social distance in dictator and ultimatum games. *Journal of Economic Behavior & Organization*, *68*(1), 29–35.

Dolan, P., & Galizzi, M. M. (2015). Like ripples on a pond: Behavioral spillovers and their implications for research and policy. *Journal of Economic Psychology*, *47*, 1–16.

Engel, C. (2011). Dictator games: A meta study. *Experimental Economics*, *14*(4), 583–610.

Englmaier, F., & Gebhardt, G. (2016). Social dilemmas in the laboratory and in the field. *Journal of Economic Behavior & Organization*, *128*, 85–96.

Falk, A., & Kosfeld, M. (2006). The hidden costs of control. *The American Economic Eeview*, *96*(5), 1611–1630.

Ferraro, P. J., & Price, M. K. (2013). Using nonpecuniary strategies to influence behavior: Evidence from a large-scale field experiment. *Review of Economics and Statistics*, *95*(1), 64–73.

Franzen, A., & Pointner, S. (2013). The external validity of giving in the dictator game. *Experimental Economics*, *16*(2), 155–169.

Ito, K., Ida, T., & Tanaka, M. (2015). The persistence of moral suasion and economic incentives: Field experimental evidence from energy demand.

Johnson, E. J., & Goldstein, D. (2003). Do defaults save lives? *Science*, *302*(5649), 1338–1339.

List, J. A. (2011). The market for charitable giving. *The Journal of Economic Perspectives*, *25*(2), 157–180.

Nowak, M. A. (2006). Five rules for the evolution of cooperation. *Science*, *314*(5805), 1560–1563.

Perc, M., & Szolnoki, A. (2010). Coevolutionary games - a mini review. *BioSystems*, *99*(2), 109–125.

Peysakhovich, A., Nowak, M. A., & Rand, D. G. (2014). Humans display a 'cooperative phenotype' that is domain general and temporally stable. *Nature Communications*, *5*, 4939.

Peysakhovich, A., & Rand, D. G. (2016). Habits of virtue: Creating norms of cooperation and defection

in the laboratory. *Management Science*, *62*, 631–647.

Pichert, D., & Katsikopoulos, K. V. (2008). Green defaults: Information presentation and pro-environmental behaviour. *Journal of Environmental Psychology*, *28*(1), 63–73.

Rand, D. G., Brescoll, V., Everett, J. A., Capraro, V., & Barcelo, H. (2016). Social heuristics and social roles: Intuition favors altruism for women but not for men. *Journal of Experimental Psychology: General*, *145*, 389–396.

Rand, D. G., & Nowak, M. A. (2013). Human cooperation. *Trends in cognitive sciences*, *17*(8), 413–425.

Reingen, P. H. (1978). Inducing compliance with a donation request. *The Journal of Social Psychology*, *106*(2), 281–282.

Truelove, H. B., Carrico, A. R., Weber, E. U., Raimi, K. T., & Vandenbergh, M. P. (2014). Positive and negative spillover of pro-environmental behavior: An integrative review and theoretical framework. *Global Environmental Change*, *29*, 127–138.

Appendices

A Tables

Table 1: Balance between DG-DG and DG-PD samples

	DG-PD			DG-DG			
	N	Mean	Std.Dev	N	Mean	Std.Dev	p-value
Age	527	31.930	10.426	794	32.340	10.395	0.483
Female (%)	527	0.408	0.492	795	0.401	0.490	0.808
Happyness (1 sad-9 happy)	527	6.059	1.463	795	6.169	1.494	0.188
Experience with AMT (1 never-5 often)	527	2.831	1.050	795	2.730	1.105	0.095*
Altruism index	527	102.349	123.228	795	108.387	124.782	0.387
Married	527	0.298	0.458	795	0.317	0.466	0.463
High school	527	0.101	0.301	795	0.122	0.328	0.229
Vocational training	527	0.034	0.182	795	0.039	0.194	0.649
Attended college	527	0.343	0.475	795	0.322	0.468	0.418
Bachelor degree	527	0.391	0.488	795	0.389	0.488	0.936
Graduate degree	527	0.121	0.327	795	0.127	0.333	0.763
Income bracket	527	4.932	2.526	795	5.117	2.430	0.182
Political affiliation (1 right-7 left)	527	4.761	1.589	795	4.713	1.558	0.589
Religious faith (1 no-7 yes)	527	3.205	2.417	795	3.589	2.507	0.006***

Note: p-values from a two-sample t test with equal variances. * signif. at 10%; ** signif. at 5%; *** signif. at 1%.

Table 2: Regression of treatment effects on behavior

	DG s1		**DG s2**		**PD s2**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Default	0.304		0.033		-0.287	
	(0.610)		(0.798)		(0.819)	
Social information	1.119*		0.993		0.063	
	(0.621)		(0.833)		(0.834)	
Rebate	3.879***		1.561*		0.510	
	(0.755)		(0.938)		(0.862)	
Min. donation rule	5.720***		1.654*		0.279	
	(0.526)		(0.907)		(0.852)	
Nudge		0.700		0.503		-0.119
		(0.547)		(0.724)		(0.729)
Push		4.853***		1.611**		0.390
		(0.562)		(0.784)		(0.746)
Constant	5.338***	5.338***	5.550***	5.550***	5.560***	5.560***
	(0.470)	(0.469)	(0.622)	(0.621)	(0.622)	(0.620)
Number of Obs	738	738	442	442	296	296
R-Squared	0.160	0.147	0.016	0.013	0.004	0.003

Note: OLS regressions, robust standard errors in parentheses. * signif. at 10%; ** signif. at 5%; *** signif. at 1%.

Table 3: Regression of treatment effects on guesses of behavior

	Guess s1		**Guess s2**	
	(1)	**(2)**	**(3)**	**(4)**
Default	3.069***		2.048***	
	(0.560)		(0.591)	
Social information	3.585***		2.389***	
	(0.592)		(0.605)	
Rebate	5.325***		1.948***	
	(0.683)		(0.655)	
Min. donation rule	4.918***		1.307**	
	(0.501)		(0.599)	
Nudge		3.321***		2.215***
		(0.506)		(0.524)
Push		5.124***		1.631***
		(0.521)		(0.541)
Constant	4.611***	4.611***	4.472***	4.472***
	(0.427)	(0.426)	(0.438)	(0.437)
Number of Obs	747	747	749	749
R-Squared	0.123	0.121	0.024	0.022

Note: OLS regressions, robust standard errors in parentheses. * signif. at 10%; ** signif. at 5%; *** signif. at 1%.

B Experimental instructions

B.1 Stage 1

Dictators

The first four screens were the same across treatments.

Screen 1. This is the first part of the HIT. You have been paired with another participant. The amount of money you can earn depends only on your choice. You are given 20c and the other participant is given nothing. You have to decide how much, if any, to give to the other participant. The other participant has no choice, is REAL, and will really receive your donation. No deception is used. You will really get the amount of money you decide to keep.

Screen 2. Here are some questions to ascertain that you understand the rules. Remember that you have to answer all of these questions correctly in order to get the completion code. If you fail any of them, the survey will automatically end and you will not get any payment.

Screen 3. What is the donation by you that maximizes your bonus? (Here participants could select any amount of money between 0c and 20c, with a 2c increase)

Screen 4. What is the donation by you that maximizes the other participant's bonus? (Here participants could select any even amount of money between 0c and 20c)

Screen 5 (baseline). Congratulations, you have answered both comprehension questions correctly! It is now time to make your choice. What amount will you give to the other person? (Here participants could select any even amount of money between 0c and 20c)

Screen 5 (default). Congratulations, you have answered both comprehension questions correctly! It is now time to make your choice. What amount will you give to the other person? (Here participants could select any amount of money between 0c and 20c, with a 2c increase. The only difference with the baseline treatment is that the option 10c was pre-selected).

Screen 5 (social information). Congratulations, you have answered both comprehension questions correctly! It is now time to make your choice. IN AN IDENTICAL EXPERIMENT CARRIED OUT TWO WEEKS AGO ON MTURK, ABOUT 50% OF THE PARTICIPANTS GAVE 10c OR MORE. What amount will you give to the other person?

Screen 5 (rebate). Congratulations, you have answered both comprehension questions correctly! It is now time to make your choice. FOR EVERY CENT THAT YOU GIVE TO THE OTHER PERSON, WE

WILL GIVE YOU BACK 0.5c, PROVIDED THAT YOU GIVE 10c OR MORE. What amount will you give to the other person?

Screen 5 (minimum donation rule). Congratulations, you have answered both comprehension questions correctly! It is now time to make your choice. YOU WILL NOT BE ALLOWED TO GIVE LESS THAN 10c. IF YOU DECIDE TO GIVE LESS THAN 10c, THE SURVEY WILL STOP AND ASK YOU TO REVISE YOUR DECISION. What amount will you give to the other person?

Recipients

The first, the second, and the fourth screens were the same across conditions:

Screen 1. This is the first part of the HIT. Your role is to guess how a participant (PERSON A) will behave towards another participant (PERSON B). You will win 20c if you make the right guess. The screenshots below show the instructions presented to Person A.

Screen 2. This contained a screenshot of the instructions seen by the dictators in their Screen 1.

Screen 3. This contained a screenshot of the instructions seen by the dictators in their Screen 5.

Screen 4. What amount do you believe Person A will give to Person B? (Here participants could select any even amount of money between 0c and 20c).

B.2 Stage 2

Dictator Game

These instructions were exactly the same as those of the baseline condition in Stage 2. The only slight difference was in Screen 1, which started with the sentence: This is the second part of the HIT. You have been paired with another participant, different from the one you were paired with before. The amount of money you can earn depends only on your choice.

Prisoner's Dilemma

Screen 1. This is the second part of the HIT. You have been paired with another participant, different from the one you were paired with before. The amount of money you can earn depends on your choice and also on the choice of the other participant. You are both given 10c and you have to decide how much, if any, to transfer to the other person. Any cent you decide to transfer will be multiplied by 2 and earned by the other participant. Any cent you decide not to transfer will be earned by yourself, but without being

multiplied by any factor. Thus: If both you and the other participant decide to transfer all of your money to each other, then you both end this part of the HIT with 20c If you decide to keep all of your money and the other participant decides to transfer all of his money, then you end this part of the HIT with 30c and the other participant ends this part of the HIT with 0c. If you decide to transfer all of your money and the other participant decides to keep all of his money, then you end this part of the HIT with 0c and the other participant ends this part of the HIT with 30c. If both you and the other participant decide to keep all of your money, then you both end this part of the HIT with 10c. The other participant is REAL, and will really make a choice. No deception is used. You will really get the amount of money you decide to keep plus twice the amount that the other participant decides to transfer to you.

Screen 2. Here are some questions to ascertain that you understand the rules. Remember that you have to answer all of these questions correctly in order to get the completion code. If you fail any of them, the survey will automatically end and you will not get any payment.

Screen 3. How much should YOU transfer in order to maximize YOUR bonus? (Here participants could select any amount of money between 0c and 10c).

Screen 4. How much should YOU transfer in order to maximise THE TOTAL BONUS bonus (i.e. the sum of your and the other participant's bonus)? (Here participants could select any amount of money between 0c and 10c).

Screen 5. How much should THE OTHER PARTICIPANT transfer in order to maximize THE TOTAL bonus (i.e., the sum of your and the other participant's bonus)? (Here participants could select any amount of money between 0c and 10c).

Screen 6. How much should THE OTHER PARTICIPANT transfer in order to maximize THEIR bonus? (Here participants could select any amount of money between 0c and 10c).

Screen 7. Congratulations! You have passed all comprehension questions. It is now time to make your choice. How much do you want to transfer to the other participant? (Here participants could select any amount of money between 0c and 10c).