

Daughters and Left-Wing Voting

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Abstract

This paper provides evidence that daughters make people more left-wing. Having sons, by contrast, makes them more right-wing. Parents, politicians and voters are probably not aware of this phenomenon -- nor are social scientists. The paper discusses its economic and evolutionary roots. It also speculates on where research might lead. The paper ends with a conjecture: left-wing individuals are people who come from families into which, over recent past generations, many females have been born.

Keywords: Voting; gender composition; daughters; political attitudes

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1. Introduction

This paper argues that children shape their parents' political preferences. It provides evidence that having daughters pushes people to become more left-wing. Giving birth to sons, by contrast, makes people more likely to vote in a right-wing way. Parents are probably not aware of this -- nor are social scientists.

The data, which are from Great Britain, are longitudinal. Political parties and institutions vary, of course, from one nation to another. We are not sure how far these results will generalize to other countries. However, because of their statistical robustness and the generality of the issues, we would conjecture that a version of the same phenomenon will be found more widely in international panel data on voting (such data sets are currently rare).

Later sections blend theoretical argument with empirical evidence. Although, to our knowledge, no investigator has documented the effect discussed later, there is a small literature of a related kind. Pioneering work on the role of gender has been done by Angrist and Evans (1998), Ben-Porath and Welch (1976), Bird (2005), Butcher and Case (1994), Chattopadhyay and Duflo (2004), Edlund (1999), Edlund and Pande (2002), Kamo and Warner (1997), Kohler et al (2005), Lundberg and Rose (2002), Norris (2004), Peresie (2005), Morgan, Lye and Condran (1988), Warner (1991) and Washington (2004). A lucid overview of much of the field has been written recently by Shelly Lundberg (2005).

The research literature finds, for example, that the gender of children appears to affect both labour supply decisions and parents' attitudes to their own roles in the family. Female politicians have been shown to raise different questions in political debates than men (Bird, 2005). The literature also demonstrates that fathers' views on women's issues, such as the ethics of abortion, are influenced by whether they have daughters; they tend to be more liberal if

they have female children and less liberal if they have male children. This result, due to Washington (2004), is probably the closest to the spirit of the conclusions to be discussed later. More broadly, our paper is relevant to the ideas of Benabou and Tirole (2003) on parental-child interactions, and fits within work on the nature of endogenous preferences (see, for instance, Bowles 1998).

One way to rationalize the paper's empirical findings is to appeal to evolutionary principles. Parents care about their offspring and wish to see those offspring prosper. The childless may not have the same social and economic objectives. Hence the political preferences of men and women might, in principle, alter as they acquire children.

We build on this idea. As an aid to thinking, the next section of the paper sets out a (highly stylized) model in which it is evolutionarily rational for male and female parents to change their voting preferences. Our framework has an economic flavour.

The model's intuition is simple. What happens behind the formal analytics is that, because

- there is pay discrimination against women, and
- females derive greater utility from public goods like community safety,

it transpires that women are intrinsically more left-wing than men. When compared to males, women prefer a larger supply of the public good and a greater tax rate on income. The reason is that their marginal utility from the first is relatively high and the tax penalty they face from the latter relatively low. As men acquire female children, however, those men gradually shift their political stance and become more sympathetic to the 'female' desire for a steeper income tax schedule and a larger amount of the public good. They become more left-wing. Similarly, a mother with many sons becomes sympathetic to the 'male' case for lower taxes and a smaller supply of public goods. She becomes more right-wing.

In practice, these forces operate at a subconscious level. Our paper assumes that people optimize as if they were conscious of their deeper motives.

2. A Model

Consider a world in which there is a public good denoted P and people earn a level of real income denoted y . The public good -- it might be thought of as a good such as the safety of the community or the quality of the environment -- is funded out of tax revenue. There is a single tax rate, t , which is levied on personal income. Individuals have political preferences. To keep things as clear as possible, assume that the political shade of government in this world can be captured by a single variable, r . It is useful to view r as some uni-dimensional measure of how left-wing (or collectivist) the government of this society is in its actions and philosophy.

Loosely, in the later model, the variable r might be thought of as the shade of 'red' of this society.

Consider a male who has no children. Assume this male individual has the following simple and separable utility function

$$V = v(P) + y(1 - t) \quad (1)$$

where the function $v(P)$ captures the utility from the public good, and $v(\cdot)$ is assumed to be differentiable, increasing and concave. It is straightforward to allow for concavity with respect to income, but linearity simplifies the later algebra.

Assume the existence of a monotonic function linking the supply of the public good to the tax rate. Define it simply as $P = P(t)$. Assume this function is increasing and differentiable. Greater income taxes thus lead to a larger supply of the public good. It seems natural to define a left-wing society, with a high value of r , as being one which provides a relatively large amount of the public good and funds this with a relatively high tax rate on income. Right-wing societies, by contrast, have low P and low t . Assume that the marginal

tax rate on income can also be thought of as a monotonic function of r , the political redness of the voters. Define it $t = t(r)$. Assume that $t(r)$ is increasing and differentiable. The amount of the public good that is provided is thus usefully condensed into

$$P = P(t(r)) = p(r) \quad (2)$$

where the new function $p(r)$ is the supply of the public good written in a compressed way as a function of the political shade of the society.

It is now possible to solve out in a simple way for the individual's preference on his society's optimal political colour, r . At the margin, he balances his desire for low taxes with his desire for the public good. Formally, a male voter's utility maximization decision can be written as the choice of the level of r that maximizes:

$$V = v(p(r)) + y(1 - t(r)) \quad (3)$$

and at an interior optimum this is

$$\frac{\partial V}{\partial r} = v'(p(r))p'(r) - yt'(r) = 0 \quad (4)$$

after assuming, as will be done throughout, that the citizen's maximand $V(r)$ is concave in r , so that the second-order condition for a maximum holds.

Now consider a female voter. In this world, a childless woman's utility function is assumed to be of form

$$U = (1 + \alpha)v(p(r)) + y(1 - \delta)(1 - t) \quad (5)$$

where a parameter alpha, α , captures any extra relative weight that females put on the public good P relative to the males, and another parameter delta, δ , is the degree of pay discrimination, if any, within the society. These seem the two salient characteristics to explore. We later examine the effects of variations in these parameters. A woman's optimal shade of political red, therefore, need not be identical to a man's. It is given at an interior maximum by

$$\frac{\partial U}{\partial r} = (1 + \alpha)v'(p(r))p'(r) - y(1 - \delta)t'(r) = 0 \quad (6)$$

which can be rewritten for ease of comparison as

$$v'(p(r))p'(r) - yt'(r) = -\delta yt'(r) - \alpha v'(p(r))p'(r) \quad (7)$$

and contrasted with the condition in the male equation in equation (4). This calculation leads to the following result:

Proposition 1

Given these assumptions, women are more left-wing than men.

Proof

The result is immediate from concavity and the fact that $v(\cdot)$, $p(\cdot)$ and $t(\cdot)$ are increasing functions. The right-hand side of equation (7) is negative. Because the function V is increasing and concave, therefore, r exceeds the level that satisfies the male optimality equation (4). In this way, equation (7) establishes that the optimal political shade of red, r^* , is higher among females than it is among males. It is then straightforward to prove a number of other results.

Proposition 2

The greater is their level of income, y , the less left-wing are individuals (of either sex).

Proof

In choosing x to maximize a well-behaved concave function $J(x, a)$, where a is some shift parameter, the sign of the comparative static result dx^*/da is given by the sign of the cross-partial derivative of $J(\cdot)$. Hence the sign here of the derivative of r^* , the optimal choice of r , with respect to any variable is given by the sign of the cross-partial derivative of the first-order condition for a maximum with respect to that particular variable. Consider income, y . For men, from equation (4), the cross-partial of the maximand with respect to r and y is given by the term

$$-t'(r) < 0 \quad (8)$$

and for women

$$-(1 - \delta)t'(r) < 0 \quad (9)$$

which, because each is negative, establishes the proposition for each sex. In this framework, a higher level of income y induces a lower optimal level of political 'redness', r^* .

Proposition 3

The greater is the degree of wage discrimination, the more leftwing are females.

Proof

By the same one-line algebraic method, the result is immediate from an inspection of the cross-partial of equation (6) with respect to delta, δ . Its sign, which is positive, is determined by that of $yt'(r) > 0$.

Proposition 4

The greater is females' utility weight on the public good, P , the more leftwing are females.

Proof

Immediate from inspection of the cross-partial of equation (6) with respect to alpha, α . Its sign is positive and is given by that of $v'(p(r))p'(r) > 0$.

What can now be said about the political preferences of men and women with children? In particular, how might parents be rationally affected by having male and female offspring?

Consider a man with children. Assume he has f female children and m male children. It is not obvious, intuitively, how such a case should be analyzed. However, one plausible assumption is that he will act in a way that puts some weight on his own (personal) preferences and some weight on the preferences of his offspring. A strict Darwinian might even argue that he would be put complete weight on his children's utilities, but that seems an extreme position.

Define an equivalent to the earlier V function -- this time for a man with children. Let the preferences of a father be represented by the new utility function

$$V^c = \gamma V + (1 - \gamma)[fU + mV] \quad (10)$$

in which the assigned weight on own utility is γ and that on the children's utility is an assigned weight of $1 - \gamma$. Here the individual acts somewhat like a utilitarian planner (and if the weight is 0.5 it is exactly family utilitarianism). For simplicity, equation (10) imposes the assumption of a steady state in utilities, and ignores discounting. In other words, male children are assigned within their male parent's maximand the same utility function as that of childless males, V , and female children are assigned the utility function of childless females, U . This might seem myopic, because parents may bear in mind that their own children will reproduce, but it can be checked that such extra terms eventually disappear algebraically because, in general, the expectation of the difference between the number of male grandchildren and female grandchildren can be taken to be zero.

Intuitively, what happens is that a father takes on some of the preferences of his female offspring, and, for their sake, begins to vote accordingly. The optimal political shade of the father is given by maximizing the function in equation (10), which produces first-order condition

$$\frac{\partial V^c}{\partial r} = [\gamma + (1 - \gamma)m] \frac{\partial V}{\partial r} + (1 - \gamma)f \frac{\partial U}{\partial r} = 0 \quad (11)$$

where, as before, we concentrate on well-determined interior optima. Under these assumptions, the model makes a simple prediction:

Proposition 5

The more daughters a man has, the more he votes to the left. The more sons he has, the more (weakly) he votes to the right.

Proof

In the notation of the model, all that is necessary is to show that as the number of daughters, f , rises, the optimal political shade of red of this individual, r^* , also increases. Using the previous methods, the sign of dr^*/df is given by the sign of the partial derivative of equation (11) with respect to the number of female children, f . The sign of that cross-partial is determined solely by the sign of the following term:

$$(1 - \gamma) \frac{\partial U}{\partial r}. \quad (12)$$

It might be thought that this term could not be signed unambiguously, but equation (11) provides a route to do so.

By combining the earlier equations (4) and (6), we can write

$$\frac{\partial U}{\partial r} = \frac{\partial V}{\partial r} + \alpha v'(p(r))p'(r) + \delta t'(r). \quad (13)$$

The last two right-hand terms in this equation are necessarily non-negative: utility is increasing in the public good; the supply of the public good is an increasing function of the tax rate; taxes are increasing in the leftwing colour, r , of the government. Therefore

$$\frac{\partial U}{\partial r} \geq \frac{\partial V}{\partial r} \quad (14)$$

and, in general, this inequality will hold strictly. But for equation (11) to be satisfied, the two partial derivatives in (14) must have opposite signs. Thus from equations (11) and (14) it follows that:

$$\frac{\partial U}{\partial r} > 0 \quad (15)$$

and

$$\frac{\partial V}{\partial r} < 0. \quad (16)$$

This completes the proof. The sign of expression (12) is positive, and that establishes the first part of Proposition 6. An equivalent proof (not included here) establishes the second part of the proposition, about the influence of sons. If, in the limiting case, the father has only sons, he continues to vote in the same way as a childless male, namely, as that given by the much earlier equation (4).

Similar results apply for females:

Proposition 6

The more sons a woman has, the more she votes to the right. The more daughters she has, the more (weakly) she votes to the left.

Proof

The mother's utility function is assumed to be

$$U^c = zU + (1 - z)[fU + mV] \quad (17)$$

where z is used here the symbol for the weight on own utility and $1-z$ is the weight on her offsprings' wellbeing. As before, U measures the utility of female children, and she has f of them. V is the utility of male children, and the mother has m of those male children. The sign of the response of r^* to an increase in f is given by the cross-partial of equation (17) with respect to r and f . Although the algebra is omitted, it is straightforward to show, using the methods of the previous proof, that the cross-partial is positive. In general, the effect of daughters is to tilt the mother to the left (the limiting case being where she has purely daughters, in which case the mother continues to vote like a childless female). Similarly, the effect of sons is to tilt the mother politically towards the right.

This model is a deliberately stylized one and cannot explain important details of the political world. Its aim is instead to contribute to analysis of the possible sources of gender differences -- to say something about broad averages within a population. In real life, individuals are likely to have political preferences that stem from a panoply of influences.

3. Empirical Testing

The paper proposes an empirical exploration of these ideas. The source used in the analysis is the British Household Panel Survey (BHPS). This is a nationally representative sample of British households, containing over 10,000 adult individuals, conducted between September and Christmas of each year from 1991 (see Taylor *et al*, 2002). Respondents are interviewed in successive waves; households who move to a new residence are interviewed at their new location; if an individual splits off from the original household, the adult members of their new household are also interviewed. Children are interviewed once they reach 11 years old. The sample has remained representative of the British population since the early 1990s. Once children leave home, no information is available on them. Numbers of adult children are not recorded in the data set, so this paper focuses on offspring who live at

home. Relatively little research appears to have been done on political preferences within the BHPS data set. Recent exceptions are Sanders and Brynin (1999), Johnston, Sarker et al (2005) and Johnston, Jones et al (2005), but these do not explore the influence of children upon their parents' politics.

A chief focus here is on which political party an individual supports. The exact question used (# AV8 in the survey) is as follows, with, for illustration, people's mean answers given for the year 1991:

Which party do you regard yourself as being closer to than the others?

Conservative (3110 individuals, 46.3%)

Labour (2707 individuals, 40.3%)

Liberal Democrats (698 individuals, 10.4%)

Scottish National Party (91 individuals, 1.4%)

Plaid Cymru (7 individuals, 0.1%)

Green Party (76 individuals, 1.1%)

Other Parties (22 individuals, 0.3%)

Other answer (7 individuals, 0.1%)

Don't know/no answer (3546 individuals)

In the later analysis, we measure 'left-wing' by using individuals' expressed support for the Labour Party or Liberal Democrat Party. We measure 'right-wing' by using expressed support for the Conservative Party. Because they are hard to classify, and numbers are small, individual voters for other political parties are eventually eliminated from the data. Clearly it is not possible in this way -- or arguably any simple way -- to do justice to the full complexities of human beings' political preferences. A trade-off exists here between tractability and generality. Nevertheless, there is agreement that Labour is to the left (it has traditionally promoted socialist ideas) and the Conservatives are to the right (it has promoted the free market). The Liberal Democrats are more centrist, and thus in between the two larger parties, but have often been seen as closer to the left than the right. The Labour and Liberal Democrats

are combined only for simplicity; the results of the paper do not rest sensitively upon such an aggregation. Later analysis will not distinguish between whether the individual survey respondent is literally happier when his or her political party is in power, though it is natural to assume so (and Di Tella and MacCulloch (2005) find evidence for that in Western Europe).

It is clear from these data that many voters say they are undecided. We assume in the paper that this is inevitable in empirical work on political preferences, and, for simplicity, later leave aside these observations.

Before moving to a formal analysis of the data set, it is natural to examine the political complexion of current female Members of Parliament in Great Britain. At the time of writing, there are 127 women in the House of Commons, which is the main legislative body. Of those, only 17 are Conservative. More than 100 of the women are Labour or Liberal Democrat. This contrasts with an approximately equal split among male politicians.

One other point should perhaps be emphasised from the outset. While the theoretical model may apply more generally, this paper will not contribute empirically to issues outside Great Britain. Women in the United States, for instance, are known to be more pro-Democrat in general than men, and this tendency has grown over the last few decades (Edlund and Pande 2002; Box-Steffensmeier, De Boef and Lin 2004). Greenberg (1998) concludes: "There is no question that, in general, women are more likely than men to favor activist government, the sort of agenda traditionally associated with the Democratic Party." Nevertheless, it is not entirely clear how, for example, Britain's Labour Party should be viewed relative to the U.S. Democrats. In modern data, Inglehart and Norris (1999) find some evidence of a more widespread female tendency to vote left in other countries (although in older post-war data this was less common). Further research will be needed to compare the paper's patterns with non-British ones.

In this data set, which spans the years 1991 to 2004, we examine the voting intentions of adults. There are 66,628 observations on recorded political-party

preferences. These are longitudinal data (this is an unbalanced panel), and there is much stability, year-on-year, in a person's political views. Approximately two-thirds of people in this sample express a preference for the Left, in our terminology, which we take as synonymous with either Labour or Liberal Democrat. In the raw data, the split between men (63% left-leaning) and women (64% left-leaning) is similar. The means and standard deviations of the raw data are provided in Appendix A. As can be seen, the mean number of children is 0.84 with a standard deviation of 1.05. Approximately 3% of the sample are unemployed; 8% are self-employed; 9% look after the home; 23% are retired; 45% are males; 68% are married; 9% are widowed; 8% have as their highest qualification a university bachelors degree, while 2% have a masters or doctorate; mean age is 49 years old. These personal characteristics are viewed here as additional influences beyond the simple average gender effect studied in the earlier section's formal model.

As suggested by the theoretical framework, it is now natural to ask whether the gender of a person's children makes a difference to that individual's political preferences. An attractive aspect of this is that, because the sex of babies is random, the gender mix of the family can be viewed as exogenous. Family size itself, of course, is endogenous; it is chosen. Moreover, some families will for personal and cultural reasons have different 'stopping rules' (perhaps go-on-until-a-boy-is-born-and-then-stop, and so on). But the individual gender of a child is almost completely out of a parent's control. The one potential exception is that in principle some babies might be aborted because of their sex, measured by ultra-scan in the womb. However, this is against the law in Great Britain. Abortion is legal only where the mother's physical or mental health is at stake.

The paper's focus is on the correlation between the gender composition of offspring and the voting preferences of parents. Figure 1 gives a first flavour of the key result in the paper. It is only a cross-section pattern but hints at an intriguing link between having daughters and voting Left. For all those with 2 children, the mean number of daughters among Left voters exceeds the mean number of sons. The same is true for people with 3 children. The same is

also found among those with 4 children. To be clear: Figure 1 includes children who are on the household roster (so those children who are dependents aged 0-15 and children who are over 15 but still remain at home).

When the sample is restricted to daughters aged under 16, which is done in Figure 2, the same pattern emerges. Because size of family is endogenous, and is likely to be correlated with people's characteristics and innate preferences, the comparisons here are deliberately across groups with equal numbers of offspring. Figure 2's result should be kept in perspective. Once the standard errors are adjusted for clustering, it is not possible to reject the null hypothesis that, for any number of children c , the number of daughters equals the number of sons for supporters of each political wing. Even so, such a test throws away some statistical information, because it does not pool the findings from all six columns in, for example, Figure 2. We return later to testing and statistical significance.

Figure 3 is stronger evidence. It switches to a graph in which political preference is on the y-axis. Here daughters are once more correlated with the parent being left-leaning. Again, the Figure is meant only as an illustration. The comparison in this case is between people with only 3 sons and those with only 3 daughters. Of those with sons, 67% vote for the Labour Party and the Liberal Democrat Party. Of those with daughters, 77% vote Labour or Liberal Democrat. This raw difference is not, however, statistically significant.

By turning to longitudinal information, the strength of the relationship can be checked more persuasively. As people have their daughters, or sons, we can follow what happens. Figure 4 begins to do so. It looks at 'switchers', namely, those who report alterations in their political affiliations. Person fixed-effects are thereby effectively differenced out. In the first column, the change in the number of daughters is plotted among those who moved from supporting the Left to supporting the Right (there are 539 such people). The mean change is approximately 1.7%. In the second column, the change in the number of daughters is plotted for those switching to the Left (there are

802). The mean of this, at approximately 3%, is almost double. Even after adjusting the standard errors for clustering, this large difference in the number of daughters is statistically significant at better than the 0.001 level. Figure 4 uses the whole sample and thus picks up year-by-year political changes. Another test is to use long changes in the data. Figure 5 sets out the result of comparing the political affiliations of people at the start and end of the whole panel. Although the effective sample is small, because most people do not change over the period, the same general pattern is found.

To control for confounding influences, a more formal test is set out in Table 1. This estimates a simple regression equation in which the dependent variable is the probability of voting Left. It uses Generalized Least Squares with random effects. The key independent variable is the number of daughters. As a control, the total number of children is also included. This follows the empirical strategy outlined in the innovative work of Ebonya Washington (2004). It allows the effect of pure family size to be held constant. Controlling for the number of children, the coefficient on the number of daughters tells us about the influence of the gender composition of the offspring. In this table, elementary exogenous regressors are included: age, age squared, and gender of the voter. The effect of daughters is positive and statistically well-determined. Its coefficient in the full sample in Table 1 is 0.011 with a standard error of 0.004. The effect is found for both male and female parents, although for men the coefficient is not quite statistically significantly different from zero at the 5% level. As is known in Great Britain, regional dummies have strong effects. 'Wave dummies' here are year-dummies for each wave of the BHPS surveys.

Table 2 includes a list of extra controls. These are for income, education, employment type, marital status, and other personal characteristics. As before, there remains a positive link between having daughters and voting for the Labour and Liberal Democrats. Although the size of coefficient on number-of-daughters is similar in the second and third columns of Table 2, its standard error in the male equation is a little worse. Consistent with the theoretical model in the earlier part of the paper, the results suggest that

males and high-income people tend to lean to the right, *ceteris paribus*. Similar findings, with a different estimator, namely logit equations with random effects, are given in Table 3. Both male and female equations have well-determined effects for the number-of-daughters variable. Many other independent variables enter the political-preference equations (Alesina and La Ferrara, 2005, have recently explored the micro-determinants of taste for redistribution), but the paper does not attempt to explore these in detail.

To this point, person fixed-effects have not been allowed for in the estimation. For well-understood reasons, there may be omitted variables that are correlated both with voting preferences and the nature of people's families. Hence there is some case for using an estimator that differences out unobservable personal characteristics. Although the usual criticisms of non-fixed-effects estimation are perhaps less powerful in this setting (because the gender mix of the children might be argued to be out of control of the parents), it is natural still to explore the structure of a fixed-effects voting equation. This is done in Table 4. Once again, the daughters variables enter positively and, both in the whole sample and the male sub-sample, in a statistically significant way. For the female sub-sample, however, the coefficient is not particularly well-determined. We had expected that, once fixed effects were included, age and wave-dummy variables would be perfectly collinear. However, the reason why age can be estimated in our fixed-effect equations (even with year effects included) is because age is measured from year to year (depending on the person's birthday), while the wave variable represents the changing survey dates in which the interview actually took place. Nevertheless, in case of sensitivity to this, we checked that the key result on the number of daughters is unaffected by omitting the age variable. Finally, perhaps unsurprisingly, in these differenced-structures some of the individual personal variables work erratically.

It is interesting to go a little further. In the spirit of the research literature described earlier, we can ask empirically whether other attitudes are altered by having daughters rather than sons. Table 5 is an attempt to shed some light on this. It uses answers to various attitudinal questions from the panel.

The number of daughters enters positively in a 'Cohabitation is all right' equation; negatively in a 'Homosexuality is wrong' equation, although in this instance the standard error is not well-determined; negatively in a 'Husband should earn while the wife stays at home' equation; and negatively in a 'Children need father as much as mother' equation'. Following the questions discussed in Johnston and Pattie (2000), it would be possible to pursue attitudinal issues still more, but we have not done so in this paper.

There are no questions in the British Household Panel survey on the area of life covered particularly by the work of Washington (2004), namely, that of people's attitudes to women's issues such as abortion, but, like her, we find here that the gender mix of children is correlated with parents' social attitudes to family matters.

A number of robustness checks were undertaken. By using a set of dummy variables, Appendix B shows that the influence of the number of daughters seems to be monotonic up to around 5 children (where, because of the rarity in modern data of large families, the size of sample becomes small). Appendix C, also as an exploration, estimates an equation for the most recent year of the sample, 2004. Although on this more limited sample the t-statistic on number of daughters is only slightly greater than 2, the same general form of equation is found. Appendix D splits the number-of-daughters variable into two age classes. The coefficient on the older age-group, those living at home but who are above age 16, is smaller than on younger daughters, although it is not statistically well-determined. Both variables enter with the predicted positive sign.

4. Conclusion

This paper's focus is upon a question that is rarely addressed. Why are some human beings right-wing while others are left-wing?

Using longitudinal data, the paper finds that having daughters makes people more left-wing (or, strictly speaking, more likely to vote for the Labour or

Liberal Democrat parties). Having sons, by contrast, makes them more right-wing. The effect seems large and not merely statistically significant. A long-standing idea in western society is that parents influence the behaviour and psychology of their offspring. This paper reverses that habit of thinking. It suggests that children shape their parents. The paper, which might be viewed as a study of endogenous preferences, also sets out a formal theoretical framework with an economic flavour.

Parents, politicians and voters are probably not aware of this phenomenon -- nor are social scientists. The model set out in the paper describes a stylized world in which, because of wage discrimination and different female preferences over public goods, rational parents tilt to the left if they have daughters. This conceptual framework gives correct predictions. Whether it is the right explanation for the patterns in the data seems an important topic for continued research.

We conclude with a tentative conjecture. It is that *left-wing individuals are people who come from extended families where, over recent past generations, many females have been born*. The theoretical ideas behind the conjecture are two-fold. The first is the one described in the paper: daughters make parents more left-wing. The second idea, which seems plausible, but for which we have not provided evidence, is that parents' political views rub off at least a little upon their offspring. Putting these two together, the prediction of the conjecture emerges. Having many daughters pushes parents to the left; by the time the children are old enough to acquire a political sense, their parents have passed on some of those left-wing opinions to their sons and daughters; if those children then go on to have daughters themselves, those left-wing views, inherited from their parents, become strengthened among the sons and daughters of the next generation. In this way, strings of daughters through the generations might lead to left-wing families today. Strings of sons would have the opposite effect. Whether there is empirical support for this unusual notion remains to be established.

Acknowledgements

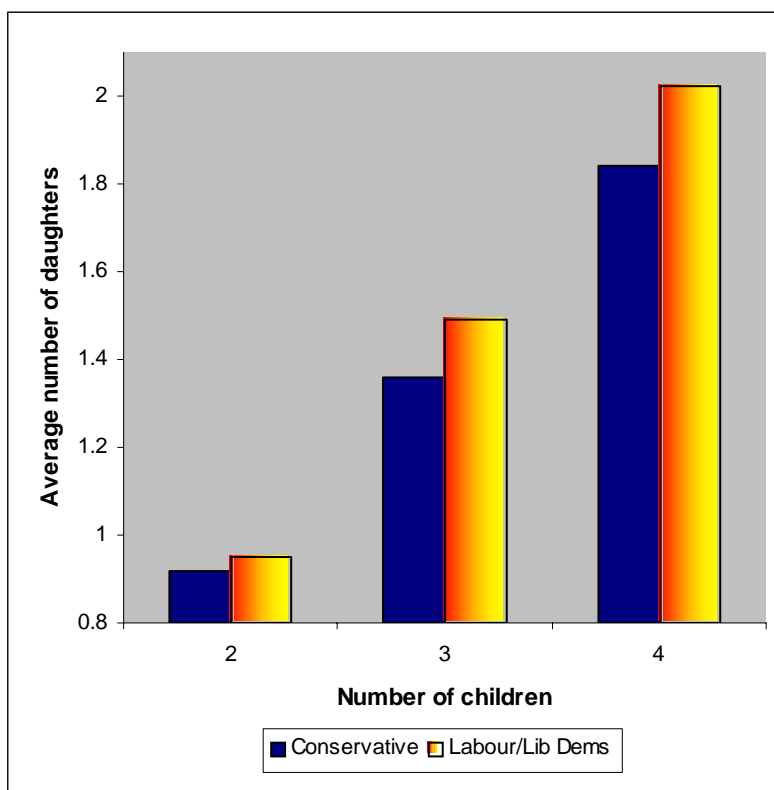
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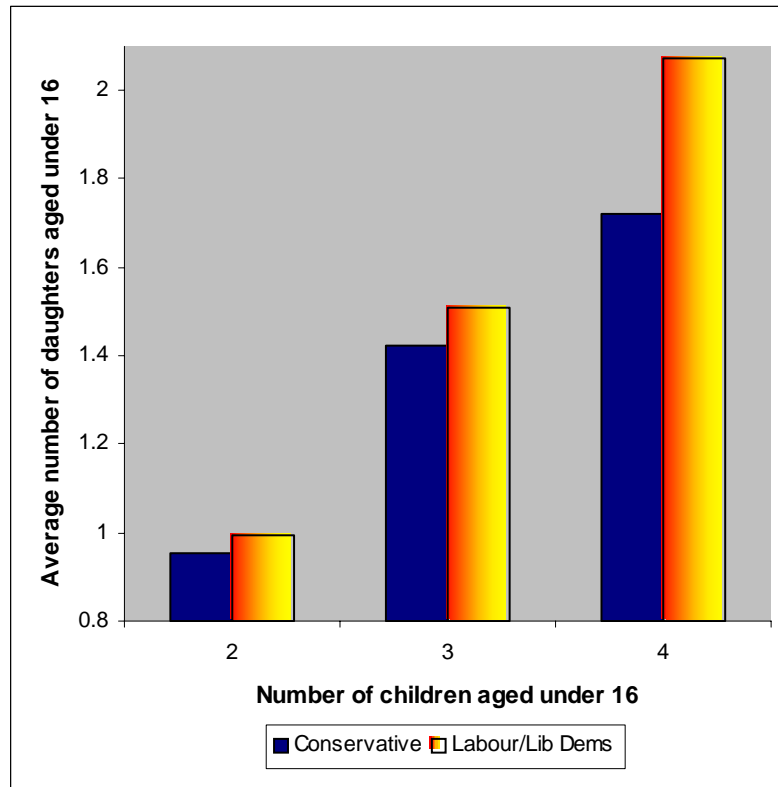
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Figure 1: Proportion of Daughters and Voting Preferences in Great Britain (1991-2004)



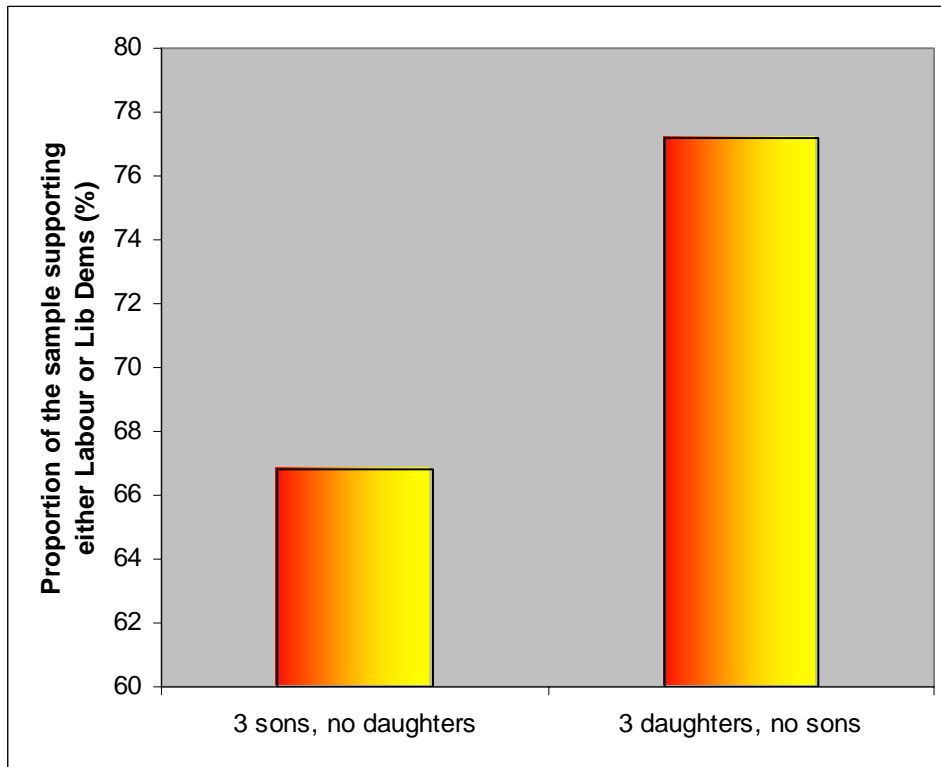
Note: there were 3,859 (7,453) observations preferring Conservative (Labour/Lib Dems) over other parties with 2 children; 1,171 (2,534) observations preferring Conservatives (Labour/Lib Dems) with 3 children; and 217 (601) observations preferring Conservatives (Labour/Lib Dems) with 4 children. The *t*-test statistics [p-value] of whether the mean number of daughters between the two groups is equal are -2.535 [0.000] (*N* of children = 2), -3.999 [0.000] (*N* of children = 3), and -2.577 [0.000] (*N* of children = 4). The adjusted *t*-test statistics [p-value] for clustering by personal identification of whether the mean number of daughters between the two groups is equal are -0.822 [0.411] (*N* of children = 2), -1.354 [0.176] (*N* of children = 3), and -0.844 [0.377] (*N* of children = 4).

Figure 2: Proportion of Daughters (Aged Under 16) and Voting Preferences in Great Britain (1991-2004)



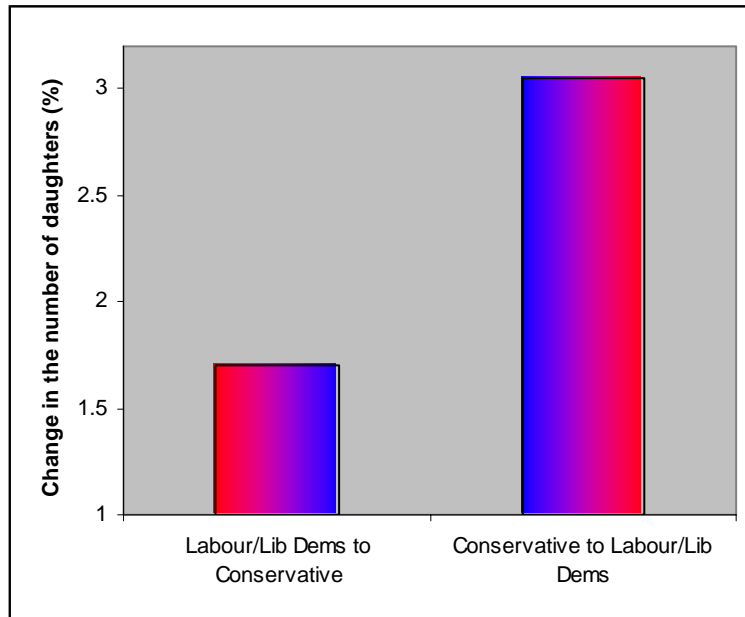
Note: there were 2,581 (5,233) observations preferring Conservative (Labour/Lib Dems) over other parties with 2 children aged under 16; 778 (1,682) observations preferring Conservatives (Labour/Lib Dems) with 3 children aged under 16; and 115 (376) observations preferring Conservatives (Labour/Lib Dems) with 4 children aged under 16. The *t*-test statistics [p-value] of whether the mean number of daughters aged under 16 between the two groups is equal are -2.199 [0.000] (*N* of children = 2), -1.914 [0.056] (*N* of children = 3), and -3.293 [0.000] (*N* of children = 4). The adjusted *t*-test statistics [p-value] for clustering by personal identification of whether the mean number of daughters between the two groups is equal are -0.980 [0.164] (*N* of children = 2), -0.924 [0.356] (*N* of children = 3), and -1.687 [0.097] (*N* of children = 4).

Figure 3: Proportion of People Supporting Either Labour or Liberal Democrats by the Gender of their Children



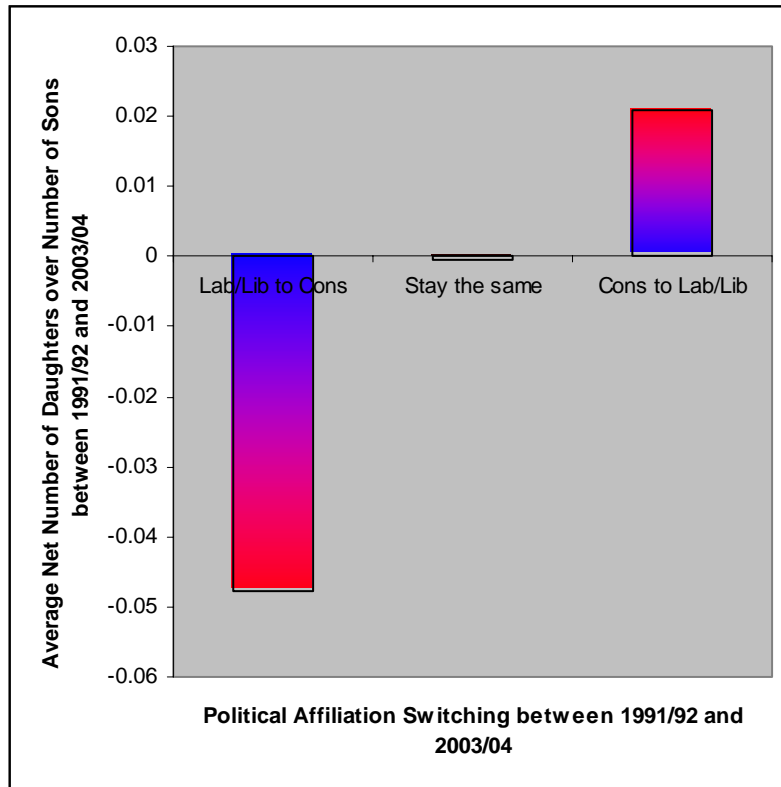
Note: there were 1,050 observations with 3 sons and no daughters, and 947 observations with 3 daughters and no sons. The t -test statistics [p-value] of whether the proportion of people supporting either Labour or Liberal Democrats between the two groups is equal is -3.035 [0.002]. The adjusted t -test statistics [p-value] for clustering by personal identification of whether the proportion of people supporting either Labour or Liberal Democrats between the two groups is equal is -1.531 [0.127].

Figure 4: Proportion of People Switching Political Party Affiliation and Change in the Number of Daughters from T to $T+1$



Note: there were 539 switches from Labour/Lib Dems to Conservative, and 802 from Conservative to Labour/Lib Dems. The adjusted t -test statistics [p-value] for clustering by personal identification of whether the change in the number of daughters between the two groups is equal is -3.131 [0.000].

Figure 5: Political Party Affiliation Switching and Average Net Change in the Number of Daughters over the Number of Sons Between 1991/92 and 2003/04



Note: there were 42 switches from Labour/Lib Dems to Conservative, and 191 from Conservative to Labour/Lib Dems. There were 1,987 people who stayed the same with their political affiliation. The adjusted t -test statistics [p-value] for clustering by personal identification of whether the change in the number of daughters between the two groups is equal is -0.4867 [0.6269].

**Table 1: The Effect of Daughters on the Probability of Being Affiliated with a Left-Wing Party:
Exogenous Variables (OLS with Random Effects)**

	All		Men		Women	
Number of daughters	0.011	(0.004)	0.009	(0.005)	0.013	(0.005)
Number of children						
1	-0.003	(0.004)	-0.005	(0.005)	-0.002	(0.005)
2	-0.008	(0.005)	-0.017	(0.007)	-0.001	(0.007)
3	-0.002	(0.008)	-0.013	(0.012)	0.006	(0.011)
4	0.012	(0.014)	0.026	(0.019)	-0.001	(0.019)
5	0.011	(0.026)	0.066	(0.038)	-0.044	(0.037)
6	-0.013	(0.038)	-0.114	(0.057)	0.083	(0.052)
7	0.106	(0.090)	0.247	(0.144)	0.022	(0.115)
8	-0.059	(0.103)	-0.744	(0.461)	0.030	(0.112)
9	0.043	(0.244)	0.182	(0.261)		
Socio-demographic status						
Men	-0.013	(0.007)				
Age	0.002	(0.001)	0.003	(0.001)	0.001	(0.001)
Age-squared/100	-0.004	(0.001)	-0.003	(0.001)	-0.004	(0.001)
Regional dummies						
Outer London	-0.048	(0.014)	-0.038	(0.019)	-0.059	(0.020)
R. of South East	-0.043	(0.013)	-0.061	(0.018)	-0.027	(0.018)
South West	-0.058	(0.014)	-0.078	(0.020)	-0.041	(0.020)
East Anglia	-0.008	(0.016)	-0.043	(0.022)	0.028	(0.023)
East Midlands	-0.016	(0.015)	-0.016	(0.021)	-0.019	(0.021)
West Midlands Conurbation	-0.021	(0.019)	-0.054	(0.029)	0.000	(0.025)
R. of West Midlands	-0.010	(0.016)	-0.038	(0.023)	0.018	(0.024)
Greater Manchester	0.056	(0.018)	0.050	(0.026)	0.063	(0.025)
Merseyside	0.059	(0.024)	0.061	(0.034)	0.056	(0.033)
R. of North West	0.010	(0.017)	0.007	(0.025)	0.013	(0.025)
South Yorkshire	0.071	(0.022)	0.099	(0.031)	0.049	(0.030)
West Yorkshire	0.026	(0.019)	0.021	(0.028)	0.032	(0.027)
R. of Yorks & Humberside	-0.036	(0.018)	-0.037	(0.026)	-0.037	(0.026)
Tyne & Wear	0.067	(0.022)	0.038	(0.031)	0.092	(0.030)
R. of North	0.050	(0.019)	0.043	(0.028)	0.056	(0.025)
Wales	0.089	(0.015)	0.075	(0.021)	0.102	(0.021)
Scotland	0.076	(0.014)	0.070	(0.021)	0.080	(0.020)
Northern Ireland	-0.240	(0.085)	-0.258	(0.122)	-0.222	(0.120)
Other	0.052	(0.018)	0.072	(0.024)	0.029	(0.026)
Constant	0.582	(0.021)	0.545	(0.030)	0.600	(0.028)
Wave dummies	Yes		Yes		Yes	
Regional dummies	Yes		Yes		Yes	
N	66,628		31,170		35,458	
R-squared	0.069		0.023		0.029	

Note: standard errors are in parentheses. Reference groups are i) women and ii) Inner London.

**Table 2: The Effects of Daughters on the Probability of Being Affiliated with a Left-Wing Party
(OLS with Random Effects)**

	All		Men		Women	
Number of daughters	0.012	(0.004)	0.011	(0.006)	0.014	(0.005)
Number of children						
1	-0.004	(0.004)	-0.007	(0.006)	-0.003	(0.005)
2	-0.011	(0.006)	-0.023	(0.008)	-0.003	(0.008)
3	-0.008	(0.009)	-0.020	(0.012)	0.000	(0.012)
4	0.002	(0.014)	0.004	(0.021)	-0.001	(0.020)
5	0.007	(0.027)	0.031	(0.040)	-0.021	(0.038)
6	-0.026	(0.039)	-0.138	(0.058)	0.083	(0.053)
7	0.092	(0.090)	0.222	(0.150)	0.026	(0.113)
8	-0.059	(0.104)	-0.776	(0.451)	0.043	(0.113)
Socio-demographic status						
Men	-0.015	(0.008)				
Age	0.001	(0.001)	0.003	(0.001)	-0.000	(0.001)
Age-squared/100	-0.003	(0.001)	-0.003	(0.001)	-0.003	(0.001)
Real household income per capita (in 10,000)	-0.004	(0.001)	-0.004	(0.002)	-0.004	(0.002)
First degree	0.023	(0.009)	0.010	(0.013)	0.035	(0.011)
Higher degree	0.036	(0.014)	0.029	(0.020)	0.041	(0.021)
Self-employed	-0.021	(0.005)	-0.027	(0.006)	-0.010	(0.008)
Unemployed	0.004	(0.006)	0.001	(0.008)	0.008	(0.009)
Retired	-0.005	(0.004)	-0.007	(0.006)	-0.005	(0.005)
Maternity leaves	-0.005	(0.013)	0.048	(0.221)	-0.006	(0.013)
Housewives/looking after home	0.000	(0.004)	0.009	(0.020)	0.001	(0.005)
Student	0.019	(0.010)	0.027	(0.016)	0.014	(0.013)
Disabled	0.001	(0.006)	0.001	(0.009)	-0.000	(0.009)
Government training scheme	-0.008	(0.028)	-0.045	(0.037)	0.043	(0.043)
Other	0.008	(0.015)	-0.021	(0.025)	0.026	(0.020)
Married	0.003	(0.007)	0.007	(0.010)	0.000	(0.010)
Cohabiting with a partner	-0.004	(0.007)	-0.006	(0.010)	0.001	(0.011)
Widowed	0.016	(0.009)	0.048	(0.015)	0.006	(0.012)
Divorced	0.021	(0.009)	0.018	(0.014)	0.020	(0.012)
Separated	0.017	(0.011)	0.024	(0.016)	0.008	(0.014)
Regional dummies						
Outer London	-0.043	(0.015)	-0.050	(0.020)	-0.038	(0.021)
R. of South East	-0.047	(0.013)	-0.074	(0.019)	-0.020	(0.019)
South West	-0.057	(0.015)	-0.088	(0.022)	-0.028	(0.021)
East Anglia	-0.012	(0.017)	-0.057	(0.023)	0.031	(0.024)
East Midlands	-0.022	(0.016)	-0.026	(0.022)	-0.020	(0.022)
West Midlands Conurbation	-0.038	(0.020)	-0.088	(0.031)	-0.004	(0.026)
R. of West Midlands	-0.017	(0.017)	-0.055	(0.024)	0.019	(0.024)
Greater Manchester	0.041	(0.019)	0.021	(0.028)	0.062	(0.026)
Merseyside	0.062	(0.025)	0.071	(0.036)	0.055	(0.034)
R. of North West	0.009	(0.018)	0.002	(0.026)	0.014	(0.026)
South Yorkshire	0.063	(0.023)	0.058	(0.033)	0.066	(0.032)
West Yorkshire	0.025	(0.020)	0.003	(0.029)	0.044	(0.027)
R. of Yorks & Humberside	-0.035	(0.019)	-0.046	(0.027)	-0.025	(0.027)
Tyne & Wear	0.067	(0.022)	0.047	(0.032)	0.085	(0.031)
R. of North	0.056	(0.019)	0.041	(0.029)	0.071	(0.026)
Wales	0.086	(0.015)	0.067	(0.022)	0.104	(0.021)
Scotland	0.084	(0.015)	0.077	(0.022)	0.091	(0.021)
Northern Ireland	-0.244	(0.084)	-0.274	(0.119)	-0.217	(0.118)
Other	0.046	(0.018)	0.058	(0.025)	0.028	(0.026)
Constant	0.620	(0.033)	0.624	(0.033)	0.704	(0.031)
Wave dummies	Yes		Yes		Yes	
N	61,041		28,490		32,511	
Overall R-squared	0.063		0.064		0.070	

Note: standard errors are in parentheses. Additional reference groups are i) no formal education to secondary school qualifications, ii) employed full-time, and iii) never been married.

**Table 3: The Effect of Daughters on the Probability of Being Affiliated with a Left-Wing Party
(Logit with Random Effects)**

	All		Men		Women	
Number of daughters	0.650	(0.119)	0.756	(0.140)	0.335	(0.151)
Number of children						
1	-0.051	(0.113)	-0.309	(0.170)	0.049	(0.138)
2	-0.567	(0.166)	-0.872	(0.221)	-0.133	(0.225)
3	-0.426	(0.255)	-0.982	(0.319)	0.105	(0.336)
4	-0.360	(0.428)	-0.212	(0.556)	0.377	(0.700)
5	-1.069	(0.574)	0.379	(0.921)	-1.262	(0.822)
6	-2.457	(0.925)	-2.620	(1.379)	0.101	(1.224)
7	0.160	(2.210)	NA		NA	
Socio-demographic status						
Men	-0.202	(0.109)				
Age	-0.047	(0.021)	0.026	(0.028)	-0.135	(0.022)
Age-squared/100	0.010	(0.018)	-0.041	(0.026)	0.069	(0.021)
Real household income per capita (in 10,000)	-0.251	(0.052)	-0.349	(0.086)	-0.199	(0.082)
First degree	0.343	(0.153)	-0.021	(0.208)	0.851	(0.206)
Higher degree	0.692	(0.394)	-0.155	(0.403)	NA	
Self-employed	-1.069	(0.134)	-1.239	(0.160)	-0.505	(0.229)
Unemployed	0.262	(0.198)	0.082	(0.266)	0.228	(0.293)
Retired	-0.059	(0.127)	-0.291	(0.204)	0.104	(0.169)
Maternity leaves	-0.039	(0.450)	NA		-0.004	(0.426)
Housewives/looking after home	0.167	(0.128)	0.760	(0.924)	0.191	(0.131)
Student	0.073	(0.352)	-0.028	(0.482)	0.416	(0.412)
Disabled	0.454	(0.188)	0.331	(0.311)	0.300	(0.273)
Government training scheme	0.405	(0.893)	-2.208	(0.955)	0.703	(1.130)
Other	0.980	(0.511)	-0.737	(0.711)	0.981	(0.545)
Married	-0.050	(0.158)	-0.002	(0.261)	-0.093	(0.258)
Cohabiting with a partner	-0.174	(0.199)	-0.538	(0.290)	0.196	(0.302)
Widowed	-0.210	(0.198)	0.938	(0.345)	-0.570	(0.289)
Divorced	0.512	(0.222)	0.366	(0.330)	0.156	(0.326)
Separated	0.226	(0.279)	0.366	(0.448)	0.009	(0.404)
Regional dummies						
Outer London	-1.720	(0.335)	-1.984	(0.551)	-2.073	(0.447)
R. of South East	-1.874	(0.323)	-1.737	(0.524)	-2.453	(0.399)
South West	-1.273	(0.320)	-1.437	(0.538)	-0.869	(0.403)
East Anglia	-1.177	(0.341)	-2.050	(0.565)	-0.954	(0.430)
East Midlands	-1.921	(0.342)	-0.940	(0.557)	-2.167	(0.419)
West Midlands Conurbation	-2.944	(0.359)	-0.941	(0.703)	-2.448	(0.469)
R. of West Midlands	-1.894	(0.361)	-2.354	(0.596)	-1.843	(0.425)
Greater Manchester	-0.434	(0.426)	-0.800	(0.593)	-0.753	(0.504)
Merseyside	3.134	(0.389)	-0.190	(0.619)	1.765	(0.623)
R. of North West	0.262	(0.356)	-0.360	(0.626)	-3.256	(0.451)
South Yorkshire	1.207	(0.483)	1.552	(0.710)	0.896	(0.867)
West Yorkshire	0.423	(0.496)	-0.961	(0.646)	1.011	(0.552)
R. of Yorks & Humberside	-1.810	(0.392)	-1.101	(0.932)	-1.447	(0.453)
Tyne & Wear	3.041	(0.376)	-1.007	(0.643)	1.336	(0.492)
R. of North	1.160	(0.370)	2.768	(0.616)	1.255	(0.499)
Wales	2.403	(0.328)	2.773	(0.551)	2.325	(0.416)
Scotland	1.910	(0.331)	2.060	(0.537)	2.299	(0.417)
Northern Ireland	-5.281	(1.024)	-5.512	(1.416)	-4.581	(1.559)
Other	1.057	(0.529)	1.132	(0.811)	0.798	(0.701)
Constant	5.428	(0.650)	3.529	(0.980)	8.159	(0.653)
Wave dummies	Yes		Yes		Yes	
N of observations	61,041		28,490		32,551	
N of groups	13,257		6,156		7,101	
sigma_u	6.663		6.747		6.788	
rho	0.931		0.933		0.933	

Note: standard errors are in parentheses. Dependent variable = a binary variable: 1 = Labour or Lib Dems, 0 = Conservative. Reference groups: women, employed full-time, never married, and Inner London. NA = not applicable due to small number of observations in that category.

**Table 4: The Effect of Daughters on the Probability of Being Affiliated with a Left-Wing Party
(Logit with Individual Fixed-Effects)**

	All		Men		Women	
Number of daughters	0.519	(0.176)	0.505	(0.258)	0.466	(0.256)
Number of children						
1	-0.450	(0.178)	-0.398	(0.274)	-0.419	(0.243)
2	-0.800	(0.261)	-1.031	(0.417)	-0.518	(0.351)
3	-0.620	(0.392)	-0.691	(0.593)	-0.413	(0.552)
4	-0.651	(0.681)	-1.057	(1.004)	-0.015	(0.989)
5	-1.286	(1.086)	-0.295	(1.667)	-2.780	(1.932)
6	-2.501	(1.443)	NA		NA	
Socio-demographic status						
Age	0.011	(0.140)	0.123	(0.206)	-0.008	(0.201)
Age-squared/100	-0.047	(0.032)	-0.022	(0.051)	-0.058	(0.042)
Real household income per capita (in 10,000)	0.070	(0.006)	0.134	(0.010)	0.024	(0.077)
First degree	-0.840	(0.405)	-1.423	(0.758)	-0.523	(0.517)
Higher degree	-0.460	(0.685)	-0.210	(0.930)	-1.124	(1.089)
Self-employed	-0.164	(0.201)	-0.359	(0.248)	0.033	(0.369)
Unemployed	-0.315	(0.273)	-0.636	(0.398)	0.012	(0.399)
Retired	-0.357	(0.172)	-0.733	(0.266)	-0.052	(0.236)
Maternity leaves	-0.287	(0.485)	NA		-0.329	(0.511)
Housewives/looking after home	-0.072	(0.175)	0.299	(1.183)	0.033	(0.192)
Student	0.130	(0.419)	-0.203	(0.704)	-0.272	(0.570)
Disabled	-0.604	(0.297)	-0.743	(0.424)	-0.798	(0.441)
Government training scheme	-0.374	(0.945)	-1.111	(1.017)	NA	
Other	0.223	(0.669)	-1.467	(1.247)	1.036	(0.930)
Married	0.638	(0.353)	0.918	(0.490)	0.525	(0.617)
Cohabiting with a partner	0.251	(0.340)	0.367	(0.454)	0.213	(0.621)
Widowed	0.860	(0.438)	1.636	(0.673)	0.393	(0.697)
Divorced	0.909	(0.408)	0.648	(0.586)	1.002	(0.672)
Separated	0.572	(0.449)	0.795	(0.627)	0.355	(0.733)
Wave dummies	Yes		Yes		Yes	
Regional dummies	Yes		Yes		Yes	
N	7,224		4,030		3,194	
Pseudo R-squared	0.161		0.176		0.175	

Note: standard errors are in parentheses. NA = not applicable due to small number of observations in that category.

Table 5: The Effect of Daughters on Attitudes Variables (OLS with Random Effects Equations)

	Cohabitation is all right		Homosexuality is wrong		Husband should earn, wife should stay at home		Children need father as much as mother	
Number of daughters	0.035	(0.011)	-0.023	(0.016)	-0.026	(0.012)	-0.024	(0.009)
Number of children								
1	-0.020	(0.013)	0.038	(0.019)	0.045	(0.014)	-0.052	(0.011)
2	-0.053	(0.018)	0.056	(0.026)	0.083	(0.018)	-0.044	(0.015)
3	-0.154	(0.026)	0.074	(0.038)	0.133	(0.027)	-0.024	(0.022)
4	-0.234	(0.044)	0.100	(0.066)	0.222	(0.045)	-0.050	(0.037)
5	-0.225	(0.080)	0.120	(0.116)	0.392	(0.082)	0.089	(0.068)
6	-0.637	(0.125)	0.610	(0.187)	0.677	(0.119)	0.223	(0.101)
7	-0.431	(0.264)	0.846	(0.378)	1.033	(0.314)	0.518	(0.255)
Socio-demographic status								
Men	-0.027	(0.013)	-0.426	(0.016)	-0.284	(0.013)	-0.139	(0.010)
Age	-0.027	(0.002)	0.004	(0.003)	0.007	(0.002)	-0.013	(0.002)
Age-squared/100	0.002	(0.002)	0.015	(0.003)	0.019	(0.002)	0.015	(0.002)
Real household income per capita (in 10,000)	0.028	(0.006)	-0.036	(0.008)	-0.031	(0.006)	0.003	(0.005)
First degree	0.080	(0.020)	-0.458	(0.027)	-0.301	(0.020)	0.063	(0.016)
Higher degree	0.097	(0.037)	-0.572	(0.049)	-0.434	(0.037)	0.115	(0.030)
Self-employed	-0.034	(0.017)	0.040	(0.026)	0.088	(0.018)	-0.019	(0.015)
Unemployed	-0.057	(0.022)	0.074	(0.034)	0.178	(0.023)	0.002	(0.020)
Retired	-0.073	(0.016)	0.061	(0.025)	0.141	(0.017)	0.021	(0.015)
Maternity leaves	0.024	(0.054)	-0.034	(0.075)	0.117	(0.057)	0.114	(0.050)
Housewives/looking after home	-0.031	(0.015)	0.101	(0.023)	0.345	(0.016)	-0.018	(0.014)
Student	-0.025	(0.034)	-0.336	(0.052)	-0.301	(0.036)	0.070	(0.030)
Disabled	-0.103	(0.022)	0.146	(0.030)	0.266	(0.022)	0.008	(0.019)
Government training scheme	-0.252	(0.110)	0.325	(0.230)	0.049	(0.125)	0.017	(0.109)
Other	-0.184	(0.067)	-0.072	(0.080)	0.136	(0.067)	-0.075	(0.058)
Married	-0.164	(0.020)	0.128	(0.027)	-0.078	(0.020)	0.216	(0.016)
Cohabiting with a partner	0.232	(0.022)	-0.035	(0.032)	-0.073	(0.023)	0.122	(0.019)
Widowed	-0.036	(0.027)	0.080	(0.038)	-0.054	(0.028)	0.170	(0.022)
Divorced	0.111	(0.026)	0.029	(0.037)	-0.054	(0.027)	-0.047	(0.022)
Separated	0.001	(0.033)	0.004	(0.047)	-0.125	(0.034)	-0.041	(0.029)
Constant	1.561	(0.071)	2.767	(0.092)	2.198	(0.064)	2.198	(0.064)
Wave dummies	Yes		Yes		Yes		Yes	
Regional dummies	Yes		Yes		Yes		Yes	
N	54,065		32,281		48,350		48,539	
Overall R-squared	0.232		0.179		0.256		0.045	

Note: standard errors are in parentheses. Responses are recoded so that 1 = strongly disagree, 5 = strongly agree.

Appendix A: Data Description and Summary

Variables	Descriptions	All			Father			Mother		
		Mean	BW	WT	Mean	BW	WT	Mean	BW	WT
Vote left wing parties	political party affiliation; 0 = Conservatives (British right-wing party) 1 = Labour/Liberal Democrats (British left-wing parties)	0.64	(0.45)	(0.15)	0.63	(0.46)	(0.15)	0.64	(0.45)	(0.15)
Number of daughters	number of natural daughters	0.40	(0.66)	(0.26)	0.38	(0.65)	(0.26)	0.41	(0.68)	(0.25)
Number of children	number of natural children	0.84	(1.05)	(0.40)	0.80	(1.03)	(0.42)	0.88	(1.07)	(0.39)
Unemployed	employment status, unemployed = 1	0.03	(0.15)	(0.13)	0.04	(0.18)	(0.15)	0.02	(0.12)	(0.12)
Self-employed	employment status, self-employed = 1	0.08	(0.23)	(0.14)	0.13	(0.29)	(0.17)	0.04	(0.15)	(0.11)
Housewife/looking after home	employment status, housewife/looking after home = 1	0.09	(0.23)	(0.18)	0.01	(0.06)	(0.06)	0.16	(0.29)	(0.24)
Student	employment status, student = 1	0.01	(0.15)	(0.08)	0.01	(0.15)	(0.08)	0.02	(0.14)	(0.08)
Retired	employment status, retired = 1	0.23	(0.39)	(0.18)	0.22	(0.39)	(0.17)	0.25	(0.39)	(0.20)
Maternity leave	employment status, maternity leave = 1	0.01	(0.09)	(0.10)	0.00	(0.01)	(0.02)	0.02	(0.11)	(0.13)
Government training scheme	employment status, government training scheme = 1	0.00	(0.02)	(0.03)	0.00	(0.02)	(0.03)	0.00	(0.02)	(0.02)
Other employment	employment status, other employment = 1	0.00	(0.04)	(0.04)	0.00	(0.04)	(0.04)	0.00	(0.05)	(0.05)
Men	gender (male = 1)	0.45	(0.50)	-	-	-	-	-	-	-
Age	age	49.27	(17.69)	(3.00)	49.01	(17.11)	(2.98)	49.50	(18.16)	(3.02)
Age ² /100	age-squared/100	27.12	(18.35)	(3.14)	26.68	(17.55)	(3.11)	27.49	(18.99)	(3.18)
Real household income (*10,000)	annual household income per capita, adjusted to CPI index (in £10,000)	0.93	(0.67)	(0.49)	0.99	(0.69)	(0.50)	0.88	(0.64)	(0.47)
Married	marital status, married = 1	0.68	(0.46)	(0.18)	0.73	(0.45)	(0.18)	0.63	(0.47)	(0.18)
Living as a couple	marital status, living with a partner = 1	0.06	(0.25)	(0.14)	0.08	(0.28)	(0.14)	0.05	(0.22)	(0.13)
Separated	marital status, separated = 1	0.02	(0.12)	(0.10)	0.01	(0.09)	(0.08)	0.02	(0.13)	(0.10)
Divorced	marital status, divorced = 1	0.06	(0.21)	(0.11)	0.04	(0.18)	(0.10)	0.07	(0.23)	(0.12)
Widowed	marital status, widowed = 1	0.09	(0.28)	(0.10)	0.04	(0.19)	(0.08)	0.13	(0.33)	(0.11)
Education: First degree	first degree education, i.e. undergraduate levels	0.08	(0.26)	(0.07)	0.09	(0.27)	(0.07)	0.07	(0.25)	(0.08)
Education: Higher degree	higher degree education, i.e. postgraduate levels	0.02	(0.14)	(0.04)	0.03	(0.15)	(0.05)	0.02	(0.12)	(0.04)
Attitude questions										
Cohabitation is alright	Cohabitation is alright; 1 = strongly disagree, 5 = strongly agree	3.37	(1.79)	(1.10)	3.32	(2.01)	(1.16)	3.41	(1.60)	(1.05)
Homosexuality is wrong	Homosexuality is wrong; 1 = strongly disagree, 5 = strongly agree	2.92	(1.12)	(0.48)	3.14	(1.16)	(0.48)	2.75	(1.06)	(0.47)
Husband should earn, wife should stay at home	Husband should earn, wife should stay at home; 1 = strongly disagree, 5 = strongly disagree	2.64	(1.03)	(0.54)	2.76	(1.03)	(0.53)	2.55	(1.02)	(0.55)
Children need father as much as mother	Children need father as much as mother; 1 = strongly disagree, 5 = strongly agree	4.15	(0.78)	(0.49)	4.23	(0.59)	(0.44)	4.09	(0.73)	(0.52)
Total number of observation		66,628			31,170			35,458		

Note: standard deviations are in parentheses. BW = between standard deviation. WT = within standard deviation.

Appendix B: The Effect of Number of Daughters on the Probability on Being Affiliated with a Left-Wing Party (OLS with Random Effects)

	All	
Number of daughters		
1	0.010	(0.005)
2	0.024	(0.009)
3	0.043	(0.016)
4	0.103	(0.036)
5	0.057	(0.118)
6	-0.491	(0.310)
7	-0.150	(0.335)
Number of children		
1	-0.003	(0.004)
2	-0.010	(0.006)
3	-0.008	(0.009)
4	-0.003	(0.015)
5	0.003	(0.028)
6	-0.040	(0.042)
7	0.095	(0.093)
8	-0.044	(0.111)
Socio-demographic status		
Men	-0.015	(0.008)
Age	0.001	(0.001)
Age-squared/100	-0.003	(0.001)
Real household income per capita (in 10,000)	-0.004	(0.001)
First degree	0.023	(0.009)
Higher degree	0.036	(0.014)
Self-employed	-0.021	(0.005)
Unemployed	0.004	(0.006)
Retired	-0.005	(0.004)
Maternity leaves	-0.005	(0.013)
Housewives/looking after home	0.000	(0.004)
Student	0.019	(0.010)
Disabled	0.001	(0.006)
Government training scheme	-0.008	(0.028)
Other	0.008	(0.015)
Married	0.003	(0.007)
Cohabiting with a partner	-0.004	(0.007)
Widowed	0.016	(0.009)
Divorced	0.021	(0.009)
Separated	0.017	(0.011)
Constant	0.673	(0.023)
Regional dummies	Yes	
Wave dummies	Yes	
N	61,041	
Overall R-squared	0.063	

Note: standard errors are in parentheses.

**Appendix C: The Effect of Daughters on the Probability of Being Affiliated with a Left-Wing Party
(Last Available Wave Only - Year 2004) - OLS Equation**

	Wave 13	
Number of daughters	0.031	(0.015)
Number of children		
1	-0.020	(0.020)
2	-0.024	(0.025)
3	-0.041	(0.038)
4	-0.094	(0.070)
5	-0.296	(0.209)
6	0.085	(0.189)
Socio-demographic status		
Men	0.004	(0.013)
Age	0.001	(0.003)
Age-squared/100	-0.003	(0.003)
Real household income per capita (in 1,000)	-0.058	(0.010)
First degree	0.101	(0.019)
Higher degree	0.113	(0.034)
Self-employed	-0.132	(0.027)
Unemployed	0.006	(0.046)
Retired	-0.021	(0.025)
Maternity leaves	0.037	(0.070)
Housewives/looking after home	-0.019	(0.028)
Student	-0.015	(0.062)
Disabled	0.084	(0.029)
Government training scheme	-0.385	(0.284)
Other	-0.007	(0.090)
Married	-0.029	(0.025)
Cohabiting with a partner	0.011	(0.032)
Widowed	0.031	(0.033)
Divorced	0.038	(0.034)
Separated	0.012	(0.058)
Regional dummies		
Outer London	-0.119	(0.057)
R. of South East	-0.196	(0.049)
South West	-0.194	(0.053)
East Anglia	-0.151	(0.059)
East Midlands	-0.157	(0.053)
West Midlands Conurbation	-0.222	(0.066)
R. of West Midlands	-0.124	(0.057)
Greater Manchester	-0.030	(0.058)
Merseyside	0.055	(0.060)
R. of North West	-0.129	(0.058)
South Yorkshire	0.061	(0.061)
West Yorkshire	0.058	(0.060)
R. of Yorks & Humberside	-0.086	(0.061)
Tyne & Wear	0.058	(0.065)
R. of North	0.035	(0.057)
Wales	0.065	(0.047)
Scotland	0.028	(0.048)
Northern Ireland	-	
Other	-0.102	(0.065)
Constant	0.859	(0.084)
N	5,361	
Pseudo R-squared	0.088	

Note: standard errors are in parentheses.

Appendix D: Further Voting Preference Equations (OLS with Random Effects)

	All		Men		Women	
Number of daughters aged (0-15)	0.018	(0.004)	0.016	(0.006)	0.023	(0.006)
Number of daughters aged (16 and over)	0.004	(0.005)	0.004	(0.007)	0.004	(0.007)
Number of children aged (0-15)						
1	-0.008	(0.004)	-0.012	(0.006)	-0.006	(0.006)
2	-0.012	(0.006)	-0.022	(0.009)	-0.005	(0.009)
3	-0.017	(0.010)	-0.027	(0.014)	-0.010	(0.014)
4	-0.008	(0.016)	0.012	(0.023)	-0.029	(0.023)
5	0.034	(0.033)	0.071	(0.051)	0.002	(0.044)
6	-0.060	(0.042)	-0.092	(0.064)	-0.026	(0.057)
7	0.056	(0.095)	0.263	(0.152)	-0.069	(0.123)
8	-0.118	(0.155)	-0.814	(0.451)	-0.048	(0.169)
Number of children aged (16 and over)						
1	-0.004	(0.004)	-0.806	(0.451)	-0.090	(0.085)
2	0.000	(0.007)	-0.004	(0.015)	-0.161	(0.169)
3	-0.025	(0.013)	-0.012	(0.030)	-0.285	(0.254)
4	0.050	(0.043)	-0.022	(0.046)	-0.245	(0.343)
Socio-demographic status						
Men	-0.015	(0.008)				
Age	0.001	(0.001)	0.003	(0.001)	0.000	(0.001)
Age-squared/100	-0.003	(0.001)	-0.003	(0.001)	-0.003	(0.001)
Real household income per capita (in 10,000)	-0.000	(0.000)	-0.004	(0.002)	-0.000	(0.000)
First degree	0.023	(0.009)	0.010	(0.013)	0.035	(0.011)
Higher degree	0.034	(0.014)	0.029	(0.020)	0.039	(0.021)
Self-employed	-0.021	(0.005)	-0.027	(0.006)	-0.010	(0.008)
Unemployed	0.004	(0.006)	0.000	(0.008)	0.008	(0.009)
Retired	-0.006	(0.004)	-0.007	(0.006)	-0.005	(0.005)
Maternity leaves	-0.005	(0.013)	0.048	(0.221)	-0.007	(0.013)
Housewives/looking after home	0.000	(0.004)	0.006	(0.020)	0.000	(0.005)
Student	0.019	(0.010)	0.027	(0.016)	0.015	(0.013)
Disabled	0.001	(0.006)	0.001	(0.009)	-0.000	(0.009)
Government training scheme	-0.009	(0.028)	-0.050	(0.037)	0.043	(0.043)
Other	0.008	(0.015)	-0.020	(0.025)	0.026	(0.020)
Married	0.002	(0.007)	0.007	(0.011)	-0.000	(0.010)
Cohabiting with a partner	-0.005	(0.007)	-0.006	(0.010)	0.000	(0.011)
Widowed	0.016	(0.009)	0.048	(0.015)	0.005	(0.012)
Divorced	0.021	(0.009)	0.018	(0.014)	0.020	(0.012)
Separated	0.016	(0.011)	0.024	(0.016)	0.007	(0.014)
Constant	0.671	(0.023)	0.624	(0.033)	0.694	(0.031)
Wave dummies	Yes		Yes		Yes	
Regional dummies	Yes		Yes		Yes	
N	61,041		28,490		32,511	
Overall R-squared	0.063		0.064		0.070	

Note: standard errors are in parentheses.