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What Motives Cause Parents to Transmit Generosity?

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Abstract

We model a parent taking costly action to transmit a value for generosity to her child. We consider three models of what motivates the parent to transmit generosity. The three motives have different predictions about how a value for generosity and the child's income will endogenously become correlated in data on charitable giving, and hence have different predictions about the direction of bias in cross-section estimates of income effects from regressions in which generosity is an unobserved fixed-effect. We ascertain the direction of bias using sibling and individual fixed-effects models and data from the *Panel Study of Income Dynamics*. We also ascertain the direction of bias directly by measuring an important component of generosity and examining its correlation with income using data from the *American National Election Study*. The overall pattern of evidence is consistent with parents transmitting generosity because they place importance on generosity being part of the child's identity.

Keywords: public goods; warm glow; charitable giving; donations; preference formation; socialization; cultural transmission; prosocial behavior, imperfect empathy, altruism.

JEL Classification: H41, D64, Z13, C80, C24.

What Motives Cause Parents to Transmit Generosity?

1. Introduction

There has been extensive work on the motives that can lead a person to voluntarily contribute to charity (Andreoni 2006; Vesterlund 2006). It is broadly accepted that the motives include altruism and a set of other motives collectively referred to as warm glow (Andreoni 1989). Which motive is effective on the margin in explaining a decision to contribute depends upon characteristics of the environment in which the contribution is given. In an environment with many other donors – such as giving money to charity – warm glow is the motive that is effective on the margin (Ribar and Wilhelm 2002).

The parameter in preferences that assigns a value to the warm-glow-motivated giving we call "generosity." Empirical analyses of charitable giving presume there are individual differences in generosity: time-constant unobserved individual-specific generosity is considered a nuisance parameter, thought to be correlated with income, and treated as an individual-specific effect (Auten, Sieg and Clotfelter 2002; Bakija 2002; Randolph 1993). Income effects on giving estimated with individual fixed-effects typically are smaller than income effects estimated in the cross-section (e.g., Clotfelter 1980; Broman 1989), suggesting that generosity is positively correlated with income. However, there is no economic theory explaining why generosity might be correlated with income in general, or positively correlated in particular.

We offer a simple economic theory that explains how a generosity–income correlation can arise. The theory begins with the central role parents play in transmitting a generosity value to their children. The distinctive features of the economic perspective on parental generosity transmission are (i) a parent purposefully shapes her child's generosity and (ii) anticipates her child's characteristics during adulthood when the transmitted generosity will lead the child to

perform generous behavior (e.g., give money to a charity) and she incorporates those anticipated future characteristics in optimal generosity transmission during the child's formative years. The economic perspective does not, however, stipulate what motive causes the parent to transmit generosity. We propose three candidate motives: (i) the parent has altruistic concern over her child's well-being and thinks that transmitting generosity will increase her child's well-being, (ii) the parent thinks the child has a duty to exhibit generous behavior regardless of its effect on her child's well-being, and (iii) the parent wants the child to have the same identity as a generous person as she does. Under each parent motive, anticipated child income affects generosity transmission in different ways, hence leading to different predictions about the direction of the *ex post* generosity–income correlation.

We empirically investigate the direction of the generosity–income correlation using two datasets – the *Panel Study of Income Dynamics* and the *American National Election Study*. First, using the *PSID* we compare cross-section estimates of the income elasticity of charitable giving to help people who are poor to estimates from fixed-effects models. These results are consistent with the parent motive being either altruism or identity. The results are inconsistent with a duty motive. Second, other data in the *PSID* indicate that the majority of parents anticipate that their children will have roughly equal incomes in adulthood. For reasons that we will later explain, this shifts the interpretation of the cross-section vs. fixed-effect results in favor of the identity motive. Finally, we use data from the *American National Election Study* to measure an important psychometric component of generosity – the principle of care (Bekkers and Ottoni-Wilhelm 2010) – and directly examine its correlation with income. The lack of correlation between this component of generosity and income is consistent with the identity motive. Hence, the overall pattern of evidence from our empirical investigation is consistent with parents

transmitting generosity because they place importance on generosity being part of the child's identity.

The innovations in the paper are posing a new question about what causes parents to socialize generosity, developing new comparative statics about parents' purposeful socialization of generosity, and testing the predictions from the comparative statics. Knowing what motive causes parents to transmit generosity is important for three reasons. First, knowing the parental motive is necessary in order to apply models of the population dynamics of value transmission (Bisin and Verdier 2010; Laferrère and Wolff 2006, Section 5) to generosity transmission. Second, knowing the parental motive – and hence the predicted bias due to omitted generosity in cross-section estimates of the income elasticity of charitable giving – helps explain why cross-section estimates of income elasticities differ from fixed-effects estimates in the extant empirical work. Third, although there is an extensive literature in developmental psychology about what parental actions are effective in increasing children's prosocial behavior – e.g., modeling, other-oriented induction, and dispositional praise (see Eisenberg, Fabes and Spinrad 2006) – there is less understanding about why these actions are effective. Knowing the parental motive to transmit generosity helps explain why these actions are effective. For example, the evidence we find supporting the model that parents transmit generosity because they place importance on generosity being part of the child's identity helps explain why dispositional praise – attributing generous behavior the child does perform to his identity – works better than praising the generous behavior itself: dispositional praise operates on the child's identity and as such is aligned with what is motivating parents to transmit generosity.

2. Three parental motives to transmit generosity

In our analysis generosity is a scalar parameter in the preference structure that leads a person to perform generous behavior. We focus on a simple relationship: that a higher level of the generosity parameter all else equal, leads to more generous behavior. Our question – What motives cause parents to transmit generosity? – presupposes that parents have answered a prior question: Why should their children perform generous behavior? One answer is that performing generous behavior is an important part of well-being. By this we mean more than the obvious idea that performing generous behavior increases utility – the starting point of economic analyses of charitable giving. We mean that parents might think that performing generous behavior will be a central part of their children's happiness in life, important enough to influence how they raise their children. A second answer is that parents might think their children have a duty to perform generous behavior whether it makes the children happy or not. Both answers have a long historical tradition in ethics. A third possibility is parents are not focused on generous behavior, but rather place importance on generosity (the preference parameter) being part of the child's identity.

In the *Theory of Moral Sentiments* Smith argues that performing generous behavior is central to one's own happiness. This is because people are made happy, not so much by goods and services, but by being beloved, admired, and respected.[1] A few people can achieve

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[1]On the importance of beloved, admired, and respected to happiness, Smith writes: "...so there is a satisfaction in the consciousness of being beloved, which, to a person of delicacy and sensibility, is of more importance to happiness, than all the advantage which he can expect to derive from it...These affections, this harmony [of their hearts], this [happy] commerce, are felt, not only by the tender and the delicate, but by the rudest vulgar of mankind, to be of more importance to happiness than all the little services which could be expected to flow from them" (1759/1997, Part I, Section II, Chapter IV). Similar statements throughout *Moral Sentiments* demonstrate Smith's belief that the main contributor to human happiness is being beloved,

admiration and respect through greatness (e.g., amassing great wealth), but for most people being beloved, admired, and respected is achievable by being virtuous. Performing observable acts of virtue – such as generous behavior – is the only way by which others become aware of one's virtue, and in turn respond with their approbation.

Alternatively, parents may hold the position that their children have a duty to perform generous behavior such as giving. This position is stated most strongly by Kant in the *Groundwork for the Metaphysic of Morals* where he argues that "We have a duty to be charitably helpful. . ." and holds up the example of a person who is "beneficent not from preference but from duty" (2008, pp. 8-9). Sen (1977) similarly argues that some actions are "really chosen out of a sense of duty" apart from their implications for one's own well-being. Duty is often emphasized in the current literature about teaching children to be generous (Bjorhovde 2002; Wuthnow 1995; the Cone/Roper survey *Raising Charitable Children*).

The third possibility is that parents care about a child's identity as a generous person. Identity is considered an important determinant of prosocial behavior in economics (Bénabou and Tirole 2006), as it is in other disciplines (e.g., Aquino and Reed 2002; Dovidio et al. 2006:159ff). Akerlof and Kranton (2000) argue that "choice of identity may be the most important 'economic' decision people make." In our model, it may the most important choice a parent makes for her child.

3. Comparative statics of generosity transmission under the three parent motives

We model generosity as a capital stock variable. A child's level of generosity (G_2) is

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admired, and respected.

transmitted by his parent (subscripts "1" and "2" indicate parent and child). Conditional on the level of generosity transmitted by his parent, the child in adulthood chooses generous behavior (g_2) to maximize utility:

$$\underset{g_2,\, x_2}{\text{maximize}} \quad W(g_2, x_2; G_2) \qquad \text{subject to} \quad p_2 g_2 + x_2 = y_2 \tag{1}$$

where x_2 is the child's consumption of all other goods, p_2 is the price of generous behavior, and y_2 is the child's income. Solving the first-order necessary conditions $W_1 = p_2 W_2$ yields the child's demand for generous behavior:

$$g_2^* = f(G_2, y_2, p_2). \tag{2}$$

In our empirical analysis we use charitable giving to help people who are poor as the measure of g_2^*. We interpret G_2 as the scalar value placed on warm glow (Andreoni 1989). As stated in the introduction this interpretation aligns with our empirical analysis of charitable giving because at the margin charitable giving in environments with a larger number of donors is motivated by warm glow (Ribar and Wilhelm 2002).

Generosity is productive in increasing generous behavior ($\partial g_2^* / \partial G_2 > 0$) via increasing the marginal utility of that behavior: $\partial W_1 / \partial G_2 > 0$. The parent's production technology that transmits generosity G_2 is:

$$G_2 = m\, a_1 + \tau\, G_1 \tag{3}$$

where a_1 are the actions (investments) the parent can take to increase her child's generosity, m is the productivity of those actions in increasing the child's generosity, G_1 is the parent's level of generosity, and τ is the transmission strength of the parent's generosity ($\tau < 1$ would indicate intergenerational depreciation). Our focus is to develop comparative statics that will allow us to test different candidate vertical transmission motives that may cause parents to transmit generosity. We leave a model in which parents purposefully take into account oblique transmission (e.g., Bisin and Verdier 2001) for future work.

The parent derives direct utility from the actions a_1 themselves (see below), while at the same time the actions are productive in transmitting generosity. For example, role-modeling a generous behavior increases a child's performance of that generous behavior (Eisenberg, Fabes and Spinrad 2006; Grusec 1991). Hence, the parent's own generous behavior (g_1) is an action that transmits generosity. In addition, the parent may include her child alongside as she and the child jointly perform generous behavior, realizing that providing opportunities to help others increases the development of a child's generosity (Eisenberg 1990).[2]

The term τG_1 represents low- or no-cost transmission, such as a genetic endowment effect and generosity transmission through parenting style.[3] For our purposes, what distinguishes

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[2]Actions are thought to be especially productive in transmitting generosity if the parent simultaneously teaches the child using empathy-based explanations about how the actions improve the well-being of others ("other-oriented induction"; see e.g., Dlugokinski and Firestone 1974; Eisenberg-Berg and Geisheker 1979; Grusec, Saas-Kortsaak and Simutis 1978).

[3]For evidence of a genetic component to generosity see Knafo and Plomin (2006), and Knafo et al. (2008), and Cesarini et al. (2009). An authoritative parenting style – a combination of (i) warmth, responsiveness, support and (ii) demandingness – teaches a child empathy for others (Chase-Lansdale et al. 1995). Generosity also can be increased by reinforcing a child's generous behavior using dispositional praise – approbation that attributes the behavior to the child's identity as a generous person, i.e., his G_2; see Grusec, Kuczynski et al. (1978), Grusec and Redler (1980), Eisenberg et al. (1987), and Mills and Grusec (1989).

the actions a_1 from the term τG_1 is that a_1 models actions that when taken incur a cost in terms of the parent's foregone consumption, whereas the τG_1 term does not. We focus on a_1.

When the parent makes an optimal choice about a_1 we assume she knows that her child's generosity will be productive in increasing his generous behavior. Furthermore, when the parent chooses a_1 during her child's formative years, we assume she anticipates her child's future income y_2. To work with properly defined indirect utility and demand functions below we assume that the parent also anticipates p_2 – the future tax-price of giving to be faced by the child – although in our empirical work we are skeptical that expectations of tax policy in future adulthood are relevant for transmission decisions made during childhood. In formulating the parent's optimal choice problem, we consider the three alternative hypotheses about her motives to transmit generosity that were described in Section 2.

3.1 Motive 1: Paternal altruism

We first follow Smith and investigate the implication of a model in which generosity increases happiness. Further, we model a parent who altruistically cares about her child's well-being, and therefore takes the generosity–happiness relationship into account when transmitting generosity. The parent's utility function can be written:

$$U(a_1, x_1; G_1) + \beta W(g_2, x_2; G_2) \qquad (4)$$

$U(\bullet)$ is the parent's own utility over the action needed to transmit generosity and her own consumption, and β is the intergenerational discount factor. The parent chooses a_1 to maximize (4) subject to $p_1 a_1 + x_1 = y_1$ and (3).

This framework is identical to Becker's (1996) extended utility function in his analysis of one's investment in one's own personal capital. The difference is that we are using Becker's framework to model a parent's investment in her child's generosity, where generosity can be seen as a dimension of Becker's personal capital. Just as with Becker's extended utility function, the second term in (4) is the imagination of well-being in the future. In our case this is the parent's imagination of her child's future well-being, and under the altruism hypothesis the parent imagines that her child's future well-being will be affected by the actions she takes today. Because it is the parent's imagination of the child's future well-being that guides her choice of transmission action, when the parent imagines her child's future well-being at two different levels of G_2 she is not comparing the utilities of two actual people, but rather she is comparing two imagined child utilities, one at each level of G_2.

Another interpretation of our framework follows from Corneo and Jeanne's (2009) model in which the child's utility function is fixed up to a vector of values (transmitted by the parent) mapped to the child's behavior choices. In our case, the function $W(.)$ is exogenously fixed up to the scalar G_2, interpreted as a value. An "imperfect empathy" interpretation also is possible: $W(.)$ is the parent's subjective evaluation of her child's future behavior using her own preferences (Bisin and Verdier 2001) or values (Tabellini 2008) to make the evaluation. Our imagination interpretation also is paternalistic in the sense that $W(.)$ is what the parent imagines her child's utility will be, and hence what she thinks will end up guiding the child's behavior.

The parent's first-order condition is:

$$U_1 + \beta\, m\, [\partial W/\partial G_2] = p_1\, U_2 \qquad (5)$$

Assuming an interior solution, equation (5) defines the parent's optimal action a_1^*. The first term on the left-hand side represents the marginal utility the parent derives from the action, without taking the child's well-being into account. For example, if the actions are role-modeling charitable giving, or jointly with her child helping others, U_1 is the marginal utility the parent would derive from giving and helping others even without intergenerational altruism ($\beta = 0$). The second term on the left-hand side is the parent's additional benefit from taking the action if by so doing her child's generosity is increased and if that in turn increases his well-being ($\partial W/\partial G_2 > 0$). $\partial W/\partial G_2 > 0$ is, of course, based on Smith's theory of well-being.

Without loss of generality we work with the child's indirect utility function $W^*(G_2, y_2, p_2)$ in equation (5) to analyze how a_1 varies with respect to y_2. The comparative static result is:

$$[U_{11} - 2\, p_1\, U_{12} + p_1^2\, U_{22} + \beta\, m^2\, W_{11}^*]\ \partial a_1^* = -\beta\, m\, W_{12}^*\, \partial y_2. \qquad (6)$$

The following two lemmas provide sufficient conditions for the bracketed term on the left-hand side to be negative (proofs are in Appendix A):

Lemma 1: If $W_{11}^* \leq 0$ then $[U_{11} - 2\, p_1\, U_{12} + p_1^2\, U_{22} + \beta\, m^2\, W_{11}^*] < 0$.

Lemma 2: If the parent own income effect of the action is normal – both with and without intergenerational altruism – then $[U_{11} - 2\, p_1\, U_{12} + p_1^2\, U_{22} + \beta\, m^2\, W_{11}^*] < 0$.

$W_{11}^* \leq 0$, means that the parent's marginal ability to increase their children's utility via generosity transmission is non-increasing in generosity. Although this condition is reasonable, the condition in the second lemma that the own income effect on the parent action is normal both with and

without intergenerational altruism is weaker, and certainly holds for actions like charitable giving.

Under either condition it immediately follows that:

Proposition 1. If either Lemma 1 or 2 hold, then:

$$\partial a_1^* / \partial y_2 > 0 \quad \text{iff} \quad W_{12}^* > 0. \tag{7}$$

In other words, the sign of W_{12}^* determines the sign of $\partial a_1^* / \partial y_2$. Keeping in mind Smith's argument that generosity increases well-being via gaining the approbation of others, the sign of W_{12}^* indicates whether generosity and income are *approbation substitutes* ($W_{12}^* < 0$) or *approbation complements* ($W_{12}^* > 0$). Smith argued that generosity and income are approbation complements – that generosity and income reinforce each other in gaining approbation: "The favor and partiality which, when there is no envy in the case, we naturally bear to greatness, are much increased when it is joined with wisdom and virtue" (Part VI Section II Chapter I). We also have the following corollary (proof is in Appendix A):

Corollary 1. If generosity increases the marginal utility of generous behavior ($\partial W_1 / \partial G_2 > 0$) and generous behavior is normal, then g_2 and G_2 separable from x_2 in $W(g_2, x_2; G_2)$ implies generosity and income are approbation complements.[4]

In terms of generosity transmission, approbation complementarity means that as y_2

[4]This parallels the separability condition in Becker and Mulligan's (1997) analysis of endogenous time preference.

increases, the parent action becomes more productive in increasing her child's utility, and condition (6) tells us that the increased productivity leads to higher a_1. This in turn leads to higher G_2 via the transmission equation (3), and consequently would establish a positive generosity–income correlation among children. Hence, under the joint hypotheses of parental transmission of generosity being motivated by altruism and approbation complementarity, the prediction is that the child's income and his generosity will be positively correlated.[5]

3.2 Motive 2: Duty

A parent who transmits generosity because she thinks her child has a duty to perform a specific level of generous behavior we model as caring about the level (amount) of generous behavior the child will perform:

$$U(a_1, x_1; G_1) + V(g_2^*) \tag{8}$$

where we assume that $V' > 0$ and $V'' < 0$. This model captures the notion that when the child is phoned by a charity that helps people who are poor and is asked for a contribution, the parent

[5]Complementarity plays a central role here, as it does in other models of transmission. In Dixit's (2009) model, contributions to a public good are assumed to be a complement to private effort in the production of one's own income. In Adriani and Sonderegger's (2009) model, information transmission to a child necessarily transmits a preference parameter to the child as well – the information transmission is assumed to be a perfect complement to the preference transmission. In Tabellini's (2008) model a preference assumption is used to make sure that "the temptation to cheat is greater if the opponent is also more likely to cheat" (strategic complementarity). In Bisin and Verdier's (2001) model the assumption about complementarity between parental transmission (direct vertical socialization) and oblique transmission (indirect horizontal transmission) affects whether heterogeneity of a preference trait is stable. In Corneo and Jeanne's (2009) model the complementarity is that the approbation you receive from being a specific type is increasing in the fraction of the population also of the same type.

wants the child to give (say) $20. This is the same idea that when the child is asked for money on the street by a person who is homeless, the parent wants the child to give (say) $1. This model of duty is the impression we are left with after reading the literature about duty discussed in Section 2. However, we cannot rule out an alternative conceptualization of duty in which the parent thinks her child has a duty to give a fixed percentage of his income to poverty alleviation organizations. We will discuss this alternative conceptualization of duty in Section 3.3.

The parent chooses a_1 to maximize (8) subject to $p_1 a_1 + x_1 = y_1$ and (3). Using (2) to replace g_2^*, the first-order condition is:

$$U_1(a_1, y_1 - p_1 a_1; G_1) + m V'(f(G_2, y_2, p_2)) f_1(G_2, y_2, p_2) = p_1 U_2(a_1, y_1 - p_1 a_1; G_1) \qquad (9)$$

In addition to the marginal utility the parent would derive from the action in the absence of transmission, the parent gets an additional benefit from the action as long as her child's generous behavior is increasing in generosity ($f_1 > 0$). The comparative static result with respect to child income is:

$$[U_{11} - 2 p_1 U_{12} + p_1^2 U_{22} + m^2 (V' f_{11} + V'' f_1^2)] \partial a_1^* = - m [V' f_{12} + V'' f_1 f_2] \partial y_2. \qquad (10)$$

A sufficient condition for the bracketed term on the left-hand side to be negative is $f_{11} < 0$ – diminishing marginal propensity to perform generous behavior with respect to generosity (along with, of course, $V'' < 0$). Although $f_{11} < 0$ is reasonable, once more a weaker sufficient condition for the bracketed term to be negative is that the parent action is normal both with and without the $V(g_2^*)$ portion of her utility (the arguments parallel those of Lemmas 1 and 2 in

Appendix A). Hence:

Proposition 2. If either $f_{11} < 0$ or the parent own income effect of the action is normal – both with and without the $V(g_2^*)$ portion of her utility – then:

$$\partial a_1^* / \partial y_2 < 0 \quad \text{iff} \quad f_{12} < -(V'' / V')\, f_1 f_2. \tag{11}$$

The right-hand side of the inequality is positive under our assumptions on the first two derivatives of V, that the child's generous behavior is increasing in generosity, and normality with respect to child income ($f_2 > 0$).

Higher child income has two effects on parent action. The first effect is that higher child income implies higher child generous behavior, reducing the marginal benefit to the parent from further increasing the child's generous behavior. This is a standard crowd-out effect.[6]

The second effect is a productivity effect. If as y_2 increases, transmitting generosity becomes more productive in increasing child generous behavior ($f_{12} > 0$), the productivity effect cancels some of the crowd-out effect. However, if $f_{12} > 0$ but the magnitude of the productivity effect is small (smaller than $-(V'' / V')\, f_1 f_2$), the crowd-out effect will dominate, and as a consequence parent action will fall if she expects her child's income to be high. Of course, parent action will fall with higher child income if $f_{12} \leq 0$. Hence, under the joint hypotheses of parental transmission of generosity being motivated by duty and the crowd-out effect of higher child income dominating the productivity effect, the prediction is that the child's income and his

[6]There is no crowd-out effect in the altruism model because child utility enters parent utility linearly, as is standard. The predictions of the altruism model obviously can change if linearity is relaxed.

generosity will be negatively correlated. An important case of this is the commonly used empirical model in which unobserved generosity operates through a child-specific fixed effect, so that the income effect is homogeneous with respect to generosity – in this model $f_{12} = 0$ and the negative generosity–income correlation follows from (11).

3.3 Motive 3: Identity

In the identity model the child's identity itself is the goal of the parent's transmission of generosity. We model a parent whose transmission motive is to shape her child's identity as a generous person to be like her own:

$$U(a_1, x_1; G_1) - \beta (G_2 - G_1)^2 \tag{12}$$

where here β is the disutility weight the parent places on having a child whose generosity differs from her's. Brekke, Kverndokk, and Nyborg (2003) use a similar model to analyze self-image where the morally ideal behavior is endogenously derived from Kant's Categorical Imperative. In equation (12), the parent regards her own generosity G_1 as the moral ideal.[7] The $\beta (G_2 - G_1)^2$ term that motivates transmission in equation (12) is not a function of child income. Therefore the prediction is that the child's income and his generosity will not be correlated.

In the case where the child's generous behavior is charitable giving, parents may teach

[7]Both the duty model in (8) and the identity model in (12) can be interpreted as kinds of imperfect empathy. The duty model (8) is similar to Bisin and Verdier's (2001) model in that the parent gets utility over the child's future behavior and uses her own preferences to make her evaluation. In (12) the parent gets utility, not over the child's future behavior, but rather the child's identity, again using her own preferences to make the evaluation.

children to tithe, that is to give a fixed percentage out of income or out of increases in income. The moral force of teachings about tithing is that the teachings apply to people of all different income levels because the fixed percentage is not a function of income. Indeed, major religious teachings about tithing specify a percentage to be given regardless of income level. Generally these teachings are interpreted as applying to religious giving, or to all the giving a person does in total, and not necessarily interpreted as applying to separate components of giving such as giving to help people who are poor. Nevertheless, equation (12) can be used to model a parent who thinks her child should give a fixed percentage of income to help people who are poor by interpreting G_2 as the coefficient on income in equation (2). Because the transmitted percentage G_2 is not a function of child income, the prediction is that the child's income and his generosity will not be correlated. Hence, if a child is taught it is his "duty" to give a fixed percentage of income, duty in this sense is indistinguishable from our model of identity.

4. Empirical model

The *PSID* has good data on charitable giving to organizations that help people who are poor (g_2^*) and good data on income, but no direct measurements of generosity G_2. Using the *PSID* to estimate a cross-section regression of giving on income – with G_2 omitted – results in a biased income coefficient. The direction of bias would differ according to which of the motives described in Section 3 actually caused parents to transmit generosity. For example, if the parental motive was altruism, then the income coefficient would have a positive bias. Our strategy is to use fixed-effects to control for G_2 and eliminate the bias in the income coefficient. Comparing how the income coefficient changes when moving from the cross-section to the fixed-effects regression reveals the direction of the bias, and hence the direction of the

generosity–income correlation. Continuing the example, if the parental motive was altruism then the fixed-effects income coefficient will drop relative to the cross-section income coefficient. This strategy, including the parallel predictions under the duty and identity motives, is summarized in Table 1.

Estimating a regression of giving on income with individual fixed-effects would certainly eliminate bias caused by unobserved G_2, but with a potential disadvantage: the individual fixed-effects also would eliminate biases caused by other time-constant individual-specific effects. The other effect we are most concerned about is that people with higher incomes will be asked more often by fundraisers to make charitable gifts.[8] Individual fixed-effects will take out bias caused by both unobserved G_2 and unobserved "asks" by fundraisers – "too much" bias removal for our purpose of wanting to take out only the bias caused by unobserved G_2. This motivates our preference for sibling fixed-effects. We now develop notation to clearly explain our interpretation of the individual and sibling fixed-effects results.

We assume that the permanent income of a child i from family f in adulthood year t has three components:

$$y_{ift} = y_{if0} + y_{if1} + \xi_{ift} \tag{13}$$

(we are dropping the subscript "2" used in Section 3 to denote child variables; in this section all variables are child variables). The first component y_{if0} is the permanent income of the child that the parent anticipated during the child's formative years. Generosity transmission is based on y_{if0}, and hence it is through y_{if0} that the generosity–income correlation emerges. We think of y_{if0}

[8]The centrality of asking for donations is well-known. See, for example, Levis (1990).

as the child's permanent income in the beginning years of his adult life. The second component y_{if1} represents the accumulation of shocks to permanent income after the beginning years of adult life through the year before our data begin (our data begin at $t = 2000$). These shocks were not anticipated by the parent when she transmitted generosity, but they are observed by the people the child knows, including fundraisers. For example, the neighborhood the child lives in and his house reveal y_{if1} (and also y_{if0}) to other people. The third permanent income component ξ_{ift} ($t = 2000, \ldots$) represents the recent year-to-year shocks to permanent income that are known to the child, but were neither anticipated by the parent nor are known (yet) by fundraisers.

The empirical model of giving is:

$$\log(g_{ift}) = \beta \log(y_{ift}) + G_{if} + \varphi_{if} + u_{ift} \tag{14}$$

where G_{if} is unobserved generosity, φ_{if} is unobserved fundraising requests, and u_{ift} is randomness in giving that is uncorrelated with permanent income. Generosity is correlated with the component of permanent income anticipated by parents:

$$\begin{aligned} \mathrm{E}[G_{if} \mid y_{ift}] = \mathrm{E}[G_{if} \mid y_{if0}] \quad &> 0 \quad \text{under the altruism–W}_{12}{}^{*} > 0 \text{ model} \\ &< 0 \quad \text{duty–crowd-out dominant model} \\ &= 0 \quad \text{identity model.} \end{aligned} \tag{15}$$

Fundraising requests are correlated with the components of permanent income (except for the most recent changes ξ_{ift}): $\mathrm{E}[\varphi_{if} \mid y_{ift}] = \mathrm{E}[\varphi_{if} \mid y_{if0} + y_{if1}] > 0$. Comparing how the income coefficient changes when moving from the cross-section to the individual fixed-effects regression

reveals the direction of the bias caused by the combination $G_{if} + \varphi_{if}$, confounding the attempt to discern the direction of the bias caused by G_{if} alone.

Sibling fixed-effects can isolate the bias caused by G_{if} alone, under the assumption that the parent expects her children's permanent incomes to be equal: $E^P[y_{if0}] = y_{\bullet f0}$ for all children i in family f (the superscript "P" indicates that it is the parent doing the expectation). Expecting the children's incomes to be equal, the parent would transmit the same amount of generosity to child i and child j – $G_{if} = G_{jf} = G_{\bullet f}$ – with the implication being that generosity is a sibling fixed-effect. The permanent income shocks that unfold after the beginning years of adulthood do differ between siblings ($y_{if1} \neq y_{jf1}$) and are observed by fundraisers, resulting in $\varphi_{if} \neq \varphi_{jf}$. Hence, sibling fixed-effect estimation of (14) removes the bias due to generosity transmission but not the bias due to other time-constant omitted variables correlated with income. For our purposes, this is just the right amount of bias removal.

Use of the sibling fixed-effects estimates to infer the generosity–income correlation depends on the assumption that parents expect their children's permanent incomes to be equal. Therefore after presenting the fixed-effects regressions, we present evidence that the majority of parents expect their children's incomes to be roughly equal.

Finally, we handle two econometric problems in the estimation of (14): many people give zero dollars to charity and there is error in using observed income changes as measurements of permanent income changes. Tobit models are the standard approach to corner solutions in modeling charitable giving, but almost all applications are either cross-section models that do not handle fixed-effects or panel models estimated with itemizer-only tax data that have very few corner solutions. To estimate β without bias from time-constant unobserved effects we use Honoré's (1992) fixed-effects Tobit estimator.

To mitigate the measurement error problem in the sibling fixed-effects models we average each sibling's income over the three years we observe. In the individual fixed-effects models we use the change in consumption expenditure as an instrument for the change in income. The validity assumption is that changes in consumption expenditure capture changes in permanent income more than they capture changes in transitory income, and of course that changes in consumption expenditure are related to changes in giving only indirectly through changes in income. We implement the individual fixed-effects IV estimator using new methods developed by Honoré and Hu (2004). In both the individual fixed-effects and fixed-effects IV models we use changes in the data between 2001 and 2005.

5. Data

The analysis uses a three-year sample from the *PSID*'s 2001, 2003, and 2005 interview years. The three-year sample begins with the 8,002 *PSID* families responding to the 2005 interview, selects the head-of-household or spouse (depending on which is the *PSID* sample member), and attempts to follow that person back through the 2001 wave. Among the 8,002 families, we can follow 6,527 back through 2001. The 1,475 families that cannot be followed back all three years are mostly families newly formed during 2002-2005.[9] Starting with the 6,527 three-year families, dropping the families not asked the charitable giving questions (n = 168), those who experienced change in the head or spouse (n = 1,951), and those born 1945 or earlier (n = 1,066), leaves a sample of 3,342 families. We restrict the sample in this way so that the analysis is not confounded by issues accompanying decisions made about family structure and

[9]The families that can be followed back are similar on observables to the 2005 families, except that the followed-back families are slightly older.

retirement. We drop a few families who report negative income or consumption expenditures, or who have missing data on other controls. We drop "singleton" families whose head/wife is the only sibling in the 2005 *PSID* from their family of origin (n = 942). The final analysis sample is n = 1,670 families from 654 unique families of origin.

The dependent variable is (log) giving "to organizations that help people in need of food, shelter, or other basic necessities" and giving to organizations like the United Way that fulfill a combination of purposes, much of which include helping people who are poor (Rooney and Brown 2007). Fifty-three percent of the 1,670 families gave in at least one of the three years, and the average amount given per year (conditional on giving in at least one of the three years) is $587 (the median is $226). The main independent variable is the *PSID*'s (log) total family income. For the consumption expenditure instrument we construct a measure of total consumption expenditure from the *PSID*'s newly expanded consumption expenditure data (Li et al. 2010). Average income is about $62,000. Average consumption expenditure captured by the *PSID* is about $30,000.

Table 2 presents descriptive statistics for the sample (5,010 family-year observations pooled together). The descriptive statistics are weighted estimates. In subsequent tables we present unweighted estimates from the models, the implicit assumption being that the generosity–income correlation we examine is homogeneous across the nationally-representative and low-income subsamples of the *PSID*. We check this assumption by estimating models with only the nationally-representative subsample, and we get the same pattern of results. The remaining statistics in Table 2 serve to list the controls we use in several model specifications.

6. Results

Table 3 presents the results from the cross-section (columns 1-3) and the sibling fixed-effects (columns 4-6) regressions. The cross-section regressions are estimated using symmetrically-censored least squares (Powell 1986). SCLS is the cross-section estimator that parallels the fixed-effects estimators we use. Column 1 is a regression with log income as the only independent variable. Column 2 adds independent variables that explain giving and are correlated with income. Column 3 adds the tax-price, calculated using NBER's TAXSIM (Feenberg and Coutts 1993). Column 4 is the first sibling fixed-effects regression. The 1.5482 estimate is only a little smaller than the corresponding cross-section estimate 1.7810. The difference is not large relative to the standard errors.[10]

Column 5 adds the independent variables. The 1.5742 estimate is nearly identical to the Column 2 corresponding cross-section estimate of 1.5031, indicating an essentially zero generosity–income correlation. When the tax-price is added the sibling fixed-effects estimate is somewhat larger than the cross-section estimate (Column 3 versus 6), though not necessarily relative to their standard errors.

Table 4 presents the results from the individual fixed-effects regressions. Panel A repeats the cross-section estimates to ease their comparison with the individual fixed-effects results in Panel B. In each specification – a simple regression of giving on income, a regression adding the independent variables, and a regression including the tax-price of giving – the individual fixed-effects estimates are dramatically smaller than the corresponding cross-section estimates, perhaps

[10]To get a meaningful sense of the magnitude of these estimates, note that the 1.78 SCLS estimate is only slightly smaller than the corresponding estimate from a Tobit model (1.97, s.e. = .07; not shown) that has an average partial effect on the observed outcome of 1.46. The 1.46 elasticity suggests that giving to organizations that help people who are poor is a luxury good.

suggesting a large positive generosity–income correlation. Panel C presents the fixed-effects IV estimates using consumption expenditure as an instrument for income. The estimates are much larger that the corresponding estimates from Panel B, indicating that a large portion of the drop in estimates in going from Panel A to Panel B is due to noise in observed income as a measure of permanent income. However, the Panel C estimates are still smaller than the Panel A cross-section estimates, consistent with a positive generosity–income correlation remaining after the measurement error correction.

Whether the sibling fixed-effects results in Table 3 can be used to infer the generosity–income correlation depends on an assumption that parents expect their children's permanent incomes to be equal. The 2007 *PSID* asked respondents to report expectations about their children's future earnings: "When your child is in his or her prime earning years, do you expect his or her household's earnings to be higher or lower than your household's earnings at comparable ages? Would you say much higher, somewhat higher, the same, somewhat lower, or much lower?" Because expectations are reported for up to three children we can compare the responses across children to learn whether parents expect their children's earnings to be very different or roughly equal. Figure 1 presents the results. Moving from left to right on the *x*-axis corresponds to parents expecting their children's future earnings to be more unequal; the unit of measurement is the number of categories apart are the expectations about children's earnings. For example, zero categories apart means that the parent expects both children to have household earnings much higher than her household's, or both to have earnings the same as her household's, etc. One category apart could be that she expects one child to have earnings somewhat higher than her's, while she expects her other child to have earnings the same as her's. Four categories apart would be she expects one child to have earnings much higher than her's,

while she expects her other child to have earnings much lower than her's. The results indicate that 74 percent of sibling pairs are expected by their parents to have earnings equal to each other's. Eighteen percent of sibling pairs are expected to be one category apart – hence 92% of sibling pairs are expected by their parents to have equal, or roughly equal, earnings. Less than one percent are expected to have earnings four categories apart.

We next assess the generosity–income correlation directly by measuring an important component of generosity: the principle of care. The principle of care reflects concern with people in need, regardless of whether they are similar or different to ones-self and regardless of whether they are in close proximity or at a large social distance. The degree to which a respondent endorses the principle of care is measured by the degree of agreement/disagreement with items such as "people should be willing to help others who are less fortunate"and "everybody in this world has a responsibility to help others when they need assistance." The measurement is internally reliable and stable over time. External validity has been demonstrated with observational measures of giving from an experiment. See Bekkers and Ottoni-Wilhelm (2010) and Wilhelm and Bekkers (2010) for further details.

We use an eight-item measure of the principle of care from the *American National Election Study, 2008-2009 Panel*. The eight items measure a single factor and Cronbach's α is .86. Figure 2 presents the coefficient estimates and 95% confidence intervals from a regression of the principle of care scale on categorical income. The reference income category is $50,000-to-$59,999. The figure shows that the principle-of-care–income relationship is essentially flat.

7. Discussion and Conclusion

Our interpretation of the overall pattern of results is that they point to parents transmitting

generosity because they place importance on generosity being part of the child's identity. The sibling fixed-effects estimate in Table 3 column 5 changes so little compared to the cross-section estimate – a somewhat surprising result in light of previous papers in which cross-section results are not robust to the inclusion of sibling fixed-effects (Altonji and Dunn 1996a,b; Geronimus and Korenman 1992; Neumark and Korenman 1994). The lack of difference between the cross-section and sibling fixed-effects estimates suggests that there is little generosity–income correlation, and this in turn is consistent with the identity model. Using the sibling fixed-effects model to reach this judgment is justified by the evidence that the large majority of parents expect their children's incomes to be roughly equal. The flat generosity–income relationship is confirmed by the examination of an important component of generosity – the principle of care.

An alternative interpretation is that the increase in the income elasticity estimate in the sibling fixed-effects specification that holds constant the tax-price (Table 3 column 6) is consistent with the duty motive. This interpretation must maintain the assumption that expectations of tax policy in future adulthood affect transmission decisions made during childhood – an assumption about which we are skeptical – and faces the practical difficulty that the strong non-linear functional relationship between the tax-price and income confounds attempts to infer the generosity–income correlation from the income variable on its own, while holding the tax-price constant. Further, the principle of care evidence fails to confirm a negative generosity–income relationship.

Another alternative interpretation is that the drop in the income elasticity estimate in the individual fixed-effects specifications (Table 4) indicates the parental motive is altruism. This interpretation must hold that other possible phenomena that can explain why the unobserved individual-specific effect is positively correlated with income – like the possibility that

fundraisers target more requests to high-income people – are of second-order importance. It would be easier to set aside the fundraising possibility if one were left with the dramatic drop in the fixed-effects estimates (Panel A), but the fixed-effects IV estimates (Panel C) indicate that a large portion of the Panel A-to-B drop in estimates is measurement error. Moreover, although judgment about the generosity–income correlation necessarily would have to be based on the individual fixed-effects estimates if parents thought their children's incomes would be different (and therefore transmitted different amounts of generosity to their children based on income), that the large majority of parents expect their children to have equal or roughly equal earnings reduces the need to rely on the individual fixed-effects estimates. Finally, the principle of care fails to support a positive generosity–income relationship.

A limitation of our results is that we do not directly observe the actions parents take to transmit generosity. For this reason we could not estimate parental actions as a function of expectations about children's future income, and directly test comparative statics predictions like equations (7) and (11). Few data sets have the multi-generational data that would allow this investigation, but conducting this investigation is an obvious direction for additional research. A second limitation is that we have examined only one manifestation of generous behavior – giving to organizations that help people who are poor. It may be that the transmission of generosity intended to produce other manifestations of generous behavior, such as giving to religious congregations, is caused by other parental motives.

Our conclusion that parents transmit generosity because they place importance on generosity being part of the child's identity has several implications. It provides empirical support for the emphasis that economists have placed on identity in theoretical models of prosocial behavior (Bénabou and Tirole 2006). It implies cultural transmission models (Bisin

and Verdier 2010) can be applied to the intergenerational dynamics of generosity transmission without having to simultaneously model intergenerational income mobility. By ruling out a generosity–income correlation, our results narrow down the range of mechanisms that might explain why income elasticity estimates from individual fixed-effects specifications are smaller than cross-section estimates (e.g., Clotfelter 1980; Broman 1989).

The results are not consistent with the widely-believed conclusion that population surveys show generosity to be negatively correlated with income – a conclusion that has been used in psychology to support the hypothesis that people of higher social class are less generous (Piff et al. 2010; Kraus, Piff and Keltner 2011). A careful analysis of the survey data upon which this conclusion has been based, that accounts for measurement error in giving and income, is an important research topic (see James and Sharpe 2007).

Finally, the results suggest an explanation why the actions that psychologists have found most effective in developing children's prosocial behavior are effective – the actions operate on the identity of the child, which is what we conclude parents are focused on in the first place. For example, role-modeling is effective because by modeling generous behavior the parent reveals intrinsic generosity as a part of her own identity. This leads to a practical implication of our results. Although the practical literature about teaching children to be generous typically touches on all three of the motives we considered, often duty is emphasized.[11] Our results suggest that the practical literature will be more useful to parents to the extent that its recommendations are aligned with what parents are trying to achieve in the transmission of generosity: the transmission of a generous identity.

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[11]For example, in the *Learning to Give* curriculum children are taught there are seven motives to give, and three of these have strong duty components: God's will, moral imperative, and loyalty-obligation. See http://learningtogive.org/lessons/unit106/lesson2.html.

References

Adriani, Fabrizio and Silvia Sonderegger. 2009. "Why do parents socialize their children to behave pro-socially? An information-based theory." *Journal of Public Economics* 93: 1119-1124.

Agard, Kathryn Ann. 2002. "Teaching the Philanthropic Tradition: A Serious Approach to Infusing Philanthropy Content into K-12 School Curriculum" Paper presented at the *Youth and Philanthropy Symposium* (August 22-23, 2002) at the Center on Philanthropy at Indiana University.

Akerlof, George A. and Rachel E. Kranton. 2000. "Economics and Identity." *Quarterly Journal of Economics* 115(3): 715-753.

Altonji, Joseph G. and Thomas A. Dunn. 1996a. "The Effects of Family Characteristics on the Return to Education." *Review of Economics and Statistics* 78(4): 692-704.

_____. 1996b. "Using Siblings to Estimate the Effect of School Quality on Wages." *Review of Economics and Statistics* 78(4): 665-671

Andreoni, James. 1989. "Giving with Impure Altruism: Applications to Charity and Ricardian Equivalence." *Journal of Political Economy* 97(4): 1447-1458.

_____. 2006. "Philanthropy." In the *Handbook of Giving, Reciprocity and Altruism*, edited by Serge-Christophe Kolm and Jean Mercier-Ythier. Amsterdam: North-Holland.

Aquino, Karl and Americus Reed, II. 2002. "The self-importance of moral identity." *Journal of Personality and Social Psychology* 83(6): 1423-1440.

Auten, Gerald E., Holger Sieg and Charles T. Clotfelter. 2002. "Charitable Giving, Income, and Taxes: An Analysis of Panel Data." *American Economic Review* 92 (1): 371-382.

Bakija, Jon. 2002. "Distinguishing Transitory and Permanent Price Elasticities of Charitable Giving with Pre-Announced Changes in Tax Law." Mimeo, Williams College.

Becker, Gary S. 1996. *Accounting for Tastes*. Cambridge: Harvard University Press.

Becker, Gary S. and Casey B. Mulligan. 1997. "The Endogenous Determination of Time Preference." *Quarterly Journal of Economics* 112(3): 729-58.

Bénabou, Roland & Jean Tirole. 2006. "Incentives and prosocial behavior." *American Economic Review* 96(5): 1652-1678.

Bekkers, René and Mark Ottoni-Wilhelm. 2010. "Principle of Care and Generosity." Mimeo, VU University Amsterdam.

Bisin, Alberto and Thierry Verdier. 2001. "The economics of cultural transmission and the dynamics of preferences." *Journal of Economic Theory* 97, 298-319.

_____. 2008. "Cultural Transmission." In: Durlauf, S.N., Blume, L.E. (Eds.), *The New Palgrave Dictionary of Economics*, Second Edition. Palgrave Macmillan.

_____. 2010. "The Economics of Cultural Transmission." NBER Working Paper 16512.

Bjorhovde, Patricia O. 2002. "Teaching Philanthropy to Children: Why, How, and What." *New Directions for Philanthropic Fundraising*. 36(Summer): 7-19.

Brekke, Kjell Arne, Snorre Kverndokk, and Karine Nyborg. 2003. "An Economic Model of Moral Motivation." *Journal of Public Economics*. 87: 1967-1983.

Broman, Amy J. "Statutory Tax Rate Reform and Charitable Contributions: Evidence from a Recent Period of Reform." *Journal of the American Tax Association* 10: 7-20.

Cesarini, David, Christopher T. Dawes, Magnus Johannesson, Paul Lichtenstein, and Björn Wallace. 2009. "Genetic variation in Preferences for Giving and Risk Taking." *Quarterly Journal of Economics* 124(2): 809-842.

Chase-Lansdale, P. Lindsay, Lauren S. Wakschlag, and Jeanne Brooks-Gunn. 1995. "A psychological perspective on the development of caring in children and youth: The role of the family." *Journal of Adolescence* 18: 515-556.

Clotfelter, Charles T. 1980. "Tax Incentives and Charitable Giving: Evidence from a Panel of Taxpayers." *Journal of Public Economics* 13: 319-340.

Cone/Roper Raising Charitable Children Study. 2000. Boston: Cone, Inc.
"Cone Charitable Children Advisory FINAL.doc" (In "My Doc .. .\ARTICLES)

Corneo, Giacomo and Olivier Jeanne. 2009. "A Theory of Tolerance." *Journal of Public Economics* 93: 691-702.

Dixit, Avinash. 2009. "Socializing education and pro-social preferences." Mimeo, Princeton University.

Dlugokinski, Eric L. and Ira J. Firestone. 1974. "Other Centeredness and Susceptibility to Charitable Appeals: Effects of Perceived Discipline." *Developmental Psychology* 10: 21-28.

Dovidio, John F., Jane A. Piliavin, David A. Schroeder and Louis A. Penner. 2006. *The social*

psychology of prosocial behavior. Mahwah, NJ: Lawrence Erlbaum Associates.

Eisenberg, Nancy. 1990. "Prosocial development in early and mid-adolescence." In *From childhood to adolescence: A transitional period*, edited by Raymond Montemayor, Gerald R. Adams, and Thomas P. Gullota. Newbury Park, CA Sage.

Eisenberg, Nancy, Robert B. Cialdini, Heather McCreath, and Rita Shell. 1987. "Consistency-Based Compliance: When and Why Do Children Become Vulnerable?" *Journal of Personality and Social Psychology* 52: 1174-1181.

Eisenberg, Nancy and Richard A. Fabes. 1998. "Prosocial Development." Pp. 701-778 in *Handbook of Child Psychology, Volume 3 (5th edition)*, edited by Nancy Eisenberg. New York: Wiley.

Eisenberg, Nancy, Richard A.Fabes and Tracy L. Spinrad. 2006. Pp. 646-718 in *Handbook of child psychology: Vol. 3, Social, emotional, and personality development (6th edition.)*, edited by Nancy Eisenberg, William Damon, Richard M. Lerner. Hoboken, NJ: John Wiley & Sons Inc.

Eisenberg-Berg, Nancy and Elizabeth Geisheker. 1979. "Content of Preachings and Power of the Model/Preacher: The Effect on Children's Generosity." *Developmental Psychology* 15:168-175.

Feenberg, Daniel R. and Elisabeth Coutts. 1993. "An Introduction to TAXSIM." *Journal of Policy Analysis and Management* 12(1): 189-194.

Gelfand, Donna M., Donald P. Hartmann, Cindy C. Cromer, Cathleen L. Smith, and Brent C. Page. 1975. "The effects of instructional prompts and praise on children's donation rates." *Child Development* 46: 980-983.

Geronimus, Arline T. and Sanders Korenman. 1992. "The Socioeconomic Consequences of Teen Childbearing Reconsidered." *Quarterly Journal of Economics* 107(4): 1187-1214.

Grusec, Joan E. 1991. "The Socialization of Altruism." Pp. 9-33 in *Prosocial Behavior*, edited by Margaret S. Clark. Newbury Park, CA: Sage Publications.

Grusec, Joan E., Leon Kuczynski, J. Philippe Rushton, and Zita M. Simutus 1978. "Modeling, Direct Instruction, and Attributions: Effects on Altruism." *Developmental Psychology* 14: 51-57.

Grusec, Joan E. and Erica Redler. 1980. "Attribution, Reinforcement, and Altruism: A Developmental Analysis." *Developmental Psychology* 16: 525-534.

Grusec, Joan E. , Peter Saas-Kortsaak and Zita M. Simutis. 1978. "The Role of Example and Moral Exhortation in the Training of Altruism." *Child Development* 49: 920-923.

Honoré, Bo E. 1992. "Trimmed LAD and Least Squares Estimation of Truncated and Censored Regression Models with Fixed Effects." *Econometrica* 60(3): 533-565.

Honoré, Bo E. and Luojia Hu. 2004. "Estimation of cross sectional and panel data censored regression models with endogeneity." *Journal of Econometrics* 122(2): 293-316.

James, Russell N., III, and Deanna L. Sharpe. 2007. "The Nature and Causes of the the U-Shaped Charitable Giving Profile." *Nonprofit and Voluntary Sector Quarterly* 36(2): 218-238.

Jellel, Mohamed and François-Charles Wolff. 2002. "Cultural Evolutionary Altruism: Theory and Evidence." *European Journal of Political Economy* 18: 241-262.

Kant, Immanuel. 2008. *Groundwork for the Metaphysic of Morals*. Translated by Jonathan Bennett. Published at http://www.earlymoderntexts.com/pdf/kantgw.pdf (Accessed 2011-05-09).

Knafo, A., & Plomin, R. 2006. "Prosocial behavior from early to middle childhood: Genetic and environmental influences on stability and change." *Developmental Psychology* 42: 771-786.

Knafo, A., Israel S.L., Darvasi A., Bachner-Melman R., Uzefovsky F., Cohen L.J., Feldman E.J.,Lerer E., Laiba E., Raz Y., Nemanov L., Gritsenko I., Dina C., Agam G., Dean B., Bornstein,G., & Ebstein R.P. 2008. "Individual differences in allocation of funds in the dictator game associated with length of the arginine vasopressin 1a receptor RS3 promoter region and correlation between RS3 length and hippocampal mRNA." *Genes and Brain Behavior* 7: 266-275.

Kraus, Michael W., Paul K. Piff and Dacher Keltner. 2011. "Social Class as Culture: The Convergence of Resources and Rank in the Social Realm." *Current Directions in Psychological Science* 20(4): 246-250.

Laferrère, Anne and François-Charles Wolff. 2006. "Microeconomic Models of Family Transfers." In the *Handbook of Giving, Reciprocity and Altruism*, edited by Serge-Christophe Kolm and Jean Mercier-Ythier. Amsterdam: North-Holland.

Li, Geng, Robert F. Schoeni, Sheldon Danziger & Kerwin Kofi Charles. 2010. "New Expenditure Data in the *Panel Study of Income Dynamics*: Comparisons with the *Consumer Expenditure Survey*." *Monthly Labor Review* 133(2): 20-30.

Levis, Wilson C. 1990. "Increased Giving by Investing More Money in Fund Raising – Wisely." *Philanthropic Monthly* April/May. Retrieved from http://nccsdataweb.urban.org/PubApps/levis/increased.html

Mills, Rosemary S.L. and Joan E. Grusec. 1989. "Cognitive, Affective and Behavioral Consequences of Praising Altruism." *Merrill-Palmer Quarterly* 35: 299-326.

Neumark, David and Sanders Korenman. 1994. "Sources of Bias in Women's Wage Equations: Results Using Sibling Data." *Journal of Human Resources* 29(2): 379-405.

Panel Study of Income Dynamics, public use dataset. Produced and distributed by the Institute for Social Research, Survey Research Center, University of Michigan, Ann Arbor, MI.

Piff, Paul K., Michael W. Kraus, Stéphane Côté, Bonnie Hayden Cheng, and Dacher Keltner. 2010. "Having Less, Giving More: The Influence of Social Class on Prosocial Behavior. *Journal of Personality and Social Psychology* 99(5): 771-784.

Powell, James L. 1986. "Symmetrically Trimmed Least Squares Estimation for Tobit Models." *Econometrica* 54(6): 1435-1460.

Randolph, William C. 1993. "Dynamic Income, Progressive Taxes, and the Timing of Charitable Contributions." Mimeo, U.S. Treasury Department. Published version: *Journal of Political Economy* 103(4): 709-738.

Ribar, David C. and Mark O. Wilhelm. 2002. "Altruistic and Joy-of-Giving Motivations in Charitable Behavior." *Journal of Political Economy* 110(2): 425-457.

_____. 2006. "Exchange, Role Modeling and the Intergenerational Transmission of Elder Support Attitudes: Evidence from Three Generations of Mexican-Americans." *Journal of Socio-Economics* 35 (3): 514-531.

Rooney, Patrick M. and Melissa S. Brown. 2007. "Patterns of household charitable giving by income group, 2005." Research report. Indianapolis, IN: The Center on Philanthropy at Indiana University. Retrieved from http://www.philanthropy.iupui.edu/research/giving%20focused%20on%20meeting%20needs%20of%20the%20poor%20july%202007.pdf

Sen, Amartya K. 1977. "Rational Fools: A Critique of the Behavioral Foundations of Economic Theory. *Philosophy and Public Affairs* 6(4): 317-344.

Smith, Adam. 1997 (1759). *The Theory of Moral Sentiments*. Washington, DC: Regnery Publishing, Inc.

Tabellini, Guido. 2008. "The Scope of Cooperation: Values and Incentives." *Quarterly Journal of Economics* 73(3): 905-950.

Vesterlund, Lise. 2006. "Why Do People Give?" In Richard Steinberg and Walter W. Powell eds., *The Nonprofit Sector*, Second edition. New Haven: Yale Press.

Wilhelm, Mark O. and René Bekkers. 2010. “Helping behavior, dispositional empathic concern, and the principle of care.” *Social Psychology Quarterly* 73: 11-32.

Wuthnow, Robert. 1995. *Learning to Care: Elementary Kindness in an Age of Indifference*. New York: Oxford University Press.

Figure 1. Earnings Expectations of Parents: Differences Across Siblings

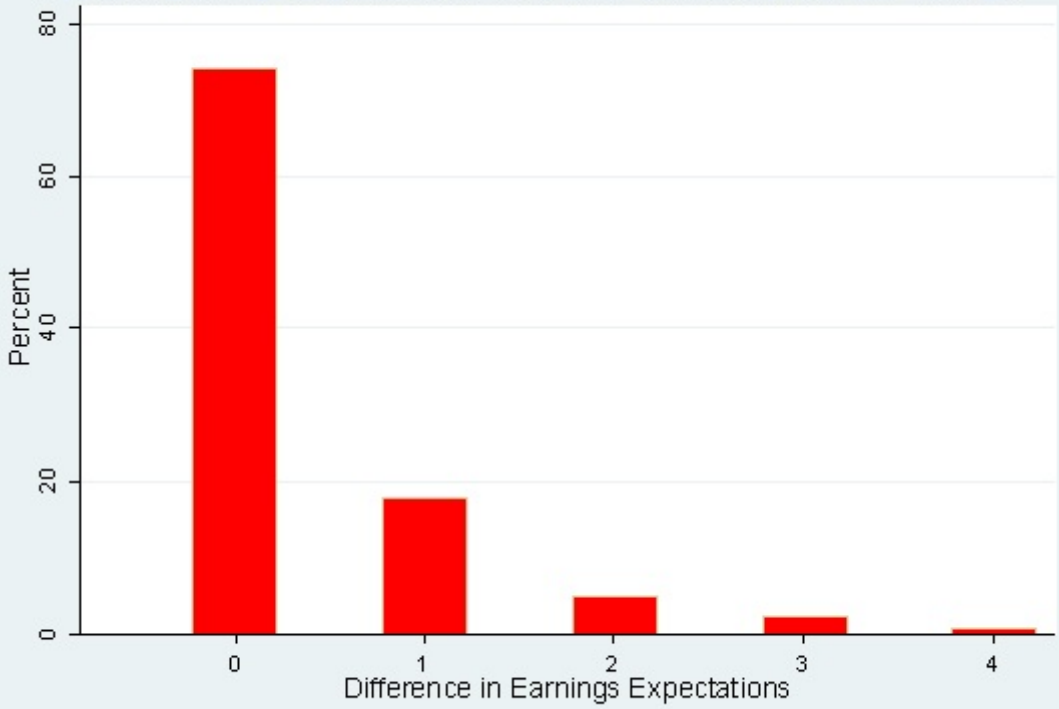

Figure 2. OLS Regression of Principle of Care on Income Groups

ANES 2008-2009 Panel (*n* = 2,233)

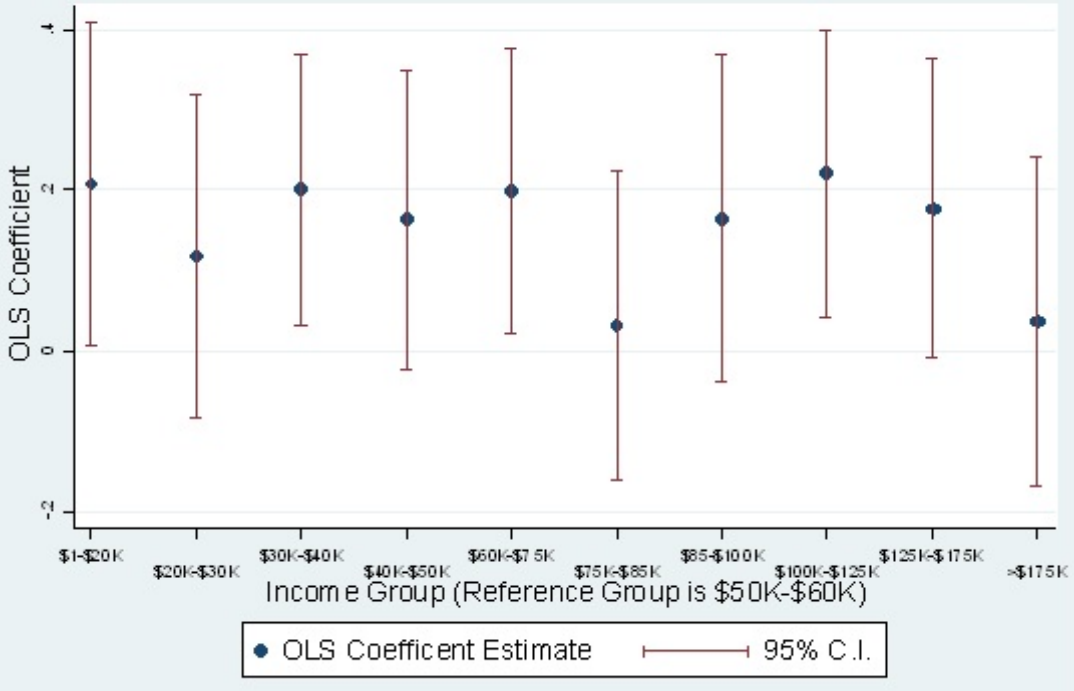

Table 1. Predictions from the Three Transmission Motives.

Parent motive to transmit generosity	Direction of bias in income coefficient in a giving regression estimated in a cross-section	Change in income coefficient in a giving regression estimated with fixed-effects
Altruism[a]	+	Drop
Duty[b]	–	Increase
Identity	0	No change

Notes: [a] Joint hypothesis is $W_{12}^{*} > 0$.
[b] Joint hypothesis is crowd-out dominance.

Table 2. Descriptive Statistics

Variable	Mean	S.D.	Variable	Mean	S.D.
Age	42.8744	7.6514	South residence	0.2833	0.4506
Female head	0.2027	0.4021	Moved in the last 2 years	0.2211	0.4151
Black	0.1267	0.3326	Poor health	0.1286	0.3348
Hispanic	0.0252	0.1567	Religion (Protestant)	0.4826	0.4997
Baby boomer	0.7505	0.4328	Religion (Catholic)	0.2491	0.4326
X generation	0.2495	0.4328	Religion (Jewish)	0.0390	0.1937
College Education	0.3384	0.4732	ln(Income)	11.0371	0.8841
Married	0.6523	0.4763	ln(Consumption)	10.2428	0.7016
Household size	2.8945	1.4630	ln(Tax price of giving)	-0.1775	0.1707
Number of kids	0.9382	1.1240	ln(Donations)	1.8606	1.9720
Big Metro residence	0.7398	0.4388	*N*	5010	

Notes: 1. From authors' calculations from PSID 2001-2005 data.

2. Estimates are weighted by PSID sampling weights.

Table 3. Giving to Organizations that Help People Who Are Poor: Cross-section and Sibling Fixed Effects Regressions

	Cross-section (SCLS)			Sibling Fixed Effects (Honore, 1992)		
ln(income)	1.7810***	1.5031***	0.9349***	1.5482***	1.5742***	1.2983***
	(0.058)	(0.075)	(0.096)	(0.090)	(0.120)	(0.156)
ln(tax price of giving)			-3.1274***			-1.6255***
			(0.361)			(0.613)
Female head		0.7120***	0.7013***		0.199	0.1675
		(0.158)	(0.151)		(0.253)	(0.245)
College education		0.3247***	0.2557***		0.1687	0.1484
		(0.085)	(0.083)		(0.150)	(0.149)
Black		-0.2419**	-0.2089**			
		(0.101)	(0.097)			
Hispanic		0.3636	0.4553*			
		(0.263)	(0.247)			
Married		0.7239***	0.7852***		0.0664	0.1109
		(0.159)	(0.153)		(0.267)	(0.257)
Poor health		-0.1448	-0.1396*		0.1536	0.1507
		(0.088)	(0.084)		(0.137)	(0.134)
Household size		-0.2076***	-0.1498**		-0.1746	-0.1462
		(0.068)	(0.066)		(0.116)	(0.115)
Number of kids		0.1807**	0.1192		0.1744	0.1456
		(0.079)	(0.076)		(0.134)	(0.132)
South residence		0.0696	0.0839		0.3836**	0.3788**
		(0.082)	(0.078)		(0.180)	(0.173)
Big Metro residence		0.6355***	0.5217***		0.5416***	0.4847***
		(0.087)	(0.083)		(0.161)	(0.170)
Moved in the last 2 years		-0.0394	-0.0141		-0.0731	-0.0503
		(0.076)	(0.073)		(0.123)	(0.123)
N	1670	1670	1670	1670	1670	1670

Notes: 1. From authors' calculations from PSID 2001-2005 data.

2. The dependent variable is the log of giving to organizations that help people in need of food, shelter, or other basic necessities plus giving to organizations that fulfill a combination of purposes.

3. Standard errors in parentheses. Standard errors for Columns 1-3 are based on 200 bootstrap replications.

4. *** p<0.01, ** p<0.05, * p<0.1

Table 4. Giving to Organizations that Help People Who Are Poor: Individual Fixed Effects Regressions

	Panel A: Cross-section (SCLS)		
ln(income)	1.7810***	1.5031***	0.9349***
	(0.058)	(0.075)	(0.096)
ln(tax price of giving)			-3.1274***
			(0.361)
	Panel B: Individual Fixed Effects (Honore, 1992)		
ln(income)	0.2325	0.227	0.1125
	(0.151)	(0.150)	(0.171)
ln(tax price of giving)			-0.9269
			(0.663)
	Panel C: Individual Fixed Effects with IV (Honore and Hu, 2004)		
ln(income)	1.1931***	0.8762***	0.6773***
	(0.319)	(0.112)	(0.187)
ln(tax price of giving)			-0.7526***
			(0.113)

Notes: 1. From authors' calculations from PSID 2001-2005 data.

2. The dependent variable is the log of giving to organizations that help people in need of food, shelter, or other basic necessities plus giving to organizations that fulfill a combination of purposes.

3. Standard errors in parentheses. Standard errors for Columns 1-3 are based on 200 bootstrap replications.

4. *** p<0.01, ** p<0.05, * p<0.1

Appendix A

Lemma 1: If $W_{11}^* \leq 0$ then $[U_{11} - 2\,p_1\,U_{12} + p_1^2\,U_{22} + \beta\,m^2\,W_{11}^*] < 0$.

Recall that even without intergenerational altruism ($\beta = 0$) we assume the parent derives utility from her generous behavior. Therefore, without altruism the parent would face an optimal choice problem in which her utility is just $U(a_1, x_1; G_1)$. This problem's second-order sufficient condition is $U_{11} - 2\,p_1\,U_{12} + p_1^2\,U_{22} < 0$. The lemma follows immediately.

Lemma 2: If the parent own income effect of the action is normal – both with and without intergenerational altruism – then $[U_{11} - 2\,p_1\,U_{12} + p_1^2\,U_{22} + \beta\,m^2\,W_{11}^*] < 0$.

The parent's own income effect is:

$$[U_{11} - 2\,p_1\,U_{12} + p_1^2\,U_{22} + \beta\,m^2\,W_{11}^*]\;\mathrm{d}a_1^* = [-\,U_{12} + p_1\,U_{22}]\,\mathrm{d}y_1. \tag{A.1}$$

As described in Lemma 1, the second-order sufficient condition for the parent's optimal choice problem without altruism is $U_{11} - 2\,p_1\,U_{12} + p_1^2\,U_{22} < 0$. Therefore without altruism (setting $\beta = 0$ in equation A.1) normality requires $-\,U_{12} + p_1\,U_{22} < 0$. Because the right-hand side in equation (A.1) is negative, with altruism normality requires the bracketed term on the left-hand side to be negative.

Corollary 1: If generosity increases the marginal utility of generous behavior ($\partial W_1 / \partial G_2 > 0$) and generous behavior is normal, then g_2 and G_2 separable from x_2 in $W(g_2, x_2; G_2)$ implies $W_{12}^* > 0$.

If g_2 and G_2 are separable from x_2:

$$W(g_2, x_2; G_2) = R(g_2; G_2) + S(x_2) \tag{A.2}$$

then the indirect utility function can be written as:

$$W^*(G_2, y_2, p_2) = R(g_2^*; G_2) + S(y_2 - p_2\,g_2^*) \tag{A.3}$$

The envelope theorem yields:

$$\partial W^* / \partial G_2 = R_2(g_2^*; G_2). \tag{A.4}$$

Hence, the second partial of interest is:

$$W_{12}^* = \partial R_2(g_2^*; G_2) / \partial y_2 = R_{21}(g_2^*; G_2)\,[\partial g_2^* / \partial y_2] \tag{A.5}$$

The term $R_{21}(g_2^*; G_2) = R_{12}(g_2^*; G_2) = \partial R_1(g_2^*; G_2) / \partial G_2$ is the partial derivative of the marginal utility of generous behavior with respect to generosity, assumed positive. Normality of g_2^* then implies $W_{12}^* > 0$.