

AN EXPERIMENTAL TEST OF WARM GLOW GIVING*

Heidi Crumpler
Department of Economics
Saint Cloud State University
St. Cloud, MN 56301

Philip J. Grossman
Department of Economics
Saint Cloud State University
St. Cloud, MN 56301
320-308-4232
pgrossman@stcloudstate.edu

ABSTRACT

This paper reports the results of an experimental test of the warm glow hypothesis. A participant is presented with the opportunity to contribute from her own endowment to a charity of choice. The experiment is designed so that a pure altruist has no incentive to donate. The amount the designated charity will receive is preset; any contribution by the participant crowds out dollar-for-dollar giving by the proctor. We find that participants, on average, donated 20 percent of their endowments and that approximately 57 percent of the participants made a donation.

* This research was supported by a grant from the John D. and Catherine T. MacArthur Foundation, Network on Preferences and Norms. We thank James Andreoni, Rachel Croson, Catherine Eckel, Glenn Harrison, Patricia Hughes, William Luksetich, Laura Razzolini, and two anonymous referees for insightful comments that substantially improved the paper.

AN EXPERIMENTAL TEST OF WARM GLOW GIVING

What motivates individuals to voluntarily contribute to charitable activities or to support any public good from which they derive no direct consumption benefit? At one extreme, donors may be pure altruists, motivated solely by an interest in the welfare of the recipients of their largesse (see Warr, 1982, Roberts, 1984, and Bergstrom et al., 1986, for example). A pure altruist's welfare is a function of the level of the public good provided not how it is funded. This constitutes the neutrality hypothesis.¹ Private charitable contributions are crowded out dollar for dollar by public funding increases (or in fact by increased giving by any other third party). At the other extreme, donors may not receive utility from the fact that other people benefit from the public good, but rather receive utility from the act of giving itself. Such an individual purchases with his donation the private good Andreoni (1989 and 1990) has termed "warm glow" and thus has a purely egoistic motivation for donating. Andreoni calls this type of giver a "pure egoist."

The importance of warm glow giving (impure altruism) was argued by Andreoni (1989 and 1990). As he showed, the neutrality hypothesis requires that giving be only of the altruistic type (i.e., Andreoni's altruism coefficient $\alpha_t = 1$). If the neutrality hypothesis holds then neither taxation financed government donations to charities nor subsidies for private giving will increase total giving to charities. Furthermore, Ricardian Equivalence holds (i.e., voluntary bequests can offset completely involuntary intergenerational redistributions created by government debt) only if intergenerational giving is totally altruistic giving.

Considerable evidence exists indicating that givers are neither pure altruists nor pure egoists. Rather, the evidence suggests that givers are impure altruists, motivated by both altruism and warm glow. However, while most economists accept that there is a component of

¹ This assumes lump-sum taxes/subsidies and strict separability in the utility function.

warm glow to giving, no clear picture of warm glow giving has developed. Existing studies, while providing evidence consistent with warm glow giving, have not isolated warm glow and have not provided a consistent measure of the magnitude of warm glow giving.

This paper reports the results of an experiment designed to isolate and measure the magnitude of warm glow giving. A participant is presented with the opportunity to contribute from her own endowment to a charity of her choice. The experiment is designed so that a pure altruist has no incentive to donate. The amount the designated charity will receive is preset; any contribution by the participant substitutes for the preset amount to be contributed by the proctor. The participant's giving crowds out dollar-for-dollar giving by the proctor. The participant's only motivation to donate is warm glow. We report evidence that indicates that warm glow does motivate charitable giving. We find that participants donated, on average, 20 percent of their endowment and that approximately 57 percent of the participants made a donation. Our findings are consistent with levels of total giving (altruistic plus warm glow) reported by comparable studies. Eckel and Grossman (1996 and 2003) and Davis, et al. (2005) report giving to charities averaging between 30 and 50 percent of endowments.

II. PURE ALTRUISTS AND PURE EGOISTS

Drawing on Andreoni's model of an impure altruist (Andreoni, 1990), the utility function is given by:

$$U_i = u(x_i, G_{-i} + g_i, g_i),$$

where x_i = i's consumption of the private good; G_{-i} = contributions to the public good by everyone except individual i; and g_i = individual i's contribution to the public good. Donor i

receives utility both from the level of the public good and from the act of giving itself. For pure altruists, the utility function reduces to:

$$U_i = u(x_i, G_{-i} + g_i)$$

G_{-i} and g_i are perfect substitutes; an extra dollar of giving by any other donor will crowd out a dollar of giving by individual i . A pure altruist is only concerned with the level of the public good, not with how it is financed. She will only donate if it will increase the level of G ($=G_{-i} + g_i$). This implies that if G is fixed, a pure altruist has no incentive to donate.

For a pure egoist, the utility function reduces to:

$$U_i = u(x_i, g_i).$$

Utility is not dependent on the level of the public good or on the contributions of others. Thus increased or decreased giving by others has no effect on individual i 's giving. For a pure egoist, donating is the same as purchasing a purely private good. This implies that, even if i 's donation crowds out dollar-for-dollar giving by others, he would still donate. For an impure altruist, motivated by both altruism and warm glow, the warm glow motivation will still result in giving even in the face of complete crowding out. Any test can only confirm the existence of warm glow. Zero giving may occur if u_g is sufficiently smaller than u_x .²

III. EVIDENCE OF WARM GLOW GIVING

Empirical studies have provided conflicting evidence as to what motivates donors. Econometric studies using field data find little evidence of crowding out of private contributions by government expenditures as predicted by the pure altruism model (see Abrams and Schmitz, 1978, 1984; Clotfelter, 1985; Kingma, 1989; Straub, 2003; and Ribar and Wilhelm, 2002). Steinberg (1991), in his review of the literature, concludes a dollar of government spending

² We thank James Andreoni for pointing this out.

crowds out between \$0.005 and \$0.35 of private donations. Only Payne (1998) reports relatively high levels of crowding out – in the range of 50 percent. A number of studies report evidence of crowding in (see Khanna, Posnett, and Sandler, 1995; Khanna and Sandler, 2000; and Payne, 2001).

Results from laboratory experiments, on the other hand, offer evidence of significant crowding out. Andreoni (1993) and Bolton and Katok (1998) find crowding out on the order of 70 percent. Konow (2004) tests the warm glow hypothesis by comparing giving in a dictator game with the recipient receiving a \$0 endowment (standard treatment) and a dictator game with the recipient with a \$4 endowment (subsidy treatment). Giving by the dictator should be less in the subsidy treatment than in the standard treatment if giving is motivated by altruism (i.e., the subsidy crowds out the dictator's giving). Konow finds incomplete crowding out consistent with impure altruism.³

Eckel, Grossman, and Johnston (2005, EGJ hereafter) offer a direct test of the warm glow hypothesis. They argue that crowding out by third-party giving will vary with the degree of fiscal illusion (i.e., the extent to which the subject is unaware that his endowment has been reduced to fund the third-party giving) and whether giving is motivated by altruism or warm glow. Subjects played a single dictator game with a charity as the recipient. There were four treatment combinations: two initial allocations and two frames. Initial allocations were either \$18 for the subject and \$2 for the charity, or \$15 and \$5 respectively. The subject was then given the opportunity to allocate additional funds if desired. The decision frame was also varied to affect subject's perceptions of the task. In one frame, subjects were informed of the initial allocations between themselves and their chosen charity. There was no suggestion that the

³ The recipients in these experiments are other anonymous (student) subjects. As Eckel and Grossman (1996) argue "...altruism requires context (p. 184)". Anonymous, fellow-student recipients are likely to generate neither substantial altruistic behavior nor substantial warm glow behavior.

subjects' endowments would have been larger in the absence of the allocation to the chosen charity. In the other, subjects were told that they had begun with an initial allocation of \$20 but this had been "taxed," and the tax amount allocated to their chosen charity. The structure of payoffs is identical in both frames. At one extreme is no fiscal illusion (fiscal transparency): the subject's initial endowment is explicitly taxed, with the tax revenue transferred to the charity. At the other extreme is complete fiscal illusion: the subject's initial endowment is smaller by the amount of the third-party giving; the tax is hidden from the subject.

EGJ argue that giving by a pure altruist will be completely crowded out by third-party giving regardless of the degree of fiscal illusion; the pure altruist is only concerned with the level of the public good, not with how it is funded. Giving by a pure egoist, however, will only be completely crowded out if there is no fiscal illusion. The pure egoist gets utility from the act of giving. If the tax is hidden, the pure egoist gets no utility from the third-party giving, but must give himself; if the tax is explicit, he receives utility from the giving he has funded via the tax. EGJ findings of complete crowding out under no fiscal illusion and no crowding out under fiscal illusion are evidence consistent with pure egoism and warm glow giving.

The above mentioned experimental studies, taken as a whole, suggest that donors are impure altruists. Giving is motivated by both altruistic as well as warm glow motivation. However, none of the above mentioned studies decomposes giving into its two components. Two relatively recent studies attempted to do just this. Palfrey and Prisbrey (1997, PP hereafter) and Goeree, et al. (2002, GHL hereafter) use modified public goods experiments to decompose giving into its two parts. PP's subjects participate in four ten-period sequences. One publicly announced marginal value of the public good (V) is used for the first two ten-period sequences and a different value is used for the second two ten-period sequences. The marginal value of the

private good (r_i) is randomly determined and private to the subject. Subjects know that the r_i s are assigned according to a uniform distribution between one and twenty. Group size is four and groups are reconstituted after each ten-period sequence. In one treatment, the subjects' endowment per period was one indivisible token; in the second treatment, subjects' endowment per period was nine tokens and they could contribute any (whole) number between zero and nine.

GHL subjects made ten decisions for each of ten treatments. All information for each treatment was available to the subjects and all ten decisions were submitted simultaneously. GHL treat each decision as a one-shot game. For each decision, the subjects allocated 25 tokens between public and private goods. A token allocated to the private good earned a constant return of \$0.05 for the contributing individual. A token contributed to the public good earned the contributing subject either \$0.02 or \$0.04 (the internal return) and earned each of the other group members (either two or four) between \$0.02 and \$0.12.

Interestingly, as similar as the two studies are, they reach different conclusions. Palfrey and Prisbrey (1997) report "... strong evidence for a warm glow effect . . . and . . . no significant evidence for an altruism effect" (p. 837). Goeree, et al. (2002) report results supportive of altruistic giving that "...is not simply of the warm glow variety . . ." (p. 271). A possible explanation for this difference is differences in the two studies' cost of a token's worth of warm glow. In the PP study the cost is given by $r_i - V$: in the GHL study the cost is given by \$0.05 – the internal return. The cost of a token's worth of warm glow in the PP study (holding the benefit to others constant) could differ by 19 tokens -- for example, ranging anywhere from -2 tokens (i.e., if $r_i = 1$ and $V = 3$) to +17 tokens (i.e., if $r_i = 20$ and $V = 3$) -- with the range limit values differing depending upon the value of V . The cost of a token's worth of warm glow in the GHL study was either one or three tokens. On the other hand, benefit to others per capita of a token

contribution to the public good was more uniform. In the PP study, a token contributed benefited others between 3 and 15 tokens; in the GHL study the benefit varied between 2 and 12 tokens. The greater variation in the cost of warm glow coupled with the relatively equal altruistic benefit may have elicited greater warm glow behavior in the PP study relative to the GHL study.

Ribar and Wilhelm (2002) attempt to reconcile the differences found in field and lab data. In their model, donors are motivated by both altruism as well as warm glow (i.e., they are impure altruists). As the number of donors increases, altruistic giving disappears due to freeriding, but warm glow giving is unaffected. They argue that the empirical field studies examined giving to organizations with large donor bases. Thus aggregate pure altruistic giving is likely to be smaller than what is measured in the lab, while aggregate warm glow giving is likely to be larger. Government funding can only crowd out the little remaining pure altruistic giving; warm glow giving is unaffected. For experimental studies, N is very small. Unless participants have little or no pure altruistic preferences, crowding out from third party giving will be relatively high.

Ribar and Wilhelm's (2002) explanation is consistent with the empirical and experimental results; but it does not directly test for warm glow giving. Furthermore, Ribar and Wilhelm's model does not explain the crowding in observed by Khanna, Posnett, and Sandler, 1995; Khanna and Sandler, 2000; and Payne, 2001 or deny the fiscal illusion explanation for the low levels of crowding out observed in the empirical studies.

IV. EXPERIMENTAL DESIGN AND PROCEDURE

Design

Participants take part in a double-anonymous, modified dictator game paired with charities of their own choosing, selected from a list of ten (see the Appendix). All sessions were

proctored by the two authors (Grossman as head proctor with Crumpler assisting with the distribution of materials) and the proctors were in the same room as the subjects throughout a session.⁴ Participants were informed that the charities they selected would receive \$10 from the proctor. After selecting their charities, participants were given an endowment of \$10 and asked how they would like to divide the \$10 between themselves and their chosen charities.

Participants were informed that:

“The amount contributed by the proctor to your selected charity **WILL** be reduced by however much you pass to your selected charity. **Your selected charity will receive neither more nor less than \$10.**”

With participants’ donations completely crowded out by reduced giving by the proctor and anonymous giving, only giving motivated by warm glow would occur.⁵ Participants then indicated how much of their \$10 endowment they wanted to keep for themselves and how much they wanted to pass on to their selected charities.

This test does not preclude an experimenter demand effect. Experimenter demand effect is a problem that plagues any experiment conducted in the artificial environment of the laboratory. On the one hand, it is possible that participants are making contributions because they have some altruistic feelings for the experimenter. By giving to the charity, the subject is reducing the financial burden on the experimenter.⁶ The same outcome would be observed if the subjects believed that giving to a charity was what the experimenter wants them to do.⁷ On the other hand, participants may believe the experimenter, hoping to validate the economic theory of

⁴ Proctors and subjects did not interact other than when the instructions were read (by Grossman in all sessions) and if a subject had a question. Questions were answered privately.

⁵ The experiment design also holds constant the impact of any gift. Duncan (2004) has named giving designed to ‘make a difference’ impact philanthropy. This motivation for giving is also disabled.

⁶ Thanks to an anonymous referee for pointing this out.

⁷ This form of the experimenter effect is similar to the real-world phenomenon of people giving to charity just because people ask them to. Thanks to an anonymous referee for pointing this out.

freeriding, wants them to give nothing. (The inclusion of the predecision manipulation check quiz, discussed below, might be sending this message.) The same outcome would be observed if the subjects wanted to extract the maximum amount from the experimenter (see Harrison and Johnson, 2006).

Six sessions were conducted. The endowment and proctor's contribution to the selected charity was \$10 in sessions 1 – 5 and \$15 in session 6. In all sessions, a survey was administered after participants had made their allocation decisions. Included in the survey was another manipulation check that asked participants “. . . if you passed \$5 (\$6 in session 6) to your designated charity, how much in total (your contribution plus the contribution by the experimenter) was donated to the charity?” For sessions 3 – 6, we added a two-question, manipulation check quiz on the same form that they used to make their allocation decisions. The quiz was to reinforce the point that the participants' donations would have no impact on the amount actually contributed to the charities.

The quiz questions are:

Of her \$10 (\$15), Sarah passes \$4 to her designated charity.

1. How much will Sarah's designated charity receive in total? \$ _____

2. How much will Sarah earn? \$ _____

Participant Recruiting

All sessions of the experiment were conducted at Saint Cloud State University. Participants were recruited by email and announcements posted in the dormitories. Announcements about the opportunity to participate in forthcoming experiments were made to several undergraduate and graduate classes. Interested parties were instructed to respond by

email. Date, time, and place information was emailed to all respondents and participants were selected for participation on a first-come, first-serve basis.

Procedure

All sessions of the experiment followed a standard procedure designed to maintain subject anonymity.⁸ Participants were seated one to a table in a large room.⁹ Consent forms were distributed, signed by the participants, and collected. At that time participants were paid a \$2 show-up fee. A monitor was chosen at random to observe and assist in conducting the experiment. The monitor received a flat fee of \$10 (\$15 in session 6). Packets containing written instructions, a slip of paper printed with a random five-digit code number, and a charity selection sheet (samples are included in the appendix) were randomly distributed. Subject anonymity was preserved by recording all decisions by five-digit code numbers. Participants were told to retain the papers with the code numbers as they would collect their earnings using the numbers. The charity selection sheet is a list of ten charities with a description of the services provided by the charities. After reading the general instructions, a participant selected the one charity she wished the \$10 (\$15 in session 6) to be donated to by the proctor and at the bottom of the sheet indicated how she wished to allocate her \$10 (\$15 in session 6). The sheets were deposited in a box in the center of the room (the box was no closer than ten feet to the nearest participant).

While earnings were tabulated and payment envelopes (labeled with the code numbers) made up, participants were given a survey to complete. Earnings envelopes were placed on a

⁸ Sessions 1, 2, and 3 (21 participants per session) were conducted as the first part of a two-part experiment. The participants did not know what constituted the second part of the experiment and they were paid for only one of the two experiments, randomly determined after both were completed.

⁹ The room was a large dining hall in the student union. The room was large enough that each participant could be seated sufficiently far from any other participant to preserve privacy.

table in the center of the room and participants collected their envelopes as they exited the room. The donations to the charities were totaled, checks were written, and the monitor and proctor walked the envelopes to the nearest mailbox and posted them.

V. RESULTS

Six sessions were conducted with a total of 150 participants (6 monitors and 144 participants making decisions). Sessions 1 – 3 each had 21 participants, session 4 had 26 participants, session 5 had 30 participants, and session 6 had 31 participants. Table 1 provides a summary of the socioeconomic characteristics for the participant pool. Characteristics of participants in sessions 1 and 2, sessions 3 – 5, and session 6 differed significantly only in subjects' class. A χ^2 contingency table test rejected the null hypothesis that the number of subjects by class was independent of the session ($\chi^2(8) = 18.9$, p-value < 0.02). Differences in other characteristics were not significant.

In addition to the manipulation question mentioned above, the post-experiment survey included four additional manipulation checks (see Table 2). Participants' responses to the manipulation statements did not differ significantly across the three participant pools with the exception of the anonymity statement ($\chi^2(6) = 17.9$, p-value < 0.007). The lower mean response for participants in sessions 1 and 2 is consistent with one procedural difference between sessions 1 and 2 and sessions 3 – 6. In sessions 1 and 2, participants could relinquish their anonymity and have their names listed as donors to the charities.¹⁰

To test for confusion the post-experiment survey included the question: “. . . if you passed \$5 to your designated charity, how much in total (your contribution plus the contribution

¹⁰ Names were listed on cover letters accompanying the donation checks. Donors received no acknowledgment for their contributions.

by the experimenter) was donated to the charity?”¹¹ Seventy-two percent of the 142 participants answering the question clearly understood the instructions. Understanding was less in sessions 1 and 2 than sessions 3 – 6; 55 percent answered correctly in sessions 1 and 2; 78.4 percent answered correctly in sessions 3 – 6. The difference in correct responses is significant ($Z = 2.64$, p -value < 0.01). The better understanding by participants in sessions 3-6 may be due to having earlier answered the in-experiment manipulation questions just prior to making their allocations. Of the 103 participants in sessions 3 - 6 answering the in-experiment manipulation question, 76 percent answered it correctly.

For the following analysis, we limit our sample to the 102 (22 from sessions 1 and 2, 80 from sessions 3 – 6) unconfused participants.¹² Even though their own donations had no impact on the donations made to the charities, 56.9 percent of these 102 participants contributed a positive amount. This is significantly different ($Z = 11.60$, p -value < 0.001) from the zero contribution rate predicted by the pure altruism model and consistent with the predictions of the warm glow model. Figure 1 reports the distribution of contributions as a percentage of endowment. A mode is observed at 0 percent with (much) smaller modes observed at 41-50 percent and 91-100 percent. In general, the number of givers declines steadily through 30 percent of endowment and then becomes relatively stable over the remainder of the distribution.

Not unexpectedly, the percentage of participants making positive contributions decreases from sessions 1 and 2 to sessions 3 – 6 after the inclusion of the two-question, in-experiment manipulation check. However, a majority of participants continued to contribute. Seventy-seven

¹¹ It must be noted that the experiment design, much like the design of a standard public-goods experiment, leaves the confused participant only one way to err, and that is to contribute (see Andreoni, 1995). An alternative explanation to warm glow giving that would explain the reported results is that the participants are altruists but were confused and did not understand that their contributions would have no impact on the total contributions made to the charities.

¹²Results are not significantly altered by excluding confused participants. Data and results for the complete sample are available upon request of the authors.

percent of the 22 participants in sessions 1 and 2 made positive contributions; 51.3 percent of the 80 participants in sessions 3 – 6 made positive contributions.¹³ Both percentages are significantly different from zero: ($Z = 8.65, p\text{-value} < 0.001$; $Z = 9.18, p\text{-value} < 0.001$, respectively). The difference between the percents contributing is, however, significant ($Z = 2.47, p\text{-value} < 0.01$).

The decision to contribute or not is not predicated on a participant's characteristics. We conducted Logit regressions to test whether the probability of contributing was a function of a participant's characteristics (i.e. age, sex, attendance at religious services, employment, and major), the charity chosen, the session (=1 if session 1 or 2, 0 otherwise), or the endowment (=1 if endowment was \$15, 0 otherwise). The participant characteristic variables, the session dummy variable and the charity dummy variables were insignificant at the 95 percent level or better. The only significant variable was the endowment dummy variable (the probability of giving was less when the endowment was \$15 rather than \$10). We were unable to reject the null hypothesis that jointly all explanatory variables had coefficients equal to zero.¹⁴

Not only did a significant proportion of participants choose to contribute, their contributions were not inconsequential. The mean donation as a percent of the endowment for all participants was 20.8 percent. Mean donation as a percent of the endowment was 19.1 percent in sessions 1 and 2 and 21.2 percent in sessions 3 – 6.¹⁵

¹³ There was little difference in the percentage of participants contributing between sessions 3 – 5 (52.5 percent) and session 6 (47.6 percent).

¹⁴ Results are available upon request.

¹⁵ Mean donation as a percentage of the endowment was 21.5 percent in sessions 3 – 5 and 20.6 percent in session 6.

VI. CONCLUSIONS

This paper presents results from a direct test of the warm glow theory of charitable giving. While previous studies have generally provided evidence consistent with warm glow giving, none have isolated warm glow giving from other motives for giving and none have provided a consistent measure of the magnitude of warm glow giving. The design of the dictator experiment we conducted provides no motivation for altruistic giving. The donations made to the recipient charities are unaffected by the level of giving by the participants.

Focusing on those participants who, when tested, displayed no misunderstandings regarding the experiment's instructions; the unconfused subjects donated on average 20 percent of their \$10 or \$15 endowment with a majority (57 percent) contributing a positive amount.

Our results suggest that warm glow giving exists and is significant. Furthermore, when we compare our findings to those of other studies that examined charitable giving without separating warm glow from altruistic giving, the results suggest that warm glow motivates a substantial proportion of all giving (at least in a laboratory setting).¹⁶ For example, Eckel and Grossman (1996) report that donors gave on average 30 percent of their \$10 endowment to charity (the Red Cross). In their 2003 article, Eckel and Grossman find that donors gave an average of 49 percent of a \$10 endowment to their selected charities. On average between 30 and 40 percent of a \$12 endowment is donated to charities in the Davis, et al. (2005) study. Our finding that participants give on average 20 percent of their endowments is consistent with Eckel and Grossman's and Davis's et al. results and suggests that Andreoni's $\alpha_i < 1$, and substantially so.

¹⁶ For comparability, we focused on studies that used charities as their recipients rather than another, anonymous student.

Finding that Andreoni's altruism coefficient is substantially less than one rejects the neutrality hypothesis. If the neutrality hypothesis does not hold, then total giving to charities can be increased by taxation financed government donations to charities and subsidies for private giving. Rejection of the neutrality hypothesis also implies that voluntary bequests do not offset completely involuntary intergenerational redistributions created by government debt. Debt will have Keynesian effects (i.e., that Ricardian Equivalence does not hold).

REFERENCES

- Abrams, B. A., and Schmitz, M. D., (1978). The Crowding-Out Effect of Governmental Transfers on Private Charitable Contributions. *Public Choice*, 33, 29-39.
- Abrams, B. A., and Schmitz, M. D., (1984). The Crowding-Out Effect of Governmental Transfers on Private Charitable Contributions: Cross-Section Evidence. *National Tax Journal*, 37, 563-568.
- Andreoni, J. (1989). ‘Giving with impure altruism: Applications to charity and Ricardian equivalence. *Journal of Political Economy*, 97, 1447-1458.
- Andreoni, J. (1990). ‘Impure altruism and donations to public goods: A theory of warm-glow giving.’ *Economic Journal*, 100, 464-477.
- Andreoni, J. (1993). An Experimental Test of the Public-Goods Crowding-Out Hypothesis. *American Economic Review*, 83, 1317-1327.
- Andreoni, J. (1995). ‘Cooperation in public-goods experiments: Kindness or confusion?’ *American Economic Review*, 85, 891-904.
- Bergstrom, T., Blume, L., and Varian, H. (1986). On the Private Provision of Public Goods. *Journal of Public Economics*, 29, 25-59.
- Bolton, G. E., and Katok, E. (1998). An Experimental Test of the Crowding Out Hypothesis: The Nature of Beneficent Behavior. *Journal of Economic Behavior and Organization*, 37, 315-331.
- Carpenter, J. (2004). When in Rome: Conformity and the Provision of Public Goods. *Journal of Socio-Economics* 33: 395-408.
- Clotfelter, C. T. (1985). *Federal Tax Policy and Charitable Giving*. University of Chicago Press, Chicago.
- Davis, D. D., Millner, E. L., and Reilly, R. J. (2005). Subsidy Schemes and Charitable Contributions: A Closer Look. *Experimental Economics* 8:85-106.
- Duncan, B. (2004). A theory of impact philanthropy. *Journal of Public Economics* 88:2159-2180.
- Eckel, C. C., Grossman, P. J. (1996). Altruism in Anonymous Dictator Games. *Games and Economic Behavior* 16: 181-191.
- Eckel, C. C., Grossman, P. J. (2003). Rebates and Matching: Does How We Subsidize Charitable Contributions Matter? *Journal of Public Economics* 87: 681-701.

- Eckel, C. C., Grossman, P. J., and Johnston, M. R. (2005). An experimental test of the crowding out hypothesis. *Journal of Public Economics*, 89, 1543-1560.
- Goeree, J. K., Holt, C. A., and Laury, S. K. (2002). Private costs and public benefits: Unraveling the effects of altruism and noisy behavior. *Journal of Public Economics*, 83, 255-276.
- Harrison, G. W. and Johnson L. T. (2006). Identifying altruism in the laboratory. In D. Davis and R.M. Isaac (editors), *Experiments in Fundraising and Charitable Contributions*. Greenwich, CT: JAI Press, Research in Experimental Economics, Volume 11.
- Khanna, J., Posnett, J., and Sandler, T. (1995). Charity Donations in the UK: New Evidence Based on Panel Data. *Journal of Public Economics*, 56, 257-272.
- Khanna, J., and Sandler, T. (2000). The Crowding-In Effect of UK Government Grants. *European Economic Review*, 44, 1543-1556.
- Kingma, B. R. (1989). An Accurate Measurement of the Crowd-Out Effect, Income Effect, and Price Effect for Charitable Contributions. *Journal of Political Economy*, 97, 1197-1207.
- Konow, J. (2004). Mixed feelings: Theories and evidence of warm glow and altruism. Loyola Marymount University Working Paper.
- Palfrey, T. R. and Prisbrey, J. E. (1997). Anomalous behavior in public goods experiments : How much and why ? *American Economic Review*, 87, 829-846.
- Payne, A. A. (1998). Does The Government Crowd-Out Private Donations? New Evidence from a Sample of Non-Profit Firms. *Journal of Public Economics*, 69, 323-345.
- Payne, A. A. (2001). Measuring the Effect of Federal Research Funding on Private Donations at Research Universities: Is Federal Research Funding More than a Substitute for Private Donations? *International Tax and Public Finance*, 8, 731-751.
- Ribar, D. C., and Wilhelm, M. O. (2002). Altruistic and Joy-of-Giving Motivations in Charitable Behavior. *Journal of Political Economy*, 110, 425-457.
- Roberts, R. D. (1984). "A Positive Model of Private Charity and Public Transfers." *Journal of Political Economy*, 92, 136-148.
- Steinberg, R. (1991). Does Government Spending Crowd-Out Donations? Interpreting the Evidence. *Annals of Public and Cooperative Economics*, 62, 591-617.
- Straub, J. D. (2003). "Fundraising and Crowd-out of Charitable Contributions: New Evidence from Contributions to Public Radio." Texas A&M University Working paper.
- Warr, P. G. (1982). "Pareto Optimal Redistribution and Private Charity." *Journal of Public Economics*, 19, 131-138.

Table 1: Summary Statistics

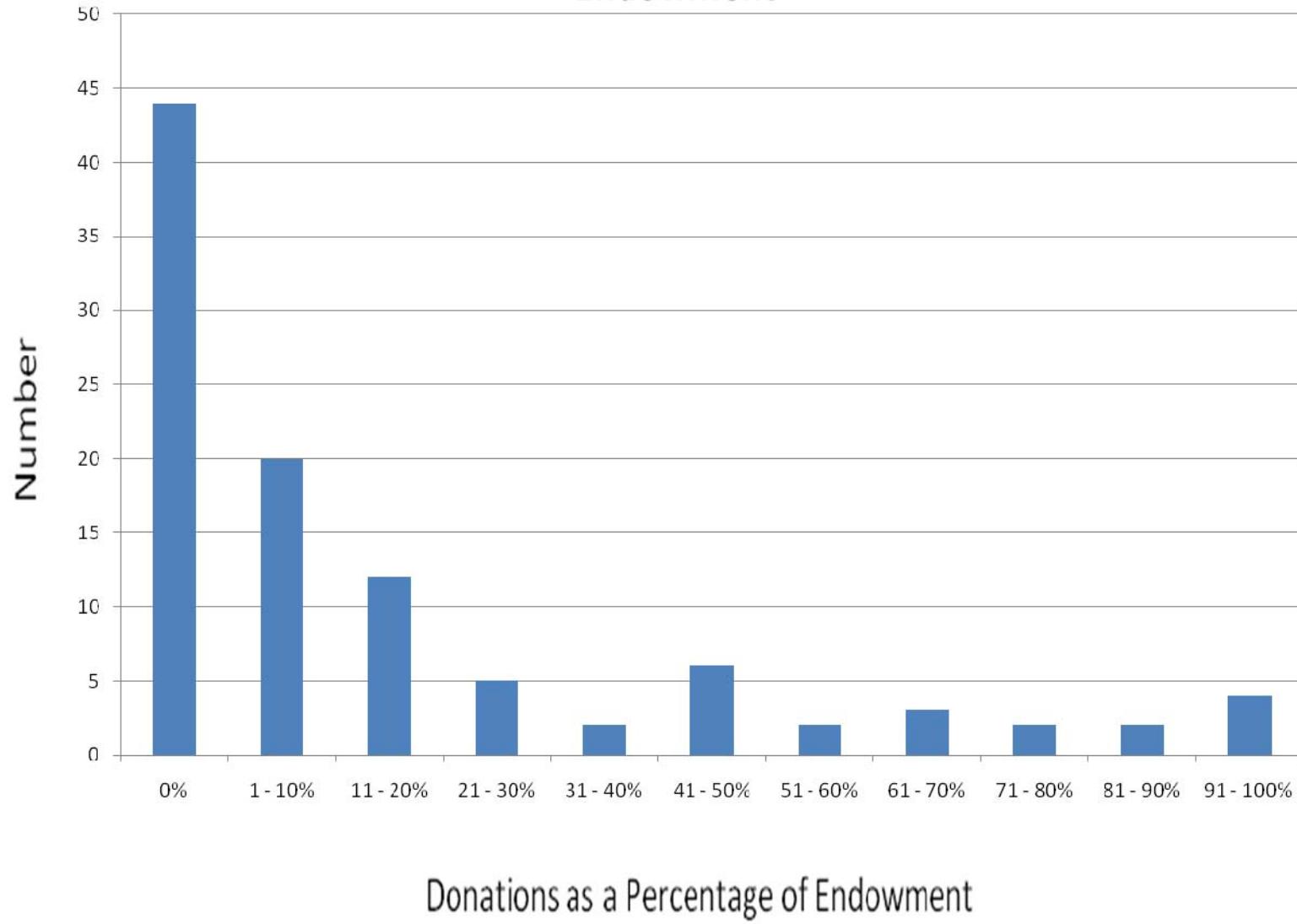
	N=144	N=40	N=74	N=30
Age				
≤18	22	9	11	2
19	45	13	27	5
20	30	12	9	9
21	23	2	15	6
22	10	2	5	3
>22	14	2	7	5
Mean	20.35	19.90	20.07	21.63
Male	73	25	37	11
Attendance at Religious Services				
Never	42	10	25	7
Less than once a month	50	15	21	14
At least once a month	33	9	20	4
Once a week	12	6	2	4
More than once a week	7	0	6	1
Employment				
Unemployed	62	18	30	14
Part-time	74	21	39	14
Full-time	8	1	5	2
Caucasian	122	33	61	28
Class				
Freshman	53	17	31	5
Sophomore	44	17	18	9
Junior	26	1	14	11
Senior	18	4	10	4
Graduate	3	1	1	1
Econ/Business Major	55	21	23	11
Number of Economics Classes Taken				
0 - 1	105	28	55	22
2 - 4	36	11	17	8
> 4	3	1	2	0
Charity Selected				
American Cancer Society	39	12	16	11
American Red Cross	15	7	5	3
Big Brothers Big Sisters	15	5	9	1
Sierra Club	9	2	7	0
Central Minnesota Task Force on Battered Women	7	1	4	2
Doctors without Borders	21	3	10	8
Feed the Children	20	5	15	0
Minnesota Aids Project	6	3	3	0
Oxfam America	5	1	2	2
YMCA	7	1	3	3

Table 2: Manipulation Check Questionnaire Summary Statistics:

Manipulation Check Questions		Mean (Std. Dev)				χ^2 Contingency Table Test χ^2 stat. (<i>p</i> -value < <i>d.f.*</i>)
		All	Sessions 1 and 2	Sessions 3-5	Session 6	
1.	The procedures followed in this experiment preserved your anonymity.	4.40 (1.01)	4.13 (1.07)	4.51 (1.04)	4.50 (0.82)	17.93 (0.007) 6
2.	The money you passed to your designated charity will be sent to the charity.	4.58 (0.80)	4.53 (0.84)	4.66 (0.63)	4.47 (1.07)	0.69 (0.96) 4
3.	The instructions for the experiment were clear and easy to follow.	4.32 (1.02)	4.45 (1.04)	4.28 (1.01)	4.23 (1.04)	7.39 (0.50) 8
4.	The recipients of donations to your designated Charity are deserving of support.	4.79 (0.72)	4.75 (0.78)	4.91 (0.41)	4.57 (1.10)	6.34 (0.18) 4

* - For question 1, responses in response categories 1 and 2 were grouped together due to lack of observations in some categories. For questions 2 and 4, responses in response categories 1, 2, and 3 were grouped together due to lack of observations in some categories.

Figure 1: Distribution of Donations as a Percentage of Endowment



APPENDIX

INSTRUCTIONS

You have been asked to participate in an economics experiment. In the course of this experiment you may earn money, which will be paid to you in cash.

One of the persons in this room will be chosen to be the monitor for today's experiment. The monitor will be paid \$10. The monitor will be in charge of the envelopes as explained below. In addition the monitor will verify that the instructions have been followed as they appear here.

You have each been given a piece of paper with your unique five-digit code number and a **CHARITY SELECTION SHEET**. Your code number will be the same for both parts of the experiment and should be the same as the number on your **CHARITY SELECTION SHEET**.

Keep the paper with the code number. You will use this number to collect your earnings at the end of this session.

For this experiment each of you will be paired with a charity of your own choosing selected from the list of ten different charities on the **CHARITY SELECTION SHEET**.

You will indicate your charity of choice by placing an **X** in the box next to that charity on the **CHARITY SELECTION SHEET**. **YOU MUST SELECT ONE AND ONLY ONE CHARITY.**

The charity you select will receive \$10 from the proctor.

You have **\$10.00** to be divided between yourself and your designated charity. You must decide how much of the **\$10.00** 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.

PLEASE NOTE: THE AMOUNT CONTRIBUTED BY THE PROCTOR TO YOUR SELECTED CHARITY WILL BE REDUCED BY HOWEVER MUCH YOU GIVE TO YOUR SELECTED CHARITY. YOUR SELECTED CHARITY WILL RECEIVE NEITHER MORE NOR LESS THAN \$10.

Example: You elect to keep \$8 for yourself and pass \$2 to your charity of choice. You will earn \$8. Your selected charity will receive \$10: \$8 from the proctor (= the original \$10 less \$2 in response to your donation) + \$2 from you.

Indicate in the spaces at the bottom of the **CHARITY SELECTION SHEET** how much of the **\$10.00** you elect to keep for yourself and how much you elect to pass to the charity. ***NOTE: the amount you elect to keep for yourself, plus the amount you elect to pass to the charity must sum to \$10.00.***

Once you have made your decision please place your **CHARITY SELECTION SHEET** in the box at the front of the room and then retake your seat.

Once everyone has made their decisions, the proctors will calculate earnings and contributions to the charities. Your earnings will be placed in an envelope marked with your five-digit code number. The proctors will calculate the total donations to each charity. The proctors will make out checks for these amounts. The monitor will place the checks in addressed and stamped envelopes. The monitor and a proctor will go together to the nearest mailbox and drop the envelopes in the mailbox.

While the proctors are making up your envelopes, you will receive a SURVEY form. Please enter your code number in the space provided and complete the survey questions. When you have completed the SURVEY, deposit it in the box at the front of the room. You are then free to go.

Your may pick up your envelope as you exit the room.

After signing a form verifying that the experiment was conducted according to the instructions, the monitor is free to leave. The experiment is then over.

Before making your allocation decision, please complete the following short quiz.

Of her \$10, Sarah passes \$4 to her designated charity.

3. How much will Sarah's designated charity receive in total? \$ _____

4. How much will Sarah earn? \$ _____

Code Number _____

CHARITY SELECTION SHEET

For this study, each of you will be paired with a charity of your choice. Following is a list of ten possible charities. Please select the **ONE** charity you wish to be paired with by placing an X in the box next to your choice.

	American Cancer Society Provides many services to cancer patients and their families such as information, medical equipment, transportation to treatment locations, and a support system
	American Red Cross Offers blood donation information and services, disaster relief, many helpful educational classes, as well as HIV/ AIDS support groups
	Big Brothers Big Sisters Provides one-to-one mentoring for youth and children residing in a one parent family for the purpose of creating caring, confident and competent young adults
	Big River Sierra Club Protects and preserves environmentally sensitive areas
	Central Minnesota Task Force on Battered Women Offers safe shelter to battered women and their children, as well as food and clothing, assistance with legal, medical, and financial problems, and information/support groups
	Doctors Without Borders Doctors and nurses volunteer to provide urgent medical care in some 70 countries to civilian victims of war and disaster regardless of race, religion, or politics
	Feed The Children One of America's most effective charities providing food, clothing, medical care, education, and emergency relief to children in the United States and overseas since 1979
	Minnesota AIDS Project Provides referrals to HIV sensitive physicians, help obtain/maintain medical coverage, support groups, legal services, life enhancement programs, toll free information and referral line, and transportation services
	Oxfam America Invests privately raised funds and technical expertise in local organizations around the world that hold promise in their efforts to help poor move out of poverty; committed to long term relationships in search of lasting solutions to hunger, poverty, and social inequities
	YMCA Provides parent visitation monitoring services and physical fitness services

Of your **\$10.00**, how much do you wish to keep for yourself, and how much do you wish to pass to your charity of choice?

Keep for Self: \$ _____

Pass to Charity: \$ _____

Total: \$ 10.00