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Version: Accepted Version

Article:
Brown, S., Srivastava, P. and Taylor, K.B. (2015) Intergenerational Analysis of the Donating Behaviour of Parents and their Offspring. Southern Economic Journal, 82 (1). pp. 122-151. ISSN: 0038-4038

https://doi.org/10.4284/0038-4038-2012.166

This is the peer reviewed version of the following article: Brown, S., Srivastava, P. and Taylor, K. (2015), Intergenerational analysis of the donating behavior of parents and their offspring. Southern Economic Journal, 82: 122–151., which has been published in final form at http://dx.doi.org/10.4284/0038-4038-2012.166. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving (http://olabout.wiley.com/WileyCDA/Section/id-828039.html)

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Intergenerational Analysis of the Donating Behaviour of Parents and their Offspring

Abstract: Using data drawn from the U.S. *Panel Study of Income Dynamics*, we explore the relationship between the donating behaviour of parents and that of their children aged less than 18 which gives a direct insight into whether an intergenerational relationship in donating behaviour exists. Furthermore, we exploit information relating to whether or not parents encourage their children to donate to charity by talking to them about donating in order to unveil information related to the intergenerational transmission of philanthropic behaviour. Our findings suggest that an intergenerational correlation is only present in the absence of a control for whether the parent talks to the child about donating. The effect from the parent talking to their offspring is associated with an increased likelihood that the child donates by approximately 10 percentage points, a finding which is robust to a number of different estimation strategies.

Key Words: Charity; Donations; Endogenous Probit Model; Intergenerational Relationships; Tobit Model.

JEL Classification: D19; H24; H41; H31

Acknowledgements: We are very grateful to the Institute for Social Research, University of Michigan for supplying the *Panel Study of Income Dynamics* 2001 to 2011. We are also very grateful to Pamela Lenton, Steven McIntosh, as well as participants at the *Generosity and Wellbeing Conference*, A Centre for Competitive Advantage in the Global Economy (CAGE)/Centre for Market and Public Organisation Conference, April 2013, University of Warwick, and participants at the Economics for a Better World, OECD-Universities Joint Conference, OECD, Paris, July 2013, for excellent comments. We would also like to express our gratitude to two anonymous referees and the co-editor for excellent comments and advice. The usual disclaimer applies.

October 2013

1. Introduction and Background

Philanthropic behaviour has attracted considerable attention in the economics literature, with theoretical contributions focusing on explaining why some individuals and households give away a portion of their income, whilst empirical contributions have focused on identifying the determinants of donating behaviour. Such interest in this particular facet of individual and household behaviour is not surprising given that recent figures from *Giving U.S.A. 2012* estimate total charitable contributions in the U.S. in 2011 at $298.42 billion.[1]

Over the last four decades, one strand of the empirical literature on the economics of charity has focused on analysis of the decision to donate at the individual or household level, with particular attention paid to the impact of tax deductibility and the corresponding price and income effects. The empirical analysis of charitable donations has benefited from both methodological advances with respect to econometric techniques as well as the increased availability and quality of individual and household level data. Andreoni (2006) provides a comprehensive survey of the influences on charitable donations established in the existing economics literature, with economic factors such as income as well as demographic characteristics playing important roles in explaining patterns of donating behaviour observed at the individual and household levels.[2]

One area, which has attracted less interest in the existing empirical literature in economics, concerns the relationship between the donating behaviour of parents and their offspring. Conversely, there is a growing related empirical literature in economics exploring intergenerational relationships related to attitudes and behaviours such as trust, risk attitudes and sociability. For example, Guiso et al. (2008) model the intergenerational transmission of priors about the trustworthiness of others within an overlapping generations framework,

[1] The figure relates to total charitable contributions from U.S. individuals, corporations and foundations and includes both cash and in-kind donations. 73% of this figure ($217.79) stems from individual donations.
[2] See Bekkers and Wiepking (2011, 2012) for comprehensive surveys of the influences on charitable donations from a range of disciplines.

whilst Dohmen et al. (2012) explore the intergenerational transmission of trust and risk attitudes using the *German Socio-Economic Panel*. Finally, using data drawn from the U.S. *National Longitudinal Survey of Youth* 1979, Okumura and Usui (2010) explore the effect of parents' social skills on their children's sociability. Thus, the intergenerational transmission of a wide range of skills, economic outcomes and attitudes has been the subject of much theoretical and empirical scrutiny in the economics literature.

In contrast, the intergenerational relationship between the donating behaviour of parents and their offspring remains relatively unexplored from an empirical perspective in the economics literature, which may reflect the shortage of data in this area. One interesting exception is Wilhelm et al. (2008), who estimate the correlation between the generosity of parents and that of their adult children using data drawn from the U.S. *Panel Study of Income Dynamics* (PSID). The findings, which are based on a wide array of econometric techniques and specification tests, indicate a strong positive correlation between the religious donations of parents and their adult children, a correlation in the same order of magnitude as that for intergenerational relationships with respect to income and wealth. For secular giving, a positive correlation remains, albeit, smaller in magnitude.

Becker (1993) argues that children are heavily influenced by the attitudes and behaviour of their parents, with childhood experiences during the formative early years serving to shape individuals' preferences. Hence, empirical investigation into whether an intergenerational relationship exists between parental donations and that of their offspring pre-adulthood would seem warranted. For example, parents, who wish to instil in their offspring altruistic attitudes and encourage philanthropic behaviour, may display altruistic behaviour themselves in order to serve as role models. Evidence from the social psychology literature based on controlled laboratory experiments cited by Cox and Stark (1996) indicates that children's pro-social behaviour increases with the pro-social behaviour of their role

models. Such contributions highlight the important role of social learning, which has attracted considerable attention in the social psychology literature, whereby children learn to behave in a pro-social manner by imitating models behaving pro-socially (Lévy-Garboua et al., 2006).[3] Similarly, findings from the child psychology literature suggest that role-modelling plays an important role in developing this type of pro-social altruistic behaviour in young children (see, for example, Grusec, 1991, for a review of the psychology literature on the socialisation of altruism in young children).

In the context of analysing the extent to which parents aim to inculcate in their children certain attitudes, Cox and Stark (1996, 2005) explore the 'demonstration effect' whereby parents teach their children the 'desired' future behaviour by setting an example themselves. They focus on preference shaping in the context of facilitating intergenerational exchange in the provision of care, where parents take care of their own parents in order to elicit future care from their children. They present empirical evidence consistent with the 'demonstration effect'. Schokkaert (2006) comments that their theoretical model provides insight into the 'formation of dutiful altruists.'[4] Clearly, for such preference shaping to take place, the children must be young enough to respond to such modelling. Similarly, Ribar and Wilhelm (2006) report results in accordance with a role model explanation for the transmission of attitudes relating to intergenerational assistance. In the context of volunteering, Bekkers (2007) reports evidence based on Dutch survey data supporting a positive relationship between volunteering and parental volunteering. For example, parental volunteering for quasi-religious associations is found to increase the probability of children's

[3] Recent evidence by de Oliveira et al. (2012) demonstrates that choices in a laboratory public goods game predict giving in real donation experiments, as well as self-reported donations and volunteering outside of the laboratory, suggesting that evidence from such laboratory experiments provide valuable predictions for behaviour in different settings.

[4] In a similar vein, Bisin and Verdier (2001) analyse the dynamics of preference traits in the context of intergenerational cultural transmission.

volunteering for secular associations, controlling for key characteristics such as religion, education, wealth and personality.

We contribute to the empirical literature on altruistic behaviour by exploring the relationship between the donating behaviour of parents and that of their children aged less than 18 years, i.e. pre-adulthood. Our focus on younger individuals reflects the importance of parental influence and guidance during this formative stage of the life cycle. Furthermore, we exploit information relating to whether or not parents encourage their children to donate to charity in order to ascertain how such 'directives' influence the intergenerational relationship between parents and their offspring. In terms of non-disciplinary verbalisations, with reference to the psychology literature, Lévy-Garboua et al. (2006), p.564, comment that 'directives are generally effective and often last.' Hence, our empirical analysis serves to shed some light on the transmission of philanthropic behaviour in the context of exploring the effects of such direct parental verbalisations in addition to establishing the existence of intergenerational correlations in such behaviour.

Our findings suggest that whether a child donates to charity is influenced by positive effects from whether the parent donates to charity. However, this intergenerational correlation disappears once we control for whether the parent talks to their child about donating to charity. This finding is robust to a number of alternative estimation strategies and suggests that such parental verbalisations are what matter in shaping a child's altruistic behaviour.

2. Data and Methodology

We use data drawn from the U.S. *Panel Study of Income Dynamics* (PSID), which is a panel of individuals on-going since 1968 with a nationally representative sample of over 18,000 individuals living in 5,000 families in the United States. The survey is conducted by the Institute for Social Research, University of Michigan. The PSID took place annually from

1968 to 1996 and then biennially from 1997 through to 2011, the latest survey year. In 1997, the PSID added an additional component, the *Child Development Supplement* (CDS), which is a study of children (aged 0-12 in 1997) in a sub-sample of PSID families. Completed interviews were obtained with 2,394 families (88% of target), providing information on 3,563 children. The CDS was undertaken again in 2002 and 2007 (when children were aged 10-19), where for the latter 1,506 children were successfully re-interviewed (90% of target), and is a nationally representative and longitudinal database of children. The CDS contains additional information relating to parents in the PSID and their children, with the objective being to provide information on early human capital formation. In cases where there were more than two eligible children in the family, two were randomly selected to take part in the CDS.

With regards to the structure of the interviews in the PSID-CDS for those households with a child, an interviewer visits the household and obtains written permission to interview the child(ren) from the primary caregiver. Firstly, in the CDS, the child(ren) is (are) interviewed in person using computer assisted personal interviewing (CAPI), including an Audio Computer-Assisted Self-Interview (ACASI) component for sensitive topics asked of adolescents, e.g. psychological control. Second, the adolescent's primary caregiver (typically the mother) is interviewed either in person or via a computer assisted telephone interview (CATI) based on their preference. Finally, either the primary caregiver or their spouse is interviewed in the PSID's core main family interview.

We focus on data from the 2002 and 2007 CDS, matching the information in the CDS with that available in the main head of family PSID questionnaires for 2001 and 2007,[5] which include a series of detailed questions relating to giving to charity. Our matched sample of children and their parents comprises 2,366 child-adult pairs observed either once or twice in the data yielding 3,105 observations, where the children are aged between 8 and 17 years.

[5] We match the 2002 CDS to the 2001 PSID since there is no 2002 PSID given that the survey is biennial post 1996. Furthermore, in 2002, the CDS re-contacted families in CDS-I (i.e. 1997) who remained active in the PSID panel as of 2001. Hence, arguably it makes more sense to match to the 2001 PSID rather than to 2003.

For those households with children, in the 2002 and 2007 CDS, the child was asked: *Did you give some of your money last year - if only a few pennies - to a church, synagogue, or another charity that helps people who are not part of your family*? The responses to this question, which provide information on the donating behaviour of children, were used to create a binary indicator, Y_C, which takes the value of one if the child makes such donations. The primary caregiver was then asked: *Do you ever talk to your child about giving some of (his/her) money - if only a few pennies - to a church, synagogue, or another charity*? The responses to this question in the CDS potentially unveil information related to how charitable behaviour is transmitted across generations. We use such responses to create a binary indicator, T, which takes the value of one if the parent talks to the child about such donations.

In the core PSID, households are asked about total donations to charity over the respective calendar years, providing detailed information about the parent's donating behaviour.[6] The responses to this set of questions are used to create a binary indicator of whether the parent donates to charity, Y_P.[7] The Center on Philanthropy Panel Study (COPPS), which provides data on giving and volunteering by families, is the generosity module in the core PSID.[8]

The matched child-parent data reveals that, on average, over the two years, 72% of children report that they donate to charity compared to 60% of parents, whilst 70% of parents

[6] The information on giving data has been shown to be nationally representative, see Wilhelm (2006).

[7] The definition of a charitable organization in the PSID includes 'religious or non-profit organizations that help those in need or that serve and support the public interest'. It is clearly stated in the questionnaire that the definition used does not include political contributions. The information about adult (parent) charitable donations available in the 2001 and 2007 PSID is related to activity in calendar years 2000 and 2006, implying that these variables describe role-modelling one year (or more) prior to the measurement of children's donating in the CDS. Information on the primary caregiver talking to their child about donating comes from the CDS and hence is concurrent with the measurement of children's donating behaviour. Unfortunately, the survey questions eliciting information about children's donating behaviour differ from those eliciting information relating to parental donating behaviour. Full details on the PSID and CDS documentation are available at: http://psidonline.isr.umich.edu/Guide/documents.aspx.

[8] See http://www.philanthropy.iupui.edu/research-by-category/center-on-philanthropy-panel-study.

report that they talk to their child about donating to charity. In the matched sample, 45% of the observations are characterised by the parent and the child both donating to charity, with only 13% reporting that neither the parent nor the child donates to charity. Interestingly, 27% of observations are characterised by the child reporting that they donate to charity, whilst the parent indicates that they do not donate to charity compared to only 15% where the parent reports that they donate to charity and the child reports that they do not donate to charity. The data also reveals that in the case where the parent talks to the child about donating to charity, 77% of children report that they donate to charity.

We explore the intergenerational transmission of altruistic behaviour by considering the influence of parental donating behaviour on the probability that their offspring donates to charity. Defining Y_{C}^{*} as the propensity to donate by the child, estimating the following univariate probit model provides a direct test of the intergenerational effect where parental donating Y_{P} is initially treated as an exogenous variable:

$$Y_{\mathrm{C}}^{*} = \boldsymbol{X}_{\mathrm{C}}'\beta + \gamma Y_{\mathrm{P}} + \varepsilon \tag{1}$$

For example, if the estimate of γ is positive this would suggest that the children of parents who donate are more likely to donate. We then consider whether the likelihood that the child donates to charity is influenced by their parent talking to them about donating, initially treating this as an exogenous variable, which is captured by the λ_0 coefficient in equation 2:

$$Y_{C}^{*} = \boldsymbol{X}_{C}'\beta_0 + \gamma_0 Y_P + \lambda_0 T + \phi_0 \left(Y_P \times T\right) + \varepsilon_0 \tag{2}$$

In addition, the interaction term in equation (2) serves to shed light on how the association between children's and parental donation behaviour is influenced by a direct attempt by parents to impart these attitudes to children by talking to them about donating. Hence, the additional term serves to indicate whether such deliberate direct attempts to influence

behaviour strengthens the intergenerational correlation in donating behaviour, which would be supported empirically if $\phi_0 > 0$.

It is unlikely that parental donating, Y_P, and talking to the child about donating, T, are exogenous and, so to take this into account, we model the donating behaviour of children via a system of three equations which captures the parent's decision to donate to charity (equation 3a below), whether the parent talks to the child about donating (equation 3b below), and whether the child donates to charity (equation 3c below). The key advantage of estimating a system of equations is that it allows us to account for the correlation via unobservable individual or household characteristics that may affect the three decisions. Thus, our system framework allows for the endogeneity of the parent's donating behaviour and whether they talk to their offspring about making charitable donations. We specify a system of three latent equations as follows:

$$Y_P^* = \boldsymbol{X}_P'\beta_{P1} + \varepsilon_{P1}; \tag{3a}$$

$$T^* = \boldsymbol{X}_T'\beta_{T1} + \varepsilon_{T1}; \tag{3b}$$

$$Y_C^* = \boldsymbol{X}_C'\beta_{C1} + \gamma_1 Y_{P1} + \lambda_1 T + \phi_1 \left(Y_P \times T\right) + \varepsilon_{C1}; \tag{3c}$$

where Y_P^* and Y_C^* represent the propensity to donate by the parent and the child, respectively, and T^* is the propensity of the parent to talk to the child about donating. Assume that the error terms in the three latent equations are independently and identically distributed and jointly follow a multivariate normal distribution with mean 0 and covariance matrix $\sum$. That is, $(\varepsilon_{P1}, \varepsilon_{T1}, \varepsilon_{C1})' \sim MVN[0, \sum]$ where the covariance matrix is given by:

$$\sum = \begin{pmatrix} 1 & \rho_{PT} & \rho_{PC} \\ \rho_{PT} & 1 & \rho_{TC} \\ \rho_{PC} & \rho_{TC} & 1 \end{pmatrix},$$

ρ_{jk} being the correlation coefficient between ε_j and ε_k $\left(j,k=\mathrm{P,T,C};j\neq k\right)$ and $\mathrm{var}\left(\varepsilon_{\mathrm{P}}\right)=\mathrm{var}\left(\varepsilon_{\mathrm{T}}\right)=\mathrm{var}\left(\varepsilon_{\mathrm{C}}\right)=1$ for identification purposes. Under this assumption, the set of equations given by (3a, b and c) above results in an endogenous Multivariate Probit (MVP) model with a recursive simultaneous structure. Identification is ensured through exclusion restrictions and a highly non-linear specification. For instance, $\boldsymbol{X}_{\mathrm{P}}$ and $\boldsymbol{X}_{\mathrm{T}}$ contain separate instruments that do not appear in $\boldsymbol{X}_{\mathrm{C}}$, as detailed below. The MVP specification with potentially non-zero off-diagonal elements in $\sum$ allows for correlations across the disturbances of the three latent equations which embody unobserved characteristics. The system of equations allows for the estimation of several joint and conditional probabilities, such as, $\mathrm{Prob}\left[Y_{\mathrm{P}}=1,T=1,Y_{\mathrm{C}}=1\right]$, $\mathrm{Prob}\left[T=0\,|\,Y_{\mathrm{P}}=1\right]$ and $\mathrm{Prob}\left[Y_{\mathrm{C}}=1\,|\,Y_{\mathrm{P}}=1,T=0\right]$.

We also explore the effect of the amount of parental donations by estimating the monetary amount donated by the family in equation (4a) simultaneously with, whether the parent talks to the child about donating (equation 4b below), and the probability that the child donates, equation (4c). The natural logarithm of the dollar amount donated in 2001 prices is given by $\log\left(D_{\mathrm{P}}\right)$. The average donation by parents is \$4,744 (4.5 in log levels) with 40% not making a charitable donation.[9] This system framework allows for the endogeneity of both the amount that the parent donates and whether they talk to their offspring about making charitable donations. We specify a system of three equations, with one censored dependent variable and two latent dependent variables, as follows:

$$\log\left(D_{\mathrm{p}}\right)=\boldsymbol{X}_{\mathrm{P}}'\beta_{\mathrm{P2}}+\varepsilon_{\mathrm{P2}}; \tag{4a}$$

$$T^{*}=\boldsymbol{X}_{\mathrm{T}}'\beta_{\mathrm{T2}}+\varepsilon_{\mathrm{T2}}; \tag{4b}$$

$$Y_{\mathrm{C}}^{*}=\boldsymbol{X}_{\mathrm{C}}'\beta_{\mathrm{C2}}+\gamma_{2}\log\left(D_{\mathrm{p}}\right)+\lambda_{2}T+\phi_{2}\left\{\log\left(D_{\mathrm{P}}\right)\times T\right\}+\varepsilon_{\mathrm{C2}}; \tag{4c}$$

[9] Given there is clustering at zero, in order to convert to natural logarithms we add one to the level of donations.

In the psychology literature, results from laboratory experiments have indicated that the more generous a role model is (in our application, the parent in terms of the level of their donation) the larger is the effect that they have (Lévy-Garboua et al., 2006). Thus, we explore whether the effect of parental donating behaviour on the probability that the child donates is increasing in the amount that the parent gives to charity. Given that the dependent variable in equation (4a) is now a censored variable, i.e. some parents do not donate to charity so there is clustering at zero, and the dependent variables in equations (4b) and (4c) are probabilities, the model is estimated simultaneously by a conditional (recursive) mixed process estimator in STATA 12 using the CMP command, see Roodman (2009).[10]

We also estimate treatment effects of the endogenous variables in both systems, i.e. in terms of equations (3a) to (3c), the impact of whether the parent donates on whether the child donates to charity and the impact of whether the parent talks to the child about donating to charity on whether the child donates to charity. Three widely used measures of treatment effects are ones that average over all individuals (ATE), ones that average over only the treated (ATET) and ones that average over only the untreated (ATEUT). For instance, focusing upon equations (3a) to (3c), the three measures of the treatment effects of Y_{P} on $\mathrm{Prob}\left[Y_{\mathrm{C}}=1\right]$, where the likelihood of the child donating is also conditioned upon the parent talking to them about making charitable donations, can be obtained as follows:

$$ATE = E\left[Y_{\mathrm{C}}^{1}-Y_{\mathrm{C}}^{0};\boldsymbol{X}_{\mathrm{C}},T\right]=\Phi\left\{\boldsymbol{X}_{\mathrm{C}}'\beta_{\mathrm{C1}}+\lambda_{1}T+\gamma_{1}+\phi_{1}T\right\}-\Phi\left(\boldsymbol{X}_{\mathrm{C}}'\beta_{\mathrm{C1}}+\lambda_{1}T\right) \tag{5}$$

$$ATET = E\left[Y_{\mathrm{C}}^{1}-Y_{\mathrm{C}}^{0}\,|\,Y_{\mathrm{P}}=1,\boldsymbol{X}_{\mathrm{P}},\boldsymbol{X}_{\mathrm{C}},T\right]=$$
$$\left\{\frac{\Phi_{2}\left(\boldsymbol{X}_{\mathrm{P}}'\beta_{\mathrm{P1}},\left(\boldsymbol{X}_{\mathrm{C}}'\beta_{\mathrm{C1}}+\lambda_{1}T+\gamma_{1}+\phi_{1}T\right);\rho_{\mathrm{PC}}\right)}{\Phi\left(\boldsymbol{X}_{\mathrm{P}}'\beta_{\mathrm{P1}}\right)}\right\}-\left\{\frac{\Phi_{2}\left(\boldsymbol{X}_{\mathrm{P}}'\beta_{\mathrm{P1}},\left(\boldsymbol{X}_{\mathrm{C}}'\beta_{\mathrm{C1}}+\lambda_{1}T\right);\rho_{\mathrm{PC}}\right)}{\Phi\left(\boldsymbol{X}_{\mathrm{P}}'\beta_{\mathrm{P1}}\right)}\right\} \tag{6}$$

[10] Unfortunately, information relating to how much the child donates is not available in the CDS.

$$ATEUT = E[Y_C^1 - Y_C^0 \mid Y_P = 0, \boldsymbol{X}_P, \boldsymbol{X}_C, T] =$$

$$\left\{ \frac{\Phi_2(-(\boldsymbol{X}_P'\beta_{P1}), (\boldsymbol{X}_C'\beta_{C1} + \lambda_1 T + \gamma_1 + \phi_1 T); -\rho_{PC}}{\Phi(-(\boldsymbol{X}_P'\beta_{P1}))} \right\} - \left\{ \frac{\Phi_2(-(\boldsymbol{X}_P'\beta_{P1}), (\boldsymbol{X}_C'\beta_{C1} + \lambda_1 T); -\rho_{PC}}{\Phi(-(\boldsymbol{X}_P'\beta_{P1}))} \right\} \quad (7)$$

where Y_C^1 and Y_C^0 denote the respective values of Y_C when Y_P takes values 1 and 0, and Φ and Φ_2 denote the univariate normal cumulative density function and the bivariate normal cumulative density function, respectively. Similarly, three measures of the treatment effects of T on $\text{Prob}[Y_C = 1]$, where the likelihood of the child donating is also conditioned upon whether the parent makes a charitable donation can be obtained. Furthermore, a set of corresponding ATEs can be calculated for the system shown in equations (4a) to (4c).

In both of the systems of equations, the computation of marginal effects in these models is fairly complex given the endogenous structure of the model and the presence of common variables across the three equations. We therefore estimate them via numerical derivatives of the multivariate normal distribution functions with respect to the exogenous variables. In addition, we can obtain marginal effects not only on marginal probabilities but also on joint and conditional probabilities. Treatment effects are also calculated using numerical gradients given they are highly non-linear functions of $\boldsymbol{X}$ and analytical solutions are difficult to obtain. The corresponding standard errors are computed using the delta method.[11] Consider the trivariate binary model shown in equations (3a) to (3c). Take the variable, $\boldsymbol{X}^*$, which appears in all three equations. If we were to compute the marginal effect of $\boldsymbol{X}^*$ on Y_C, this would comprise of a direct effect of $\boldsymbol{X}^*$ on $\text{Prob}[Y_C = 1]$ and indirect effects through $\text{Prob}[T = 1]$ and $\text{Prob}[Y_P = 1]$ given that T and Y_P enter equation (3c), see Greene (2012). Similarly, direct and indirect effects occur when estimating equations (4a) to (4c).

[11] Marginal effects, treatment effects and standard errors are estimated using GAUSS 12.

We explore whether parent and child donating behaviour are correlated after controlling for a range of characteristics (such as income, wealth, health and religion) that are expected to influence such intergenerational relationships. As argued by Bekkers (2007), omitting such controls may lead to spurious correlation between parental and children's behaviour, based on biased empirical results. In terms of the explanatory variables, common covariates in both $\boldsymbol{X}_{\mathrm{P}}$ and $\boldsymbol{X}_{\mathrm{T}}$, are controls for the following head of household characteristics: age; gender; ethnicity; years of schooling; health status specifically whether in good/very good health, or whether in excellent health (where poor or very poor health forms the reference category); and religious denomination of the family, whether catholic, protestant, or any other religious group (where no religion forms the reference category). We also control for household labour income, household non-labour income, household wealth and whether the home is owned, either outright or via a mortgage. Following the existing literature, we control for the price of donating to charity, which is determined by taxation as income donated to recognised charities in the U.S. is not subject to income tax. Hence, disposable income falls by less than the full amount donated: the price of the donation becomes the donation net of the saving in tax since each dollar donated to a recognised charity leads to less than one dollar sacrificed for consumption purposes (Auten et al., 2002). For households who itemise charitable donations in their tax return, the price of the donation is defined as one minus the household's marginal tax rate on the contribution made, whereas for households who do not itemise charitable donations, the price of the donation is one: donating one dollar means that there is one dollar less for consumption. Households who itemise are assigned the relevant tax rate using the National Bureau of Economic Research

TAXSIM programme,[12] which calculates federal state tax liabilities for survey data based on a range of factors such as earnings, marital status and children.[13]

As the components of the model are nonlinear, the system is uniquely identified due to these nonlinearities, Greene (2012). However, it is preferable to identify the three equations on the basis of explicit exclusion restrictions and, hence, this is the approach we take (see, for example, Wooldridge, 2010). In $\boldsymbol{X}_{\mathrm{P}}$, equations (3a) and (4a), we include the following set of instruments. Firstly, the proportion of households donating by state for age specific (18+) reference groups matched to parents by state and age. This is generated from the main PSID sample rather than the matched parent-offspring sub-sample. We conjecture that this will influence parental donations for those who are in the same social reference space, see Andreoni and Scholz (1998), i.e. state-age group. However, the donating decision of the child is likely to be independent of this since a different reference group is arguably applicable, i.e. 8-17 years olds. Secondly, we also use a binary indicator for whether the household has itemised for medical expenses in the previous year. The logic here is that tax deduction is an incentive to make donations, see Vesterlund (2006). Hence, the itemisation status for items other than charitable donations, e.g. medical expenses, may act as proxy for awareness of tax advantages, which might, therefore, be an appropriate predictor for donations. In $\boldsymbol{X}_{\mathrm{T}}$, equations (3b) and (4b), we include a set of binary instruments specifically: whether the parent discusses what their child studies in school on a daily basis; and whether the parent talks to the child on a daily basis about current events like things

[12] See http://www.nber.org/~taxsim/.

[13] One remaining issue, however, is that the decision to itemise is arguably not fully exogenous, i.e. the decision to itemise may be influenced by the level of donations. To account for this, as is common in the existing literature (see Auten et al., 2002), we exclude 'endogenous itemisers' who are defined as those who have itemised but would not have done so in the absence of their actual charitable donations. Due to an additional source of possible endogeneity relating to the price of a charitable donation being a function of both the donation and income, following Auten et al. (2002), we calculate the price variable firstly by assuming that charitable donations equal zero (i.e. the first dollar price) and then after including a predicted amount of giving, set at 1% of average income. As stated by Auten et al. (2002), p.376, 'this procedure yields a tax price consistent with the actual costs of giving, but not endogenous to the individual donation decision.' Following the existing literature, we then take an average of the two price variables.

going on in the news. The idea here is that talking to children about their studies and/or events in the media is likely to be associated with the parent talking to the child about making donations to charity, but arguably have no direct influence on the probability that the child donates per se. We also use a binary indicator for whether the child eats with the family on a daily basis as an instrument as it seems likely that children who regularly eat with their parents will have a higher propensity to discuss issues, e.g. donating, yet this is not likely to directly influence the decision of the child to undertake a charitable donation.[14]

In $\boldsymbol{X}_{\mathrm{C}}$, we include controls for a range of child characteristics and family level covariates. The following child characteristics are used in the model: gender; ethnicity; age; whether the child has one sibling, or two or more siblings in the household (no siblings as the reference category); health status, specifically whether in good/very good health, or whether in excellent health (where poor or very poor health forms the reference category); the number of friends that the child has; the amount of the allowance/pocket money received by the child; whether the child was involved in any volunteer service activities or service clubs in the past 12 months; and a proxy for ability from performance in a reading test, passage comprehension test, and an applied problems test.[15] Finally, we attempt to control for aspects of the child's behaviour by combining a number of variables through factor analysis into a single measure.[16] In terms of household controls included in the child's donating equation, we incorporate the price of donating, household income, wealth, family housing tenure and

[14] The validity of the instruments is discussed in the following section.

[15] Each test is the age-standardized score in the Woodcock-Johnson Revised Achievement Tests, which are widely used and have been validated extensively (see Woodcock and Johnson, 1990, for further details of the tests).

[16] The underlying variables used in the factor analysis are whether the parent states that the child does each of the following, without adult encouragement, most days or everyday: helps siblings; is kind towards siblings; cooperated with siblings; takes turns with play materials with siblings; or listens to siblings. Also whether the child has given emotional support to their friends over the last 6 months; whether the child has helped friends with things they had to get done, such as homework or chores, a few times a week or more over the last six months; and whether the child has helped parents with things they had to get done, such as chores or running errands, a few times a week or more over the last six months. Note that factor analysis rather than principal components is used due to the variables being measured on different scales. The variables are standardised prior to the factor analysis.

the religious denomination of the family, where these variables are defined as above. Summary statistics for all of the explanatory variables employed in our empirical analysis are presented in Table 1 in the appendix.[17] In equations (3a, 3b) and (4a, 4b), all covariates in $\boldsymbol{X}_{\mathrm{C}}$ are included in the regressors, i.e. $\boldsymbol{X}_{\mathrm{C}} \subseteq \{\boldsymbol{X}_{\mathrm{P}}, \boldsymbol{X}_{\mathrm{T}}\}$, in order to gain increased efficiency in the estimates (Wooldridge 2010).

3. Results

Initially we focus on the results of estimating the univariate models of equations (1) and (2) which consider the determinants of the probability that the child donates. As discussed above this treats both whether the parent donates (amount of the donation) and whether the parent talks to the child about charitable donations as exogenous variables. Hence, we then consider the potential problem of endogeneity and whether this influences our findings by employing the multivariate frameworks given by equations (3a-3c) and (4a-4c).

Univariate Analysis

The results from estimating the univariate models of equations (1) and (2) are shown in Table 2 with marginal effects reported. There are four specifications shown. Columns 1 and 2 are based on estimating equations (1) and (2) conditional upon whether the parent donates to charity, whereas columns 3 and 4 repeat the analysis but are based on the amount that the parent donates. The probability that the child donates is inversely related to, for example, the child being male, which is consistent with the findings of Wilhelm et al. (2011), and the non labour income of the household.[18] Positive effects on the likelihood that the child donates are found from whether the child volunteers; the passage comprehension test score; and whether the family religious denomination is protestant relative to no religion. Turning to the effect of parental donating behaviour, the results in both columns 1 and 3 reveal that the likelihood

[17] It is important to acknowledge that some of the covariates may potentially be endogenous such as pocket money or volunteering, which may lead to bias in the results. We find, however, that omitting such potentially endogenous variables from the model does not influence the results relating to our key parameters of interest.

[18] Non labour income includes benefit income for unemployment compensation and child support plus all other sources of transfer income received by the head and spouse.

that the child donates to charity is positively related to the parent donating and also to the amount donated. To be specific, if the parent donates then the probability that the child donates to charity increases by 5.2 percentage points. Or, if the parent increases the amount donated by 1% the probability that the child donates to charity increases by 1 percentage point. Hence, there is some evidence of an intergenerational effect in donating behaviour when parental donating behaviour is treated as exogenous. However, this effect becomes statistically insignificant once whether the parent talks to the child about donating is entered into the model, see columns 2 and 4. In particular, whether the parent talks to the child about donating is associated with around 10 percentage points higher probability that the child donates.

There is some evidence in the existing literature to suggest differential effects of parental role modelling upon children's altruistic behaviour. For example, Stukas et al. (1999) found that parental role modelling had a larger impact on the self-image of young females and argued that this subsequently might imply a stronger effect on girls' pro-social behaviour. This is consistent with the reasoning put forward by Eisenberg et al. (2006) where a higher level of moral reasoning is sometimes exhibited by girls. Consequently, girls might be more responsive to parental role modelling whilst boys have to be encouraged verbally to donate. Similarly, there may be differential effects of parental role modelling and verbalisation by race. Often giving and volunteering are considered to be closely related pro-social behaviour, see, for example, Wilhelm et al. (2011), and so it could be argued that the influence of role modelling and conversations about giving may differ between parents who volunteer compared to those who do not undertake voluntary work. A similar argument could also be made for whether the parent reports a religious denomination or not. All these characteristics might influence the intergenerational transmission in different ways and so we test the equality of the key parameters between groups, explicitly: sons – daughters; white –

non-white; parent volunteers – non volunteer; and family religious – non religious. The results of testing the equality of the inter-generational coefficient γ_0, the verbalisation coefficient λ_0, and the interaction coefficient ϕ_0 are shown in Table 3. Interestingly, the only group where statistical differences are found in the key coefficients is for those families reporting a religious denomination relative to those who do not.

We have repeated the univariate empirical analysis of equations (1) and (2) decomposing parental donations into those to religious and non-religious organisations, the results are reported in Table 4 in Panels A and B respectively where four specifications are shown as in Table 2. The analysis reveals that, when the binary parent donating indicator is replaced with whether the parent donates to a religious cause, see Panel A, the intergenerational marginal effect, γ_0, is always positive and statistically significant associated with around a 10 percentage point increase in the probability that the child donates. Focusing on the amount of religious donation made by the family, this is always statistically significant with a one per cent increase in the level of the donation associated with around a 2 percentage points higher probability that the child donates. The effect of the parent talking about donating remains in terms of statistical significance and economic magnitude. There is no evidence to support the premise that direct attempts by the parent to influence their offspring's behaviour strengthen the intergenerational correlation in donating behaviour, i.e. the null hypothesis that $\phi_0 = 0$ is not rejected. Conversely replacing the parental donating indicator with one for whether the parent donates to non-religious organisations is statistically insignificant when talking to the child about donating is included in the specification, see Table 4 Panel B. However, the effect of talking remains throughout.[19] Thus the results

[19] Unfortunately the CDS data does not have information on the type of donation made by the child, so we can only decompose parental donations and not match this to the type of charity the child donates to. This is an interesting avenue for future research if such data should become available.

suggest that the transmission of religious giving is stronger potentially as a by-product of the transmission of religion (although this is controlled for at the family level).

Univariate Analysis – Robustness

The analysis thus far has dealt with repeated observations on the same child, which can be a maximum of two years, by clustering at this level of aggregation. What follows aims to investigate whether the results are sensitive to: (i) employing a child fixed effects estimator; (ii) clustering at both the child and sibling level, i.e. two-way clustering of the standard errors; and (iii) adopting a sibling fixed effects estimator. In the robustness analysis we focus upon overall charitable donations for brevity.[20] In order to implement a fixed effects estimator and adopt two-way clustering of the standard errors, we use the linear probability model (LPM). Firstly, equations (1) and (2) are re-estimated using the LPM clustering at the child level to see whether the results are similar to that of the univariate probit estimator. The results are reported in Table 5 Panel A which has the same structure as Table 2. Columns 1 and 2 are based on estimating equations (1) and (2) conditional on whether the parent donates to charity, whereas columns 3 and 4 repeat the analysis but are based on the amount that the parent donates. Clearly, in terms of the magnitudes of the coefficients and statistical significance of the primary variables of interest, the findings are very similar to that of the probit specifications.[21] In particular, a parent talking to their child about donating is associated with around an 11 percentage points higher probability of the child donating. In Panels B and C of Table 5, we re-estimate the same specifications allowing for child fixed effects and two way clustering, respectively.

The advantage of the LPM fixed effects estimator is that for some children we have two observations at different points in time and hence it is possible to account for

[20] Results from splitting donations into religious and non-religious causes are available from the authors upon request.

[21] This is despite the well-known drawbacks of using the LPM to model binary outcomes, see Greene (2012) for a discussion of such issues.

unobservable time invariant child effects which might influence their decision to donate. Specifically, introducing child, *C*, and time, *t*, subscripts to the error terms in equations (1) and (2), $\varepsilon_{Ct} = \alpha_C + \nu_{Ct}$, the error can be decomposed into a fixed effect α_C and a white noise component ν_{Ct} where the former is the unobservable component. Table 5 Panel B summarises the results of employing the fixed effects estimator and the analysis essentially reveals that the results are robust to removing the child fixed effect.[22]

In the empirical analysis discussed thus far, the standard errors are clustered at the cross sectional unit of observation, i.e. the child, with the exception of the LPM child fixed effects estimator. However, it is possible that there are multiple children (siblings) in the sample and so it may also be important to take into account clustering at this additional level of aggregation. Indeed, for our sample of children, only 45% have no siblings in the sample. To investigate this, we apply the Cameron et al. (2011) estimator, where standard errors in the current application are clustered both at the child and family level. Failing to accommodate the potential clustering within families could result in standard errors being under-estimated. The results of the two way clustering analysis are shown in Table 5 Panel C where only the t-statistics differ (the point estimates are the same). Again the results are consistent with those discussed above. The predominant finding is that it is whether the parent talks to their offspring about donating that matters with the effect remaining statistically significant at the 1 per cent level.

The presence of siblings in the data enables us to employ an alternative strategy which will help improve upon the identification of the influence of parents talking to their offspring upon the child's decision to donate. To do this, we employ a sibling fixed effects estimator where variation that occurs at the sibling level is exploited. This is important in that different

[22] We are grateful to an anonymous referee for highlighting the possibility that the difference in the estimated coefficients for parental giving in Panels A and B could imply that the transmission only occurs among those children who are sensitive to parental influence, which is consistent with the results based on the sibling fixed effects model presented in Panel D discussed below.

children, for exogenous reasons, may have been exposed differently to their parent talking to them about making charitable donations. Hence, this potential within family variation enables us to isolate the effect of this verbal directive from influences that both siblings would have been exposed to, i.e. family level covariates including whether the parent donates. The approach we use can be summarised as follows:

$$Y_{\mathrm{C}}^{1} - Y_{\mathrm{C}}^{2} = \tilde{\lambda}\left(T^{1} - T^{2}\right) + \left(\boldsymbol{X}_{\mathrm{C}}^{1} - \boldsymbol{X}_{\mathrm{C}}^{2}\right)'\tilde{\boldsymbol{\beta}} + \tilde{\varepsilon} \tag{8}$$

The superscripts '1' and '2' refer to the two siblings within the same household, and $\boldsymbol{X}_{\mathrm{C}}^{s}$ is a vector of child specific covariates for sibling *s*, specifically: age; gender; test scores; log allowance; child behaviour; and number of friends, where in equation (8) these covariates are entered as a vector of sibling differences, $\boldsymbol{X}_{\mathrm{C}}^{1} - \boldsymbol{X}_{\mathrm{C}}^{2}$. In this model all family covariates, including whether the parent donates since this is defined at the household level (see Section 2), are differenced out of the analysis. Selecting families with two siblings and arranging the data to employ the specification in equation (8) yields 729 observations at the family level, i.e. 1,458 children, where only 36% of observations have no variation in both the sibling difference of donating, $Y_{\mathrm{C}}^{1} - Y_{\mathrm{C}}^{2}$, and the sibling difference in the parent talking to the child, $T^{1} - T^{2}$. The results are shown in the final row, Panel D, of Table 5 where we report the estimated $\tilde{\lambda}$ parameter only. Clearly, the influence of the parental directive is still apparent, statistically significant, and this is after isolating the common effects upon siblings stemming from family environment and other family fixed effects, both observable, e.g. parental donating behaviour and parental education, and unobservable. Arguably this approach helps to identify the impact of parental verbal directives, exploiting the different exposure of

siblings to their parents' talking to their children about making charitable donations within the same household.[23]

Multivariate Analysis

We now explore the potential problem of endogeneity in the key covariates of interest, i.e. whether the parent donates to charity or the amount donated and whether they talk to their child about donating. This analysis is based upon estimating the multivariate system of equations, (3a-3c) and (4a-4c), and the results are presented in Tables 6 to 8. In each alternative model, the joint test that the correlation in the three error terms is equal to zero is rejected endorsing the modelling approach and implying endogeneity between the key variables of interest.[24] Table 6 presents the marginal effects from estimating the trivariate probit model (equations 3a-3c) relating to the exogenous variables for: the probability of whether the parent makes any donations; the probability that the parent talks to the child about donations; and the associated marginal effects related to the probability that the child donates are presented (where direct, indirect and total effects are shown). Table 7 follows a similar structure showing the coefficients (for the censored, i.e. tobit, part of the model) and marginal effects from estimating the simultaneous model (equations 4a-4c) relating to the endogenous variables for: the amount donated to charitable causes; the probability that the parent talks to the child about donations; and the associated marginal effects related to the probability that the child donates are presented (again direct, indirect and total effects are shown). Table 8 reports the associated treatment effects on the key variables of interest.

It is apparent from the first column in Table 6 that head of household characteristics such as ethnicity and years of schooling all influence the probability that the parent donates to

[23] An important caveat to note is that this identification strategy is only valid if the sibling variation in exposure to the parental talking about donating is exogenous, i.e. uncorrelated with unobserved sibling differences which may influence their decision to donate to charity.

[24] For equations (3a-3c), the chi-squared statistic associated with testing the hypothesis that the three ρ parameters are jointly equal to zero is 44.99 (p-value=0.000). The corresponding chi-squared statistic and p-value for equations (4a-4c) is 83.71 (p-value=0.000).

charity. Statistically significant positive effects are also apparent from household labour income, wealth and home ownership, signalling the importance of financial factors. The positive marginal effect relating to volunteering ties in with the notion that donating money and donating time to charitable causes are complementary activities, see, for example, Wilhelm et al. (2011). In terms of the instruments used in the parental donating equation, both the proportion of households donating in the state where the family resides, matched to the parent's age, and past medical itemization have a positive and statistically significant influence on parental donating behaviour. Covariates are found to have a similar influence when considering the amount donated, see Table 7, in addition the gender of the parent and age are also statistically significant.

The outcome of whether the parent talks to their child about donating behaviour is shown in the second column of Tables 6 and 7. Family and parental characteristics which are significantly associated with this outcome are: years of schooling; ethnicity; and home ownership. In terms of the instruments employed, all three, i.e. whether the parent discusses school studies, and/or they talk about the news, and whether the family eats meals together, are all individually and also jointly significant. For example, whether the family eat together on a daily basis is associated with around a 3 percentage point higher probability that the child donates to charity.

Statistically significant positive effects on the probability that the child donates to charity, see Tables 6 and 7 final column, are apparent from the number of friends that the child has, the child's participation in volunteer service activities, and the number of years of schooling of the parent. Inverse direct effects on the probability that the child donates are apparent for male children, white children, and the level of household non labour income. Both sets of instruments used in modelling whether the parent donates to charity (i.e. the proportion of households donating in the state where the family resides, and previous medical

itemization) and whether the parent talks about donating to the child (i.e. whether on a daily basis the parent discusses school studies, they talk about current affairs, and they eat together) are jointly insignificant in the child donating equation.[25] Hence, our findings would suggest that the instruments perform well in a statistical sense and we would argue they are viable intuitively (see Section 2 above).

The *ATE*s, *ATET*s and *ATEUT*s are shown for the binary endogenous variables (i.e. whether the parent donates to charity and whether they talk to the child about donating) in Table 8 panel A. These are also reported in Table 8 panel B for the binary endogenous variable, i.e. whether the parent talks to the child about donating, and average marginal effects (*AMEs*) estimated over all individuals for the continuous endogenous variable (i.e. the amount donated). It is apparent from Table 8 Panel A (Panel B) that the treatment effects (*AME*) of whether the parent donates to charity on whether the child donates to charity (amount donated to charity) are all positive, yet statistically insignificant. This is not surprising given that there are no significant indirect effects stemming from the parental donating equation on the child's donating decision, as can be seen from the anti-penultimate column of Tables 6 and 7. Conversely, it is clear from both of the models estimated that the effects from the parent talking to their child about donating to charity are large, positive and statistically significant, at around 13 percentage points in the multivariate probit model (see Table 8 Panel A). This is due to the significant indirect effects of the parent talking to their

[25] To further provide some insight into the validity of the instruments in the parent donates equation, namely the proportion of households donating by state-age reference group and whether the family itemized for medical expenses in the previous year, we adopt an approach to exogeneity following Smith and Blundell (1986). To do this, equations (3a) and (3c) are estimated separately as univariate probit models. Initially, equation (3a) is estimated and then we test whether the residuals (linear prediction) from the first stage regression, i.e. the parent's donating equation, are statistically significant in equation (3c), i.e. the child's donating equation. The residuals from the first stage are found to be statistically insignificant in the child donating equation (3c) and the instruments are jointly statistically significant in the parental donating equation at the 1% level, implying validity of their use in this application. We adopt the same approach to test the validity of the instruments in the talking equation (3b), namely whether the parent discusses the child's studies on a daily basis, whether they talk about current affairs on a daily basis, and whether the family eats meals together daily. The residuals from equation (3b) are insignificant in the child donating equation (3c) and are jointly significant in the talking equation at the 1% level, which again implies validity of the instruments.

offspring about making charitable donations on the decision of the child to donate (see penultimate column of Tables 6 and 7). This would suggest that, whilst there is no direct intergenerational effect from the overall donating behaviour of parents on their children's donating behaviour, talking about donating appears to be important.

The exception to this is when we decompose parental donations into religious causes and non-religious causes where the treatment effects are shown in Tables 9 and 10 respectively.[26] There is evidence of an intergenerational effect between whether the parent makes a donation to a religious charity and the probability that the child donates. Specifically, the treatment effect is approximately 10 percentage points (Table 9 Panel A) which is similar in magnitude to the univariate results reported in Table 4 Panel A. Generally, the role of talking to the child is consistent with the previous findings for overall charitable donations with the treatment effects of talking to the child dominating the religious intergenerational coefficient in terms of magnitude. There is no evidence, however, that the intergenerational coefficient is influenced by talking to children since the interaction term is always statistically insignificant for all charitable donations and where donations are decomposed. This implies that parents are able to influence this aspect of their offspring's behaviour via verbalisations, consistent with the psychology literature, e.g. Lévy-Garboua et al. (2006), which may serve to nurture the generosity and altruistic behaviour of their children.[27]

4. Conclusion

In this paper we have contributed to the empirical literature on the analysis of charitable donations by exploring the relationship between the donating behaviour of parents and their offspring aged less than 18, i.e. pre-adulthood. Our findings suggest that whether the parent

[26] Full marginal effects for the two decompositions are available from the authors upon request.

[27] Since the question about which the child gives refers to 'last year' we cannot rule out the possibility that a positive response to the talking question shows that parents talk to the child about previous giving. The fact that talking about giving is significant in all specifications estimated could imply that the effect from talking is a result of past giving by the child and not vice versa. However, the correlation coefficient between whether the child donated in the previous year and whether the parent talks to the child is relatively small at 0.0351 and statistically insignificant (p-value=0.3409) so arguably this is unlikely to be a concern.

donates to charity and whether the parent talks to the child about donating both have positive influences on the probability that the child donates to charity. However, the intergenerational effect relating to the parent's donating behaviour is driven to statistical insignificance once we simultaneously control for whether the parent talks to their child about donating. The only exception to this is when parental donations are decomposed into religious and non-religious causes where for the former there is evidence of a direct intergenerational effect. This suggests that parents through talking are able to influence this aspect of their offsprings' behaviour and help to nurture the generosity and altruistic behaviour of their children.[28]

Dohmen et al. (2012), p.23 state 'there are at least three potential transmission channels: genetics, child learning by imitation, and deliberate efforts by parents to shape the preferences and beliefs of their children.'[29] As argued by Dohmen et al. (2012), shedding light on the existence of such intergenerational relationships is important regardless of the prevailing transmission mechanism due to its implications for important issues such as social mobility or the persistence of cultural differences or economic outcomes such as income, wealth and educational attainment. The results herein are consistent with parents shaping their child's preferences through talking about donating.

Schokkaert (2006) discusses the important role that social learning plays via reinforcement or imitation in the formation of preferences. Moreover, evidence suggests a hysteresis effect in that someone who has donated in the past is more likely to donate in the future. Thus, it may be the case that individuals who donate during childhood are more likely

[28] It is important to acknowledge that, throughout the paper, it is assumed that intergenerational transmission occurs from parents to children. However, Harris (1998), who summarises the research in developmental psychology, argues that causality in parent-child relationships is bidirectional, parents influence their children and children also influence their parents: 'the relationship between a parent and a child, like any other relationship between two individuals, is a two-way street,' p.26. Furthermore, Harris (1998) argues that if parents do have effects on children, it must be a different effect for different children 'since children raised by the same parents do not turn out alike,' p. 353. Hence, as argued by an anonymous reviewer, some children may be sensitive to parental 'preaching' about the importance of generosity, while others are not or less so. The former type of children may attract more conversations about giving.

[29] As highlighted by an anonymous referee, the three channels distinguished by Dohmen et al. (2012) are similar to those distinguished by Bekkers (2007).

to donate as adults. We provide some preliminary evidence for this by tracking 1,487 children (observed in either 2001 or 2007) into adulthood in the latest wave of the PSID in 2011. For this sub sample, the average age when observed as a child (adult) is 14 (23). The correlation between whether individuals donated as children and whether they donated to charity in early adulthood is 0.1103 (p-value 0.000), which is consistent with a hysteresis effect.

Philanthropic behaviour has already attracted considerable attention in the economics literature yet to date little is known about the intergenerational relationship between the donating behaviour of parents and their offspring. Our empirical findings have served to shed some light on how parents influence the donating behaviour of their children and hopefully will serve to stimulate further interest in this research area.

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TABLE 1: Summary statistics and variable definitions

	DEFINITION	MEAN	*S.D.*
Child variables			
Male child	Gender of child: 1=male, 0=female	0.51	*0.50*
White child	Ethnicity of child: 1=white, 0=non white	0.23	*0.42*
Age of child	Age of child 8 to 17	13.27	*2.55*
Age of child squared	Age of child squared	182.53	*66.49*
1 sibling in the household	Siblings: 1=child has 1 sibling in the household, 0=other	0.47	*0.49*
2+ siblings in the household	Siblings: 1=child has 2 or more siblings in the household, 0=other	0.08	*0.28*
Child health good/very good	Health of child: 1=good or very good, 0=other	0.44	*0.50*
Child health excellent	Health of child: 1=excellent, 0=other	0.53	*0.49*
Number of friends	Number of friends child has: 0,...,4+	2.63	*1.20*
Log allowance[#]	Natural logarithm of child's weekly allowance	1.33	*1.71*
Child volunteers	Child volunteered during past 12 months: 1=yes, 0=no	0.32	*0.47*
Letter word	Standardised letter word test score	0	*1*
Passage comprehension	Standardised passage comprehension test score	0	*1*
Applied Problems	Standardised applied problem test score	0	*1*
Behaviour	Factor analysis of behavioural traits of the child	0.44	*0.98*
Parent/family variables			
Age	Age of parent (head or spouse): 18 to 81	40.50	*7.56*
Age squared	Age of parent squared	1,697.42	*638.60*
Male	Gender of parent: 1=male, 0=female	0.69	*0.46*
White	Ethnicity of parent: 1=white, 0=non white	0.45	*0.49*
Years of schooling	Schooling of parent: 8 (8^{th} grade or below) to 17 (post graduate)	12.69	*2.44*
Health good/very good	Health of parent: 1=good or very good, 0=other	0.65	*0.48*
Health excellent	Health of parent: 1=excellent, 0=other	0.23	*0.42*
Log labour income[#]	Natural logarithm of annual labour income of husband & wife	9.74	*2.83*
Log non labour income[#]	Natural logarithm of annual non labour income husband & wife	3.50	*4.15*
Log wealth[#]	Natural logarithm of annual stocks/shares, checking/savings	5.24	*4.03*
Own home	Housing tenure: 1=owned outright/or mortgage, 0=other	0.64	*0.48*
Catholic	Family religious denomination: 1=catholic, 0=other	0.22	*0.42*
Protestant	Family religious denomination: 1=protestant, 0=other	0.65	*0.48*
Other religion	Family religious denomination: 1=other religion, 0=other	0.06	*0.24*
Price	One minus the tax rate	0.83	*0.12*
Number of hours volunteer	Unpaid hours parent(s) volunteered over past year 0-3,650	69.60	*252.46*
% donate state-age	Mean proportion donating at state level by age (18+)	0.59	*0.10*
Medical itemize	Family itemized for medical expenses lagged: 1=yes, 0=no	0.08	*0.27*
Discuss studies	Parent discusses what child studies in school: 1=daily, 0=other	0.49	*0.50*
Talk news	Parent talks to child about current affairs/ news: 1=daily, 0=other	0.12	*0.33*
Family eat	Child eats with family: 1=daily basis, 0=other	0.38	*0.47*
OBSERVATIONS	3,105		

[#]All monetary variables are given in 2007 prices. For all monetary variables, in order to convert to natural logarithms, we add one to the level of the variable in question.

TABLE 2: Marginal Effects: Univariate models of the probability that the child donates to charity

	1		**2**		**3**		**4**	
	M.E.	TSTAT	M.E.	TSTAT	M.E.	TSTAT	M.E.	TSTAT
Child covariates								
Male child	-0.0490	*(2.96)*	-0.0475	*(2.88)*	-0.0501	*(3.03)*	-0.0485	*(2.94)*
White child	-0.0480	*(2.20)*	-0.0354	*(1.62)*	-0.0474	*(2.17)*	-0.0353	*(1.61)*
Age of child	-0.0183	*(0.56)*	-0.0124	*(0.39)*	-0.0156	*(0.48)*	-0.0109	*(0.34)*
Age of child squared	0.0006	*(0.47)*	0.0004	*(0.37)*	0.0005	*(0.41)*	0.0004	*(0.33)*
1 sibling in the household	-0.0224	*(1.34)*	-0.0228	*(1.37)*	-0.0230	*(1.38)*	-0.0231	*(1.39)*
2+ siblings in the household	0.0491	*(1.59)*	0.0434	*(1.41)*	0.0470	*(1.52)*	0.0421	*(1.37)*
Child health good/very good	0.0419	*(0.94)*	0.0432	*(0.98)*	0.0436	*(0.98)*	0.0446	*(1.02)*
Child health excellent	0.0038	*(0.09)*	0.0102	*(0.23)*	0.0036	*(0.08)*	0.0099	*(0.22)*
Number of friends	0.0143	*(2.10)*	0.0106	*(1.56)*	0.0131	*(1.92)*	0.0098	*(1.45)*
Log allowance	0.0051	*(1.04)*	0.0020	*(0.41)*	0.0055	*(1.11)*	0.0024	*(0.49)*
Child volunteers	0.1357	*(7.32)*	0.1291	*(7.01)*	0.1323	*(7.13)*	0.1267	*(6.87)*
Letter word	-0.0286	*(1.96)*	-0.0299	*(2.07)*	-0.0293	*(2.01)*	-0.0304	*(2.11)*
Passage comprehension	0.0415	*(2.72)*	0.0379	*(2.52)*	0.0399	*(2.63)*	0.0369	*(2.46)*
Applied Problems	0.0218	*(1.54)*	0.0246	*(1.74)*	0.0202	*(1.43)*	0.0232	*(1.65)*
Behaviour	0.0079	*(0.98)*	0.0038	*(0.48)*	0.0078	*(0.98)*	0.0040	*(0.50)*
Parent/family covariates								
Log labour income	-0.0052	*(1.70)*	-0.0050	*(1.60)*	-0.0056	*(1.76)*	-0.0053	*(1.69)*
Log non labour income	-0.0059	*(3.02)*	-0.0059	*(3.07)*	-0.0056	*(2.90)*	-0.0058	*(2.99)*
Log wealth	-0.0028	*(1.15)*	-0.0025	*(1.01)*	-0.0038	*(1.53)*	-0.0032	*(1.30)*
Own home	0.0027	*(0.14)*	-0.0043	*(0.23)*	-0.0034	*(0.18)*	-0.0086	*(0.46)*
Price	0.0557	*(0.83)*	0.0438	*(0.66)*	0.0554	*(0.83)*	0.0444	*(0.67)*
Catholic	0.0447	*(1.34)*	0.0496	*(1.49)*	0.0453	*(1.36)*	0.0498	*(1.50)*
Protestant	0.0833	*(2.75)*	0.0840	*(2.81)*	0.0822	*(2.72)*	0.0830	*(2.78)*
Other religion	0.0062	*(0.14)*	0.0078	*(0.18)*	0.0046	*(0.11)*	0.0064	*(0.15)*
Parent donates to charity	0.0520	*(2.78)*	0.0179	*(0.62)*	–		–	
Talk about donating	–		0.1054	*(4.35)*	–		–	
Parent donates×Talk	–		0.0254	*(0.76)*	–		–	
Log parental donation	–		–		0.0102	*(4.12)*	0.0050	*(1.25)*
Talk about donating	–		–		–		0.1025	*(4.35)*
Log parent donation×Talk	–		–		–		0.0032	*(0.72)*
Wald chi squared (d); *p*-value	156.54; *p*-value=[0.000]		199.66; *p*-value=[0.000]		165.56; *p*-value=[0.000]		203.73; *p*-value=[0.000]	
OBSERVATIONS	3,105							

Note: In specifications 1 and 3 (2 and 4) d=24 (d=26).

TABLE 3: Tests of equality of key coefficients between groups

	SON – DAUGHTER	**WHITE – NON WHITE**	**PARENT: VOLUNTEER – NON VOLUNTEER**	**FAMILY: RELIGIOUS – NON RELIGIOUS**
Equation 1				
γ	$\gamma^{son} = \gamma^{daughter}$	$\gamma^{white} = \gamma^{nonwhite}$	$\gamma^{volunteer} = \gamma^{nonvolunteer}$	$\gamma^{religious} = \gamma^{nonreligious}$
$\chi^2(1)$; p-value	0.40; p=0.5253	0.24; p=0.6248	0.09; p=0.7626	0.66; p=0.4177
Equation 2				
γ	$\gamma^{son} = \gamma^{daughter}$	$\gamma^{white} = \gamma^{nonwhite}$	$\gamma^{volunteer} = \gamma^{nonvolunteer}$	$\gamma^{religious} = \gamma^{nonreligious}$
$\chi^2(1)$; p-value	0.02; p=0.8764	0.05; p=0.8264	0.50; p=0.4748	0.63; p=0.4279
λ	$\lambda^{son} = \lambda^{daughter}$	$\lambda^{white} = \lambda^{nonwhite}$	$\lambda^{volunteer} = \lambda^{nonvolunteer}$	$\lambda^{religious} = \lambda^{nonreligious}$
$\chi^2(1)$; p-value	0.01; p=0.9521	1.78; p=0.1818	1.98; p=0.1591	4.33; p=0.0379
ϕ	$\phi^{son} = \phi^{daughter}$	$\phi^{white} = \phi^{nonwhite}$	$\phi^{volunteer} = \phi^{nonvolunteer}$	$\phi^{religious} = \phi^{nonreligious}$
$\chi^2(1)$; p-value	0.53; p=0.4652	0.96; p=0.3263	1.14; p=0.2859	4.16; p=0.0413

Notes: γ is the intergenerational coefficient, i.e. on whether the parent donates; λ is the coefficient on whether the parent talks to their child about donating; and ϕ is the coefficient on the interaction term between whether the parent donates and talking about charitable donations to their child.

TABLE 4: Marginal Effects: Univariate models of the probability that the child donates to charity – parental decomposition of donations.

	1		2		3		4	
	M.E.	TSTAT	M.E.	TSTAT	M.E.	TSTAT	M.E.	TSTAT
PANEL A: religious donations								
Parent donates to religious charity	0.1136	*(6.49)*	0.0978	*(3.11)*	–		–	
Talk about donating	–		0.1084	*(5.39)*	–		–	
Parent donates to religious charity×Talk	–		-0.0073	*(0.20)*	–		–	
Log parental donation to religious charity	–		–		0.0195	*(7.48)*	0.0169	*(3.33)*
Talk about donating	–		–		–		0.1031	*(5.20)*
Log parent donation to religious charity×Talk	–		–		–		-0.0009	*(0.16)*
Wald chi squared (d); *p*-value	182.92; *p*-value=[0.000]		216.66; *p*-value=[0.000]		192. 62; *p*-value=[0.000]		223.18; *p*-value=[0.000]	
OBSERVATIONS	3,105							
	1		**2**		**3**		**4**	
	M.E.	TSTAT	M.E.	TSTAT	M.E.	TSTAT	M.E.	TSTAT
PANEL B: non-religous donations								
Parent donates to non-religious charity	0.0503	*(2.67)*	0.0186	*(0.65)*	–		–	
Talk about donating	–		0.1071	*(4.47)*	–		–	
Parent donates to non-religious charity×Talk	–		0.0234	*(0.70)*	–		–	
Log parental donation to non-religious charity	–		–		0.0095	*(3.60)*	0.0047	*(1.13)*
Talk about donating	–		–		–		0.1064	*(4.58)*
Log parent donation to non-religious charity×Talk	–		–		–		0.0028	*(0.61)*
Wald chi squared (d); *p*-value	156.30; *p*-value=[0.000]		199.85; *p*-value=[0.000]		162.72; *p*-value=[0.000]		202.80; *p*-value=[0.000]	
OBSERVATIONS	3,105							

Notes: (i) control variables in both Panels A and B are as given in Table 2. (ii) Note: In specifications 1 and 3 (2 and 4) d=24 (d=26).

TABLE 5: Robustness analysis of the probability that the child donates to charity

PANEL A: LPM (OLS)	**1** COEF	TSTAT	**2** COEF	TSTAT	**3** COEF	TSTAT	**4** COEF	TSTAT
Parent donates to charity	0.0553	*(2.86)*	0.0237	*(0.72)*	–		–	
Talk about donating	–		0.1164	*(4.26)*	–		–	
Parent donates×Talk	–		0.0201	*(0.54)*	–		–	
Log parental donation	–		–		0.0105	*(4.16)*	0.0061	*(1.33)*
Talk about donating	–		–		–		0.1153	*(4.32)*
Log parent donation×Talk	–		–		–		0.0019	*(0.39)*
F statistic (d_1, d_2); *p*-value	7.52; *p*-value=[0.000]		9.55; *p*-value=[0.000]		7.96; *p*-value=[0.000]		9.16; *p*-value=[0.000]	
OBSERVATIONS	3,105							
PANEL B: Child Fixed Effects	**1** COEF	TSTAT	**2** COEF	TSTAT	**3** COEF	TSTAT	**4** COEF	TSTAT
Parent donates to charity	0.0349	*(0.81)*	0.0412	*(0.81)*	–		–	
Talk about donating	–		0.1375	*(3.19)*	–		–	
Parent donates×Talk	–		0.0093	*(0.18)*	–		–	
Log parental donation	–		–		0.0102	*(4.12)*	0.0088	*(1.09)*
Talk about donating	–		–		–		0.1416	*(3.31)*
Log parent donation×Talk	–		–		–		0.0031	*(0.38)*
F statistic (d_1, d_2); *p*-value	5.54; *p*-value=[0.000]		1.62; *p*-value=[0.029]		5.28; *p*-value=[0.000]		1.67; *p*-value=[0.022]	
OBSERVATIONS	3,105							
PANEL C: Two-way Clustering	**1** COEF	TSTAT	**2** COEF	TSTAT	**3** COEF	TSTAT	**4** COEF	TSTAT
Parent donates to charity	0.0553	*(2.68)*	0.0237	*(0.69)*	–		–	
Talk about donating	–		0.1164	*(3.98)*	–		–	
Parent donates×Talk	–		0.0201	*(0.52)*	–		–	
Log parental donation	–		–		0.0105	*(3.92)*	0.0061	*(1.28)*
Talk about donating	–		–		–		0.1153	*(4.06)*
Log parent donation×Talk	–		–		–		0.0019	*(0.38)*
OBSERVATIONS	3,105							
PANEL D: Sibling Fixed Effects	COEF	TSTAT						
Difference in talking about donating; $\left(T^1 - T^2\right)$	0.0562	*(1.97)*						
F statistic (d_1, d_2); *p*-value	3.95; *p*-value=[0.000]							
OBSERVATIONS	729							

Notes: (i) Control variables in each panel are as in Table 2A. (ii) Degrees of freedom in Panel A d_1=24 (specifications 1 and 3) or d_1=26 (specifications 2 and 4) and d_2=2,365. (iii) Degrees of freedom in Panel B d_1=23 (specifications 1 and 3) or d_1=25 (specifications 2 and 4); and d_2=716 (specification 1 and 3) or d_2=714 (specifications 2 and 4). (iii) In Panel C the standard errors are clustered at the child and sibling level using the Cameron et al. (2011) estimator. (iv) In Panel D there is only one specification since whether the parent donates (log $ amount donated) is differenced out of the model, as is the interaction term, along with all other family level covariates. (v) In Panel D the degrees of freedom are d_1=8 and d_2=721.

TABLE 6: Marginal Effects: Probability (parent donates =1); Probability (parent talks to the child about donating = 1); and Probability (child donates = 1)

	Prob. (parent donates=1): $Y_P = 1$	**Prob. (parent talks to child about donating=1):** $T = 1$	**Prob. (child donates=1):** $Y_C = 1$			
			Direct effect	Indirect effect from parent donating	Indirect effect from talking to child	Total effect
	M.E.	M.E.	M.E.	M.E.	M.E.	M.E.
Child covariates						
Male child	0.0558 ***	-0.0089	-0.0488 ***	0.0022	-0.0014	-0.0480 ***
White child	-0.0597 *	-0.0172	-0.0335 *	-0.0023	-0.0026	-0.0384 *
Age of child	-0.0054	-0.0672 **	-0.0120	-0.0022	-0.0103 *	-0.0244
Age of child squared	0.0016	0.0015	0.0004	0.0001	0.0002	0.0007
1 sibling in the household	0.0029	0.0138	-0.0232	0.0001	0.0021	-0.0210
2+ siblings in the household	-0.0010	0.0315	0.0441	0.0001	0.0048	0.0489
Child health good/very good	-0.0787	0.0191	0.0429	-0.0031	0.0029	0.0428
Child health excellent	-0.0365	-0.0163	0.0098	-0.0014	-0.0025	0.0059
Number of friends	0.0198 **	0.0387 ***	0.0099	0.0008	0.0059 ***	0.0166 **
Log allowance	0.0016	0.0209 ***	0.0014	0.0001	0.0032 ***	0.0047
Child volunteers	0.0913 ***	0.0546 ***	0.1307 ***	0.0036	0.0084 **	0.1427 ***
Letter word	0.0327 **	0.0083	-0.0307 *	0.0013	0.0013	-0.0281
Passage comprehension	0.0452 **	0.0356 **	0.0375 **	0.0018	0.0055	0.0448 **
Applied Problems	-0.0043	-0.0100	0.0253	-0.0002	-0.0015	0.0236
Behaviour	-0.0129	0.0275 ***	0.0038	-0.0005	0.0042 **	0.0075
Parent/family covariates						
Log labour income	0.0121 ***	-0.0008	-0.0050	0.0005	-0.0001	-0.0047
Log non labour income	0.0026	0.0023	-0.0060 ***	0.0001	0.0004	-0.0055 ***
Log wealth	0.0311 ***	0.0030	-0.0027	0.0012	0.0005	-0.0011
Own home	0.1220 ***	0.0745 ***	-0.0065	0.0048	0.0114 **	0.0097
Price	0.0573	0.1268 *	0.0416	0.0022	0.0195	0.0633
Catholic	-0.0081	-0.0477	0.0505	-0.0003	-0.0073	0.0429
Protestant	0.0143	-0.0090	0.0857 ***	0.0006	-0.0014	0.0849 ***
Other religion	0.0631	-0.0018	0.0072	0.0025	-0.0018	0.0079
Age	0.0163	0.0114	–	0.0006	0.0018	0.0024
Age squared	-0.0001	-0.0001	–	0.0001	0.0001	0.0001
Male	0.0368	0.0234	–	0.0014	0.0036	0.0050
White	0.0598 **	-0.1530 ***	–	0.0023	-0.0235 ***	-0.0212 **
Years of schooling	0.0354 ***	0.0088 **	–	0.0014	0.0014 *	0.0027 *
Health good/very good	0.0315	-0.0008	–	0.0012	-0.0001	0.0011
Health excellent	0.0611 *	0.0260	–	0.0024	0.0040	0.0064
Number of hours volunteer	0.0002 ***	–	–	0.0001	–	0.0001
% donate state-age	0.4121 ***	–	–	0.0161	–	0.0161
Medical itemize	0.1113 ***	–	–	0.0044	–	0.0044
Discuss studies	–	0.0406 **	–	–	0.0062 *	0.0062 *
Talk news	–	0.0608 **	–	–	0.0093	0.0093 *
Family eat	–	0.0310 **	–	–	0.0048	0.0048
Chi Squared (91); p value	1,210.13; *p=[0.000]*					
OBSERVATIONS	3,105					

***, **, * denotes statistical significance at the 1, 5 and 10 per cent level.

TABLE 7: Marginal Effects: Log amount parent donates to charity; Probability (parent talks to the child about donating = 1); and Probability (child donates = 1)

	Log $ amount parent donates: $\text{Log}(D_P)$		**Prob. (parent talks to child about donating=1):** $T=1$		**Prob. (child donates=1):** $Y_C=1$							
					Direct effect		Indirect effect amount parent donates		Indirect effect from talking to child		Total effect	
	COEF		M.E.		M.E.		M.E.		M.E.		M.E.	
Child covariates												
Male child	0.5334	***	-0.0095		-0.0508	***	0.0050		-0.0030		-0.0488	***
White child	-0.6945	***	-0.0146		-0.0195		-0.0066		-0.0046		-0.0307	
Age of child	-0.7130	**	-0.0664	**	-0.0011		-0.0067		-0.0208	*	-0.0286	
Age of child squared	0.0210		0.0015		0.0002		0.0002		0.0005		0.0008	
1 sibling in the household	-0.0126		0.0124		-0.0258		-0.0001		0.0039		-0.0221	
2+ siblings in the household	0.0752		0.0332		0.0372		0.0009		0.0104		0.0485	
Child health good/very good	-0.6620		0.0153		0.0473		-0.0061		0.0048		0.0461	
Child health excellent	-0.2387		-0.0181		0.0158		-0.0021		-0.0057		0.0080	
Number of friends	0.2422	***	0.0385	***	0.0033		0.0022		0.0121	***	0.0176	**
Log allowance	-0.0277		0.0198	***	-0.0022		-0.0003		0.0062	**	0.0038	
Child volunteers	0.8097	***	0.0521	***	0.1205	***	0.0076		0.0163	**	0.1444	***
Letter word	0.4971	***	0.0079		-0.0340	*	0.0046		0.0025		-0.0269	*
Passage comprehension	0.4909	***	0.0347	**	0.0310		0.0046		0.0109		0.0465	
Applied Problems	-0.0630		-0.0087		0.0277		-0.0005		-0.0027		0.0244	
Behaviour	-0.1365		0.0279	***	-0.0007		-0.0012		0.0088	*	0.0069	
Parent/family covariates												
Log labour income	0.1645	***	-0.0004		-0.0057	*	0.0016		-0.0001		-0.0043	
Log non labour income	0.0128		0.0022		-0.0061	***	0.0001		0.0007		-0.0053	
Log wealth	0.3198	***	0.0028		-0.0043		0.0030		0.0009		-0.0004	
Own home	1.5694	***	0.0737	***	-0.0268		0.0147		0.0231	**	0.0111	
Price	0.2448		0.1233	*	0.0247		0.0026		0.0387		0.0060	
Catholic	-0.3324		-0.0442		0.0601	*	-0.0031		-0.0139		0.0431	
Protestant	0.2451		-0.0058		0.0880	***	0.0023		-0.0018		0.0884	***
Other religion	0.5944		-0.0158		0.0038		0.0058		-0.0050		0.0046	
Age	0.2550	***	0.0103		–		0.0024		0.0032		0.0056	*
Age squared	-0.0020	*	-0.0001		–		0.0001		0.0001		0.0001	
Male	0.5057	*	0.0203		–		0.0047		0.0064		0.0111	
White	0.5613	**	-0.1590	***	–		0.0055		-0.0499	**	-0.0444	**
Years of schooling	0.3393	***	0.0088	**	–		0.0031		0.0028	*	0.0059	*
Health good/very good	0.5515	*	-0.0033		–		0.0053		-0.0010		0.0043	
Health excellent	0.8712	***	0.0202		–		0.0085		0.0063		0.0148	
Number of hours volunteer	0.0016	***	–		–		0.0001		–		0.0001	
% donate state-age	2.6613	***	–		–		0.0254		–		0.0254	
Medical itemize	0.9647	***	–		–		0.0092		–		0.0092	
Discuss studies	–		0.0363	**	–		–		0.0114	*	0.0114	*
Talk news	–		0.0553	**	–		–		0.0173		0.0173	
Family eat	–		0.0318	**	–		–		0.0100		0.0100	
Chi Squared (25); p value	1,648.56; *p=[0.000]*											
OBSERVATIONS	3,105											

***, **, * denotes statistical significance at the 1, 5 and 10 per cent level.

TABLE 8: Treatment effects – all parental charitable donations

PANEL A: Multivariate probit model	ATE	T STAT	ATET	T STAT	ATEUT	T STAT
Parent donates to charity	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|Y_p=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|Y_p=0\right]$	
	0.0214	*(0.48)*	0.0215	*(0.48)*	0.0214	*(0.48)*
Parent talks to child about donating	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|T=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|T=0\right]$	
	0.1344	*(2.73)*	0.1358	*(2.63)*	0.1309	*(3.06)*
Interaction term	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|Y_p=1,T=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|Y_p=0 \text{ and/or } T=0\right]$	
	0.0252	*(0.75)*	0.0255	*(0.75)*	0.0248	*(0.75)*
PANEL B: Multivariate tobit and probit model	ATE/AME	T STAT	ATET	T STAT	ATEUT	T STAT
Parent donates to charity	AME		–		–	
	0.0055	*(0.60)*				
Parent talks to child about donating	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|T=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|T=0\right]$	
	0.2964	*(2.65)*	0.3187	*(2.71)*	0.2371	*(2.42)*
Interaction term	AME					
	0.0033	*(1.07)*	–		–	

TABLE 9: Treatment effects – parental religious donations

PANEL A: Multivariate probit model	ATE	T STAT	ATET	T STAT	ATEUT	T STAT
Parent donates to religious charity	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\vert Y_p=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\vert Y_p=0\right]$	
	0.0979	*(2.04)*	0.0986	*(1.91)*	0.0979	*(2.04)*
Parent talks to child about donating	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\vert T=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\vert T=0\right]$	
	0.1428	*(2.87)*	0.1428	*(2.87)*	0.1323	*(1.46)*
Interaction term	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\vert Y_p=1,T=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\vert Y_p=0 \text{ and/or } T=0\right]$	
	-0.0048	*(0.13)*	-0.0048	*(0.13)*	-0.0047	*(0.13)*
PANEL B: Multivariate tobit and probit model	ATE/AME	T STAT	ATET	T STAT	ATEUT	T STAT
Parent donates to religious charity	AME		–		–	
	0.0136	*(1.12)*				
Parent talks to child about donating	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\vert T=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\vert T=0\right]$	
	0.2960	*(2.44)*	0.3178	*(2.50)*	0.2379	*(2.22)*
Interaction term	AME					
	0.0019	*(0.44)*	–		–	

TABLE 10: Treatment effects – parental non-religious donations

PANEL A: Multivariate probit model	ATE	T STAT	ATET	T STAT	ATEUT	T STAT
Parent donates to non-religious charity	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|Y_p=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|Y_p=0\right]$	
	0.0006	*(0.14)*	0.0006	*(0.14)*	0.0006	*(0.14)*
Parent talks to child about donating	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|T=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|T=0\right]$	
	0.1371	*(2.78)*	0.1384	*(2.67)*	0.1337	*(3.12)*
Interaction term	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|Y_p=1,T=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|Y_p=0 \text{ and/or } T=0\right]$	
	0.0241	*(0.72)*	0.0241	*(0.72)*	0.0240	*(0.72)*
PANEL B: Multivariate tobit and probit model	ATE/AME	T STAT	ATET	T STAT	ATEUT	T STAT
Parent donates to non-religious charity	AME		–		–	
	0.0040	*(0.45)*				
Parent talks to child about donating	$E\left[Y_C(1)-Y_C(0)\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|T=1\right]$		$E\left[Y_C(1)-Y_C(0)\middle\|T=0\right]$	
	0.3072	*(2.77)*	0.3307	*(2.84)*	0.2447	*(2.52)*
Interaction term	AME					
	0.0032	*(0.99)*	–		–	