Altruistic Behavior and Habit Formation

by

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Abstract

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This paper examines whether altruistic behavior is habit forming. We take advantage of a data set that includes a rich set of information concerning individuals' donations of cash and time as adults as well as information about whether they were involved with charitable activities when they were young. The basic premise is that if altruistic behavior when young is a good predictor of such behavior in adulthood, then this is consistent with the notion that altruistic behavior is habit forming.

Using U.S. data, we examine both donations of money and time, and find that engaging in charitable behavior when young is a strong predictor of adult altruistic behavior, *ceteris paribus.* A major issue in the interpretation of this result is that the correlation between youthful and adult altruistic behavior may be due to some third variable that affects both. While it is impossible to rule out such a possibility, we are able to control for family influences that likely could affect lifetime attitudes toward altruism. We find that, even taking this factor into account, altruistic behavior as a youth plays a significant role in explaining adult behavior. This result applies to donations of money and time to a variety of types of non-profit organizations.

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1. Introduction

Seniors at many universities are solicited for donations from their alma maters even before they graduate. The solicitation activities continue after graduation, when many of the new alumni are in entry level jobs or graduate school. When these recent graduates say that they don't have much money, the solicitors respond that the important thing is to give something, even if it is just $5. This practice might seem odd. Why expend all this effort merely to raise a few dollars? Why not just wait until the potential donors are older and have a greater capacity to give? The reason is a deeply held belief among university development officers: altruistic behavior is habit forming. Thus, for example, the president of the University of South Dakota Foundation explained that "[g]etting young alumni to give just a little, $10 or $15, gets them in the habit. Maybe many years down the road they will be able to donate a lot" (quoted in Meer [2008]).

This view is held by other types of non-profits as well. For example, the director of Canada's largest direct-response fundraising organization opined that "people giving money to the tsunami appeals who haven't given to charities before [will] find that they kind of like the experience, and…end up giving money to other things" (quoted in Reinstein [2008, p.22]). Whether habit formation is an important factor in altruistic behavior is of some importance. In 2007, charitable giving in the United States was over $306 billion dollars (Giving USA [2008]), and between September 2007 and September 2008, about 62 million people engaged in volunteer activities (Bureau of Labor Statistics [2009]).

Habit formation has been studied intensively by economists, particularly in the context of consumption behavior (Dynan [2000]). The general conclusion is that it is an important phenomenon in household spending decisions. When we turn to altruistic behavior, academics

as well as fundraisers find this notion to be plausible. For example, Monks [2003, p. 124] conjectures that inducing young alumni to donate early "may have significant lifetime effects," and Turner *et al.* [2007, p. 819] note that "young alumni are sometimes encouraged to make token gifts…so that they may begin a habit of giving back." However, there is very little statistical evidence for the validity of the habit-formation hypothesis, and the few papers that have been written reach somewhat different conclusions. In this paper we bring new evidence to bear on the question of whether altruistic activities early in life lead to more altruistic behavior as an adult, other things being the same. We analyze both donations of money and time to non-profit institutions.

Section 2 reviews the previous research on habit formation and altruism. Section 3 describes the data and econometric framework. We present our results in Section 4. Our main finding is that involvement in altruistic activities when young is a strong predictor of adult altruistic behavior. This holds true even taking into account aspects of the individual's family environment as a youth that might affect lifetime preferences for altruism. These findings are consistent with the notion that charitable behavior is habit forming. Section 5 presents some alternative specifications of the model. We find that the basic results are robust to changes in specification. For example, we find that one cannot reject the hypothesis that the habit formation process is the same for men and women. We also present evidence that youthful experiences with altruism affect adult giving to a variety of types of non-profit institutions, not just colleges and universities. Section 6 concludes with a brief summary and a discussion of possible topics for future research.

2. Previous Literature

One approach to examining the habit formation hypothesis is to analyze the relationship between altruistic behavior at a particular point in time and prior altruistic behavior. For example, Lee, Piliavin and Call [1999] analyze data from a 1989 telephone interview study that asked respondents whether they donated blood, donated money, or spent time volunteering, and then asked whether they had engaged in the same activities the year before. They find a strong positive correlation between current activity and activity the year before. Dill [2009] analyzes data from the National Education Longitudinal Study of 1988, and finds that individuals who volunteered in high school are more likely to be volunteers as young adults. A similar tack is taken by Lindahl and Winship [1992] in their analysis of alumni donations to Northwestern University. They estimate a model in which the amount of an individual's giving between 1988 and 1990 is a function of the amount donated before 1988, and find that "past giving is the strongest single factor in predicting future giving" (p. 43). In a subsequent paper they stress that it is not clear whether the relationship is causal (Lindahl and Winship [1994, p. 743]), a qualification that is undoubtedly correct. There are several reasons why giving from one period to a next could be correlated in the absence of habit formation.

Auten et al. [2002] use panel data from the years 1979 to 1993 to examine the determinants of tax deductible charitable contributions. Their econometric study estimates the correlations in the amounts donated in various years, and indicates that one cannot reject the hypothesis that they are zero. On this basis, they conclude that "habit formation is probably not very important in charitable behavior" (p. 378). A possible limitation of their study is that, because they rely on tax return data, they only observe donations that are listed as itemized deductions. In addition, they make their inferences about habit formation on the basis of year-to-year correlation patterns in a relatively short panel. Like Lindahl and Winship [1992], then, their

analysis cannot shed light on the question of whether behavioral patterns established when young can explain altruistic behavior later in life.

Meer [2008] examines the relationship between giving when young and adult donative behavior. His econometric strategy addresses directly the possibility that donations earlier in life may be an endogenous variable. Using data from an anonymous research university, Meer takes advantage of the observation that an individual's donations when she is young are plausibly related to the performance of the university's athletic teams when she was a student, but by the time she is an adult, athletic performance when she was a student has no impact.[1] Meer finds that the frequency with which young alumni donate has a substantial impact on giving in later years, a finding that is consistent with the habit formation hypothesis. The generality of his results may be limited, though, by the fact that he examines only one type of charitable giving and at a single institution.

The papers discussed so far look at current giving as some function of past giving. Another tack would be to see if an individual's altruistic behavior when young establishes a "taste" for giving in the future. A number of papers have examined a different but related question, which is whether an individual's family environment as a youth affects his or her future altruistic behavior. For example, Schervish and Havens [1997] estimate a regression in which current charitable giving depends on an indicator variable for whether the individual saw somebody in his or her family help others when young. They find that this variable is significant. Mustillo et al. [2004] show that the likelihood that a woman volunteers as an adult depends on whether or not her mother was involved in volunteer activity. Similarly, Bekkers'

[1] In technical terms, the university's athletic performance when the individual was young is used as an instrument for donations made when young. See Wooldridge [2000] for details.

[2005] analysis of data from the Netherlands indicates that if a person's parents did volunteer work when he or she was a child, then the child's charitable donations as an adult are higher, *ceteris paribus*. On the other hand, Rosenthal [1998] finds that the probability that an individual engages in political volunteering does not depend on his or her family's altruistic activities.

As already noted, these papers do not pertain directly to the habit-formation hypothesis, because they do not attempt to relate the individual's own altruistic activities when young to behavior as an adult. However, such studies remind us of the importance of taking into account an individual's childhood environment when examining his or her adult charitable behavior.

In short, the empirical literature on habit formation in altruistic behavior is thin, and has yielded mixed results. Our goal in this paper is to fill in some of the gaps in our understanding of this phenomenon. We take advantage of a micro data set that includes a rich set of information about both individuals' current altruistic behavior, and their behavior when they were young. We analyze several cross sections jointly, to reduce the likelihood that our results are due to unusual circumstances in a particular year. Unlike most previous work, we look at both monetary contributions and volunteer work. As well, we examine giving to various kinds of non-profits (for example, religious, educational, and so on) to see whether habit formation is more important in some contexts than in others. We turn now to the data and econometric model that we use to implement this strategy.

3. Data and Econometric Model.

3.1 Data

Our data come from the Independent Sector's *Survey of Giving and Volunteering in the United States (SG&V)*. According to the Independent Sector, the survey's purpose is "to provide reliable information about volunteering and giving patterns and the motivations that correlate with such behavior." The dataset, which contains a great deal of information about donations of cash and time, consists of a series of cross sections that are nationally representative of the U.S. adult population. The survey began in 1988 and is repeated approximately every two years. The questions asked vary somewhat from year to year. We use the data from 1992, 1994, 1996, 1999, and 2001, because these waves contain all the variables that are central to this study. The number of respondents varies by year: 2,671 for 1992, 1,509 for 1994, 2,719 for 1996, 2,553 for 1999 and 4,178 for 2001. This gives us a total sample of 13,630 individuals. The *SG&V* includes sample weights, and they are used in all of our calculations.

Characterizing altruistic behavior. One way to contribute to an organization is to donate money; another is to donate time. Our data allow us to examine contributions of both money and time. Specifically, our dependent variables are defined as follows:

DidDonate: This binary variable equals one if the respondent donated to any type of charity during the previous year. The average is 69.6 percent.

AmountDonate: This continuous variable is the amount of money, in 2001 dollars, that individuals donated during the previous calendar year. The average amount donated, conditional on the gift being positive, is $1,286, with a standard deviation of $2,798. The relatively large standard deviation reflects the highly skewed distribution of donations--the maximal gift in our sample is $113,302. As noted below, to make sure that outliers are not dominating our analysis, we re-estimated our baseline models for *AmountDonate* deleting the observations with donations in the top one percent.

DidVolunteer: This binary variable takes a value of one if the respondent volunteered for any kind of non-profit institution during the previous month. The average is 37.0 percent.

HoursVolunteer: The final dependent variable is continuous and represents the number of hours volunteered in the previous calendar month. The average is 23.4, conditional on volunteering, with a standard deviation of 27.9. Again, we re-estimated the model after deleting the observations with the top one percent of hours volunteered.

The summary statistics and definitions of the dependent variables are recorded in Table 1.

Independent variables. A major issue is how to characterize individuals' involvement in altruistic behavior when they were young. The survey asks two questions that are useful in this regard. The first is, "When you were young[2] did you help raise money for a cause or organization?" We create the variable *Fundraiser*, which takes a value of one if the individual responded positively, and zero otherwise. Our premise is that a finding that *Fundraiser* positively affects altruistic behavior as an adult, *ceteris paribus*, is consistent with the habit formation hypothesis. As far as we know, such a variable has not been studied in previous analyses of habit formation in altruistic behavior. As indicated in Table 2, which shows the summary statistics for all our right hand side variables, about 36 percent of the respondents in the sample participated in fundraisers when they were young.

The second relevant question is, "When you were young did you do some kind of volunteer work?" We create the variable Y*outhVol*, which is one if the individual volunteered as a youth, and zero otherwise. About 47 percent of the respondents did some kind of volunteer work when they were young. Note that helping to raise money is a type of volunteer work.

[2] Those administering the survey were instructed to say that if asked, "young" means 18 years of age or younger.

However, it is a distinct type of volunteer work, and as such might have its own impact on the individual's future altruistic activity.

As we noted earlier, previous literature has shown that parents' involvement in altruistic activity affects their children's behavior as an adult. At the same time, it seems likely that parents' altruistic behavior is positively correlated with the activities undertaken by their children when they are living at home. To the extent this is true, failure to control for the parents' volunteer behavior would lead to upwardly biased estimates of the impact of children's altruistic activities on their adult behavior. We therefore include on the right hand side *ParentsVol*, an indicator variable that takes a value of one if the respondent observed either of his or her parents volunteer when the respondent was a youth. About 50 percent of respondents reported that they observed at least one of their parents volunteer when they were a child.

One should note that the information from childhood on both the respondents' behavior and their parents' behavior is reported retrospectively. As such, respondents who currently donate and volunteer might be more likely to remember childhood participation in these activities, which would induce an upward bias in our estimates of the relationship between altruistic activity when young and an adult. In her discussion of the methodological problems associated with the use of retrospective data, Rossi [2001, p. 243] observes that there isn't much to be done about it, but does observe that the problem might be mitigated when retrospective variables are pegged loosely to the years of childhood rather than to specific ages. The retrospective variables in the *SG&V* meet this criterion. In any case, the possible interpretive issues that arise because of the retrospective nature of the data should be kept in mind.

Turning now to the other covariates, an extensive empirical literature provides useful guidance with respect to variables that should be included in models of charitable donations.[3] These variables include income (Andreoni [2006]), age (Clotfelter [1997]), gender (Andreoni *et al*. [2003]), race (Bryant et al. [2003]), marital status (Andreoni *et al.* [2003]), employment status (Havens *et al*. [2007]), and education (Andreoni [2006]). Freeman's [1997] study of volunteer activity uses very similar right hand side variables. Our data set permits us to include all these variables. Another variable that has been shown to have explanatory power in some previous studies is religious affiliation. Unfortunately, the *SG&V* includes a question on religion only for a subset of the years in our sample. We therefore do not include it in our basic specification. However, as an exercise, we re-estimated the model using only data for the years in which religion is available, and found that including the religious affiliation variables did not change our substantive results.

Age and Age^2 are continuous variables, measured in years. We use indicator variables for gender, marital status, and employment status. (Unemployed and retired workers are both included in the "not employed" category.) Education is entered as a set of dichotomous variables; the omitted category in our regressions is less education than high school. Income is measured in thousands of 2001 dollars. We enter it as a quadratic because previous research suggests that the relationship between giving and income is nonlinear (Andreoni [2006]). We do not have data on individuals' marginal tax rates. As Feenberg [1987] and others have noted, while one could use tax tables to impute a tax rate for each individual, such a variable would simply be a nonlinear function of other right hand side variables, with income the most important. Hence, its coefficient could not convincingly be identified as the independent effect of the "tax price of

[3] For general surveys, see Andreoni [2006], Havens et al. [2007], and Vesterlund [2006].

giving." In effect, then, in our model the quadratic in income is picking up both the effect of income and the effect of the tax system on altruistic behavior. The fact that we cannot give a clean interpretation to the coefficients on the income variables is not a serious limitation, since neither the independent effect of income nor tax price is the focus of this research. Finally, race is characterized by a series of dichotomous variables, one each for Whites, Blacks, Asians, and Others.[4] White is the omitted group in the regressions.

In addition to the variables in Table 1, each regression includes indicators for the state in which the individual resides, and year effects. The year effects reflect the impacts of the business cycle, the stock market, and so on; see Bristol [1991] and Ehrenberg and Smith [2001]. As noted earlier, using several cross sections decreases the likelihood that our results will be dominated by the idiosyncrasies of the economic or social environment in a particular year.

3.2 Econometric Model

Because the amount donated is zero for a substantial number of observations, we use the Tobit estimator rather than ordinary least squares; this statistical technique is described in the appendix. We include on the right hand side all the independent variables in Table 2, plus state effects and year effects. We assume that the determinants of the amount of giving and the probability of giving are the same. Because the quantitative impacts of youthful experience on both the probability and amount of giving are of interest, we report both sets of marginal effects. We treat adult volunteer activity in the same fashion. That is, we use the same right hand side variables to estimate the determinants of the number of hours volunteered and the probability of volunteering at all.

[4] The "other" group includes all groups not categorized as White, Black, or Asian, namely: American Indians, Alaskan Natives, Native Hawaiians and Pacific Islanders.

Our empirical setup is consistent with the theoretical framework outlined by Andreoni [2006, pp. 1249-50]. Specifically, one can view the estimating equations as having been generated by a conventional utility-maximizing model in which the arguments of the utility function include amount donated to charities and time spent volunteering, *inter alia.* Within such a framework, the variables that determine the variables of interest are the same for both donations and time spent volunteering ([Brown and Lankford [1992]), although there is no reason to expect that any given variable will have the same effect on the two decisions. The possibility of habit formation arises in such a model when altruistic behavior in the past increases the marginal utility of altruistic behavior in the present, in the spirit of Becker and Murphy's [1988] work on "rational addiction." An alternative construct, the role-identity model, has been used by sociologists to study donations of cash and time; see Lee, Piliavin and Call [1999]. Their empirical implementation of this conceptual framework is similar to ours in that they allow the same set of variables to influence both decisions, but do not constrain any given variable to have the same effect on each decision.

4. Results

The basic results are reported in Table 3. Column (1) shows the estimated marginal effects for the probability that the respondent donated cash in the past year, column (2) for the (unconditional) total amount of charitable contributions during the previous year, column (3) for the probability that the respondent volunteered in the previous month, and column (4) for the (unconditional) total number of hours volunteered during the previous month. Before turning to the estimates for the variables relating to behavior as a youth, we discuss briefly the other right hand side variables. The positive linear terms and negative quadratic terms in age indicate that the respective forms of altruistic behavior first increase and then decrease in age. The

coefficients in columns (1) and (2) imply that donations of cash increase throughout the entire relevant range; columns (3) and (4) imply that volunteer activity peaks in the late 30s. One cannot reject the hypothesis that men and women have the same propensity to make donations, but men are less likely than women to do volunteer work. Being employed is associated with a somewhat lower propensity to make cash gifts and a somewhat higher propensity to volunteer. The likelihood of giving increases with education, as does time spent volunteering. Consistent with previous studies, giving increases with income. Whites have a greater likelihood of donating cash and volunteering than Asians; the differences between Whites and Blacks are statistically insignificant. All these results are generally in line with those from the literature (Andreoni [2006]).

We now turn to our main concern, the variables relating to the impact of altruistic activities when young upon adult behavior. From column (1), we see that an individual who was involved in fundraising when young is 3.1 percentage points more likely to make a cash gift as an adult, and individuals who volunteered when young are about 8 percentage points more likely to make a cash gift. Importantly, these effects are statistically significant even after taking into account parental volunteer activity, which itself raises the probability that an individual makes a cash gift as an adult by 5.6 percentage points.[5] Thus, the positive correlation between youthful

[5] If *ParentsVol* is omitted from the regression, the coefficients on the indicators for altruistic experience when young increase. For example, in the equation for the probability of making a cash gift, the marginal effect of *Fundraiser* increases by 0.48 percentage points, and that of *YouthVol* increases by 0.85 percentage points. Hence, by ignoring parents' volunteer activity, one may overestimate the impact of altruistic behavior when young.

and adult altruistic behavior does not seem to be simply an artifact of the fact that altruistic people come from families with a culture of altruism.[6]

Column (2) shows that participation in a fundraiser when young increases giving by $122 per year as an adult whereas the effect of having volunteered is larger, $328. Having parents who volunteered increases the amount donated by $217. According to column (3), altruistic behavior as a youth affects volunteer activity as well as cash gifts. Specifically, individuals who fundraised when they were young are 6.0 percentage points more likely to do volunteer work when they are adults, and those who volunteered when young are 8.3 percentage points more likely to volunteer as adults. Again, this takes into account parental volunteer activity, which exerts a 9.0 percentage point increase in an individual's likelihood of volunteering as an adult.

Finally, column (4) shows the determinants of time spent volunteering. Individuals who participated in fundraisers when young volunteer 2.4 more hours per month than those who did not, and individuals who volunteered when young volunteer about 3.2 more hours per month. To put these figures in perspective, note that the unconditional mean of volunteering is only about 9 hours per month.[7] Hence, these estimates represent substantial changes in volunteer activity.

To summarize: Our findings with respect to the impact of various demographic variables on donations and volunteering, reported in Table 3, are generally consistent with most previous research, suggesting that there is nothing idiosyncratic about our data. Further, involvement in altruistic activities as a youth increases both adult cash donations and volunteering, *ceteris paribus*. The effects are statistically significant and substantial in magnitude. Importantly, they

[6] We estimated a variant of our basic model that allows the impact of altruistic activity when young to depend on whether or not there was parental volunteer activity. Mechanically, this means interacting *ParentsVol* with *Fundraiser* and *YouthVol*. In general, the interaction terms were statistically insignificant.

[7] From Table 1, the proportion of individuals who volunteer is 0.370 and the conditional mean is 23.4, so the unconditional mean is 8.7.

do not appear merely to be picking up the effect of a family culture of altruism, because the empirical model takes into account parental volunteer activity. These findings are consistent with the notion that altruistic behavior is habit forming.

5. Additional Issues

In this section we estimate a number of alternative models, which allows us to assess the robustness of the results and to explore further the relationship between altruistic behavior as a youth and as an adult.

5.1 Differences by Gender

Some previous research shows men and women differ in the determinants of their altruistic behavior (Andreoni and Vesterlund [2001], Rossi [2001]). To assess whether the habit formation process is different by gender, we augment the basic model with a set of terms that interact the variables characterizing behavior when young with an indicator for whether the individual is a male. The coefficients on these variables are estimates of differential impacts by gender. The results are reported in Table 4 and suggest that, in general, there are no statistically discernible differences between men and women. That is, we find no support for the hypothesis that the relationship between childhood and adult altruism varies by gender.

5.2 Differences by Age

In practically all analyses of altruistic behavior, age is an important variable (Clotfelter [1997], Freeman [1997]). This raises the possibility that the impact of youthful altruistic behavior may depend on an individual's age. Perhaps, for example, the impact of experiences when young dissipates with age. To investigate this possibility, we augment the baseline models with a set of interactions between the variables that characterize youthful altruistic behavior and

the respondent's age. As reported in Table 5, for decisions relating to cash donations, one cannot reject the hypothesis that the interaction terms are zero. For decisions relating to volunteer activity, the coefficients are negative, but only marginally significant. Taken together, these findings suggest that, viewed through the lens of our framework, we cannot reject the hypothesis that the donative patterns established by youthful experience with altruism do not weaken over time.

5.3 Differences by Type of Non-Profit Organization

As indicated above, some of the most careful work on the habit formation hypothesis focuses on donations to universities. Our data allow us to examine whether habit formation is important for other kinds of giving as well. In terms of our underlying theoretical model, in effect we are allowing donations of cash and time to various types of charities to enter the utility function as separate arguments.

We begin by selecting the five types of non-profits for which donations and volunteer work are most common in our data: education, the environment, health, religion, and youth development.[8] Education includes elementary and secondary schools, both public and private, higher education, and libraries. The environment category includes programs for environmental quality and beautifications as well as animal welfare. Health includes hospitals, mental health organizations, nursing homes, hospices, clinics, and organizations such as the American Cancer Society. Religious organizations include churches, synagogues, convents, seminaries, and mosques. Youth development includes organizations such as Boy Scouts, Girl Scouts, 4H Clubs,

[8] The proportion of the sample that makes a donation and the proportion that volunteer for each non-profit category are as follows: education (19.2%, 16.0%), environment (15.2%, 8.4%), health (29.4%, 12.3%), religious (50.6%, 25.7%), and youth development (22.8%, 15.4%). The other categories are arts, human services, international/foreign, foundations, public or society benefit, adult recreation, other, work-related, informal, and political.

and Little League. We re-estimate the basic models of Table 3 for each type of non-profit organization.

The results are presented in Table 6. A glance at the table indicates that, in general, altruistic behavior when young is a statistically significant determinant of adult giving and volunteering in all categories. The magnitudes vary across the various types of non-profits. The impacts are the smallest for environmental organizations. No category has the largest effect for every variable, although the very large impacts of *YouthVol* on both donations and volunteering for religious organizations are noteworthy.[9] It seems safe to conclude that the habit-forming tendencies of youthful altruistic behavior affect adult contributions of time and money to a wide variety of non-profit entities.

6. Conclusion

We began by noting that many fundraisers believe that altruistic behavior is habit-forming. However, academic research testing the habit-formation hypothesis has yielded mixed results. We investigate this issue with a rich data set that contains information on both amounts given to non-profit organizations and time spent volunteering. The data include indicators of individuals' fundraising and volunteer behavior when they were young. We find that individuals who were involved with altruistic activities when young are more likely to make cash donations as adults and more likely to do volunteer work as well. This holds true even after taking into account whether individuals' parents were volunteers, which suggests that charitable behavior when young has an impact that is independent of a family culture of altruism. Further, habit formation affects contributions to various kinds of non-profit institutions, not just colleges and

[9] Although the effects of *Fundraiser* and *YouthVol* are qualitatively similar across different types of non-profits, conventional chi-squared tests reject the hypothesis that they are the same.

universities. While one must be cautious in drawing conclusions for practitioners in the field, it would seem fair to say that an implication of our work is that charitable organizations should consider getting donors involved fairly early in their lives. Specifically, programs that encourage children to fundraise and volunteer might be an investment that pays a substantial return when they become adults.

There is, however, a caveat. Our data include no information about whether contributions were made online or using more traditional means. In this context, it is interesting to consider a recent study conducted by Target Analytics [2009], which showed that first-time online donors often do not return to make additional donations. Does this mean that online giving is not habit-forming in the same way as traditional methods? Given that modern computer technology did not even exist when most of the individuals in our sample were young, we cannot address that question. And if online donative activity does not have the same kind of habit-forming effects, can non-profits develop alternative strategies to encourage donations? These are important questions for future research.

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Appendix

The purpose of this appendix is to discuss some technical issues associated with the estimation of the model. The issues arise primarily because of the structure of the data on cash gifts and time spent volunteering.

As noted in Section 3.1 of the text, our sample contains a few large outliers with respect to dollars of donations and hours of volunteering, and such observations can conceivably dominate the results. To determine whether this is the case, we remove the top 1 percent of donations from the observations used to estimate the model of column (2) of Table 3, and the top 1 percent of volunteer hours used to estimate the model of column (4), and then estimate the regressions using the truncated data.

In results that are available upon request, we find that after outliers are removed from the data, *Fundraiser* and *YouthVol* remain statistically significant in both equations. The marginal effects for hours of volunteering are a bit smaller than their counterparts in Table 3; for the amounts donated, the effect of *Fundraiser* is a bit larger and the effect of *YouthVol* is smaller. The basic story is unchanged, so we conclude that our findings regarding the impact of habit formation on donating and volunteering are not driven by outliers.

We next turn to a technical issue that arises because, in a substantial of observations, the amount of money given and/or the amount of time volunteered are zero. (See Table 1.) Under such conditions, ordinary least squares can be used to estimate the parameters of the model, but it is possible that the predicted values generated by the model will be negative. However, neither donations nor hours spent volunteering can be negative. An estimation procedure called Tobit guarantees that the predicted value of the dependent variable (in our case, dollars donated or hours volunteered) will not be less than zero. Roughly speaking, the Tobit model simultaneously

estimates the probability that a given set of right hand side variables will lead to a positive value, and the magnitude of the value conditional on it being positive. We assume that the variables that determine the probability of making a donation and the conditional amount donated are the same. Under this condition, the Tobit estimates also allow us to generate the marginal effect of each right hand side variable on the probability of making a donation. For details see Wooldridge [2000, pp. 540-546].

Table 1*

Dependent Variable Definitions and Summary Statistics

Variable	Description	Mean	Standard Deviation
DidDonate	1 if the respondent donated money within the previous year	0.6960	0.4600
AmountDonate	Total giving for the previous year in 2001 dollars	1285.6	2797.7
DidVolunteer	1 if the respondent volunteered within the previous month	0.3702	0.4829
HoursVolunteer	Total volunteer hours within the past month	23.43	27.86

* The maximal number of respondents is 13,630. However, not every question is answered in every survey; therefore, the number of observations varies slightly across variables. Both *AmountDonate* and *HoursVolunteer* are amounts donated and hours volunteered, respectively, conditional on making a donation and volunteering.

Table 2*

Independent Variable Definitions and Summary Statistics

Variable	Description	Mean	Standard Deviation
Fundraiser	1 if as a youth the respondent participated in a fundraiser	0.3610	0.4803
YouthVol	1 if as a youth the respondent volunteered	0.4735	0.4993
ParentsVol	1 if as a youth at the respondent observed at least one of his or her parents volunteering	0.4960	0.5000
Age	Age of respondent in years	44.71	17.39
Age^2	Age squared	2301.4	1736.0
Male	1 if the respondent is male	0.4768	0.4995
Married	1 if the respondent is married	0.6053	0.4888
Employed	1 if the respondent is employed	0.6159	0.4864
Education LessHS	Omitted Category: 1 if the respondent did not complete high school	0.1994	0.3995
HS	1 if the respondent's highest education is a high school degree	0.3028	0.4595
SomeCollege	1 if the respondent's highest education is some college	0.2800	0.4490
College	1 if the respondent's highest education is an undergraduate college degree	0.1227	0.3281
PostCollege	1 if the respondent's highest education is a more than an undergraduate college degree	0.0951	0.2934
Income	Income of respondent in 2001 dollars, in thousands of dollars	49.94	36.46
$Income^2$	Income squared	3823.1	5797.2
Race/ Ethnicity White	Omitted Category: 1 if the respondent is White	0.8494	0.3577
Black	1 if the respondent is Black	0.1127	0.3163

Asian	1 if the respondent is Asian	0.0179	0.1328
Other	1 if the respondent is other then White, Black, or Asian	0.0206	0.1421

* The maximal number of respondents is 13,630. However, not every question is answered in every survey; therefore, the number of observations varies modestly for each variable. The empirical models also include state and time effect.

Table 3*

Basic Results

	(1)	(2)	(3)	(4)
Variable	**DidDonate**	**AmountDonate**	**DidVolunteer**	**HoursVolunteer**
Fundraiser	0.0311***	122.4***	0.0604***	2.384***
	(0.0092)	(35.81)	(0.0096)	(0.3723)
YouthVol	0.0839***	328.5***	0.0827***	3.226***
	(0.0092)	(35.80)	(0.0097)	(0.3788)
ParentsVol	0.0556***	217.1***	0.0893***	3.481***
	(0.0087)	(33.99)	(0.0093)	(0.3620)
Age	0.0038**	14.76**	0.0038**	0.1493**
	(0.0015)	(5.775)	(0.0016)	(0.0640)
Age^2	-0.00001	-0.0565	-0.00005***	-0.0020***
	(0.00002)	(0.0591)	(0.00002)	(0.0007)
Male	0.0034	13.14	-0.0858***	-3.332***
	(0.0083)	(32.59)	(0.0089)	(0.3484)
Married	0.0779***	298.6***	0.0735***	2.818***
	(0.0094)	(36.57)	(0.0102)	(0.3957)
Employed	-0.0307***	-121.0***	0.0218**	0.8449**
	(0.0104)	(40.69)	(0.0110)	(0.4288)
HS	0.0628***	252.4***	0.0136	0.5300
	(0.0133)	(51.73)	(0.0149)	(0.5794)
SomeCollege	0.1019***	418.6***	0.0733***	2.936***
	(0.0140)	(54.85)	(0.0154)	(0.5989)
College	0.1212***	526.7***	0.0887***	3.670***
	(0.0167)	(65.08)	(0.0179)	(0.6962)
PostCollege	0.1874***	884.7***	0.1383***	5.984***
	(0.0183)	(71.32)	(0.0193)	(0.7514)
Income	0.0011***	4.150***	0.0005*	0.0207*
	(0.0003)	(1.094)	(0.0003)	(0.0116)

Income2	0.00001*** (0.000002)	0.0453*** (0.0061)	-0.000001 (0.000002)	-0.00006 (0.00006)
Black	-0.0160 (0.0143)	-61.58 (56.01)	0.0049 (0.0154)	0.1915 (0.5994)
Asian	-0.1530*** (0.0350)	-515.4*** (136.6)	-0.1443*** (0.0416)	-4.954*** (1.616)
Other	-0.0087 (0.0300)	-33.48 (116.9)	-0.0267 (0.0329)	-1.013 (1.280)
Constant	-0.3293*** (0.0386)	-1285.7*** (150.9)	-0.9908*** (0.0442)	-38.51*** (1.717)
Observations	10921	10921	11567	11567
Pseudo-R^2	0.01	0.01	0.05	0.05

* Columns (1) and (3) are marginal effects for whether an individual donated money to a non-profit organization or did volunteer work, respectively. Columns (2) and (4) are the marginal effects on amount donated as an adult and hours volunteered in the previous month, respectively generated by Tobit models. Right hand side variables are defined in Table 2. Not every question is answered by every respondent; therefore, the number of observations varies modestly across specifications. Standard errors are in parentheses. A (***) indicates that the variable is statistically significant at the 1 percent level, a (**) at the 5 percent level, a (*) at the 10 percent level. The R-squared statistics in columns 1 and 2 are equal to each other, as are those in columns 3 and 4. This is because the results for the dichotomous and continuous variables are determined by the same underlying Tobit coefficients.

Table 4*

Differential Effects by Gender

	(1)	(2)	(3)	(4)
Variable	**DidDonate**	**AmountDonate**	**DidVolunteer**	**HoursVolunteer**
Fundraiser	0.0298**	117.2**	0.0479***	1.880***
	(0.0122)	(47.54)	(0.0125)	(0.4872)
YouthVol	0.0862***	337.6***	0.0826***	3.219***
	(0.0126)	(49.19)	(0.0131)	(0.5099)
ParentsVol	0.0524***	204.9***	0.0781***	3.038***
	(0.0118)	(46.26)	(0.0123)	(0.4784)
Male * Fundraiser	0.0029	11.54	0.0297	1.176
	(0.0179)	(69.75)	(0.0187)	(0.7249)
Male * YouthVol	-0.0049	-18.88	0.0002	0.0081
	(0.0181)	(70.59)	(0.0193)	(0.7489)
Male * ParentsVol	0.0067	26.12	0.0267	1.049
	(0.0171)	(66.64)	(0.0184)	(0.7130)
Observations	10921	10921	11567	11567
Pseudo-R^2	0.01	0.01	0.05	0.05

* This table reports the results when we estimate the basic models of Table 3 augmented with three terms interacting the variables relating to altruistic experience when young with gender. The models in this table have the same independent variables and are estimated using the same statistical methods as the basic model (Table 3), but the coefficients on the other right hand side variables are not reported for brevity. Not every question is answered in every survey; therefore, the number of observations varies modestly across specifications. Standard errors are in parentheses. A (***) indicates that the variable is statistically significant at the 1 percent level and a (**) at the 5 percent level. The R-squared statistics in columns 1 and 2 are equal to each other, as are those in columns 3 and 4. This is because the results for the dichotomous and continuous variables are determined by the same underlying Tobit coefficients.

Table 5*

Differential Effects by Age

	(1)	(2)	(3)	(4)
Variable	**DidDonate**	**AmountDonate**	**DidVolunteer**	**HoursVolunteer**
Fundraiser	0.0395	156.0	0.1041***	4.154***
	(0.0259)	(101.2)	(0.0274)	(1.064)
YouthVol	0.0782***	305.9***	0.0874***	3.406***
	(0.0259)	(101.3)	(0.0280)	(1.086)
ParentsVol	0.0603**	235.6**	0.0370	1.437
	(0.0245)	(95.76)	(0.0266)	(1.034)
Age * Fundraiser	-0.0002	-0.7455	-0.0010*	-0.0385*
	(0.0005)	(2.131)	(0.0006)	(0.0228)
Age * YouthVol	0.0001	0.4896	-0.00008	-0.0030
	(0.0005)	(2.068)	(0.0006)	(0.0227)
Age * ParentsVol	-0.0001	-0.3960	0.0012**	0.0454**
	(0.0005)	(1.951)	(0.0006)	(0.0216)
Observations	10921	10921	11567	11567
Pseudo-R^2	0.01	0.01	0.05	0.05

* This table reports the results when we estimate the basic models of Table 3 augmented with three terms interacting the variables relating to altruistic experience when young with age. The models in this table have the same independent variables and are estimated using the same statistical methods as the basic model (Table 3), but the coefficients on the other right hand side variables are not reported for brevity. Not every question is answered in every survey; therefore, the number of observations varies modestly across specifications. Standard errors are in parentheses. A (***) indicates that the variable is statistically significant at the 1 percent level, a (**) at the 5 percent level, and a (*) at the 10 percent level.

Table 6*

Results by Type of Non-Profit Organization

	(1)	(2)	(3)	(4)
Variable	**DidDonate**	**AmountDonate**	**DidVolunteer**	**HoursVolunteer**
		Education		
Fundraiser	0.0429***	29.42***	0.0207***	0.2923***
	(0.0080)	(5.450)	(0.0054)	(0.0760)
YouthVol	0.0744***	50.71***	0.0331***	0.4643***
	(0.0087)	(5.870)	(0.0060)	(0.0839)
Observations	11311	11311	11581	11581
		Environment		
Fundraiser	0.0379***	11.52***	0.00006**	0.0004**
	(0.0073)	(2.196)	(0.00002)	(0.0002)
YouthVol	0.0516***	15.58***	0.0008***	0.0006***
	(0.0078)	(2.332)	(0.00003)	(0.0002)
Observations	11384	11384	11571	11571
		Health		
Fundraiser	0.0599***	40.37***	0.0164***	0.2427***
	(0.0091)	(6.065)	(0.0044)	(0.0645)
YouthVol	0.0491***	32.61***	0.0064	0.0946
	(0.0094)	(6.209)	(0.0047)	(0.0683)
Observations	11394	11394	11571	11571
		Religious		
Fundraiser	-0.0002	-0.4995	0.0114	0.1506
	(0.0099)	(25.18)	(0.0079)	(0.1048)
YouthVol	0.0780***	199.7***	0.0643***	0.8541***
	(0.0099)	(25.20)	(0.0082)	(0.1086)
Observations	11121	11121	11581	11581

	Youth Development			
Fundraiser	0.0491***	19.16***	0.0371***	0.6326***
	(0.0085)	(3.265)	(0.0056)	(0.0940)
YouthVol	0.0719***	27.78***	0.0296***	0.4967***
	(0.0089)	(3.438)	(0.0061)	(0.1014)
Observations	11312	11312	11581	11581

* This table reports the results when we estimate the basic models of Table 3 separately for each of the five largest non-profit categories. The models in this table have the same independent variables and are estimated using the same statistical methods as the basic model (Table 3), but the coefficients on the other right hand side variables are not reported for brevity. Standard errors are in parentheses. A (***) indicates that the variable is statistically significant at the 1 percent level and (**) at the 5 percent level.