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TIME-INCONSISTENT CHARITABLE GIVING

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ABSTRACT

If social institutions, like fundraising, create incentives that generate utility from deciding to give, then some donors would decline a request to give to charity now while agreeing now to give later. This meets the classic definition of time-inconsistent choices. This is not because of a problem of self-control, but of social-control over the timing of the ask vis-a-vis the gift. In striking contrast to the prior literature, if given a choice of commitment or flexibility regarding decisions now to give later, time-inconsistency due to social-control problems generates strict demand for flexibility. We illustrate this theoretically and experimentally.

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An online appendix is available at http://www.nber.org/data-appendix/w22824

1 Introduction

Time-inconsistent behavior has been of central interest to economists over the last several decades, both theoretically and empirically. A "classic" explanation for dynamic choice reversals is that individuals' preferences are time inconsistent. Present-bias, due to lack of self-control or temptation, leads to preference rankings over alternatives that change over time, with individuals becoming more impatient as the timing of consumption nears (e.g., Strotz, 1956; Laibson, 1997; O'Donoghue and Rabin, 1999; Gul and Pesendorfer, 2001; Fudenberg and Levine, 2006). Evidence consistent with such preferences has been widely documented in domains involving individual decisions, such as financial decision-making, health-related choices and effort provision (e.g., Frederick, Loewenstein, O'Donoghue, 2002; Cohen et al., 2016).

This paper studies dynamic prosocial decisions, in the context of charitable giving. We propose that, in this domain, time inconsistency can be pervasive, not only due to lack of self-control, but also due to lack of social-control over the timing of the ask vis-a-vis the gift. As demonstrated in several recent studies, individuals often feel pressured to behave prosocially, and respond positively when asked to give to charity, though they may not enjoy the gift per se (e.g., DellaVigna, List and Malmendier, 2012; Andreoni, Rao, and Trachtman, 2017).[1] In other words, individuals derive utility from *deciding* to give. A direct implication is that some will decline to give when they are asked to give immediately, but agree now to give later. That is, social pressure will lead to time-inconsistent charitable giving.

The aim of this paper is to investigate the extent of time inconsistency in charitable giving and, importantly, document the source of this inconsistency. In contrast to the static focus of the vast literature on charitable giving, we study intertemporal giving decisions. The temporal nature of giving is important both practically, as it describes many, if not most, giving decisions in the world, and theoretically as it can help us recognize

[1] See also Dana, Cain and Dawes (2006), Dana, Weber and Kuang (2007), Andreoni and Rao (2011), and Exley (2015). For reviews on the literature on charitable giving, see Andreoni (2006), List (2011), and Andreoni and Payne (2013).

some under-appreciated subtleties of this critical sector of society, and better understand how fundraising works, as well as its benefits and costs. We document extensive time inconsistency in charitable giving experimentally, and show that lack of social-control and lack of self-control explain over 70% of time-inconsistent giving choices.

To illustrate our approach, we start by comparing two possible giving decisions made in the present. The first decision is about a gift to be paid in the present. The second is an otherwise identical decision about a gift to be paid in the future. A standard approach to giving (e.g., Bergstrom, Blume and Varian, 1986; Andreoni, 1989) assumes that utility flows from consumption and giving, such that gifts transacted now affect utility now, and gifts transacted in the future only affect utility in the future. If future consumption and giving are discounted equally, and the future is otherwise identical to the present, the decision to give does not depend on when the gift is paid. That is, giving is *time consistent*.

Consider, alternatively, the possibility that the social interaction surrounding the donor and fundraiser creates a plethora of pressures that support a giving *decision* more so than a giving *transaction*. These social pressures produce utility at the moment a decision to give is made, regardless of whether that decision concerns a gift to be transacted now or later. If the target of the social pressure does not enjoy giving per se but experiences social pressure, the person will be more likely to *decide* in the present to make a gift if that gift is transacted in the future rather than the present. We refer to this giving behavior as *time inconsistent*. Rather than being derived from self-control problems or temptation, in our approach the time inconsistency is driven by the observation that humans are social animals who, for a myriad of reasons, would rather say yes to a fundraiser than no, all else equal. Their preferences are not time inconsistent, but their behavior is, since the delay between the decision and the donation reduces the cost of saying yes. This can make fundraising more successful, but may give individuals regrets in the future.[2]

[2]Readers may recognize in themselves the unwillingness to say no to providing a public service in the future, such as advising an editor on a paper that has a 30 day deadline. In the moment we must feel better off accepting the refereeing job, while when we sit down to do it we often wish we had said no. Moreover, having done this so many times, we are not suffering any myopia. The origins of this time inconsistency are in saying yes to the request, not to non-stationarity in preferences nor temptations to

Whether time inconsistency is due to temptation or social pressures can fortunately be distinguished by examining whether time-inconsistent individuals also demand commitment. The proof-positive evidence of temptation as a cause of time inconsistency is that people who are aware of their inconsistency will welcome an opportunity to commit now to their decisions about the future as a form of *self-control*. If individuals, sans social interactions, find the act of giving tempting (Dreber et al., 2016), they will be more likely to give in the present than in the future. They will also demand commitment *not* to give. By contrast, if they are tempted to be selfish (e.g., Saito, 2015), they will be more likely to give in the future. These types will demand commitment *to giving*.[3]

If, by contrast, there are social pressures, then a different logic prevails. A person who suffers a cost from saying no to the fundraiser may say no to a request to give immediately but yes to a request to give in the future. Yet, she will not demand commitment. This person will demand flexibility to change her mind in the future. The reason she demands flexibility is to exert *social-control*, a thing her predicament has caused a lack of. Flexibility restores social-control by allowing the donor to realign the time of the request to coincide with the time of the gift, at which point she can make the preferred decision.[4]

This prediction is distinct from demand for flexibility that stems from uncertainty about the future (Kreps, 1979) in two ways. First, flexibility is differentially demanded by those time-inconsistent individuals, who exhibit a preference to give when the gift is delayed, but reverse their choice when giving is immediate. Second, while those who demand flexibility due to uncertainty have an incentive to use the time between the advance and the immediate decision to resolve uncertainty and change their choice accordingly,

review yet another manuscript.

[3]Several recent papers have studied the effect of *time pressure* on giving (e.g., Rand, Greene and Novak 2012). The results in this literature are mixed. Persistent evidence of "intuitive altruism," that is, more generous immediate responses, has been found by some authors (e.g., Rand and Kraft-Todd, 2014, Rand et al., 2014), but not others (e.g., Recalde, Riedl and Vesterlund, 2015). Recent work has shown that these results depend on incentives (Kessler, Kivimaki and Niederle, 2016).

[4]In this model social pressure is generated by an individual's emotional reaction to the ask, e.g., from her empathy towards the fundraiser and the charity. It is not strategic vis-a-vis other donors (social signaling) or the individual herself (self signaling) and, hence, choosing flexibility is not costly. We explore both non-strategic and strategic models of social pressure, and find evidence consistent with the non-strategic model.

those who demand flexibility due to social pressure do not.

Our experiments show that time-inconsistent charitable giving is significant: Giving is 50% more likely when gifts are delayed. In two between-subjects treatments, we find that, while 31% of subjects give when the donation is immediate, 46% of subjects decide now to give later, where the gift is delayed by a week. This represents strong evidence of violations of time stationarity (Halevy, 2015), and is consistent with evidence presented in a field experiment by Breman (2011).

Next, we document substantial heterogeneity in the source of time inconsistency in charitable giving, using a within-subjects experiment, in which we examine the link between time-inconsistency and commitment. We find evidence of three types of time inconsistency, in line with the sources highlighted above, which explains over 70% of time-inconsistent choices. The first type, which represents 40% of time-inconsistent subjects, behaves in line with our model of social pressures. She chooses to give in advance, but not immediately, and demands flexibility. The second type, which represents 20% of time-inconsistent subjects, behaves in line with the Dreber et al. (2016) model of temptation to be altruistic. She chooses not to give in advance, but gives immediately, and demands commitment not to give. The third type, which represents 12% of time-inconsistent subjects, behaves in line with a model of temptation to be selfish. She chooses to give in advance, but does not give immediately, and demands commitment. Hence, a large share of time-inconsistent behavior can be explained by lack of social-control, in addition to lack of self-control.

Our findings also show that, on average, demand for flexibility is related to reported resolution of uncertainty about the giving decision, in support for Kreps (1979). Yet, those who exhibit time inconsistency in line with lack of social-control are significantly less likely to report resolving uncertainty over time, and the change in their giving decision is unrelated to updating about the charity, as predicted. Further, consistent with recent findings suggesting that women may feel more pressured to act prosocially than men (e.g., Babcock et al., 2017), we find that women exhibit more time inconsistency than men.

The heterogeneity we document has important implications for mechanism design in the context of charitable giving. A relevant example in practice is the inclusion of the option to pledge a future gift. Our framework implies that, if individuals are allowed to pledge, that is, state an intention to donate in the future without commitment, those who suffer from social pressure will select into pledging, rather than giving immediately. These pledges will however be insincere, and thus will not be fulfilled once the individual is asked to confirm them. Also, if individuals who pledge are "pressured" to confirm by being thanked for their pledge, the rate of reneging will be reduced. By contrast, individuals who are tempted to give will select into giving immediately, rather than pledging. We find evidence consistent with these predictions in an additional experiment in which future donations were implemented through pledges.

The paper is organized as follows. Next, in Section 2, we present our model of time-inconsistent charitable giving derived from the social incentives surrounding giving, as well as review more standard models of time inconsistency. We then present the design (Section 3) and results (Section 4) from our main experiment. We provide additional within-subject evidence based on pledging behavior (Section 5). Section 6 concludes.

2 Models of Time-Inconsistent Charitable Giving

This section starts by describing the intertemporal charitable decision we study, and then examines models of time inconsistency in charitable giving.

2.1 Setting

To study time inconsistency in charitable giving, we compare two situations. First, an individual decides now, at time t, whether or not to give now, which we will refer to as Decide Now to Give Now (NN). Second, an individual decides now whether to give at time $t + k$, which we will refer to as Decide Now to Give Later (NL). The first time period, t, we will call the present, now, or today, while the second time period is k days later and will be called the future, or later. The individual has an endowment m in each

period, and can give an amount g in at most one of these two periods.

To study commitment demand, we introduce a third decision. This decision is made at time $t+k$, later, with respect to a gift that is also made later, at time $t+k$. We refer to it as Decide Later to Give Later (LL). Each subject makes two choices, NL at time t, and LL at time $t+k$. At time t, the individual also chooses the probability $p \in \{0.1, 0.5, 0.9\}$ with which the advance decision, NL, is implemented. We refer to commitment demand as the choice of $p = 0.9$. Similarly, we say individuals demand flexibility if $p = 0.1$ is preferred, and they are indifferent if $p = 0.5$ is preferred. Commitment is probabilistic, to preserve incentive compatibility of the NL and LL choice, experimentally.

As a benchmark, we start with a standard model of intertemporal choice where the individual is assumed to have stationary, time separable preferences over giving, g, and consumption $m - g$, with a discount rate $\delta < 1$. A standard, and also key, assumption is that utility depends only on final consumption in each period (Bergstrom et al., 1986; Andreoni, 1989; Ribar and Wilhelm, 2002). Thus, an individual endowed with m each period who is asked now to give now will have utility $u(g) = U(m - g, g)$ if she gives and $u(0) = U(m, 0)$ if she does not. For convenience, we normalize the utility of not giving to be $u(0) = 0$, and simply refer to $u(g)$ as u. The individual decides now to give now if

$$u > 0 \tag{1}$$

An individual who is asked in period t to give g in period $t + k$ will have utility at time t of $\delta^k u$ if she gives, where $0 < \delta < 1$ is the discount factor, and $\delta^k u(0) = 0$ if she does not give. In both cases the decision to give requires satisfying condition (1), for any k. We thus say the individual is *time-consistent*: behavior is the same whether choices are planned in advance or at the time of consumption.

We next consider two frameworks that yield time-inconsistent charitable giving. First, we study models of social pressure, which affect the individual's social-control of the giving decision. Second, we examine models of temptation.

2.2 Social pressure

The power of social pressure from being asked to behave unselfishly is intrinsically compelling to most of us. It has been part of the formal discussion of altruism since at least Becker (1974). Several recent studies have shown that social pressures of several varieties can be extremely important to charitable giving (Dana et al., 2006; Dana et al., 2007; DellaVigna et al., 2012; Andreoni et al., 2017; and Trachtman, et al., 2015). Motivated by this evidence, models of giving have been extended to include a "social pressure" term (DellaVigna et al., 2012; Name-Correa and Yildirim, 2016). The utility from giving is then:

$$u + s(g)$$

where the new term s represents the utility from social pressures that flows when a decision to give is made. To maintain our normalization that the utility of not giving is zero, we also normalize $s(0) = 0$ and so $s(g) = s \geq 0$ when $g > 0$. Then s can be thought of as the net benefit of conceding to the pressure to give.[5]

The central insight of our paper is that social pressure is felt *at the moment a decision to give is made*, while the utility from giving is only felt at the moment the gift is made. When this is asynchronous, it can generate time-inconsistent behavior.

Following the existing literature, social pressure here is generated by factors such as empathy towards the fundraiser and the charity, or altruism. It is not strategic vis-a-vis other donors (social signaling) or the individual herself (self signaling). Rather it stems from individual's emotional reactions to a charitable ask, which for many are negative when the ask is declined. An alternative framework would model s as the outcome of a signaling process. We start by modeling social pressure as non-strategic, and then

[5]This model therefore only assumes that saying "yes" to the fundraiser yields higher utility than saying "no" does. Giving our normalization, the model does not take a stand on how saying yes or no compares to the case of not being asked at all, only that, once asked to give, saying yes (all else equal) leaves one better off than saying no. Thus, the model can incorporate both cases where social pressure increases utility (as in Crumpler and Grossman, 2008; Chowdhury and Jeon, 2014) or decreases it (as in DellaVigna et. al, 2012; Name-Correa and Yildirim, 2016; and Andreoni, et al., 2017).

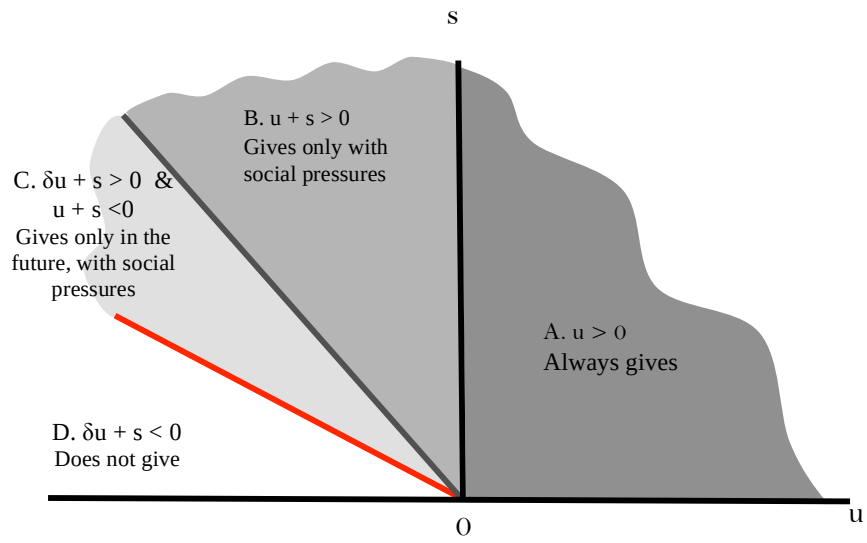


Figure 1: Utility Parameters and Choices

turn to a signaling approach later in this subsection, highlighting the key similarities and differences between these two approaches.

Consider the individual's decision now to give now (NN). She gives if:

$$u + s > 0. \tag{2}$$

Two kinds of people satisfy equation (2). First are those who would give even without the aid of social pressure, that is $u > 0$. This type is characterized in Figure 1 by the dark grey area, A. The second kind is those who only give with social pressure, and would not without it. By equation (2) these people have $u < 0$ while $u + s > 0$—the social pressure is decisive. They are identified by the medium grey area, B, of Figure 1.

When the gift is decided now but given later (NL), giving takes place if

$$\delta u + s > 0. \tag{3}$$

These people are shown on the light grey area, C, of Figure 1. Since $\delta < 1$, this means

that some people will agree now to give later who would *not* also agree now to give now. We refer to this as *time inconsistency* in giving behavior. Comparing equations (2) and (3), we see how satisfying (3) but not (2) describes the people whose charitable giving is time inconsistent. In particular, time-inconsistent types have

$$-s/\delta < u < -s. \tag{4}$$

This brings us to our next point: commitment versus flexibility demand. Consider the choice of our time-inconsistent person with utility as described in (4). When making a decision now to give later she would give, as $\delta u - s > 0$. However she would expect to prefer not to give, when making a decision later to give later, as $u - s < 0$. Individuals anticipate that, at time $t + k$, they will not wish to give and hence prefer $p = 0.1$; they demand flexibility.

We find this prediction to be quite striking, both for its simplicity and for the extreme difference from the prior literature. Present-bias is an internally generated loss of self-control in the future; and commitment freezes timing and thus assures the self-control. Social pressure, by contrast, is an externally generated loss of social-control that brings unwanted incentives to alter otherwise optimal plans. Flexibility allows one to release the social pressure and to restore social-control of the timing of decisions. Self-control problems are "cured" by commitment, while social-control problems are "cured" by flexibility.

Another interesting observation is to note that it is well known (Kreps, 1979) that demand for flexibility can be optimal with time-*consistent* preferences. This model predicts that, for time-consistent individuals, who make the same giving decision regardless of when the giving transaction takes place, neither flexibility nor commitment hold value. We discuss Kreps (1979) in further detail below.

2.2.1 Signaling Models

Important theoretical work by Benabou and Tirole (2006, 2016), and theory and experiments by Andreoni and Bernheim (2009), have shown that, if individuals care about being altruistic but also about being percieved as altruistic, then pools can form where fair or altruistic types can distinguish themselves from less fair or altruistic types. We have also solved for a model of this type for the experiment in the current paper. The full blown model is presented in Appendix A. For brevity we do not present it here.

The signaling model assumes a continuum of types who participate in decisions like those in our experiment. The exercise is one of finding the types who will split the population into pools of givers and non-givers, selecting commitment or flexibility. In describing the choices and patterns, this signaling model predicts time inconsistency as the social pressure model does. However, on how people actually use the signals, and commitment demand in particular, it predicts important differences. Steadfast givers can distinguish themselves from less altruistic types by committing to give. They do not need commitment to assure they will give, but only need to choose it so people will know they are high types. In contrast to time-consistent givers under non-strategic social pressure, who are indifferent between commitment and flexibility, time-consistent givers should use commitment strategically, as a signal, under social signaling.

2.3 Models of Temptation or Self-Control

Models of temptation and procrastination have thus far mainly focused on intertemporal choice over sooner or later private consumption. A large literature on time-inconsistency has proposed that individuals are present-biased and exhibit self-control problems when choosing whether to consume today or save for the future (e.g., Strotz, 1956; Laibson, 1997; O'Donoghue and Rabin, 1999; Gul and Pesendorfer, 2001; Fudenberg and Levine, 2006), and a large body of empirical evidence finds support for such models when studying intertemporal allocations of monetary rewards, leisure, effort or food, among others (Frederick et al., 2002, for a review of early findings; and for more recent studies see

McClure et al., 2004, Augenblick et al., 2015; Halevy, 2015; Cohen et al., 2016).

Giving yields utility at the expense of private consumption. If giving is more tempting than private consumption, the individual will be present-biased towards giving. Dreber et al. (2016) propose such a dual-self model. In their framework, the desire to give is stronger for the short-run self than for the long-run self. The long-run self can control the short-run self's desire, but doing so is costly. Since the short-run self has a stronger desire to give, the individual will be *more* likely to give when deciding now to give now (NN) than deciding now to give later (NL).

To illustrate this result, we simplify the dual-self model with a $\beta - \delta$ framework. Let β represent the relative present-bias towards giving, where $\beta = \beta_g/\beta_c$, and β_g is the strength of present-bias towards giving, and β_c that towards consumption. Since private consumption and giving may be discounted differently, we do not normalize private consumption to be zero. Instead, an individual's utility from private consumption is $u(m-g)$, and her utility from giving is $v(g)$. She decides to give under NL if

$$\delta u(m-g) + \beta\delta v(g) > 0$$

which implies

$$u(m-g) + \beta v(g) > 0.$$

When giving is relatively more tempting (as in Dreber et al., 2016), $\beta < 1$, and individuals are more likely to give under NN than NL. Evidence consistent with this prediction has been found in delayed dictator games (Kovarik, 2009; Dreber et al., 2016), but not in the context of charitable giving (Breman, 2011).[6] By contrast, suppose that personal consumption is relatively more tempting (e.g., Saito, 2015; Noor and Ren, 2011). Then, $\beta > 1$, and individuals are less likely to give under NN than NL. Hence, temptation models generate time-inconsistency, and the direction of time-inconsistency depends on

[6]While there are many potential reasons for this difference, and more evidence is needed, one potential explanation is the importance of social pressure in the context of charitable giving.

whether giving or private consumption are more tempting. In either version of the model, the long-run self prefers the advance decision, NL, over the immediate decision, LL, and hence demands commitment.

The predictions of the models of time-inconsistency are summarized Table 1. The main difference between the two models is that, under social pressure, individuals who are time inconsistent prefer flexibility. By contrast, under temptation, they prefer commitment.[7]

Table 1: Summary of Predictions of Models of Time Inconsistency

	Models		
	Social	Temptation to	
Behavior	Pressure	Give	Not Give
1. Time Inconsistency:	Yes	Yes	Yes
1A. More likely to give in NN or NL?	NL	NN	NL
2. Commitment vs. Flexibility Demand:	Flexibility	Commitment	Commitment

Note: This table summarizes the predictions of the conceptual framework. Commitment vs. Flexibility Demand refers to the choice of p of time-inconsistent subjects.

2.4 Flexibility and Uncertainty

Demand for flexibility could be due to uncertainty (Kreps, 1979). An individual may be uncertain about the relative quality of the charity. This could justify demand for flexibility, but would not be consistently associated with time inconsistency or a particular direction of time inconsistency. Both individuals who exhibit time-consistent and time-inconsistent charitable giving would demand flexibility.

At the same time, individuals who are uncertain about the future or the charity would have an incentive to use the time between t and $t+k$ to learn more about the quality of the charity or to consider their financial situation. We thus elicited self-reported measures of such behaviors to examine whether demand for flexibility of any particular group (time-consistent or time-inconsistent individuals) is associated with having resolved relevant

[7]Sophistication about time inconsistency is assumed throughout. If individuals were naïve with respect to their time inconsistency, they would not exhibit a preference towards flexibility or commitment.

uncertainty.

3 Experimental Design

The purpose of the experiment is to establish the presence of time-inconsistent charitable giving and determine the source of time inconsistency. To measure intertemporal donation decisions, subjects participated in two sessions that were (to the hour) one week apart, where the opportunity to donate $5 to charity was presented. We refer to the first and second sessions as the week 1 and week 2 sessions, respectively. Participation in both sessions was required, regardless of any decisions made in week 1.

In the first treatment of the experiment, Decide Now to Give Now (or NN), the ask, the decision to donate, and the gift happen in week 1. In the second treatment, Decide Now to Give Later (or NL), the ask and the decision to donate occur in week 1, while the gift is delayed seven days to week 2. The subject's decision is final, implying that it cannot be revised in week 2. A significant difference in giving between the NN and NL treatments is a demonstration of violations of time stationarity (Halevy, 2015), at the between-subjects level.

The third treatment was designed to measure within-subjects time inconsistency and examine the source of time inconsistency.[8] In contrast to the NN and NL treatments, each subject makes two giving decisions, one of which is randomly implemented. The first decision is made in week 1 when subjects make a decision about donating $5 in week 2. This is the same decision as in the Decide Now to Give Later treatment. We refer to it as the week-1 decision. In week 2 subjects return to the lab to make a second decision

[8]In a recent study Andreoni et al. (2016) find that people switch their decisions about how to allocate goods fairly between two people depending on the context of that decision. When the decision is ex ante to a partial realization of uncertainty, subjects favor ex ante notions of fairness. After the partial realization of uncertainty, subjects prefer to adopt an ex post stance on fairness, despite the fact that from the ex ante perspective this change is very unfair. Moreover, subjects rejected opportunities to commit to a fairness perspective, but rather preferred the flexibility for their fairness criterion to fit the context. In that paper preference for flexibility stems from changing fairness criteria after and before the realization of uncertainty. This motivation for changing choices is completely unrelated to social pressure in the context of charitable giving, where the norm is unchanging over time and individuals change their behavior in a self-serving manner.

about a gift to be made in week 2. This decision is akin to the Decision Later to Give Later discussed in the conceptual framework, and we refer to it as the week-2 decision. We refer to this as the NL&LL treatment.

Subjects in NL&LL are informed about the two decisions in week 1. In week 2, after both decisions are made, the experimenter randomly selects one of the two decisions, either the week-1 decision or the week-2 decision, to be carried out. This ensures incentive compatibility for both decisions. As outlined in the conceptual framework, we add one more step to the above in order to measure demand for commitment. In week 1, the subject chooses the probability with which the week-1 decision will be implemented in week 2, p from the set $p \in \{0.9, 0.5, 0.1\}$.[9] This method has been previously implemented in experiments examining the relationship between commitment demand and time inconsistency (e.g., Augenblick, Niederle and Sprenger, 2015). Such studies find that time inconsistency in private consumption choices is associated with demand for commitment, and hence would suggest that observing such a relationship in the giving domain is possible.

In all treatments, the week 1 session opens with a scripted slide show about the charity GiveDirectly (www.GiveDirectly.org). The presentation, which lasts about 15 minutes, discusses the work the charity does by giving direct cash grants to poor households in Kenya and other African nations. It also discusses the results of scientific evaluations of the program (Haushofer and Shapiro, 2016) showing very high returns on investment as well as endorsements from charity rating groups such as GiveWell. Importantly, the presentation also highlights that one of the co-founders and current officers of GiveDirectly is Professor Paul Niehaus of the Department of Economics at the University of California, San Diego, where the study was conducted. This, we expect, adds confidence to both our claims about the quality and efficacy of the charity and our (true) promises that the donations would indeed go to GiveDirectly. The presentation ends with an ask to give $5. The experimental treatments vary only on when financial transactions

[9]To differentiate strict preferences for the earlier or later decision from a simple randomization, we also allow the subject to indicate indifference between high and low probabilities. If they do, their p is selected as either high or low with the flip of a coin, effectively creating a $p = 0.5$.

occur. After all decisions were made in the week 2 session, subjects filled out a survey that elicited behavior between the week 1 and week 2 sessions, which we use to examine whether individuals used this time to resolve uncertainty about the charity or their financial situation.[10]

The experiment was conducted at the UC San Diego Economics Laboratory. All subjects were recruited for a two-session experiment, where the second session took place exactly one week after the first one. The instructions used are presented in Appendix B.

There were 535 subjects who participated in the week 1 session. Fourteen subjects of 179 in the NN treatment, 20 out of 173 in the NL treatment and 20 out of 183 in NL&LL treatments, respectively, failed to show up to the second session.[11,12] The analysis focuses on the 481 subjects who participated in both sessions in all treatments, though results are qualitatively the same considering all subjects. Details of this analysis can be found in Appendix C.

4 Results

In this section we first document the extent of time inconsistency in our experiment and then examine the association between time inconsistency and commitment demand.

4.1 Result 1: Time-inconsistency

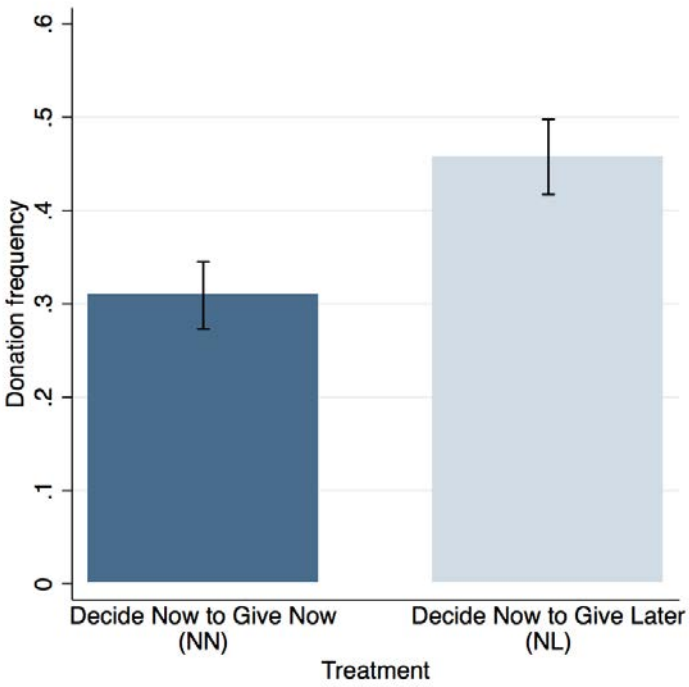
Figure 2 presents our main result from the NN and NL treatments: Introducing a delay between the decision and the gift increases giving substantially. In the Decide Now to

[10]This survey also included as empathy and impulsiveness scales, which were used in Andreoni, Koessler and Serra-Garcia (2017) to examine the relationships between giving, empathy and impulsivity in the NN treatment.

[11]These subjects did not differ in their donation decision ($\chi^2 = 0.189$, $p = 0.664$), or treatment assignment ($\chi^2 = 1.570$, $p = 0.456$).

[12]To reduce attrition, the first four out of eight sessions of the NN and NL treatments followed the common practice of paying a higher show-up payment in week 2 of the study, paying \$6 in week 1 and \$20 in week 2. The second set of four sessions paid the same show-up of \$15 in both weeks. We observe no significant differences in attrition ($\chi^2 = 0.197$, $p = 0.658$) and donation behavior ($\chi^2 = 0.184$, $p = 0.668$ in NN, and $\chi^2 = 0.206$, $p = 0.650$, in NL) between these sessions and hence pool them in the analysis. In the NL&LL treatment, subjects always received a show-up of \$15 in both weeks.

Give Now treatment, 31% of the subjects choose to donate. In the Decide Now to Give Later treatment, the giving rate rises significantly to 46% of the subjects ($\chi^2 = 7.419$, $p < 0.01$). Notice not just the statistical significance of this result, but the economic significance as well. By putting 1 week of time between the decision to give and paying for that gift, our experiment increased giving by nearly 50%.



Note: Error bars denote ± 1 S.E.

Figure 2: Giving Decisions in the NN and NL Treatment

The elicitation of two donation decisions in the NL&LL treatment allows us to observe time inconsistency at the individual level. We classify subjects into four groups based on their dynamic choice paths: those who donate in both weeks, which we refer to as (Donate, Donate); those who do not donate in either week, which we refer to as (Not Donate, Not Donate); and those who make different donation decisions over time, (Donate, Not Donate) or (Not donate, Donate). Based on their dynamic choices, 25% of the subjects are classified as (Donate, Donate), 38% are classified as (Not Donate,

Not Donate), 23% are classified as (Donate, Not Donate) and 14% are classified as (Not Donate, Donate).

The share of time-inconsistent subjects, 37%, is thus significant. A majority of these, 62% (or 23% of subjects in the sample) choose to donate in advance, but not immediately. The remainder, 38%, choose (Not Donate, Donate). The former type of change in giving decisions is significantly more frequent than the later (McNemar's test, $p = 0.07$), in line with the results of the NN and NL treatments. Further, the share of individuals who are time-inconsistent, choosing to donate in advance but not immediately (23%), is almost as large as the share of individuals who consistently donate throughout the experiment (25%).

To sum up, there is significant evidence of time inconsistency and more giving in NL than NN. This is in line with social pressure as well as a temptation to be selfish. To distinguish between these models, and examine the extent of heterogeneity in preferences, we examine the relationship between time inconsistency and commitment demand.

4.2 Result 2: Commitment Demand

On aggregate, 35% of the individuals demand flexibility, choosing to place a probability of 0.1 to their week 1 decision. Of the remaining subjects, 27% are indifferent, and effectively choose $p = 0.5$, while 39% demand commitment, allocating a 0.9 probability to their week 1 decision. Figure 3 illustrates the choice of p in week 1 for each of the four possible dynamic paths. The dashed black line at 0.33 represents the benchmark should choices among p be random.

The results reveal a clear preference for flexibility among time-inconsistent subjects who choose to donate in advance, but not immediately. Specifically, 65% demand flexibility. This is consistent with social pressure. By contrast, only 19% demand commitment, which is consistent with a temptation to be selfish. The observed distribution of commitment demand is significantly different from chance ($\chi^2 = 16.59$, $p < 0.01$). Hence, these results reveal that individuals who are time inconsistent, and choose to donate in advance but not immediately, are mainly individuals who suffer from social pressure.

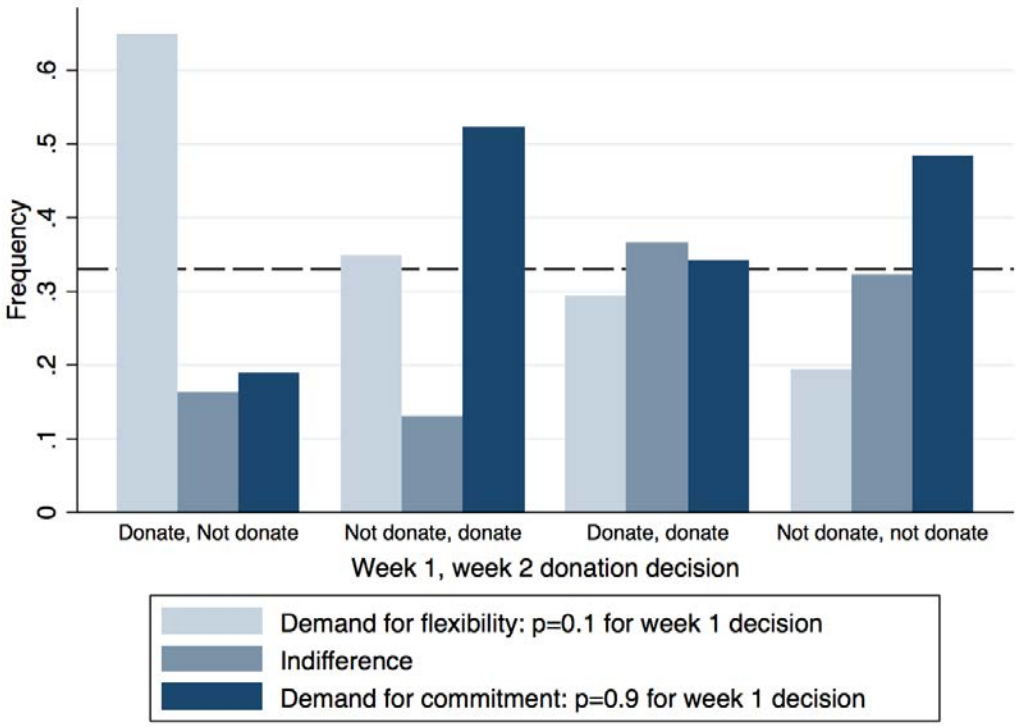


Figure 3: Dynamic giving decisions and commitment demand

This indicates that the time inconsistency observed at the between-subjects level in the treatments NN and NL can be explained by social pressure, rather than temptation.

Next, consider individuals who are time inconsistent, but choose not to donate as their week 1 decision. Among those subjects who choose (Not Donate, Donate) more select commitment: 52% demand commitment, while 35% demand flexibility. This distribution is marginally significantly different from chance ($\chi^2 = 5.30$, $p = 0.07$). Hence, a majority of individuals in this group behave as predicted by a model where there is temptation to give: they use commitment demand to overcome temptation to give.

We next examine commitment demand among time-consistent subjects. Individuals who choose to donate in both weeks exhibit a distribution of commitment choices that is not significantly different from chance ($\chi^2 = 0.34$, $p = 0.84$), suggesting indifference among different commitment options. This result speaks against commitment being

viewed as a signaling device. These types exhibit indifference, suggesting that (non-strategic) social pressure is distinct from signaling.

Lastly, individuals who choose (Not Donate, Not Donate) appear to favor commitment relative to flexibility ($\chi^2 = 7.87$, $p = 0.02$). In models of temptation in which commitment is strict (Dreber et al., 2016), commitment demand can be observed by time-consistent individuals even though they would otherwise resist temptation. While in our experiment commitment is only probabilistic, and hence a decision is required in both periods regardless of commitment, one may interpret these time-consistent individuals to be consistent with a temptation to give, as proposed by Dreber et al. (2016).

Table 2 provides support for these results using a multinomial probit regression that relates commitment choice with the type of dynamic choice made. As can be seen in column (1), individuals who choose to (Donate, Not Donate) are significantly more likely to choose flexibility. Column (2), by contrast, shows that that those who choose (Not Donate, Donate) are more likely to commit than to express indifference. For time-consistent subjects, column (3) confirms that individuals who consistently choose to donate do not exhibit a preference for flexibility or commitment, while column (4) reveals that individuals who consistently say no to giving exhibit a lower preference for flexibility, though they do not significantly prefer commitment, relative to indifference.

A central conclusion is that there is substantial heterogeneity in the source of time inconsistency. Importantly, this heterogeneity has two main sources (social pressure and temptation), which explain over 70% of the time inconsistency exhibited in the experiment. Specifically, in Table 3 we construct a classification of types into the sources of time inconsistency discussed in our conceptual framework. The question we ask is, which share of time-inconsistent subjects exhibits a behavior that is consistent with social pressure or temptation? The first group is that of subjects consistent with social pressure, who choose to donate in advance, but not immediately, and demand flexibility. This group constitutes 40% of the time-inconsistent subjects. The second group concerns those subjects who are tempted to be selfish and, thus, donate in advance, but not immediately, and demand commitment. This group constitutes 11.7% of the subjects.

Table 2: Dynamic giving decisions and commitment demand

	(1)	(2)	(3)	(4)
	Dynamic inconsistency		Dynamic consistency	
Week-1 Decision	Donate,	Not donate,	Donate	Not donate
Week-2 Decision	Not donate	Donate	donate	Not donate
Flexibility:	0.259***	0.108	-0.110	-0.257*
$p = 0.1$ for week 1 decision	(0.098)	(0.103)	(0.090)	(0.138)
Commitment:	-0.040	0.141*	-0.117	0.016
$p = 0.9$ for week 1 decision	(0.117)	(0.080)	(0.097)	(0.154)
Observations		163		
Percent of all subjects	23%	14%	25%	38%

Note: This table presents the marginal effects (calculated at the means of all variables) from a multinomial probit regression relating patterns of dynamic choice to commitment choice. The variable Flexibility is a dummy variable that takes value one if the subject chooses $p = 0.1$ for the week 1 decision, and zero otherwise. The variable Commitment is a dummy variable that takes value one if the subject chooses $p = 0.9$ for the week 1 decision. The omitted category is indifference. Robust standard errors, clustered at the session level, are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The third group is that of subjects who are tempted to be altruistic, who do not donate in advance, but do immediately, and demand commitment. This group constitutes 20% of of the subjects. Together, the theories of temptation and social pressure therefore explain the behavior of 71.7% of the time-inconsistent subjects.

Table 3: Sources of Time Inconsistency: A Classification

Source of Time Inconsistency	Behavior	Share of time-inconsistent subjects
Social pressure	(Donate, Not Donate) + Flexibility	40.0%
Temptation to be selfish	(Donate, Not Donate) + Commitment	11.7%
Temptation to give	(Not Donate, Donate) + Commitment	20.0%
Other		28.3%

Note: This table classifies time-inconsistent subjects into three groups, depending on their behavior in the NL&LL treatment. The first column of the table displays the source of time inconsistency, the second column the associated behavior and the third column the share of individuals in that group.

4.3 Additional Analyses

In what follows we provide additional evidence to support the conclusions presented thus far. We start by analyzing the role of uncertainty in the decision to demand commitment or flexibility, and hence provide an analysis of the predictions in Kreps (1979). Next, we discuss why the desire to smooth consumption is inconsistent with our results. We finalize this section by examining gender differences in time inconsistency, since women have been found to be more susceptible to social pressure in existing studies (e.g., Brescoll, 2011; Rand et al., 2016; Babcock et al., 2017).

4.3.1 Flexibility and Uncertainty

In this section we explore whether the relationship between time inconsistency and demand for flexibility can be explained by the individual's uncertainty about the charity or her future financial situation, as would be predicted by Kreps (1979). The first reason for this analysis is to address the potential concern that the results above could be due to uncertainty rather than social pressure. The evidence suggests that this is not the case. The reason is that, according to Kreps (1979), if individuals have rational expectations (they are not overly optimistic or overly pessimistic about the future), the *direction* of time inconsistency should not be related to demand for flexibility. In other words, individuals who choose (Donate, Not Donate) and those who choose (Not Donate, Donate) should be equally likely to demand flexibility. However, the data reveals that, among those subjects who choose (Donate, Not Donate), 65% demand flexibility, while only 35% of those who choose (Not Donate, Donate) demand flexibility. This difference is statistically significant (McNemar's χ^2-test, $p < 0.01$).

At the same time, it is of interest to examine whether uncertainty could be the reason to demand flexibility for individuals who display other dynamic paths. For this reason, at the end of the week 2 session, after all donation decisions had been made, we asked individuals to indicate their level of agreement with the following statements: Over the last week... (a) I thought about GiveDirectly; (b) I read or did research about GiveDirectly; (c) I learned about other charities like GiveDirectly; (d) I thought about whether

my financial situation allows me to donate to GiveDirectly. Answers were provided on a 5-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). Based on these statements we construct an index, that we label as Resolving Uncertainty index, that measures the extent to which the individual thought and did research about her donation decision. A higher value of the index indicates more research and thought was given to the donation decision. We also elicited the extent to which the search for information about GiveDirectly changed the subject's opinion, through the statement "Over the last week I became more favorable about GiveDirectly."[13]

In Table 4 we examine the relationship between these measures and donation behavior in the NL&LL treatment. Naturally, since these measures were elicited after donation decisions have been made, the results should be interpreted with caution. Column (1) of Table 4 displays the results of a linear regression on the (standardized) Resolving Uncertainty index and decisions in the NL&LL treatment. The results indicate that individuals who demanded flexibility report a higher likelihood doing more thinking and research between week 1 and week 2, relative to those individuals who are indifferent between commitment and flexibility. Interestingly, those subjects who choose (Donate, Not Donate) and demand flexibility are *less* likely to do research and think about the charity, which again speaks against the concern that this type of time-inconsistent individuals demanded flexibility due to uncertainty.

Column (2) of Table 4 explores the relationship between changes in opinion with regards to GiveDirectly, time inconsistency and demand for flexibility. The results indicate that subjects who chose (Not Donate, Donate) and demanded flexibility express becoming significantly more favorable towards GiveDirectly in the week between the first and second session of the experiment. The behavior of these subjects is consistent with Kreps (1979), since they were initially uncertain and cautious, but changed their donation decision, potentially due to their change in opinion about GiveDirectly. By contrast, the behavior of subjects who exhibited the opposite type of time inconsistency, i.e., chose (Donate, Not Donate), and demanded flexibility is again inconsistent with Kreps (1979).

[13]Detailed summary statistics of these variables are provided in Appendix C.

Table 4: Flexibility and Uncertainty

	(1) Resolving Uncertainty Index	(2) Became more favorable towards charity
(Not Donate, Not Donate)	-0.137	-0.784
	(0.513)	(0.598)
(Donate, Not Donate)	0.462	-0.803
	(0.311)	(0.464)
(Not Donate, Donate)	0.042	-0.803*
	(0.473)	(0.420)
Demand Commitment	0.192	-0.073
	(0.286)	(0.423)
(Not Donate, Not Donate) X Demand Commitment	0.564	0.565
	(0.528)	(0.693)
(Donate, Not Donate) X Demand Commitment	-0.732	0.334
	(0.526)	(0.683)
(Not Donate, Donate) X Demand Commitment	0.386	0.894
	(0.531)	(0.507)
Demand Flexibility	0.961*	-0.073
	(0.438)	(0.458)
(Not Donate, Not Donate) X Demand Flexibility	-0.336	0.511
	(0.536)	(0.684)
(Donate, Not Donate) X Demand Flexibility	-1.053*	0.803
	(0.531)	(0.571)
(Not Donate, Donate) X Demand Flexibility	0.444	1.487**
	(0.433)	(0.515)
Constant	-0.375	0.240
	(0.332)	(0.388)
Observations	163	163
R-squared	0.133	0.094

Note: This table presents the estimate coefficients from an ordinary least squares regression relating choices in the NL&LL treatment and self-reported measures of behavior between the week-1 and week-2 session. The Resolving Uncertainty index is the sum of the answers to the following statements: Over the last week... (a) I thought about GiveDirectly; (b) I read or did research about GiveDirectly; (c) I learned about other charities like GiveDirectly; (d) I thought about whether my financial situation allows me to donate to GiveDirectly. A value of 1 corresponds to strongly disagree and 5 corresponds to strongly agree. Hence, a higher index indicates higher overall agreement with the statements regarding reading and thinking about the donation decision. This variable is standardized. The variable Became more favorable towards charity takes values 1 to 5, reflecting disagreement/agreement with the statement "Over the past week I became more favorable about GiveDirectly". This variable is also standardized. All explanatory variables are dummy variables that take value one if the subject make the described behavior. Robust standard errors, clustered at the session level, are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1

These subjects change their decision towards not donating in week 2, but they do not report becoming *less* favorable towards the charity, since the coefficient for this group is not significant and positive (0.803).

4.3.2 Smoothing

A question arises when, should the individual be able to choose a donation level, she would maximize her utility by giving an amount strictly between \$0 and \$5. This option is not available in the experiment, and the individual will always give one of two amounts, \$0 or \$5. In the NL&LL treatment, the decision maker chooses the probability p with which she donates. Under Expected Utility, her utility is $p \cdot U(m-g, g) + (1-p) \cdot U(m, 0)$. If $U(m-g, g) > U(m, 0)$, $p = 1$ is optimal. Hence, it will never be optimal for the decision maker to make different choices over time. As long as preferences exhibit monotonicity in p, the same conclusion holds.

4.3.3 Gender Differences

Recent findings suggest that women may feel more pressured to act prosocially than men (e.g., Brescoll, 2011; Rand et al., 2016; Babcock et al., 2017). If so, women should exhibit more time inconsistency in giving decisions when such time inconsistency is the result of social pressure. We examine whether the increase in giving observed under NL relative to NN differs by gender. In these treatments, the share of female participants was 61% in both treatments.

While only 30% of female participants give when asked now to give now, 50% give when asked now to give later. This difference is statistically significant (χ^2-test, $p < 0.01$). By contrast, among men, 32% of participants give in the NN treatment and 39% give in the NL treatment, a difference that is not statistically significant (χ^2-test, $p = 0.438$). Hence, in line with social pressure, violations of time stationarity are mainly driven by women. Although such violations are more prevalent among women than men, we note that the difference is not statistically significant, perhaps due to the limited sample size.

This gender difference follows the same pattern in the NL&LL treatment, where within-subject time inconsistency is measured. Among men, there is no evidence of time inconsistency: 41% of men choose to give in advance (NL) and 39% choose to give when donations are immediate (LL). By contrast, among women, there is a significantly larger share of giving when the decision is made in advance: 53% of women give in advance,

while 40% give when donations are immediate (Wilcoxon signed-ranks test, $p = 0.05$).[14]

5 Implications: The Case of Pledges

Our findings to this point highlight different sources of time inconsistency. One real-world environment in which these findings could matter is the institutional regularity of charitable solicitation through pledges (see also, Lacetera, Macis and Mele, 2016).[15] In this section, we examine the implications of the documented heterogeneity on pledging and the effectiveness of pledges in increasing giving.

We compare two scenarios in which an individual can pledge. First, at time t a person is asked whether she would like to state an intention to give in $t+k$. This stated intention is not, however, binding. At time $t+k$ the individual is reminded of her pledge and asked to validate the pledge and give, or to renege. In this scenario, the only way a person can give is to pledge. Consider a second scenario where, in addition to the pledge, we also allow subjects to give immediately in period t. We call our two scenarios Pledge (P) and Pledge or Give Now (PGN).

The heterogeneity observed in our main experiment provides two main predictions. First, individuals who are susceptible to social pressure should select into pledging. If the costs of reneging on pledges are low, these types will rarely fulfill their pledges and, thus pledging should not increase giving. However, if pledging is indicative of sensitivity to social pressure, then expressing gratitude for a pledge will increase the rate at which individuals who pledged fulfill them.[16] Second, for those individuals who are tempted to be altruistic, the option to give now could be tempting, and lead to selection of such

[14]Further detailed results are presented in Appendix C.

[15]Studies of pledges have been conducted in psychology in which pledges are more like our Decide Now to Give Later treatment in that they are binding commitments to give, such as Zellermayer (1996), who finds the result is sensitive to whether the pledge is framed as coming from currently held money (a negative effect), or from money earned in the future (positive effect). The psychologists Meyvis, Bennett and Oppenheimer (2010) find that those more capable abstract thinking are also more willing to give in the future. A related literature has studied the effect of repetition on generosity. For example, Kessler and Roth (2014) find that individuals are less likely to say no to organ donation when they make a second decision in the lab.

[16]For the complete theoretical analysis, see Appendix A.

types into giving immediately rather than giving later.

5.1 Design and Procedures

This experiment was conducted exactly like our main experiment, except that the subjects were asked to make pledges, not binding choices, about giving a week later. In the first treatment, called Pledge (P), subjects could state in week 1 an intention to donate when they return for week 2 of the study, which they will or will not confirm next week. We purposely formulated the pledge as an intention, to avoid confusion about the level of commitment, and thus examine an environment in which the costs of reneging would not be very high.[17,18] In the second treatment called Pledge or Give Now (PGN) individuals were allowed to self-select into the timing of giving they prefer, by adding an option to give now, in week 1 instead of pledging to give in week 2. In both treatments individuals who pledged received a thank-you email by 5pm on the day in which the week 1 session took place. This thank-you email expressed gratitude for their pledge and highlighted the importance of their donation.[19] All subjects received an email 24 hours prior to their week 2 session simply reminding them to attend.

There were 118 subjects in the P treatment and 215 in the PGN treatment. We purposely recruited more subjects in the latter treatment to have enough observations when examining the effect of the thank-you note on giving. A detailed analysis of attrition is provided in Appendix C, where we show that there is no evidence of differential attrition by treatment or decision.[20]

[17]The wording of the potential answers to the ask was always either "No," or "Yes, I'd like to donate $5 next week. Ask me again next week and I will make my final decision." To avoid confusion about the level of commitment to the pledge, the word pledge was not used anywhere in Pledge treatment. The instructions are presented in Appendix B.

[18]The phrasing of intentions or promises is centrally important, as demonstrated in Charness and Dufwenberg (2006, 2010).

[19]To examine how the thank-you letter works, we designed both a "strong" and a "weak" version of the thank-you note. The weak thank-you note emphasized the importance of the pledge and thanked individuals for pledging. The strong thank-you note included two manipulations shown elsewhere to enhance the social pressure to give, by using the identifiable victim effect and strengthening the individual's identity as a donor. We did not observe a significant difference across the type of thank-you note, and hence pool them here.

[20]In the P treatment, 110 of 118 subjects participated in the week-2 session. In the PGN treatment,

5.2 Results

Pledging: We start by describing the decision to pledge in week 1. In the Pledge treatment, 65% of the subjects pledge to donate. In the Pledge or Give Now (PGN) treatment, the total percentage of subjects who pledge or give immediately is 69%. These frequencies are not significantly different from each other ($\chi^2 = 0.543$, $p = 0.461$). Within the PGN treatment 48% of the subjects pledge to give in week 2 and 21% of the subjects give immediately. Hence, there is selection into giving now in PGN, as predicted.

Reneging: In week 2, individuals reneged frequently.[21] Without thank-you notes, 47% of the individuals renege in the Pledge treatment. This fraction increases to 71% in the Pledge or Give Now treatment ($\chi^2 = 3.214$, $p = 0.073$), confirming that the option to give immediately in the Pledge or Give Now treatment induces self-selection.

With thank-you notes, individuals renege in 42% of the cases, compared to 47% in the P treatment. This drop in reneging is small and not significant ($\chi^2 = 0.138$, $p = 0.710$). In the PGN treatment, thank-you notes reduce reneging by a large and significant 23 percentage points, from 71% to 48% percent ($\chi^2 = 3.798$, $p = 0.051$). The stronger effect of the thank-you note in Pledge or Give Now treatment further confirms the role of self-selection in this treatment. It suggests that many of the individuals who pledged appear to have done so with the intention of reneging, and for them the thank-you note resulted in a significant reduction in reneging. This effect is especially striking in light of the fact that the thank-you note came within a few hours of their pledges and seven days before subjects returned to confirm them or renege.

Ultimate giving: The high frequency of reneging implies that, without thank-you notes, giving does not increase in the P and PGN treatments. In these treatments, 35%

197 of 215 subjects participated in the week-2 session. The show-up fee was \$6 for the week 1 session and \$20 for the week 2 session, as in half of the sessions of the NN and NL treatments. We did not find an impact of this time structure of show up fees on behavior in those treatments. Further, this structure should act against our prediction of substantial reneging rates in week 2.

[21] In the Pledge treatment 72 subjects pledged to give in week 2. Among pledgers, approximately half (56%) received a thank-you note. In the Pledge or Give Now treatment 95 subjects pledged to give in week 2. Among them, 74% received a thank-you note.

of individuals give in week 2, a rate that is not significantly different from giving when asked to give immediately as in the NN condition (31%). By contrast, thanking those who pledged can increase the rate of giving, up to 45%.

Table 5 presents a regression analysis of the effects of pledging and thank-you notes, including the NN and NL treatments from our main experiment as benchmarks.[22] Column (1) of Table 5 shows the results of a probit regression, ignoring the presence of thank-you notes. To examine the effect of thank-you notes, we conduct a placebo test by assigning those who did not pledge to a thank-you condition with a probability equal to that of their counterparts who did pledge. Using this assignment, we examine the effect of the thank-you conditions using a weighted probit regression. This analysis is shown in column (2) of Table 5.[23]

Table 5 shows that pledging alone has a small effect on giving of less than 5 percentage points, and is not statistically significant. This result is consistent with the social pressure model, whereby individuals pledge with the intention of reneging. For pledging to show a measurable positive and significant effect on giving in our experiment, it must be accompanied by both the option to give now, in week 1, and a thank-you note of either kind. When these conditions are both met, giving rises by 15.5 percentage points, a statistically and economically significant increase. This reveals that applying social pressure through thank-you notes among those who are most likely to renege, and who thus reveal susceptibility to social pressure, is effective in increasing ultimate donations.

[22] Our analysis of the treatment effects in Table 5 reports p-values that are uncorrected for multiple hypothesis testing (e.g., List et al., 2016). However, since all p-values for significant differences are below 0.001, correcting p-values leaves our conclusions unchanged.

[23] An alternative approach is to randomly assign a share of the individuals who did not pledge to each thank-you condition, and use bootstrapping. Results remain qualitatively similar with this approach.

Table 5: Treatment effects on ultimate giving

	(1)	(2)
	Donation	
Decide Now to Give Later (NL)	0.149***	0.149***
	(0.041)	(0.041)
Pledge (P)	0.056	
	(0.048)	
Pledge+Without thank-you		0.042
		(0.056)
Pledge+Thank-you		0.069
		(0.066)
Pledge or Give Now (PGN)	0.127***	
	(0.028)	
Pledge or Give Now+Without thank-you		0.047
		(0.059)
Pledge or Give Now+Thank-you		0.155***
		(0.025)
Observations	625	625
R-squared	0.011	0.014

Note: This table presents the average marginal effects (calculated at the means of all variables) from probit regressions on ultimate giving decisions. Column (1) presents the marginal effect from simple probit regressions on the treatment. Column (2) presents results from weighted probit regressions, whereby individuals who did not pledge in Pledge and Pledge or Give Now are assigned to both the no thank-you and the thank-you conditions, and weighted correspondingly. The variables Decide Now to Give Later, Pledge, Pledge+Without thank-you, Pledge+Thank-you, Pledge or Give Now, Pledge or Give Now+Without thank-you, Pledge or Give Now+Thank-you are dummies that take value one in the corresponding treatment or treatment+thank you condition, zero otherwise. Robust standard errors, clustered at the session level, were used in each individual regression. ***,**,* indicates significance at the 1%, 5%, and 10% levels, respectively.

6 Discussion and Conclusion

Social institutions of all kinds can create distortions of optimal choices by providing utility to the act of deciding, *and* de-linking the (pro-)social decision from the actual consumption of the good. This can create time inconsistency that benefits the designer for the institution, but not necessarily the agent. However, flexibility can restore social-control, giving the agent the opportunity to undo decisions generated by the design decisions of the fundraiser or, generally, of the social institution. In these kinds of contexts, for many individuals commitment will not be valuable, except if it is formulated as a preemptive move that allows avoiding being asked in the first place.

To the best of our knowledge, the idea of social institutions playing this role in

intertemporal choice is new. There are many environments in which such forces may be at work. One example we used as illustration is pledging. Our framework explains why pledges may not increase giving. It is also consistent with evidence from estate planing, where individuals are highly likely to leave a charitable bequest in their will if asked to (Sanders and Smith, 2016). There are other examples, beyond charitable giving. Invitations to provide service to others or society, such as refereeing or writing book chapters, are often made well in advance of when the referee report or the chapter is due. Introspection reveals that agreeing to such requests is often regretted, suggesting that lack of social-control may play a role.

The heterogeneity in dynamic giving choices also raises important questions for mechanism design. Fundraisers may wish to target different types of ask to different types of donors, offering commitment devices to some and options to give now to others. One characteristic along which heterogeneity is observed is gender: women appear to be significantly more prone to the influence of social pressure. This may have important implications for the design and focus of charitable fundraising campaigns, as well as policy implications for both the social costs and incidence of providing society's public goods.

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