Appendix A: Impure Altruism Model

The impure altruism model of Andreoni (1989) has become a workhorse for the field and has recently been validated by Ottoni-Wilhelm et al. (2017). We start from a version of this model that allows the "warm glow" component to depend on a variety of factors. The model motivates the variety of treatments that we incorporate in the experimental design.

Consider an individual i. Preferences may vary at the individual level, but for now we omit i subscripts for simplicity of notation. The individual receives income I, makes a charitable gift g, and consumes $c = I - g$. Charitable gifts to the same cause include those from immediate peers, γ_p, those from a wider reference group, γ_r, and those from others outside of this group, γ_o. Total gifts to the cause are $G = g + \gamma_p + \gamma_r + \gamma_o$.

Individuals maximize the utility function $U(g) = u(c) + a(G) + w(g)$. The functions $u(c)$, $a(G)$, and $w(g)$ are all strictly increasing and concave. In addition to the utility of consumption, $u(c)$, this form allows for impure altruism, namely the purely altruistic utility from the public good, $a(G)$, combined with the warm-glow utility obtained from one's own gift, $w(g)$. Warm glow may depend on the level of income or donations by others, and so could be written as $w(g|I, \gamma_p, \gamma_r, \gamma_o)$, but we leave this dependence implicit for notational simplicity.

The choice of g to maximize $U(g)$ gives the first-order condition $0 = \frac{dU}{dg} = -u'(c) + a'(G) + w'(g)$. We seek to understand how factors such as income and the donations of others affect one's own donation. The theoretical effect of changes in these variables on gifts can be captured by differentiating the first-order condition. For example, if income increases, then we have $0 = \frac{d}{dI}\frac{dU}{dg} = -\left(1 - \frac{\partial g}{\partial I}\right) u''(c) + \frac{\partial g}{\partial I} a''(G) + \frac{\partial g}{\partial I} w''(g) + \frac{\partial}{\partial I} w'(g)$, and therefore

$$\frac{\partial g}{\partial I} = \frac{\frac{\partial}{\partial I} w'(g) - u''(c)}{-\left(u''(c) + a''(G) + w''(g)\right)}.$$

Similarly, $\forall j \in \{p, r, o\}$,

$$\frac{\partial g}{\partial \gamma_j} = \frac{a''(G) + \frac{\partial}{\partial \gamma_j} w'(g)}{-\left(u''(c) + a''(G) + w''(g)\right)}.$$

These expressions motivate many of the treatments employed in the literature on charitable giving. In each expression, the denominator is strictly positive because all terms within the outer parentheses are negative. Hence, the sign of the derivative provides information

about the terms in the numerator. When income increases, the resulting decrease in the marginal utility of consumption will have a positive effect on gifts. Income may also affect warm glow, and while the sign of $\frac{\partial}{\partial I}w'(g)$ is not theoretically determined, it is expected to be nonnegative, and unless it is sufficiently negative to overcome the effect on the marginal utility of consumption, income should increase giving. When gifts by others increase, the negative term $a''(G)$ in the numerator captures the negative effect of diminishing marginal utility derived from contributions to the public good. The second term captures the effect on warm glow, which could go in either direction, and if it is not positive and sufficiently large, then the entire expression will be negative. Absent (unmodeled) signaling, if donations by others increase one's own donation, then warm glow must be of greater marginal importance than altruism at the current values of all variables.

The baseline model motivates a variety of treatments meant to uncover the structure of the utility function. In particular, we experimentally vary income and donations of others in a variety of ways that are described in the next section. If we were to impose a parametric structure on the baseline model, then these treatments would provide over-identification for structural estimation of the model. Our findings, however, suggest a number of limitations of this model. We return to the theory in Section 4 to discuss these limitations and propose an alternative model of preferences.

Appendix B: Pilot Experiments

Prior to conducting our main experiment, we ran two pilot experiments, which we label Pilot 1 and Pilot 2. The pilots were intended to test subjects' ability to perform tasks and answer questions over a series of donation scenarios. In our first pilot, we attempted to involve at least half as many subjects as the 282 who had participated in the experiment of Drouvelis and Marx (2018). Ultimately, 223 subjects participated in Pilot 1, and we found that the new within-subject design provided greater statistical power than our previous work and thus required fewer subjects. As such, we employed a smaller sample of 91 subjects in Pilot 2. The second pilot allowed us to test alternative tasks and revisions to scenarios that appeared to confuse subjects in Pilot 1. As in the main experiment, both pilots consisted of two parts, which we discuss in turn.

Part 1: Real-effort tasks: The nature of the tasks performed during Part 1 is the same as described in Section 2 of the paper. For the pilot experiments, we varied the number of tasks performed, the piece-rate payments for correct answers, and the time that subjects were given to perform the tasks. Specifically, in Pilot 1, subjects were asked to perform two tasks (in the following sequence): the hard language and the hard math task. The piece rate payment was 25 pence and 50 pence, respectively. Subjects were given a 5-minute time limit for each task. In Pilot 2, subjects were asked to perform six tasks (in the following sequence): the easy math, the hard math, the easy language, the hard language, the easy math and the easy language task. The piece rate payment for correct answers was 3 pence for the easy version of either the language or the math task and 21 pence for the hard version of either the language or the math task. Subjects were given a 3-minute time limit for each task.

Part 2: Donation choices: After subjects had completed Part 1, they were given the opportunity to donate some of their earnings to the local charity. Following their donation decisions, subjects were then asked to make donation choices with respect to a number of scenarios which assess the relative strength of various mechanisms that may be important in explaining donation patterns. The instructions informed subjects that one of the scenarios would be selected at random and implemented after all choices had been made. These

scenarios focused on the following mechanisms:

- *Beliefs about the average of others' first-opportunity donations:* After subjects had decided about their own first-opportunity donations, they were asked to report what they think others (excluding themselves) in their session had given as their first-opportunity donation. Subjects' responses were incentivized in that estimates within £0.10 of the correct amount earned the subject an additional £1.

- *Labmates' actual donations:* In this scenario we allowed each subject to condition the amount they would donate on the average donations of the other subjects in her session. In particular, subjects were asked to indicate how much they wished to donate for possible ranges of labmates' first-opportunity donations. In Pilot 1 we asked subjects how much they wish to donate if the average of others' first opportunity donation was : i) less than £0.50 per person; ii) at least £0.50 but less than £1.00 per person; iii) at least £1.00 but less than £1.50 per person; iv) at least £1.50 but less than £2.00 per person; and v) at least £2.00 per person. In Pilot 2 we asked subjects the same question but we used more and smaller ranges of others' first opportunity donation. These were: i) at least £0 but less than £0.66 per person; ii) at least £0.66 but less than £0.67 per person; iii) at least £0.67 but less than £1.04 per person; iv) at least £1.04 but less than £1.05 per person; v) at least £1.05 but less than £1.42 per person; vi) at least £1.42 but less than £1.43 per person; vii) at least £1.43 but less than £1.80 per person; viii) at least £1.80 but less than £1.81 per person; ix) at least £1.80 per person. We further asked subjects to decide for the same ranges as above in a condition in which the first-opportunity donation was implemented for all but one randomly-selected subject, while for this subject the conditional choice was implemented.

- *Minimum amount donated by an anonymous donor:* In these scenarios, subjects were told that an anonymous donor ("Donor X") will donate as necessary to ensure that donations for a given session will be at least some amount plus the subject's own donation. More specifically, in Experiment 1, subjects had to indicate how much they would like to donate if the anonymous donor guarantees that the average donations of others in their session will be: i) at least £0.01 per person?; ii) £0.50 per person?; iii) £1.00 per person?; iv) £1.50 per person?; v) £2.00 per person? Responses to open-ended survey questions indicated

that subjects did not understand these instructions and believed their own donation would affect the amount donated by Donor X. Pilot 2 was more like the final experiment in that subjects had to indicate, for each of the nine ranges of labmates' donations, how much they would like to donate if the anonymous donor adds £0.38 per person.

- *Information about past donations:* In Experiments 1 and 2, subjects were informed of the average amount donated in the experiment of Drouvelis and Marx (2018). Here we exploited differences in gifts across treatments to randomly vary the signaled amount without deceiving subjects. The relevant average donations were £0.665 and £1.047. Within sessions we evenly divided subjects into those who received a low signal amount and a high signal amount. After the information signal we allowed subjects to choose a new donation amount and then asked them to again estimate the average of their labmates' first-opportunity donations. Subjects' responses were again incentivized in that correct estimates within £0.10 were compensated with an additional £1.

After subjects had completed each of the above scenarios, we randomly selected which scenario to implement and informed subjects of the scenario, their donation decision under the scenario, and any extra payments for correct beliefs about others. Finally, subjects responded to a post-experimental questionnaire in which we collected data on their demographic characteristics and on the Cognitive Reflection Test (CRT) of Frederick (2005).

All experiments were conducted in the Birmingham Experimental Economics Laboratory (BEEL) and all treatments were computerized and programmed with the Multistage software from Caltech. Subjects on average earned £9.89 in Pilot 1 and £14.93 in Pilot 2.[14] Sessions lasted, on average, 55 minutes.

[14] At the time of Pilot 1 (Pilot 1) £1 was equivalent to US$1.25 (US$1.24).

Appendix C: Experiment Instructions

Welcome! You are about to take part in an experiment. This experiment is run by the "Birmingham Experimental Economics Laboratory" and has been financed by various research foundations. Just for showing up you have already earned £2.50. You can earn additional money depending on the decisions made by you and other participants. It is therefore very important that you read these instructions with care.

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 an experimenter will come to you. You may use the provided scrap paper but no phones, calculators, or other devices. If you use a device, talk, laugh, exclaim out loud, etc., you will be asked to leave and you will not be paid. We expect and appreciate your following of these rules.

We will first jointly go over the instructions. After we have read the instructions, you will have time to ask clarifying questions. Please do not touch the computer or its mouse until you are instructed to do so. Thank you.

This experiment consists of three different timed tasks. You will be paid a fixed amount of money for each correct answer you provide in each task. The total amount of money you will earn from this experiment will be £2.50 for showing up plus the sum of your earnings from each task of the experiment.

After Task 3 you will be told how many correct responses you gave in each of the tasks. After this you will collect your earnings.

Following these instructions you will find the instructions for Task 1 of the experiment. You will receive new instructions for the other tasks once everyone in the room has completed Task 1.

Task 1

Task 1 consists of arranging pairs of letters to form words like the following examples:

TR, EA, TS, RE = RETREATS. CU, FF, LI, NK = CUFFLINK.

You must use all the letters. You can change the order of the pairs but you cannot change the order of the two letters within each pair. You will have 2.5 minutes to provide answers.

You will be paid 25 pence for each correct answer provided during the 2.5 minute time limit.

To answer a problem, you will simply type the word on the keyboard, then press OK and another problem will appear. You can choose not to answer a question by pressing the OK button. The answer will then be recorded as being incorrect and you will be moved to the next problem. To help with time management, there will be a clock counting down the seconds for the 2.5 minute duration.

Task 2

Task 2 consists of solving 2-number multiplication problems like the following example:

10 x 97 = 970. 20 x 30 = 600.

You will have 2.5 minutes to provide answers.

You will be paid 50 pence for each correct answer provided during the 2.5 minute time limit.

To answer a problem, you will simply type the numbers on the keyboard, then press OK and another problem will appear. You can choose not to answer a question by pressing the OK button. The answer will then be recorded as being incorrect and you will be moved to the next problem. To help with time management, there will be a clock counting down the seconds for the 2.5 minute duration.

Task 3

Subjects receive instructions only for the task they have been randomly assigned to perform on their screens.

Experimenter's announcement: You will now have an additional 5 minutes to perform one of the tasks. The rules and payment rate will be the same as when you performed the task before.

At the end of Task 3, subjects will get the following instructions:

Experimenter's announcement: You can now see the number of correct answers you gave in each of the tasks. Please give me a moment to print the results.

You will now be given an opportunity to donate some of your income from the experiment to a charity, and last, you will be asked to complete a survey.

Written onscreen: Thank you, you have completed the tasks. Your total earnings from today's experiment (including your £2.50 show-up fee) sum to £[***Autofill***].

Thank you, you have completed the tasks. Your total earnings from today's experiment (including your £2.50 show-up fee) sum to £[Autofill].

Would you like to donate some of your earnings to Acorns Children's Hospice of Birmingham? If so, please enter the amount (between £0 and £[Autofill]) in the box provided.

Thank you for considering donating to Acorns. We'd like to ask you a few questions about this. We will call the amount that you just entered on the previous screen your "*first-opportunity donation*." What do you think was the *average* first-opportunity donation among participants besides yourself in your laboratory session?

If your guess is within £0.10, you will receive an additional £1. When we refer to the average across people we include those who give zero.

Now we're going to give you some opportunities to let your donation depend on some information. We'll ask you to make a series of choices under different scenarios. After all students have responded to all scenarios we will select one of these scenarios at random and implement your choice in that scenario. We'll use the first-opportunity donation as Scenario 1. We will only implement the randomly-selected scenario, so you should make your choice in each scenario as if that is the scenario that will be implemented. Each scenario is equally likely to be implemented.

If you have any questions, please raise your hand. Otherwise, click to proceed. If you finish responding to all scenarios before other participants you will need to wait until others finish.

Scenario 2

This is a simple scenario that does not involve any additional information.

How much would you like to donate if this scenario is selected?

Scenario 3

In this scenario you can donate based on the first-opportunity donations of other participants in your laboratory session. If this scenario is selected we will calculate the average among others in your session (excluding you), determine the interval in which this average lies, and implement your desired donation for that outcome.

How much would you like to donate if the average of other participants' first-opportunity donation was…

a. at least £0.75 but less than £0.80 per person?

b. at least £1.20 but less than £1.25 per person?

c. at least £1.65 but less than £1.70 per person?

d. at least £2.10 but less than £2.15 per person?

e. any other amount?

Scenario 4

In this scenario you can donate based on the first-opportunity donations of other participants in your laboratory session and an anonymous donor (who we'll call "Donor X").

How much would you like to donate if the average of other participants' first-opportunity donation was…

a. at least £0.75 but less than £0.80, and Donor X adds £0.45 per person?

b. at least £1.20 but less than £1.25, and Donor X adds £0.45 per person?

c. at least £1.65 but less than £1.70, and Donor X adds £0.45 per person?

d. at least £2.10 but less than £2.15, and Donor X adds £0.45 per person?

e. any other amount, and Donor X adds £0.45 per person?

Scenario 5

In this Scenario, all the participants in this session will receive an extra £1 as a bonus.

How much would you like to donate to Acorns if this scenario is selected?

Scenario 6

In this Scenario, all the participants in this session will receive an extra £2 as a bonus.

How much would you like to donate to Acorns if this scenario is selected?

Scenario 7

In this Scenario, half the participants in this session will receive an extra £2 as a bonus, and the other half will receive no bonus. You have been randomly assigned to the half that will receive no bonus.

How much would you like to donate to Acorns if this scenario is selected?

Scenario 8

In this Scenario, half the participants in this session will receive an extra £2 as a bonus, and the other half will receive no bonus. You have been randomly assigned to the half that will receive £2.

How much would you like to donate to Acorns if this scenario is selected?

Scenario 9

In this scenario you can choose a donation for another participant. You will be randomly assigned to one other person in the laboratory. This person will receive a bonus of £2 minus any portion of the £2 that you choose to have donated to Acorns.

How much of the £2 would you like to have donated to Acorns if this scenario is selected?

How much of your own earnings would you like to donate to Acorns if this scenario is selected?

Scenario 10

Earlier this semester BEEL ran an experiment like the one you've participated in today, and we gave participants an opportunity to donate a portion of their earnings to Acorns.

In this scenario you can donate based on the average first-opportunity donations across laboratory sessions of this earlier experiment.

How much would you like to donate if this average was…

a. at least £0.75 but less than £0.80 per person?
b. at least £1.20 but less than £1.25 per person?
c. at least £1.65 but less than £1.70 per person?
d. at least £2.10 but less than £2.15 per person?
e. any other amount?

Scenario 11

Earlier this semester BEEL an experiment like the one you've participated in today, and we gave participants an opportunity to donate a portion of their earnings to Acorns. The average donation across sessions in this experiment was £X [1.225 / 2.135] per person.

How much would you like to donate to Acorns if this scenario is selected?

Now you can guess again: What do you think was the average first-opportunity donation among participants besides yourself in your laboratory session?

If your guess is within £0.10, you will receive an additional £1.

Scenario 12

In this scenario you can again donate based on the first-opportunity donations of other participants in your laboratory session.

How much would you like to donate if the average of other participants' first-opportunity donation was…

a. at least £0.75 but less than £0.80 per person?
b. at least £1.20 but less than £1.25 per person?
c. at least £1.65 but less than £1.70 per person?
d. at least £2.10 but less than £2.15 per person?
e. any other amount?

Scenario 13

In this Scenario, all the participants in this session will receive an extra £2 as a bonus.

How much would you like to donate to Acorns if this scenario is selected?

Scenario 14

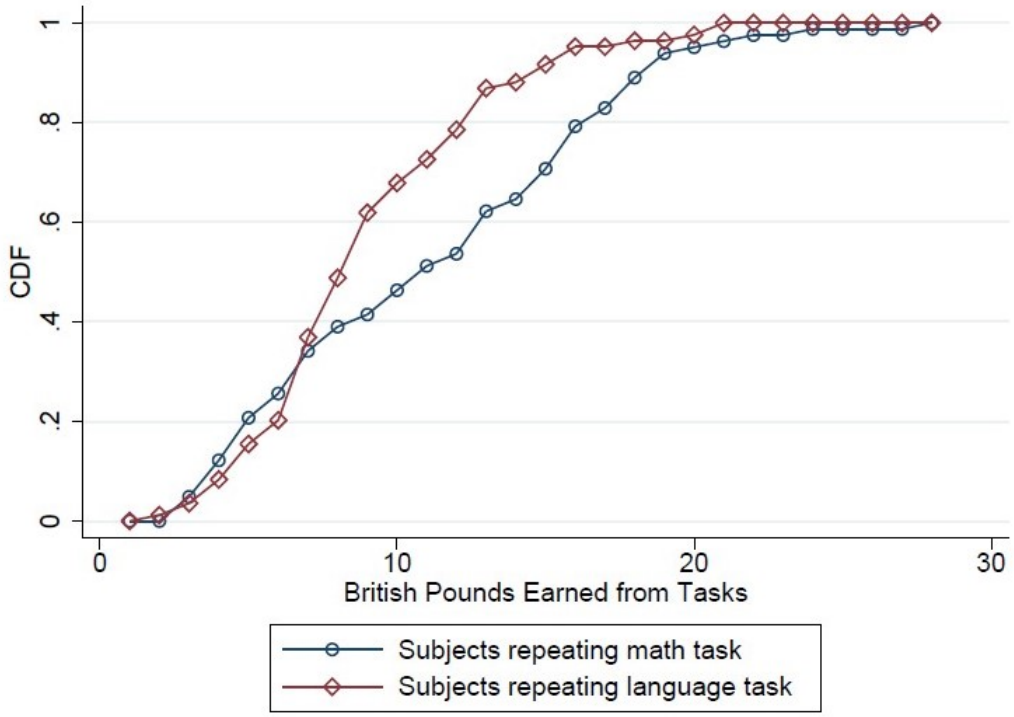
In this scenario you can again choose a donation for another participant. You will be randomly assigned to one other person in the laboratory. This person will receive a bonus of £2 minus any portion of the £2 that you choose to have donated to Acorns.

How much of the £2 would you like to have donated to Acorns if this scenario is selected?

How much of your own earnings would you like to donate to Acorns if this scenario is selected?

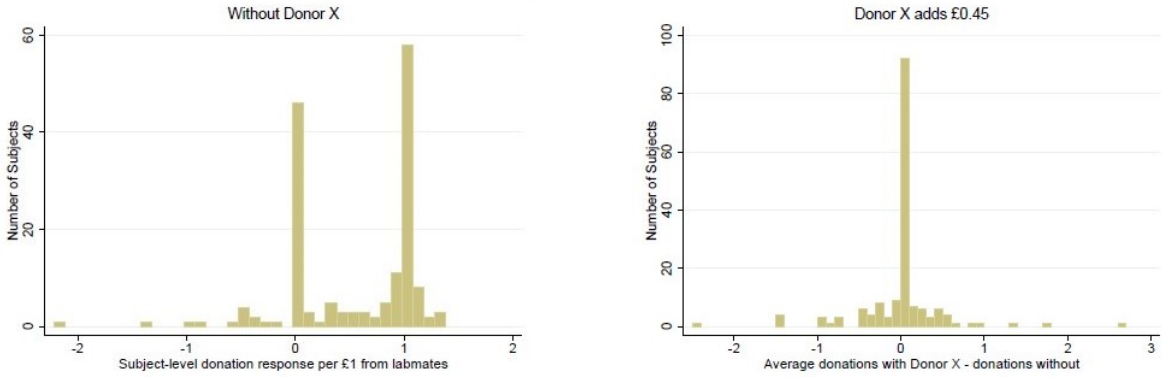
Appendix D: Additional Figures and Tables

Figure D.1: Cumulative distribution of earnings from tasks



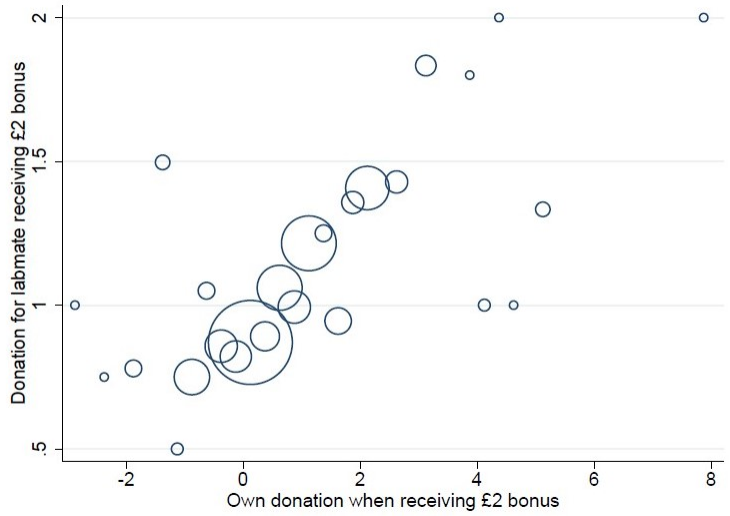
Notes: The figure describes earnings in experimental tasks (excluding show-up fee and any incentive payments). A CDF is shown for subjects assigned to repeat the math task (N=82) and those assigned to repeat the language task (N=84). A Kruskal-Wallis rank test rejects equality of the distributions (p=0.0291).

Figure D.2: Heterogeneous responses to others' donations



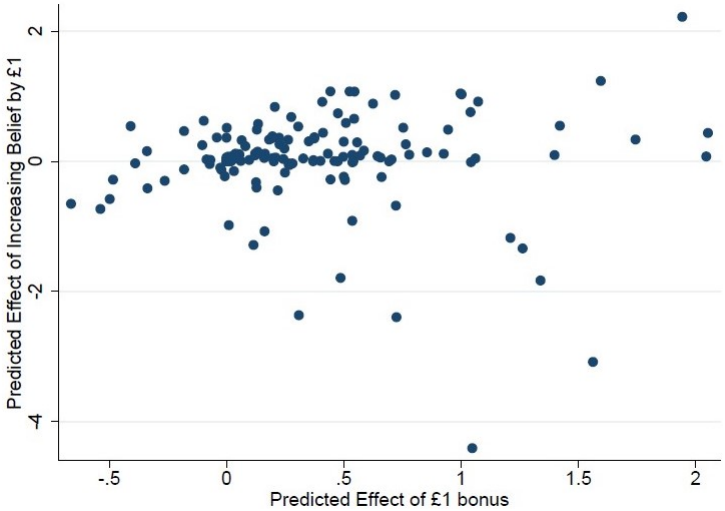
Notes: Distributions of coefficients from subject-specific regressions of conditional donations on minimum value of range of donations by labmates (Panel A) or an anonymous donor (Panel B).

Figure D.3: Correlation of donation with response to bonus income with donation for labmate



Notes: This figure shows the correlation between own donations and donations for labmates when receiving £2 bonus. Own donation when receiving £2 is the difference between baseline donations and the donations when receiving £2 bonus. Corresponding scenarios both before and after signals of past giving are used. Similar values of own donation are pooled in the same £0.25 bin. Larger marker means more observations in the bin.

Figure D.4: Heterogeneity of estimated choices



Notes: Subject-level predictions from estimates of the model of preferences in Section 4. N=144.

Table D.1: Similarity of donations across randomly assigned order of scenarios

	Scenario...									
	5	6	7	8	9 (self)	9 (other)	10a	10b	10c	10d
Scenario Order	-0.3166	-0.2425	-0.3099	-0.1201	-0.2102	-0.0422	0.0023	-0.0954	-0.2214	-0.2849
	(0.2528)	(0.2661)	(0.2556)	(0.2762)	(0.1773)	(0.1065)	(0.1396)	(0.1430)	(0.1536)	(0.1735)
N	166	166	166	166	166	166	166	166	166	166
Adj. R-squared	0.00	-0.00	0.00	-0.00	0.00	-0.01	-0.01	-0.00	0.01	0.01

	Scenario...									
	10e	11	12a	12b	12c	12d	12e	13	14 (self)	14 (other)
Scenario Order	-0.1640	-0.1957	0.0669	0.0145	-0.1368	-0.1822	-0.0744	-0.2747	-0.1688	-0.0643
	(0.2252)	(0.1575)	(0.1272)	(0.1308)	(0.1442)	(0.1675)	(0.2115)	(0.2608)	(0.2006)	(0.1073)
N	166	166	166	166	166	166	166	166	166	166
Adj. R-squared	-0.00	0.00	-0.00	-0.01	-0.00	0.00	-0.01	0.00	-0.00	-0.00

Notes: *** denotes significance at the 1-percent level, ** denotes significance at the 5-percent level, and * at the 10-percent level. Robust standard errors in parentheses.

Table D.2: Similarity of main results across subject responses to learning of experiment

	(1) All	(2) Non-responders	(3) Positive-responders	(4) Negative-responders	(5) P-value of equality (columns 2-4)
Effect of bonus	.3668***	.3606***	.3576***	.3872***	.947
	(.0325)	(.043)	(.0571)	(.0785)	
N	[664]	[348]	[144]	[172]	
Effect of earnings	.0411	-.0453	-.008	.2203	.1933
	(.0618)	(.0926)	(.0274)	(.1279)	
N	[166]	[87]	[36]	[43]	
Effect of anonymous donor	-.0235	.0123	-.0026	-.1135	.4836
	(.0378)	(.0492)	(.0606)	(.0947)	
N	[332]	[174]	[72]	[86]	
Slope of labmate response	.5261***	.4428***	.727***	.5263***	.0259
	(.0459)	(.0617)	(.0867)	(.0992)	
N	[664]	[348]	[144]	[172]	
Effect of high signal	.5547***	.7054**	.298	.4143	.532
	(.1718)	(.2761)	(.2526)	(.2946)	
N	[166]	[87]	[36]	[43]	

Notes: *** denotes significance at the 1-percent level, ** denotes significance at the 5-percent level, and * at the 10-percent level. Categories in columns indicate how a subject's donation changed from Scenario 1 to Scenario 2, when the subject learned that multiple donation scenarios would be assessed.

Table D.3: Scenario-2 donation response to earned income

	(1) Donation OLS	(2) Donation IV	(3) Any donation IV Probit	(4) Log donation IV	(5) Donation IV Tobit
Earnings from Tasks	-0.0113	-0.0382	0.0145	-0.0291	-0.0176
	(0.0203)	(0.0613)	(0.0181)	(0.0428)	(0.0875)
Constant	1.0649***	1.3339**	0.4974**	0.2438	0.6271
	(0.2503)	(0.6650)	(0.2103)	(0.4280)	(0.8989)
N	166	166	166	108	166
First stage F				26.36	

Notes: The table shows 2SLS results of the impact of earnings on donations in Scenario 2. The first stage of the IV regressions is capture in Panel (a) of Table 2, with the exception of the particular sample with positive donations in column (4), for which the relevant first-stage F statistic is included. *** denotes significance at the 1-percent level, ** denotes significance at the 5-percent level, and * at the 10-percent level. Robust standard errors in parentheses.

Table D.4: Donor types and individual characteristics

Results

	(1)	(2)	(3)	(4)
	Labmates responses		Effect of bonus	Donate for others
	Dummy	Slope		
Has a Polit. Party	-0.0229			
Times Partic. in Past Exp.	-0.0240	-0.0245		
Cognitive-Reflective Test Score	-0.0766	-0.0586	0.0325	
Not from UK or EU	0.0240	0.3741		0.1336
Feels Most People Fair		-0.0371		
Would Avoid Paying for Transit		0.0275		
Has Donated to Charity		0.1927		
Involvement in Organizations		-0.0123		
No. of Known Labmates			0.0264	
Male			-0.0677	
Age				-0.0098
Married				-0.1437
Mother's Educational Attainment				0.0939
Log of Past Donations				0.0168
N	146	146	146	146

Variable Definitions

Individual characteristics	Variable description
Age	Age of the subject
Male	Dummy equals 1 if the subject is male
Married	Dummy equals 1 if the subject is married
Father's Education Level	Linear ranking of (Primary, 2ndry, some U, U degree, Post grad)
Mother's Education Level	Linear ranking of (Primary, 2ndry, some U, U degree, Post grad)
Attend Services	Religious svcs: 0: never, 1: 1-2/year, 2: 1/mo., 3: 1/week."
Has a Polit. Party	If the subject belongs to a political party
Feels Most People Fair	Subject thinks most people fair (vs. take advantage if they can)
Would Avoid Paying for Transit	Justified on public transport? 0: never, 1: sometimes, 2: often.
Ever Partic. in Past Exp.	Has the subject ever participated in an economics experiment
Times Partic. in Past Exp.	How many times the subjects participated in experiments
No. of Known Labmates	How many labmates the subject knows
Cognitive-Reflective Test Score	Frederick (2005)
Not from UK or EU	Nationality = Other
Has Donated to Charity	If the subject has donated before.
Log of Past Donations	log(1+amount)
Has Religion	Does the subject have religion
Knows Any Labmates	If the subject knows any labmates by name
Involvement in Organizations	Sum across types. 0: None, 1: Mbr, 2: Active Mbr, 3: Mgr, 4: Board Mbr. (Types: Sport clubs, Music group, Political party, Lobby group, Non-profit institution, Other kind of voluntary organisation)

Notes: The table shows the correlation between donation responses and individual characteristics. The top panel reveals the relevant characteristics predicted by lasso method, and the bottom panel gives the list of individual characteristics that are included in the estimation.

Table D.5: Donation response to own and others' bonus income

	(1) All	(2) Responders	(3) Non-responders
Own bonus	0.3794***	0.4021***	0.3162***
	(0.0378)	(0.0436)	(0.0758)
Bonus for others	0.0353	0.0243	0.0655
	(0.0380)	(0.0467)	(0.0620)
N	830	610	220
Adj. R-squared	0.23	0.24	0.19

Notes: This table shows the donations from bonus income for the full sample (column 1), and separately for subjects who respond to their labmates' choices (column 2) and those who do not (column 3). *** denotes significance at the 1-percent level, ** denotes significance at the 5-percent level, and * at the 10-percent level. Individual FE is included in all regressions and standard errors are clustered by individual.

Appendix E: Between-subjects Anonymous-donor Experiment

In this section, we present the results from additional sessions we conducted in a separate series of experiments in order to test why the anonymous donor was found to have an insignificant effect on donations, as described in section 5.3.1. In these additional sessions, we first had subjects perform a real-effort task (Part 1) allowing them to earn some income from the experiment. Following this (in Part 2), subjects are provided with an unannounced opportunity to make a donation, identical to the design of the main experiment we presented in the paper (section 3.2). For the donation opportunity, subjects could be randomly allocated to one out of two donation scenarios, to which we refer as "Without Donor X" and "With Donor X". In the former scenario, subjects simply had to indicate how much money (out of their total earnings from Part 1 of the experiment) they would like to donate to a local charity (which was the same as in the main experiment); while in the latter scenario, subjects were informed that an anonymous donor will add £0.45 before they were asked to make a donation decision.

Subjects were assigned one of only two scenarios, allowing us to test for between-subjects differences in donation behavior in the presence of an anonymous donor. We thereby rule out confounding factors that could have influenced donations in the main experiment, such as subjects being tired or having misunderstood the scenarios due to the presence of multiple scenarios or the fact that only one of the scenarios was actually paid in each session.

In addition, we test whether the lack of significant effects in the anonymous donor

scenarios is an artefact of the earnings context in that subjects generated income as in Niederle and Vesterlund (2010) rather than the tasks explained in section 3.1. In sum, subjects participated in three different rounds that differed with regards to how they are paid in each round. In all three rounds, subjects were randomly paired with another participant and had to perform a math task (solving additions of four two-digit numbers) in a fixed period of three minutes. Specifically, subjects in Round 1 of the experiment are paid piece rate, while in Round 2, they participate in a tournament, where the subject with the highest number of correct additions from the pair receives everything and the other subjects receives nothing. In Round 3, subjects are asked to select which of the two compensation schemes (piece rate vs. tournament) they prefer and subsequently, they perform the addition task based on their preferred payment scheme.

In various sessions of this experiment, we randomly allocate subjects to three separate between-subjects conditions in which subjects (before the beginning of Round 3) are asked to solve a word puzzle containing neutral or competitive word primes. In some of the sessions, we also included a control treatment whereby subjects did not have to solve any word puzzle (no priming). In the following analysis, the dependent variable is the amount donated to the charity, and the independent variable consists of a dummy which equals 1 for the "With Donor X" scenario and 0 otherwise. We present four OLS regression models: in Model (1) we look at differences in donation behavior in the no priming (control) treatment, whereas in Models (2) and (3) we look at donation differences in the treatments with neutral and competitive word primes, respectively.

Our regression results from these models confirm our earlier findings that the anonymous donor has a statistically insignificant effect, regardless of whether we analyze behavior in treatments with or without primes. The same conclusion is drawn if we pool all data considering donation behavior in all three treatments as shown in the last column of the regression table (Model 4).

Table E.1: Individual characteristics included in the analysis and variable description

	(1) Full sample	(2) No priming	(3) Neutral priming	(4) Competitive priming
A. Control group mean	0.51	0.62	0.52	0.37
B. OLS estimates				
Pooled reference point treatments	-0.083	-0.118	-0.088	-0.029
	(0.082)	(0.153)	(0.153)	(0.102)
Observations	498	184	165	149