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Checking Out Checkout Charity: A Study of Point-of-Sale Donation Campaigns[1]

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Checking Out Checkout Charity: A Study of Point-of-Sale Donation Campaigns

Abstract: There has been a proliferation of point-of-sale donation campaigns, where people are asked to donate following an unrelated transaction, and it is natural to ask how giving varies according to the solicitation methods used. We use an experiment to compare three popular solicitation mechanisms: a fixed donation request (yes or no to a randomly assigned amount); a rounding request (yes or no to an endogenous amount); and an open-ended ask. For requested amounts less than $1, participants in the rounding treatments were much more likely to donate. Differences in donation rates between the rounding and fixed request treatments appear to be driven by "loose-change effects," whereby individuals are more likely to donate if they would have less change as a result of the prior cash transaction. The fixed donation request results in a higher mean willingness-to-donate and a lower income elasticity of donating when compared to open-ended. We also examine the effects of providing (limited) information on the charity, and find that this increases revenue and donation rates, but only for the fixed request mechanism. This result may also be explained by loose-change effects.

JEL Classifications: C91; D64; H00

Keywords: charitable giving; checkout charity; solicitation methods; altruism; social pressure; experiments

1. Introduction

Point-of-sale (POS) donation campaigns have become an increasingly popular fundraising tool. Commonly referred to as "checkout charity," these campaigns ask people to make small donations when checking out at stores and restaurants or ordering online. According to a report by Engage for Good (2019), in 2018 checkout charity generated more than $486 million in donations in the U.S. and more than $5.3 billion over the last three decades.[2] Across these fundraising campaigns, there is much variation in solicitation methods. Examples include a collection box at a McDonald's service counter, a cashier at PetSmart asking a customer if they would like to donate a specific amount (e.g., $1) to help feed hungry pets, and an electronic ask through a payment kiosk at Walmart.

Checkout charity campaigns have characteristics that distinguish them from other fundraising efforts. Notably, customers are usually caught unaware by the solicitation at checkout and either have limited ability or no option to avoid the ask (e.g., when paying online, and the ask is automated).[3] Furthermore, the consumer is usually forced to make a quick decision, often within a few seconds. This type of split-second decision-making, known as "impulse-giving," is a potential contributor to the success of checkout charity campaigns. Last, in most cases, the amount requested (or expected) from the potential donor is small – often less than a $1.

While there is some survey research suggesting that most consumers are agreeable to being asked to donate at checkout and prefer some approaches over others (Catalist 2016), there is little research on what methods are most effective at reaching fundraising objectives (e.g.,

[2] These statistics are for a group of 79 POS fundraising campaigns that each raised over $1 million.
[3] Multiple studies have documented evidence of avoidance behavior, whereby potential donors will avoid being solicited if possible (Andreoni and Rao 2011; DellaVigna, List, and Malmendier 2012).

maximizing revenue or donation rates), and what behavioral mechanisms underlie donation behavior in the unique POS donation setting.

This study contributes to the literature by exploring differences across some of the popular fundraising methods used in this relatively new checkout charity setting. We conduct a controlled experiment through which we raise donations and vary as treatments the donation solicitation mechanism, amount requested, and whether (brief) information on the charity is provided. The experimental setting captures the key characteristics of a checkout charity encounter in the field: an unanticipated, quick ask for a small amount of money to go towards a known charity.

We focus on three solicitation mechanisms commonly used in POS campaigns: fixed donation request, rounding request, and an open-ended ask (i.e., an amount of the donor's choosing). Both the rounding and fixed request are "closed-ended" mechanisms that simply present the potential donor with a yes or no choice. The rounding request is unique to checkout charity. In the field, the rounding request is tied to the customer's bill, and the common ask involves rounding up the bill to the next whole dollar, with the difference donated to the charity. In the experiment, we ask the potential donor to round down their earnings from an unrelated experimental task to the next whole dollar amount.

In the fixed request treatments, we randomly assign the amount requested of the potential donor. This provides the opportunity to compare donation rates with the rounding treatments at several amounts below $1. Further, we use a wide range of fixed request amounts (up to $3), which allows for extensive comparisons with the open-ended treatments. For both of these solicitation mechanisms, we estimate willingness-to-donate distributions and the income elasticities of charitable donations.

Our comparison of different solicitation mechanisms is distinct within the broad charitable giving literature. Much of the prior work on solicitation mechanisms focuses on the effects of providing suggested donation amounts in an otherwise open-ended setting, with suggestions relayed in various ways such as a recommendation, an amount contributed by another donor, or a default option (Edwards and List 2014; Adena, Huck, and Rasul 2014; Goswami and Urminsky 2016). While the evidence across studies is mixed, the data overall suggest that – relative to the control (no suggestion) – the donation rate decreases with the suggested amount, and both the average donation (for those who donated) and revenue increase with the suggested amount (Goswami and Urminsky 2016).

In a survey about checkout charity by Catalist (2016), the primary reason selected for not donating at the register was "not knowing much about the cause asking for money." For this reason, we test the effects of including a brief information statement on the charity. Information effects have been studied in the literature, with several studies finding positive effects on donation rates and revenue (Cryder, Loewenstein, and Scheines 2013; Goswami and Urminsky 2016; Horn and Karlan 2018). Additionally, the type of information provided matters. In concurrent work, Horn and Karlan (2018) conduct an online eBay checkout charity experiment, and find that certain information drivers (short mission statement) have a larger effect than others (popularity). Our study adds to this literature by investigating possible interactions between the solicitation mechanism used and charity information.

To inform the comparisons across treatments, we build upon the theory of DellaVigna, List, and Malmendier (2012), which models donation behavior as motivated by private consumption utility, (pure or impure) altruism, and social pressure. The theory highlights that social pressure and decision costs differ between closed- and open-ended solicitations. Further,

an open-ended solicitation allows for one to give an amount that maximizes utility whereas in a closed-ended solicitation, a donor should simply agree to donate whenever the utility of donating the requested amount is higher than the utility of not donating.

We find that, at amounts less than $1, donation rates are significantly higher in the rounding treatments relative to the fixed request and open-ended treatments.[4] We provide evidence that differences in donation rates between the fixed request and rounding treatments are at least in part driven by "loose-change effects", whereby individuals are more likely to donate if they would have less change as a result.[5] Albeit in different decision settings and with different solicitation mechanisms, other studies on charitable giving have also found loose-change effects (Fielding and Knowles 2015; Brown, Meer, and Williams 2019; Etang, Fielding, and Knowles 2012).[6] Donation rates in the fixed request treatments are either equal to or higher than donation rates for the open-ended treatments at various amounts, which is predicted by the theoretical framework. This overall leads to a higher mean willingness-to-donate for the fixed request treatments, and a lower income elasticity of charitable donations. Additionally, a one sentence information statement about the charity has a positive but small effect on donation rates and amounts, but in the fixed request treatment only. This result may also be explained by loose-change effects.

[4] For open-ended solicitations we compute the donation rate at a particular amount, $x, by calculating the percentage of individuals who donate at least $x. This provides a way to compare behavior across open- and closed-ended solicitation treatments.

[5] As summarized by Fielding and Knowles (2015), this phenomenon may be due to a preference for whole numbers or a preference for bills over coins, which are easier to carry and more difficult to lose.

[6] Brown, Meer, and Williams (2019) evaluate donation preferences between giving time and money. In one treatment where participants must earn money before donating, many choose to donate any coins earned while keeping notes. In Etang, Fielding, and Knowles (2012), participants are given a combination of coins and notes for a donation experiment ($15 in notes and $5 in coins). Of those participants who chose to donate, many gave $5 by donating all of their coins. Fielding and Knowles (2015) test whether participants are more willing to donate via coin collection if given smaller bills/more loose change and find weak evidence of loose-change effects.

2. Theoretical framework

In this section we develop a theoretical framework to better understand giving behavior, and to highlight factors that may lead to differences across experimental treatments. We begin with the utility function of DellaVigna, List, and Malmendier (2012). In particular, the utility to a potential donor from giving an amount g is:

[1] $$U(g) = u(W - g) + av(g, G_{-i}) - s(g),$$

where W is the donor's wealth, and G_{-i} denotes the giving of others. The first term is the "private" utility of the donor, with $u' > 0$ and $u'' \leq 0$. The function $v(g, G_{-i})$ represents the utility derived from charitable donations, and captures pure and impure altruism. It is assumed that $v'_g > 0$ and $v''_{gg} < 0$. The coefficient $a \geq 0$ denotes the level of altruism. The third term reflects disutility from social pressure, and the donor is assumed to incur a utility cost of $s(g) = S \cdot (g^s - g) \cdot 1_{[g<g^s]} \geq 0$. The severity of the social cost to an individual is captured by the parameter S. The utility cost arises when the donation is less than the social norm g^s.

2.1. Closed-ended donation mechanisms: fixed donation request and rounding request

The fixed donation and rounding request mechanisms are closed-ended mechanisms in that they provide a take-it-or-leave-it opportunity to give a specific amount, g^f. This amount signals the social norm, i.e., $g^s = g^f$, and one only experiences a social cost by not giving. The individual will then agree to donate $g = g^f$ if:

[2] $$u(W - g^f) + av(g^f, G_{-i}) \geq u(W) + av(0, G_{-i}) - S \cdot g^f.$$

In the absence of social pressure, people are less likely to donate as g^f increases. This is because private consumption utility is decreasing at an increasing rate, and the marginal utility of giving to the charity is increasing at a decreasing rate. However, as the social cost of not giving

increases with g^f, there will be some range of (low) values for g^f for which increasing the amount of the ask either holds fixed or increases the utility difference between giving or not. Beyond this range, donation rates will nevertheless decrease. It is interesting to note that a donor may agree to give g^f even if this is higher than the amount that would maximize her utility in a setting where her choice is unconstrained. With an unconstrained donation choice an individual selects an amount that maximizes utility whereas in a closed-ended setting one simply donates if the utility of donating the requested amount is higher than the utility from not giving.

2.1.1. Loose change effects

As documented in the literature, either due to a preference for whole numbers or a disutility from carrying coins, a possible motive for giving is to reduce the amount of loose change that would otherwise arise. To build this into the model, let the utility cost of loose change be given by $l(g) = L \cdot m(g) \geq 0$, where $m(g)$ is the number of coins one receives from the cash transaction (based on the difference between the cash paid and the bill), accounting for any donation g, and $L \geq 0$ is a preference weight. Extending the model, one will agree to donate $g = g^f$ if:

[3] $$u(W - g^f) + av(g^f, G_{-i}, I) - l(g^f) \geq u(W) + av(0, G_{-i}, I) - S \cdot g^f - l(0)$$

The rounding mechanism avoids loose change, and so $l(g^f) = 0$ whereas $l(0) \geq 0$. The fixed donation request can eliminate, decrease, increase, or hold fixed the amount of loose change generated. Therefore, we expect that the donation rate, for any g^f, will be higher with the rounding mechanism.

2.2. Open-ended donation mechanism

For an open-ended solicitation, individuals have the freedom to choose any donation

amount. This is conceptually desirable to charities, as it gives rise to the possibility that some will give more than what would have been directly asked for in a closed-ended solicitation. Further, one does not need to consider the tradeoffs such as donation rates and expected revenue involved with selecting g^f. However, there are additional considerations. First, whereas we speculate that the amount of the ask in a closed-ended mechanism naturally establishes a social norm, in the absence of a suggested donation amount it is unclear what the social norm is for an open-ended ask. The default donation is now zero, and if this is perceived to be the norm then there is no potential social cost from not donating. Second, the decision problem is now a more complex, two-stage problem. The individual first must determine whether or not to give, and then if she elects to give, she must figure out how much.

Let $\tilde{g}^s$ denote the donor's beliefs about the social norm, which we assume is a fixed amount. This for instance may be the person's expectation of the average amount given by others. Further, similar to Reiley and Samek (2019), let c denote a fixed decision cost, which is incurred if the individual decides she should donate, in which case she needs to use cognitive resources to determine how much. Another way to frame this is that not donating is the simplest option. The utility of donating an amount $g > 0$ is then given by

[4] $$u(W-g) + av(g, G_{-i}) - S \cdot (\tilde{g}^s - g) \cdot 1_{[g<\tilde{g}^s]} - c.$$

Prior to "paying" the cognitive cost c one does not exactly know the optimal donation nor the utility associated with it. Nevertheless, if the optimal amount is likely to be small, it will not be worth incurring this decision cost. Let $\underline{g}$ denote the threshold donation amount above which it will be optimal to incur the decision cost. Moreover, let g^* denote the optimal donation amount in the open-ended setting; i.e., this is the donation amount that maximizes [4].

In order to make an apples-to-apples comparison between closed- and open-ended

mechanisms, we can contrast the donation rate at a particular amount g^f with the proportion of people who give at least g^f when asked to give any amount of their choosing. In the absence of social costs and decision cost considerations, as $U'(g) \geq 0$ for any $g \leq g^*$, it follows that it will be optimal to agree to any amount $g^f \leq g^*$ offered in the closed-ended setting. Further, as mentioned above there will be cases in the closed-ended setting where individuals will agree to donate an amount higher than g^* rather than not donate at all. That is, there will be some range of donation amounts greater than g^* for which $U(g) > U(0)$. Introducing decision costs means that when $U(0) < U(g^*) < U(\underline{g})$, an individual faced with an open-ended ask will donate nothing, but will nevertheless agree to donate g^f at least when $g^* \geq g^f$.

Social costs provide a third channel through which someone in a closed-ended setting will agree to pay g^f even when it exceeds g^*. If $\tilde{g}^s \geq g^f$ then it will continue to be the case where it the donor will agree to pay $g^f \leq g^*$, rather than nothing in the take-it-or-leave-it setting. Of course, open-ended beliefs could be less than a given amount g^f which means that social pressure may induce a donation of g^f in the fixed request setting, but something less than g^f in the open-ended setting. Moreover, when faced with an open-ended ask, beliefs are endogenous to the donor. In contrast, increasing the amount of the ask serves to increase the social pressure to give in the closed-ended setting. As mentioned above, for an increase in g^f, this may actually hold fixed or increase the difference in utility from donating or not.

Despite the fact that, conditional on any amount g^f, donation rates are expected to be higher for the closed-ended mechanisms, it will often be the case that the open-ended mechanism elicits a higher mean revenue (i.e., money raised per person, including non-donations) given that the closed-ended mechanism restricts how much one can give. For instance, suppose that 25% are willing to donate when faced with the open-ended solicitation, and conditional on donating

they give $5. This will result in a higher revenue from a take-it-or-leave it ask of $1, even if the donation rate is 100%. Overall, the comparison is ambiguous and depends upon the preferences of the population along with the choice of requested donation amount(s).

Using statistical methods we will describe later, including a range of fixed donation amounts in the design allows us to identify and estimate a willingness-to-donate function. This will allow us to calculate measures of central tendency such as the mean or median. Mean willingness-to-donate can be directly compared with the mean amount donated in the open-ended case. The difference between the two thus quantifies by "how much" underlying preferences differ across mechanisms. Given the theory predicts higher (conditional) donation rates for the fixed donation request mechanism, it follows that theory predicts that mean willingness-to-donate will also be higher.

2.3. Providing information on the charity

When donors otherwise have imperfect information on the charity, providing an information statement may alter the utility of giving. If donors are motivated by pure altruism, then information that changes beliefs about the charity's production function can alter $v(\cdot)$. For instance, if the person learns that donations would potentially go to social causes she cares about, but did not previously know of, this can increase the value of $v(\cdot)$ for any amount donated. Information may also influence a, as noted by DellaVigna, List, and Malmendier (2012), if beliefs about the quality of the charity are altered. If the information signal brings potentially unknown but positive information, it follows that this increases the marginal utility of giving to the charity and it is optimal for donors to voluntarily give a higher amount.

2.4. Testable hypotheses

The theoretical framework motivates the following testable hypotheses:

Hypothesis 1. The donation rate, conditional on any amount g^f, will be higher for the rounding mechanism relative to the fixed donation request.

Hypothesis 2. The donation rate, conditional on any amount g^f, will be higher for a closed-ended solicitation relative to an open-ended solicitation.

Hypothesis 3. Donation rates for the closed-ended mechanisms will decrease as the amount requested increases.

Hypothesis 4. The donation rate will increase when potential donors are provided with favorable information on the charity.

Hypothesis 5. The mean willingness-to-donate will be higher for the fixed donation request when compared with the open-ended solicitation.

All hypotheses, with the exception of Hypothesis 3, follow directly from the theory. While donation rates may actually increase with the amount requested if social pressure is high enough, we expect overall that donation rates will be decreasing, at least across a range of sufficiently high amounts. Hypothesis 1 relies on "loose change" effects being important. Hypotheses 4 rests on the assumption that participants have imperfect information about the charity, in which case providing them with information increases the utility of charitable giving.

3. Experimental Design and Procedures

From the summer of 2017 through the fall of 2019, and following the completion of an unrelated laboratory economics experiment, we asked several hundred students at a public research university whether they were willing to donate to St. Jude Children's Research Hospital.

St. Jude is a well-known non-profit organization, and is one of the highest grossing charities. The research hospital has been involved in many POS campaigns over the years. There were neither verbal nor written instructions provided prior to the ask, which was made through the participant's computer screen, paralleling a field setting where the ask comes at a surprise (e.g., at a checkout kiosk).

Following the solicitation, we asked those who agreed to donate to disclose their reasons for giving, and those who did not donate were asked to disclose their reasons for not giving. We also asked whether people enjoyed being asked to donate. We further have some basic demographic information on participants, as this was collected as part of post-experiment questionnaires used in the unrelated experiments. All information was collected via personal computers using software programmed in z-Tree (Fischbacher 2007).

Participants were assigned to one of six treatments defined by the solicitation method (fixed request, rounding, and open-ended) and information condition (no information or information). Treatment assignment was quasi-random as we reassigned those selected into a rounding treatment if their earnings from the unrelated experiment was a whole dollar amount.

In the fixed request, we asked the potential donor "Would you like to donate $X.XX to St. Jude Children's Research Hospital? ", and provided response options of "Yes" or "No thanks." For the rounding mechanism, we instead asked "Would you like to round down your earnings to the nearest whole dollar by donating $0.XX to St. Jude Children's Research Hospital?". Last, the open-ended solicitation was worded as "Would you like to donate a portion of your earnings to St. Jude Children's Research Hospital? Please check "Yes" or "No thanks" and enter the desired donation in the Donation Amount box below."

We included the fixed request and rounding mechanisms due to their perceived popularity. In a consumer survey report released by Catalist (2016), the "add $1" (a fixed donation request) was the most preferred method of donation at the register at 46%. Following close behind was the rounding method with 23% of consumers preferring it. While those surveyed did not express a preference for an open-ended ask, this approach is nevertheless commonly used, such as when people are simply presented with a donation box.

Earnings in the unrelated experiment were in quarter amounts, and so individuals in rounding treatments were asked to donate either 25¢, 50¢ or 75¢. For the fixed request treatments, we randomly varied across participants the amount of the request: 25¢, 50¢, 75¢, $1, $1.50, $2, and $3. This facilitates comparisons with both the rounding and open-ended solicitations.[7]

For treatments with information, we derived a single descriptive sentence indicating specific uses for monetary donations to provide the additional charity information customers might desire. Specifically related to St. Jude Children's Research Hospital, we gathered information on what donations were used for from the organization's website and constructed the following informational sentence: "Through donations, St. Jude's patients (children) receive care, treatment, and cutting edge research, at no cost to their families".[8]

[7] The first few hundred observations were collected using an experimental design that included all six treatments, but fixed request amounts were either 50 cents or $1. In order to provide additional comparisons between this and other treatments we added the additional fixed request amounts to the design. We continued to collect data from all six treatments after this change was made.

[8] At the conclusion of the experiment, participants were shown a letter that would later be sent to St. Jude along with a check for the money raised. The letter detailed where the money was coming from, how it was collected, as well as a statement confirming that researchers would not be claiming these donations as a tax deduction.

4. Results

We have data from 896 donation observations.[9] Table 1 provides descriptive statistics. 57% of the participants are male, and the mean age is 20. The overall donation rate is 49%, and in total $377.50 was collected for St. Jude Children's Research Hospital. Prior to being asked to donate, participants had earned $22.89 on average from an unrelated experiment, with earnings ranging from $6.75 to $36.75. Donations across all participants average 42 cents, while donations among contributors are 85 cents on average.

When questioned whether they enjoyed being asked to donate, 43% selected "Yes", 43% indicated they were "Indifferent", and only 14% answered "No." Interestingly, 13% of participants chose not to donate, but enjoyed being asked to do so. For those that donated, the most popular reason for doing so was that they liked the charity (59%), followed by perceiving the amount requested to be reasonable (55%). Only 3% of subjects donated but did not like being asked to do so. Of those not donating, the most popular reason selected was "I recently donated to charity" at 34%, with "I just didn't want to" the second most popular at 29%.[10]

Table 2 provides a summary of outcomes by treatment that are *unconditional* on the amount requested (if any). The rounding treatment without information has the highest donation rate at 82.02%. Performing Pearson's chi-squared tests and pooling observations by solicitation mechanism, we find that the difference in donation rates between the Fixed Request and Rounding treatments (difference = -39.57%; $p < 0.01$) is statistically significant. Even if we limit observations in the fixed request treatments to amounts less than $1, the difference in donation

[9] As we collected data in association with multiple experiments, and we do not have the ability to associate observations with participant names, the number of unique participants is unknown. Based on data from the recruitment system associated with the experimental laboratory, we estimate that roughly 700 observations correspond with participants who were only asked to donate on one occasion, with most others asked to donate on two occasions.

[10] The appendix presents all response options to the follow-up questions and the percentage selecting them.

rates persists (difference = -22.66%; $p < 0.01$). In addition, a comparison between the open-ended and rounding treatments reveals a significant difference in overall donation rates (difference = 38.37%; $p < 0.01$). There is no statistical difference between open-ended and fixed request treatments (difference = 1.20%; $p = 0.802$)

The open-ended treatments yielded the highest revenue per person across all participants and all contributors. While the donation rate was somewhat low, those who donated contributed a relatively high amount (around $2). This is not unexpected as donation amounts are unconstrained, in contrast to the closed-ended solicitations. We pool observations by mechanism and use t-tests to determine if differences in mean donation amounts between mechanisms are significantly different. We find differences in revenue are statistically significant in comparisons between the fixed request and open-ended treatments (difference = -$0.49; $p < 0.01$) and the rounding and open-ended treatments (difference = -$0.42; $p < 0.01$).

The summary statistics suggest higher donation rates due to information for the fixed request and open-ended mechanisms, but a lower rate for the rounding mechanism. Statistically, using Pearson's chi-squared tests, these donation rates are different for the fixed request mechanism ($p = 0.043$) but not for the rounding ($p = 0.623$) or the open-ended asks ($p = 0.308$). The difference in revenue for the fixed request mechanism is 9¢ and is marginally statistically significant ($p = 0.06$).

Figure 1 illustrates donation rates by solicitation mechanism. For the two closed-ended mechanisms, the figures simply reflect the percentage of "yes" responses at each dollar amount. For the open-ended solicitation, presented is the empirical a survival function, which reflects the percentage of respondents that donated *at least* a particular amount.

As expected, donation rates for the closed-ended mechanisms generally decline with the

amount requested. For amounts less than $1, the rounding treatments have the highest donation rates: 89.28% at 25¢; 77.96% at 50¢; and 75.38% at 75¢. In comparison, donation rates for the fixed request treatments are somewhat lower than the rounding treatments for asks at 25¢ (66.67%) and 50¢ (69.37%), but much lower for the ask of 75¢ (37.08%). Open-ended (conditional) donation rates are the lowest at 42.19%, 38.28%, and 37.50% across the three amounts. Using Pearson's chi-squared tests, we reject the hypothesis of equal donation frequencies when comparing any two mechanisms ($p < 0.01$). This result holds when comparing the fixed request and open-ended mechanisms, when comparing either amounts less than $1 or across the entire range of amounts present in the fixed request treatments.

Donation rates for the fixed request treatments continue to decline at amounts greater than $1. For amounts less than $1, (conditional) donation rates in the open-ended treatment are lower than that of both closed-ended treatments (except at 75¢). However, donation rates between the fixed request and open-ended treatments are roughly equal for donations amounts greater than $1.

4.1. Donation Rates

To gain additional insights, as well as to control for other factors that may also be driving treatment effects, we estimate ordinary least squares regressions. The dependent variable, *Donated*, is an indicator of whether a participant donated (regardless of amount). In model (1), the included explanatory variables are a set of mechanism-specific indicator variables as well as interactions between each mechanism indicator and an indicator that equals 1 when information about the charity was provided. In (2), we add as control variables the participant's earnings in the prior experiment, age, and gender. In both models, the baseline (omitted) treatment is the open-ended mechanism without information. These regression results are presented in Table 3.

From model (1), the rounding mechanism yielded a much higher overall donation rate relative to open-ended, a 44.1 percentage point difference. There is no difference in the overall donation rates between open-ended and fixed request. Confirming the earlier results based on nonparametric tests, the one-sentence information statement on the charity only has a significant effect for the fixed request mechanism. As can be gleaned from model (2), adding control variables has little impact on estimated treatment effects. As expected, those who earned more in the prior experiment donate at a higher rate – a 0.9 percentage point increase for each additional dollar earned. Although the variation in age is limited due to the student sample, we also find that donation rates increase by 1.4 percentage points for each year of age. The effect of both covariates may be indicative of an income effect.

Given the limited range of asks for the rounding treatments, for a more apples-to-apples comparison we present regressions in Table 4 that allow for an analysis of donation rates at amounts below $1. This is undertaken by dropping observations from the fixed request treatments associated with asks of $1 or more. To make data from the open-ended treatments comparable, we randomly assigned an ask of 25¢, 50¢, and 75¢ to each participant and then recorded yes/no responses based on whether the actual amount given is at least as high as the randomly assigned amount.[11]

Model (1) uses the same specification as the first model from Table 4, and demonstrates that both the fixed request and rounding treatments yield higher donation rates (consistent with the non-parametric tests). Interestingly, there no longer is an information effect for the fixed request treatment. The point estimate suggests only a 3.2 percentage point difference. Therefore,

[11] This random assignment procedure adds some "noise" to the estimation. However, as the open-ended distribution is fairly flat across this range of amounts (see Figure 1), estimation results change only negligibly when we repeat the random assignment procedure and re-estimate the model.

providing information seems to matter at amounts higher than 75¢.

Model (2) adds indicators for asks of 50¢ and 75¢, coefficients on which measure differences from the baseline ask of 25¢. The donation rate at 50¢ is virtually identical to the rate at 25¢, whereas the donation rate at 75¢ is 14.2 percentage points lower relative to the 25¢ donation rate. Model (3) incorporates control variables. The effects of prior experiment earnings are similar to before, but age is no longer statistically correlated with the donation rate.

The results from both the regressions and the nonparametric tests presented earlier provide support for the first two hypotheses presented in Section 2.4: donation rates are higher in the rounding treatments relative to the fixed request treatments; and, donation rates are higher in the closed- versus open-ended solicitations. There is some qualified support for Hypothesis 3. Whereas the regressions suggest that donation rates (weakly) decrease with the amount asked, this is largely driven by the fixed request treatments. Indeed, using Pearson's chi-squared tests, we fail to reject that the donation frequencies are equal across the three amounts for the rounding mechanism ($p = 0.130$), but reject this hypothesis for the fixed request treatments ($p < 0.01$).[12] Last, there is some support for Hypothesis 4, but only for the fixed request mechanism.

4.2. Loose-change effects

As suggested in the theory, and consistent with some prior research, loose-change effects are a potential driver of the observed differences between the fixed request and rounding mechanisms (for amounts less than $1). It is also possible that differences stem from a simple framing effect, based on the subtle variation in how the ask is worded. While it is not possible to directly test for a framing effect, the data do provide avenues for determining whether loose-change effects provide a plausible explanation.

[12] The latter result holds regardless of whether we restrict the analysis to only include amounts less than $1.

For each participant in the fixed request treatments (amounts less than $1), we determined whether donating the suggested amount would increase or decrease the amount of change received upon payment from the experiment session.[13] For example, if a subject earns $16.75 for the session and is prompted to donate $0.50, donating would decrease change relative to not donating. As presented in Table 5, the donation rate is 38.78% for those who would receive more change by donating whereas the donation rate for those who would receive less change by donating is 81.51%. This difference is statistically significant ($p < 0.01$).

Donating when faced instead with the rounding mechanism always reduces loose change. The donation rate for the rounding treatments (80.56%) is very similar to, and is not statistically different from, the donation rate for those in the "less change" fixed request treatments. Therefore, these two comparisons provide strong evidence that loose-change effects are driving the difference between these solicitation mechanisms.

There is additional support of loose-change effects evident in the data. Among the 54 donors in the open-ended treatments, 42 left themselves less change as a result of their donation, 12 percent gave themselves an equal amount of change, and not a single person gave themselves more change. Through the post-experiment questionnaire, several participants left comments such as "I didn't want a quarter" and "I don't like change anyways".

The evidence on loose-change effects, along with the finding that the information statement only increases the donation rate for the fixed request mechanism, motivated us to ask the question of whether loose-change effects may also explain the heterogeneity in information effects. To examine this, using all the fixed request data, we test for information effects conditional on how donating alters the amount of change received. Among those facing less

[13] Very few observations are associated with a situation where donating the fixed amount holds the amount of change fixed.

change if they donate, the donation rates are similar between no information (65.43%) and information (69.12%) treatments ($p = 0.880$). For those who would have more change if they donate, the difference in the donation rates is notably higher (25.79% versus 32.24% or 6.45%), although not quite significantly different ($p = 0.112$).[14] Last, when donating would not alter the change one receives, the information effect is very large (30.00% versus 51.72% or 21.72%) and is statistically significant ($p = 0.012$). Thus, the information statement encourages donations, but this effect depends on loose change. Of course, a related effect cannot emerge with either the rounding mechanism (as donating always reduces change) or the open-ended mechanism (change can always be reduced irrespective of the information statement). When placed in the context of the theory model, the evidence suggests that information is an argument in the loose change function and does not alter the utility derived from charitable donations as originally hypothesized.

4.3. Revenue

We now briefly analyze revenue, the amount collected from a participant, which is equal to zero for non-donors. We use ordinary least squares estimation with *Amount Donated* as our dependent variable and the open-ended treatment without information as our baseline. The two estimated models are presented in Table 6 and include the same covariates as those in Table 3.

From both models, there is a significant decrease in average revenue, when one uses either closed-ended mechanism relative to the open-ended ask. The magnitude is rather large, on the order of a 50% to 65% decrease. Interestingly, the estimates from the two closed-ended mechanisms are similar. Thus, although we included additional, higher amounts in the fixed request treatments, the resulting lower donation rates proved enough to offset the potential

[14] This difference is marginally significant if we focus on requested amounts below $1.

revenue that could have been gained. Echoing results from the analysis of donation rates, information only affects mean donations for the fixed request mechanism. From Model (2), increasing experiment earnings by $1 translates to increase of 2¢ in the amount donated.

Of course, these results are not altogether surprising, given that the open-ended mechanism does not impose a constraint on the amount donated, and the fixed request amounts were randomly assigned rather than targeted. To provide a more apples-to-apples comparison between the open-ended and fixed request mechanisms, we now turn to the estimation of willingness-to-donate functions.

4.4. Willingness to Donate

The random assignment of a large range of ask amounts for the fixed request treatments allows us to estimate the distribution of willingness-to-donate (WTD). Conceptually, this involves fitting a function to the data presented in Figure 1. By doing so, we can estimate measures of central tendency, e.g., mean WTD. This mean WTD can be interpreted as the dollar amount an average person would have donated under the fixed request mechanism, absent the constraints imposed by asking for a particular dollar amount. This thus provides a clearer picture of whether and how underlying preferences differ across the closed- and open-ended mechanisms.

To estimate WTD functions using the binary choice data (fixed request), we use established methods from the welfare economics literature (Cameron and James 1987; Wooldridge 2010) . Let y_i^* denote participant i's latent WTD. This is not directly observed from the donation choice, but instead can be treated as a censored dependent variable. When the person donates, this implies that $y_i^* > g_i^f$; i.e., the lower bound on WTD is the amount requested. Otherwise, when the person does not donate, this provides the signal $y_i^* < g_i^f$; i.e., g_i^f

identifies the upper bound of WTD. We assume that y_i^* is a linear function of covariates and a mean-zero error term which is assumed to be distributed normal with standard deviation σ. This gives rise to what is commonly referred to as an interval regression model. With a linear conditional mean function, assuming the error term has a normal distribution is analogous to assuming a normal distribution for WTD, and further one can interpret coefficients of the model directly as marginal effects.

Accommodating data from both donation mechanisms in the same regression does not pose additional challenges as software packages allow for a mix of continuous and interval-censored data.[15] As we assume that donations of $0 in the open-ended treatments are true indications of the person's WTD, for consistency we use $0 as the lower-bound on WTD for those in the fixed request treatments who opted out of donating. The WTD regressions are presented in Table 7.

From Model (1), mean WTD is $0.82 (std. err. = $0.09) for the open-ended treatment, averaged across information conditions. Mean WTD is $1.16 ($0.05) for the fixed request, which is statistically different than the open-ended ($p < 0.01$). This finding supports Hypothesis 5. For both mechanisms, information does not systematically alter WTD. Model (2) adds controls variables. Importantly, the Earnings variable allows us to estimate the income elasticity of donations. When evaluated at the mean of the Earnings variable, and also averaging over the information conditions, the income elasticity is 1.00 (0.28) for open-ended and 0.68 (0.17) for fixed request.[16] These elasticities are significantly different ($p = 0.025$). Given the earlier findings on loose-change effects, Model (3) allows WTD to vary for those in the fixed request

[15] We estimate the reported regressions using the "intreg" command in Stata (version 15.1).
[16] As the income elasticity is a nonlinear function of estimated parameters, we obtain standard errors using the delta method.

treatments that had the opportunity to reduce the amount of loose change if they agree to donate. This has a large effect on mean WTD, increasing it by $0.36, which about a 30% difference. The income elasticity for this subgroup is 0.56 (0.14).

5. Discussion

We use an experiment to compare three popular solicitation mechanisms used in point-of-sale donation campaigns or "checkout charities": a fixed donation request (yes or no to a randomly assigned amount); a rounding request (yes or no to an amount based on a prior, unrelated transaction); and an open-ended ask. Findings from the experiment provide insights that are of potential importance to checkout charity campaign designers. First, donation rates are lowest for the open-ended ask. This solicitation mechanism allows potential donors to give *any* amount, and so we suspect that this finding may be counterintuitive to some. The theoretical framework we develop provides multiple reasons for this finding, among them that there is a cognitive cost associated with figuring out *how much* to give; in contrast, the closed-ended solicitations pose potential donors with a simple take-it-or-leave-it decision. Second, we find higher donation rates (conditional on the amount asked) for a rounding mechanism relative to the fixed donation request. The evidence supports that this is motivated by "loose change effects", which may stem from a preference for whole numbers or the disutility from carrying coins. If the main driver is the latter, then our results are unlikely to extend or at least may be weaker when characterizing behavior from non-cash transactions.

Third, the open-ended solicitation did raise more revenue per person. Therefore, when one employs an open-ended ask there is a clear tradeoff between donation rates and revenue. One potential way to dampen this tradeoff is to provide a suggested donation amount or amounts

along with the open-ended ask. This is hypothesized to decrease cognitive burden, which should increase donation rates. However, as suggested by several research studies conducted in different contexts, one must select suggested donation amounts carefully. In the context of the theoretical framework, the suggested donation amount is likely to alter the social norm, and for instance a recommended amount that is too low may unintentionally limit the donations from generous individuals. Fourth, we find that providing a one-sentence information statement on the charity increases donations, but only for the fixed request solicitation. This provides qualified support for what is a relatively easy tool to implement in most settings.

The evolution of our experimental design suggests a straightforward approach to determine fixed amounts that a campaign designer may wish to use, either as part of a closed-ended solicitation or as recommended amounts for to an open-ended ask. First, an open-ended solicitation (without recommendations) can be used as a cost-effective way for gathering information on the underlying willingness-to-donate distribution for a population of interest. (This also avoids the potential pitfalls of randomly asking different people to donate different amounts.) Second, as for higher amounts both theory and our results suggest that the willingness-to-donate distributions are similar for fixed request and open-ended, this function can be used to target fixed amounts based on revenue and donation rate goals. For instance, the open-ended distribution from the experiment suggests that asking for either $3 or $1.50 will generate the same revenue per person, but the latter doubles the donation rate. If one wants to maximize revenue, the data suggest a $2 ask is best.

As our experiment was conducted in a lab setting with college students involving a single charity, the generalizability of our findings is an open question. The pervasiveness of checkout charity campaigns means that this segment of the population nevertheless has plenty of

experience with them. Further, fast food restaurants are popular settings for checkout charities, and the majority of students eat fast food on a daily basis. Perhaps a larger concern is that we studied a rounding mechanism that involved rounding experiment earnings down which represents different framing from the field setting where one is asked to round their bill up. Nevertheless, the main treatment effects associated with this mechanism are tied to loose-change effects. The theoretical framework suggests that loose-change effects should arise in both rounding up and rounding down scenarios.

Last, this investigation represents an early attempt to gain insight into checkout charity methods, and there is still plenty to learn about in this setting. In traditional charity campaigns, a person is asked infrequently to donate; for instance, it is typical for organizations (including universities) to have annual fundraising drives. On the other hand, checkout charity campaigns can last weeks or months, and frequent shoppers will then be asked to donate to the same charity on multiple occasions. In turn, an open question is what methods are congruent with campaign performance over the duration of the campaign, and similarly what the optimal campaign length is, taking into consideration the cost of running the campaign. Yet another interesting question is how donation behavior varies according to the solicitor. In some cases, the solicitation is made by a person. In others, whether one donates may be viewed by others (e.g., those in line at a grocery store or a cashier). The online checkout experience is, in contrast, private. Important factors such as social pressure, warm glow, form of payment, and decision time vary across these settings. It is therefore natural to expect solicitor effects, and by extension interactions between the solicitation methods and the solicitor.

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Table 1. Data description

Variable name	Description	Mean	Std. Dev.
Donated	=1 if participant donated in experiment	0.491	0.500
Amount Donated	amount participant donated to charity, if any, in $	0.418	0.748
Fixed Request	=1 if fixed request solicitation mechanism	0.656	0.475
Rounding	=1 if rounding solicitation mechanism	0.201	0.401
Open-ended	=1 if open-ended solicitation mechanism	0.143	0.351
Information	=1 if participant presented with information on charity	0.481	0.500
50 cents	=1 if donation ask was for 50¢	0.190	0.392
75 cents	=1 if donation ask was for 75¢	0.172	0.377
Less change	=1 if donating would result in less change and mechanism is closed-ended	0.367	0.482
Male	=1 if participant identifies as male	0.570	0.495
Age	participant's age, in years	20.478	2.244
Earnings	participant's earnings from prior experiment, in $	22.893	4.975

Table 2. Summary statistics by treatment

Solicitation method:	Fixed Request		Rounding		Open-ended	
Information Included?	No	Yes	No	Yes	No	Yes
N	310	278	89	91	66	62
Donation Rate	37.09%	45.32%	82.02%	79.12%	37.88%	46.77%
Mean Donation (if Donated)	$0.79	$0.84	$0.50	$0.50	$2.49	$1.68
Mean Revenue	$0.29	$0.38	$0.41	$0.39	$0.83	$0.81

Table 3. Analysis of donation rates

Dependent variable: Donated	(1)	(2)
Fixed Request	-0.008	-0.004
	(0.066)	(0.067)
Fixed Request × Information	0.082**	0.086**
	(0.041)	(0.040)
Rounding	0.441***	0.425***
	(0.073)	(0.074)
Rounding × Information	-0.029	-0.014
	(0.059)	(0.059)
Open-ended × Information	0.090	0.084
	(0.087)	(0.088)
Earnings		0.009***
		(0.003)
Age		0.014**
		(0.006)
Male		0.023
		(0.032)
Constant	0.379***	-0.131
	(0.060)	(0.163)
N	896	896
R^2	0.105	0.118
F-statistic	26.96	19.75

Notes: *, **, and *** indicate significance at the 10%, 5%, and 1% significance levels, respectively. Robust standard errors are in parentheses.

Table 4. Donation rates, conditional on asks of under $1

Depended Variable: Donated†	(1)	(2)	(3)
Fixed Request	0.199***	0.219***	0.227***
	(0.073)	(0.074)	(0.075)
Fixed Request × Information	0.032	0.029	0.031
	(0.061)	(0.059)	(0.058)
Rounding	0.457***	0.475***	0.461***
	(0.072)	(0.073)	(0.075)
Rounding × Information	-0.029	-0.028	-0.017
	(0.059)	(0.060)	(0.060)
Open-ended × Information	0.023	0.050	0.043
	(0.086)	(0.088)	(0.087)
50 cents†		-0.047	-0.030
		(0.047)	(0.047)
75 cents†		-0.196***	-0.186***
		(0.048)	(0.049)
Earnings			0.011***
			(0.004)
Age			0.004
			(0.007)
Gender			0.007
			(0.040)
Constant	0.364***	0.431***	0.066
	(0.060)	(0.067)	(0.191)
N	574	574	574
R^2	0.104	0.133	0.148
F-Statistic	14.89	13.90	11.23

Notes: *, **, and *** indicate significance at the 10%, 5%, and 1% significance levels, respectively. Robust standard errors are in parentheses. † For comparability with the closed-ended treatments, values of the indicated variables for open-ended treatments are based on the procedures described in the text.

Table 5. Analysis of loose-change effects

Amount of change (number of coins) if participant donates relative to if they do not	Donation Rate	
	Fixed Request	Rounding
Less change	81.51%	80.56%
More change	38.78%	--
Fixed Request: "Less change" = "More change"	$p < 0.001$	
Fixed Request "Less change" = Rounding	$p = 0.837$	

Note: presented *p*-values of the stated hypotheses correspond with Pearson's chi-squared test.

Table 6. Analysis of revenue (per person)

Dependent variable: *Donation Amount*	(1)	(2)
Fixed Request	-0.536***	-0.526**
	(0.204)	(0.203)
Fixed Request × Information	0.087*	0.090**
	(0.046)	(0.046)
Rounding	-0.419**	-0.431**
	(0.204)	(0.203)
Rounding × Information	-0.017	-0.007
	(0.040)	(0.042)
Open-ended × Information	-0.015	-0.024
	(0.263)	(0.262)
Earnings		0.015***
		(0.005)
Age		0.011
		(0.008)
Gender		-0.016
		(0.050)
Constant	0.830***	0.279
	(0.202)	(0.290)
N	896	896
R^2	0.052	0.062
F-statistic	4.46	4.24

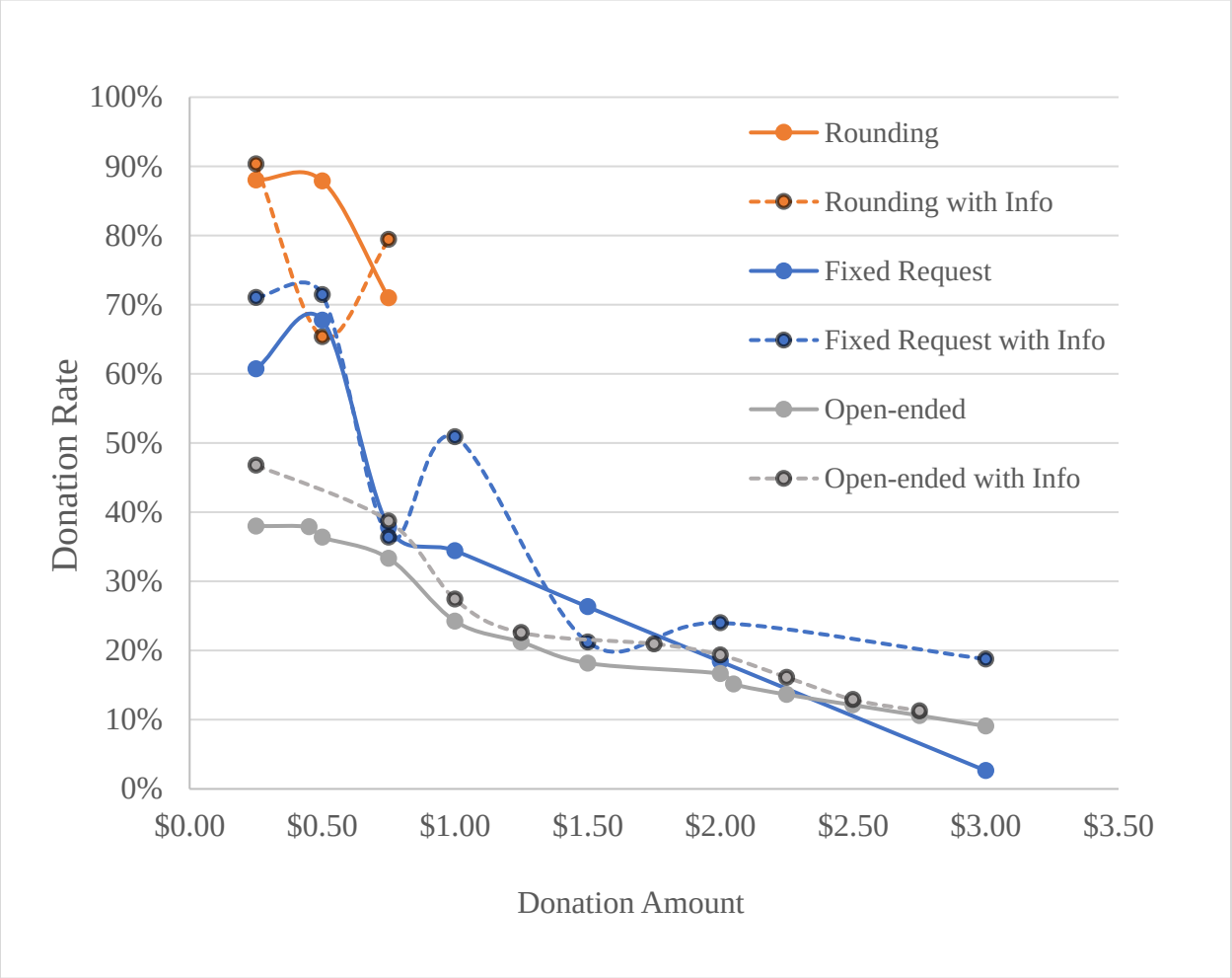
Notes: *, **, and *** indicate significance at the 10%, 5%, and 1% significance levels, respectively. Estimates for both models use robust standard errors.

Table 7. Willingness-to-donate models

	(1)	(2)	(3)
Fixed Request	0.274**	0.296**	0.224
	(0.140)	(0.139)	(0.075)
Fixed Request × Information	0.122	0.133	0.139
	(0.098)	(0.098)	(0.099)
Fixed Request × Less change			0.363***
			(0.128)
Open-ended × Information	-0.015	-0.039	-0.039
	(0.176)	(0.173)	(0.174)
Earnings		0.035***	0.036***
		(0.009)	(0.009)
Age		0.022	0.023
		(0.021)	(0.021)
Gender		-0.016	-0.010
		(0.086)	(0.087)
Constant	0.830***	0.821***	0.821***
	(0.122)	(0.122)	(0.122)
Std deviation of WTD (σ)	0.993	0.980	0.987
	(0.033)	(0.033)	(0.033)
N	716	716	716
McFadden's R^2	0.008	0.019	0.025
Log-likelihood	-757.372	-749.123	-744.885

Notes: *, **, and *** indicate significance at the 10%, 5%, and 1% significance levels, respectively. Standard errors are in parentheses. The variables Earnings, Age, and Gender are demeaned so that the intercept can be interpreted as the estimated mean WTD for the open-ended treatment without information in all models.

Figure 1. Donation Rates by Mechanism



Appendix

Figure A.1 Fixed request solicitation ("no information" condition) (screenshot)

Figure A.2a Follow-up question: Reasons for donating (screenshot)

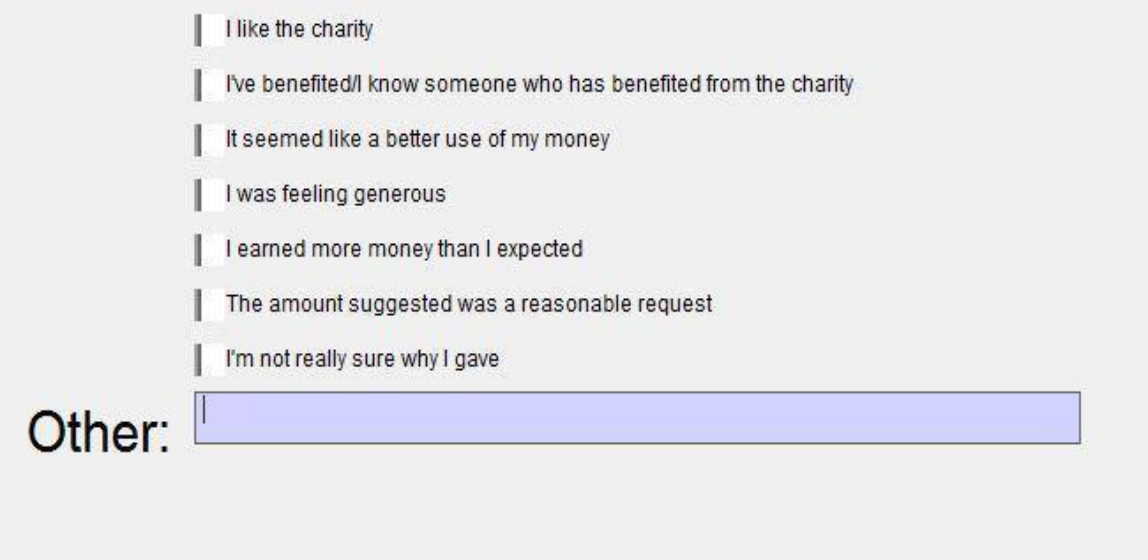
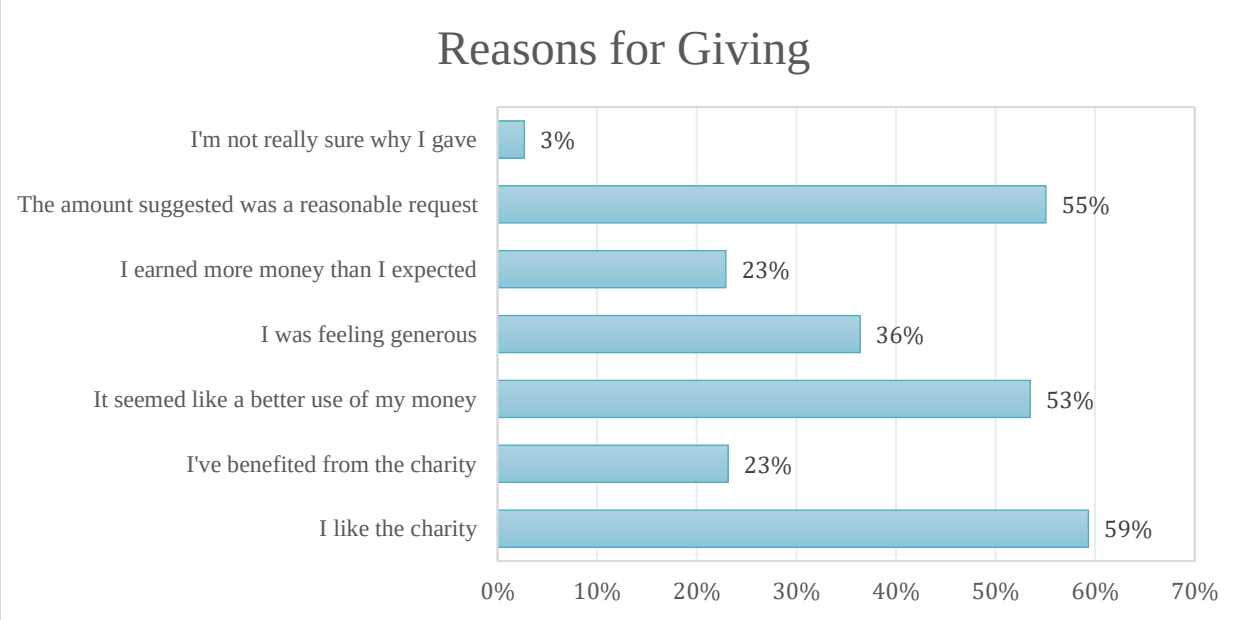


Figure A.2b Reasons for donating, response frequencies



Note: more than option could be selected, and so the percentages above do not add up to 100%. On average, participants that donated gave an average of 2.53 reasons.

Figure A.3a Follow-up question: Reasons for not donating

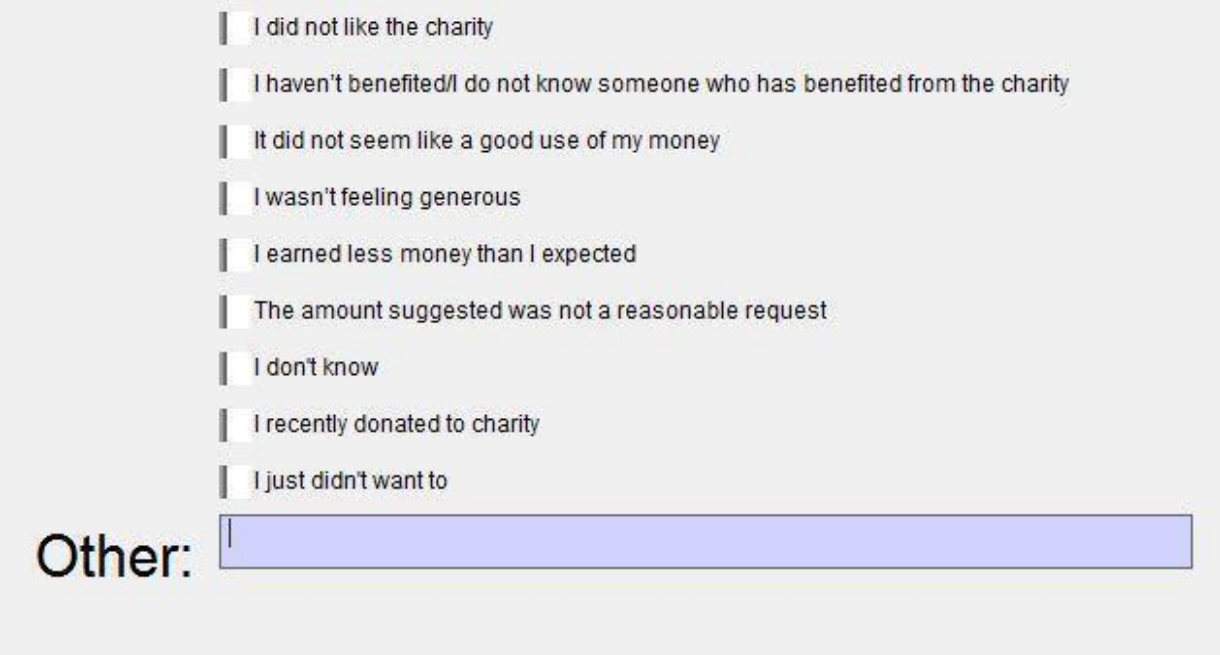
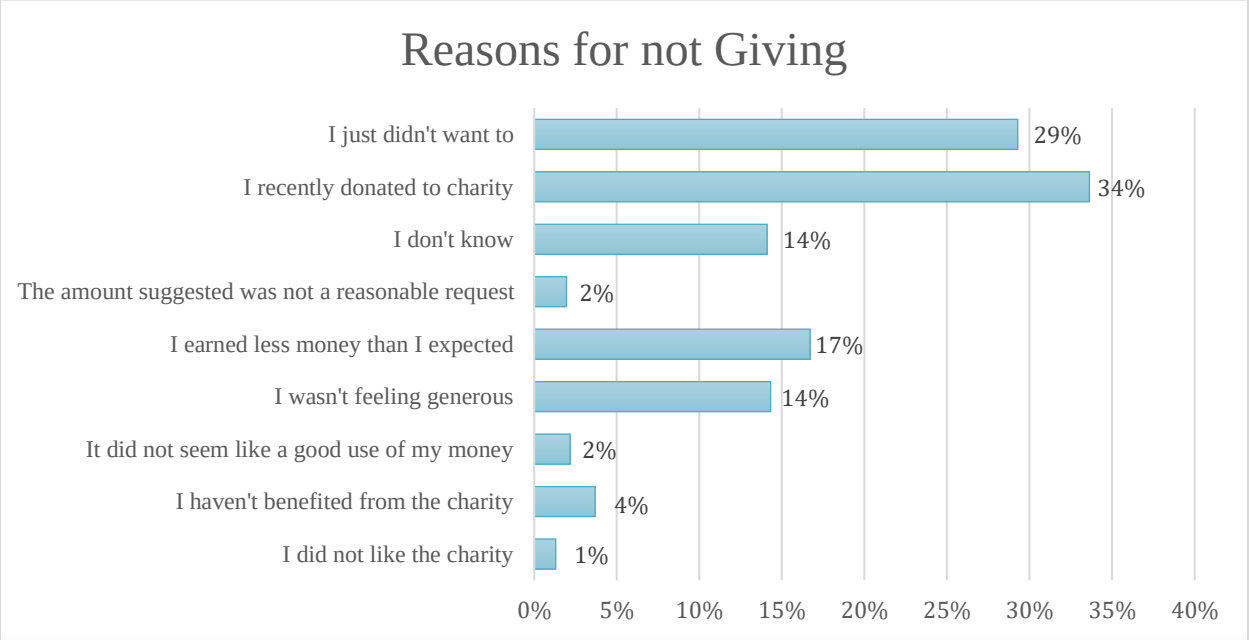


Figure A.3b Reasons for Not Giving



Notes: more than option could be selected, and so the percentages above do not add up to 100%. On average, subjects that declined to donate gave an average of 1.17 reasons.

Table A.1 Cross-tab between enjoying being asked to donate and whether the person donated

	Did the Participant Enjoy Being Asked to Donate?			
	No	Indifferent	Yes	Total
Donated	2.6%	15.8%	30.8%	49.2%
Did not Donate	10.9%	27.3%	12.6%	50.8%
Total	13.5%	43.1%	43.4%	100%