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# The double dividend of social information in charitable giving: Evidence from a framed field experiment

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## 1. Introduction

Charitable organizations are quite creative in attracting donors, for example, by using quality certificates, setting defaults, using subsidy mechanisms such as rebates and matching, or evoking positive emotions (e.g. [Adena et al., 2019](#), [Altmann et al., 2019](#), [Knutsson et al., 2019](#), [Gandullia and Lezzi, 2018](#), [Goenka and van Osselaer, 2019](#)).

The appeal that is probably implemented most often as well as investigated the most is the publication of donations. On the one hand, [Smith et al. \(2014\)](#), [Shang and Croson \(2009\)](#), and [Goeschl et al. \(2018\)](#) show that receiving information on previous contributions stimulate further donations. This can either be explained by receiving additional information about the quality of a donation campaign ([Hermalin, 1997](#), [Potters et al., 2007](#)) and the altruism of others ([Ostrom, 2000](#)), or by social effects like the utility respondents gain when they behave in line with social norms (e.g. [Bernheim, 1994](#)). Particularly, [Jones and Linardi \(2014\)](#) show that at the receiving end of social information, individuals are drawn towards the average of the previous contributions.

On the other hand, not only receiving information on previous donations, but the option to publicize one's own donation has also been found to enhance individuals donations ([Winterich et al., 2013](#)). Similarly, [Samek and Sheremeta \(2017\)](#) show that revealing identities of donors is an effective way of increasing contributions, as donors are able to signal their altruism to their peers. In turn, this provides donors with reputational utility and gains in social status ([Harbaugh, 1998a,b](#)). On top of that, [Andreoni and Petrie \(2004\)](#) reveal that the option to make a donation public increases donations beyond pure reputation-seeking, suggesting that being perceived as a leader induces further utility gain. [Vesterlund \(2003\)](#) suggests that when having the chance to signal a charities quality to others, individuals who believe that contribution levels are strategic complements, may give more in order to strategically influence others to give more as well.

All these studies reveal that social information and recognition are effective appeals. However, they neglect that donors give for heterogeneous reasons, which could also lead to heterogeneous reactions towards charity appeals. [Knutsson et al. \(2019\)](#), for example, show that matching donations has a stronger effect on females compared to males, [Gandullia and Lezzi \(2018\)](#) report that individuals who usually donate are less responsive to price changes, and [Gangadharan et al. \(2018\)](#) demonstrate that the type of donor influences the manner of giving. The literature also refers to heterogeneous treatment effects, concerning the relevance of social recognition when donating and demonstrates that public recognition can also backfire (e.g. [Winterich et al., 2013](#), [Simpson et al., 2017](#)). Thus, it is of great importance to take the different motivations of donors into account when targeting appeals for charitable giving.

There are a variety of motives for individuals to donate (for an overview see [Bekkers and Wiepking, 2011](#), [Schokkaert, 2006](#)), of which some may simultaneously guide donation decisions ([Batson and Shaw, 1991](#)). [Ariely et al. \(2009\)](#) differentiate between three motivation types, (i) the intrinsic motivation representing the private utility gained by doing something good for others, known as altruism, (ii) the extrinsic motivation representing the utility gained from private benefits, such as gifts, due to donations, and (iii) the image motivation referring to the utility gained from the positive perception of others about oneself. Based on such giving motives, scientists try to identify donor types. [Gangadharan et al. \(2018\)](#) and [Gandullia et al. \(2020\)](#), for example, rely on the definition of different types of altruists by [Andreoni \(1989, 1990\)](#) and find that those donor types influence the manner of giving. Yet, little is known about the interaction between the donor types and the effects of charitable appeals.

Aiming to account for heterogeneous effects of social information and recognition among subjects who differ in their altruistic motivation, this study employs a framed field experiment based on a modified dictator game with a follow-up survey. We compare baseline

donations (Baseline) with donations in settings in which subjects can either gain reputation (Reputation), act as a role model (Role model), or are influenced by others (Follow the herd). In comparison to other studies, we apply a setting in which the publication of donations is provided to completely unknown and unrelated peers - as is the case for most charity collections. Finally, we suggest implications for charities and policy makers on how to reduce free-riding behavior by increasing voluntary giving of individuals with a lower inherent level of altruism without deterring contributions of individuals with a higher inherent level of altruism.

Our results reveal that the Role model treatment and the Follow the herd treatment have a significant positive influence on donation behavior. Both treatment effects are mostly rooted in the increased willingness to donate rather than the actual amount donated. Role-model effects appeal particularly to individuals with high altruistic motives, while Follow-the-herd effects increase giving particularly among individuals with low altruistic motives. We conclude that fundraisers can effectively increase their payoff by utilizing voluntary publications of donations. Providing social information to individuals with low altruistic motives, while offering individuals with high altruistic motives the possibility to be a role model, leads to a double dividend in charitable giving.

The remainder of this paper is organized as follows: Section 2 gives an overview on previous research and Section 3 describes the experimental design. Subsequently we discuss the descriptive and empirical analysis in Section 4, followed by a conclusion and a brief discussion in Section 5.

## 2. Literature Review

Early research on charitable giving by [Morgan et al. \(1979\)](#) shows that most people assume that others pay attention to what they give to donation campaigns. More than half of their respondents also believe that donations are generally higher if they are made

public. That visibility positively influences giving behavior has since been confirmed in the lab ([Dana et al., 2006](#), [Rege and Telle, 2004](#), [List et al., 2004](#)) and in the field ([Alpizar et al., 2008a,b](#), [Alpizar and Martinsson, 2013](#), [Soetevent, 2005](#)). It can also explain why charities routinely publish the names of generous donors, organize public events or hand out small gimmicks that signal a “good deed” to others ([Andreoni and Petrie, 2004](#)). At the same time, this may also explain why anonymous donations are typically very rare and exceptionally admired ([Glazer and Konrad, 1996](#)).

A broad strand of literature which deals with public donation behavior has focused on the reputation motive. A theoretic model presented by [Holländer \(1990\)](#) assumes that individuals want their behavior to be socially approved by others – a goal which can only be achieved by acting in accordance to their norms and rules. In a society that regards generosity as positive, individuals give donations in order to receive social recognition ([Schokkaert, 2006](#)). By doing something “good” for the community, donors can signal altruism to their peers, which in return may provide gains in reputation ([Bénabou and Tirole, 2006](#), [Harbaugh, 1998a,b](#)). [Glazer and Konrad \(1996\)](#) add that individuals do not necessarily only signal altruism, but also wealth, success, vision, reliability or other characteristics that their peers potentially value, which is confirmed by [Mahmud and Wahhaj \(2019\)](#). Empirically, image signaling through charitable giving was found to offer donors personal advantages based on indirect reciprocity. This includes gains in political reputation and income ([Milinski et al., 2002](#)), a reduction of complaints at an internet reselling store ([Elfenbein et al., 2012](#)), and a higher probability to be chosen as interaction partner ([Fehrler and Przepiorka, 2016](#)).

Next to seeking reputation, quality-signaling is a central factor of enhanced donations in the presence of publicity. If a charities’ quality is unknown, individuals might give more in order to act as role models ([Potters et al., 2007](#), [Andreoni and Petrie, 2004](#)). A theoretic model developed by [Vesterlund \(2003\)](#), proposes that individuals that care about the provision of a public good might set positive examples to influence others. [Karlan and Mc-](#)

[Connell \(2014\)](#) argue, that these ‘role models’ must believe that their reported donations have a positive effect on the amount which observing followers will donate. In this case, they benefit from a perceived temporary matching grant, which reduces the price of the donation and increases its efficacy ([Reinstein and Riener, 2011](#)). According to [Eckel and Grossman \(2003\)](#), the positive effect of matching grants, which is also found by [Karlan and List \(2007\)](#), can be explained by its framing effect that promotes cooperative behavior.

Inter alia, [Reinstein and Riener \(2011\)](#) and [Karlan and McConnell \(2014\)](#) aim to disentangle the reputation and role model effect. [Reinstein and Riener \(2011\)](#) conduct a lab experiment with a sample of 192 students. After a meet and greet stage, participants played multiple-stage dictator games with donations to real charities. Decisions were made in no reporting, anonymous reporting, or identified reporting treatments. In addition, [Reinstein and Riener \(2011\)](#) analyze whether the treatments induce different effects if the reporting is done before or after other participants have to decide upon their donation. Thus, their experimental design separates the reputation incentive from the role-model incentive. They show that participants in the role-model treatment donate significantly more when their identity and donation is revealed. In this particular setting the role-model effect is slightly stronger than the reputation effect. Utilizing a follow-up questionnaire, [Reinstein and Riener \(2011\)](#) show that the role models’ increased donation behavior is mostly based on the expectation to attract a larger number of other donors, rather than expecting higher amounts of donations. This is in line with [Eckel and Grossman \(2003\)](#), who report similar findings.

[Karlan and McConnell \(2014\)](#) conduct a multiple stage dictator game in the lab with 94 volunteers that could donate parts of their endowment to a real charity. Similar to [Reinstein and Riener \(2011\)](#), respondents had to reveal their donation either before or after the other participants made their donation choice. Thus, the reputation motive remained equal for all participants, while the role model motive differed across the two treatment groups. Overall, [Karlan and McConnell \(2014\)](#) find no additional effect of the role-model treatment on top

of the reputation treatment. Therefore, they conclude that individuals rather signal their social status than a charities' quality.

In addition to the outlined types of signaling social information, receiving such information is known to shape donation behavior as well. Observing others' contributions to a public good provides information about their level of altruism and may thus increase individual contributions ([Ostrom, 2000](#)). At the same time, quality signals can reduce the perceived uncertainties for follower subjects ([Potters et al., 2007](#)) - a finding which is consistent with the theory on leadership within a firm by [Hermalin \(1997\)](#). [Vesterlund \(2003\)](#) shows that when there is imperfect information regarding the real value of a public good, announcing previous contributions can reduce the free-rider problem and thus be beneficial for fundraising campaigns. The importance of quality signaling is also emphasized by [Rondeau and List \(2008\)](#) and [Varian \(1994\)](#). [Karlan and List \(2012\)](#) provide empirical evidence that quality signals are particularly effective to enhance subsequent donations, especially if given by large-scale donors.

While [Potters et al. \(2007\)](#), [Vesterlund \(2003\)](#) and [Goeschl et al. \(2018\)](#) show that revealing previous contributions can indeed increase the follower subjects' donations, [Reinstein and Riener \(2011\)](#) find rather inconclusive results. Only if the leader's identity was revealed alongside the donation, an increase of one dollar by a role model increased the followers' donation by 40 cents on average. Such diverse findings are also supported by [Karlan and McConnell \(2014\)](#), who only find the variance of contributions to increase. They argue, that these results express heterogeneous effects of quality signals on different types of people.

Recent literature reveals the existence of heterogeneity in treatment effects. For example, [Knutsson et al. \(2019\)](#) show that matching has a stronger effect on females compared to males. Heterogeneous treatment effects are also addressed in the literature on the relevance of social recognition for charitable giving and demonstrate that public recognition can also backfire (e.g. [Winterich et al., 2013](#), [Simpson et al., 2017](#), [Jones and Linardi, 2014](#)). Thus, it

is of great importance to take the different motivations of donors into account when targeting appeals for charitable giving.

Recently, scientists seek to identify donor types based on the motive that makes individuals give to charity (e.g. [Gangadharan et al., 2018](#), [Gandullia et al., 2020](#)). They mostly concentrate on the different types of altruism defined by [Andreoni \(1989, 1990\)](#). Overall, the identification of different donor types would allow a more diverse and targeted approach on how to attract individuals to contribute to donation campaigns. Yet, little is known about the interaction between donor types and the effects of charitable appeals. Thus, in addition to the general treatment effects, this paper investigates the influences of aforementioned appeals on two different types of people: those with a low level of altruism and those with a high level of altruism.

### 3. Experimental Design

As part of a street survey, the framed field experiment was conducted between October 3<sup>rd</sup> and November 2<sup>nd</sup>, 2018, in the German city of Kassel. The first five days of the experiment took place in the center of Kaufungen, a suburb of Kassel. The week after, data was collected in Kassels' pedestrian zone. After a worsening weather situation made this outside location unpleasant to both the participants and experimenters, we relocated to the entrance area of a big grocery store, where most of the observations were collected.

To recruit participants, two of five experimenters approached by-passers. Persons who agreed to participate in the survey were then asked to proceed to one of three trained interviewers waiting at separately positioned tables nearby.<sup>1</sup> To minimize undesired effects, all experimenters had practised the survey before, wore name tags and dressed discreetly. Furthermore, the questionnaire was read out loud, so that all used the same wording. The

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<sup>1</sup>Due to this approach, we could not record a meaningful participation rate.

participation was voluntary and participants were ensured that their answers would remain anonymous.

Respondents were then informed that they had a 10 % chance of winning €50 at the end of the survey. Furthermore, we asked whether they would be willing to (partially) donate their potential payout to the local children’s library<sup>2</sup>. Overall, we implemented four treatments in two consecutive phases of the experiment. The experimental design is summarized in Figure 1.

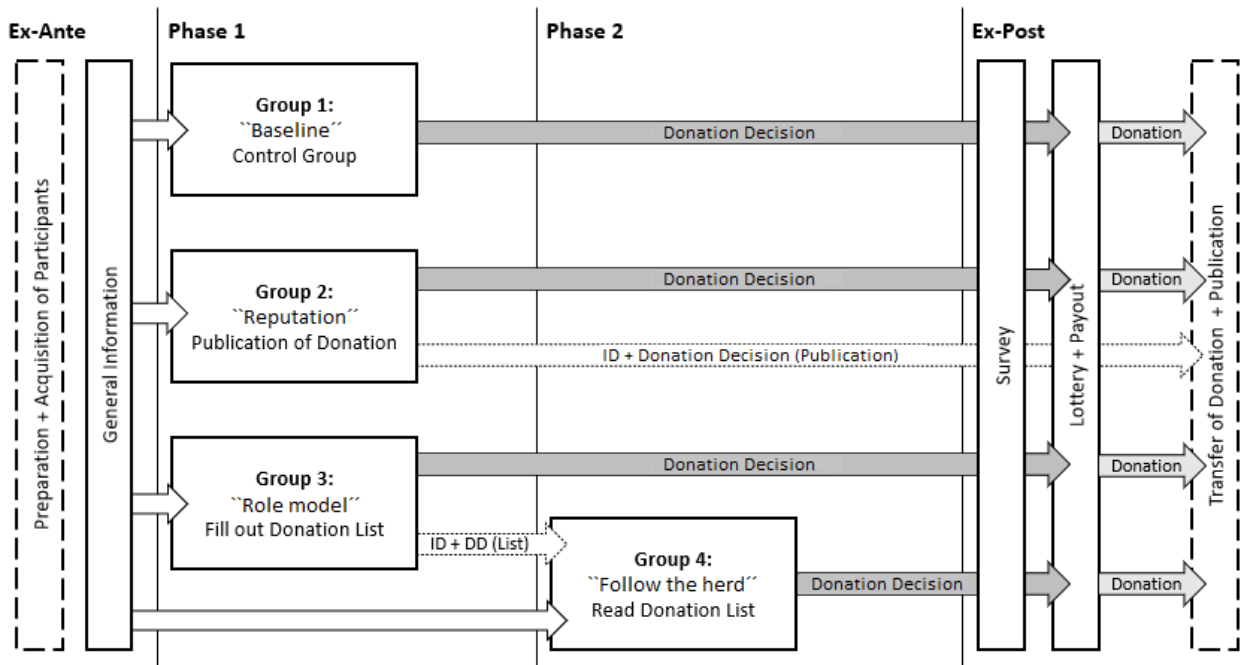


Figure 1: Overview of the Experiment

In phase 1, respondents were randomly assigned to either the Baseline, Reputation or Role model treatment. Respondents in the Baseline group were directly asked whether they were willing to donate everything or part of their reward, in case they win. Respondents in the Reputation group were previous to their donation decision informed, that, if they were interested, we would publish their name and donation decision on the homepage of the

<sup>2</sup>Referring to either Kaufungen or Kassel.

University of Kassel and in a press release. Comparing this treatment to the baseline allows us to analyze the influence of reputation-seeking motives on donation behavior. Respondents in the third treatment made their donation decision after they were informed that they could write their name and their potential donation on a list, which we would show participants in a second phase of the survey as examples. Thus, when making their donation decision, subjects in this Role model treatment, were aware that they could set a positive example for others. This setting allows us to analyze the extent of which the option to set an example for others alters donation behavior.

In the second phase of the experiment, we implemented the final treatment. Respondents in the Follow the herd group were shown the complete list of examples<sup>3</sup>, consisting of donation decisions from the Role model group, prior to their donation decision. In such a setting, participants are aware that others had been generous for this charity. This allows us to analyze follower effects.

In the “ex-post” phase after the experiment, all participants were asked questions regarding their economic preferences and their socio-demographic characteristics.<sup>4</sup> Finally, at the end of the survey, lots were drawn from pots. According to their donation decisions, winners were either paid out in cash or the money would be held for the donation.

Table 1 shows the descriptive statistics of the elicited variables for the full sample.<sup>5</sup> Overall, 73 % of the participants ( $N = 651$ ) were willing to donate some or all of their potential payout. On average, respondents were willing to donate €22.87. The mean age of the participants is 45 years, ranging from a minimum of 18 up to 86 years (continuous

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<sup>3</sup>The ‘Donation list’ is displayed in Table A.4 in the Appendix.

<sup>4</sup>The English translations of the used questions as well as the treatment texts are shown in the Appendix. The survey itself was conducted in German.

<sup>5</sup>The summary statistics of all elicited variables by treatment can be found in Table A.1 in the Appendix. Apart from the share of respondents who did not indicate their income, differences across treatments are not significant. This suggests a successful randomization of respondents into treatments.

Table 1: Summary Statistics - Full Sample

Variable	Count	Mean	SD	Min	Max
Positive donation	651	0.73	0.44	0	1
Amount donated (in €)	651	22.87	19.31	0	50
Age (in years)	623	45.44	17.90	18	86
Female	638	0.46	0.50	0	1
Parent	634	0.50	0.50	0	1
Uni. degree	634	0.35	0.48	0	1
Uni. qualification	634	0.36	0.48	0	1
Secondary school	634	0.29	0.45	0	1
Income N/A	651	0.24	0.43	0	1
Low income	651	0.45	0.50	0	1
High income	651	0.31	0.46	0	1
Risk averse	636	0.45	0.50	0	1
Trusting	630	0.15	0.36	0	1
Patient	630	0.74	0.44	0	1
High altruism	635	0.77	0.42	0	1
Regional identity	651	0.51	0.50	0	1

variable: *age*). About 46 % of participants are female (binary variable: *female*) and almost 50 % indicated to have at least one child (binary variable: *parent*).

Roughly 35 % of the participants have at least a first university degree as highest educational level (binary variable: *uni. degree*). About 36 % finished their A-levels or have a technical diploma, which qualifies them to study at a university (binary variable: *uni. qualification*). Last, around 29 % finished general secondary school or lower as highest educational level (binary variable: *secondary school*).

Furthermore, participants were asked to state their monthly net household income by indicating one out of ten income classes. We use the mean values of these classes, to construct a continuous variable.<sup>6</sup> To account for household sizes, we utilize the square root scale to create a weighted income measure.<sup>7</sup> However, a high share of respondents did not indicate

<sup>6</sup>Following [Feldman \(2010\)](#), the upper limit of the last class was set at 1.5 times the lower limit.

<sup>7</sup>According to this equivalence scale, the value of the weighted net household income is composed of the households' income divided by the square root of the respective household size. For an overview on available income scales see [Atkinson et al. \(1995\)](#).

their household income. Therefore, we generate the binary variables *income N/A* (24 %), *low income* (45 %), which takes the value 1 if the weighted household income is below or equal to €2,000, and *high income* (31 %), which takes the value 1 if the weighted household income is greater than €2,000.

To elicit respondents' economic preferences, we rely on validated survey items (Dohmen et al., 2011, Falk et al., 2018). Most importantly, we consider respondents to have a high level of altruism (77 %; binary variable: *high altruism*), if they agree or strongly agree to the statement '*I am willing to give to a good cause without expecting anything in return*'. Furthermore, we define respondents, who indicated on a five-point likert scale that they disagree or strongly disagree to being willing to take risks, as risk averse (45 %; binary variable: *risk averse*). In line with this, people who agreed or strongly agreed with the statements '*I believe that people have only the best of intentions*' and '*I am willing to give up something that benefits me today in order to benefit more in the future*' as trusting (15 %) and patient (74 %) (binary variables: *trusting* and *patient*).

Finally, adapted from items originally used by Kyle et al. (2004) to measure place identity, we asked respondents to indicate their agreement to whether they '*feel strongly connected to their region*' and whether they '*have no obligations to their region*'. We dub those respondents, who agreed or strongly agreed with the first and vice versa disagreed or strongly disagreed with the second statement, to have a *regional identity* (51 %; binary variable).

#### 4. Results and Discussion

Of the 651 people who took part in the experiment, 67 won the €50. In sum, €1,490 was donated to the youth libraries (€365 in Kaufungen and €1,125 in Kassel). Table 2 shows the summary statistics of the donation variables (*positive*, *conditional*, and *overall*) by treatment and Figure A.1 in the Appendix displays the distribution of the overall donations by treatment. Here the variable *positive* refers to the share of respondents, who were willing

to donate; *conditional* refers to the average donation of those, who were willing to donate; and *overall* refers to the average donation all respondents, including non-donors, were willing to make.

Table 2: Summary Statistics Donation Variables

Treatment		Positive Donation	Conditional Donation	Overall Donation
	N	Mean	Mean	Mean
<i>a</i> Baseline	156	67 %	€ 29.67	€ 19.97
<i>b</i> Reputation	160	65 %	€ 32.74	€ 21.28
<i>c</i> Role model	159	81 % <i>aaa,bbb</i>	€ 30.98	€ 24.94 <i>aa,bb</i>
<i>d</i> Follow the herd	176	80 % <i>aa,bbb</i>	€ 31.45	€ 25.02 <i>aa,b</i>
Total	651	73 %	€ 31.21	€ 22.87

The superscript letters indicate statistically significant differences between the corresponding treatments. Levels of significance:  $a,b,c,d < 0.10$ ,  $aa,bb,cc,dd < 0.05$ ,  $aaa,bbb,ccc,ddd < 0.01$ . Tests of significance are based on two-sided non-parametric tests (Pearson  $\chi^2$  or Mann-Whitney-Wilcoxon).

To test whether the treatments induced variations in donation behavior, we first use two-sided non-parametric tests. To compare the likelihood of a positive donation we use Pearson  $\chi^2$  tests and for the overall and conditional average donation Mann-Witney-Wilcoxon (MWW) tests.

In the Baseline treatment around 67 % of respondents were willing to donate at least some of their potential payout. This share is not significantly different from the Reputation treatment (65 %, Pearson  $\chi^2$ :  $p = 0.665$ ), but significantly lower than in the Role model (81 %, Pearson  $\chi^2$ :  $p = 0.008$ ) and Follow the herd (80 %, Pearson  $\chi^2$ :  $p = 0.011$ ) treatments. Between the latter two treatment groups, the donation rates are not statistically different from each other. However, both rates are significantly higher than in the Reputation treatment (Role model, Pearson  $\chi^2$ :  $p = 0.001$ ; Follow the herd, Pearson  $\chi^2$ :  $p = 0.003$ ).

Investigating the overall amount people were willing to donate, we identify a similar pattern. Based on two-sample MWW tests, we find that the overall average donation in the the Role model treatment (€ 24.94) and in the Follow the herd treatment (€ 25.02) is

significantly higher than in the Baseline treatment (€19.97, Role model,  $p = 0.017$ ; Follow the herd,  $p = 0.025$ ). Again, both treatments are not significantly different from each other, but both average donations are significantly higher than in the Reputation treatment (€21.28, Role model, MWW:  $p = 0.046$ ; Follow the herd, MWW:  $p = 0.055$ ).

Considering the conditional donations, we find no significant differences across all treatments. This suggests, that the treatments only affected the likelihood to donate, but not the amount people were willing to donate. Hence, the differences across treatments that we find for the overall average donations are likely driven by the higher donation rates.

In a consecutive step we employ parametric regression models. As the decision to donate to charity actually consist of two decisions, we use a linear Cragg hurdle model. This allows us to take into account that the decision to donate and the decision about the amount to be donated, are not independent of each other. Besides controlling for binary variables indicating the treatments, we control for respondents' socio-demographic characteristics as well as their economic preferences and regional identity. Finally, to address the question whether individuals with a lower level of altruism behave differently compared to individuals with a higher level of altruism across treatments, we include interaction terms in a second regression model.

Table 3 show the results of the linear Cragg hurdle model.<sup>8</sup> In column (1) we present the marginal and discrete effects with respect to the first hurdle, i.e. the general likelihood to be willing to donate. The results for the second hurdle, i.e. the donation amount, are shown in columns (2) and (3) with respect to the conditional and overall donations.

In general, the estimation results confirm the findings from the non-parametric tests. Across both hurdles, we find no differences between the Reputation and the Baseline treatment. On the other hand, respondents in the Role model treatment and in the Follow the

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<sup>8</sup>We use the command “churdle linear” in Stata 14 to estimate the model and the command “margins” to compute the discrete and marginal effects.

herd treatment have a 12.8 %p and 14.4 %p higher likelihood to donate than in the Baseline treatment. Overall, respondents in the Role model treatment and in the Follow the herd treatment, on average donate €4.88 and €4.85 more than in the Baseline treatment, respectively. However, we again find no treatment effects with respect to the conditional donation.

Table 3: Estimation Results

	(1)		(2)		(3)	
	Positive Donation		Conditional Donation		Overall Donation	
	Coef.	Z-value	Coef.	Z-value	Coef.	Z-value
Reputation	-0.042	(-0.788)	2.364	(1.157)	0.261	(0.126)
Role Model	0.128***	(2.611)	1.304	(0.677)	4.883**	(2.357)
Follow the herd	0.144***	(2.973)	0.666	(0.326)	4.853**	(2.267)
Age	-0.002*	(-1.676)	0.291***	(6.288)	0.150***	(2.837)
Female	-0.005	(-0.146)	-2.095	(-1.492)	-1.715	(-1.150)
Parent	-0.026	(-0.600)	-0.306	(-0.180)	-1.038	(-0.555)
Uni. degree	-0.020	(-0.435)	1.756	(0.941)	0.658	(0.324)
Uni. qualification	-0.081*	(-1.657)	1.911	(0.981)	-1.165	(-0.558)
Income N/A	-0.031	(-0.660)	-0.767	(-0.398)	-1.512	(-0.771)
High income	0.034	(0.830)	4.583***	(2.870)	4.514**	(2.506)
Risk averse	-0.044	(-1.242)	-1.775	(-1.228)	-2.667*	(-1.743)
Trusting	-0.025	(-0.490)	-0.808	(-0.414)	-1.349	(-0.660)
Patient	0.033	(0.775)	3.271*	(1.871)	3.398*	(1.879)
High altruism	0.123***	(2.588)	3.970**	(2.067)	6.523***	(3.443)
Regional identity	-0.021	(-0.586)	1.198	(0.820)	0.252	(0.162)
Interviewer effects	Yes		Yes		Yes	
Location effects	Yes		Yes		Yes	
Observations	600		600		600	

Discrete and marginal effects of linear Cragg hurdle model estimation results with robust standard errors. Z-values in parentheses. Levels of significance: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

As discussed in Section 3, we further include a set of control variables. Besides the presented coefficients we included interviewer specific indicators and controlled for the different locations the survey took place at, i.e. Kaufungen or Kassel. In line with previous findings (Kitchen, 1992, List, 2011), *age* is positively related with the amount respondents are willing to donate. However, in contrast to these studies, we find *age* to be negatively associated with the likelihood to donate. Albeit, this effect is only weakly significant. In addition, it is worth noting that we find no gender effects. This is in line with Bolton and Katok

(1995), Bekkers (2007), but in contrast to Mesch et al. (2011), Piper and Schnepf (2008), and Wit and Bekkers (2016), who find inconclusive results with respect to the relationship between gender and donation behavior. We also do not find any differences in donations between respondents who did not indicate their household income, and those who have a low weighted net household income. In line with List (2011), respondents with a high weighted income, give significantly more compared to those with a low income (on average €4.51). For the conditional donation the difference is slightly larger (€4.58). However, in our case the positive relationship of high income and the likelihood to donate is insignificant.

Furthermore, being *risk averse* is negatively associated with the overall donation, whereas being *patient* has a positive relationship with both the conditional as well as the overall donation. All three effects are just weakly significant. Finally, people with a high level of altruism (*high altruism*), have a significantly higher probability to donate (12.3 %p) and are also willing to donate significantly more (€3.97), conditional on being willing to donate. Together, these effects add up to a statistically but also economically significantly higher overall donation of €6.52 on average.

As pointed out in Section 1, a central aim of this study is to address the links between the inherent level of altruism in individuals and the deployed mechanisms that aim to increase charitable giving. To do so, we include interaction terms between the treatment variables and the *high altruism* indicator in our main model. The estimation results are displayed in Table A.2 in the Appendix. Table A.3 in the Appendix shows the corresponding discrete effects of *high altruism* for each treatment.

Figure 2 illustrates the predicted likelihood to donate for respondents with either a low or a high level of altruism across treatments. It is striking that only in the Role model treatment the probability to donate is statistically significantly higher for the high altruism group (26.4 %p;  $p = 0.004$ ).

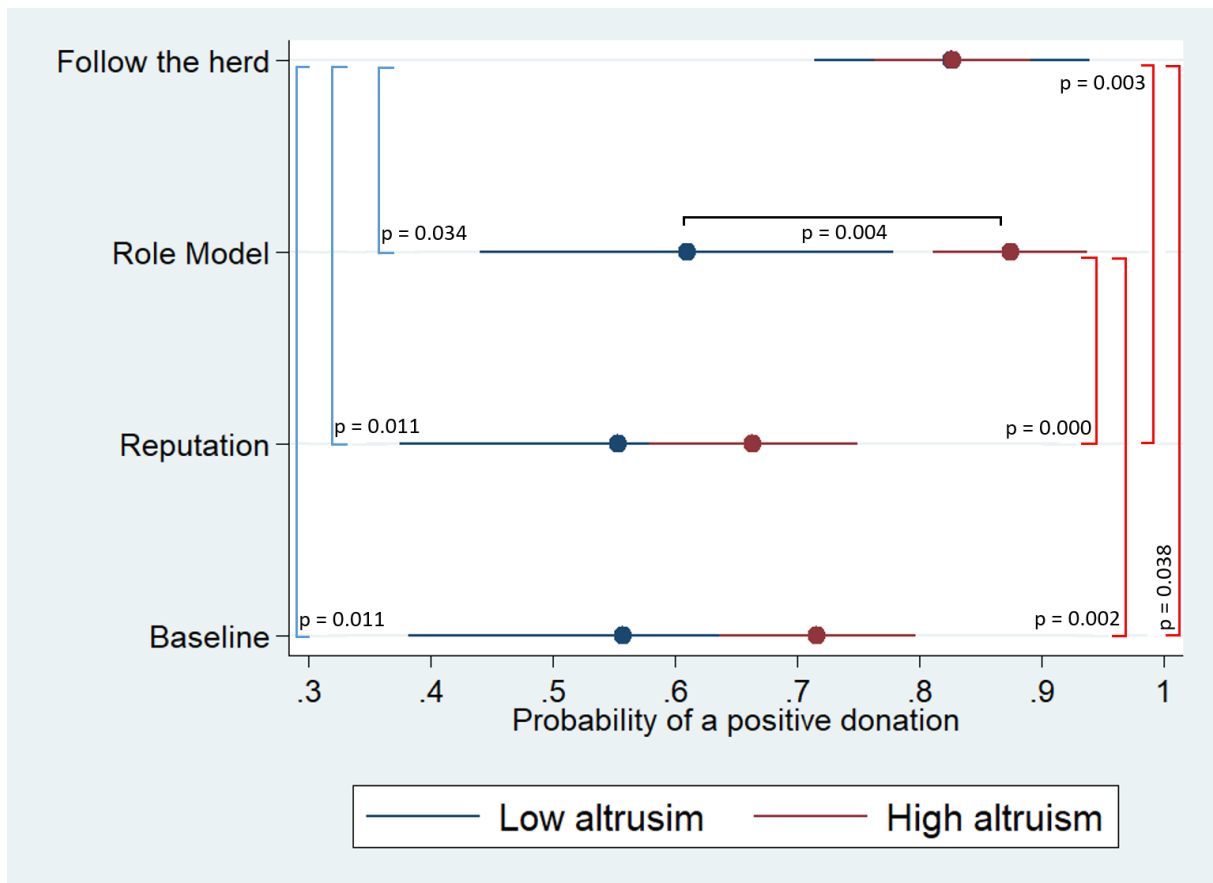


Figure 2: **Probability of donation: Low altruism vs. High altruism**

The chart illustrates the predicted likelihood to be willing to donate for respondents with low and high levels of altruism by treatment. The error bars indicate the 95 % confidence interval. All values are based on the estimation results shown in Table A.3 in the Appendix. P-values are only indicated for significant differences.

Furthermore, for respondents with a low level of altruism (blue bars) the probability to donate is highest in the Follow the herd treatment (83%), which is significantly higher compared to all other treatments. In contrary, participants with a high level of altruism (red bars) have the highest predicted likelihood to donate in the Role model treatment (87 %). This share, as well as the share in the Follow the herd treatment (83%), is significantly higher compared to the Baseline (72%) and the Reputation treatment (66%).

In contrast to previous findings (e.g. Andreoni and Petrie, 2004, Alpizar and Martinsson, 2013, Bénabou and Tirole, 2006), offering the opportunity to signal a “good deed” in the

Reputation treatment did not effect the likelihood to donate in our experiment. This result holds true in general (see Table 3) and also if we differentiate between individuals with either low or high shares of altruism (see Figure 2). A possible reason for why our results differ from the literature could be due to the particularities of our treatment design. Since respondents were most likely unfamiliar with the universities' homepage and its' press releases, the treatment might not have provided them with sufficient opportunity to build a reputation.

Overall, both other treatments (Role Model and Follow the herd) caused a significantly higher likelihood to donate compared to the Baseline (see Table 3). However, for the Role Model treatment this effect is solely driven by the respondents with a high level of altruism, as illustrated in Figure 2. Our results thus suggest that the motivation to attract a larger number of donors by setting a positive example (e.g. [Eckel and Grossman, 2003](#), [Reinstein and Riener, 2011](#)), only applies to individuals with a high level of altruism.

In contrast, the Follow the herd treatment induced almost identical donation rates for respondents with low and high levels of altruism, both shares being significantly higher than in the respective Baseline treatment. These findings are in line with previous literature (e.g. [Goeschl et al., 2018](#), [Smith et al., 2014](#), [Vesterlund, 2003](#)), which found announcing previous donations as a quality signal to effectively enhance donation rates.

Figure 3 illustrates the predicted mean conditional (left) and overall (right) donations for respondents with low and high levels of altruism across treatments. Conditional on making a positive donation, the difference in the amount donated between these types of respondents is only significant in the Baseline treatment. For respondents with a low level of altruism, the conditional donations are significantly higher in all treatments, compared to the corresponding baseline. In contrast, we find no differences in conditional donations for the *high altruism* group across all treatments. Given the higher share of individuals with a high level of altruism in our sample, this likely drives the general results (see Table 3), where we find no differences across treatments with respect to the conditional donations.

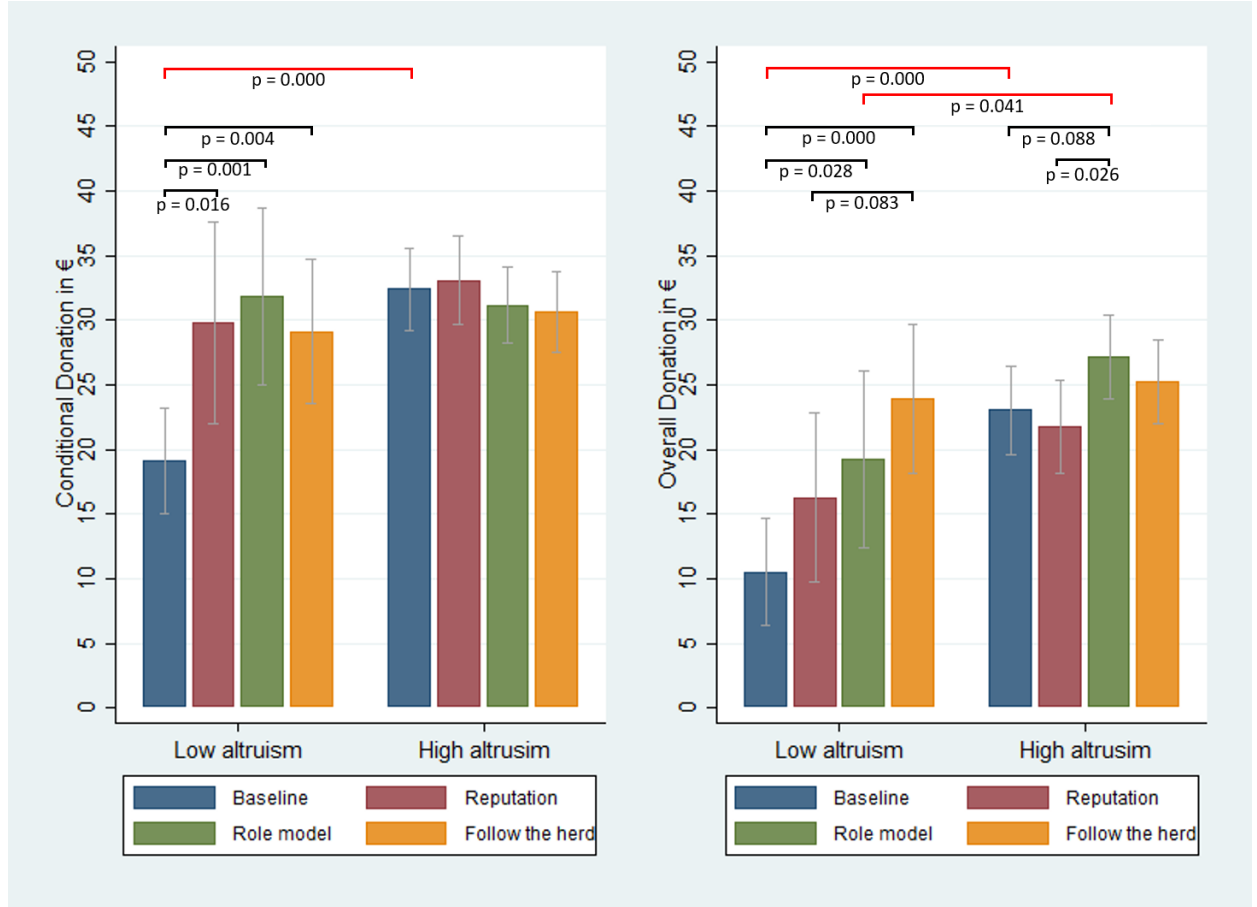


Figure 3: **Interaction effects on overall and conditional donations**

The first and second panel illustrate the predicted mean conditional donations for respondents with low and high levels of altruism by treatment. The third and fourth panel illustrate the predicted mean overall donations for respondents with low and high levels of altruism by treatment. The error bars indicate the 95 % confidence interval. All values are based on the estimation results shown in Table A.3 in the Appendix. P-values are only indicated for significant differences.

Therefore, we can confirm existing evidence from the literature, which suggests that seeking reputation (e.g. Harbaugh, 1998a; Glazer and Konrad, 1996), being a role model (e.g. Andreoni and Petrie, 2004; Reinstein and Riener, 2011), and following previous examples (e.g. Smith et al., 2014; Goeschl et al., 2018) foster the amounts donors are willing to give - however, only with respect to individuals with a low level of altruism.

The joint effect of the likelihood to donate and the conditional donation amount, aggregates in the overall donation. As shown in Table 3, compared to the Baseline, overall

donations are significantly higher only for the treatments Role Model and Follow the herd. Again, we see heterogeneity with respect to the inherent level of altruism in individuals. As shown in the right part of Figure 3, the difference between the Baseline treatment and the Follow the herd treatment is only significant for participants with a low level of altruism. Whereas the effect of the Role Model treatment is significant in both cases. Furthermore, our results reveal significant differences in overall donations for respondents with low and those with high levels of altruism, with respect to the Baseline and the Role model treatment. In the case of the Baseline treatment, this difference is likely driven by the higher conditional donations of respondents with a high level of altruism (see Figure 3), whereas in the case of the Role model treatment, this difference is likely caused by their higher probability to donate (see Figure 2).

## 5. Conclusion

We evaluate a framed field experiment, to analyze the interaction between different appeals that we made to individual donors and their inherent level of altruism. Besides a Baseline treatment, which only asks for the donation decision, we employ three different appeal strategies (i.e. Reputation, Role model, and Following the herd). With respect to their evaluation, we differentiate between the likelihood to donate, the conditional donation, and the resulting overall donation.

In general, the treatments Role model and Follow the herd induce significantly higher donation rates, which also lead to higher overall donations in these treatments compared to the Baseline. Furthermore, respondents with a high level of altruism not only donate more frequently, but also make significantly higher conditional donations. Taking a closer look at the interaction between the treatments and respondents' levels of altruism, we find considerable differences in the results across the treatments. It is striking that while all treatments failed to increase the conditional donation of respondents with a high level of

altruism, they all yielded significantly higher conditional donations for respondents with a low level of altruism. Furthermore, the general difference that we see between the donation rates in the Role model and the Baseline treatment is in fact only significant for individuals with a high level of altruism.

Overall, our results underline the importance of considering the inherent level of altruism in individuals, when selecting tools to stimulate charitable giving. For an audience of highly altruistic respondents, providing the opportunity to set a positive example for others seems the most promising approach of the considered treatments. On the other hand, for charities approaching individuals with lower levels of altruism, providing them with a set of positive examples might be the most promising approach. Thus, using social information as appeal for donors leads to a double dividend by attracting both groups of individuals.

Knowing beforehand whether a potential donor has a lower or a higher level of altruism and adapting the individual appeal towards her or him accordingly, can significantly enhance charitable giving in the future. Yet, subsequent research is needed to substantiate this conclusion. At the same time, this seems a promising idea for future studies.

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## Appendix A. Additional figures, tables and survey instructions

### Appendix A.1. Additional figures

Figure A.1 shows the distribution of the overall amounts respondents were willing to donate, across treatments.

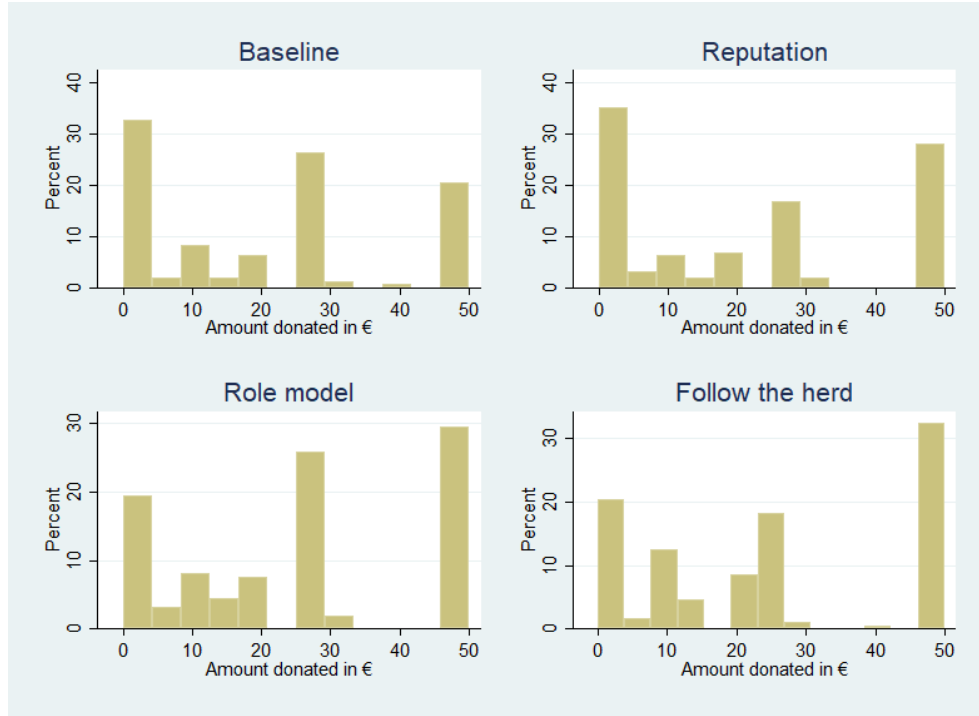


Figure A.1: Distribution of the ‘overall amount donated’ by treatment

### Appendix A.2. Additional tables

Table A.1 shows summary statistics of all elicited variables by treatment. Table A.2 displays the estimation results of the linear Cragg hurdle model, which includes interaction terms of the treatments and the *High altruism* indicator. Based on the estimation displayed in Table A.2, Table A.3 presents the discrete effects of the binary variable *High altruism* for each treatment. Finally, Table A.4 displays the ‘Donation list’, which was shown to respondents in the Follow the herd treatment.

Table A.1: Summary Statistics by treatment

	Baseline				Prestige				Role Model				Follow the Herd				P-value
	Count	Mean	SD	Min-Max	Count	Mean	SD	Min-Max	Count	Mean	SD	Min-Max	Count	Mean	SD	Min-Max	
Pos. Donation	156	0.67	0.47	0-1	160	0.65	0.48	0-1	159	0.81	0.40	0-1	176	0.80	0.40	0-1	0.001
Donation (in €)	156	19.97	18.47	0-50	160	21.28	20.34	0-50	159	24.94	18.61	0-50	176	25.02	19.36	0-50	0.026
Age (in years)	151	46.85	17.98	18-81	152	45.65	17.26	18-86	151	44.37	17.61	18-82	169	44.93	18.71	18-82	0.672
Female	151	0.51	0.50	0-1	155	0.49	0.50	0-1	156	0.44	0.50	0-1	176	0.41	0.49	0-1	0.232
Parent	151	0.53	0.50	0-1	154	0.55	0.50	0-1	153	0.44	0.50	0-1	176	0.48	0.50	0-1	0.256
Uni. degree	150	0.38	0.49	0-1	154	0.34	0.48	0-1	154	0.37	0.48	0-1	176	0.33	0.47	0-1	0.767
Uni. qualification	150	0.36	0.48	0-1	154	0.38	0.49	0-1	154	0.30	0.46	0-1	176	0.39	0.49	0-1	0.324
Secondary school	150	0.26	0.44	0-1	154	0.28	0.45	0-1	154	0.33	0.47	0-1	176	0.28	0.45	0-1	0.550
Income N/A	156	0.29	0.46	0-1	160	0.24	0.43	0-1	159	0.31	0.47	0-1	176	0.14	0.35	0-1	0.001
Low Income	156	0.45	0.50	0-1	160	0.42	0.49	0-1	159	0.40	0.49	0-1	176	0.52	0.50	0-1	0.153
High Income	156	0.26	0.44	0-1	160	0.34	0.48	0-1	159	0.28	0.45	0-1	176	0.34	0.48	0-1	0.234
Risk averse	150	0.47	0.50	0-1	155	0.43	0.50	0-1	155	0.45	0.50	0-1	176	0.47	0.50	0-1	0.920
Trusting	148	0.15	0.36	0-1	153	0.16	0.36	0-1	154	0.12	0.32	0-1	175	0.17	0.37	0-1	0.633
Patient	149	0.76	0.43	0-1	154	0.73	0.45	0-1	153	0.76	0.43	0-1	174	0.73	0.45	0-1	0.822
High altruism	150	0.79	0.41	0-1	155	0.79	0.41	0-1	155	0.76	0.43	0-1	175	0.76	0.43	0-1	0.891
Regional identity	156	0.53	0.50	0-1	160	0.51	0.50	0-1	159	0.48	0.50	0-1	176	0.51	0.50	0.1	0.866

Notes: P-values in the last column refer to Pearson's chi-squared test for independence between the treatments in case of binary variables and to the Kruskal-Wallis equality-of-populations rank test for non-binary variables.

Table A.2: Estimation Results of the linear Cragg Hurdle Model

	First Hurdle (Likelihood to Donate)		Second Hurdle (Conditional Donation)	
Reputation	-0.011	(-0.031)	14.660**	(2.557)
Role Model	0.146	(0.427)	17.011***	(3.363)
Follow the herd	0.865**	(2.501)	13.832***	(2.914)
High altruism	0.466*	(1.665)	17.639***	(4.514)
# Reputation	-0.151	(-0.388)	-13.895**	(-2.203)
# Role model	0.475	(1.172)	-18.397***	(-3.263)
# Follow the herd	-0.463	(-1.188)	-15.814***	(-2.966)
Age	-0.007*	(-1.651)	0.332***	(6.024)
Female	-0.001	(-0.005)	-2.106	(-1.289)
Parent	-0.109	(-0.712)	-0.353	(-0.179)
University degree	-0.128	(-0.785)	2.040	(0.938)
University qualification	-0.306*	(-1.824)	1.786	(0.795)
Income N/A	-0.102	(-0.649)	-1.335	(-0.592)
High income	0.129	(0.884)	5.326***	(2.940)
Risk averse	-0.147	(-1.210)	-2.124	(-1.263)
Trusting	-0.086	(-0.516)	-1.359	(-0.593)
Patient	0.120	(0.842)	3.915*	(1.867)
Regional identity	-0.076	(-0.614)	1.521	(0.891)
Interviewer effects	Yes		Yes	
Location effects	Yes		Yes	
Observations	600		600	

Linear Cragg hurdle model estimation results with robust standard errors. The regression includes interaction terms between treatments and the binary variable *High altruism*. Z-values in parenthesis. Levels of significance: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table A.3: Discrete effects of *High altruism* by treatment

	Positive Donation		Conditional Donation		Overall Donation	
	Coef.	Z-value	Coef.	Z-value	Coef.	Z-value
High altruism	0.123***	(2.587)	4.312**	(2.311)	6.439***	(3.423)
in Baseline	0.159	(1.614)	13.263***	(4.987)	12.518***	(4.543)
in Reputation	0.111	(1.098)	3.241	(0.746)	5.461	(1.417)
in Role Model	0.264***	(2.843)	-0.657	(-0.174)	7.948**	(2.042)
in Follow the herd	0.001	(0.009)	1.540	(0.483)	1.288	(0.389)

Discrete effects of the *High altruism* indicator by treatment based on the linear Cragg hurdle model displayed in Table A.2. Z-values in parentheses. Levels of significance: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table A.4: Donations of previous participants in the event of a win

No.	Name	Donation amount in the event of a win	No.	Name	Donation amount in the event of a win
1		€ 25	23		€ 10
2		€ 50	24		€ 15
3		€ 25	25		€ 10
4		€ 10	26		€ 50
5		€ 25	27		€ 50
6		€ 25	28		€ 0
7		€ 25	29		€ 20
8		€ 25	30		€ 20
9		€ 25	31		€ 50
10		€ 25	32		€ 50
11		€ 30	33		€ 50
12		€ 25	34		€ 15
13		€ 10	35		€ 50
14		€ 5	36		€ 25
15		€ 25	37		€ 25
16		€ 25	38		€ 50
17		€ 30	39		€ 25
18		€ 10	40		€ 25
19		€ 50	41		€ 20
20		€ 50	42		€ 25
21		€ 50	43		€ 0
22		€ 25			

### *Appendix A.3. Survey instructions*

The following survey instructions are translated from German into English. They include all treatment texts and the questions with which we have elicited the variables. Each respondent only participated in one treatment.

#### **Introductory text**

Thank you for taking part in our survey. It will take about 15 minutes to complete. For your participation you will receive a lottery ticket at the end, with which you can win €50 with a little luck. Every 10<sup>th</sup> ticket wins. All information provided is voluntary and

will of course be treated strictly confidentially and in compliance with the applicable data protection laws. All analyses will be carried out on an anonymous basis. First, please decide whether you would like to take home the € 50 in cash or whether you would like to donate all or part of it to the Youth Library in Kaufungen (in Kassel). Your donation will be used to purchase borrowable information materials and tools on climate and energy that can be used by children, adults, schools and kindergartens. The total amount of the collected donations will be published on our website and in a press release after the survey is completed.

**Treatments** (*only one was shown to each participant*)

*Treatment Baseline*

Q1: If you win, would you like to donate all or part of the amount?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> I don't want to take part in this lottery
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Q1.1: [*if Q1 = Yes*] How much: -----€

*Treatment Reputation*

If you wish, we will record your name and the amount you donated in the event of a win in a list, which we will publish on our website and in a press release after the survey is completed.

Q1: If you win, would you like to donate all or part of the amount?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> I don't want to take part in this lottery
------------------------------	-----------------------------	--

Q1.1: [*if Q1 = Yes*] How much: -----€

Q1.2: [*if Q1 = Yes*] I would like my name and the amount of my donation to be recorded on the list in the event of a win.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

*(Respondents who indicated ‘yes’ were asked to write down their name and the donation amount and to sign a permission form for publication.)*

### *Treatment Role model*

If you wish, we will record your name and the amount you donated in the event of a win in a list, so that participants in a second phase of this survey can follow this example.

Q1: If you win, would you like to donate all or part of the amount?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> I don’t want to take part in this lottery
------------------------------	-----------------------------	--

Q1.1: [*if Q1 = Yes*] How much: \_\_\_\_\_€

Q1.2: [*if Q1 = Yes*] I would like my name and the amount of my donation to be recorded on the list in the event of a win.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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*(Respondents who indicated ‘yes’ were asked to write down their name and the donation amount and to sign a permission form for publication.)*

### *Treatment Follow the herd*

Here you can see a list of previous participants and their donations in case of a win. (*Re-*

*spondents were handed a print-out version of the list.)*

Q1: If you win, would you like to donate all or part of the amount?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> I don't want to take part in this lottery
------------------------------	-----------------------------	--

Q1.1: [*if Q1 = Yes*] How much: \_\_\_\_\_€

### Economic preferences and regional identity

Q2: Now it's about you as a person. Please indicate, to what extent you agree with the statements. Please use the numbers from 1 "strongly disagree" to 5 "strongly agree".

Statement	1	2	3	4	5
I believe that people have only the best intentions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am willing to give to a good cause without expecting anything in return.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am willing to give up something that benefits me today in order to benefit more in the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am willing to take risks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q3: I will now read out two more statements to you. Please indicate, to what extent you agree with the statements. Please use the numbers from 1 "strongly disagree" to 5 "strongly agree".

Statement	1	2	3	4	5
I feel very connected to my region.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have no obligations to my region.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Socio-demographic characteristics

To conclude the survey and before you receive your lottery ticket as a reward for completing the survey, we would like to ask you to provide some statistical information.

Q4: Please indicate your gender:

<input type="checkbox"/> Male	<input type="checkbox"/> Female	<input type="checkbox"/> Not specified
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Q5: How many persons live permanently in your household, including yourself?

<input type="checkbox"/> 1 Person	<input type="checkbox"/> 2 Persons	<input type="checkbox"/> 3 Persons
<input type="checkbox"/> 4 Persons	<input type="checkbox"/> 5 Persons	<input type="checkbox"/> 6 Persons
<input type="checkbox"/> 7 Persons	<input type="checkbox"/> 8 Persons	<input type="checkbox"/> More than 8 persons
<input type="checkbox"/> Not specified		

Q6: Do you have children?

<input type="checkbox"/> Yes, namely: _____	<input type="checkbox"/> No	<input type="checkbox"/> Not specified
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Q7: Please state your year of birth: \_\_\_\_\_

Q8: What is the highest level of education you have attained?

<input type="checkbox"/> No graduation	<input type="checkbox"/> Secondary Education
<input type="checkbox"/> General certificate of secondary education	<input type="checkbox"/> Advanced technical college entrance qualification
<input type="checkbox"/> University entrance qualification	<input type="checkbox"/> University degree (Bachelor/Master/Diploma/etc.)
<input type="checkbox"/> Doctorate/ Habilitation	<input type="checkbox"/> Not specified

Q9: Please indicate your monthly net household income (After tax and social-insurance payments, including regular payments like child allowances, expenses according to the “Federal Law concerning the Promotion of Education or Training”, housing allowances, subsistence allowance, etc.)

<input type="checkbox"/> less than €500	<input type="checkbox"/> €500 to less than €1,000	<input type="checkbox"/> €1,500 to less than €1,500
<input type="checkbox"/> €1,000 to less than €2,000	<input type="checkbox"/> €2,000 to less than €3,000	<input type="checkbox"/> €3,000 to less than €4,500
<input type="checkbox"/> €4,500 to less than €6,000	<input type="checkbox"/> €6,000 to less than €7,500	<input type="checkbox"/> €7,500 to less than €10,000
<input type="checkbox"/> €10,000 or more	<input type="checkbox"/> Not specified	