ESSAYS ON PREFERENCE FOR CHARITABLE GIVING

A Dissertation

by

NISHITA SINHA

Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Co-Chairs of Committee,	Luis A. Ribera
	Richard T. Woodward
Committee Members,	Marco A. Palma
	Catherine C. Eckel
Head of Department,	Mark L. Waller

May 2021

Major Subject: Agricultural Economics

ABSTRACT

A large part of the total charitable giving (approximately 70%) in the United States come from individuals with modest incomes (Giving USA, 2019[1]). These small gifts accumulate in powerful ways to mitigate the pain of individuals and communities in dire circumstances. Long recognized for its prominent role in shaping economic behavior, other-regarding preferences have been under close scientific scrutiny in the last several decades. In my dissertation, I use methods in experimental economics to explore three distinct topics in the economics of charitable giving literature: (i) Motivations for giving under cause-marketing, (ii) Role of social norms in explaining giving behavior, and (iii) Evolution of other-regarding preferences of students through the college-term.

In section 2 of the dissertation, I explore if a partnership between consumer good sellers and charitable cause, also known as cause-marketing, can increase total donations for the cause. The answer to this question depends on whether individual donors care about their donations only to the extent that it adds to the total donations (altruism) or they derive additional utility from direct donations (warm-glow). Using a general model of impure altruism that accommodates for donations from cause-marketing and data from a lab experiment, I show that individuals do respond to donations from cause-marketing by reducing their own donations dollar-to-dollar, thereby leaving the total donations unchanged.

In section 3 of the dissertation, I analyze the role of social norms in explaining the differences in giving behavior between different recipients. Earlier studies show that giving in a dictator game is sensitive to the extent to which a recipient is perceived as "deserving" of aid. Dictator transfers to a charity is observed to be significantly higher than that to a student. Along with measuring dictator transfers, I elicit social norms of giving in dictator games with different recipients (a student and

[1]Giving USA (2019): Americans gave $427.71 billion to charity in 2018 amid complex year for charitable giving. https://givingusa.org/giving-usa-2019-americans-gave-427-71-billion-to-charity-in-2018-amid-complex-year-for-charitable-giving/

a charity working for bush fire relief in Australia) using an incentivized coordination game. The results suggest that differences in giving behavior are closely related to differences in social norms of giving. I also find that subjects care more about adhering to social norms in a charitable giving context.

Finally, in section 4 of the dissertation, I explore the evolution of other-regarding preferences in young adults through their college-terms. College students are frequently recruited as subjects in economic experiments, yet little is known if they undergo any kind of preference change through their college years. New social connections, a competitive academic environment and independent living under tight budget constraints, all have the potential to influence the other-regarding preferences of young adults. Using panel data from a large-scale experiment conducted at Rice University, I conclude that while other-regarding preferences of undergraduate students are generally stable, they do weaken through the college years, i.e. students become less generous. Furthermore, I find that this observation is consistent between both a survey measure and an incentivized measure of other-regarding preference.

DEDICATION

Dedicated to the memory of my mother and grandmother who I have missed more in this journey than ever.

To my family and teachers who believed in me when I didn't. Thank you.

ACKNOWLEDGMENTS

My deepest gratitude to the co-chairs of my committee - Dr. Luis A. Ribera and Dr. Richard T. Woodward - who have contributed immensely to my growth as a scholar. Thank you to Dr. Luis A. Ribera for wholeheartedly letting me follow my passion. I am grateful to Dr. Richard T. Woodward for his patience through my innumerable questions that he answered in person, over emails and on phone calls.

I am fortunate to have had Dr. Marco A. Palma and Dr. Catherine C. Eckel as my committee members. They opened me to the world of experimental economics which made all the difference. I shall forever be indebted to their formative comments on my research. I also extend my gratitude to Dr. Rick Wilson at Rice University and Dr. Erin Krupka at University of Michigan for their valuable comments and suggestions.

I could not be more thankful to my employers at Texas A&M Transportation Institute for their co-operation in the last several months as I completed my dissertation research while working a full-time job. I owe a deep sense of gratitude to Dr. Eva Shipp, Dr. David Schrank and Dr. Bill Eisele for their kindness and encouragement through some difficult times.

Last but not the least, I am grateful to my parents, parents in-law and siblings who encouraged me to pursue my dreams, and to my husband, Kartikeya, who has always found more happiness in my achievements than his own. A special mention goes to Kartikeya for being the test subject in every single research idea that came to my mind and living with me every day of this process.

CONTRIBUTORS AND FUNDING SOURCES

Contributors

This work was supervised by a dissertation committee consisting of Drs. Luis A. Ribera, Richard T. Woodward and Marco A. Palma of the Department of Agricultural Economics, and Dr. Catherine C. Eckel of the Department of Economics.

All other work conducted for the dissertation was completed by the student independently.

Funding Sources

Graduate study was supported by a scholarship from the Department of Agricultural Economics at Texas A&M University, assistantships from the Center for North American Studies, Human Behavior Laboratory and Dr. Catherine C. Eckel at Texas A&M University.

TABLE OF CONTENTS

Page

LIST OF FIGURES

FIGURE Page

LIST OF TABLES

TABLE Page

1. INTRODUCTION

From focusing on rational utility maximizers to embracing "rational fools", the nature of economic theory has greatly evolved in the last half century. Experimental economics has played a critical role in this evolution, especially in the development of literature on other-regarding behavior (Cooper, 2014). Davis and Holt (1993) document the three most common objectives of economic experiments: (i) testing behavioral implications of economic theory (ii) documenting empirical regularities in economic experiments to inform theory, and (iii) testing key behavioral assumptions of economic theory. In this dissertation, I use experimental methods in all of the ways stated above to explore three key aspects of economics of charitable giving. In section 2 of the dissertation, I test behavioral implications of a novel charitable giving model that accounts for donations from cause-marketing. In section 3, using experimental data, I document the differential role social norms play in explaining the variation in giving to differently deserving recipients. In section 4, I investigate the stability assumption of other-regarding preferences among young college-students.

Economic models of charitable giving are based on underlying motivations for giving. There are two key motives for giving - altruism and warm-glow. People motivated by altruism, referred to as altruistic donors, donate to help those in need and get utility from increasing the total donations to the recipients (Becker, 1974). Warm-glow givers, on the other hand, are egoistically motivated who derive utility from the act of giving and do not care about total donations. A pure altruist's preference over a private consumption good and *total* charitable output implies complete crowding-out of any third-party contributions. In contrast, crowding-out is incomplete if there is value attached also to the act of giving. Third-party contributions only partially crowd-out private donations when this happens (Andreoni, 1989). To summarize, a third-party contribution will not result in an increase in total donations if individuals are motivated purely by altruism. Total donations will increase if and only if individuals are at least partially motivated by warm-glow.

A number of studies have exploited the "crowding-out test" also known as the neutrality hy-

pothesis, to test for pure altruism. By varying the levels of taxation and government provision of public good, Andreoni (1993) finds crowding out of private contributions to the extent of 71% and rejects pure altruism. Bolton and Katok (1998) in a bid to eliminate strategic factors in reading donors' preferences use a dictator game instead of a public goods game and find that 73.7% of private giving is crowded out by a lump-sum transfer from donors to recipients. As a result, they also reject pure altruism. Recent studies have centered around fine-tuning this result by testing for framing effects (Eckel et al., 2005), eliminating any potential confounds that can affect private contributions (Gronberg et al., 2012) and measuring crowding-out at two different output levels (Ottoni-Wilhelm et al., 2017). In all these studies, any transfer from a third-party donor to the recipient is lump-sum.

Section 2 explores giving motivations when third-party donations are proportional in nature such as under *cause-marketing*. Cause-marketing (CM) refers to the practice of linking consumer goods with charities or causes. It is a common practice for increasing sales and loyalty of products. Under cause-marketing, the seller of the consumer good makes donations to a charity or a charitable cause for every unit of good sold. For example, Starbucks gives away a nickel from each sales of Ethos Water to support water and sanitation efforts in water-stressed areas of the world. More recently, cause-marketing has become a widely studied form of charitable giving both as part of corporate social responsibility and as means of raising money to support a designated charity (Krishna, 2011; Kerr and Das, 2013; Dubé et al., 2017). However, the extant studies have not explored the impact of cause-marketing on total donations in a way that is consistent with the economic theory of charitable giving. In section 2, I close this gap by extending the existing economic models of giving to include donations via cause-marketing. My extended model has two distinguishing features. First, it allows for both altruistic and warm-glow utilities from donations via cause-marketing. Second, it allows for donors to derive differential warm-glow utility from cause-marketing donations owing to the dependence between consumer purchases and seller's donations, and their direct contributions.

The key behavioral implications of the model are centered around identifying giving motiva-

tions. Identification of motives affords answer to a central policy question related to the charitable giving aspect of cause-marketing - can cause-marketing increase total donations for a charitable cause? If individual donors are pure altruists, they will respond to donations from cause-marketing by decreasing their own donations dollar-for-dollar. This will mean a mere change in the source of donations but not an increase in the total money raised for a charitable cause. In contrast, if individuals are motivated by *both* altruism and warm-glow, there will still be a decrease in private donations to counter the increase in total donations from cause-marketing, but not sufficient to neutralize all of the increase. But, what if donors derive warm-glow utility not just from their direct donations but also through cause-marketing donations? I show in section 2, that if individuals indeed attach warm-glow utility to cause-marketing donations, the extent of crowding-out will be higher than when donors get such utility only from their direct donations. Depending on the relative strength of motives, therefore, I show that total donations under cause-marketing can increase, remain unchanged or even decrease.

I use laboratory experiment to test the implications of my model, and ultimately to understand the impact of cause-marketing on total donations. Data from the laboratory experiment suggest that while the study participants are motivated both by altruism and warm-glow, they not only get warm-glow utility from their direct donations but also from cause-marketing donations. As a result, even though donors in our study are impure altruists, they reduce their direct donations by nearly enough to compensate for any increase in total donations through cause-marketing, leaving total donations essentially unchanged.

In the following section of the dissertation, section 3, I study the role social norms play in determining donation behavior between different recipients. Previous studies show that donations to differently deserving recipients vary significantly (Engel, 2011). More specifically, individuals are known to be more generous to a recipient who they perceive to be more deserving of an aid than one who is not. Eckel and Grossman (1996) show that giving in dictator games with equal amounts of endowment but varying recipient-types (a charity versus another student) varies substantially - the charity receives significantly higher amounts than another student. The theories of social

preference - altruism and inequality aversion - do independently account for the giving behavior change between different recipients. In particular, altruism explains the behavior of dictators when the recipient is a charity and inequality aversion explains the transfer choices of dictators when the recipient is another student.

However, I argue that instead of discussing the observed differences in giving behavior in light of different motives of giving, we can use concern for social norms to make sense of the different outcomes. Using social norms elicited using incentivized coordination games for both recipient-types (a charity and a student), I find that (a) the elicited norms mirror the theoretical predictions of altruism when the recipient is a charity and of inequality aversion when the recipient is another student, (b) the differences in giving behavior are closely related to differences in social norms of giving, and (c) subjects care more about adhering to social norms in a charitable giving context.

Finally, in section 4 of the dissertation, I focus on stability of other-regarding preferences. Stability of preferences is a key assumption in economic models (Friedman, 1962). A rational economic agent is expected to make the same choices facing unchanged constraints even at different points in time. This assumption is especially useful in drawing policy implications from a preference elicitation study. Ceteris paribus, proposed policy changes can be expected to yield predicted outcomes over time if preferences are stable. In the context of charitable giving, a key question is whether altruistic preferences are stable. The short answer to this question based on previous studies is "It depends." It depends on the type of sample, preference measure and duration of the test, among other variables (Brosig et al., 2007; De Oliveira et al., 2012; Carlsson et al., 2014; Chuang and Schechter, 2015). While some of the studies cited here suggest that social preferences are unstable (Brosig et al., 2007), others argue in favor of stability at least for certain types of measures (survey measures are shown to be stable by Chuang and Schechter (2015)) and in the long-term (Carlsson et al., 2014).

In section 4 of my dissertation, I deviate from the standard "Pass-Fail" investigation of the stability assumption by focusing on the *nature* of preference evolution among young adults over a period of four years. In particular, I investigate the change in other-regarding preferences of col-

lege students as they go through their college experiences. Undergraduate college students are an integral part of economic experiments. Most experiments in universities and colleges recruit subjects from the convenience pool of college students. Yet, there has been no attempt to understand if freshmen behave differently from seniors. In section 4, I explore this question using data from a large-scale laboratory experiment conducted at Rice University. In this experiment, the other-regarding preference of the class of 2020 was measured prior to students starting college in July 2016 and then again at the end of their college-term in March 2020. A comparison of the before and after measures suggests that students at Rice University were less other-regarding at the time they finished college.

The findings from each of the three sections of the dissertation contribute to the literature on preference for charitable giving. Section 2 provides the first estimate of the crowding-out effect of third-party donations when they are endogenous in nature or dependent on donor's consumption choices, as under cause-marketing. Previous experiments have measured the degree of crowding-out in an exogenous setting such that third-party donations are lump-sum and unrelated to donor's consumption choices. Fundraisers and policymakers should also find the results of this section of interest since the identification of underlying giving motives based on the crowd-out estimates suggests that cause-marketing may not result in an increase in total donations. Second, while previous studies have relied on variants of other-regarding preferences to explain differences in giving to different recipients, section 3 underscores the importance of social norms in providing a unifying framework to explain donation choices to differently "deserving" recipients. Finally, results in section 4 provide the first evidence that the other-regarding preferences of undergraduate college students weaken through the college-term.

2. THE CROWDING-OUT EFFECT OF CAUSE-MARKETING ON PRIVATE DONATIONS

2.1 Introduction

Understanding the underlying motivations for charitable giving is key to efficient fundraising practices (Gangadharan et al., 2014). Prior to the introduction of impure altruism model (Andreoni, 1989), charitable giving in economic theory was assumed to be motivated solely by the desire to help the recipient. This assumption is congruent to the pure altruism model (Becker, 1974). In the pure altruism model, the source of donations is irrelevant - donations by self and a third-party are perfect substitutes. The irrelevance of the source of donations leads us to the strong neutrality hypothesis first intoduced by Warr (1982). According to this hypothesis, any third-party donations to a charity that is funded by a lump-sum tax on donors' income will result in a dollar-for-dollar decrease in donor's direct contributions to the charity. Consequently, total donations to the charity remain unchanged.

Neutrality breaks down in the impure altruism model because there is value attached to the act of giving. In this model, people give not only because they want to help the recipients but also because they derive additional private benefit, known as, warm-glow from doing a "good deed". Third-party contributions only partially crowd-out private donations when donors are motivated by a combination of warm-glow and altruism (Andreoni, 1989). Incomplete crowding-out of direct donations results in an increase in the total funds raised for the charity.

At the end of the motive spectrum are pure warm-glow donors who only care about the warm-glow utility. These donors do not respond to a change in third-party donations as long as their budget set remains unchanged. Thus, it is the relative strength of these motives - altruism and warm-glow - that determines the general equilibrium effect of an increase in third-party giving (Andreoni, 1989). The neutrality hypothesis is tested to determine whether or not the donors care about their own gifts only to the extent that they affect the aggregate contributions.

The underpinning of motivation behind giving is critically relevant to the charitable giving

aspect of cause-marketing. Cause-marketing is the practice of linking consumer goods to a charitable cause. Under this practice, firms agree to donate a fixed part of the sales proceeds per unit of consumer goods sold. A number of firms use this tool to increase sales and loyalty for a wide range of products from coffee to cars (Krishna, 2011). The association of consumer goods with a charitable cause has the potential to increase total donations for the cause. This potentially favorable outcome depends, however, on one critical assumption - consumers do not reduce their direct donations one-to-one in response to donations that accrue through cause-marketing. Much of the recent work in the management literature on cause-marketing has focussed on its effect on customer attitudes, sales, and brand-value (Bloom et al., 2006; Samu and Wymer, 2009; Ballings et al., 2018). Only a few studies have explored the effect of cause-marketing on consumer's direct donations in relation to giving motivations (Krishna, 2011; Koschate-Fischer et al., 2012; Dubé et al., 2017). The results from these studies suggest that both altruistic and warm-glow motives underlie individual donation choices in the cause-marketing framework.

However, we argue that the approach to test giving motivations in the extant literature is not consistent with the economic theory of charitable giving. The neutrality hypothesis derived from the pure altruism model is fundamental to the economic theory of giving. This hypothesis is tested using the balanced-income test (Ottoni-Wilhelm et al., 2017). In this test, participants allocate their experimental endowment between themselves and a charity for varying levels of endowment and third-party donations to the charity. The endowment is negatively adjusted to account for any increase in third-party contributions. A pure altruist's preference over a private consumption good and total donations implies a dollar-for-dollar decrease in individual i's private donations, in response to a lump-sum tax funded third-party transfer to the recipient. In contrast, partial crowding-out is observed when the donor, in addition to altruism, is also motivated by warm-glow.

The balanced-income test derived from the pure altruism model, while useful in testing motives when third-party donations are lump-sum in nature, is not appropriate when donations accrue in proportion to private good consumption, like it does under cause-marketing. In this paper, we

develop the pure and impure altruism models, and derive what we call the "balanced-price test"[1] to test for underlying donor motivations in the cause-marketing framework. Recall that, third-party increases in donations completely crowd-out donor's direct contributions if givers are motivated solely by altruism. We show that under cause-marketing, pure altruism is not a necessary condition for complete crowding-out. In other words, complete crowding-out can occur even when donors are impure altruists.

When third-party donations accrue through cause-marketing, crowding-out can take place via two different channels. First, donors motivated by altruism reduce their private giving as total donations increase when firms donate a portion of their sales proceeds to the charity. Second, crowd-out can occur through the "warm-glow" channel. If individuals consider their purchase of the consumption good as an act of charity and derive warm-glow utility from their purchase, they ought to reduce their direct giving to account for donations through cause-marketing. This implies that complete crowd-out under cause-marketing is true even if donors are impure altruists, but do not distinguish between their direct contributions and donations through cause-marketing.

Besides the consumers, cause-marketing involves two parties - a not-for-profit charity and a for-profit consumer goods firm. A partnership between the two parties is an effort to raise funds for the charity as well as to increase sales and brand value of the cause-related consumer good. In the real-world, consumers may be drawn toward a cause-marketed good due to its association with a charity, i.e. because they see a purchase of the good as a way to give to a charitable cause, because they value the good regardless of its association with a charitable cause, or a combination of these two motives. Our focus in this study is to understand the donation motives of consumers purchasing the cause-related good. Hence, we eliminate from our design any confounding factors that may arise from consumer motives underlying a purchase. We do this by offering our study participants only one consumer good - tokens with monetary value - and in some treatments purchase of the tokens are combined with a third-party transfer to a charitable cause. In this way, our experimental design allows us to identify giving motivations under cause-marketing in a manner that is consistent with

[1] We thank Ottoni-Wilhelm for suggesting this phrase.

the economic theory of charitable giving.

We test models of pure altruism and pure warm-glow when third-party donations accrue via cause-marketing. Since the focus of our study is on investigating donation motives, Using a novel experimental design that is consistent with the existing economic theory on charitable giving, we provide the first estimates of crowding-out of direct donations in the cause-marketing framework, in a laboratory setting. In order to explore consumer's warm-glow utility from donations through consumption, we analyze the difference in donor responses to changes in third-party donations that occur *endogenously* through cause-marketing versus *exogenously*, i.e. independently of donor's consumption choices.

We show that impure altruism in the exogenous setting does not imply incomplete crowding-out of direct donations, regardless of the nature of third-party donations. When third-party donations accrue exogenously or independent of donors' consumption choices, we estimate an incomplete crowding-out of 79%. This leads us to reject the neutrality hypothesis of pure altruism model. On the contrary, when third-party donations accrue endogenously via cause-marketing, we estimate that for a \$1 increase in the *rate* of third-party donations per unit of consumption, direct donations decrease by about \$5 and the crowding-out is complete. Our results suggest that while on average, participants in our experiment are impure altruists, i.e. motivated both by altruism and warm-glow, they do not distinguish between their direct donations and donations via cause-marketing. This results in complete crowding-out of third-party donations in the case-marketing framework.

Our study has important policy implications for aid agencies, especially for the ones in the United States. Around 70% of the total charitable giving in 2017 in the United States came from individual donations. These small individual gifts accumulate in powerful ways to mitigate the pain of individuals and communities in dire circumstances. Cause-marketing has emerged as a powerful way of increasing donations,[2] but it remains unknown if the resulting surge in donations from corporations is a mere change in donation source or there is a real increase in the size of

[2]One such campaign was Susan G. Komen's partnership with KFC's Buckets for the Cure Campaign in 2010 to raise money for breast cancer awareness. It was noted that this campaign resulted in Foundation's largest donation ever (https://www.qsrmagazine.com/news/kfc-gives-foundation-its-biggest-donation-ever).

total donations for a cause. The findings of our study suggest that cause-marketing, by negatively impacting donors' private contributions, may result in no change in total donations for a cause.

The rest of the paper is organized as follows. In section 2, we develop the impure altruism model that accommodates for third-party giving via cause-marketing. In section 3, we present the experimental design to investigate donation motives under the cause-marketing framework. In Section 4, we present the results from our experiment and conclude in section 5.

2.2 Background Theory and Model

In this section, we present the general forms of different philanthropic models that apply in the endogenous donation or cause-marketing framework. We extend the mathematical representation of the standard pure and impure altruism models in Ottoni-Wilhelm et al. (2017) to capture donations from cause-marketing and draw implications for total donations and donor's direct contributions.

2.2.1 Pure Altruism Model with Cause-Marketing

A pure altruist *i* who benefits from consuming a private good *x* and *total* donations to a charity, *G*, has the utility function: $U(x_i, G)$. Individual *i* maximizes her utility subject to the budget constraint: $px_i + g_i^d \leq w_i$, where *p* is the price of consumption good *x*, g_i^d is the direct contribution of the individual to the charity and w_i is her income. The sum of all donations to the charity, *G* is given by $G = g_i^d + G_{-i} + \gamma x_i$, where G_{-i} is an exogenous third-party donation to the charity and γ is the seller's donation per-unit of good *x* consumed by *i*. We can rewrite *i*'s budget constraint as:

$$px_i + G \leq w_i + G_{-i} + \gamma x_i$$
$$\text{or } (p - \gamma)x_i + G \leq w_i + G_{-i}.$$

Given the utility function $U(x_i, G)$ and the budget constraint above, the optimal solutions or the demand functions of x^* and G^* for individual *i* are given by:

$$x^* = f[(w_i + G_{-i}), (p - \gamma)]$$
$$G^* = g[(w_i + G_{-i}), (p - \gamma)]$$

Demand for both goods — *x* and *G* — depend on two components: social income ($Z_i = w_i + G_{-i}$) and social opportunity cost ($C_i = p - \gamma$). If $\gamma = 0$ such that there is no cause-marketing and the price of the consumption good *x* is normalized to 1, then the model becomes the standard pure altruism model. In the standard model, *i*'s preferred level of G^* is given by: $G^* = g(w_i + G_{-i}) = g(Z_i)$. The balanced income test of the standard pure altruism model is derived from this demand function. Denote by d_1, the partial derivative of $g(.)$ with respect to Z_i. Then, a change in total donation is given by: $dG^* = d_1(dw_i + dG_{-i})$. A balanced social income such that $dw_i = -dG_{-i}$ implies no change in *i*'s optimal G^*, or $dG^* = 0$. In other words, individual *i* responds to a change in own income or a change in exogenous third-party donations in exact same measure Warr (1982); Bergstrom et al. (1986). The balanced-budget test is shown graphically in Figure 2.1.

Our balanced price test exploits the social opportunity cost component of the demand function : $G^* = g[(w_i + G_{-i}), (p - \gamma)]$. Third-party donations at the rate γ for every unit of good *x* consumed by an individual *i* lowers her opportunity cost of consumption in terms of forgone G^*. If an increase in the donation rate (γ) is accompanied by an increase in price by an equivalent amount such that there is no change in the social opportunity cost, $(p - \gamma)$, then *i*'s optimal G^* remains the same. Let d_2 represent the partial derivative of $g(.)$ with respect to $C_i = (p - \gamma)$, then:

$$dG^* = [d_1(dw_i + dG_{-i}) + d_2(dp - d\gamma)]$$

In a general framework, where third-party donations can accrue both endogenously (γx_i) and exogenously (G_{-i}), we can test for pure altruism by applying the balanced price test $(dp = d\gamma)$ and the balanced income test $(dw_i = -dG_{-i})$.

So far, we have described these tests in terms of total giving or G^*. Next, we translate these tests in terms of *i*'s direct contribution: g_i^d.

$$g_i^d = G^* - \gamma x_i - G_{-i}$$

$$dg_i^d = dG^* - d(\gamma x_i) - dG_{-i} \tag{2.1}$$

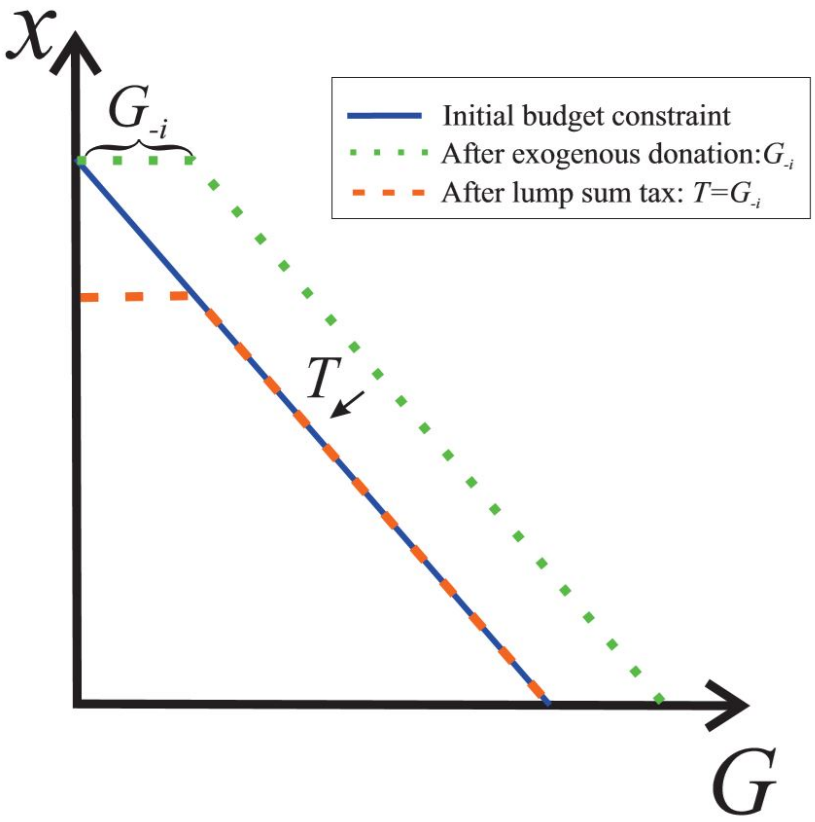


Figure 2.1: Balanced-Budget Test of Pure Altruism

Notes: The original budget line is shown in a continuous (blue) line. An exogenous increase in third-party donations shifts the budget line to the right. This new budget line is shown in the dotted (green) line. A lump-sum tax equivalent to G_{-i} pushes the budget line to the left, shown here in the dashed-line (orange).

$$d(\gamma x_i) = x_i d\gamma + \gamma[d_1(dw_i + dG_{-i}) + d_2(dp - d\gamma)]$$

Substituting $d(\gamma x_i)$ into equation 2.1 above under the balanced-income $(dw_i = -dG_{-i})$ and balanced-price $(dp = d\gamma)$ settings, we obtain the following:

$$dg_i^d = -x_i d\gamma - dG_{-i}.$$

With a change in exogenous third-party donations, the balanced-income test yields the following:

$$\frac{dg_i^d}{dG_{-i}\,(dw_i=-dG_{-i})} = -1$$

In other words, an exogenous increase in third party donations by $\$1$ that is accompanied by a lump-sum tax of an equivalent amount on *i*'s income must result in $\$1$ decrease in *i*'s direct contribution. This is the standard complete crowding-out test of pure altruism which implies that increases in total giving due to third-party donations is matched by an equivalent decrease in direct contributions (g_i^d).

Likewise, when third-party donations accrue endogenously through consumption, the *balanced-price test* predicts the following for a pure altruist:

$$\frac{dg_i^d}{d\gamma\,(dp=d\gamma)} = -x_i$$

The above implies that an increase in the *rate* of donation by $\$1$ will result in individual *i* reducing her direct contribution by an amount that is equal to her consumption demand of good *x*. Note that for the pure altruist, consumption level of good *x* does not change because *i*'s budget set remains unchanged. The balanced-price test is shown graphically in Figure 2.2.

As observed in both Figures 2.1 and 2.2, affecting an equivalent amount of a lump-sum tax or "sales-tax" to match the increase in third-party donations allows us to test for the pure altruism model.

2.2.2 Impure Altruism Model with Cause-Marketing

The standard impure altruism model (Andreoni, 1989) where individual *i*, in addition to obtaining utility from total giving, also benefits from her own contribution in the form of warm-glow is given by:

$$U(x_i, G, g_i^d)$$

In the cause-marketing framework, where individual *i* may derive additional warm-glow utility from her donations through consumption of good *x*, we additively augment the standard impure altruism model as:

$$U(x_i, G, \alpha_d g_i^d + \alpha_x g_i^x)$$

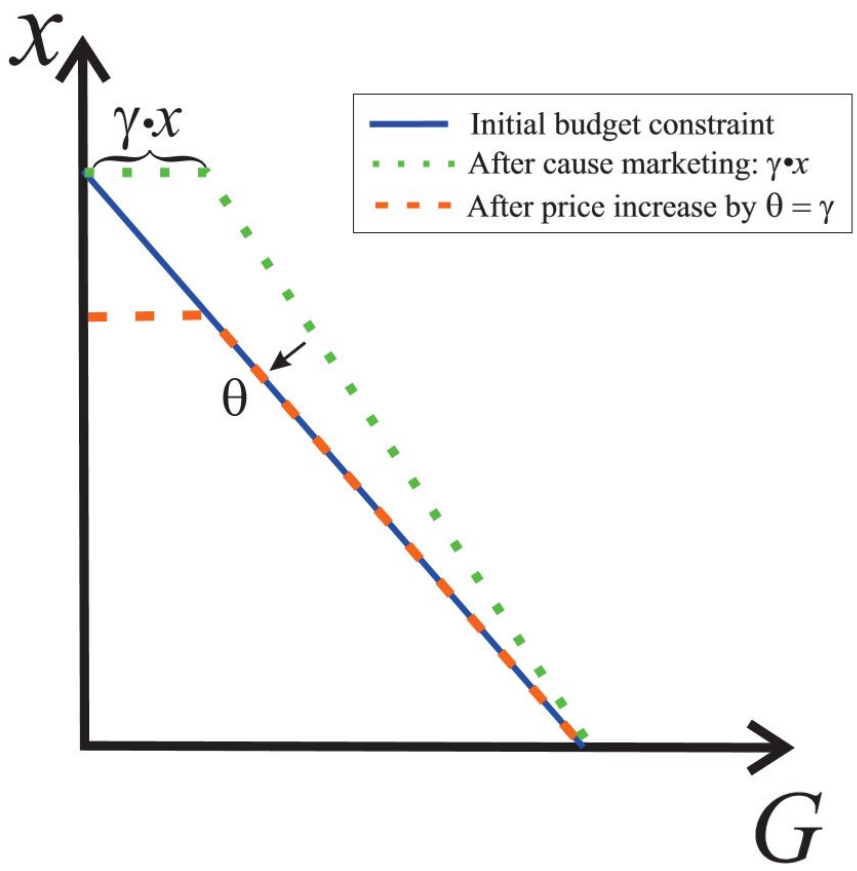


Figure 2.2: Balanced-Price Test of Pure Altruism

Notes: The original budget line is shown in a continuous (blue) line. When donation accrues via cause-marketing, the budget line shifts proportionally to the right. This new budget line is shown in the dotted (green) line. An equivalent increase in price of good *x* forces the budget line inwards shown here in the dashed-line (orange).

Note that $g_i^x = \gamma x_i$. A linear constraint on the warm-glow component such as the above is useful for separately identifying the consumption benefits of good x from warm-glow benefits of good x. Furthermore, we attach weights (α_d and α_x) that sum to 1 to the linear function to allow for differential warm-glow gains from direct contribution (g_i^d) and g_i^x. For α_x = 0, our model reduces to the standard impure altruism model.

An impure altruist faces the same budget constraint as in section 2.2.1:

$$(p - \gamma)x_i + G \leq w_i + G_{-i}.$$

Using the budget constraint in our utility function $U(x_i, G, \alpha_d g_i^d + \alpha_x g_i^x)$, we obtain:

$$U(\frac{Z_i - G}{C_i}, G, \alpha_d(G - G_{-i} - \gamma\frac{Z_i - G}{C_i}) + \alpha_x\gamma\frac{Z_i - G}{C_i}) \tag{2.2}$$

where $Z_i = (w_i + G_{-i})$ or the social income and $C_i = (p - \gamma)$ or the social opportunity cost.

Maximizing the utility function 2.2 with respect to G yields the following first-order condition:

$$\frac{-1}{C_i}U_1(.,.,.) + 1.U_2(.,.,.) + (\alpha_d p - \alpha_x\gamma).U_3(.,.,.) = 0. \tag{2.3}$$

The above implies that:

$$G^* = h[Z_i,\ C_i,\ \alpha_d G_{-i},\ (\alpha_d p - \alpha_x\gamma)] \tag{2.4}$$

Using total differentiation, we get:

$$dG^* = [h_1(dw_i + dG_{-i}) +\ h_2(dp - d\gamma) + \alpha_d dG_{-i} + (\alpha_d dp - \alpha_x d\gamma)]. \tag{2.5}$$

In the balanced price setting such that dp = $d\gamma$, we have:

$$dG^* = [h_1(dw_i + dG_{-i}) + \alpha_d dG_{-i} + (\alpha_d - \alpha_x)d\gamma].$$

If $\alpha_d = \alpha_x$, such that individual *i* obtains equal warm-glow utlity from her direct contribution (g_i^d) and a donation through consumption of good *x* (g_i^x), an increase in γ that is matched by an equal increase in price $(dp = d\gamma)$ results in no change in total giving *G* under the impure altruism model. Below, we derive the crowding-out effect in terms of direct donation (g_i^d).

$$g_i^d = G^* - G_{-i} - g_i^x$$
$$\text{or } dg_i^d = dG^* - dG_{-i} -\ d(\gamma x_i)$$
$$\text{or } dg_i^d = [h_1(dw_i + dG_{-i}) +\ h_2(dp - d\gamma) + \alpha_d dG_{-i} + (\alpha_d - \alpha_x)d\gamma] - dG_{-i} -\ d(\gamma x_i).$$

For $dw_i = dG_{-i} = 0,\ dp = d\gamma\ and\ \alpha_d = \alpha_x$,

$$dg_i^d = -\,d(\gamma x_i) \text{ or } dg_i^d/d\gamma = -x_i$$

Complete crowding-out under cause-marketing, $dg_i^d/d\gamma = -x_i$, therefore is associated with both pure altruism, and impure altruism models if $\alpha_d = \alpha_x$.

However, if $\alpha_d > \alpha_x$ such that *i* values her direct contributions (g_i^d) more than donations through consumption, the model predicts partial crowding-out and total donations will increase. We call these donors *benevolent* altruists. It is likely that cause-marketing donations that also provide consumption good benefits moderate the warm-glow effect and generates less utility than direct giving (Krishna, 2011).

On the contrary, if $\alpha_d < \alpha_x$, crowding-out will be more than complete resulting in a fall in total giving. We call donors with this preference-type, *indulgent* altruists, and argue that their donation attitude can be understood in the social cognitive framework. Cheung and Chan (2000) identified several factors that underlie donation choices including: (i) the attitude or trust in the charity organization, (ii) the outcome efficacy or the expectancy of the organization for using the donation, and (iii) need for donation. Individuals who place higher weight on these factors and expect their donations to make greater impact when made through large corporations will derive more utility from donations via cause-marketing than their direct donations.

2.2.3 Pure Warm-Glow Model with Cause-Marketing

In line with our impure altruism model defined in Section 2.2.2, we define our general warm-glow model as the following:

$$U(x, \alpha_x g_i^x + \alpha_d g_i^d) \tag{2.6}$$

In this model, donors can derive varying degrees of warm-glow from their direct donations (g_i^d) and cause-marketing donations (g_i^x). For α_x = 0, our model is equivalent to the standard pure warm-glow model.

Denote as G^w the sum of donations that can be attributed to individual i under cause-marketing. This is equivalent to $G^w = g_i^x + g_i^d$. Individual $i's$ budget constraint: $px_i + g_i^d \leq w_i$ can then be

rewritten as: $(p-\gamma)x_i+G^w \leq w_i$. Using the budget constraint in equation 2.6 yields the following:

$$U(\frac{w_i - G^w}{C}, \alpha_d(G^w - \gamma\frac{w_i - G^w}{C}) + \alpha_x\gamma\frac{w_i - G^w}{C}) \tag{2.7}$$

We now maximize the above utility function with respect to G^w and obtain the following first order condition:

$$(-1).U_1(.,.) + (\alpha_d p - \alpha_x\gamma)U_2(.,.) \tag{2.8}$$

We can solve the above equation for optimal G^{w*} as a function of the following three arguments:

$$G^{w*} = m(w_i, C, \alpha_d p - \alpha_x\gamma) \tag{2.9}$$

Using total differentiation, the above implies:

$$dG^{w*} = dw_i + m_1(dp - d\gamma) + (\alpha_d dp - \alpha_x d\gamma). \tag{2.10}$$

It is clear from the above equation that if α_d = α_x, a balanced-price test such that $dp = d\gamma$, any third-party increases in donations due to γ will completely crowd-out individual's direct contributions (g_i^d). If, however, $\alpha_x = 0$ like in the standard pure warm-glow model where donors derive warm-glow utility only from their direct donations, there will be no change in individual's direct contribution for an unchanged income and price of good *x*. In Table 2.1 , we present all donor types and their implications for total donations and individual's direct donation (g_i^d) under the balanced-price test.

2.3 Experimental Design

In this section, we begin with a detailed explanation of the balanced-income and balanced-price tests. Next, we discuss the use of individualized charities to control for third-party donations in our experiment in sub-section 2.3.2. The different decision tasks that participants complete are

Table 2.1: Philanthropic Models and Implications for Total Donations and Donor's Private Contributions of a Balanced Price Change $(dp = d\gamma)$

Donor Type	Sub-Types	dG^*	$\mathrm{d}g_i^d*$
Pure Altruist $U(x, G)$	-	Equal to 0	Complete crowd-out
Impure Altruist $U(x, G, \alpha_x g_i^x + \alpha_d g_i^d)$	Indulgent Altruist $(\alpha_x > \alpha_d)$	Less than 0	More than complete crowd-out
	Indifferent Altruist $(\alpha_x = \alpha_d)$	Equal to 0	Complete crowd-out
	Benevolent Altruist $(\alpha_x < \alpha_d)$	Greater than 0	Less than complete crowd-out
Mixed Warm-Glow $U(x, \alpha_x g_i^x + \alpha_d g_i^d)$	Indulgent Warm-Glow $(\alpha_x > \alpha_d)$	Less than 0	More than complete crowd-out
	Indifferent Warm-Glow $(\alpha_x = \alpha_d)$	Equal to 0	Complete crowd-out
	Benevolent Warm-Glow $(\alpha_x < \alpha_d)$	Greater than 0	Less than complete crowd-out
Pure Warm-Glow $U(x, g_i^d)$	-	Greater than 0	Zero crowd-out

explained in sub-section 2.3.3. In the last sub-section 2.3.4, we explain the experiment procedures.

2.3.1 Balanced-Income and Balanced-Price Tests

Both balanced-income and balanced-price tests are modified forms of a dictator game. In a dictator game, participants allocate their experimental endowment between themselves and a recipient. The participants' earnings equal the share of endowment she keeps for herself and the recipients receive the share allocated to them. In the charitable giving literature, the recipient is usually a charitable organization or other recipients in need of monetary support, to elicit participants' altruistic preferences. As shown in section 2.1, a pure altruist will reduce her direct contributions one-to-one in response to a lump-sum tax funded increase in third-party donations. This is the balanced-income test of pure altruism. The social income $(Z_i = w_i + G_{-i})$ is *balanced* by taxing participants' endowment (w_i) by an amount equal to the increase in third-party donation (G_{-i}). In the balanced-price test, the social opportunity cost $(C_i = p - \gamma)$ is kept unchanged by manipulating the price of good *x* and the rate of donation (γ).

To implement the balanced-price test in our experiment, we introduce a consumption good - tokens - that the participants in our experiment can buy using their endowment (provided in experimental currency units or ECUs) at a given price. The participants allocate their endowment between buying tokens for themselves and making a direct donation to a recipient. Participants' earnings from a decision task is equal to the number of tokens they buy. There is also a third-party donation associated with every unit of token bought by the participants to mirror the cause-marketing framework.

Our donor partner (third-party donor) in this study is the Texas Extension Education Foundation (hereafter the Foundation) that donates both exogenously and endogenously (through token purchase) in the experiment. The balanced-income test is used to verify motives in the exogenous setting where an increase in donation from the Foundation is accompanied by an equivalent decrease in endowment ($dw_i = -dG_{-i}$). In order to test motives in the endogenous framework, we use the balanced-price test where an increase in the rate of donations for every token purchased from the Foundation is matched by an equivalent change in price of a token ($dp = d\gamma$).

2.3.2 Individualized Charity

The recipients of donations in our experiment are small-scale cocoa producers in Ecuador. We partner with Maquita Foundation in Ecuador, an organization dedicated to improve the quality of life of small-scale cocoa growers of this region. Each participant in our study is paired with a different farmer. This part of our design is inspired by Ottoni-Wilhelm et al. (2017) study on giving motivations where the authors use individualized charities to control for the level of giving-by-others.

Some of the prized varieties of cocoa are organically grown (i.e. without using synthetic fertilizers) by poor small-scale family farmers. These farmers use traditional production techniques that help to preserve the local biodiversity. Our participants are informed that in recent years, participation of large-scale corporations in cocoa farming has increased. These corporations often use synthetic fertilizers and insecticides and grow varieties of cocoa with higher yields, but poor flavor characteristics. The productivity of the corporation-grown cocoa trees is 3-4 times higher

than the organic varieties. Small-scale family farmers do not have a direct trade relationship with specialty food partners and, therefore, end up selling their product to local middlemen who do not distinguish between different varieties of cocoa. Due to lower yields of the organic varieties, the annual earnings of small-scale farmers from cocoa production is less than 50% of the minimum wage earnings in Ecuador. This unsustainably low price has prompted many such farmers to abandon their lands and migrate to big cities in search of jobs where they do not fare well due to their limited skill set (Useche and Blare, 2013; Blare and Useche, 2013).

We provide the above information to the participants and ask them to donate to *one* such farmer. This donation, we explain, will help the farmer in buying farm inputs to increase cocoa productivity. In addition to the participant, the Foundation donates to the farmer- both exogenously and endogenously. The total donation to the farmer is the sum of the participant's direct contribution (g_i^d), and any donation from the Foundation (G_{-i} and g_i^x).

2.3.3 Decision Tasks

We use a within-subject design to identify the heterogeneity in giving motivations. All participants make nine allocation decisions and one of these decisions is randomly selected by the computer to determine the participant's and recipient's earnings from the experiment. Four of these decision tasks are associated with endogenous donations and the other five tasks with exogenous donations. To account for any order effects, the participants complete the nine allocation tasks in one of six different orders.[3] The participants also fill out a brief survey after they complete the decision tasks. In addition to obtaining demographic controls, the survey questions are meant to elicit participants' real-world charitable behavior. We also add a manipulation check questionnaire (Davis et al., 2005) where subjects respond, on a 5-point scale, to questions on anonymity preservation, clarity of instructions and their belief that their donations will be passed to the recipients.

Tasks 1 through 4 allow us to test for the pure altruism model. Table 2.2 presents the endowment, token price and third-party donations associated with these tasks. In Tasks 1 and 2,

[3]We tested for ordering effects in our results and do not find any in either the endogenous or exogenous setting. The smallest p-value associated with order dummies is 0.70 in the endogenous setting and 0.63 in the exogenous setting.

the Foundation makes a positive donation for every unit of token purchased by the participant. A pure altruist will demand the same level of total donations (G^*) in these two tasks (note the price-adjustment exercise between tasks 1 and 2). In tasks 3 and 4, the Foundation donates to the farmers exogenously. A pure altruist would not change her preferred level of total donation between tasks 3 and 4 (note the lump-sum tax adjustment between tasks 3 and 4).

Table 2.2: Decision Tasks Pertaining to the Test of Pure Altruism

	Decision Tasks	Endowment	Token Price	Gamma (γ)	Third-Party (Exogenous)
Endogenous	Task - 1	20	1.25	0.25	2
	Task - 2	20	1.50	0.50	2
Exogenous	Task - 3	18	1.00	0	4
	Task - 4	15	1.00	0	7

In order to test for pure warm-glow, we rely on participants' direct donations in tasks 1, 5, 6 and 7. Table 2.3 presents the endowment, token price and any third-party donations associated with these tasks. Tasks 1 and 5 in Table 2.3 allow us to measure unfunded (income and price remain unchanged) crowd-out in the endogenous donation setting. Unfunded crowd-out in the exogenous setting is measured from tasks 6 and 7. The extent of unfunded crowd-out enables assessment of the pure warm-glow motive. In the endogenous setting, a donor motivated by warm-glow from her direct contributions alone, will keep her donations unchanged between tasks 1 and 5 in response to an unchanged budget constraint. Likewise, in the exogenous setting, the pure warm-glow model predicts no change in participants' direct contributions in tasks 6 and 7.

In order to understand whether participants derive warm-glow from donations through their cause-marketing, we rely on the difference in responses to third-party contributions that accrue endogenously versus those that accrue exogenously. We argue that rejection of pure altruism in the exogenous donation setting, but not in the endogenous setting is evidence that donors derive warm-glow from Foundation's donations through their token purchases. To understand why, imagine a donor *i* who is an impure altruist and hence, only partially crowds-out any increase in the

Table 2.3: Decision Tasks Pertaining to the Test of Pure Warm-Glow

	Decision Tasks	Endowment	Token Price	Gamma (γ)	Third-Party (Exogenous)
Endogenous	Task - 1	20	1.25	0.25	2
	Task - 5	20	1.25	0.50	2
Exogenous	Task - 6	20	1.25	0	2
	Task - 7	20	1.25	0	5

Foundation's donations that occur *exogenously*. However, the same donor *i* completely crowds-out the Foundation's donations when it accrues endogenously through her token purchase. As shown in Table 2.1, this is true if the donor is an impure altruist, but derives equal measure of warm-glow from her direct donations and donations through cause-marketing, i.e. $\alpha_x = \alpha_d$. Table 2.4 details all possible combinations of motives that underlie donations in the two settings and the inferences about α_x that can be drawn from the possible combinations.

Table 2.4: Test of Pure Altruism and Possible Inferences

		Tasks 3 and 4 (Exogenous)	
		Reject Full Crowding-out (FCO)	Do Not Reject FCO
Tasks 1 and 2 (Endogenous)	Reject FCO	Impure Altruism, Impure Altruism	Impure Altruism, Pure Altruism
	Do Not Reject FCO	Pure Altruism, Impure Altruism	Pure Altruism, Pure Altruism

Likewise, any inconsistency in the revealed motives from the warm-glow test (tasks 1, 5 for the endogenous setting and tasks 6,7 for the exogenous setting) across the two settings allows us to extract information on α_x. Suppose, for example, we are unable to reject the pure warm-glow model in the exogenous setting such that donors care only about their direct contributions. However, in the endogenous setting, we reject the pure-warm glow model. This inconsistency in revealed motives, we argue, is due to participants deriving warm-glow also from donations through

their token purchase. While the donors are driven by warm-glow (as revealed in the exogenous setting), they reduce their direct donations in response to donations from the Foundation in the endogenous setting to account for the warm-glow utility they obtain from donations that accrue every time they buy a token. This result would be congruent to our mixed warm-glow model where $\alpha_x = \alpha_d$, presented in section 2.2.3.

In Table 6, we present all possible combinations of results from measuring unfunded crowd-out (no lump-sum or sales tax) under both settings, and the inferences that can be drawn from each combination.

Table 2.5: Test of Pure Warm-Glow and Possible Inferences

		Tasks 6 and 7 (Exogenous)	
		Reject Zero Crowding-out (ZCO)	Do Not Reject ZCO
Tasks 1 and 5 (Endogenous)	Reject ZCO	Impure Altruism, Impure Altruism	Mixed Warm-Glow, Pure Warm-Glow
	Do Not Reject ZCO	Pure Warm-Glow, Impure Altruism	Pure Warm-Glow, Pure Warm-Glow

We also adopt a secondary approach to test for presence of warm-glow utility from donations via cause-marketing. Tasks 8[4] and 9 are direct tests of warm-glow in the endogenous and exogenous frameworks, respectively. In both these tasks, participants are endowed with 20 ECUs. The total donation in these tasks is fixed at $\$20$ each, regardless of participant's direct contributions. In task 8, the tokens cost a dollar each and the Foundation donates a dollar for every token purchased. As a result, if a participant chooses to buy 10 tokens and donate the rest of the 10 ECUs, the farmer will receive \$10 from the participant and another \$10 (10 tokens x \$1) from the Foundation. As another example, if a participant chooses to use all of 20 ECUs to buy 20 tokens, the farmer will receive nothing from the participant but \$20 (20 tokens x \$1) from the Foundation. Note that the farmer will receive \$20 for all allocation choices of the participant. In task 9, the tokens still cost

[4]Task 8 is a manipulation of Crumpler and Grossman (2008) warm-glow test in endogenous donation setting.

a dollar but in this case, the Foundation exogenously donates the difference between $\$20$ and participant's direct donations to the farmer. For example, if a participant chooses to buy 10 tokens and donate the rest of the 10 ECUs, the farmer will receive \$10 from the participant and another \$10 (\$20 - \$10) from the Foundation. The Foundation will donate \$20 if the participant donates \$0. Given that there is no incentive for the participants to donate in order to increase the amount of total donations received by the farmer, any positive contribution in tasks 8 and 9 implies the presence of warm-glow utility. Parameters associated with tasks 8 and 9 are presented in table 2.6.

Table 2.6: Decision Tasks Pertaining to Direct Test of Warm-Glow

	Decision Tasks	Endowment	Token Price	Gamma (γ)	Third-Party (Exogenous)
Endogenous	Task - 8	20	1.00	1	0
Exogenous	Task - 9	20	1.00	0	$20 - g_i^d$

2.3.4 Experimental Procedures

A total of 89 community members from Bryan-College Station area in Texas participated in our experiment which was conducted between October-November 2020. Participants for the study were recruited using Sona Systems - a participant management software. On the day of the experiment, participants entered the reception area one at a time. There was no waiting area in compliance with research guidance during COVID-19. A lab assistant at the reception administered temperature check of participants and allowed them inside the laboratory if they had a normal body temperature. Inside the laboratory, participants were seated in front of a computer where they read the information sheet and consented to participate in the experiment. The information sheet provided details about the study duration, potential earnings and any risks associated with the study. Each participant was given an experiment label to associate them with their decisions. The participants could begin the study after inputting their label number.

The experiment was programmed and conducted with the software oTree (Chen et al., 2016).

Before completing the actual allocation tasks, all participants completed a small quiz to ensure their understanding of the tasks. The quiz was compulsory and participants needed to score 100% in order to move ahead in the study. The compulsory quiz allowed us to ensure that participants understood how the earnings and donations are calculated. On the actual task screens, however, earnings, direct donations, donations through token purchase and total donations were provided for all possible allocation (see Screen 18 in Appendix A).

We took three steps to assure the participants that the donations will be passed on to the recipients. First, the information provided to the participants on the recipients included screenshots of the Maquita Foundation's website with its web address and other contact details (see Screens 8 and 9 in Appendix A). Second, the participants were told that after completion of the study, one participant will be randomly selected to visit the laboratory and verify the acknowledgment receipt from Maquita Foundation. Third, all participants were told they would receive an email message that the donations have been made and that the acknowledgment receipt is kept at the front desk should they wish to verify it.[5]

2.4 Results

In this section, we present the results from our laboratory experiment. First, we briefly discuss the descriptive statistics and then present the test results of different models of charitable giving. We begin by testing the pure altruism and pure warm-glow models under our two settings - Endogenous and Exogenous - by measuring the change in direct giving of individuals (g_i^d) in response to an increase in third-party donations. Thereafter, we discuss the difference in participants' donations in decision tasks 8 and 9 where the altruism motive is eliminated. Lastly, we present the utility function parameters from our structural estimation of the heterogeneous-agent model.

2.4.1 Descriptive Statistics

A total of 89 community members from the Bryan-College Station area in Texas participated in our experiment. All sessions were conducted between October and November of 2020. More

[5]Funds have been sent to Maquita Foundation, and we are currently waiting on disbursement of the total donation amount between farmers. We will notify the participants as soon as the payments are made to the farmers.

females participated in our experiment (62% females, 37% males and 1% who identified themselves as other). About 3% of all participants gave zero across all tasks. There were 4 participants who gave away everything in all decision tasks. However, excluding tasks 8 and 9 where the total donations to farmer were fixed at $20, 14 participants gave away all their endowment in donations through tasks 1-7. Tasks 8 and 9, expectedly, had the most number of participants at the lower corner - 62% gave zero in task 8 (endogenous third-party donations) in comparison to 54% in task 9 (exogenous third-party donations). The average giving in tasks 8 and 9 were $4.5 and $5.3, respectively. In Figure 2.3, we present the average giving by participants across all tasks.

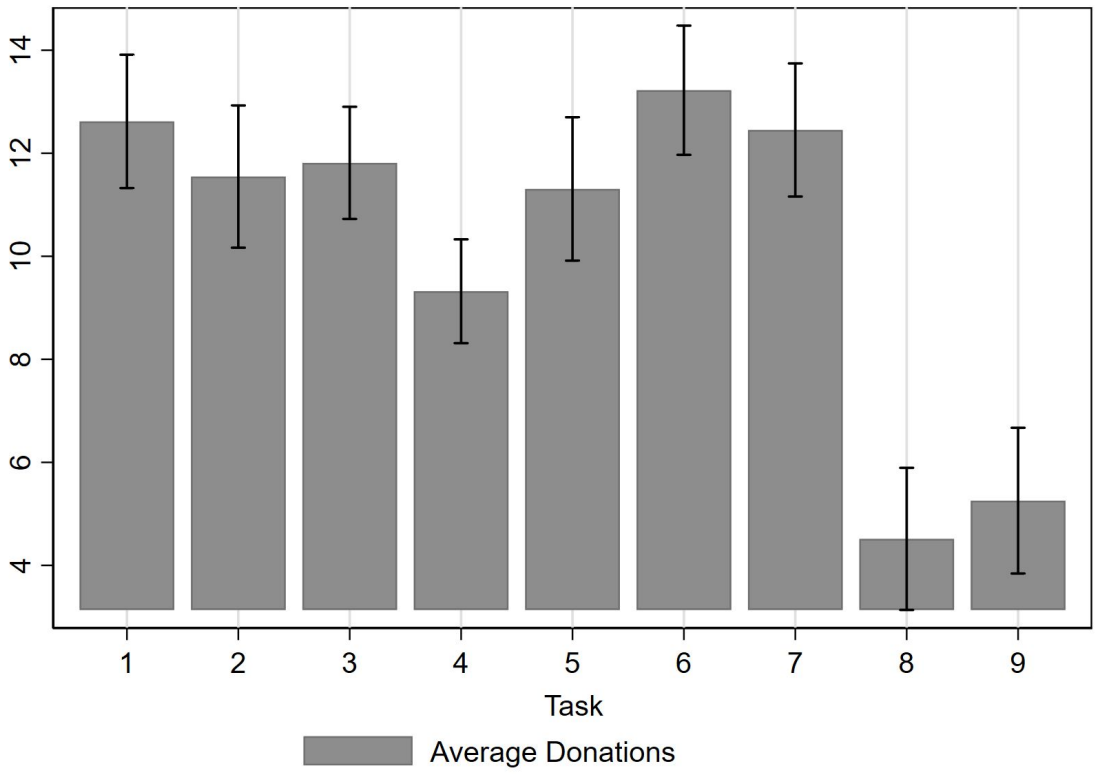


Figure 2.3: Average Donations by Task

Table 4.1 provides a summary of socio-demographic characteristics of our participants that we collected as part of the study. We also included a manipulation check at the end of the experiment to assess participants' confidence in the farmers' cause and their overall experience with the

experiment. Results from the manipulation check are summarized in Table 2.8.

Table 2.7: Summary Statistics

Variables		Observations	Mean (Standard Deviation)
Age		89	40.09 (12.57)
Gender:	Female	89	0.62 (0.49)
Race:	White	89	0.73 (0.45)
	Asian	89	0.14 (0.34)
	Black	89	0.10 (0.30)
Hispanic		89	0.13 (0.34)
Donation Frequency[a]		89	2.77 (1.11)
Eat Chocolate (1 = Yes)		89	0.87 (0.34)
Care if Chocolate is Organic? (1 = Yes)		77	0.06 (0.25)
Care if fruits and vegetables are produced organically? (1 = Yes/Sometimes)		89	0.67 (0.47)
Would you consider donating regardless of donations through your purchase?[b] (1 = Yes)		89	0.90 (0.30)

a: 0 = Never in life, 1 = Not in the last year, 2 = 1-3 times in the past year, 3 = 3-10 times in the past year, 4 = More than 10 times in the past year.
b: This question was asked in a hypothetical setting in the survey section of the experiment. See Appendix A for the exact question.

Table 2.8: Manipulation Checks: Summary Statistics (N = 89)

Response Scale: 1 - 5	Mean (Standard Deviation)
Q1: The procedures followed in this experiment preserved your anonymity.	4.72 (0.74)
Q2: The money you donated to the farmer will be passed on to the farmer.	4.42 (0.93)
Q3: The instructions for the experiment were clear and easy to follow.	3.67 (1.16)
Q4: The farmers are deserving of your support.	4.76 (0.48)
Q5: If you could select a different charity, would you have made a larger donation?	2.69 (1.24)

2.4.2 Models of Charitable Giving

Earlier in section 2, we showed that complete crowding-out in the endogenous framework is associated with more than one model of charitable giving. Complete crowding-out in the pure altruism model is the result of perfect substitutability between own contributions and any third-party contributions. However, when third-party contributions accrue endogenously, complete crowding-out is possible even if donors are either impure altruists or driven exclusively by warm-glow, given that they derive equal warm-glow benefits from their direct donations (g_i^d) and charitable contributions through their consumption of good *x*: g_i^x.

Three models in the endogenous setting imply complete crowding-out of direct donations but each leads to a different level of total giving. In contrast, the exogenous framework is simple, in that, complete crowding-out is only associated with the pure altruism model. Impure altruism is associated with partial crowding-out and the pure warm-glow model implies zero crowding out in the exogenous donation setting. In the following section, we test the model of pure altruism using the balanced-income and balance-price tests.

2.4.3 Pure Altruism Model

The pure altruism model predicts no change in demand of the private good *x* (tokens in our case) and total donations G^* for an unchanged budget set: $(p-\gamma)x+G \leq w_i+G_{-i}$. Matching the change in the *rate* of the Foundation's donation with a price change keeps the budget set in the endogenous donation setting unaltered. As a result, we expect no change in pure altruist's demand for tokens between decision tasks 1 and 2. Our null hypothesis for the pure altruism model, therefore, is no difference in the number of tokens bought between tasks 1 and 2 or $H_0 : x_1 - x_2 = 0$. Using a non-parametric Wilcoxon signed rank test, we conclude that the difference in tokens bought in tasks 1 and 2 is not statistically significant ($Z = 1.757, p > 0.05$). Consequently, we do not reject the null hypothesis, and therefore, the pure altruism model in the endogenous donations setting. In the exogenous third-party donations setting, we test for pure altruism by comparing the number of tokens bought between decision tasks 3 and 4. Note that the pure altruist's budget set in the

exogenous setting is kept constant between tasks 3 and 4 by matching the increase in third-party donations (G_{-i}) by an equivalent amount of a lump-sum tax on the donor's income. We find that the difference in tokens bought between tasks 3 and 4 is statistically significant ($Z = 2714, p < 0.01$), leading to rejection the pure altruism model in the exogenous framework.

In order to measure the *extent* of crowding-out of participant's direct donations from the Foundation's endogenous donations, we regress participants' direct donations (g_i^d) on the rate of donations (γ) per unit of token purchased by the participants. Recall that in the endogenous donation framework, pure altruism predicts complete crowding-out or $\frac{dg_i^d}{d\gamma} = -x_i$. In column (1) of Table 2.9, we present the crowding-out effect ofthe change in the rate of donations through cause-marketing on participants' direct donations. The estimate in column (1) comes from a random-effect Tobit regression that accounts for both lower and upper limits. In column (2) we present the estimate of crowding-out in donors' direct contributions when exogenous third-party donations increase by $\$1$. Recall, that in the exogenous donation framework, complete crowding-out is equivalent to: $\frac{dg_i^d}{dG_{-i}} = -1$.

Table 2.9: Crowding-out Estimates in Endogenous and Exogenous Settings

Participants' Direct Donation	Endogenous Framework (1)	Exogenous Framework (2)
Rate of CM Donation (γ)	-4.96^a (1.95)	-
Lump-sum Donations (G_{-i})	-	-0.79^b (0.13)
Tasks	(1,2)	(3,4)

Notes: The dependent variable in the regressions is participants' direct donations to the farmer paired with them. The estimates in columns (1) and (2) are marginal effects from a random-effect Tobit regression that accounts for a lower corner of \$0 and an upper corner of \$20 in column (1). The upper censor in column (2) varies between tasks 3 and 4 because of the difference in the endowments. Test of complete crowding-out in column 1 is $H_0 : abs(\frac{dg_i^d}{d\gamma} \geq \bar{x}_{1,2})$. Here, $\bar{x}_{1,2} = 5.77$, the average number of tokens bought in tasks 1 and 2. We note from before that there is no significant difference between tokens bought in tasks 1 and 2. In column 2, the test of crowding-out is $H_0 : abs(\frac{dg_i^d}{dG_{-i}}) \geq 1$. The p-values are following: $p^a = 0.339$, $p^b = 0.047$. Standard errors are bootstrapped.

Test of pure altruism model based on crowding-out estimates reinforces our earlier results. In the endogenous setting, the crowd-out estimate is \$4.96. This implies that for a $\$1$ increase in the *rate* of donations through token purchase, participants' direct donations to the farmer go down by \$4.96. Based on the associated p-value (0.339) of complete crowding-out test, we do not reject the pure altruism model in the endogenous setting. In the exogenous setting, the crowd-out estimate is \$0.79 or 79%. In other words, for a *dollar* increase in donations from the Foundation, participants decrease their direct donations by \$0.79. We reject the pure altruism model in the exogenous setting (p-value of complete crowding-test is 0.047).

Note that the two crowd-out estimates are not directly comparable one-to-one. The crowding-out estimate in the endogenous setting (column 1) is the change in participant' direct donations in response to an increase in the *rate* of donations from the Foundation that accrue through "consumption" of tokens. The *actual* change in donations as a result of an increase in the accrual rate by $\$1$ is equivalent to the number of tokens bought by the participants, which on average is much greater than one. Contrast this with the crowding-out estimate in Column (2) which is a response to an exogenous increase in third-party donations from the Foundation by $\$1$.

The crowd-out estimate in column (1) suggests that participants on average reduce their direct donations by nearly as much as the average number of tokens they buy. We, therefore, do not reject the pure altruism model in the endogenous setting. In contrast, we are able to reject the pure altruism model in the exogenous setting.

2.4.4 Pure Warm-Glow Model

The pure warm glow model where donors derive warm-glow utility only from their direct donations predicts no response to a change in third-party donations - endogenous or exogenous - for an unchanged budget set: $px + g_i^d \leq w_i$. Decision tasks 1 and 5 keep the budget set of a donor motivated purely by warm-glow unchanged. The third-party donations in these two tasks accrue endogenously. Likewise, decision tasks 6 and 7 do not alter the budget set for a pure warm-glow donor, but present the participant with varying levels of exogenous donations from the Foundation.

In the endogenous setting, we expect the donations of a pure warm-glow giver to remain un-

changed between tasks 1 and 5. Our null hypothesis for test of the pure warm-glow model in the endogenous setting is $H_0 : (g^d_{i\,(1)} - g^d_{i\,(5)} = 0)$. Using the Wilcoxon signed rank test, we reject the null hypothesis of no change in participants' direct giving ($Z = 2.694, p - value < 0.01$). In the exogenous donation framework, we test for the pure warm-glow model by testing if the difference in participants' direct donations between tasks 6 and 7 is significantly different from zero. Our null hypothesis for the test of pure warm-glow model in the exogenous setting, therefore, is: $H_0 : (g^d_{i\,(6)} - g^d_{i\,(7)} = 0)$. We again reject the null hypothesis that this difference is zero ($Z = 3.371,\ p - value < 0.01$) and consequently the pure warm-glow model in the exogenous donation setting as well.

In table 2.10, we present the crowding-out estimates for both endogenous (tasks 1 and 5) and exogenous settings (tasks 6 and 7). These results are consistent with our earlier assessment where we rejected the pure warm-glow model in both frameworks. Note that between tasks 1 and 5, the rate of donations per unit of token purchased goes up to 50 cents, but without a matching price increase to keep the warm-glow donor's budget set from task 1 unchanged. According to the crowding-out estimate, participants' reduce their direct donations by more than $\$6$ in response to an increase in the Foundation's donation rate by \$1. This response is significantly different from zero, which allows us to reject the pure warm-glow model in the endogenous donation framework. In the exogenous setting, participants' respond to an increase in the Foundation's donation by reducing their direct donations by an estimated 32 cents. This estimate is also significantly different from zero, and as result, we reject the null hypothesis of zero crowding out predicted by the pure warm-glow model.

Now, let us summarize what we have learned about participants' giving preferences from the analyses so far. We rejected the pure altruism model in the exogenous donation setting but not in the endogenous setting. However, we rejected pure warm-glow in both settings. This puts us in the bottom left box of Table 2.4 and top left of Table 2.5. Inconsistency in the inference about the pure altruism model between the endogenous and exogenous settings is our first evidence that participants derive warm-glow from cause-marketing donations or that $\alpha_x > 0$. In the following

Table 2.10: Crowding-out Estimates in Endogenous and Exogenous Settings

Participants' Direct Donation	Endogenous Framework (1)	Exogenous Framework (2)
Rate of CM Donation (γ)	-6.59^a (2.59)	-
Lump-sum Donations (G_{-i})	-	-0.32^b (0.11)
Tasks	(1,5)	(6,7)

Notes: The dependent variable in the regressions is participants' direct donation to the farmer paired with them. The estimates in columns (1) and (2) are marginal effects from a random-effect Tobit regression that accounts for a lower corner of \$0 and an upper corner of \$20 in column (1). The upper censor in column (2) varies between tasks 6 and 7 because of the difference in the endowments. Test of pure warm-glow in column 1 is $H_0 : \frac{dg_i^d}{d\gamma} = 0$. In column 2, the test of pure warm-glow is $H_0 : \frac{dg_i^d}{dG_{-i}} = 0$. The p-values are following: $p^a = 0.011$, $p^b = 0.0.003$. Standard errors are bootstrapped.

sub-section, we further discuss analyses pertaining to warm-glow from cause-marketing donations.

2.4.5 Warm-Glow from Donations through Cause-Marketing

We do not reject the model of pure altruism in the endogenous framework. In other words, there is complete crowding-out of any third-party donations that accrue via cause-marketing. Going back to our inference table, Table 2.1, complete crowding-out in the endogenous setting is associated with both pure altruism and impure altruism models. Since, we reject the pure altruism model in the exogenous setting, we argue that our participants, in general, are impure altruists, deriving equal warm-glow utility from their direct contributions and donations from cause-marketing resulting in no change in total donations to the farmer between tasks 1 and 2 $(Z = -1.759, p - value > 0.05)$.

We also investigate the difference in donations between tasks 8 and 9 to directly test if participants' derive any warm-glow utility from donations through cause-marketing. Recall that the total giving to the farmer is fixed at $\$20$ in both these tasks, which eliminates altruism as an underlying motive for donations. The only difference between these two tasks is that in task 8 any deficit between the $\$20$ and the participant's donations is covered by the Foundation through tokens purchased by the participants (cause-marketing), whereas in task 9 any such deficit is covered

exogenously by the Foundation. If participants derive warm-glow from donations that accrue from their token purchases, participant's direct givings in task 8 should be lower than in task 9.

Comparing participants' direct donations between tasks 8 and 9, we find that fewer participants donate a positive amount when the Foundation covers the deficit endogenously. 38% of all participants donated a positive amount in task 8 versus 46% in task 9. The average donations are \$4.51 and \$5.26, in tasks 8 and 9, respectively. We test for pairwise difference in the direct donations of participants between tasks 8 and 9. Our null hypothesis here is the following: $H_0 : (g^d_{i\,(8)} - g^d_{i\,(9)} \geq 0)$. We use a non-parametric Wilcoxon signed rank test to verify if the difference in giving is statistically different from zero. We do not, however, find statistical evidence that participants behave less generously when Foundation's donations accrue endogenously $(Z = -0.934, p - value > 0.05)$.

2.5 Discussion and Conclusions

We study the effect of cause-marketing on total funds raised for a charitable cause. What started with American Express' Statue Restoration Program has over time become a powerful means to increase product sales.[6] In addition to giving boost to sales, cause-marketing has the ability to increase the total funds raised for a designated charitable cause. However, whether or not the total donations increase depends on how consumers of the cause-related good respond to contributions from the corporation with respect to their own charitable donations. We show that as long as consumers do not fully account for donations from the corporation in their direct contributions to the charity, total donations would increase. The extent to which the consumers account for corporation's donation in their own contributions is a direct implication of underlying giving motivations of the donor-consumers.

Despite the critical importance of individual donations in community development, we could only find one previous study that explores the effect of cause-marketing on total donations in the marketing literature. In an empirical study, Krishna (2011) shows that people reduce their

[6] American Express ran a three month long program where they contributed a penny to the restoration of the Statue of Liberty every time one of its credit cards was used during the last quarter of 1983. The project is said to have generated \$1.7 million for the Statue and a significant increase in usage of the American Express card - NYT, 1986.

charitable giving in response to their purchase of a cause-related good, suggesting a decline in total donations when individuals purchase goods that are "cause-marketed." The author does not explore the underlying factors that lead to lower total donations under cause-marketing, but argues that perhaps consumers think of their purchase as a charitable act and decrease subsequent private donations.

In economics, the use of experimental methods to understand factors that drive genorosity has grown substantially over the years (Cooper and Kagel, 2016). The existing work mostly focuses on identifying giving motivations, and analyzing fundraising mechanisms. However, reference to giving motivations in this literature has been primarily in the context of lump-sum third-party donations that are independent of donor's consumption choices. In this study, we extend the existing models of philanthropic giving to accommodate third-party donations that accrue in proportion to donors' consumption choices via cause-marketing.

We use our models to derive implications for total donations and individual's direct donations when giving is motivated by altruism and/or warm-glow in the cause-marketing framework. Some of the key implications of our results are based on how consumers regard donations by corporations that accrue through their purchases. Our theoretical model of impure altruism allows participants to obtain varying levels of warm-glow from their direct donations and donations that accrue via their consumption choices through cause-marketing. Our test results suggest that (a) donations by the participants in our experiment are driven both by altruism and warm-glow motives, and (b) the warm-glow utility in cause-marketing framework is generated both from their direct contributions and donations that accrue via their consumption. In addition, we show that participants attach the same weight to donations via cause-marketing as their direct donations. This results in complete crowding-out of third-party donations via cause-marketing.

Our results align with the work of Krishna (2011). However, the decrease in total donations observed in her study could be due to reasons other than donors regarding cause-marketing donations as their own. In the author's experiment, all participants were donating to the same recipient. In absence of individualized charities, however, individuals may also lower their donations if they

believe that the total giving will increase due to purchase of the cause-related good by other consumers. We control for giving-by-others in this study by creating an individualized charity for each subject which allows us to study in isolation the effect of donations through consumer good purchase on donors' direct contributions. Moreover, our study is grounded in the economic theory of charitable giving and provides a framework to include third-party donations that are endogenous to own consumption choices.

However, we want to highlight an important aspect of our study that could be suppressing the warm-glow parameter on donations through cause-marketing. The warm-glow utility from donations via cause-marketing is likely to be more prominent if an individual's decision to buy a consumption good is due to its association with a charitable cause. In our experiment, however, we have focused on consumers who would buy the consumer good regardless of its association with any cause or a charity. In other words, these individuals purchase the good because they prefer it for reasons other than its association with a charitable cause. This seemingly restrictive focus is useful in putting a lower bound on warm-glow utility from donations through cause-marketing. Any evidence of warm-glow utility in this setting suggests that the utility would only be higher when we include consumers who purchase the good largely due to its association with a charitable cause. In that case, one would expect a higher crowding-out of consumer's direct contribution to the cause by donations from the seller of the consumer good, and consequently, lower total donations.

That said, we would like to add here that most consumers have strong brand preferences when it comes to buying consumer staples such as food items, diapers for kids (Pampers) and other regular items. Barone et al. (2000) in their empirical study show that when trade-offs are required in exchange for selecting a brand that is associated with a cause, the proportion of participants selecting the cause-related brand is significantly lower than under conditions of inter-brand homogeneity. Therefore, our focus on "core consumers" is not very far-fetched from the real-world consumption behavior where consumers may want to stick to particular brands regardless of any cause-association. The authors further argue that when inter-brand differences exist, the tendency

of consumers to select the cause-related brand will be contingent on the size of donation by the firm.

Given the above, we believe that the present research provides a sufficiently close approximation of consumers' real world behavior and provides evidence that in the charitable giving environment we created in the laboratory, participants derive equal amount of warm-glow utility from their direct contributions as donations that accrue through cause-marketing due to their consumption choices, resulting in no change in total funds raised for a charitable cause.

3. ARE NORMS SACROSANCT? SOCIAL NORMS AND DONATIONS TO DIFFERENTLY DESERVING RECIPIENTS

3.1 Introduction

The dictator game is used widely to elicit the other-regarding preferences (altruism, inequity aversion, fairness) of individuals. In the simplest form of the game, a randomly selected "dictator" allocates a fixed sum of money (usually an experimental endowment) between herself and another anonymous study participant. In absence of any strategic motivation as in standard dictator games, the amount transferred by the participants to their counterparts is used as a measure of their other-regarding preferences. The first full choice set dictator game where participants could share any positive amount from their endowment was conducted by Forsythe et al. (1994). Ever since, there have been numerous studies that have explored other-regarding preferences of individuals using dictator allocations under different institutional settings. Much of the recent interest in this game, however, has revolved around the sensitivity of implications drawn from dictator allocations to small institutional changes (Bardsley, 2008; List, 2007; Cappelen et al., 2013).

One institutional change that is known to significantly impact dictator transfers is recipient-type. Eckel and Grossman (1996) vary recipient-type in a two-treatment double-blind anonymous dictator game to study the importance of altruism as a motivation underlying giving behavior. The authors include two different recipients in their study - an anonymous student and an established charity. Dictator transfers to the charity are found to be significantly higher than to the students. Five subjects (out of a total 58) transferred whole of the endowment when the recipient was a charity in comparison to none among those paired with another student. Several other studies have manipulated the extent to which the recipient is deserving to explore its impact on the dictators' generosity. In a meta-analysis of dictator outcomes, Engel (2011) show that recipients receive 8% more if they are visibly deserving.

Different motives likely guide transfers to differently deserving recipients. Two key forms of

other-regarding preference that have been discussed in much detail in the literature are altruism and inequality aversion. Fehr and Schmidt (2006) define an altruist as one who is "willing to sacrifice own resources in order to increase the well-being of others." Mathematically, this implies that the first derivative of an individual's utility with respect to material resources of other agents is *always* strictly positive. In terms of a standard dictator game, altruism implies higher utility from allocation choices that increasingly favor the recipient. Fehr and Schmidt (2006) define inequality aversion as a *conditional* form of altruism where an individual values addition to another agent's resources only as long as it makes the payoffs more equitable. Mathematically, an inequality averse individual's utility is increasing in her own monetary payoff and reducing inequality between own and another agent's allocation. However, any disutility to the agent from inequality is higher if another person is better off. In a standard dictator game this implies that an inequality averse individual will disregard allocation choices that favor the recipient. Based on these two definitions and previous observations on dictator transfers to differently deserving recipients, altruism explains transfers that lie to the right of the allocation choice spectrum when the recipient is a charity. On the other hand, inequality aversion rationalizes the action of dictators (most go for an "equal-split") when the recipient is a peer and no more deserving than the dictators themselves. Korenok et al. (2012) test if inequality aversion is the primary motivation underlying dictator sharing by endowing both the dictator and the recipient. The authors observe a significant fall in amount shared by the dictator as they increase the recipient's endowment from 0 to an amount equal to the dictator's endowment.

Rather than verifying the motives for giving, in this paper, we investigate the utility of social norms, "the customary rules that govern behavior in groups and societies" in explaining giving behavior between recipient-types (Bicchieri et al., 2018). Social information and norms are known to influence giving behavior (Martin and Randal, 2008; Croson et al., 2009; Agerström et al., 2016). For norms to explain giving between recipient-types, they must reflect the varying motivations for giving - altruism and inequality aversion - that rationalize donation choices to differently deserving recipients.

We measure dictator game transfers of undergraduate students at Rice University to two differently deserving recipients - a charity working for bush fire relief in Australia and another student participant in the study. Additionally, we elicit our study participants' perceived social norms[1] of giving for 11 different dictator transfer choices using an incentivized coordination-game introduced by Krupka and Weber (2013).[2] We verify if the elicited norms vary in line with the theory of altruism when the recipient is a charity and with inequality aversion when the recipient is another student. Simply put, when the recipient is a charity, norm may invoke a higher degree of generosity than the equal split, and the equal division is likely to carry less weight, whereas when the recipient is another student, the norm for giving in this case is likely to be the equal division of resources. We then explore if the giving behavior of our student participants in the two dictator games (charity and another student) correlates with the social norms of giving. Finally, we investigate if norms weigh differently on giving behavior for differently deserving recipients. In other words, do individuals care more or less about conforming to the social norms when they are giving to one recipient-type or another?

Our findings are three-fold. First, consistent with previous studies, we find that dictator transfers are significantly higher when the recipient is a charity than when the recipient is a fellow student. Second, we show that the social norms for giving vary substantially under the two contexts. More specifically, the most appropriate action for a dictator when the recipient is a charity is to transfer all the endowment. In contrast, the most appropriate action when the recipient is another student is to split the endowment equally with the recipient. Third, we show that giving behavior under both recipient-types is closely related to social norms. Lastly, we find that while taking a more appropriate action is valuable in both settings, it is significantly more valuable in the context of charitable giving. Moreover, when the recipient is a charity, incremental increases in the degree

[1]The two most widely referred types of norms are (i) Injunctive Norms, and (ii) Descriptive Norms. Injunctive norms refer to the "right" or "appropriate" action in a given circumstance while descriptive norms describe action that most people take, irrespective of its appropriateness. In this paper, we rely on the variation in injunctive norms to explain difference in giving behavior

[2]We note that Krupka and Weber (2013) use similarly elicited norms to explain giving behavior between multiple variants of dictator game but with *same* recipient-type. In addition to showing that individuals in different variants behave in manner consistent with social norms, they note that there is a stable preference for complying with social norms in all variants. In other words, people value social norm adherence equally in all variants of dictator game.

of appropriateness is less valuable. Subjects are less likely to choose actions that are marginally *more* appropriate than the one that is considered *most* appropriate.

Overall, our results have significance for both theorists and experimentalists. That social norms are able to account for giving motivations is encouraging and has the potential to generate simpler unifying models that can explain giving behavior under different contexts. Moreover, the fact that social norms are valued differently between contexts should influence the way norms are currently modelled in utilitarian frameworks. For experimentalists and other empirical researchers relying on standard lab measures to learn about the altruistic preference of their subjects, our study underscores the importance of "contexts" in determining giving behavior. We also validate the Krupka-Weber norm elicitation strategy in a two-recipient framework which should encourage the use of norm ratings in deriving a-priori prediction of donation behavior.

The rest of our paper is organized as follows. In the next section, we discuss the experimental design and procedures. In section 3, we present the results and conclude in section 4.

3.2 Experimental Design and Procedures

The research reported here is part of a larger panel study where we recruited two-thirds of the students in the entering undergraduate class in 2016 at Rice University to examine the evolution of their preferences (altruism, risk aversion, time preference, competitiveness, loss aversion, ingroup favoritism, among others) across their college years. Subjects participated in twelve different lab and online studies between their matriculation in 2016 and graduation in 2020 measuring specific types of preferences. In this section, we discuss the experimental design of a subset of tasks used in this paper that subjects completed in two waves of the panel in the months of February and March of 2020. (Detailed instructions are presented in Appendix B).

Using a within-subject design, we collected data on dictator transfers and social norms of giving to two different recipients - a charity working for bush fire relief in Australia (charity treatment) and an anonymous Rice University student who was also a participant in the panel (student treatment). A total of 358 subjects completed all four tasks spread out between the two waves conducted in February and March of 2020.

In the dictator games, subjects were asked to allocate their endowment of $20 between themselves and another recipient - the charity in February 2020 and another student in March 2020. Participants read the following vignette about the Australian bush fire in the charity treatment:

> *Australians are reeling from hundreds of devastating fires sweeping through parts of the country. Since October 2019, the wildfires have scorched millions of acres of land and destroyed more than a thousand homes. At least 26 people have died. But perhaps the greatest damage is to wildlife. An estimated 1 billion animals have been lost, and scientists fear long-term damage to many sensitive ecosystems. With people displaced and wildlife populations gutted, there are ways you can help.*

Subjects were instructed to choose among three different organizations working for bush fire relief - Australian Red Cross, New South Wales Rural Fire Service and the Royal Society for the Prevention of Cruelty to Animals (RSPCA) New South Wales - and then allocate $20 (their endowment in this task) between themselves and the charity of their choice. Subjects could choose between eleven possible alternative allocations ($0 for themselves and $20 for the counterpart, $2 for themselves and $18 for the counterpart and so on to donating the full endowment - see Appendix B for details).

In the student treatment, the subjects were provided with the following instructions:

> *In this task you will allocate a fixed amount of money between yourself and another person. If this task is randomly selected for payment, then you will either be paid as a decision maker, or as a recipient of someone else's decision. Your role of decision maker or recipient will also be determined randomly. You will not know the identity of your counterpart, nor will the counterpart know yours. If your role is the decision maker, then a recipient will be randomly selected for you. That recipient is also a member of the Class of 2020 participating in this study. If your role is the recipient, you will be randomly assigned to a decision maker, who is also a member of the Class of 2020 participating in the study. Their decision will determine their own payoff and yours.*

As in the case of charity treatment, subjects could choose between eleven possible alternatives ($0 for themselves and $20 for the counterpart, $2 for themselves and $18 for the counterpart and so on.

Next, we describe the incentivized co-ordination game that was used to elicit social norms of giving. This procedure is a slightly modified version of the Krupka and Weber (2013) procedure. Subjects played the game twice, first in context of a student, and second in the context of the charity. In each game, subjects were asked to rate the appropriateness of all eleven possible allocation choices on a 4-point scale - "very socially appropriate," "somewhat socially appropriate," "somewhat socially inappropriate" and "very socially inappropriate." To incentivize these tasks subjects were instructed that they would earn money only if their ratings for three randomly selected allocation choices matched the modal rating for those choices by other student participants. Thus the procedure elicits subjects' beliefs about what others believe to be the level of social appropriateness of each allocation: this is not their own belief, but rather their belief about others' beliefs.

Both norm elicitation tasks were completed in February 2020. Subjects read the following instructions in the norm elicitation task for the student treatment:

> *There are 2 individuals: A and B. A has $20 to allocate between himself/herself and individual B. Both A and B are students at Rice, and both are aware of this. However, neither knows the identity of the other. A must decide how much to keep for himself/herself, and how much to pass to B. A's decision determines the earnings of both individuals. A can make any of 11 possible allocations. You will be asked, for each possible allocation, whether that allocation by A is socially appropriate or not. If this task is chosen for payment, 3 of these allocations will be randomly selected. For each, your response will be compared with the other study participants in your college. If you select the same response as the most frequently given by other participants in your college, then you will receive $3. If you do not match the most common response then you will receive $0.*

Note that "your college" refers to the residential college (dorm) that the subject is assigned to at

Rice.[3]

For the charity treatment, the elicitation occurred after the donation decision. Subjects read the following instructions:

> *I ask you to assess the social appropriateness of the possible decisions that could be made in [the bush fire charity decision]. For this decision, we ask you to consider another person in [name of subject's own residential college], who has made the allocation choice. Consider the following allocation. There is individual A, who is from [name of subject's own residential college], and who has selected one of the Australian charities assisting with the wildfires. Individual A has $20 to allocate between himself/ herself and the charity. A must decide how much money to keep for himself, and how much to give to the charity. A can make any of 11 possible allocations. You will be asked for each allocation, whether that allocation by A is socially appropriate or not. If this task is chosen for payment, 3 of these allocations will be randomly selected. For each, your response will be compared with the other study participants from [name of subject's own residential college]. If you select the same response as the most frequently given by other participants in your college, then you will receive $3. If you do not match the most common response then you will receive $0.*

3.3 Results

A quick summary of our results is that contextual differences can elicit vastly different social norms and that these norms can help us make largely accurate predictions about giving behavior under different contexts. Consistent with previous experiments, we find that difference in recipient type in a dictator game results in large variation in dictator transfers. We also find that social norms differ between recipient types and can explain the observed difference in dictator transfers. This finding while echoing the importance of social norms in determining behavior, also lends

[3]Students are randomly assigned to one of twelve residential colleges on campus, and they remain with the college – where they sleep, eat, and study – for their entire time at Rice. It is a strong component of social identity at the University.

credibility to a co-ordination-game based norm elicitation strategy. We elaborate on these and other key findings of our study below.

Result 1: *Dictators transfer a significantly larger amount to the recipient in the charity treatment.*

In Figure 3.1, we present the distribution of dictator transfers under our two treatments - charity and student. A total of 358 subjects participated in both treatments. In treatment 1, when recipient is a charity, more subjects choose allocations that are favorable to the recipient than when the recipient is a student. Remarkably, 50% (N=176) of our subjects transfer all their endowment ($20) to the recipient in the charity treatment. In comparison, only 1 subject gives $20 to the recipient in treatment 2 where the recipient is a student. Table 3.1 presents the summary statistics of dictator transfers under both treatments. The average transfer in the charity treatment is $13.6 or about 68% of the initial endowment of $20. Average transfer in the student treatment is much lower, $6.2 or 31% of the initial endowment. The difference is giving behavior is substantiated when we use results from a Wilcoxon signed ranks test ($z = 14.213$, $p = 0.000$). This non-parametric test is based on differences in transfers between treatments for each subject and, therefore, is appropriate to test for treatment effects in a within subject design.

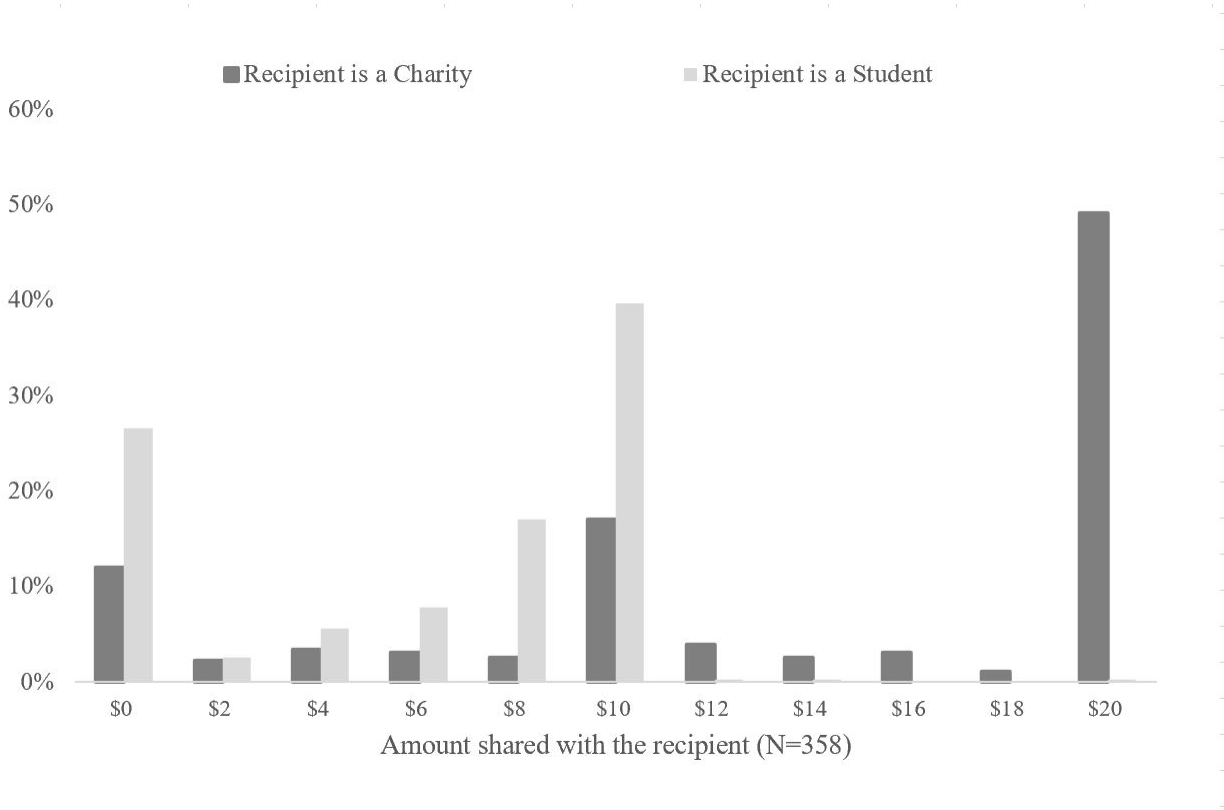


Figure 3.1: Frequency Distribution of Dictator Transfers between Treatments

Table 3.1: Summary Statistics of Dictator Transfer by Treatment

Variable	N	Mean (Standard Deviation)	Min	Max
Dictator Transfer (Charity)	358	13.61 (7.34)	0	20
Dictator Transfer (Student)	358	6.20 (4.25)	0	20

Result 2: *The injunctive norms of giving in the charity treatment is significantly different than those in the student treatment.*

Following Krupka and Weber (2013), we convert our subjects' appropriateness rating for each allocation choice into numerical scores. A rating of "Very Socially Appropriate" by a subject

is assigned a value of 1, "Somewhat Socially Appropriate" a value of 1/3, "Somewhat Socially Inappropriate" a value of - 1/3 and "Very socially Inappropriate" is assigned a value of -1.

In Table 3.2, we present the appropriateness rating of each allocation choice in the dictator game for both treatments. The table shows the mean, standard deviation and the distribution of appropriateness rating for each allocation choice under both treatments. The left half of the table presents these estimates for the charity treatment. The mean appropriateness rating in this treatment is monotonically increasing in the amount received by the charity and peaks at the allocation choice that yields nothing for the dictator and everything for the recipient ($0, $20). The right panel of Table 3.2 presents the mean, standard deviation and the distribution of appropriateness rating for treatment 2 - where the recipient is a student. In this treatment, the appropriateness rating is increasing in recipient's earnings for all allocations that do not result in a dictator payoff that is lower than the recipient. The mean appropriateness rating decreases for any allocation choice that yields the dictator a lower payoff than the recipient. Accordingly, the most appropriate action in this treatment is to equally split the endowment, whereas in the charity treatment the most appropriate action is to transfer all of the endowment to the recipient. In the last column of the table, we present results from a Wilcoxon rank sum test comparing the distribution of ratings between the two treatments. The test result shows that the distribution of appropriateness rating differs between the two treatments for every single allocation choice. This puts into perspective the glaring difference in the social norms of giving to a charity versus a fellow student. All allocation choices that yield lower payoff for the recipient are considered inappropriate in the charity treatment. More than 50% of our subjects rate these choices as inappropriate. In the second treatment where the recipient is another student, only the choices that strongly favor the dictator (shares $0 - $6 out of $20) are considered strongly inappropriate.

Recall that these ratings are elicited using an incentivized coordination game. Subjects could earn additional money if their own rating of appropriateness of each allocation choice matched with the modal rating of that allocation choice. In the charity treatment, subjects are better able to match their response to that of the group. Barring a few occasions, more than 50% of all

participants generally agree on the appropriateness rating of different choices. On the contrary, in the student treatment, there is some disagreement about the appropriateness of allocation choices that strongly favors the recipient. This indicates that our subjects are more in consensus with what the norm is when the recipient is a charity and not another student.

Result 3: *Dictator transfers closely follow the social norms of giving in both treatments.*

In Figure 3.2, we overlay the mean appropriateness rating of each allocation choice over the distribution of dictator transfers in both treatments. As seen in the figure, the modal behavior in each of the two treatments coincides with the peak of mean appropriateness rating. In the charity treatment, the mean appropriateness rating hits the apex at ($0, $20).

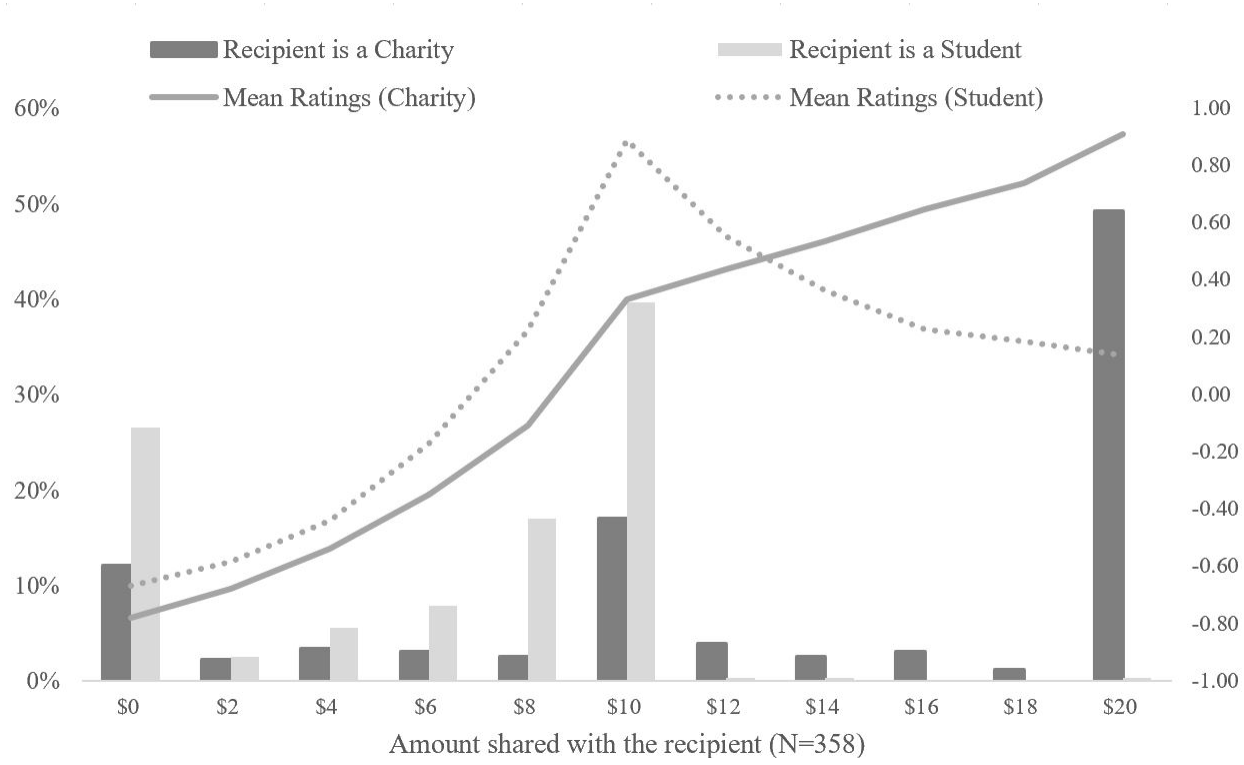


Figure 3.2: Distribution of Dictator Transfers and Mean Norm Ratings in both Treatments

Table 3.2: Summary Statistics of Norm Ratings under Both Treatments

Charity Treatment (N=358)							**Student Treatment (N=358)**							
Action	**Mean**	**SD**	**VI (%)**	**SI (%)**	**SA (%)**	**VA (%)**	**Action**	**Mean**	**SD**	**VI (%)**	**SI (%)**	**SA (%)**	**VA (%)**	**Wilcoxon Signed-Ranks Test**
Give $0	-0.78	0.48	78	13	5	3	Give $0	-0.67	0.50	62	29	5	3	4.292***
Give $2	-0.68	0.53	67	22	8	4	Give $2	-0.58	0.50	51	39	8	3	3.309***
Give $4	-0.54	0.57	52	32	12	4	Give $4	-0.44	0.51	35	48	13	3	3.172***
Give $6	-0.35	0.58	33	44	17	6	Give $6	-0.17	0.50	13	54	28	5	4.931***
Give $8	-0.11	0.62	20	39	30	12	Give $8	0.23	0.46	3	25	58	14	8.834***
Give $10	0.33	0.58	6	21	42	32	Give $10	0.89	0.29	1	1	13	85	13.541***
Give $12	0.44	0.55	4	15	42	39	Give $12	0.55	0.48	2	8	44	46	3.750***
Give $14	0.54	0.53	4	9	39	48	Give $14	0.36	0.60	5	22	35	37	-4.624***
Give $16	0.65	0.52	4	5	30	61	Give $16	0.23	0.71	14	23	27	36	-8.958***
Give $18	0.74	0.50	4	4	19	73	Give $18	0.18	0.76	20	20	24	37	-10.755***
Give $20	0.91	0.33	2	1	6	91	Give $20	0.14	0.82	27	15	20	38	-13.664***

Notes: ***$p < 0.01$

VI refers to “Very Inappropriate”; SI to “Somewhat Inappropriate”, SA to “Somewhat Appropriate” and VA to “Very Appropriate.”

This allocation choice yields $0 for the dictator and $20 for the recipient. Around 50% of all subjects in the charity treatment gave away all their endowment ($20) and another 28% chose an allocation that was at least as favorable to the recipient as themselves. In the student treatment, the mean rating peaks at ($10, $10) which yields $10 each for the dictator and the recipient. About 40% of subjects chose ($10, $10) or an equal split of the endowment as their preferred allocation in this treatment.

Note that in both treatments, subjects maximize their monetary payoff by keeping the $20 for themselves. However, this payoff maximizing allocation ($20, $0) is considered more inappropriate when the recipient is a charity than when it is another student. This difference in appropriateness rating is also seen in the distribution of dictator allocations between the two recipients at ($20, $0) choice, in that more subjects chose this transfer option in the student treatment than the charity treatment. Around 30% of subjects chose to share nothing with the recipient in the student treatment versus only 12% in the charity treatment. Note that this happens even though there is only a small difference in the appropriateness rating of the allocation choice ($20, $0) between the two treatments: -0.78 in the charity treatment vs. -0.67 in the student treatment. We argue that this happens due to high cost of choosing a more appropriate action for individuals with strong self-interest motive. In other words, these individuals are aware that their action is not "socially appropriate" but are unwilling to bear the cost of taking a more appropriate action.

The equal-split allocation of ($10, $10) also has remarkably different norm ratings between the two treatments (0.33 in charity vs. 0.89 in student). In the student treatment, this allocation choice is rated as the most appropriate action by the dictators. This implies that any rightward deviation from this action (transferring to the recipient more than $10) yields the dictator both lower payoff and lower norm ratings. This consideration is noticeable in the distribution of dictator allocation where only 3 out of 358 subjects chose an allocation more favorable to the recipient in the student treatment.

Result 4: *There is more value to adhering to social norms when the recipient is a charity.*

To explore the relative strength of self-interest and norm-compliance motives in determining

giving behavior and the differential value of norms itself between recipient-types, we analyze our participants' allocation choices in a social norm utility framework. We first present the utility framework suggested by Krupka and Weber (2013) and then discuss a second framework that builds on the first one.

Let A = $a_1, ., a_k$ be the set of actions available to a decision maker. Assuming that individuals care both about monetary payoff from choosing an action a_k and the extent of its social appropriateness, the utility function can be written as:

$$U(a_k) = V(\pi(a_k)) + \gamma N(a_k) \tag{3.1}$$

In equation (1) , $V(\pi(a_k))$ is the value a decision maker attaches to monetary returns from taking action a_k and $N(a_k)$ is the average social norm rating associated with action a_k. The decision maker's utility is increasing in both monetary payoff and the norm rating of an action. The parameter $\gamma \geq 0$ captures the extent to which a decision maker cares about aligning his/her actions with the social norm. An individual with higher γ will derive more utility from selecting an action collectively perceived as more appropriate than someone with a lower γ. On the contrary, for individuals who do not care about aligning their action with social norms, γ takes a value of 0.

Imposing a linear restriction on $V(\pi(a_k))$, equation 1 can be rewritten as:

$$U(a_k) = \beta\pi(a_k) + \gamma N(a_k) \tag{3.2}$$

Our modified model (given by equation 3.3) deviates from equation 3.2 above, in the way we treat the normative component of the utility function. Instead of using norms as a relative concept where each possible action is associated with variable degrees of appropriateness, we treat norms as an absolute notion and argue that individuals derive utility based on whether or not they conform to the norm. We define the norm as the action with the highest mean appropriateness rating. Individuals in the modified framework, therefore, face a trade-off between their own payoff and conforming to *the* norm. We add a dummy variable $D_{maxrating}$ that takes a value 1 if action a_k

has the highest average norm rating and 0 otherwise. γ_N in equation 3.3 is the weight individuals attach to adhering to the norm. Equation 3.3 represents the modified framework. As before, the parameter β is the weight on monetary returns associated with action a_k.

$$U(a_k) = \beta\pi(a_k) + \gamma_N D_{maxrating} \tag{3.3}$$

We use a conditional logit regression (McFadden, 1974) to identify the parameters, β and γ, in equation (2) and β and γ_N in equation 3.3. In order to run our regressions, we expand the dataset to include all possible dictator allocation choices for every subject (there are 11 different allocation choices or alternatives in our dictator game). We then define a binary dependent variable (choice) which for each subject takes a value 1 for the alternative selected and 0 otherwise. The explanatory or attribute variables in both models are monetary payoff and the mean[4] appropriateness rating associated with each allocation choice. In the modified model (equation 3.3), there is a third explanatory variable, $D_{maxrating}$, which takes a value 1 for the allocation choice (\$0, \$20) in the charity treatment and for (\$10, \$10) in the student treatment.

Columns 1 and 2 present parameter estimates for the Krupka and Weber (2013) utility framework given by equation 3.3 . In column 1 of Table 3.3, the estimated coefficients for both monetary payoff and appropriateness rating are positive and statistically significant. This implies that individuals put a positive weight on both attributes when making their choice. In column 2 of Table 3.3, we add two interaction terms - one that interacts the variable monetary payoff with the charity treatment and another that interacts the mean norms ratings with the charity treatment. These two terms allow us to investigate any differences in marginal utilities from payoffs and the degree of appropriateness between the two treatments. Interestingly, we note that the while the payoff interaction term is statistically insignificant, the norm interaction term is positive and significant. This indicates that there is more value from taking an action that is more socially appropriate in the charity treatment. There is also a non-marginal positive change in the coefficient associated with

[4]We compare the parameter estimates of equation 3.2 when using mean ratings to those when using the actual (self) ratings of the participants (Table B.1 in Appendix B). The relative magnitude of weights attached to monetary payoff and appropriateness rating are nearly the same when using mean ratings versus the self ratings.

Table 3.3: Conditional Logit Regression Estimates of Choice Determinants

	Equation 2		Equation 3	
Variables	(1)	(2)	(3)	(4)
Monetary Payoff (β)	0.19***	0.32***	0.07***	0.13***
	(0.01)	(0.02)	(0.01)	(0.01)
Appropriateness Rating (γ)	2.40***	2.61***		
	(0.11)	(0.15)		
Monetary Payoff	-	-0.01		-0.03***
x Charity Treatment		(0.01)		(0.00)
Appropriateness Rating	-	2.22***		
x Charity Treatment		(0.17)		
$D_{Maxrating}$ (γ_N)	-	-	2.85***	2.35***
			(0.11)	(0.13)
$D_{Maxrating}$	-	-		1.66***
x Charity Treatment				(0.16)
Log-likelihood	-1758.78	-1678.11	-1554.22	-1501.05
Observations	7,876	7,876	7,876	7,876

Note: ***p $<$ 0.01

monetary payoff in column (2).

We estimate the parameters of our modified model (given by equation 3.3) in columns 3 and 4. The estimates indicate that subjects care about both the monetary payoff and the norm (action associated with the highest mean appropriateness rating) when choosing their action. Finally, in column 4, we interact both payoff and the the dummy $D_{Maxrating}$ with the charity treatment. The payoff interaction term is negative and statistically significant implying that individuals care less about their monetary payoffs in the charity treatment. In addition, the coefficient on the interaction term associated with $D_{Maxrating}$ is positive and statistically significant. This implies that individuals derive place more weight on making the "most appropriate" choice when the recipient is a charity. In other words, there is more value to norm compliance in a charitable giving context.

To test the relative strength of both models in predicting the giving behavior, we calculate the probability distribution of dictator transfers for both treatments using the estimated coefficients for

each model. Figures 3.3 and 3.4 compare the predicted choice frequencies and the observed choice frequencies for the charity treatment and the student treatment, respectively. In Figure 3.3, we see that our modified model is in general a better predictor of giving behavior when the recipient is a charity. Our idea of including the absolute notion of norm seems to work particularly well in explaining the modal giving behavior in the charity setting (49% of all participants gave away all their endowment). The only allocation choice where there is a big difference between the observed and predicted (modified) choice frequency and where the Krupka-Weber (2013) framework does significantly better is ($10, $10).

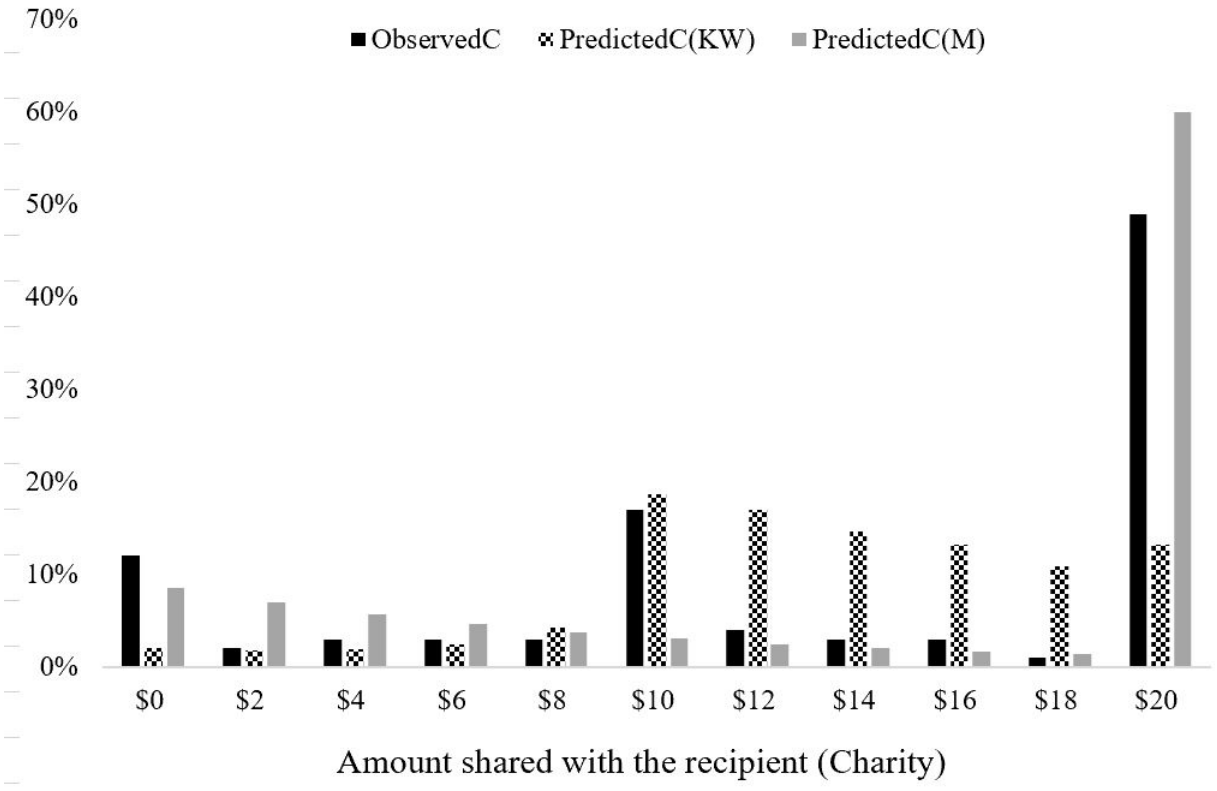


Figure 3.3: Comparison of Distribution of Dictator Transfers Between Models

Notes: PredictedC(KW) is based on the Krupka-Weber framework given by Equation 3.2. PredictedC(M) is based on the modified model given by Equation 3.3.

In Figure 3.4, we present the comparison of predicted and observed choice frequencies for the student treatment. In this case, neither model outperforms the other. The modified model, however, does better at predicting the modal behavior and at least as good at the left corner ($20, $0). At other choice points, the result is mixed. Overall, it seems the modified model works better in contexts where there is a strong motivation for taking the "most appropriate" action. When the recipient in a dictator game is a charity, the incremental increases in appropriateness rating do not bring a significant value to individuals.

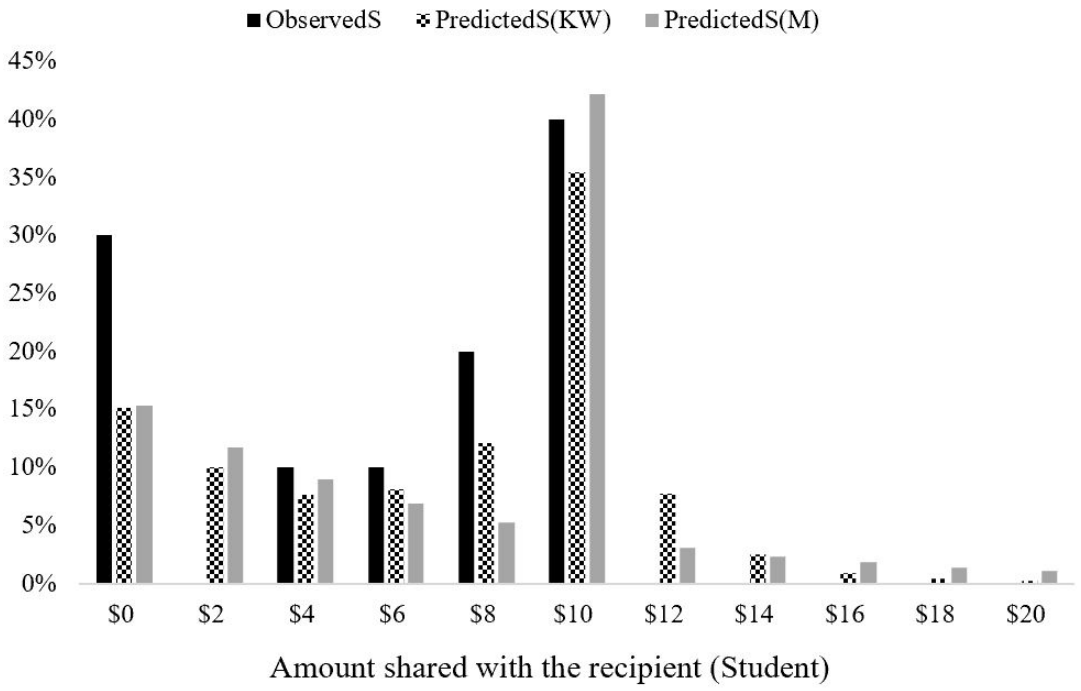


Figure 3.4: Comparison of Distribution of Dictator Transfers Between Models

Notes: PredictedC(KW) is based on the Krupka-Weber framework given by Equation 3.2. PredictedC(M) is based on the modified model given by Equation 3.3.

3.4 Conclusions

Social norms are known to influence donation choices. Previous studies, however, have mostly relied on a "uni-dimensional" assessment of the role norms play in determining donation behavior. The focus has been mostly on exploring the utility of norms as a policy tool in increasing donations. In this paper, we instead rely on social norms to explain variation in giving behavior to differently deserving recipients. Our objective leads us to discover several important theoretical and empirical findings.

First, our approach offers a unified account of difference in giving between differently deserving recipients. Instead of resorting to different models of other-regarding behavior to explain donation choices to different recipients, we show that a singular variable - social norms - has the potential to robustly explain differences in giving behavior between recipient-types. Social norms mirror the theoretical predictions of altruism when the recipient is a charity and that of inequality aversion when the recipient is another study participant.

Second, we weigh in on the varying importance of social norms in determining giving behavior. We find that norm compliance is significantly more valuable in a charity setting. We also distinguish between a relative and an absolute notion of social norm. We argue that where social norms are a relative measure, any trade-off between material gains and norm compliance will be stronger. Individuals are more likely to choose actions that bring them incrementally closer to the most appropriate action. On the other hand, where there is strong motivation to take the most appropriate action (like in the case of charitable giving), behavior will likely be less "scattered." This result has important implication for use of social norms as a policy tool under varied contexts.

In our rather simple dictator-game framework, we show that social norms play a dominant role in explaining variation in giving behavior. More research, however, is required to understand if norms merely reflect the underlying giving motivations when the recipients vary, or norms affect giving through an entirely different channel. Our results also have critical implications for fundraising agencies. We note that since charities perceived as more "deserving" of aid are likely to receive higher donations, the "ask" from fundraisers is critical to increasing charitable output.

4. DO STUDENTS BECOME LESS OTHER-REGARDING THROUGH THE COLLEGE-TERM? EVIDENCE FROM A LABORATORY EXPERIMENT

4.1 Introduction

In an unequal society, other-regarding behavior toward genetically unrelated strangers is critical to smooth functioning of institutions and societies (Boyd and Richerson, 2005). A large body of research emerged in the mid-twentieth century to explore the evolutionary origins of altruism in humans (Hamiliton, 1964; Trivers, 1971, 1974). In economics, the inaugural studies on other-regarding behavior focused on reconciling the striking empirical results from ultimatum and dictator games with the standard economic model. In the last two decades, however, economists have formally engaged with economic models that depart from the self-interest hypothesis to include some sort of other-regarding preference.

While this engagement has largely focused on identifying motivations underlying altruistic behavior, part of the literature deals with understanding the demographic basis of heterogeneity in other-regarding behavior. More specifically, gender differences in altruism has been under close scientific scrutiny in the last two decades (Eckel and Grossman, 1998; Andreoni and Vesterlund, 2001; Visser and Roelofs, 2011; Brañas-Garza et al., 2018). Another demographic factor that has featured frequently in the literature is age. List (2004) in one of the earliest systematic exploration of the relationship between age and other-regarding behavior shows that there is a positive correlation between age and contributions in both multiple and one-shot public goods games. The correlation between age and altruism has also been explored among young adults and children (Benenson et al., 2007; Fehr et al., 2008, 2013). All these studies broadly agree on a positive correlation between age and altruism.

While the association between age and altruism has been studied extensively, an area that has not received much attention is the evolution of other-regarding preferences among young adults. It remains largely unknown if and how the other-regarding preferences of young adults change in

response to certain common experiences. In this study, we explore the change in other-regarding preferences of undergraduate students through their college years. Our rationale for investigating this issue is threefold. First, college students undergo several academic and non-academic experiences during the time they spend through college years. Four years of residential college experience and constant interactions with network of friends and peers have the potential to shape the otherwise "less-crystalized" preferences of young adults. Second, most young adults live outside of their parents' homes for the first time when they start college. While living away from parents means independence, it also brings responsibility. College students make several everyday decisions by themselves such as what classes to take, and which activities to participate in, all of which contribute toward experiential learning that could lead to changes in preferences. Finally, college students often face a hard budget constraint when making day to day economic decisions. The experience of making ends meet through college years likely impacts their marginal utility from a dollar, and that in turn should be reflected in all economic decisions made by college students.

As experimental economists, we also have a selfish motive of investigating this relationship. Economic experiments extensively use college students as their recruitment pool. While there are some empirical studies that have investigated changes in giving behavior among college students, the primary focus of these studies is on testing either the stability of altruistic preferences (Brosig et al., 2007) or the external validity of lab measures (Benz and Meier, 2008), rather than studying the nature of preference evolution among students themselves. Given the frequent and established use of college students as experimental subjects in economics and related disciplines, it is important that we know to what degree can the experimental inferences drawn from freshmen be extended to students of other cohorts and beyond.

We exploit a unique dataset from a large-scale laboratory experiment at Rice University between 2016-2020 to study the evolution of other-regarding preferences through college years. Our unique data are especially suited to explore preference evolution comprehensibly for several reasons: First, we collect measures of other-regarding preference for the entering class of 2020 prior to their arrival on Rice University campus in July 2016 and again at the end of their college-term in

March 2020 that allows us to draw a before-after comparison. Additionally, we adopt an inclusive approach to data collection in that we collect both a survey measure and an incentivized measure (standard dictator game) to ensure that our results are not sensitive to the type of measure.

Second, in addition to the class of 2020, we elicit the other-regarding preferences of the entering classes of 2021, 2022 and 2023. This helps us to verify if the class of 2020 is systemically different from any other entering class at Rice University. Data from additional cohorts also allow us to check for any changes in other-regarding preferences with time itself.

Third, we left out a segment of the entering class of 2020 from the recruitment pool of the "before" elicitation study conducted in 2016. This excluded or untouched sample (who are seniors in 2020) complete a near replication of our 2016 study at the end of the college-term in 2020 allowing us to control for any experiment participation effect on the behavior of our panel.

Lastly, during the study period (2016 -2020), our panelists had the opportunity to donate toward Hurricane Harvey relief in March 2018, Australian bush fire relief in February 2020 and COVID relief in April 2020 through the experiments. We use the data from these real donation tasks to explore the correlation between giving behavior of our students over time and across domains.

Using our data, we answer two questions - First, we explore if other-regarding preferences of undergraduate students change through the college-term. Second, we test if the donation behavior of students are correlated over time and across contexts. Our findings are as follows. First, our data suggest that college students become less other-regarding by the end of the college-term. Students in our study transfer lower amounts in a dictator game to their counterparts at the end of college in 2020 than at the beginning in 2016. The weakening of other-regarding preferences is also observed in our participants' self-reported survey measure of altruism. A key criticism of survey measures is that they are not incentive compatible and therefore, inaccurate. Notwithstanding the criticism, we find that both the survey and incentivized measures change in the same direction. Second, we note that regular participation in economic experiments negatively weighs on other-regarding preference, and while that does moderate the extent of change in other-regarding preferences through college-years, our major result of weaker preferences by the end remains. Finally, we find that the

other-regarding preference measure from the end of college-term is correlated more strongly with the charitable contributions made for Harvey, bush fire and COVID relief by the students through the study period than the one measured at the beginning in 2016.

Our findings have significance for experimentalists as well as fundraising agencies. For example, our finding that measures of other-regarding preferences elicited from freshmen is different from those of seniors ought to influence the degree to which we can extrapolate our results beyond the experimental sample. Of course, more research is needed to verify if the observed change is sticky, i.e., do preferences revert to their original "level" as students go on to get jobs and earn income. Another key finding that the weakening of other-regarding preferences is reflected alike in both the survey measure and the incentivized measure should be comforting for experimentalists, since it is not always possible to collect multiple preference measures. For fundraisers, our result suggests that higher contributions can be expected from freshmen than seniors.

In what follows, we present the experimental design and results. Subsection 2 presents the design and procedures of our experiment. Subsection 3 presents the results and subsection 4 concludes.

4.2 Experimental Design and Procedures

The research reported here is part of a larger panel study where we recruited students from the undergraduate class of 2020 at the Rice University to examine the evolution of their preferences (altruism, risk aversion, time preference, competitiveness, loss aversion, ingroup favoritism, beliefs, among others) through the college years. Subject participated in 12 different studies from 2016-2020 measuring specific types of preference. In this study, we explore the evolution and stability of other-regarding preferences using a subset of the data collected from 2016 through 2020.

Experiment - 1 (July 2016): The first wave of the study was conducted in July - August, 2016 prior to students arriving on campus. Subjects were told that the study would take about 25 minutes and that they would be compensated USD $5 for completing a short survey and compensated for two out of six, randomly chosen, incentivized decision tasks. A total of 661 subjects were

contacted via email and 553 completed this wave of the study. On average subjects earned $26.79 for their participation. Excluding extreme outliers, it took subjects an average of 20 minutes to complete this study. In this wave, we used a survey measure and an incentivized measure to elicit our students' other-regarding preferences. The survey measure is based on the German Socio-Economic Panel (SOEP) study in which subjects were asked to respond on a scale of 0-10 to the following question: "Do you generally donate a lot of time and money to help others or do you focus primarily on taking care of yourself and family?" A higher number on this scale implies lower altruism. Subjects also participated in a standard dictator game in this wave. The instructions (available in Appendix C) asked the subjects to allocate a fixed amount of money ($20) between themselves and another recipient, also an entering freshman at Rice University. It was explained that if the task was randomly selected, the role of decision maker or recipient was determined randomly and their identity would not be revealed. The participants then made their choice between 11 possible alternatives ($0 for themselves and $20 for the counterpart, $2 for themselves and $18 for the counterpart and so on).

Experiment - 2 (March 2018): By this wave there was some attrition from the panel. A total of 420 of 549 subjects participated in this wave of the study.[1] The study, also conducted online, indicated it would take approximately 15 minutes to complete, and included an incentivized decision task and a short demographic survey. Excluding outliers, subjects completed the study in slightly over 14 minutes and earned, on average, USD $29.21. The incentivized portion of the study was a modified gift exchange game to measure altruistic preferences (Fehr et al., 1998). Each participant in this task was paired with a "firm." All participants were randomly assigned into one of two treatments - Firm Blue (a "firm" that was another student) or Firm Green (a "firm" in which profits went to the Houston Food Bank which had been providing relief in the aftermath of Hurricane Harvey). Subjects knew if they were paired with another student or the Houston Food Bank. As with a standard gift exchange game, subjects choose the level of effort they wished to exert in response to different payment offers from the "firm." Subjects knew that effort was costly

[1]Two subjects were removed from the study because they started working in the Behavioral Research lab. Two other subjects requested that they be excluded from the study.

and that their effort choice determined their own earnings as well as the firm's earnings. We used a strategy method to ask subjects to choose their level of effort for 10 different levels of fixed payments (see Appendix C for the screen shot of the instructions).

Experiment - 3 (February 2020): A total of 385 panel members participated in this wave of the study. Subject were told there were two parts to the study. In Part 1 there were 7 tasks, 6 of which were incentivized. These tasks were in a fixed order. In Part 2 subjects were asked to identify 10 of their friends and later participated in an experiment designed to test the strength of the friendship network. Subjects were told that the on-line study would take approximately 15 minutes. Excluding outliers, subjects spent slightly over 11 minutes in the study. On average, subjects earned $33.29 for both parts of the study.

We refer to two of the seven tasks from Part 1 in this chapter. The first task is a modified dictator game where we asked participants to make donations for bush fire relief in Australia.[2] Subjects were instructed to choose between three different organizations working for bush fire relief - Australian Red Cross, New South Wales Rural Fire Service and the Royal Society for the Prevention of Cruelty to Animals (RSPCA), New South Wales - and then allocate $20 (their endowment for this task) between themselves and the charity of their choice. The detailed instructions are available in Appendix C.

Experiment - 4 (March 2020): This wave of the study was designed to document any change in students' preferences using the same instruments as in Experiment 1 (2016). A total of 406 panelists were in this study. Study subjects were told that the study would take approximately 25 minutes. Excluding outliers, subjects spent an average of 23 minutes with this on-line study. The study took place between March 17 and April 11, 2020. Subjects had just been sent off campus for remote learning due to COVID-19.

As in Experiment - I, this wave involved a SOEP style survey question about altruism and a dictator game between the subject and a randomly chosen Rice student also participating in

[2]At the time we were carrying out Part 1 of the study, wild fires were raging through Australia. More than 20% of Australia's forests were burnt in bushfires. See https://www.theguardian.com/australia-news/2020/feb/25/unprecedented-globally-more-than-20-of-australias-forests-burnt-in-bushfires

the study. We had the participants re-do the SOEP style survey question on altruism - "Do you generally donate a lot of time and money to help others or do you focus primarily on taking care of yourself and family?" on a scale of 0-10 and play the standard dictator game allocation of $20 between themselves and another fellow study participant from Rice University.

Experiment - 5 (April 2020): This wave of the study focused extensively on how subjects were coping with the COVID-19 pandemic. A total of 397 panelists completed this study.[3] Subjects were told the study would take approximately 25 minutes and that there were three aspects of compensation. First, everyone was compensated $10 for completing a survey embedded in the study. Second, subjects would face five incentivized decision tasks from which one would be randomly selected for payment. Lastly, 5 participants from the study would be chosen randomly and paid an additional $100. Excluding outliers, panelists spent just over 22 minutes in the experiment and earned an average of USD $17.06. This excludes the $2,457.84 given to charity.

At the end of the study, and before the subjects knew their earnings, they were given an opportunity to donate a part of or all their earnings for COVID relief to a charitable organization of their choice - CDC Foundation or Direct Relief. Both organizations were salient for providing protective personal equipment (PPE) at a time when there were extreme shortages in the United States. Subjects chose between donating $0, $1, $5, $10 or their total earnings. Note that the subjects did not know their earnings when making their donation choice.

4.3 Results

A quick summary of our results is that other-regarding preferences weaken through the college-term. We observe this weakening in both the survey and incentivized measures of other-regarding preference. We also note that while donation behavior of our participants is generally correlated across different contexts , it correlates more strongly with the measure of other-regarding behavior elicited at the end of the college-term than the beginning. We discuss these results below.

[3]These respondents were part of a larger study that included 1,705 subjects who completed all of the tasks. Potential participants were drawn from Rice, Prairie View A&M and Texas A&M students who had previously participated in studies carried out by the senior authors.

Result 1: College students become less altruistic through the college-term.

Figures 4.1 and 4.2 present the distribution of the SOEP style survey measure of altruism and dictator transfers at the beginning (2016) and end (2020) of college-term, respectively. In the survey measure where students self-assess their degree of altruism on a scale of 0 to 10, a higher number implies higher degree of altruism. Note that, the scores have been reversed in the analysis. A lower score in the analysis means less altruistic. We observe (Figure 4.1) that a higher proportion of our sample lie on the left of the scale in 2020 than in 2016. In other words, more students report a lower degree of altruism at the end of the college-term than at the beginning. The distribution of self-reported degree of altruism from the survey data aligns with the distribution of dictator transfers (Fig 4.2) in 2016 and 2020. A higher proportion of our sample transfers less than $10 out of a total $20 in 2020 than in 2016. In addition, only about 40% of all students go for an equal split of $20 at the end of the college-term in comparison to over 60% who transferred $10 to their counterparts in 2016 at the beginning of college years.

Table 4.1: Summary Statistics of Other-Regarding Preference Measures in 2016 and 2020

Variable	N	Mean (Standard Deviation)	Min	Max
Survey Measure (2016)	412	4.62 (2.10)	0	10
Survey Measure (2020)	412	4.17 (2.20)	0	10
Dictator Transfer (2016)	404	8.53 (3.64)	0	20
Dictator Transfer (2020)	404	6.22 (4.34)	0	20

Table 4.1 presents summary statistics from the survey and incentivized measures of altruism. For the panel, the data presented in the table are calculated for students who participated in both 2016 and 2020 waves of the study. A total of 412 students completed the survey measure in both waves. The incentivized measure was completed in both waves by 404 students. Both the survey and incentivized measures indicate a higher degree of altruism prior to arriving on college campus than at the end of the college-term. This observation is corroborated when we use Wilcoxon signed

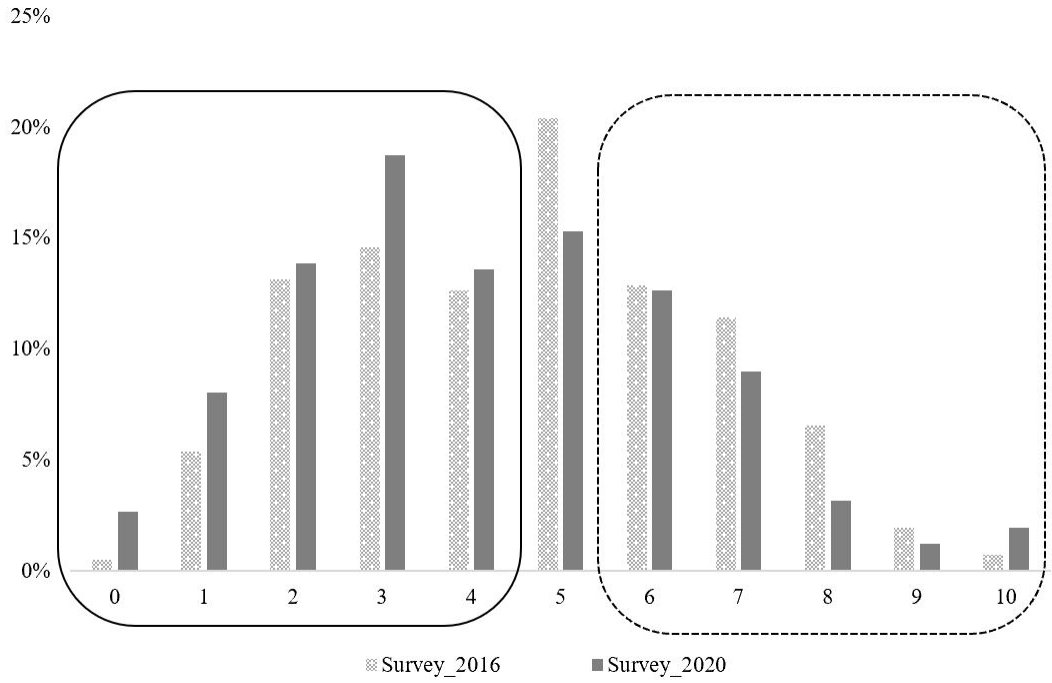


Figure 4.1: Distribution of Self-Reported Degree of Altruism in 2016 and 2020 (N = 412).

rank test ($z = 4.01$, $p < 0.01$) to test for difference between the degree of altruism measured in 2016 and 2020. It is possible, however, that the observed decline in altruistic preference of our sample is due to factors other than their experiences through the college-term. For instance, it may be that there is something strange about the entering class of 2020 in that their preferences are erratic. Second, it could also be that it is simply the changing times that is accounting for this change in altruistic preferences. Lastly, it is possible that our panel - the class of 2020 - that has participated in several economic experiments through the four years of college has with time and experience become more self-regarding. We look for evidence for each of these explanations.

First, we evaluate if the class of 2020 was indeed different from other cohorts. We test this by comparing the dictator transfers of class of 2020 at the beginning of college-term with that of the entering class of 2021. The class of 2021, like the class of 2020, completed a set of preference elicitation task including a dictator game in July 2017 prior to arriving on campus. We find no evidence that the class of 2020 is any more or less generous than the entering class of 2021 at the

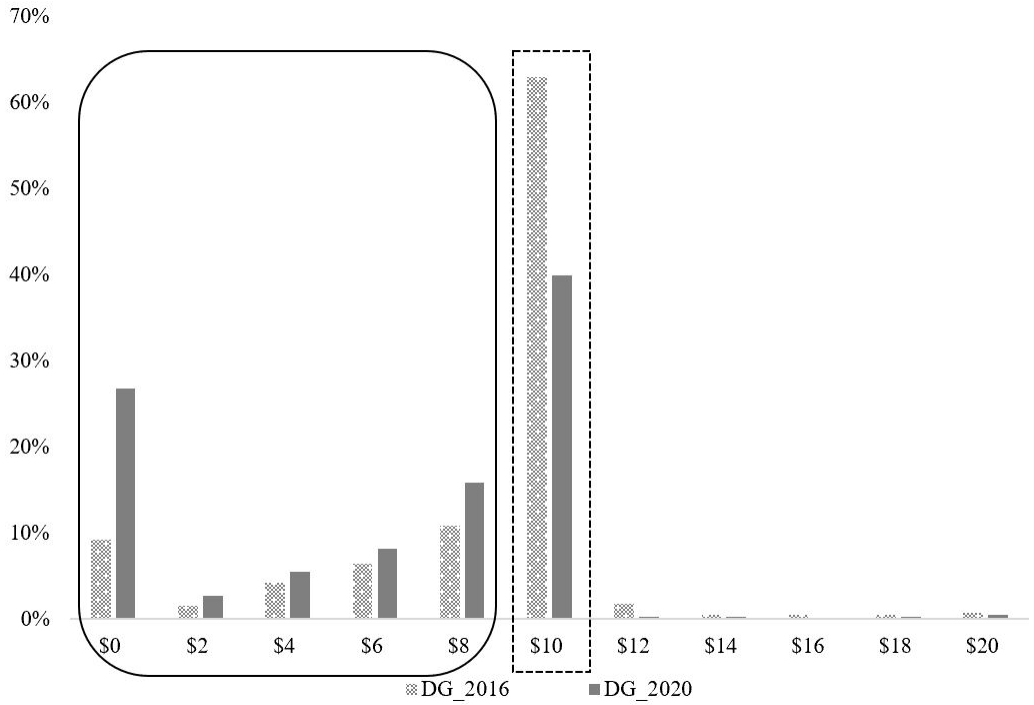


Figure 4.2: Distribution of Dictator Transfers in 2016 and 2020 (N = 404).

beginning of their college-term (z = - 0.048, p = 0.9615).

Second, we compare the dictator transfers of several different entering classes at the beginning of their college-terms to understand the role of changing times in changing altruistic preferences. In 2017, 2018 and 2019 we asked a smaller sample of matriculating students to participate in the same initial task as the entering class of 2020. When comparing dictator transfers across these groups we find no evidence that the cohorts entering in years after 2016 are increasingly more self-regarding. In Table 4.2, we present summary statistics of dictator transfers of our panel (class of 2020) along with the entering class of 2021, 2022 and 2023 who completed the task in 2016, 2017, 2018 and 2019, respectively.

Lastly, in order to investigate the role of repeated participation in economic experiments on subjects' altruistic preferences, we compare both the survey response and dictator transfer of our panel from the 2016 and 2020 waves to the survey response and dictator transfer of our reserve sample. A proportion of sample from the class of 2020 was set aside at the beginning of the

Table 4.2: Summary Statistics of Dictator Transfers

Variable	N	Mean (Standard Deviation)	Min	Max
Dictator Transfer (Class of 2020)	553	8.47 (3.91)	0	20
Dictator Transfer (Class of 2021)	121	8.40 (4.52)	0	20
Dictator Transfer (Class of 2022)	154	7.81 (4.28)	0	20
Dictator Transfer (Class of 2023)	146	8.79 (3.34)	0	20

study to help with such a comparison. In March 2020, we recruited from this excluded sample (now seniors) and put them through the same set of tasks as noted in the previous section for experiment 4. As shown in Table 4.3, the mean self-reported degree of altruism for the untouched seniors is lower than the treated sample's measure at the beginning of the college-term indicating a weakening of other-regarding preferences at the end of college-term. Moreover, the mean self-reported degree of altruism of the excluded seniors is nearly the same as our panel's mean measure at the end of the college-term implying a negligible effect of past experiment participation on our panel's self-reported measure.

Table 4.3: Summary Statistics of Survey Measure of Altruism: Class of 2020

Variable	N	Mean (Standard Deviation)	Min	Max
Altruism (Panel; July, 2016)	412	4.62 (2.10)	0	10
Altruism (Panel; Feb, 2020)	412	4.17 (2.20)	0	10
Altruism (Exc. Seniors; Feb, 2020)	264	4.15 (2.34)	0	10

We also compare the dictator transfer of our panel to that of the excluded seniors. If there is indeed a weakening of other-regarding preferences through the college-term unrelated to repeat exposure of our panel to economic experiments, we should observe a higher proportion of the excluded seniors choosing favorable transfers for themselves than in our panel at the beginning of the college-term. In Figure 4.3, we present a comparison of dictator transfers between our panel (both 2016 and 2020 waves) and the excluded seniors. Interestingly, the sample of excluded seniors lies

in the middle of the other-regarding scale with the panel being most generous at the beginning of the college-term and least generous at the end of the college-term. We interpret this result as evidence in favor of a "participation-effect." It is possible that with regular participation, earnings from experiments become more salient mitigating the "house-money" effect of experimental endowments. Several studies suggest that participants make more generous dictator transfers when endowments are more abstract (presented on computer screens) or windfall than when they are given in cash or is earned prior to playing the dictator game (Cherry et al. (2002); Reinstein and Riener (2012)). With regular participation in economic experiments, earnings are likely to become more tangible, which partially explains the less generous dictator transfers by our panel at the end of their college-term in 2020. But, even after accounting for any house-money effect, transfers of the excluded seniors at the end of college-term is lower than those made by our panel in 2016 ($z = 3.54$, $p < 0.01$).

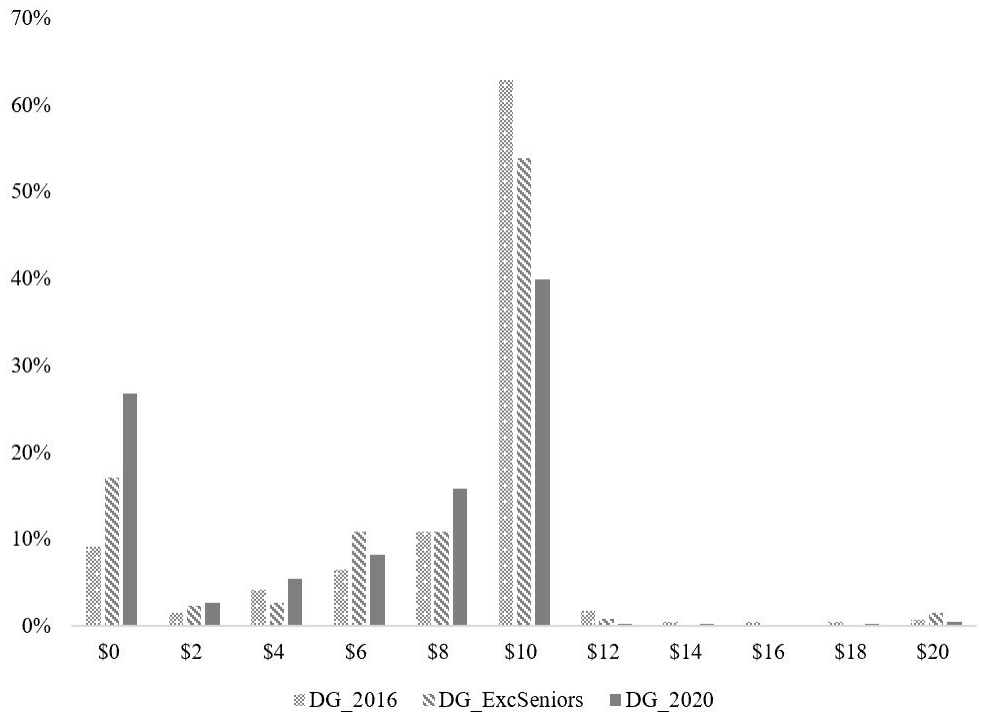


Figure 4.3: Distribution of Dictator Transfers of the Panel (2016 and 2020) and the Reserve Sample (2020)

Result 2: Donation behavior over time and across domains is correlated through the college-term. Additionally, the correlation between the measure of other-regarding preferences elicited at the *end* of the college-term and donation choices is stronger.

Students from our panel from the undergraduate class of 2020 at Rice University had the opportunity to make donations to three different charitable causes between 2018 and 2020. As noted earlier, in addition to the charitable cause, the decision making environment also varied between the three donation elicitation tasks. In experiment 2 conducted in 2018, students who were paired with "Firm Green" in a modified gift exchange setting had the opportunity to donate for Harvey relief. In experiment 3, students could donate toward bush fire relief in Australia in a dictator game setting. Lastly, in experiment 5, we asked if our students would like to donate a part or all of their earnings from a survey for COVID relief. In total, 149 students completed these three donation tasks as well as the other-regarding preference elicitation tasks (dictator game) in 2016 and 2020.

Donations for Harvey relief (March, 2018): In a modified gift exchange setting (Fehr et al., 1998), students paired with a virtual firm "Firm Green" were asked to choose the level of effort they would like to exert for the firm in return for payment. Their effort choice determined their own and "Firm Green's" earnings. The firms' earnings were forwarded to a charitable organization working for Harvey relief. The payment was fixed in that an effort choice of 1 unit and an effort choice of 10 units yielded the same payment for the student. For the firm, however, higher effort meant higher earnings. Students chose the amount of effort they wanted to exert for ten different levels of fixed payment. In absence of any variable payment, the private optimal effort level for the students in each of the ten decisions was to exert only 1 unit of effort. One of the ten decisions was randomly selected to determine the outcome for both the student and the firm. To arrive at a single measure of donation behavior, we averaged the deviation of effort choice from the private optimum (1 unit) across the ten decisions. In Figure 4.4, we present the distribution of average deviation from the private optimum. Other than the 15% of 149 students who chose 1 unit of effort, the deviation from private optimal or "donations" was quite dispersed. The mean deviation was 3.9 units and the standard deviation was 2.1 units.

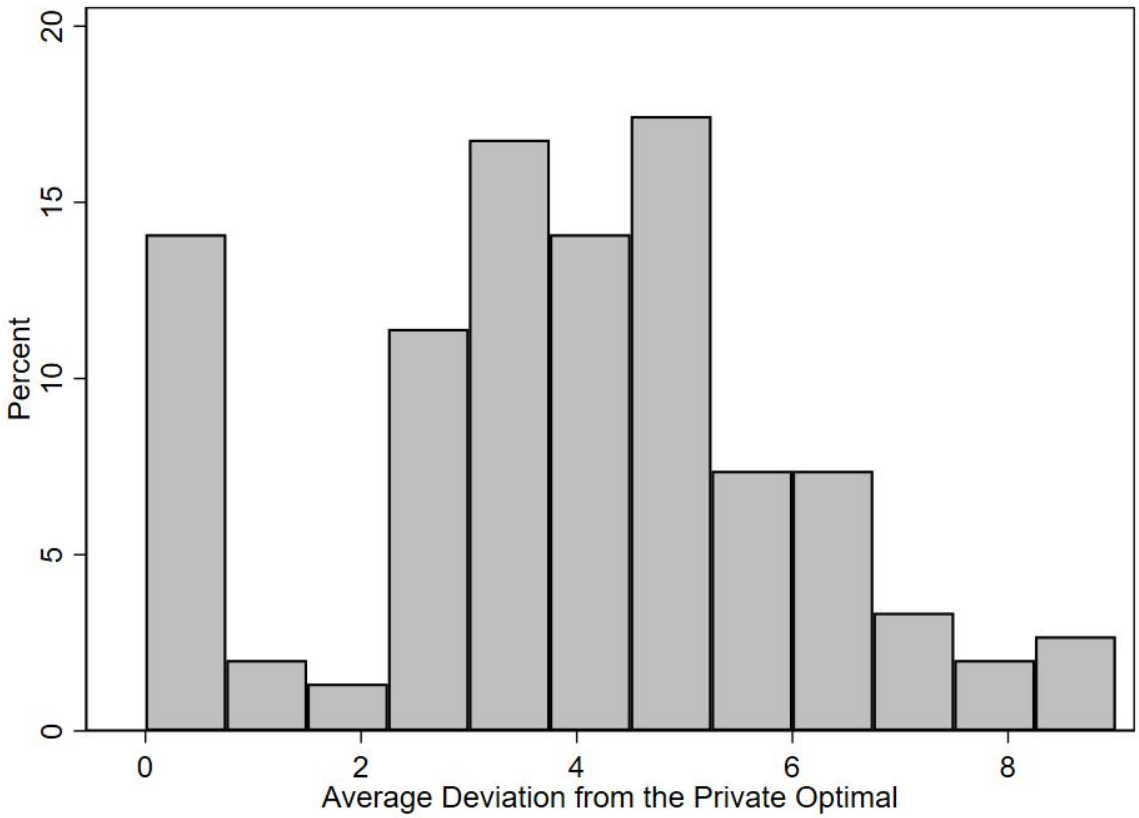


Figure 4.4: Distribution of Giving Behavior for Harvey Relief (2020)

Donations for Australian bush fire relief (February, 2020): In a dictator game setting, our student participants had the opportunity to donate for Australian bush fire relief. Figure 4.5 shows the distribution of dictator transfers or giving behavior for bush fire relief. The mean donation in this task was $13.7 with a standard deviation of $2.1.

Donations for COVID relief (April, 2020): We conducted a study based on COVID-19 in April of 2020. At the end of this study, participants were asked if they would like to give away any part of their earnings from the study. Around 25% of the participants decided not to donate any amount from their earnings whereas close to 11% gave away all their earnings. Figure 4.6 shows the distribution of donation choices in this task.

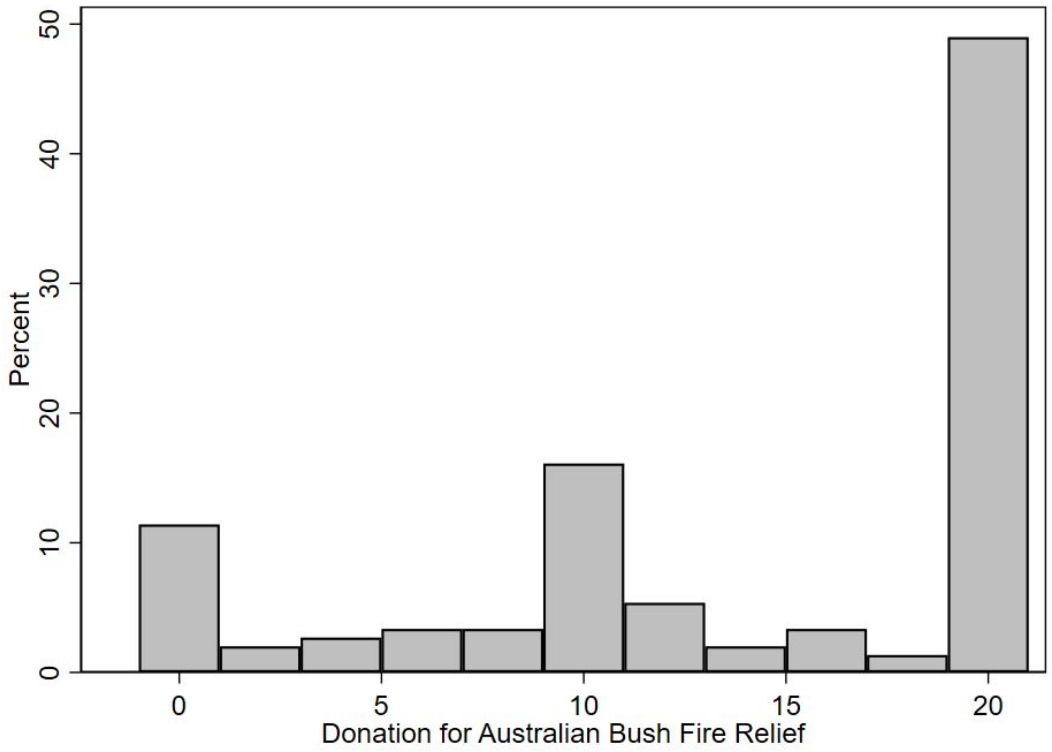


Figure 4.5: Distribution of Donations for Australian Bush Fire Relief (2020)

Correlation between Giving Behavior In table 4.4, we present the Pearson correlation coefficients between the giving behavior of our study participants under all three contexts. We also show how well the behavior correlates with our incentivized measure of other-regarding preferences (dictator game) taken both at the beginning (2016) and end of college-term (2020). Columns 1 and 2 of Table 4.4 show the correlation between dictator transfers in 2016 and 2020, respectively, and donation choices for Harvey relief, bush fire relief and COVID relief.

We find a positive and statistically significant correlation between our students' giving behavior for all three causes. Moreover, the other-regarding preference measure from 2020 has stronger correlations with donation choices than the measure from 2016. The difference in correlations increases as we move further toward the end of the college-term. Dictator transfers from 2020 correlates only slightly better with Harvey giving behavior than dictator transfers from 2016 (0.23 vs. 0.20). In the case of bush fire relief, the difference in correlation is higher (0.35 in 2020 vs. 0.24

in 2016). The correlation between the last donation choice made by the participants for COVID relief and dictator transfers in 2020 is 0.36, as compared to 0.19 with dictator transfers made in 2016.

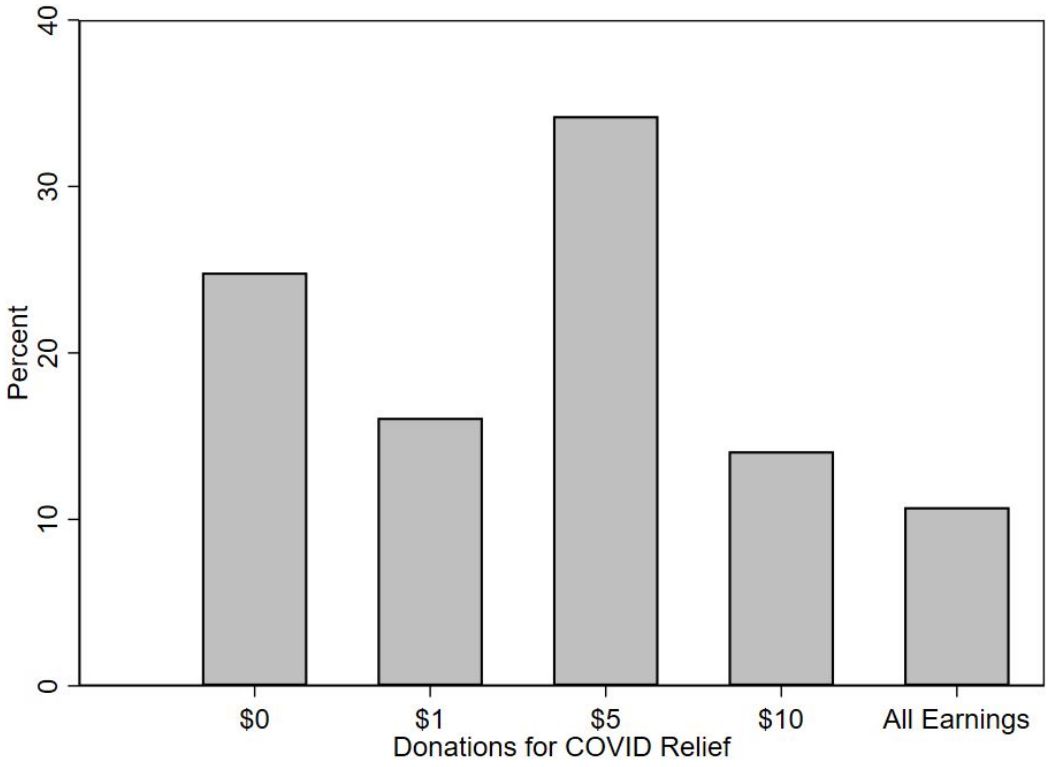


Figure 4.6: Distribution of Donations for COVID Relief

Table 4.4: Pearson Correlation Coefficients (N=149)

	Dictator Giving (July, 2016)	Dictator Giving (March, 2020)	Harvey Giving (March, 2018)	Fire Relief Giving (Feb, 2020)	COVID Relief Giving (April, 2020)
Dictator Giving (July, 2016)	1.00	0.17**	0.20**	0.24***	0.19**
Dictator Giving (March, 2020)	0.17**	1.00	0.23***	0.35***	0.36***
Harvey Giving (March, 2018)	0.20**	0.23***	1.00	0.19**	0.20**
Fire Relief Giving (Feb, 2020)	0.24***	0.35***	0.19**	1.00	0.46***
COVID Relief Giving (April, 2020)	0.19**	0.36***	0.20**	0.46***	1.00

Notes: **p < 0.05; ***p < 0.10

4.4 Conclusions

We investigate changes in other-regarding preferences of students through the college-term by exploiting experimental data collected between 2016-2020 using the same student sample - undergraduate class of 2020 at Rice University. Students in our panel play the traditional dictator game twice - first at the beginning of the college term and then again at the end of the college term. Temporal stability of dictator transfers has previously been tested by Brosig et al. (2007). Brosig and co-authors conducted what we call a short-term stability test where the maximum difference between the first and last conducted dictator game is one week. The authors found a considerable decrease in amount shared by the participants between the first and last game. In fact, average allocation in the last dictator game is sufficiently close to that predicted by the standard economic theory. We argue that broadly, there are three ways one can gain from replicating experiments on the same subject pool. First, repetitions allow us to mitigate experimenter's demand effect. Second, repeated measures allow us to investigate changes in participants' decisions that may occur due to knowledge about decisions made by other participants. Lastly, we can use repeat measures to explore any change in preferences over time as individuals age or due to exposure to certain real-world shocks. Repeat exposures to dictator game within a week like in Brosig et al. (2007) is insufficient to test if preferences indeed alter as time passes. Nevertheless, short-term repeat measures can help us in exploring the influence of other participants' decisions on own-decisions and may also be somewhat successful in alleviating experimenter's demand effect. However, one can also argue that repeat measures in a short time frame has the potential to aggravate experimenter's demand effect by confusing the participants and leading them to behave in a way that is driven more by participants' perceptions about the experiment than their own preferences. Our objective of repeating dictator game in this study was to understand if and how other-regarding preferences of college students change as they get more independent and make everyday decisions under tight budget constraints. We measure the preference first in July 2016 at the beginning of the college-term for the class of 2020, and then at the end of college-term in March, 2020. We find that students become less other-regarding or more self-regarding by the end of their college-terms.

We also document our student participants' donation behavior for three different disasters: Harvey relief in March, 2018, Australian bush fire relief in February, 2020 and COVID relief in April, 2020. We elicit donations in each of the three cases under varying decision-making environments. Our results suggest that donation behavior is correlated over time (2018-2020) and over contexts. The weakening of other-regarding preferences, however, reflects in the donation behavior of students, in that, dictator outcomes at the end of college-term in 2020 correlates more strongly with the donation choices.

Our results should find interest particularly among experimentalists. College students frequently participate in economic experiments and their preferences throughout their college-term are assumed to be stable. In this paper, we have shown that other-regarding preferences weaken and freshmen may behave differently when they are seniors. More research is needed to understand the mechanism behind the observed changes, and if they prevail in the long-term.

5. SUMMARY AND CONCLUSIONS

In this dissertation, I explore three key aspects of donor preferences. The first essay (section 2) examines the motivations for giving under cause-marketing. The second essay (section 3) highlights the importance of social norms in explaining donation behavior. The third and final essay (section 4) explores the changes in other-regarding preferences of young adults through the college years.

More specifically, section 2 focuses on evaluating the impact of cause-marketing, a rather popular mechanism of increasing sales and brand-value, on total donations raised for a charitable cause. Using a novel theoretical model of giving that accommodates donations from cause-marketing and data from a lab experiment that mirrors the theoretical model of giving, I test for underlying giving motivations in the cause-marketing framework. The findings suggest that donations from cause-marketing result in a dollar-for-dollar decrease in direct contributions, ultimately leading to an unchanged level of total donations for a cause. This implies that even though cause-marketing could lead to increase in product sales and brand loyalty, it may not result in a higher total donations.

Section 3 highlights the importance of social norms in explaining donation choices to differently deserving recipients. Prior studies find that donations to a recipient considered more deserving of aid is substantially higher. Instead of using multiple social preference models to explain giving to different recipients, I use monetary payoffs and variation in social norms to make sense of the starkly different giving choices. Using a utility framework, I show that differences in giving behavior are closely related to differences in social norms. In addition, the results suggest adhering to social norms is significantly more valuable to individuals in a charitable giving context.

Finally, section 4 explores changes in other-regarding preferences of students through their college-terms. Undergraduate college students are frequently recruited as subjects in economic experiments, yet little is known if there are differences in their preferences from when they were freshmen to when they are seniors. Using data from a large-scale experiment spanning over four

years (2016-2020), I show that undergraduate students become less generous through the college-term.

It is also important to note some of the limitations in the methodology and findings of these studies. First, the cause-marketing study relies on data from a laboratory experiment to examine responses to donations from cause-marketing. While the lab environment created in the study presents the decision-maker with theoretically the same trade-offs, there remain aspects of a real-world consumer good purchase experience that cannot be simulated in the lab. For example, the present work does not allow for heterogeneity in "consumer goods". Differences in consumer good characteristics can weigh on purchase decisions and ultimately on donation choices. Second, the work on social norm and donation behavior (section 3) is not able to address if social norms impact donation behavior independent of underlying giving motivations. Finally, while section 4 establishes that other-regarding preferences of undergraduate college students weaken through the college-term, more research is needed to investigate the probable mechanisms that can lead to such a change and whether the observed change is sustained beyond the college years. In conclusion, this dissertation while filling important theoretical and experimental gaps in the literature, opens up some promising avenues for future research.

REFERENCES

Agerström, Jens, Rickard Carlsson, Linda Nicklasson, and Linda Guntell, "Using descriptive social norms to increase charitable giving: The power of local norms," *Journal of Economic Psychology*, 2016, *52*, 147–153.

Andreoni, James, "Giving with impure altruism: Applications to charity and Ricardian equivalence," *Journal of political Economy*, 1989, *97* (6), 1447–1458.

_ , "An experimental test of the public-goods crowding-out hypothesis," *The American Economic Review*, 1993, pp. 1317–1327.

_ **and Lise Vesterlund**, "Which is the fair sex? Gender differences in altruism," *The Quarterly Journal of Economics*, 2001, *116* (1), 293–312.

Ballings, Michel, Heath McCullough, and Neeraj Bharadwaj, "Cause marketing and customer profitability," *Journal of the Academy of Marketing Science*, 2018, *46* (2), 234–251.

Bardsley, Nicholas, "Dictator game giving: altruism or artefact?," *Experimental Economics*, 2008, *11* (2), 122–133.

Barone, Michael J, Anthony D Miyazaki, and Kimberly A Taylor, "The influence of cause-related marketing on consumer choice: does one good turn deserve another?," *Journal of the academy of marketing Science*, 2000, *28* (2), 248–262.

Becker, Gary S, "A theory of social interactions," *Journal of political economy*, 1974, *82* (6), 1063–1093.

Benenson, Joyce F, Joanna Pascoe, and Nicola Radmore, "Children's altruistic behavior in the dictator game," *Evolution and human Behavior*, 2007, *28* (3), 168–175.

Benz, Matthias and Stephan Meier, "Do people behave in experiments as in the field? - evidence from donations," *Experimental economics*, 2008, *11* (3), 268–281.

Bergstrom, Theodore, Lawrence Blume, and Hal Varian, "On the private provision of public goods," *Journal of public economics*, 1986, *29* (1), 25–49.

Bicchieri, Cristina, Ryan Muldoon, and Alessandro Sontuoso, "Social Norms," in Edward N.

Zalta, ed., *The Stanford Encyclopedia of Philosophy*, winter 2018 ed., Metaphysics Research Lab, Stanford University, 2018.

Blare, Trent and Pilar Useche, "Competing objectives of smallholder producers in developing countries: examining cacao production in Northern Ecuador," *Environmental economics*, 2013, (4, Iss. 1), 72–80.

Bloom, Paul N, Steve Hoeffler, Kevin Lane Keller, and Carlos E Basurto Meza, "How social-cause marketing affects consumer perceptions," *MIT Sloan management review*, 2006, *47* (2), 49.

Bolton, Gary E and Elena Katok, "An experimental test of the crowding out hypothesis: The nature of beneficent behavior," *Journal of Economic Behavior & Organization*, 1998, *37* (3), 315–331.

Boyd, Robert and Peter J Richerson, *The origin and evolution of cultures*, Oxford University Press, 2005.

Brañas-Garza, Pablo, Valerio Capraro, and Ericka Rascon-Ramirez, "Gender differences in altruism on Mechanical Turk: Expectations and actual behaviour," *Economics Letters*, 2018, *170*, 19–23.

Brosig, Jeannette, Thomas Riechmann, and Joachim Weimann, "Selfish in the end?: An investigation of consistency and stability of individual behavior," 2007.

Cappelen, Alexander W, Ulrik H Nielsen, Erik Ø Sørensen, Bertil Tungodden, and Jean-Robert Tyran, "Give and take in dictator games," *Economics Letters*, 2013, *118* (2), 280–283.

Carlsson, Fredrik, Olof Johansson-Stenman, and Pham Khanh Nam, "Social preferences are stable over long periods of time," *Journal of Public Economics*, 2014, *117*, 104–114.

Chen, Daniel L, Martin Schonger, and Chris Wickens, "oTree - An open-source platform for laboratory, online, and field experiments," *Journal of Behavioral and Experimental Finance*, 2016, *9*, 88–97.

Cherry, Todd L, Peter Frykblom, and Jason F Shogren, "Hardnose the dictator," *American Economic Review*, 2002, *92* (4), 1218–1221.

Cheung, C-K and C-M Chan, "Social-cognitive factors of donating money to charity, with special attention to an international relief organization," *Evaluation and program planning*, 2000, *23* (2), 241–253.

Chuang, Yating and Laura Schechter, "Stability of experimental and survey measures of risk, time, and social preferences: A review and some new results," *Journal of development economics*, 2015, *117*, 151–170.

Cooper, D, "Other regarding preferences: A selective survey of experimental results. Kagel JH, Roth AE, eds. Handbook of Experimental Economics, Vol. 2," 2014.

Cooper, David J and John H Kagel, "Other-regarding preferences," *The handbook of experimental economics*, 2016, *2*, 217.

Croson, Rachel, Femida Handy, and Jen Shang, "Keeping up with the Joneses: The relationship of perceived descriptive social norms, social information, and charitable giving," *Nonprofit Management and Leadership*, 2009, *19* (4), 467–489.

Crumpler, Heidi and Philip J Grossman, "An experimental test of warm glow giving," *Journal of public Economics*, 2008, *92* (5-6), 1011–1021.

Davis, Douglas D and Charles A Holt, *Experimental economics*, Princeton university press, 1993.

_ , Edward L Millner, and Robert J Reilly, "Subsidy schemes and charitable contributions: A closer look," *Experimental economics*, 2005, *8* (2), 85–106.

Dubé, Jean-Pierre, Xueming Luo, and Zheng Fang, "Self-signaling and prosocial behavior: A cause marketing experiment," *Marketing Science*, 2017, *36* (2), 161–186.

Eckel, Catherine C and Philip J Grossman, "Altruism in anonymous dictator games," *Games and economic behavior*, 1996, *16* (2), 181–191.

_ and _ , "Are women less selfish than men?: Evidence from dictator experiments," *The economic journal*, 1998, *108* (448), 726–735.

_ , _ , and Rachel M Johnston, "An experimental test of the crowding out hypothesis," *Journal of Public Economics*, 2005, *89* (8), 1543–1560.

Engel, Christoph, "Dictator games: A meta study," *Experimental economics*, 2011, *14* (4), 583–

610.

Fehr, Ernst and Klaus M Schmidt, "The economics of fairness, reciprocity and altruism–experimental evidence and new theories," *Handbook of the economics of giving, altruism and reciprocity*, 2006, *1*, 615–691.

_ , Daniela Glätzle-Rützler, and Matthias Sutter, "The development of egalitarianism, altruism, spite and parochialism in childhood and adolescence," *European Economic Review*, 2013, *64*, 369–383.

_ , Georg Kirchsteiger, and Arno Riedl, "Gift exchange and reciprocity in competitive experimental markets," *European Economic Review*, 1998, *42* (1), 1–34.

_ , Helen Bernhard, and Bettina Rockenbach, "Egalitarianism in young children," *Nature*, 2008, *454* (7208), 1079–1083.

Forsythe, Robert, Joel L Horowitz, Nathan E Savin, and Martin Sefton, "Fairness in simple bargaining experiments," *Games and Economic behavior*, 1994, *6* (3), 347–369.

Friedman, Milton, "Price theory, a provisional text.," Technical Report 1962.

Gangadharan, Lata, Philip J Grossman, and Kristy Jones, *Donor types and paternalism*, Monash Univ., Department of Economics, 2014.

Gronberg, Timothy J, R Andrew Luccasen III, Theodore L Turocy, and John B Van Huyck, "Are tax-financed contributions to a public good completely crowded-out? Experimental evidence," *Journal of Public Economics*, 2012, *96* (7-8), 596–603.

Hamiliton, WD, "The genetical evolution of social behavior, I & II," *J. Theor. Biol*, 1964, *7*, 1–52.

Kerr, Anthony H and Neel Das, "Thinking about fit and donation format in cause marketing: The effects of need for cognition," *Journal of Marketing Theory and Practice*, 2013, *21* (1), 103–112.

Korenok, Oleg, Edward L Millner, and Laura Razzolini, "Are dictators averse to inequality?," *Journal of Economic Behavior & Organization*, 2012, *82* (2-3), 543–547.

Koschate-Fischer, Nicole, Isabel V Stefan, and Wayne D Hoyer, "Willingness to pay for cause-related marketing: The impact of donation amount and moderating effects," *Journal of market-*

ing research, 2012, *49* (6), 910–927.

Krishna, Aradhna, "Can supporting a cause decrease donations and happiness? The cause marketing paradox," *Journal of Consumer Psychology*, 2011, *21* (3), 338–345.

Krupka, Erin L and Roberto A Weber, "Identifying social norms using coordination games: Why does dictator game sharing vary?," *Journal of the European Economic Association*, 2013, *11* (3), 495–524.

List, John A, "Young, selfish and male: Field evidence of social preferences," *The Economic Journal*, 2004, *114* (492), 121–149.

_ , "On the interpretation of giving in dictator games," *Journal of Political economy*, 2007, *115* (3), 482–493.

Martin, Richard and John Randal, "How is donation behaviour affected by the donations of others?," *Journal of Economic Behavior & Organization*, 2008, *67* (1), 228–238.

McFadden, Daniel, "The measurement of urban travel demand," *Journal of public economics*, 1974, *3* (4), 303–328.

Oliveira, Angela CM De, Catherine Eckel, and Rachel TA Croson, "The stability of social preferences in a low-income neighborhood," *Southern Economic Journal*, 2012, *79* (1), 15–45.

Ottoni-Wilhelm, Mark, Lise Vesterlund, and Huan Xie, "Why do people give? Testing pure and impure altruism," *American Economic Review*, 2017, *107* (11), 3617–33.

Reinstein, David and Gerhard Riener, "Decomposing desert and tangibility effects in a charitable giving experiment," *Experimental Economics*, 2012, *15* (1), 229–240.

Samu, Sridhar and Walter Wymer, "The effect of fit and dominance in cause marketing communications," *Journal of Business Research*, 2009, *62* (4), 432–440.

Trivers, Robert L, "The evolution of reciprocal altruism," *The Quarterly review of biology*, 1971, *46* (1), 35–57.

_ , "Parent-offspring conflict," *Integrative and Comparative Biology*, 1974, *14* (1), 249–264.

Useche, Pilar and Trent Blare, "Traditional vs. modern production systems: Price and nonmarket considerations of cacao producers in Northern Ecuador," *Ecological Economics*, 2013, *93*, 1–10.

Visser, Michael S and Matthew R Roelofs, "Heterogeneous preferences for altruism: Gender and personality, social status, giving and taking," *Experimental Economics*, 2011, *14* (4), 490–506.

Warr, Peter G, "Pareto optimal redistribution and private charity," *Journal of Public Economics*, 1982, *19* (1), 131–138.

APPENDIX A

INSTRUCTIONS FOR EXPERIMENTS PERTAINING TO SECTION 2

Screen 1

Instructions

Thank you for participating in our study. This is an economic experiment where your decisions will determine the amount you earn, so please read the instructions carefully to make sure you understand the rules. **You will also complete a quiz to test your understanding and you must answer the quiz questions correctly to proceed further in the study.**

This study has two parts. In the first part, you will be asked to make nine decisions and in the second part you will be asked to fill out a survey. When you have completed both parts, **one of your nine decisions** will be randomly selected to determine your earnings. As a result, it is in your best interest to make your most preferred choice in every decision.

Your total earnings from the study will be $25 for showing up for the study plus the payment that results from the randomly selected decision. The entire study should take about an hour, and at the end you will be paid privately and in cash.

We ask that you do not speak to other participants or make any comments. Please raise your hand if you have questions and a proctor will come to your desk. We also ask that you do not discuss the procedures of the study with others outside of this room.

Next

Screen 2

Your Identity

Your identity is confidential. You will never be asked to reveal it to anyone during the course of the study. Your name will never be associated with your decisions or with your answers on the survey. Neither the assistants nor other participants will be able to link you to any of the decisions you make. In order to keep your decisions private, please do not reveal your choices to any other participant.

Next

Screen 3

Decision Tasks

In the decision tasks, you will have the opportunity to donate to a poor cocoa farmer from Ecuador, a developing country. Cocoa is a key ingredient in a number of specialty foods like chocolates, ice cream and flavored drinks. Some of the prized varieties of cocoa are organically grown (i.e. without using synthetic fertilizers) by poor small-scale family farmers. These farmers use traditional production techniques that help to preserve local biodiversity.

In recent years, however, participation of large-scale corporations in cocoa farming has increased. These corporations often use synthetic fertilizers and insecticides, and grow varieties of cocoa that have high yields, but poor flavor characteristics.

Next

Screen 4

Cocoa Farmer

Small-scale family farmers do not have a direct trade relationship with specialty food partners. These farmers, therefore, end up selling their product to local middlemen who do not distinguish between different varieties of cocoa. Due to lower yields of the *organic* varieties, the annual earnings of small-scale farmers from cocoa production is less than **50%** of the minimum wage in Ecuador. This unsustainable low price has prompted many small-scale farmers to abandon their lands and migrate to big cities in search of jobs where they do not fare well due to their limited skill set.

For this study, we have partnered with *Maquita Foundation* in Manabi, Ecuador, which works to improve the quality of life of vulnerable farmers in this region. You will have the opportunity to donate to one small-scale farmer associated with the *Maquita Foundation*. Your donation will help this farmer with purchasing inputs to improve the productivity of superior varieties of cocoa and increase his or her earnings.

Next

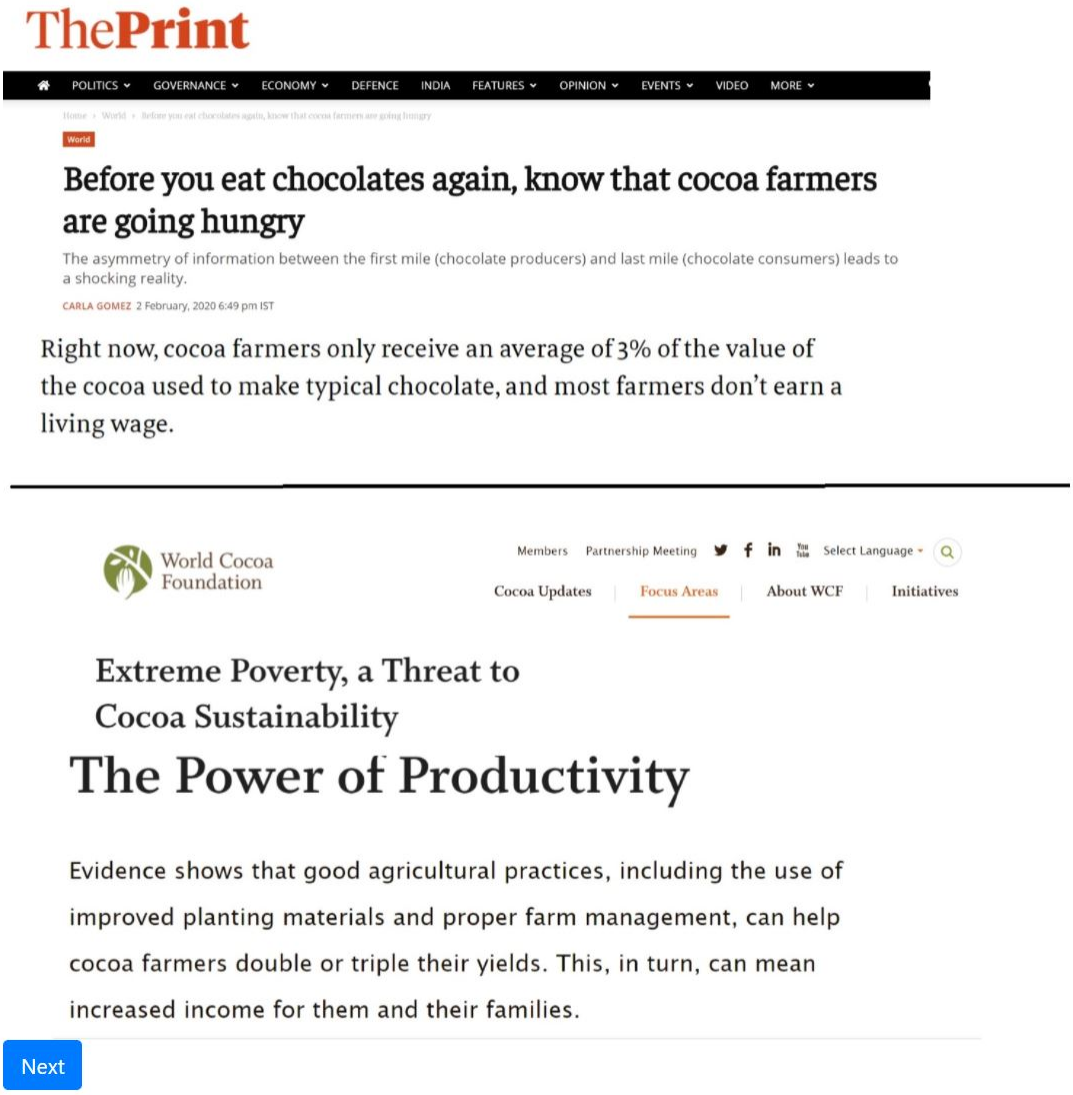
Screen 5

Farmers and the Foundation

In the next few screens you will see some news coverage on cocoa farmers and the work that Maquita Foundation does to help these small-scale farmers.

Next

Screen 6



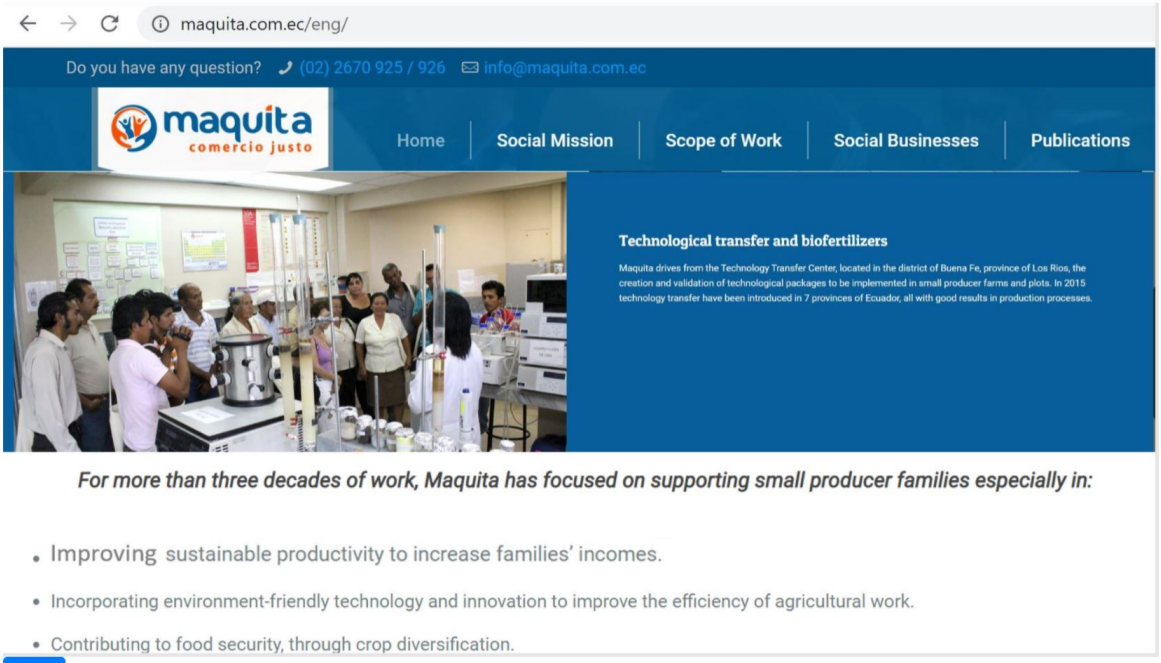
Next

Screen 7

Screen 8

Screen 9

Maquita Foundation



Next

Screen 10

Maquita Foundation at Work

Next

Screen 11

Donations to the Farmer

Each participant in this study is randomly and anonymously paired with one small-scale farmer associated with the *Maquita Foundation* in Ecuador. This means that each participant will donate to a different farmer.

For each of your decisions, you will be given experimental currency units **(ECUs)** which you will use to buy tokens for yourself at a given price and donating to the farmer paired with you.

Your earnings in dollars will be equivalent to the number of tokens you buy.
The farmer will receive a dollar for every ECU donated by you to him/her. For example, if you donate 4 ECUs, the farmer will receive $4 from you.

Example

- You have **10 ECUs** to allocate between buying tokens for yourself and donating to the farmer paired with you
- The price of a token is **2 ECUs**

If you choose to buy **3 tokens** for yourself, using **6 ECUs** and give **4 ECUs** (10 - 6) to the farmer, you will earn **$3** from this decision and the farmer paired with you will receive a donation of **$4 from you.** You can also choose a non-integer token allocation amount if you want, for example: 5.50 ECUs to buy 2.75 tokens.

Next

Screen 12

Donations to the Farmer

Other than yourself, the **Texas Extension Education Foundation (TEEF)** will donate to the farmer paired with you. TEEF can make their donation in two forms - Direct and Indirect.

1. **Direct Donation -** TEEF may donate a fixed amount (D) to the farmer paired with you. This amount of donation from TEEF will be known to you.

2. **Indirect Donation -** TEEF may make indirect donations to the farmer paired with you **at the rate i** for every unit of token purchased by you. **For example,** if **i is 20 cents** and you buy **10 tokens**, then TEEF will donate 0.20 x 10= **$2** to the farmer. If **i = 0**, then TEEF will make no indirect donations as a result of your token purchase.

The amount of direct donation and the rate of indirect donation from TEEF will vary across decision tasks.

Remember, each participant in this study is paired with a different farmer. If you choose not to allocate any funds to the farmer, the money received by the farmer you are paired with will be limited to direct (D) and indirect donations (i), if any, from TEEF. **Only you have the opportunity to give additional funds to the farmer you are paired with. None of the other participants in this study can donate money to this farmer.**

Next

Screen 13

Donation Receipts

All the donations to farmers at the Maquita Foundation will be sent at the conclusion of the study. We will randomly select one study participant at the end of the study to verify that the payments are actually sent to the Maquita Foundation. This participant will be compensated for his/her time.

You will be notified by email when the donations have been made. An acknowledgement receipt from the Foundation will be kept at the front desk of the lab if you wish to verify it.

Next

Screen 14

Sample Decision

In the next screen, you will see an example of the type of decisions you will make. This is just an example to demonstrate how your earnings and donation amounts are calculated. The example is not meant to guide your decision in any way. On the actual decision screen, you will be able to select the allocation that you prefer.

Next

Screen 15

Example

- You have **10 ECUs** to allocate between buying tokens for yourself and donating to the farmer paired with you
- The price of a token is **2 ECUs**
- The direct donation (D) from TEEF to the farmer is **$5**
- TEEF donates 10 cents for every token purchased by you, i.e. **i=$ 0.10**

You may choose to use all of the allocation (10 ECUs) to buy tokens. In that case, you will buy **5 tokens (=10/2).** If this decision is selected for payment, your earnings from the decision will be **$5**, plus the show-up fee of **$25**, a total of **$30**. Your donation to the farmer will be $0. The farmer will receive from TEEF, **$5** directly and **50 cents** (0.10 * 5 tokens) indirectly. In total, the farmer paired with you will receive a donation of **$5.50** ($5 + 50 cents).

Alternatively, you may choose to donate all of **10 ECUs** to the farmer and buy **zero tokens** for yourself. If this decision is selected for payment, your earnings from this decision will be **$0** (0/2), so you will receive the show-up fee of **$25**. Your donation to the farmer will be $10. In addition, the farmer will receive from TEEF, **$5** directly. There will be no indirect donations from TEEF because you bought zero tokens. In total, the farmer paired with you will receive a donation of **$15** ($10+$5).

You will now answer some quiz questions on the next screen to make sure you understand how everything is calculated.

Next

Screen 16

Quiz

- You have **20 ECUs** to allocate between buying tokens for yourself and donating to the farmer paired with you
- The price of a token is **2 ECUs**
- The direct donation (D) from TEEF to the farmer is **$3**
- TEEF donates 10 cents for every token purchased by you, i.e. **i=$0.20**

Suppose you allocate 10 ECUs out of the 20 ECUS you have for buying tokens for yourself.

Based on that, please answer the questions below. You must answer the questions correctly to move on to the next page.

1. What is your $ earning from this decision? Note that your earning equals the number of tokens you buy.:

2. What is your $ donation to the farmer? Note that the farmer will receive from you as may dollars as the number of ECUs you donate.:

3. What is TEEF's indirect donation ($) to the farmer? Note that indirect donation equals the donation from TEEF as a result of your token purchase. :

4. What is TEEF's direct donation ($) to the farmer?:

5. What is the total donation ($) to the farmer? Note that the farmer in total will receive a sum of your donation and, any direct and indirect donation from TEEF.:

Next

Screen 17

Practice

On the next screen, you will complete a practice task. During and after the practice task, you will have time to ask the proctor any questions you may have. After completing the practice task, you will proceed to complete the actual decision tasks.

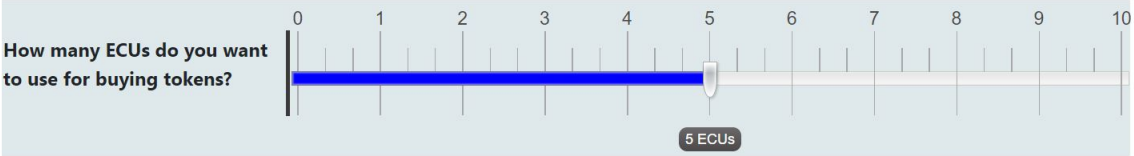
Next

Screen 18

Practice Task

- You have **10 ECUs** to allocate between buying tokens for yourself and donating to the farmer paired with you.
- The price of a token is **1.10 ECUs**
- The direct donation (D) from TEEF to the farmer is **$5**
- TEEF donates 10 cents for every token purchased by you, i.e. **i=0.1**

Using the slider below, choose how many ECUs from your endowment you would like to use to buy tokens. Below the slider you will see the consequences of this choice for your earnings and the donation amounts.



(a) ECUs spent on buying tokens: **5**

(b) Tokens purchased or **Your earnings**, **in dollars**: **4.55**

(c) Your donation to the farmer, **in dollars**: **5.00**

(d) Direct donation from TEEF, **in dollars** : **5**

(e) Indirect donation from TEEF when you purchase tokens, **in dollars**: **0.46**

(f) Total donations to the farmer, **in dollars** : **10.46**

Next

Screen 19

Decision Tasks

Now, you are about to begin the actual task. In total, you will complete **nine decision tasks**. The amount of ECUs you have for allocation, the price of a token, and donations from TEEF (direct and indirect) will vary between the decision tasks.

In each decision task, you will see a slider like the one on the last page and your earnings and donations to the farmer (your own, and from TEEF) for all token allocation choices. In each decision task, please choose the allocation you prefer the most.

Remember, **one of your nine decisions** will be randomly selected to determine your earnings and the donations to the farmer with whom you have been paired. As a result, it is in your best interest to make your most preferred choice in every decision. Please proceed when you are ready.

Next

Notes: Decision tasks 1 though 9 followed in the slider format presented in Screen 18. Thereafter, the participants completed the following survey.

Screen 20

Survey

Please write your experiment ID (the number on your desk) below.:

What is your age?:

What is your gender?:

- ○ Male
- ○ Female
- ○ Other

Choose one or more races that you consider yourself to be::

- ○ White
- ○ Black or African American
- ○ American Indian or Alaska Native
- ○ Asian
- ○ Native Hawaiian or Pacific Islander

Screen 21

How frequently do you donate to charity?:

- ○ Never in my life
- ○ Not in the last year
- ○ 1-3 times in the past year
- ○ 3-10 times in the past year
- ○ More than 10 times in the past year

What kind of chocolate do you buy?:

- ○ Organic
- ○ Regular
- ○ I do not care if it is organic or not
- ○ I do not eat chocolate

Before purchasing, do you check if your fruits and vegetables are produced organically, i.e. without using synthetic fertilizers / pesticides / herbicides?:

- ○ Yes
- ○ Sometines
- ○ No

Screen 22

Please respond to the following items using the rating scale. 1 represents Strongly Disagree and 5 represents Strongly Agree

	1	2	3	4	5
The procedures followed in this experiment preserved your anonymity.	○	○	○	○	○
The money you donated to the farmer will be passed on to the farmer.	○	○	○	○	○
The instructions for the experiment were clear and easy to follow.	○	○	○	○	○
The farmers are deserving of your support.	○	○	○	○	○
If you could select a different charity, would you have made a larger donation?	○	○	○	○	○
You enjoyed your time participating in this experiment.	○	○	○	○	○

Next

APPENDIX B

RESULT AND INSTRUCTIONS FOR EXPERIMENTS PERTAINING TO SECTION 3

Table B.1: Comparison of Regression Estimates: Mean Ratings vs. Self Ratings

	Mean Ratings	Self Ratings
Monetary Payoff	0.319***	0.152***
	(0.021)	(0.012)
Norm Ratings	2.525***	1.123***
	(0.155)	(0.100)
Norm Ratings x Charity	2.160***	1.297***
	(0.192)	(0.130)
Log-Likelihood	-1459.754	-1495.794
Observations	7,876	7,876

Note: ***p $<$ 0.01

Screenshot 1. Introduction

Description

This is a continuation of a study that you have participated in previously. I thank you for your previous participation and hope you will take the time to complete this wave. As before, you can earn money by participating.

There are two parts to this study. Part 1 includes Seven Tasks. Tasks 1-6 ask about decisions involving the allocation of money. Task 7 asks for your opinion. In Tasks 1-6 you will have a chance to earn money, depending on your answers and the answers of other people.

In Part 2 of this study, I am interested in your communication with your friends. You will be asked to identify up to ten of your friends, and you will have a chance to earn additional money by communicating with them. (Your friends' identity will not be known by me and will be kept confidential.)

Risks and Benefits

There are no risks to participating in this study, over and above those encountered in everyday life. As with all waves of this study, you will have a chance to earn money. You will also have an opportunity to learn about decision making and perceptions by others of those decisions.

Costs and Payments

The activity will take approximately 15 minutes to complete. There are no costs for helping me with this study. You can make as little as $3.00 or as much as $130.00 for this wave of the study.

Confidentiality

No identifying information will be collected, except for a random ID, that will enable us to contact you to report your earnings.

Right to Withdraw

As with all waves of this study, your participation is voluntary. You may cease your participation at any time.

IRB Approval

If you have any questions about this study or if you have a research-related problem, you may contact the Principal Investigator, Dr. Rick K. Wilson at rkwexp@rice.edu. If you have questions pertaining to your rights as a research participant; or to report objections to this study, you should contact the Rice Compliance Administrator at Rice University. Email: irb@rice.edu or Telephone: 713-348-3586.

Consent

By continuing with the study, you certify that you are at least 18 years old, have read and understood this consent form and agree to participate in this research study. A copy of this page will be sent to the email address that you provide once you give your consent.

CONTINUE

Screenshot 2. Dictator Transfer (Recipient is a charity)

Australians are reeling from the hundreds of devastating fires sweeping through parts of the country. Since October 2019, the wildfires have scorched millions of acres of land and destroyed more than a thousand homes. At least 27 people have died. But perhaps the greatest damage is to wildlife. An estimated 1 billion animals have been lost, and scientists fear long-term damage to many sensitive ecosystems. With people displaced and wildlife populations gutted, there are ways that you can help.

In this task, you have an opportunity to donate money to a charity helping with the Australian wildfires. You will have a chance to choose a charity on the next screen. For this task, you have been given an endowment of $20. You are asked to allocate the $20 between yourself and your charity of choice.

You must decide how much of the $20.00 to keep for yourself and how much to pass to your selected charity. You may elect to keep it all for yourself and give nothing to the charity, keep nothing for yourself and pass it all to the charity, or keep some for yourself and pass the remainder to the charity. The charities available to you are explained on the next screen.

If this task is selected for payment, whatever you elect to keep (if anything) you will be paid to you and whatever you elect to give to the charity (if anything) will be sent to the charity you choose. The experimenter will forward the funds to the charity, using their donation website. You will have an opportunity to contact us when the study is over if you would like us to provide you with verification that the donation was made.

Screenshot 3. Dictator Transfer (Recipient is a charity)

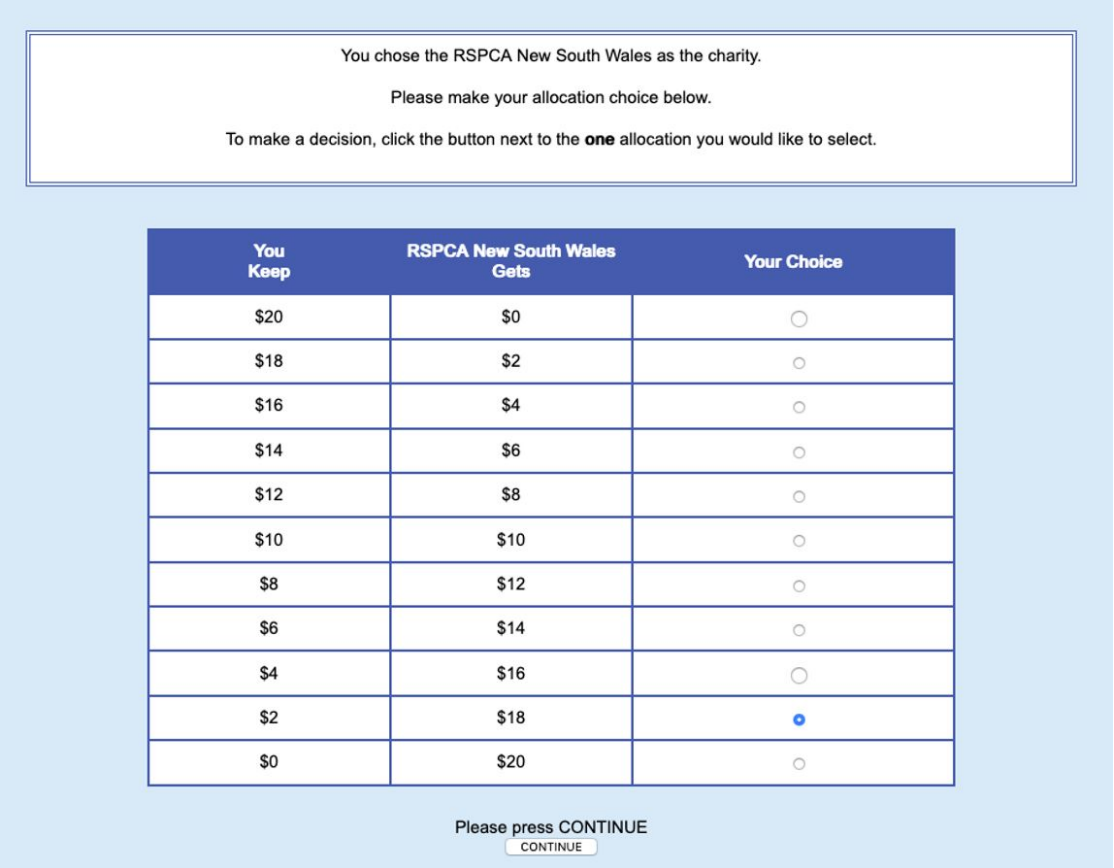
In Task 3 you are paired with a charity of your choice. Following is a list of 3 possible charities. Please select the ONE charity you wish to be paired with by checking the button next to your choice. All of the Charities have an excellent rating.

Your Choice	The Charity
○	**Australian Red Cross** The Australian Red Cross is accepting donations to its Disaster Relief and Recovery Fund, which has helped to send 1,285 staff members and volunteers to communities affected by the fires and to provide support to displaced people sheltering in more than 69 evacuation and recovery centers. The Red Cross also provides emergency grants to help people cover their immediate needs.
○	**NSW Rural Fire Service** The most affected state, New South Wales, which includes Sydney, Australia's largest city, is having its worst fire season in 20 years. Firefighters and community workers in rural fire brigades are in the thick of it. The fire service has a map that is regularly updated, showing clusters of fire spots stretching along a swath of the country's southeast coast. Donations are directed to emergency efforts and nonemergency community work.
◉	**RSPCA New South Wales** New South Wales has the most injured and displaced wildlife in Australia. Funds from the organization's bush fire appeal will support its work at evacuation centers in northern New South Wales and other areas. Once fire zones are cleared, its inspectors will enter those areas to assess how to help any injured animals.

Please press CONTINUE

CONTINUE

Screenshot 4. Dictator Transfer (Recipient is a charity)



You chose the RSPCA New South Wales as the charity.

Please make your allocation choice below.

To make a decision, click the button next to the **one** allocation you would like to select.

You Keep	RSPCA New South Wales Gets	Your Choice
$20	$0	○
$18	$2	○
$16	$4	○
$14	$6	○
$12	$8	○
$10	$10	○
$8	$12	○
$6	$14	○
$4	$16	○
$2	$18	◉
$0	$20	○

Please press CONTINUE

CONTINUE

Screenshot 5. Norm Elicitation Task (General Introduction)

In Tasks 1 and 2 you will read descriptions of different decision situations. These describe situations in which one person, whom we will call Individual A, makes a decision. For each situation, you will be given a description of the decision faced by Individual A. This includes several possible choices available to Individual A.

After you read the description of the decision, you will be asked to evaluate the different possible choices available to Individual A and to decide, for each choice, whether doing so is *socially appropriate* and *consistent with moral or proper social behavior* or *socially inappropriate* and *inconsistent with moral or proper social behavior*. By socially appropriate, I mean behavior that most people agree is the *correct* or *ethical* thing to do. Another way to think about what I mean is that if Individual A were to select a socially inappropriate choice, then someone else might be angry at Individual A for doing so.

Screenshot 6. Norm Elicitation Task (General Introduction)

As an example, suppose Individual A observed Individual B cheating on an exam. This is a clear violation of the Honor Code. Individual A decides not to report Individual B. On a four point scale you are asked whether this is *socially appropriate* or *socially inappropriate*.

In your responses, I would like you to answer as truthfully as possible, based on your opinions of what constitutes socially appropriate or socially inappropriate behavior.

Screenshot 7[1]. Norm Elicitation Task (General Introduction)

In order to determine your payment for the decisions in Tasks 1 and 2, your response for each situation will be compared with the responses of **other study participants in your college**. If you select the same response as the one most frequently given by other participants in your college, then you will receive $3. If you do not match the most common response you will receive $0. The total amount will be paid to you at the conclusion of the study.

For instance, if the most common response of people in your college was that violating the honor code was *Very Socially Inappropriate* and IF you also chose that response then you would receive $3.00. Otherwise you would receive $0.00.

If you are ready to begin, click CONTINUE.

Screenshot 8. Norm Elicitation Task (Recipient is a charity)

You will now begin Task 4.

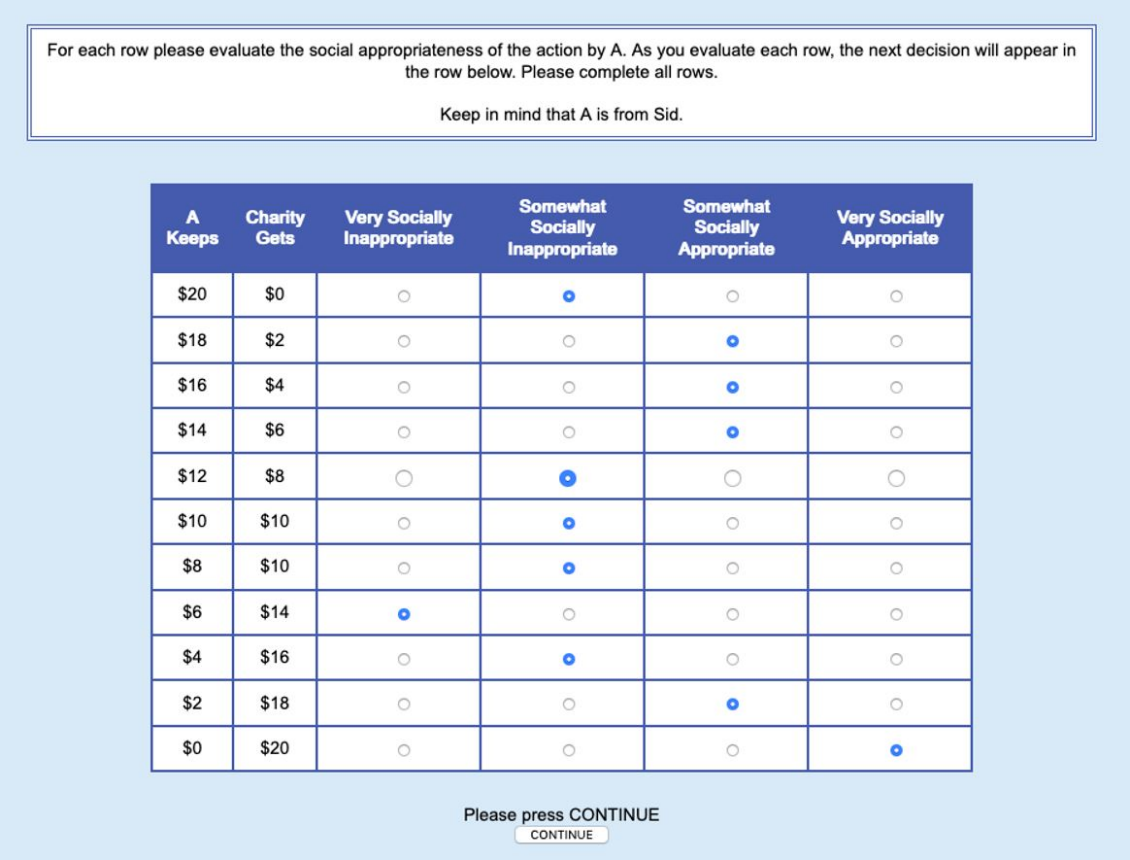
For Task 4 I ask you to assess the social appropriateness of the possible decisions that could be made in Decision 1. For this decision, we ask you to consider another person in Sid, who has made an allocation choice.

Consider the following situation. There is an individual, A, who is from Sid, and who has selected one of the Australian charities assisting with the wildfires. Individual A has $20 to allocate between himself/herself and the charity. A must decide how much to keep for himself/herself, and how much to give to the charity.

A can make any of 11 possible allocations. You will be asked, for each possible allocation, whether that allocation by A is socially appropriate or not.

In Task 3 there are 11 different allocations. If this Task is chosen for payment, 3 of these allocations will be randomly selected. For each your response will be compared with the **other study participants from Sid.** If you select the same response as the one most frequently given by other participants in your college, then you will receive $3. If you do not match the most common response then you will receive $0.

Screenshot 9. Norm Elicitation Task (Recipient is a charity)



For each row please evaluate the social appropriateness of the action by A. As you evaluate each row, the next decision will appear in the row below. Please complete all rows.

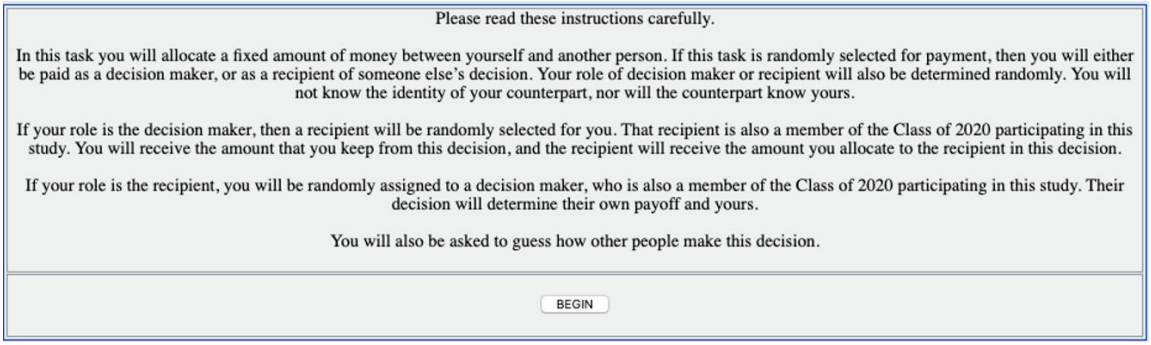
Keep in mind that A is from Sid.

A Keeps	Charity Gets	Very Socially Inappropriate	Somewhat Socially Inappropriate	Somewhat Socially Appropriate	Very Socially Appropriate
$20	$0	○	◉	○	○
$18	$2	○	○	◉	○
$16	$4	○	○	◉	○
$14	$6	○	○	◉	○
$12	$8	○	◉	○	○
$10	$10	○	◉	○	○
$8	$10	○	◉	○	○
$6	$14	◉	○	○	○
$4	$16	○	◉	○	○
$2	$18	○	○	◉	○
$0	$20	○	○	○	◉

Please press CONTINUE

CONTINUE

Screenshot 10. Dictator Transfer (Recipient is a student)



Please read these instructions carefully.

In this task you will allocate a fixed amount of money between yourself and another person. If this task is randomly selected for payment, then you will either be paid as a decision maker, or as a recipient of someone else's decision. Your role of decision maker or recipient will also be determined randomly. You will not know the identity of your counterpart, nor will the counterpart know yours.

If your role is the decision maker, then a recipient will be randomly selected for you. That recipient is also a member of the Class of 2020 participating in this study. You will receive the amount that you keep from this decision, and the recipient will receive the amount you allocate to the recipient in this decision.

If your role is the recipient, you will be randomly assigned to a decision maker, who is also a member of the Class of 2020 participating in this study. Their decision will determine their own payoff and yours.

You will also be asked to guess how other people make this decision.

BEGIN

Screenshot 11. Dictator Transfer (Recipient is a student)

You have a total of $20.00 to allocate between yourself and the recipient. There are no right or wrong answers. You may choose whatever you wish.

Please select one of the choices below.

Allocation to Me	Your Choice:	Allocation to Someone Else
$20.00	○	$0.00
$18.00	○	$2.00
$16.00	◉	$4.00
$14.00	○	$6.00
$12.00	○	$8.00
$10.00	○	$10.00
$8.00	○	$12.00
$6.00	○	$14.00
$4.00	○	$16.00
$2.00	○	$18.00
$0.00	○	$20.00

SUBMIT

If you would like to review the instructions, please click REVIEW.

REVIEW

Screenshot 12. Norm Elicitation Task (Recipient is another student)

For Task 1 you have the following situation. There are 2 individuals: A, and B. A has $20 to allocate between himself/herself and individual B. Both A and B are students at Rice, and both are aware of this. However, neither knows the identity of the other. A must decide how much to keep for himself/herself, and how much to pass to B. A's decision determines the earnings of both individuals.

A can make any of 11 possible allocations. You will be asked, for each possible allocation, whether that allocation by A is socially appropriate or not.

In Task 1 there are 11 different allocations. If this Task is chosen for payment, 3 of these allocations will be randomly selected. For each your response will be compared with the **other study participants in your college.** If you select the same response as the one most frequently given by other participants in your college, then you will receive $3. If you do not match the most common response then you will receive $0.

Screenshot 13. Norm Elicitation Task (Recipient is another student)

For each row please evaluate the social appropriateness of the action by A. As you evaluate each row, the next decision will appear in the row below. Please complete all rows.

Keep in mind that A and B are Rice students and both are aware of this, but do not know each other's identity.

A Keeps	B Gets	Very Socially Inappropriate	Somewhat Socially Inappropriate	Somewhat Socially Appropriate	Very Socially Appropriate
$20	$0	○	●	○	○
$18	$2	○	●	○	○
$16	$4	○	●	○	○
$14	$6	○	●	○	○
$12	$8	○	●	○	○
$10	$10	○	●	○	○
$8	$12	○	○	●	○
$6	$14	○	○	●	○
$4	$16	●	○	○	○
$2	$18	●	○	○	○
$0	$20	●	○	○	○

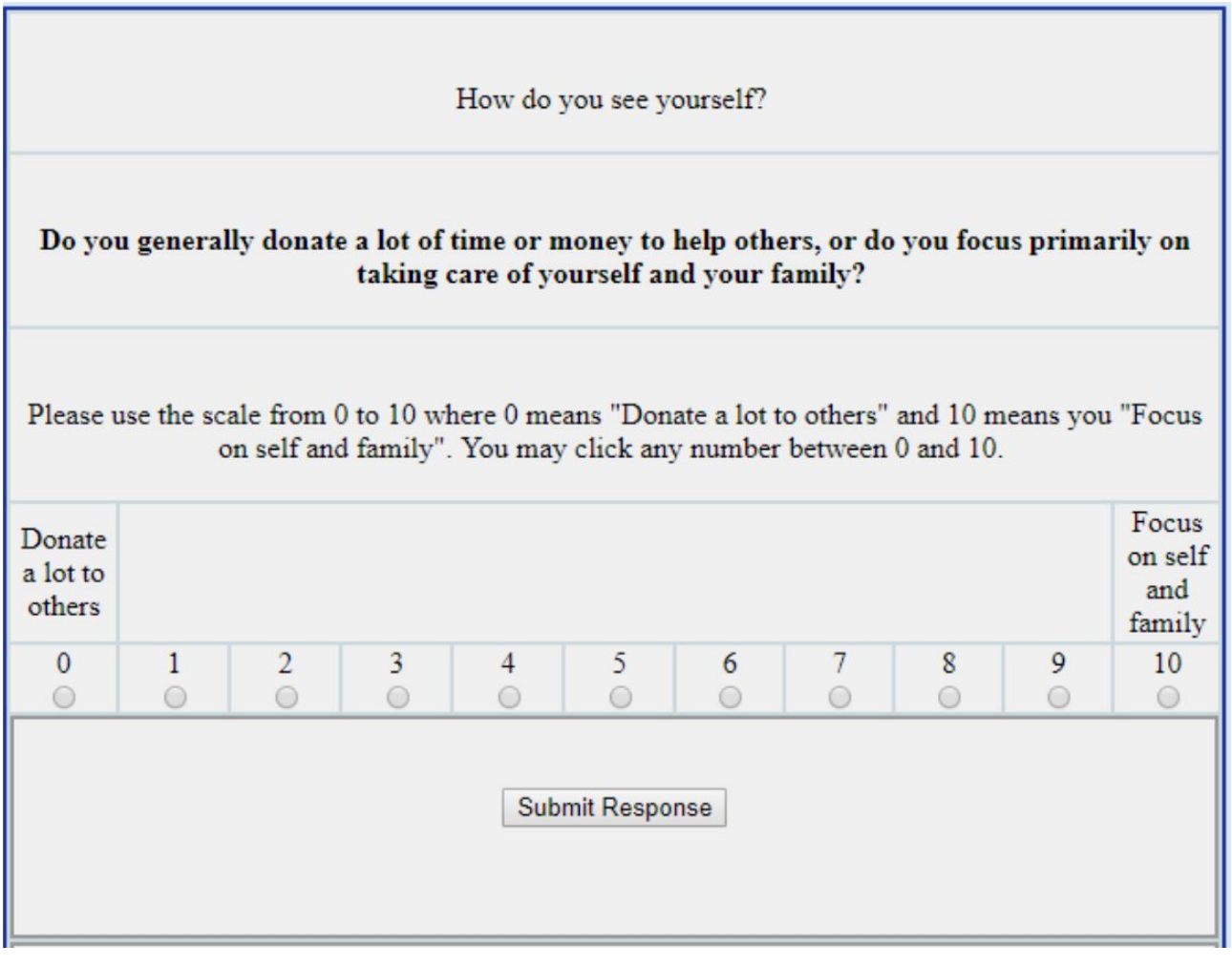
Please press CONTINUE

CONTINUE

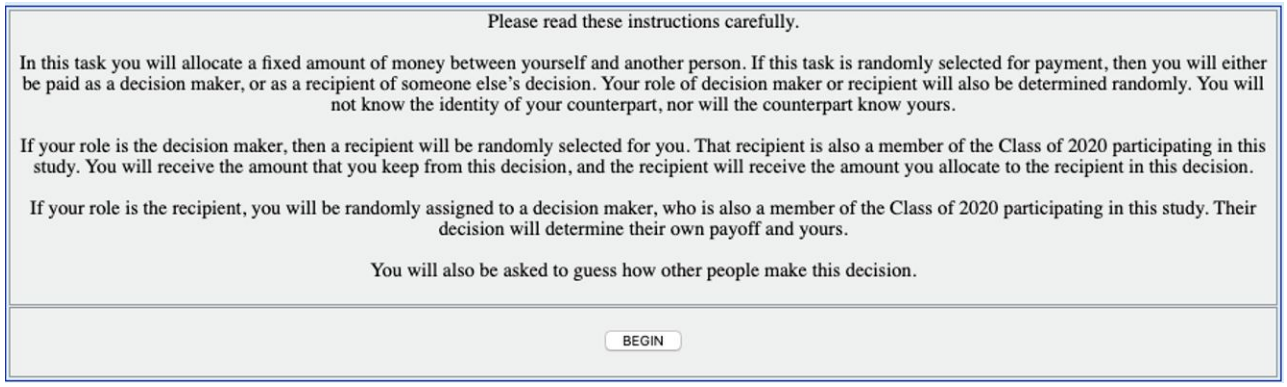
APPENDIX C

INSTRUCTIONS FOR EXPERIMENTS PERTAINING TO SECTION 4

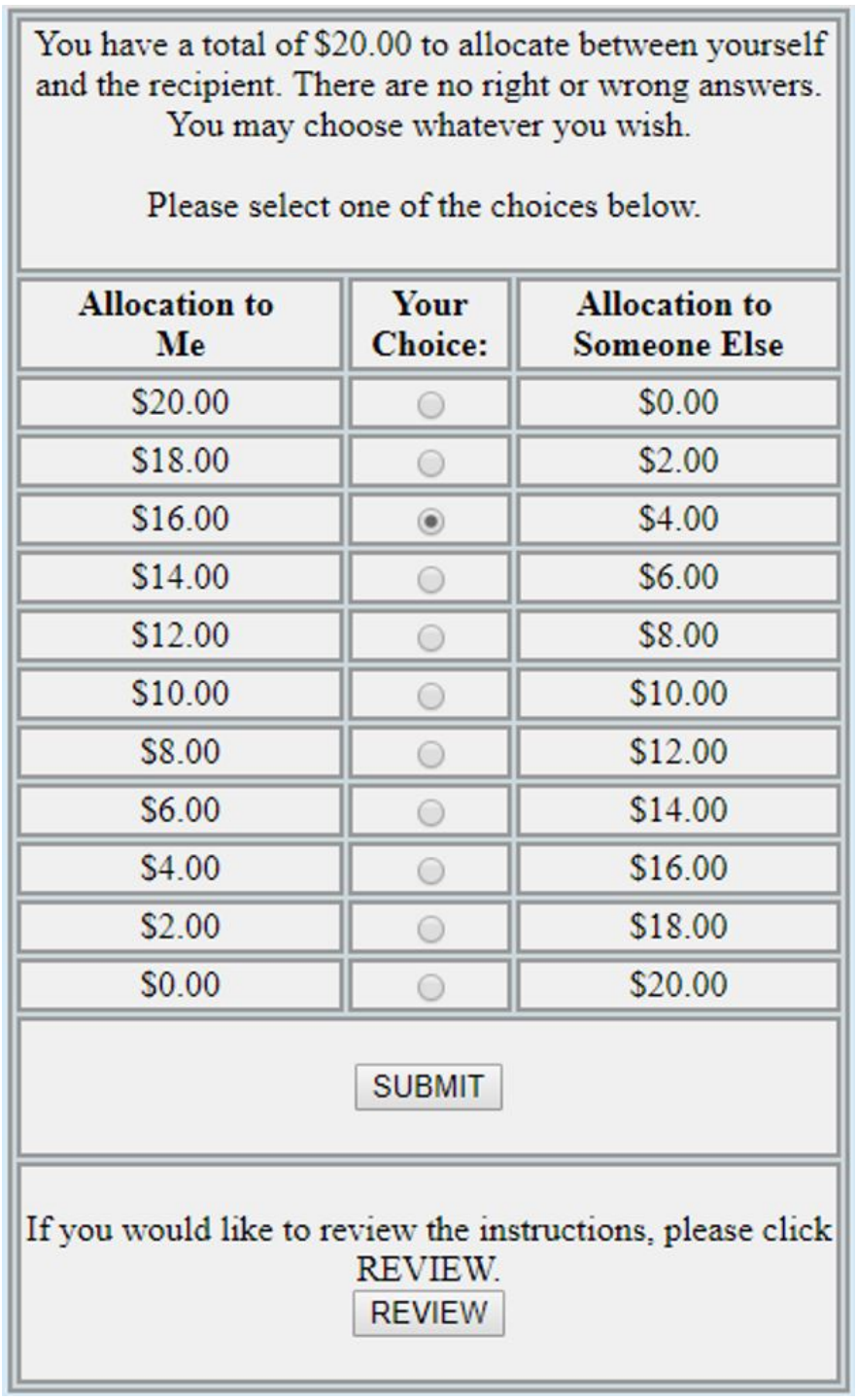
Screenshot 1. Survey Measure of Other-regarding Preference



Screenshot 2. Incentivized Measure of Other-regarding Preference (Dictator Game)



Screenshot 3. Incentivized Measure of Other-regarding Preference (Dictator Game)



You have a total of $20.00 to allocate between yourself and the recipient. There are no right or wrong answers. You may choose whatever you wish.

Please select one of the choices below.

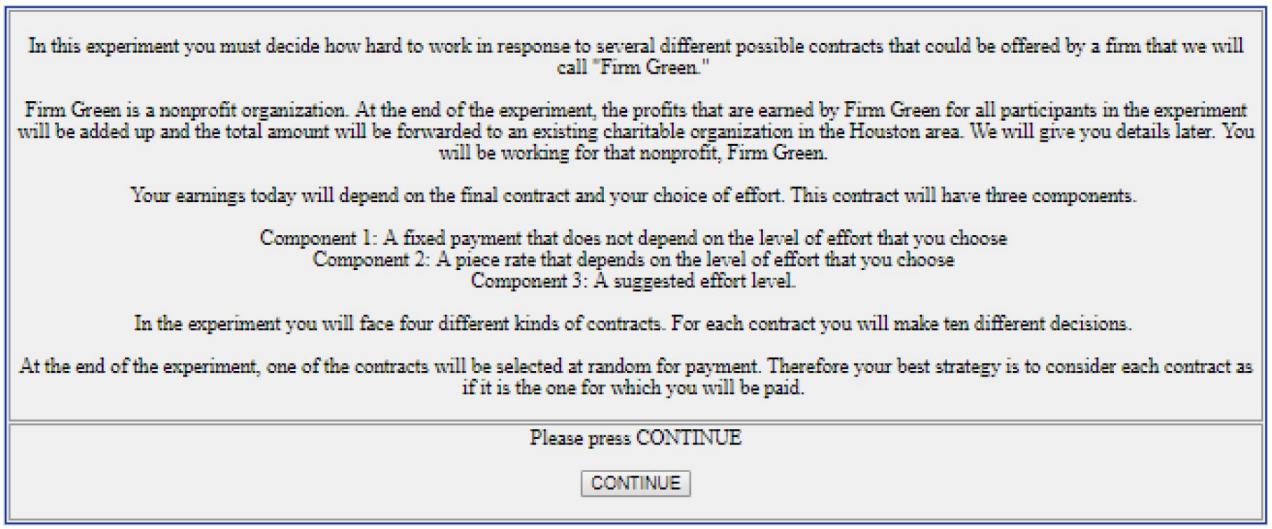
Allocation to Me	Your Choice:	Allocation to Someone Else
$20.00	○	$0.00
$18.00	○	$2.00
$16.00	◉	$4.00
$14.00	○	$6.00
$12.00	○	$8.00
$10.00	○	$10.00
$8.00	○	$12.00
$6.00	○	$14.00
$4.00	○	$16.00
$2.00	○	$18.00
$0.00	○	$20.00

SUBMIT

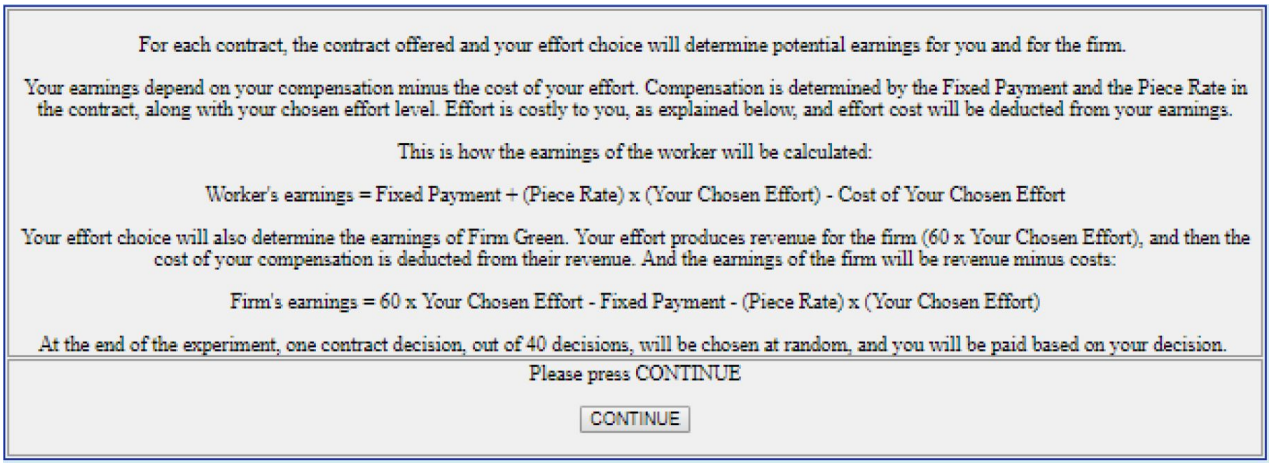
If you would like to review the instructions, please click REVIEW.

REVIEW

Screenshot 4. Modified Gift Exchange for Eliciting Donations for Harvey



Screenshot 5. Modified Gift Exchange for Eliciting Donations for Harvey



Screenshot 6. Donations for Hurricane Harvey relief

Imagine that you have recieved an offer from Firm Green that specifies a Fixed Payment, a Piece Rate and a Suggested Effort Level.

You must decide what level of effort to choose.

Note that the Fixed Payment and Piece Rate determine your earnings, but the suggested level of effort is non-binding, and does not affect your earnings. You may choose any level of effort you like.

Effort is costly. The possible levels of effort range from 1 to 10. The table below describes the cost (in tokens) of choosing that effort level This cost schedule will be in effect for all contracts.

Level of Effort	1	2	3	4	5	6	7	8	9	10
Cost of Effort (in tokens)	0	3	10	21	35	52	72	95	121	150

CONTINUE

Screenshot 7. Modified Gift Exchange for Eliciting Donations for Harvey

Suppose that Firm Green offers you a Fixed Payment = 165, a Piece Rate of 18, and asks you for an Effort Level of 4. In response you can choose any effort you want, 1 - 10. Your earnings will be:

Fixed Payment + Piece Rate x Effort Level - Cost of Effort Level
= 165 + (18 x Effort Level) - Cost of Effort Level

You can choose the effort level you prefer, and each additional effort level will earn 18 tokens. However, each additional effort level increases your cost. For each effort level, your earnings and Firm Green's earnings are shown in the table below.

Level of Effort	1	2	3	4	5	6	7	8	9	10
Cost of Effort (in tokens)	0	3	10	21	35	52	72	95	121	150
Your Earnings (in tokens)	183	198	209	216	220	221	219	214	206	195
Firm's Earnings (in tokens)	-123	-81	-39	3	45	87	129	171	213	255

Firm Green's earnings (passed on to a charity) are the following.

60 x Effort Level - Fixed Payment - Piece Rate x Effort Level
60 x Effort level - 165 - 18 x Effort Level

Please press CONTINUE

CONTINUE

Screenshot 8. Modified Gift Exchange for Eliciting Donations for Harvey

Suppose that Firm Green offers you a fixed payment = 165, a piece rate of 4 and asks you for an effort level of 7. In response you can choose any effort you want. 1 - 10. Your earnings will be:

Fixed Payment + Piece Rate x Effort Level - Cost of Effort Level
= 165 + 4 x Effort Level - Cost of Effort Level

You can choose the effort level you prefer, and each additional effort level will earn 4 x Effort Level - Cost of Effort Level. For each effort level, your earnings and Firm Green's earnings are shown in the table below.

Level of Effort	1	2	3	4	5	6	7	8	9	10
Cost of Effort (in tokens)	0	3	10	21	35	52	72	95	121	150
Your Earnings (in tokens)	169	170	167	160	150	137	121	102	80	55
Firm's Earnings (in tokens)	-109	-53	3	59	115	171	227	283	339	395

Firm Green's earnings (which are passed on to a charity) are the following.

60 x Effort Level - Fixed Payment - Piece Rate x Effort Level
60 x Effort level - 165 - 4 x Effort Level

CONTINUE

Screenshot 9. Modified Gift Exchange for Eliciting Donations for Harvey

Practice

Cost of Effort Table

Level of Effort	1	2	3	4	5	6	7	8	9	10
Cost of Effort (in tokens)	0	3	10	21	35	52	72	95	121	150

For purposes of practice, please choose different levels of effort (1 to 10) using the pull down menu. Note that in this contract the Fixed Payment is 95 and the Piece Rate is 8. Once you make a decision you can press CALCULATE to calculate your earnings and the firm's earnings.

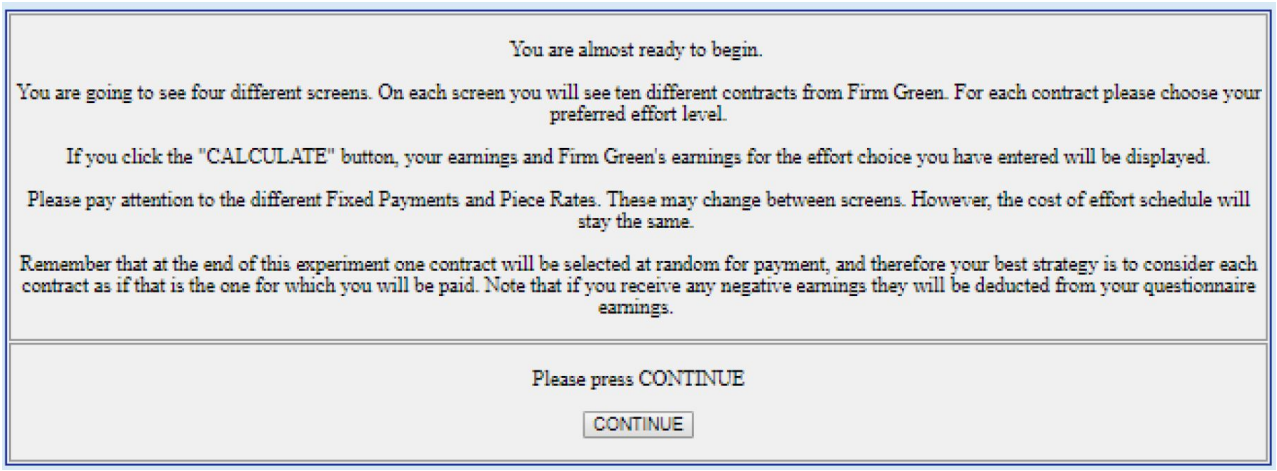
Practice Contract	Fixed Payment	Piece Rate	Suggested Effort Level	Choice of Effort Level	Your Earnings	Firm's Earnings
x	95	8	1	4 ▼	106	113

CALCULATE

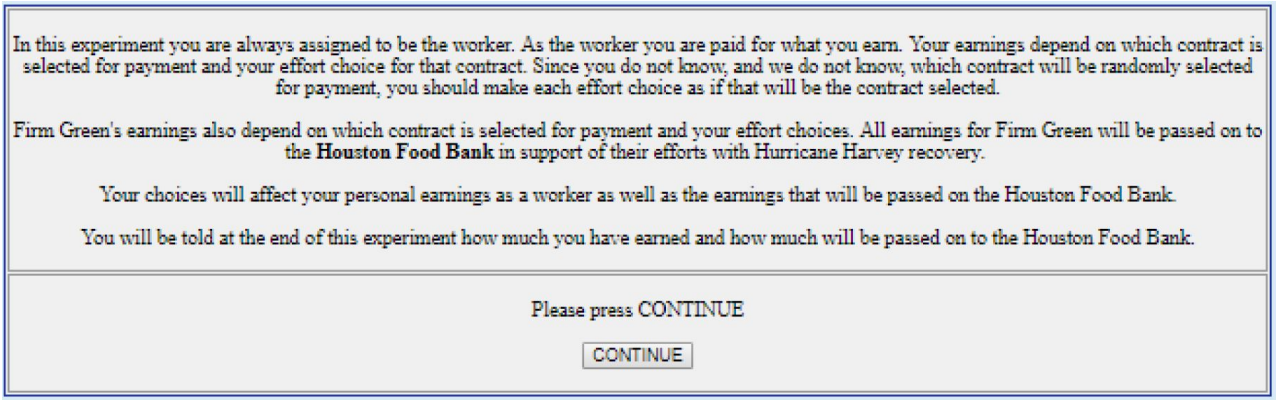
Press CONTINUE when you are ready to leave Practice

CONTINUE

Screenshot 10. Modified Gift Exchange for Eliciting Donations for Harvey



Screenshot 11. Modified Gift Exchange for Eliciting Donations for Harvey



Screenshot 12. Modified Gift Exchange for Eliciting Donations for Harvey

Cost of Effort Level Table										
Level of Effort	1	2	3	4	5	6	7	8	9	10
Cost of Effort (in tokens)	0	3	10	21	35	52	72	95	121	150

Please choose the level of effort 1 to 10 for each of the contracts in the table below. Once you make your decisions, you can press CALCULATE to calculate your earnings and the firm's earnings.

Contract	Fixed Payment	Piece Rate	Suggested Effort Level	Choice of Effort Level	Your Earnings	Firm's Earnings
A1	30	0	8	2 ▼	27	90
A2	60	0	8	3 ▼	50	120
A3	95	0	8	7 ▼	23	325
A4	130	0	8	5 ▼	95	170
A5	165	0	8	5 ▼	130	135
A6	205	0	8	2 ▼	202	-85
A7	245	0	8	6 ▼	193	115
A8	285	0	8	9 ▼	164	255
A9	330	0	8	3 ▼	320	-150
A10	375	0	8	10 ▼	225	225

CALCULATE

Press CONFIRM when you have finished making your Decisions

CONFIRM

Screenshot 13. Modified Dictator Game for Eliciting Donations for Australian Bush Fire Relief

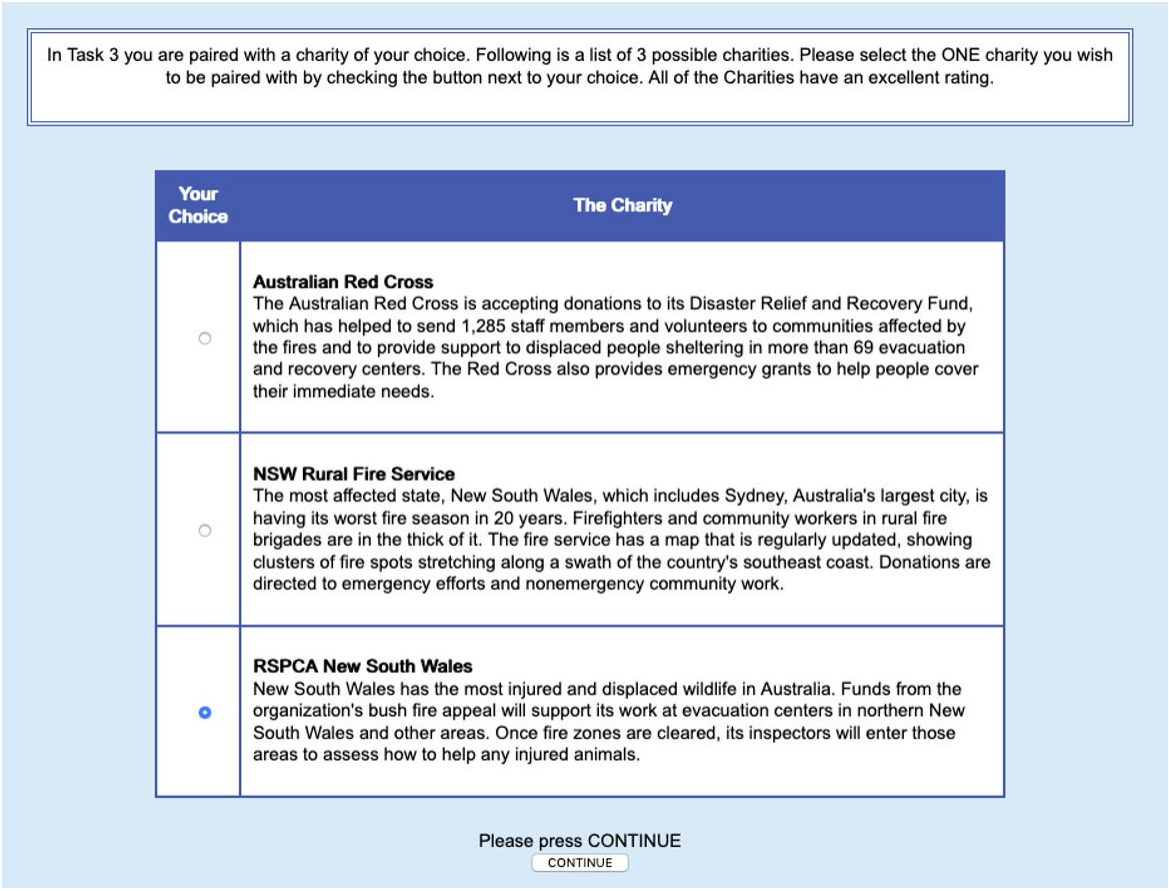
Australians are reeling from the hundreds of devastating fires sweeping through parts of the country. Since October 2019, the wildfires have scorched millions of acres of land and destroyed more than a thousand homes. At least 27 people have died. But perhaps the greatest damage is to wildlife. An estimated 1 billion animals have been lost, and scientists fear long-term damage to many sensitive ecosystems. With people displaced and wildlife populations gutted, there are ways that you can help.

In this task, you have an opportunity to donate money to a charity helping with the Australian wildfires. You will have a chance to choose a charity on the next screen. For this task, you have been given an endowment of $20. You are asked to allocate the $20 between yourself and your charity of choice.

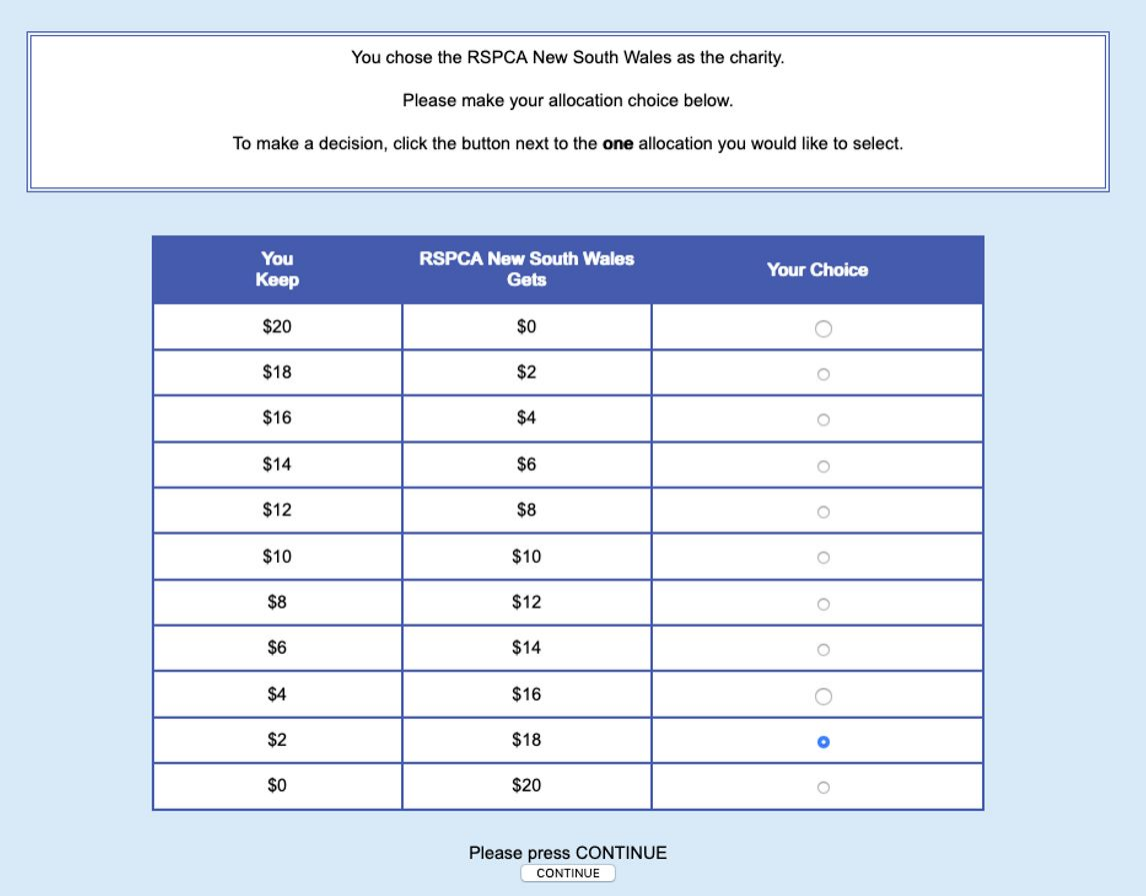
You must decide how much of the $20.00 to keep for yourself and how much to pass to your selected charity. You may elect to keep it all for yourself and give nothing to the charity, keep nothing for yourself and pass it all to the charity, or keep some for yourself and pass the remainder to the charity. The charities available to you are explained on the next screen.

If this task is selected for payment, whatever you elect to keep (if anything) you will be paid to you and whatever you elect to give to the charity (if anything) will be sent to the charity you choose. The experimenter will forward the funds to the charity, using their donation website. You will have an opportunity to contact us when the study is over if you would like us to provide you with verification that the donation was made.

Screenshot 14. Modified Dictator Game for Eliciting Donations for Australian Bush Fire Relief



Screenshot 15. Modified Dictator Game for Eliciting Donations for Australian Bush Fire Relief



You chose the RSPCA New South Wales as the charity.

Please make your allocation choice below.

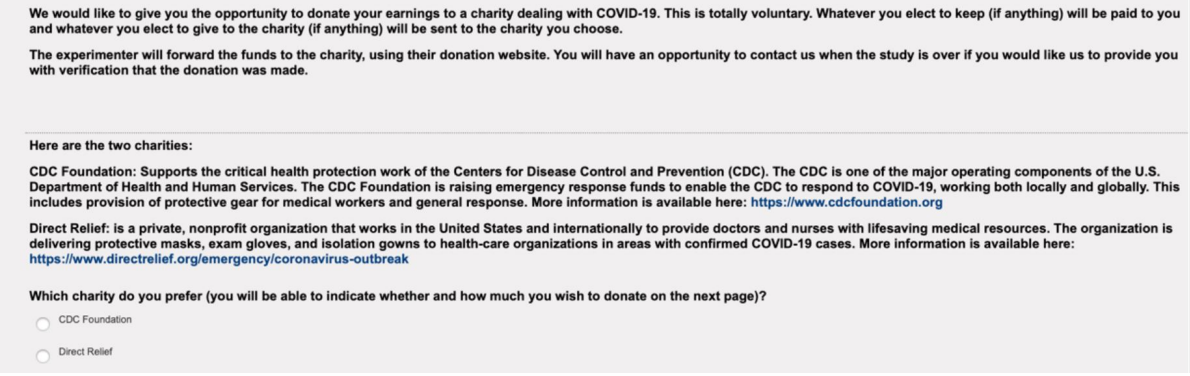
To make a decision, click the button next to the **one** allocation you would like to select.

You Keep	RSPCA New South Wales Gets	Your Choice
$20	$0	○
$18	$2	○
$16	$4	○
$14	$6	○
$12	$8	○
$10	$10	○
$8	$12	○
$6	$14	○
$4	$16	○
$2	$18	◉
$0	$20	○

Please press CONTINUE

CONTINUE

Screenshot 16. Eliciting Donations for COVID Relief



We would like to give you the opportunity to donate your earnings to a charity dealing with COVID-19. This is totally voluntary. Whatever you elect to keep (if anything) will be paid to you and whatever you elect to give to the charity (if anything) will be sent to the charity you choose.

The experimenter will forward the funds to the charity, using their donation website. You will have an opportunity to contact us when the study is over if you would like us to provide you with verification that the donation was made.

Here are the two charities:

CDC Foundation: Supports the critical health protection work of the Centers for Disease Control and Prevention (CDC). The CDC is one of the major operating components of the U.S. Department of Health and Human Services. The CDC Foundation is raising emergency response funds to enable the CDC to respond to COVID-19, working both locally and globally. This includes provision of protective gear for medical workers and general response. More information is available here: https://www.cdcfoundation.org

Direct Relief: is a private, nonprofit organization that works in the United States and internationally to provide doctors and nurses with lifesaving medical resources. The organization is delivering protective masks, exam gloves, and isolation gowns to health-care organizations in areas with confirmed COVID-19 cases. More information is available here: https://www.directrelief.org/emergency/coronavirus-outbreak

Which charity do you prefer (you will be able to indicate whether and how much you wish to donate on the next page)?

○ CDC Foundation

○ Direct Relief

Screenshot 16. Eliciting Donations for COVID Relief