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Correlates of Social Value Orientation: Evidence from a Large Sample of the UK Population

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JEL classification: D64

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Abstract

We are the first to measure social value orientation in large survey, representative of the UK population. The ring measure passes tests for ecological validity, concurrent validity, and, less convincingly, internal validity. More than half of our respondents heed the welfare of others, a third is selfish. Respondents are more altruistic towards the young and the old, and towards women. Women are more altruistic, wealthier people less. People who have children or grew up with younger siblings are more altruistic, Muslims and Na'vi less. Professionals, managers, administrators and machine operators are less altruistic, students more. There is weaker evidence that left-handers, people further West, Buddhists and non-Whites are less altruistic. Effect sizes are small. That is, other-regarding preferences are either largely idiosyncratic or explained by factors we did not observe. Preference for a richer but more unequal society is highly correlated with the ring measure for social value orientation. More altruistic respondents want the government to spend more on secondary education and less on pensions, and argue for a higher carbon tax on transport fuels. There is no relationship between altruism and desired public spending on primary education, higher education, or health care.

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1. Introduction

Homo sapiens is not nearly as selfish as *Homo economicus*. Scores of observational and experimental studies show that people make real sacrifices for others beyond their immediate

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and calculated self-interest (REF). Many had suspected this from introspection and casual observation (REF), or predicted this from an evolution perspective (Wilson, 2015). However, we know very little about the extent of other-regarding behaviour or its heterogeneity. This paper presents the first evidence from a large, representative sample.

Other-regarding preferences are important to predict and understand the behaviour of economic agents (Fehr and Schmidt, 2006). The assumption of selfishness is key to horizontal aggregation of demand and the construction of a single representative agent (Collard, 1978). It is also implicit in the typical assumption that individual observations are independent of one another (Leider et al., 2009). We show that altruism is not only found in experiments, but also in a representative sample of the population.

The assumption of selfishness may therefore need to be replaced. Other-regarding preferences are not a big issue in welfare theory if uniform: Self-worth is enhanced by worth-in-the-eyes-of-others, but this is an affine transformation if the same for everyone (cf. Ng, 1999). We find, however, that there is heterogeneity in who cares about others and who is cared about by others. This creates a tension between welfare maximisation and discrimination. We find, for instance, that people with older siblings are more deserving because those siblings care.

Large samples are rare in the empirical parts of this literature. Amiel and Cowell (2003) and Durante et al. (2014), for instance, use experiments and thus small groups. Alesina and Giuliano (2011) use the General Social Survey to find correlates to the question whether governments should be actively involved in supporting the poor. Theirs is a different question than ours, however, as we focus on dictator games (Güth et al., 1982, Kahneman et al., 1986). Engel (2011) conducts a meta-analysis of 603 experiments with a total of 20,813 subjects, an average of 35 subjects per experiment. We suspect that sample sizes have increased substantially since, although we are not aware of any study with as many observations (or covariates) as the current paper. Because little demographic information was gathered in the individual experiments, Engel focused on the impact of experimental design. In a sample of 1,964, Bekkers (2007) finds that generosity in a dictator game increases with age, education, income, trust and prosocial value orientation.

We use a particular combination of six dictator games that allow us to compute the ring measure of social value orientation (Sawyer, 1966, Griesinger and Livingston, 1973, Liebrand, 1984, Van Lange et al., 1997, Murphy et al., 2011, Murphy and Ackermann, 2014). Dictator games are popular among economists for studying fairness. The ring measure, however, was developed by psychologists, using a different jargon. The ring measure allows for a wide range of behaviours and implied motivations. In practice, only four types are observed. Individualists are selfish, maximize their own pay-off, disregarding the pay-off to the other party. Pro-social people strike a trade-off between the pay-offs to self and other; Collard (1978) would call this altruism. In ring measure parlance, however, altruists maximize the other's pay-off, disregarding their own. Competitive respondents treat the pay-offs as a positional good, maximizing the distance between pay-offs to their own advantage.

Kuss et al. (2015) see reflections of the ring measure in the human brain. Höglinger and Wehrli (2017) validate the ring measure of social value orientation using Mechanical Turk. Brañas-Garza et al. (2018) let 3,500 people play a dictator game on Mechanical Turk to find

that women are more altruistic; we have a larger sample and many more covariates.

The paper proceeds as follows. Section 2 discusses the surveys and experiments that generated the data. Section 3 presents descriptive statistics and tests of the validity of our core measure of social value orientation. Section 4 shows the correlates of that measure. Section 6 concludes.

2. Data

Three data sets were collected. In September and October 2015, 17,053 residents of the United Kingdom started an online survey, and 12,028 completed it. The survey includes information on age, gender, number of children and grandchildren, age of children, religion, ethnicity, education, occupation, income, wealth, and date, time and location of the survey respondent. We incorporated some of the political attitude questions of the British Attitudes Survey (see Mulligan and Appleby, 2001, for example) which are designed to locate people's political views on a spectrum without actually asking them for political party affiliations or voting intentions. A series of questions were included to measure time preferences, and another series to elicit risk aversion. We also asked questions about four domains of public policy: Health, education, environment and pensions. See Dolton and Tol (2016) for the full details. Readers can still take the survey.

For the purposes of this paper, the survey included the ring measure of social-value orientation (Murphy et al., 2011, Murphy and Ackermann, 2014). This consists of six dictator games (Güth et al., 1982), in which the respondent chooses a pay-off for herself and someone else; see Table A.2. The ring measure R_i of respondent i is defined as

$$R_i = \frac{\sum_g P_{ijg} - B}{P_{iig} - B} \tag{1}$$

where P_{ijg} is the pay-off awarded by respondent i to participant j in dictator game g; B=£50 is a normalizing constant; and $G = 6$ is the number of games. The six dictator games were shown in random order, and the scales were randomly flipped. Typically, object j is unknown to subject i. In this case, however, we showed a picture, or rather a randomly selected one of eight pictures. The objects were a child, a young adult, a middle-aged person, and someone elderly; objects were either male or female; all objects looked happy in the picture; all were white and good-looking; see Figure A.3. Typically, dictator games are incentivised, but not in this survey.

Instead of the ring measure, we could have used the utility function proposed by Fehr and Schmidt (1999). However, with six dictator games and discrete choices in each game, the parameters of the Fehr-Schmidt utility function are poorly constrained. That is, any metric of the distance between actual and observed choices is flat for large areas of the parameter space (see Breitmoser, 2013, for a more detailed discussion).

Half of the respondents were asked to agree, on a seven-point scale, to the statement "we should help people who are worse off than us." This question serves two roles. First,

respondents were primed to think about inequality. Second, it may be that a simple, qualitative question can be used to forecast the response to a complicated set of quantitative questions.

All respondents were asked to choose between five income distributions between three hypothetical people. Half of the respondent were asked the question for male names, the other for female names. In the richest, most unequal distribution the top income is £60,000 per year, the middle income £44,000/yr and the bottom income £33,000/yr. The top income falls in steps of £2,000/yr, the bottom income rises in steps of £1,000/yr, and the middle income is unchanged between the five scenarios. This question was repeated at lower incomes, with the richest, most unequal distribution at £33,000, £23,000, and £16,000 per year. The first question was centred on the 70th percentile of the UK income distribution, the second question on the 40th percentile. This design was inspired by Fehr and Schmidt (2006) and features the leaky bucket of Okun (1975). The answers to these questions imply bounds on the parameters of a Bergson-Samuelson welfare function (Bergson, 1938, 1954, Samuelson, 1956), as specified by Atkinson (1970), extended with a subsistence, or reserve, income (Geary, 1950, Stone, 1954). Unfortunately, however, most respondents picked a corner solution so that the data is not particularly informative. See Figure A.2. Thirty-six percent of respondents preferred the most equal income distribution on offer in both questions, while another twenty-two percent twice chose the distribution with the highest average income. We therefore converted this data into three classes: 0 = maximum average income in both questions, 2 = maximum income equality in both questions, 1 = everything else.

The survey includes information on age, sex, handedness, birthday, first letter of last name, number of older and younger siblings when growing up, number of children and grandchildren, age of children, religion, ethnicity, education, occupation, income, wealth, and date, time and location of survey. We use these as regressors below.

In November and December 2015, 13 experiments were run at Royal Holloway, University of London, with a total of 166 subjects. In May 2016, another 9 experiments were done at the University of Sussex, with a total of 137 subjects. The main aim of these experiments is beyond the scope of the paper. However, the ring measure of social value orientation was part of the experiment. The object of the dictator games was another, anonymous participant in the experiment. The experiment was incentivised, with a chance of one in N of pay out. The subjects in the experiments were invited to take the survey described above. This allows us to compare social value orientation online / unincentivised and in the laboratory / incentivised.

In May 2016, another survey was conducted online. Again, the risk measure of social value orientation was part of the experiment. The object of the dictator games was another, anonymous participant in the survey. The experiment was incentivised, with a sure pay-out. Subjects totalled 400 and include participants in the main survey, participants in the experiments (many of whom took the main survey as well), and people who registered for but did not take part in the experiments (but who were subsequently invited to the main survey). This allow us to compare social value orientation online and in the laboratory (both incentivised) and incentivised or not (both online).

3. Descriptive statistics and validity

3.1. Descriptive statistics

Murphy et al. (2011) find that most people are individualistic, followed by pro-social, with few competitive people and no altriusts. Our results are different. Figure 1 shows the distribution of the ring measure of social value orientation. Sixty percent of the 14,327 respondents are classified as pro-social, with a modal angle of 30°—that is, they contribute less to the other than to themselves, but more than they could have. Four percent is classified as altruistic (angle¿57°), but Figure 1 shows that there really is a continuum of very pro-social and altruistic respondents. Altruistic respondents seek to maximize the other's pay-off. Thirty-five percent is classified as individualistic, with a modal angle of 5°. These respondents seek to maximize their own pay-off. One percent of respondents is classified as competitive—people who maximize the distance between their pay-off and the other's—but again there is a continuum of individualism and competitiveness.

3.2. Validity

Our discussion of validity loosely follows McLeod (2013).

3.2.1. Consistency within measurement

Murphy et al. (2011) and Murphy and Ackermann (2014) argue that the ring measure of social value orientation allows for a test of transitivity. They do not formally describe the test, instead released a Matlab code. The test classifies each of the six responses as "competitive", "individualistic", "pro-social" or "altruistic"—albeit using a different criterion than Equation (1)—and tests whether respondents are coherent in their behaviour. This is a valid test if the six dictator games are played separately. However, in our survey, the six games were shown together and therefore cannot be treated as separate decisions.

Instead, we dropped one of the six dictator games in turn, recalculated the ring measure, and computed the standard deviation and range across the six ring measures. We would expect a larger standard deviation and greater range for higher ring measures, and that is indeed what is found. See Table B.3. We Box-Cox transformed the jackknife standard deviation and regressed it on the ring measure. Figure B.4 plots the residuals against this measures. It shows no outliers. There are no respondents with remarkably volatile answers. We thus passed a test for internal validity.

One percent of respondents completed the six dictator games in less than 9 seconds, five percent in less than 17 seconds. Altruism is unrelated to the time taken to answer the questions, but faster respondents display reduced volatility in their answers. See Table B.3. We therefore exclude the fastest respondents in some of the regressions below as a robustness test.

3.2.2. Consistency with similar variables

In the main survey, there is a significant relationship between the ring measure of social value orientation and the inequity aversion implied in the questions about the preferred income distribution and between the ring measure and inequity aversion classes (using ordered

logit or probit). A regression of agreement to the statement that "we should help people who are worse off than us" on the ring measure showed no relationship. Simple regressions of agreement to the statements that "government should redistribute income from the better off to those who are less well off" and "ordinary working people do not get their fair share of the nation's wealth" on the ring measure reveal significant, positive relationships. See Table B.4.

In the incentivised survey, we asked for the willingness to "contribute to good causes without expecting anything in return" (Falk et al., 2015). This shows a positive relationship with the ring measure. We also asked respondents to imagine that they unexpectedly received £1,000 and "how much [they] would donate to [their] favourite good cause" (Falk et al., 2015). This also shows a positive relationship with the ring measure. We further played a standard public goods game. Participants got £1 and could place all or part of that in a pot with nine other participants; the contents of the pot were doubled but shared equally over all ten participants. The ring measure relates positively with voluntary contributions to the public good. See Table B.4.

In the experiment, a survey was administered including ten qualitative questions that together measure altruism. The questions asked for agreement, on a scale of 1 to 7, to the statements that the respondent "makes people feel welcome", "anticipates the needs of others", "loves to help others", "is concerned about others", "has a good word for everyone", "looks down on others", "is indifferent to the feelings of others", "makes people feel uncomfortable", "turns his/her back on other", and "takes no time for others". We flipped the last five responses, and averaged. The ring measure for social value orientation relates positively to the average of the answers to these questions. See Table B.4.

In sum, we applied a number of tests for concurrent validity, and passed all but one.

3.2.3. Consistency between measurements

There is a positive and significant relationship between social value orientation as measured in the survey and the experiment and as measured in the experiment and the incentivized survey. Mentzakis and Mestelman (2013) similarly found that there is no hypothetical bias. However, the relationship is negative and insignificant as measured in the survey and the incentivized survey. See Table B.5. Our measure thus passed tests of ecological validity.

4. Correlates

4.1. Social value orientation

Table C.6 shows regression results for the ring measure of social value orientation. We report results for all observations and for observations where the respondents took more than 8 seconds, excluding the fastest percentile, and 16 seconds, excluding the fastest five percentiles. We report results for all explanatory variables, and a stepwise exclusion of all insignificant variables. The last results are reproduced in Table 1.

Respondents who were primed with the question "we should help people who are worse off than us" are slightly more altruistic (see also Gomes and McCullough, 2015). The ring measure increases by 1.0°, a statistically significant but economically meaningless amount—the

difference between the modal individualist and the modal pro-social person is 30°. Respondents were 3.0° more altruistic when shown a picture of a female, 4.0° more altruistic when shown a picture of a child, and 6.2° more altruistic when shown a picture of an elderly person (Long and Krause, 2017).

Female respondents are 2.0° more altruistic (see also Croson and Gneezy, 2009, Anderson et al., 2011, Angerer et al., 2015, Bezu and Holden, 2015, Chowdhury et al., 2017, Brañas-Garza et al., 2018). There is no significant relationship between the ring measure and age, handedness, place of last name in the alphabet, birth date, or current location. There is no relationship either with religion or ethnicity, with the exception of self-declared Na'vi[1] who are 14.6° less altruistic, quite contrary to their fictional character.

Respondents who grew up with younger siblings are more altruistic by 0.5°/sibling, but having older siblings does not affect altruism. Angerer et al. (2015) found that children with older brothers are less altruistic. There is no relationship with the number of own children.

There is no relationship between social value orientation and income (see also Almås et al., 2017, Côté et al., 2015). However, wealthy respondents are more individualistic at 0.2° per £100,000 in net assets. Respondents whose education stopped at the GCSEs are 1.1° more altruistic, and people who have a professional degree 2.4° less altruistic. Respondents in managerial, professional or administrative jobs are more individualistic, by 3.0°, 1.5° and 2.0°, respectively. Machine operators are 5.2° less altruistic and students 7.4° more.

Because students are typical subjects in experiments, Figure C.5 splits Figure 1 into three subsamples: Students, people aged 18-24, and people older than 24. Students stands out for being more altruistic. This is confirmed by $\chi^2(3)$-tests for the equality of proportions. Young people are different from old people (p¡0.1%), students are different from non-students (p¡0.1%), and students are different from non-students in the same age group (p¡0.1%), but young and old non-students are not different (p¿10%).

There is no relationship between social value orientation and the time of day or day of the week of the response, or the total time taken to complete the survey.

The long list of explanatory variable notwithstanding, the R^2 is low at 7%. Although there are a number of variables that significantly influence altruism, the effect sizes are typically small. The regression model explains the trees but not the forest. Hilbig et al. (2015) and Zhao et al. (2016) find that giving in a dictator game is best explained by personality traits (see also Bogaert et al., 2008), which are not included here.

Table C.7 repeats the above analysis, but now with probit models for the four classes of social orientation, viz. altruism, pro-sociality, individualism and competitiveness. Full regression results and a general-to-specific specification are shown; the latter are reproduced in Table 1.

As for the continuous ring measure, priming reduces individualism. People are more likely to be altruistic towards young children and the elderly; and towards women. Females are more likely to be prosocial. The relationship with religion and ethnicity is somewhat stronger than above. Agnostics are less likely to be competitive. White British are more likely to be prosocial, and Na'vi more individualistic. Having older siblings does not affect social

[1] the aliens who star in James Cameron's Avatar

orientation, but having grown up with younger siblings and having children makes people more prosocial. Household income is not significant, but wealthy people are more likely to be individualists. People with professional degrees are more likely to be individualists. Job choice is important with managers, professionals, administrators and machine operators more likely to be individualists.

In contrast to the continuous measure, age and handedness have significant effects: Older people, and left-handed ones tend to be more individualistic. People in the technical and skilled professions are more individualistic People in the east of the country are less likely to be prosocial, and people in the north are more competitive. There is weak evidence that the time of day at which the survey is taken affects attitudes towards others.

There is some evidence that people's attitudes towards others depends on who those others are and their wellbeing. Unfortunately, the UK does not have a population registry so we have to rely on the 2011 Census. Using the latitude and longitude of the location of the computer used to fill out the survey, we match respondents to their local authorities. We use the Census data—from five years prioron the ethnic and religious composition of the local area; and on levels of multiple deprivation. We add these ecological variables to the regression, as well their interactions with the relevant personal characteristics. We thus not only measure whether Muslims have a different attitude towards others, and people living in a predominantly Muslim area, but also whether Muslims in a Muslim area have a different attitude than Muslims elsewhere. None of the ecological variables tested turns out to be statistically significant from zero. Other-regarding preferences are determined by the characteristics of the person rather than by her surroundings.

4.2. Inequity aversion

As so many respondents chose a corner solution, maximizing either equality or average income, we discarded the implied inequity aversion and subsistence income and instead converted the answers to the ideal income allocation into three classes: those who maximize total income and thus minimize equality, those who maximize equality and thus minimize total income, and those in between.

Table C.8 shows the regression results for ordered probit and logit models. We report results for all explanatory variables, and a stepwise exclusion of all insignificant variables. The latter results are reproduced in Table 1 for the ordered probit.

Respondents who were primed with the question "we should help people who are worse off than u" are more egalitarian. Respondents who answered the question for female names are more egalitarian but only if the incomes are centred around the 70th percentile of the UK income distribution.

Fong (2001) found that white, male, married, rich, and highly educated people are less in favour of income redistribution. Our data roughly agree.

Female respondents are more egalitarian, left-handed ones are more egalitarian. There is no significant relationship with age, place of last name in the alphabet, birth date, or location. Adherents to the Abrahamic religions are less egalitarian, Jews the least, followed by Muslims and Christians. People of mixed race are less egalitarian.

Respondents who grew up with younger siblings are egalitarian, but older siblings have no effect. There is no relationship with the number of own children.

Respondents with a higher income are less egalitarian, as are wealthier respondents. Respondents with a higher education, however, are more egalitarian. Students, the unemployed, homemakers and people in sales or administration are more egalitarian.

There is no relationship between egalitarianism and the time of day of the response, or the total time taken to complete the survey. However, people are more egalitarian on Fridays (or people who are more egalitarian prefer Fridays for responding to surveys).

4.3. Inequity aversion and social value orientation

Comparing the results of Table 1 for social value orientation and inequity aversion, we find some commonalities and some discrepancies. In both cases, framing matters. Interviewees respond to the priming questions, and show greater care for women. In both cases, there is relationship with gender, religion, number of younger siblings, wealth, education and occupation. There is no relationship with place in the alphabet, day of birth, ethnicity, or location. The discrepancies are age, income and handedness which are significant in one case but not in the other. This suggests that inequity aversion and social value orientation are related but different. Indeed, the former reflects preferences on the income distribution whereas the latter reflects preferences on the allocation of a windfall.

5. Willingness to pay for public goods

The survey also contained questions on public policy for education, pensions, climate, and health. These aspects are explored in more detail in companion papers. For this paper, we regress respondents' stated preferences for government spending on the same list of control variables as above, plus our measure for social value orientation and the interaction between SVO and the relevant personal characteristics. Specifically, for education, we interact SVO with a dummy variable that captures whether the respondent has children who would benefit from increased spending on primary, secondary or tertiary education. For pensions, we use dummies for the respondent having retired or being over 60 years of age. For climate, we use indicators for respondents' personal concern about climate change or climate policy. For health, we use variables for respondents' self-assessed health, their body-mass index derived from self-reported height and weight, and their alleged exercise regime.

In simple regressions, there is a positive and significant association between SVO and preferred public spending on secondary and tertiary education. Adding the interactions and base dummies (but no other controls) does not affect this for secondary and tertiary education. Primary school spending is affected: Respondents with children under 12 would like to see more government spending on primary schools, and this effect is stronger if such respondents are more selfish. These results remain when adding other controls, although the p-value for SVO drops to 7% in the regression for tertiary spending. In a stepwise general-to-specific regression, SVO is eliminated from the primary and tertiary regressions. For secondary education, respondents would like to see government invest £3.25 (s.e. 1.20) per

pupil per year more per degree of social value orientation. In words, altruistic respondents care more about secondary education. See Tables C.9, C.10 and C.11.

SVO or its interaction with age or being retired does not significantly contribute to the prediction of the desired level of the state pension either in a simple regression or in a multiple regression with all controls. However, SVO is statistically significant in a general-to-specific stepwise regression: Respondents want the state pension to fall by £0.21 (s.e. 0.07) per person per week per degree of social value orientation. The average SVO is 27°, which makes for £5 on the average weekly pension of £105. See Table C.12. There is no ready explanation for this economically and statistically significant result (albeit not statistically robust). Perhaps altruists argue that the government has done quite enough for retirees and should focus on other vulnerable groups instead.

Social value orientation does not directly affect stated preferences on the level of the carbon tax on heating or transport fuels. However, when interacted with immediate concern about climate change, SVO is significant. For a carbon tax on heating fuels, the pattern is robust. Those who are more altruistic and care more about the immediate impacts of climate change call for a higher excise. Evaluated at the sample means, the effect size is £3.54 per household per year. However, those who are more altruistic and are more concerned about the impacts of climate change rather than about climate policy, call for a lower tax. At the sample means, this is £4.32 per household per year. The difference between the two estimates is not statistically significant. For a carbon tax on transport fuels, SVO and SVO interacted with immediate concern for climate change are significant in some specifications but not in others. SVO interacted with concern for climate change over climate policy is statistically significant, robust and economically meaningful: At the sample mean, more altruistic respondents are willing to pay 14 (s.e. 5) pence per litre less per degree of social value orientation. Altruism is directed at the regressive effects of climate policy. See Tables C.13 and C.14.

Social value orientation has no statistically significant effect on preferred public spending on health care, either alone or interacted with own health. Respondents do not see public health as a redistributive policy, perhaps because income-differentiated health care is a distant memory in the UK. See Table C.15.

6. Discussion and Conclusion

We present the first large, representative survey of social value orientation. Our measure passes tests for ecological validity and concurrent validity, but there are concerns about internal validity: While respondents are consistent they are also somewhat affected by priming, and there are small but significant time-of-day and day-of-week effects. Unfortunately for experimentalists and in contrast to Exadaktylos et al. (2013), we find that students are significantly different from other parts of the population.

We find that more than half of our respondents heed the welfare of others. A third is selfish. Smaller groups maximize the other's welfare at their own expense, or maximize their advantage over the other. We relate our measure of social value orientation to a host of demographic variables. Although many explanatory variables are statistically significant, effect

sizes are generally small. That is, other-regarding preferences are either largely idiosyncratic or explained by factors we did not observe.

We find that respondents are more altruistic towards the young and the old, and towards women. Women are more altruistic, wealthier people less. People who have children or grew up with younger siblings are more altruistic, Muslims and Na'vi less. Professionals, managers, administrators and machine operators are less altruistic, students more. There is weaker evidence that left-handers, people further West, Buddhists and non-Whites are less altruistic. Effect sizes are small: A poor, female student with younger siblings is about 15° more altruistic, which is half the distance between individualistic and pro-social preferences.

We also measure who prefers a richer but more unequal society over a poorer but more equal society. This parameter is more immediately relevant for public policy, but harder to measure. It is highly correlated with the ring measure for social value orientation, and has roughly the same correlates, although education and religion are more important.

We find that more altruistic respondents want the government to spend more on secondary education and less on pensions, and argue for a higher carbon tax on transport fuels. There is no relationship between altruism and desired public spending on primary education, tertiary education, or health care.

We did not include policy variables in our regressions, so there are no immediate policy implications—and perhaps policy makers should not try to make people more or less altruistic (Sunstein, 2015). It has long been known that most people are not purely selfish. Our paper contributes to the understanding of heterogeneity in other-regarding preferences. There are no policy implications there either, but it may inform electoral and marketing strategies.

Future research should replicate the current survey for other countries to see which correlates are universally human and which are culture-specific. The survey and experiments should be extended to include personality traits, and pay closer attention to altruism towards people from one's own group and towards outsiders. Our measurement of inequity aversion can be improved upon.

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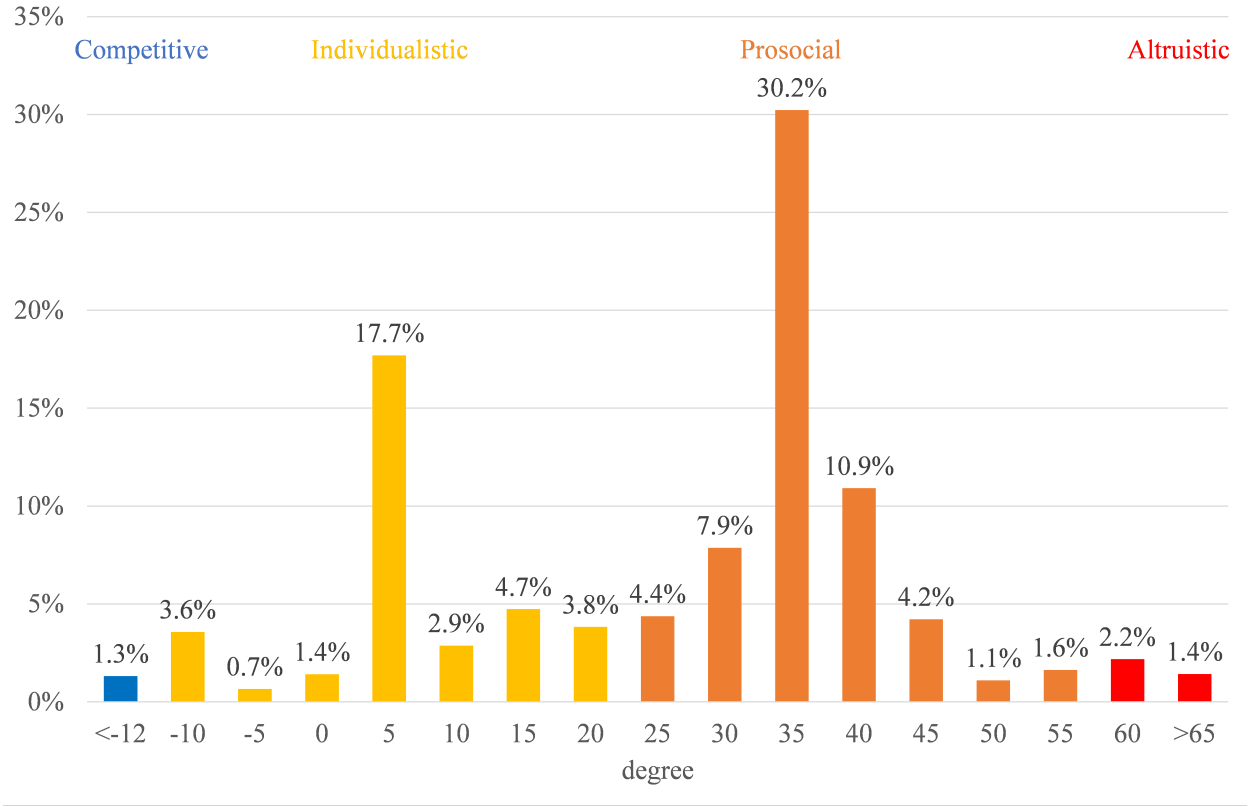

Figure 1: Histogram of the ring measure of social value orientation.

Table 1: Regression results

	SVO	altruist	prosocial	individualist	competitive	ineq
Respondent demographics						
male				0.160***		
				(0.0261)		
female	2.037***		0.175***		-0.307***	0.193***
	(0.325)		(0.0260)		(0.0741)	(0.0228)
age		0.00461**	-0.00279***	0.00201**		
		(0.00191)	(0.000975)	(0.000984)		
left-handed		-0.199**		0.0762**		-0.0771**
		(0.0830)		(0.0359)		(0.0310)
Children	0.254**		0.0317***	-0.0367***	0.0701***	
	(0.127)		(0.0106)	(0.0108)	(0.0260)	
Younger siblings	0.409***	0.0457**			-0.0761**	
	(0.135)	(0.0205)			(0.0352)	
latitude					0.0646***	
					(0.0218)	
longitude			-0.0146***			

Table 1—continued from previous page

	SVO	altruist	prosocial	individualist	competitive	ineq
			(0.00454)			
income	-0.166**					-0.116**
	(0.0721)					(0.048)
net assets	-0.152**		-0.0191***	0.0208***		-0.035***
	(0.0674)		(0.00499)	(0.00504)		(0.005)
Respondent ethnicity						
White British		-0.146**	0.106***	-0.0729**		
		(0.0644)	(0.0344)	(0.0350)		
Asian	1.620**					
	(0.816)					
Na'vi	-11.43***		-0.886**	1.080***		
	(4.221)		(0.372)	(0.371)		
Mixed						-0.193**
						(0.0815)
Other	3.882**					
	(1.744)					
Respondent religion						
Christian					-0.245**	-0.0963***
					(0.106)	(0.0225)
Muslim	-2.772**					-0.140**
	(1.087)					(0.0667)
Buddhist	-3.545**		-0.303**			
	(1.753)		(0.135)			
Jewish	-4.129**					-0.391***
	(2.081)					(0.140)
Agnostic					-0.383***	
					(0.134)	
None					-0.296**	
					(0.120)	
Respondent education						
GCSE						0.0899**
						(0.0402)
A levels		0.167***				0.107***
		(0.0613)				(0.0328)
bachelors					-0.304***	0.151***
					(0.108)	(0.0317)
professional	-2.239***		-0.181***	0.187***		
	(0.691)		(0.0539)	(0.0542)		
diploma						0.116***
						(0.0379)
masters						0.174***

Table 1—continued from previous page

	SVO	altruist	prosocial	individualist	competitive	ineq
						(0.0438)
Respondent occupation						
Manager	-2.985***		-0.314***	0.301***		
	(0.573)		(0.0454)	(0.0446)		
Administrative	-1.786***	-0.228**	-0.177***	0.195***		0.0823**
	(0.524)	(0.105)	(0.0428)	(0.0424)		(0.0368)
Professional	-1.181**		-0.135***	0.136***	0.192**	
	(0.493)		(0.0405)	(0.0398)	(0.0925)	
Machine	-4.416***		-0.325***	0.358***		
	(1.500)		(0.117)	(0.117)		
Skilled			-0.107**			
			(0.0522)			
Technical			-0.141**	0.165***		
			(0.0643)	(0.0638)		
Sales			-0.188***	0.162***		0.0978**
			(0.0558)	(0.0558)		(0.0480)
Other						0.183***
						(0.0439)
Student	7.069***	0.957***	-0.264***	-0.180***		0.152***
	(0.596)	(0.0784)	(0.0518)	(0.0533)		(0.0408)
Homemaker						0.157***
						(0.0457)
Unemployed						0.197***
						(0.0433)
Object characteristics						
female	2.954***	0.274***	0.133***	-0.161***		
	(0.316)	(0.0524)	(0.0248)	(0.0253)		
young	-3.926***	-0.603***	-0.103***	0.184***		
	(0.444)	(0.0731)	(0.0347)	(0.0353)		
middle	-4.010***	-0.646***	-0.106***	0.189***		
	(0.451)	(0.0791)	(0.0352)	(0.0358)		
old	1.841***		0.147***	-0.177***		
	(0.445)		(0.0352)	(0.0364)		
Rich female						0.126***
						(0.0217)
Survey characteristics						
primed	0.974***			-0.0728***		0.0731***
	(0.316)			(0.0253)		(0.0218)
Time			-3.42e-05***			
			(1.18e-05)			
H1		0.447**		-0.259**		

Table 1—continued from previous page

	SVO	altruist	prosocial	individualist	competitive	ineq
		(0.195)		(0.126)		
H8		0.268***				
		(0.0964)				
H12					0.262**	
					(0.128)	
H17				-0.135**		
				(0.0584)		
Friday						0.0807**
						(0.0344)
Constant 1						-0.571***
						(0.0368)
Constant 2						0.565***
						(0.0368)
Constant	25.30***	-2.074***	0.260***	-0.509***	-5.316***	
	(0.519)	(0.109)	(0.0613)	(0.0615)	(1.149)	
Observations	10,621	10,478	10,678	10,678	10,506	10,677
R^2	0.067					

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix A. Additional details on survey and experiment

Table A.2: Upper and lower bounds of pay-offs to decision-maker (self) and object (other) in the six dictator games in the survey, incentivised survey, and experiment.

Survey		Inc. Survey		Experiment	
Self	Other	Self	Other	Self	Other
£85-£50	£85-£100	£0.85-£0.50	£0.85-£1.00	17-17	17-3
£85-£50	£15-£100	£0.85-£0.50	£0.15-£1.00	17-20	3-10
£100-£85	£50-£85	£1.00-£0.85	£0.50-£0.85	10-17	20-17
£85-£85	£15-£85	£0.85-£0.85	£0.15-£0.85	10-17	20-3
£100-£50	£50-£100	£1.00-£0.50	£0.50-£1.00	10-20	20-10
£100-£85	£50-£15	£1.00-£0.85	£0.50-£0.15	17-20	17-10

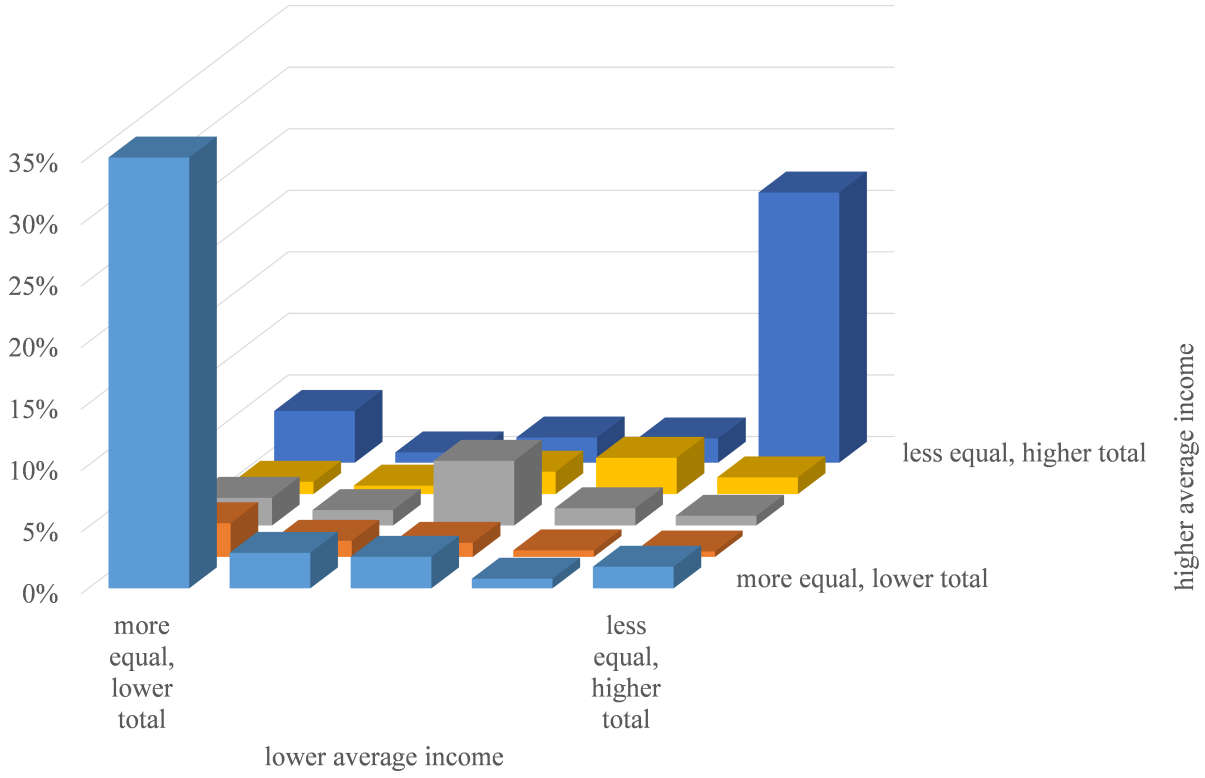

Figure A.2: Preferred income distribution at two levels of average income.

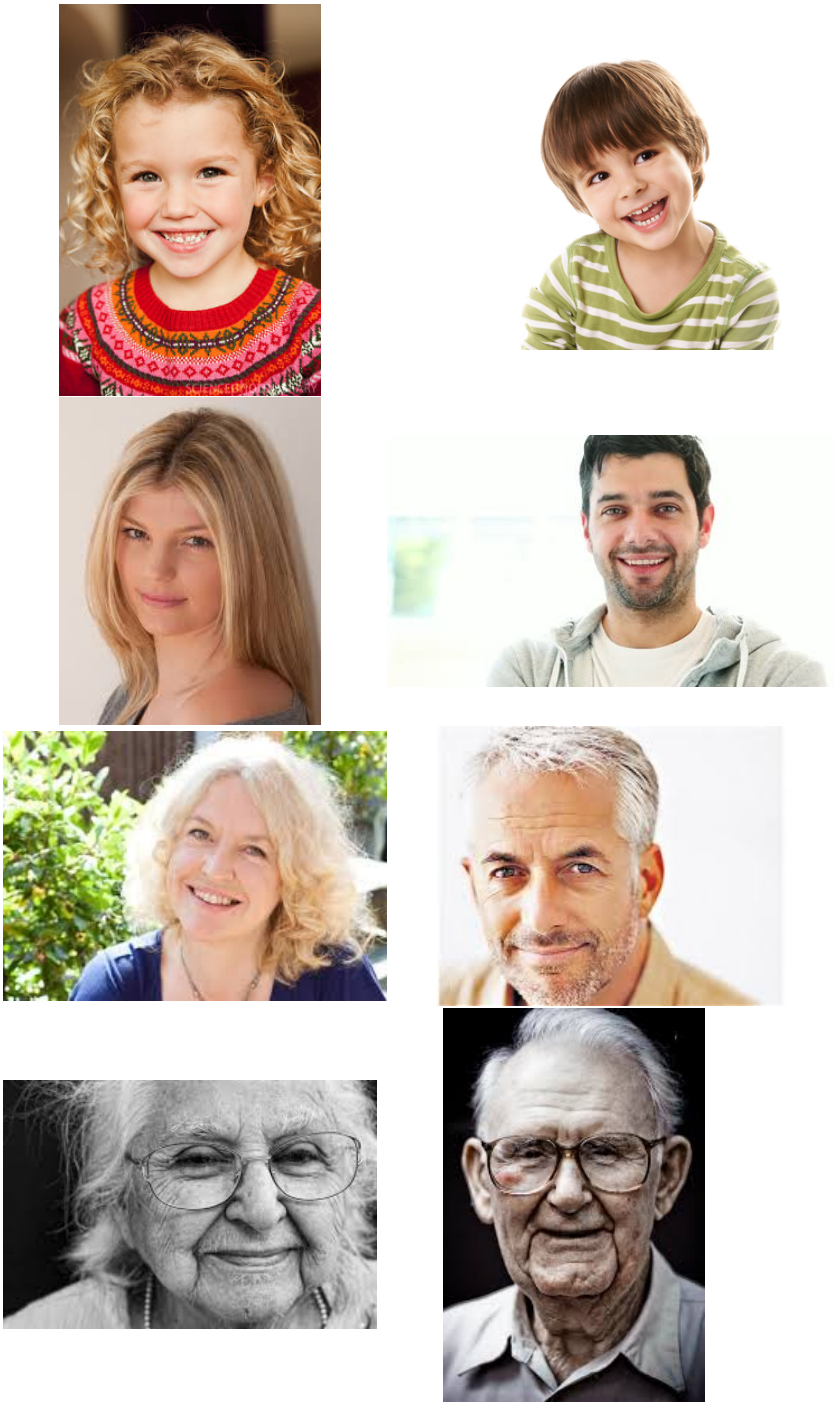

Figure A.3: Pictures of the objects in the dictator games in the survey. Subjects were shown one, randomly selected picture.

Appendix B. Validation

Table B.3: Tests for internal validity.

	(1) St.Dev.	(2) Box-Cox	(3) Range	(4) SVO	(5) St.Dev.	(6) Range
SVO	-0.0385***	-0.00115***	-0.0973***			
	(0.000869)	(1.90e-05)	(0.00227)			
t=Time				1.61e-06	-1.74e-05*	-4.97e-05**
				(1.06e-05)	(9.03e-06)	(2.35e-05)
Constant	6.443***	0.753***	17.74***	26.56***	5.453***	15.24***
	(0.0264)	(0.000577)	(0.0688)	(0.142)	(0.0149)	(0.0388)
Observations	14,045	14,045	14,045	14,327	14,045	14,045
R^2	0.123	0.208	0.116	0.000	0.000	0.000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: SVO = ring measure of social value orientation; St.Dev. = Jackknife standard deviation of the SVO; Box-Cox = its Box-Cox transformation; range = Jackknife range of the SVO; Time = time taken to play the six dictator games

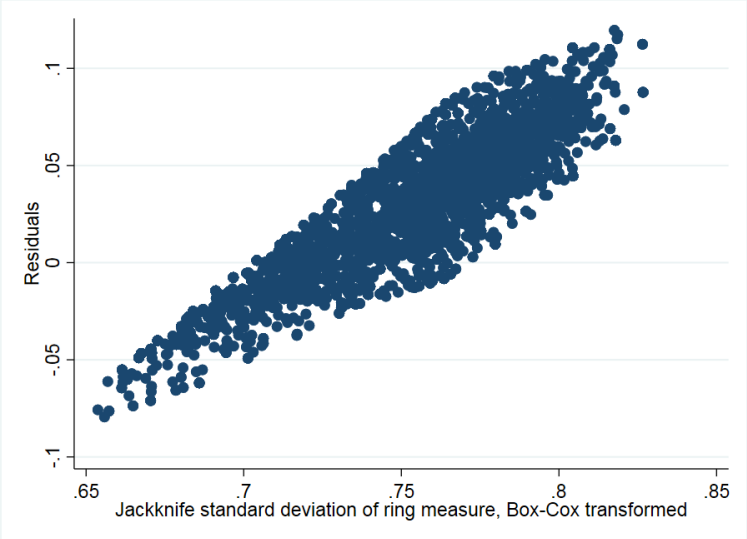

Figure B.4: Residuals against fitted values for the regression of the jackknife standard deviation for the ring measure of social value orientation raised to the power -1.17 on the ring measure of social value orientation. N=14,045.

Table B.4: Tests for concurrent validity.

	Survey	Inc. Survey	Experiment	N
Atkinson	0.0111***			13,962
	(0.000655)			
Equity (logit)	0.00976***			14,038
	(0.000558)			
Equity (probit)	0.0165***			14,038
	(0.000943)			
care	0.0421			7,222
	(0.529)			
redistribution	0.00564***			13,998
	(0.000579)			
fair share	0.00330***			13,997
	(0.000526)			
good cause		0.0515***		375
		(0.00794)		
donate		1.719**		373
		(0.704)		
public good		0.549***		372
		(0.116)		
altruism			2.813**	287
			(1.382)	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B.5: Tests for ecological validity.

	(1)	(2)	(3)
	Experiment	Inc. survey	Inc. survey
Survey	0.582***	-0.0231	
	(0.0679)	(0.0351)	
Experiment			0.670***
			(0.0617)
Observations	183	269	120
R^2	0.289	0.002	0.500

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix C. Additional results

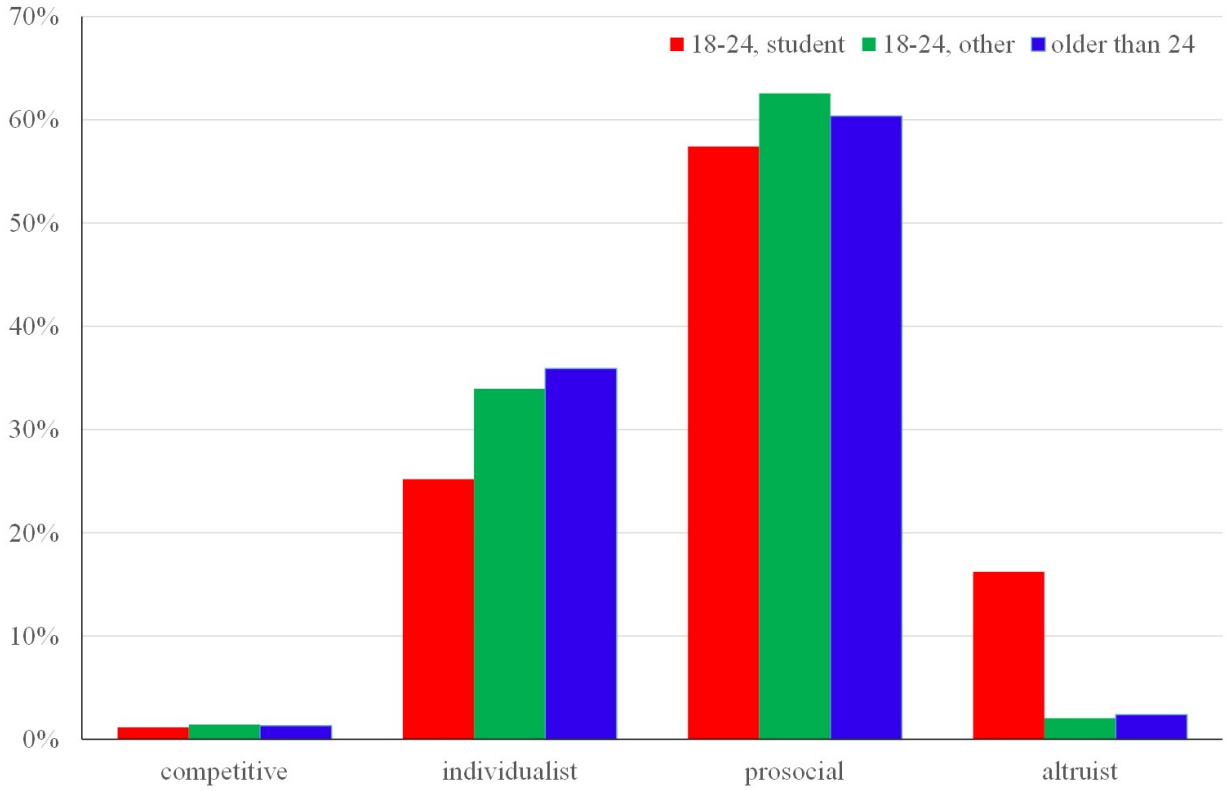

Figure C.5: Histogram of the ring measure of social value orientation by age and studentship.

Table C.6: Correlates of the ring measure of social value orientations.

	All observations		Time > 8s		Time > 16s	
	all	stepwise	all	stepwise	all	stepwise
Object characteristics						
female	2.907	2.900	2.928	2.940	3.061	3.083
	(9.14)**	(9.15)**	(9.13)**	(9.20)**	(9.31)**	(9.41)**
young	-3.905	-3.936	-3.930	-3.963	-4.218	-4.245
	(8.74)**	(8.83)**	(8.72)**	(8.81)**	(9.12)**	(9.21)**
middle	-4.013	-4.031	-4.007	-4.022	-4.069	-4.109
	(8.85)**	(8.92)**	(8.76)**	(8.82)**	(8.67)**	(8.79)**
old	1.822	1.817	1.894	1.892	2.023	2.011
	(4.07)**	(4.07)**	(4.20)**	(4.20)**	(4.37)**	(4.36)**
Respondent demographics						
male	0.055		-0.228		-0.528	
	(0.03)		(0.11)		(0.23)	

Table C.6—continued from previous page

	All observations		Time > 8s		Time > 16s	
	all	stepwise	all	stepwise	all	stepwise
female	1.934	2.046	1.611	2.064	1.130	1.933
	(0.98)	(6.29)**	(0.80)	(6.31)**	(0.49)	(5.78)**
age	-0.018		-0.021		-0.028	
	(1.26)		(1.42)		(1.83)	
left-handed	-0.858		-0.815		-0.696	
	(1.88)		(1.76)		(1.45)	
name	-0.010		-0.012		-0.005	
	(0.42)		(0.51)		(0.23)	
birthday	-0.001		-0.000		0.000	
	(0.19)		(0.15)		(0.13)	
longitude	0.005		0.001		0.008	
	(0.07)		(0.02)		(0.12)	
latitude	-0.140		-0.139		-0.171	
	(1.24)		(1.23)		(1.49)	
older siblings	-0.168		-0.175		-0.150	
	(1.31)		(1.36)		(1.12)	
younger siblings	0.449	0.412	0.450	0.454	0.466	0.490
	(3.28)**	(3.04)**	(3.27)**	(3.37)**	(3.28)**	(3.53)**
children	0.280	0.253	0.283		0.313	
	(2.01)*	(1.99)*	(2.02)*		(2.19)*	
income	-0.132	-0.163	-0.137	-0.163	-0.094	
	(1.77)	(2.26)*	(1.82)	(2.24)*	(1.21)	
net assets	-0.147	-0.152	-0.146	-0.155	-0.186	-0.234
	(2.06)*	(2.25)*	(2.01)*	(2.28)*	(2.49)*	(3.60)**
Respondent religion						
Christian	-0.578		-0.722		-0.389	
	(0.50)		(0.62)		(0.32)	
Muslim	-3.309	-2.765	-3.443	-2.789	-2.625	
	(2.09)*	(2.53)*	(2.14)*	(2.51)*	(1.53)	
Hindu	-0.923		-0.860		-0.237	
	(0.49)		(0.45)		(0.12)	
Sikh	-4.059		-4.069		-3.167	
	(1.52)		(1.50)		(1.07)	
Buddhist	-3.885		-3.596	-3.922	-3.512	-3.016
	(1.87)		(2.04)*	(1.87)	(1.98)*	(1.38)
Jewish	-4.528		-4.142	-4.669	-3.831	
	(1.90)		(1.98)*	(1.95)	(1.51)	
Jedi	0.345		0.192		0.870	
	(0.15)		(0.08)		(0.35)	
Other	0.294		0.149		0.218	

Table C.6—continued from previous page

	All observations		Time > 8s		Time > 16s	
	all	stepwise	all	stepwise	all	stepwise
	(0.19)		(0.10)		(0.14)	
Agnostic	-0.728		-0.926		-0.718	
	(0.61)		(0.77)		(0.58)	
None	-0.109		-0.291		-0.186	
	(0.09)		(0.24)		(0.15)	
Respondent ethnicity						
White British	1.909		1.975		3.259	
	(0.95)		(0.98)		(1.52)	
White other	2.368		2.472		3.560	
	(1.13)		(1.17)		(1.59)	
Asian	3.972		1.763	3.967	1.724	4.575
	(1.80)		(2.15)*	(1.78)	(2.08)*	(1.95)
Black	1.075		1.021		2.528	
	(0.47)		(0.44)		(1.04)	
Na'vi	-9.135	-11.466	-9.788	-12.916	-10.274	-14.619
	(1.93)	(2.71)**	(2.00)*	(2.95)**	(1.73)	(2.67)**
Mixed	1.561		1.593		2.621	
	(0.67)		(0.68)		(1.06)	
Other	5.955	3.959	5.952	3.834	7.326	
	(2.25)*	(2.26)*	(2.23)*	(2.16)*	(2.60)**	
Respondent education						
Craft	0.385		0.250		-0.123	
	(0.30)		(0.19)		(0.09)	
Some GCSE	0.454		0.544		0.463	
	(0.44)		(0.52)		(0.43)	
GCSE	1.314		1.311		1.406	1.155
	(1.21)		(1.20)		(1.24)	(2.08)*
A-levels	0.472		0.555		0.429	
	(0.46)		(0.53)		(0.40)	
diploma	1.198		1.244		1.107	
	(1.12)		(1.15)		(0.99)	
bachelor's	0.353		0.410		0.246	
	(0.34)		(0.39)		(0.23)	
professional	-1.630	-2.243	-1.573	-2.207	-1.941	-2.377
	(1.36)	(3.24)**	(1.31)	(3.16)**	(1.57)	(3.34)**
master's	0.022		0.087		0.012	
	(0.02)		(0.08)		(0.01)	
PhD	0.161		0.219		-0.475	
	(0.10)		(0.14)		(0.28)	
Respondent occupation						

Table C.6—continued from previous page

	All observations		Time > 8s		Time > 16s	
	all	stepwise	all	stepwise	all	stepwise
Manager	-3.685	-2.993	-3.760	-3.059	-3.553	-3.042
	(4.72)**	(5.21)**	(4.78)**	(5.26)**	(4.40)**	(5.20)**
Professional	-1.790	-1.187	-1.864	-1.338	-1.986	-1.466
	(2.43)*	(2.40)*	(2.51)*	(2.69)**	(2.62)**	(2.93)**
Technical	-1.880		-1.873		-1.885	
	(1.93)		(1.90)		(1.84)	
Administrative	-2.479	-1.790	-2.448	-1.826	-2.600	-1.951
	(3.35)**	(3.41)**	(3.29)**	(3.47)**	(3.43)**	(3.65)**
Skilled	-1.255		-1.293		-1.430	
	(1.51)		(1.54)		(1.66)	
Carer	0.986		1.026		0.916	
	(0.81)		(0.84)		(0.72)	
Sales	-1.662		-1.694		-1.848	
	(1.87)		(1.89)		(2.03)*	
Machine	-5.064	-4.410	-5.091	-4.539	-5.936	-5.237
	(3.17)**	(2.93)**	(3.16)**	(2.98)**	(3.50)**	(3.26)**
Other	-0.948		-1.003		-1.114	
	(1.15)		(1.21)		(1.32)	
Student	6.311	7.345	6.243	7.047	6.298	7.361
	(6.81)**	(12.29)**	(6.69)**	(12.10)**	(6.59)**	(12.51)**
Homemaker	-0.329		-0.345		-0.440	
	(0.39)		(0.41)		(0.52)	
Unemployed	-0.022		0.010		-0.176	
	(0.03)		(0.01)		(0.21)	
Survey characteristics						
time	0.000		0.000		0.000	
	(0.06)		(0.02)		(0.01)	
primed	0.953	0.969	0.979	0.993	0.971	0.989
	(2.99)**	(3.06)**	(3.05)**	(3.11)**	(2.95)**	(3.02)**
Time of day						
H1	0.821		0.832		0.817	
	(0.33)		(0.34)		(0.32)	
H2	-2.117		-2.113		-1.310	
	(0.96)		(0.95)		(0.58)	
H3	-2.004		-1.936		-1.807	
	(0.96)		(0.92)		(0.85)	
H4	-1.970		-1.908		-1.445	
	(0.96)		(0.92)		(0.69)	
H5	-1.502		-1.506		-1.571	
	(0.73)		(0.73)		(0.75)	

Table C.6—continued from previous page

	All observations		Time > 8s		Time > 16s	
	all	stepwise	all	stepwise	all	stepwise
H6	-2.461		-2.448		-2.276	
	(1.20)		(1.19)		(1.09)	
H7	-2.296		-2.315		-2.411	
	(1.12)		(1.12)		(1.15)	
H8	-0.819		-0.786		-0.494	
	(0.40)		(0.38)		(0.23)	
H9	-2.936		-2.920		-2.581	
	(1.42)		(1.41)		(1.23)	
H10	-2.423		-2.367		-2.336	
	(1.18)		(1.15)		(1.11)	
H11	-3.373		-3.414		-3.298	
	(1.64)		(1.66)		(1.57)	
H12	-3.370		-3.274		-3.010	
	(1.63)		(1.58)		(1.43)	
H13	-2.556		-2.537		-2.099	
	(1.25)		(1.23)		(1.00)	
H14	-3.255		-3.249		-2.976	
	(1.59)		(1.58)		(1.43)	
H15	-2.652		-2.632		-1.991	
	(1.30)		(1.29)		(0.96)	
H16	-2.438		-2.430		-2.102	
	(1.19)		(1.18)		(1.00)	
H17	-1.144		-0.986		-0.841	
	(0.55)		(0.47)		(0.40)	
H18	-2.065		-2.064		-1.780	
	(0.98)		(0.98)		(0.83)	
H19	-2.203		-2.185		-2.297	
	(1.00)		(0.99)		(1.02)	
H20	-1.614		-1.556		-1.605	
	(0.69)		(0.66)		(0.67)	
H21	-1.811		-1.821		-1.591	
	(0.64)		(0.64)		(0.54)	
H22	-3.126		-3.087		-3.032	
	(1.15)		(1.13)		(1.09)	
H23	-1.745		-1.817		-1.204	
	(0.61)		(0.63)		(0.40)	
Day of week						
Tue	-0.020		-0.018		0.022	
	(0.03)		(0.03)		(0.03)	
Wed	-0.175		-0.202		-0.414	

Table C.6—continued from previous page

	All observations		Time > 8s		Time > 16s	
	all	stepwise	all	stepwise	all	stepwise
	(0.27)		(0.31)		(0.62)	
Thu	-0.616		-0.622		-0.643	
	(1.00)		(1.00)		(1.01)	
Fri	-0.126		-0.025		-0.227	
	(0.19)		(0.04)		(0.34)	
Sat	-0.057		-0.003		-0.106	
	(0.10)		(0.01)		(0.19)	
Sun	-0.521		-0.529		-0.595	
	(0.88)		(0.88)		(0.97)	
cons	34.878	25.324	35.285	25.591	36.171	25.394
	(5.16)**	(48.63)**	(5.18)**	(49.99)**	(5.09)**	(50.80)**
R^2	0.07	0.07	0.07	0.07	0.08	0.07
N	10,621	10,621	10,505	10,505	10,028	10,028

* $p < 0.05$; ** $p < 0.01$

Table C.7: Correlates of the four classes of social value orientations.

	altruism		prosocial		individualist		competitive	
	all	stepwise	all	stepwise	all	stepwise	all	stepwise
Object characteristics								
female	0.260	0.254	0.140	0.136	-0.163	-0.161	-0.149	
	(4.89)**	(4.89)**	(5.63)**	(5.50)**	(6.42)**	(6.38)**	(2.00)*	
young	-0.570	-0.580	-0.104	-0.104	0.184	0.184	0.196	
	(7.16)**	(8.05)**	(2.97)**	(3.01)**	(5.20)**	(5.20)**	(1.88)	
middle	-0.643	-0.642	-0.108	-0.105	0.191	0.189	0.111	
	(7.42)**	(8.14)**	(3.06)**	(2.98)**	(5.32)**	(5.28)**	(1.01)	
old	0.034		0.148	0.148	-0.178	-0.177	0.003	
	(0.55)		(4.18)**	(4.19)**	(4.88)**	(4.87)**	(0.03)	
Respondent demographics								
male	-0.115		-0.050		0.091	0.160	-0.400	
	(0.38)		(0.33)		(0.59)	(6.13)**	(1.15)	
female	-0.208		0.132	0.175	-0.070		-0.707	-0.307
	(0.68)		(0.86)	(6.76)**	(0.45)		(2.00)*	(4.14)**
age	0.003		-0.003	-0.003	0.003	0.002	-0.002	
	(1.09)		(2.36)*	(2.85)**	(2.15)*	(2.05)*	(0.73)	
left-handed	-0.195	-0.197	-0.029		0.075	0.076	-0.104	
	(2.31)*	(2.39)*	(0.82)		(2.07)*	(2.12)*	(0.93)	
name	-0.001		-0.001		0.001		-0.000	
	(0.32)		(0.77)		(0.70)		(0.07)	
birthday	-0.000		-0.000		0.000		0.001	
	(0.08)		(0.49)		(0.18)		(1.19)	
longitude	0.006		-0.014	-0.015	0.004		-0.011	
	(0.86)		(2.71)**	(3.22)**	(0.82)		(0.42)	
latitude	-0.021		0.003		-0.005		0.051	0.065
	(1.21)		(0.37)		(0.50)		(1.86)	(2.96)**
older siblings	-0.020		-0.003		0.002		0.040	
	(0.91)		(0.34)		(0.18)		(1.48)	
younger siblings	0.052	0.050	0.015		-0.020		-0.076	-0.076
	(2.43)*	(2.42)*	(1.36)		(1.81)		(2.07)*	(2.16)*
children	0.001		0.030	0.032	-0.037	-0.037	0.074	0.070
	(0.06)		(2.74)**	(2.99)**	(3.27)**	(3.41)**	(2.38)*	(2.70)**
income	0.003		-0.005		0.003		0.020	
	(0.25)		(0.83)		(0.47)		(1.23)	
net assets	0.001		-0.016	-0.019	0.018	0.021	-0.018	
	(0.07)		(2.91)**	(3.88)**	(3.25)**	(4.14)**	(0.97)	
Respondent religion								
Christian	-0.150		-0.030		0.086		-0.290	-0.245
	(0.92)		(0.34)		(0.92)		(1.31)	(2.32)*

Table C.7—continued from previous page

	altruism		prosocial		individualist		competitive	
	all	stepwise	all	stepwise	all	stepwise	all	stepwise
Muslim	-0.164		-0.106		0.168		0.315	
	(0.76)		(0.86)		(1.32)		(1.06)	
Hindu	-0.409		0.004		0.103		0.000	
	(1.42)		(0.03)		(0.68)			
Sikh	-0.723		-0.211		0.366		0.231	
	(1.33)		(1.02)		(1.74)		(0.45)	
Buddhist	-0.064		-0.339	-0.299	0.321		0.044	
	(0.22)		(2.10)*	(2.21)*	(1.96)		(0.11)	
Jewish	0.000		-0.245		0.182		0.140	
	(0.00)		(1.33)		(0.97)		(0.34)	
Jedi	-0.428		0.220		-0.142		0.004	
	(1.00)		(1.22)		(0.77)		(0.01)	
Other	-0.227		0.051		0.042		-0.761	
	(0.95)		(0.42)		(0.34)		(1.68)	
Agnostic	-0.182		-0.059		0.131		-0.439	-0.383
	(1.08)		(0.64)		(1.36)		(1.84)	(2.86)**
None	-0.088		-0.018		0.065		-0.364	-0.296
	(0.54)		(0.19)		(0.68)		(1.58)	(2.46)*
Respondent ethnicity								
White British	-0.158	-0.180	0.218	0.111	-0.280	-0.073	3.668	
	(0.58)	(2.78)**	(1.39)	(3.22)**	(1.78)	(2.08)*	(0.02)	
White other	-0.057		0.129		-0.241		3.773	
	(0.20)		(0.79)		(1.47)		(0.03)	
Asian	0.121		0.131		-0.295		3.471	
	(0.41)		(0.77)		(1.70)		(0.02)	
Black	-0.327	-0.404	0.134		-0.163		3.337	
	(0.98)	(2.02)*	(0.75)		(0.91)		(0.02)	
Na'vi	0.000		-0.839	-0.879	0.887	1.080	0.000	
			(2.06)*	(2.36)*	(2.20)*	(2.91)**		
Mixed	0.202		-0.020		-0.124		3.660	
	(0.66)		(0.11)		(0.68)		(0.02)	
Other	0.179		0.298		-0.460		3.648	
	(0.53)		(1.44)		(2.17)*		(0.02)	
Respondent education								
Craft	-0.294		0.013		0.016		0.052	
	(1.25)		(0.13)		(0.15)		(0.19)	
Some GCSE	-0.104		0.013		0.001		0.075	
	(0.62)		(0.16)		(0.01)		(0.35)	
GCSE	0.038		0.064		-0.058		-0.155	
	(0.22)		(0.74)		(0.65)		(0.65)	

Table C.7—continued from previous page

	altruism		prosocial		individualist		competitive	
	all	stepwise	all	stepwise	all	stepwise	all	stepwise
A-levels	0.072		-0.046		0.030		-0.016	
	(0.45)		(0.57)		(0.36)		(0.07)	
diploma	-0.059		0.039		-0.022		-0.182	
	(0.35)		(0.46)		(0.25)		(0.77)	
bachelor's	-0.065		-0.020		0.047		-0.340	-0.304
	(0.40)		(0.24)		(0.55)		(1.46)	(2.81)**
professional	-0.141		-0.178	-0.181	0.204	0.187	-0.073	
	(0.70)		(1.90)	(3.36)**	(2.14)*	(3.44)**	(0.29)	
master's	-0.164		-0.050		0.067		-0.018	
	(0.88)		(0.56)		(0.73)		(0.08)	
PhD	-0.134		0.068		-0.060		-0.253	
	(0.49)		(0.54)		(0.47)		(0.68)	
Respondent occupation								
Manager	-0.103		-0.279	-0.313	0.298	0.301	0.140	
	(0.80)		(4.59)**	(6.88)**	(4.83)**	(6.74)**	(0.77)	
Professional	-0.244	-0.192	-0.096	-0.134	0.127	0.136	0.254	0.192
	(1.87)	(2.16)*	(1.66)	(3.32)**	(2.15)*	(3.42)**	(1.47)	(2.07)*
Technical	-0.196		-0.105	-0.140	0.162	0.165	-0.205	
	(1.15)		(1.37)	(2.18)*	(2.10)*	(2.59)**	(0.77)	
Administrative	-0.345	-0.251	-0.152	-0.177	0.206	0.195	0.080	
	(2.51)*	(2.39)*	(2.62)**	(4.14)**	(3.50)**	(4.60)**	(0.43)	
Skilled	-0.038		-0.090	-0.107	0.092		0.040	
	(0.27)		(1.37)	(2.05)*	(1.39)		(0.21)	
Carer	-0.157		0.112		-0.109		0.163	
	(0.71)		(1.14)		(1.09)		(0.58)	
Sales	0.037		-0.167	-0.188	0.176	0.162	-0.126	
	(0.26)		(2.40)*	(3.37)**	(2.48)*	(2.91)**	(0.52)	
Machine	0.000		-0.310	-0.324	0.380	0.358	0.208	
			(2.50)*	(2.77)**	(3.05)**	(3.07)**	(0.68)	
Other	-0.173		-0.012		0.045		-0.017	
	(1.19)		(0.19)		(0.68)		(0.08)	
Student	0.812	0.915	-0.231	-0.280	-0.178	-0.180	-0.097	
	(5.81)**	(14.32)**	(3.20)**	(5.41)**	(2.38)*	(3.39)**	(0.41)	
Homemaker	-0.185		-0.028		0.061		0.129	
	(1.25)		(0.42)		(0.90)		(0.65)	
Unemployed	-0.126		0.041		-0.037		0.193	
	(0.90)		(0.64)		(0.56)		(1.02)	
Survey characteristics								
time	0.000		-0.000	-0.000	0.000		-0.000	
	(0.36)		(2.30)*	(2.88)**	(0.53)		(0.34)	

Table C.7—continued from previous page

	altruism		prosocial		individualist		competitive	
	all	stepwise	all	stepwise	all	stepwise	all	stepwise
primed	0.091		0.047		-0.071	-0.073	0.022	
	(1.74)		(1.87)		(2.77)**	(2.88)**	(0.30)	
Time of day								
H1	0.742	0.463	0.040		-0.189	-0.259	-0.075	
	(1.54)	(2.37)*	(0.21)		(0.95)	(2.05)*	(0.13)	
H2	0.440		-0.078		0.043		-0.043	
	(0.93)		(0.45)		(0.24)		(0.08)	
H3	0.214		-0.021		-0.045		0.338	
	(0.46)		(0.13)		(0.27)		(0.74)	
H4	0.391		-0.075		0.012		0.039	
	(0.86)		(0.46)		(0.07)		(0.08)	
H5	0.411		-0.126		0.057		0.162	
	(0.90)		(0.78)		(0.35)		(0.35)	
H6	0.476	0.202	-0.171		0.075		0.270	
	(1.06)	(2.09)*	(1.06)		(0.46)		(0.59)	
H7	0.226		-0.089		0.070		-0.101	
	(0.50)		(0.55)		(0.43)		(0.21)	
H8	0.567	0.293	-0.077		-0.003		-0.058	
	(1.26)	(3.05)**	(0.47)		(0.02)		(0.12)	
H9	0.249		-0.152		0.147		-0.558	
	(0.55)		(0.94)		(0.89)		(1.03)	
H10	0.098		-0.033		0.040		0.049	
	(0.21)		(0.20)		(0.25)		(0.11)	
H11	0.270		-0.193		0.146		0.287	
	(0.59)		(1.20)		(0.89)		(0.63)	
H12	0.075		-0.084		0.079		0.356	0.262
	(0.16)		(0.52)		(0.48)		(0.78)	(2.04)*
H13	0.357		-0.135		0.120		-0.029	
	0.79)		(0.84)		(0.74)		(0.06)	
H14	0.195		-0.092		0.083		0.110	
	(0.43)		(0.57)		(0.51)		(0.24)	
H15	0.412		-0.174		0.104		0.182	
	(0.91)		(1.09)		(0.64)		(0.40)	
H16	0.348		-0.132		0.097		-0.139	
	(0.77)		(0.82)		(0.59)		(0.29)	
H17	0.334		0.019		-0.064	-0.135	0.015	
	(0.73)		(0.12)		(0.39)	(2.31)*	(0.03)	
H18	0.360		-0.094		0.051		-0.197	
	(0.79)		(0.57)		(0.30)		(0.40)	
H19	-0.042		-0.032		0.071		-0.342	

Table C.7—continued from previous page

	altruism		prosocial		individualist		competitive	
	all	stepwise	all	stepwise	all	stepwise	all	stepwise
	(0.09)		(0.18)		(0.40)		(0.61)	
H20	0.397		-0.075		0.025		0.011	
	(0.82)		(0.40)		(0.13)		(0.02)	
H21	0.000		0.026		-0.060		0.571	
			(0.12)		(0.27)		(1.09)	
H22	0.462		-0.094		-0.027		0.544	
	(0.90)		(0.44)		(0.12)		(1.03)	
H23	0.450		-0.117		0.029		0.465	
	(0.81)		(0.52)		(0.13)		(0.84)	
Day of week								
Tue	-0.166		0.072		0.002		-0.190	
	(1.58)		(1.40)		(0.03)		(1.18)	
Wed	-0.193		0.098		-0.024		-0.131	
	(1.86)		(1.93)		(0.46)		(0.87)	
Thu	-0.178		0.031		0.025		-0.021	
	(1.86)		(0.64)		(0.50)		(0.15)	
Fri	-0.194		0.110		-0.049		0.058	
	(1.89)		(2.17)*		(0.95)		(0.41)	
Sat	-0.084		0.061		-0.012		-0.101	
	(1.01)		(1.42)		(0.27)		(0.82)	
Sun	-0.208		0.037		0.037		-0.187	
	(2.20)*		(0.80)		(0.78)		(1.33)	
cons	-0.612	-1.785	0.079	0.254	-0.194	-0.509	-7.905	-5.316
	(0.58)	(22.89)**	(0.15)	(4.14)**	(0.36)	(8.28)**	(0.05)	(4.63)**
N	10,478	10,478	10,678	10,678	10,678	10,678	10,506	10,506

* $p < 0.05$; ** $p < 0.01$

Table C.8: Regression results for respondents who maximise equality (2), who maximise total income (0), and who make a trade-off (1) for ordered probit and ordered logit, and for all explanatory variables and all significant explanatories.

	probit		logit	
	all	stepwise	all	stepwise
Object characteristics				
Rich female	0.124	0.126	0.210	0.213
	(5.70)**	(5.80)**	(5.78)**	(5.87)**
Poor female	0.003		0.006	
	(0.12)		(0.17)	
Respondent demographics				
male	0.154		0.239	
	(1.15)		(1.09)	
female	0.331	0.193	0.528	0.314
	(2.48)*	(8.47)**	(2.40)*	(8.24)**
age	-0.000		0.000	
	(0.21)		(0.16)	
left-handed	-0.075	-0.077	-0.131	-0.137
	(2.41)*	(2.49)*	(2.54)*	(2.69)**
name	-0.001		-0.002	
	(0.67)		(0.72)	
birthday	-0.000		-0.000	
	(0.45)		(0.38)	
longitude	0.000		0.000	
	(0.02)		(0.06)	
latitude	-0.001		-0.000	
	(0.17)		(0.02)	
older siblings	-0.003		-0.005	
	(0.30)		(0.33)	
younger siblings	0.018		0.032	0.032
	(1.92)		(2.01)*	(2.04)*
children	0.013		0.019	
	(1.36)		(1.20)	
income	-0.000	-0.000	-0.000	-0.000
	(2.06)*	(2.41)*	(1.99)*	(2.40)*
net assets	-0.000	-0.000	-0.000	-0.000
	(7.31)**	(7.48)**	(7.30)**	(7.42)**
Respondent religion				
Christian	-0.134	-0.096	-0.223	-0.160
	(1.68)	(4.28)**	(1.70)	(4.26)**
Muslim	-0.188	-0.140	-0.318	-0.256
	(1.75)	(2.11)*	(1.82)	(2.38)*

Table C.8—continued from previous page

	probit		logit	
	all	stepwise	all	stepwise
Hindu	-0.200		-0.340	
	(1.56)		(1.63)	
Sikh	-0.053		-0.091	
	(0.29)		(0.32)	
Buddhist	0.054		0.076	
	(0.38)		(0.33)	
Jewish	-0.421	-0.391	-0.677	-0.623
	(2.63)**	(2.79)**	(2.63)**	(2.79)**
Jedi	-0.084		-0.152	
	(0.55)		(0.63)	
Other	-0.040		-0.057	
	(0.38)		(0.32)	
Agnostic	-0.005		-0.015	
	(0.07)		(0.11)	
None	-0.047		-0.074	
	(0.58)		(0.56)	
Respondent ethnicity				
White British	0.061		0.106	
	(0.44)		(0.46)	
White other	0.053		0.092	
	(0.37)		(0.38)	
Asian	0.076		0.127	
	(0.51)		(0.51)	
Black	-0.057		-0.090	
	(0.36)		(0.35)	
Na'vi	-0.078		-0.084	
	(0.25)		(0.16)	
Mixed	-0.135	-0.193	-0.198	-0.310
	(0.85)	(2.37)*	(0.75)	(2.30)*
Other	0.027		0.060	
	(0.15)		(0.20)	
Respondent education				
Craft	0.102		0.160	
	(1.14)		(1.08)	
Some GCSE	0.065		0.100	
	(0.92)		(0.85)	
GCSE	0.153	0.090	0.250	0.151
	(2.05)*	(2.24)*	(2.00)*	(2.26)*
A-levels	0.173	0.107	0.287	0.185
	(2.45)*	(3.26)**	(2.42)*	(3.37)**

Table C.8—continued from previous page

	probit		logit	
	all	stepwise	all	stepwise
diploma	0.181	0.116	0.290	0.191
	(2.46)*	(3.06)**	(2.37)*	(3.03)**
bachelor's	0.221	0.151	0.362	0.256
	(3.10)**	(4.77)**	(3.04)**	(4.84)**
professional	0.033		0.045	
	(0.40)		(0.32)	
master's	0.241	0.174	0.398	0.294
	(3.09)**	(3.97)**	(3.04)**	(4.01)**
PhD	0.155		0.256	
	(1.43)		(1.42)	
Respondent occupation				
Manager	-0.090		-0.146	
	(1.68)		(1.61)	
Professional	-0.020		-0.023	
	(0.38)		(0.27)	
Technical	-0.044		-0.074	
	(0.67)		(0.66)	
Administrative	0.051	0.082	0.091	0.140
	(1.00)	(2.24)*	(1.05)	(2.28)*
Skilled	-0.072		-0.124	
	(1.26)		(1.30)	
Carer	0.025		0.050	
	(0.30)		(0.36)	
Sales	0.061	0.098	0.112	0.167
	(1.00)	(2.04)*	(1.08)	(2.10)*
Machine	-0.094		-0.154	
	(0.86)		(0.83)	
Other	0.151	0.183	0.269	0.316
	(2.66)**	(4.17)**	(2.81)**	(4.28)**
Student	0.125	0.152	0.210	0.243
	(1.98)*	(3.72)**	(1.99)*	(3.61)**
Homemaker	0.123	0.157	0.225	0.275
	(2.13)*	(3.44)**	(2.31)*	(3.60)**
Unemployed	0.168	0.197	0.304	0.347
	(2.96)**	(4.55)**	(3.18)**	(4.77)**
Survey characteristics				
Time	0.000		0.000	
	(0.17)		(0.23)	
primed	0.073	0.073	0.120	0.121
	(3.33)**	(3.36)**	(3.30)**	(3.33)**

Table C.8—continued from previous page

	probit		logit	
	all	stepwise	all	stepwise
Time of day				
H1	-0.041		-0.079	
	(0.24)		(0.27)	
H2	-0.191		-0.338	
	(1.25)		(1.31)	
H3	-0.101		-0.180	
	(0.70)		(0.74)	
H4	-0.074		-0.150	
	(0.52)		(0.62)	
H5	-0.170		-0.309	
	(1.19)		(1.28)	
H6	-0.144		-0.256	
	(1.02)		(1.07)	
H7	-0.156		-0.280	
	(1.10)		(1.17)	
H8	-0.087		-0.167	
	(0.61)		(0.70)	
H9	-0.083		-0.158	
	(0.58)		(0.66)	
H10	-0.076		-0.151	
	(0.53)		(0.63)	
H11	-0.092		-0.176	
	(0.65)		(0.73)	
H12	-0.106		-0.196	
	(0.74)		(0.82)	
H13	-0.043		-0.089	
	(0.30)		(0.37)	
H14	-0.093		-0.178	
	(0.66)		(0.75)	
H15	-0.108		-0.196	
	(0.77)		(0.83)	
H16	-0.048		-0.097	
	(0.34)		(0.40)	
H17	-0.091		-0.170	
	(0.63)		(0.70)	
H18	-0.080		-0.152	
	(0.55)		(0.62)	
H19	-0.102		-0.202	
	(0.68)		(0.79)	
H20	-0.174		-0.309	

Table C.8—continued from previous page

	probit		logit	
	all	stepwise	all	stepwise
	(1.07)		(1.14)	
H21	-0.002		-0.017	
	(0.01)		(0.05)	
H22	-0.253		-0.443	
	(1.36)		(1.42)	
H23	-0.160		-0.259	
	(0.81)		(0.77)	
Day of week				
Tue	-0.030		-0.049	
	(0.67)		(0.65)	
Wed	-0.002		-0.003	
	(0.05)		(0.05)	
Thu	-0.003		-0.014	
	(0.08)		(0.20)	
Fri	0.073	0.081	0.117	0.132
	(1.63)	(2.34)*	(1.57)	(2.31)*
Sat	-0.032		-0.056	
	(0.85)		(0.90)	
Sun	0.006		0.003	
	(0.15)		(0.05)	
Cons1	-0.552	-0.571	-0.820	-0.907
	(1.20)	(15.54)**	(1.07)	(14.41)**
Cons2	0.587	0.565	1.047	0.954
	(1.28)	(15.37)**	(1.37)	(15.15)**
N	10,677	10,677	10,677	10,677

* $p < 0.05$; ** $p < 0.01$

Table C.9: How much should the government spend on primary education?

	(1)	(2)	(3)	(4)
SVO	0.690	2.005	2.206	
	(1.086)	(1.219)	(1.401)	
Children		311.7***	250.8***	111.5**
		(81.76)	(95.63)	(48.51)
SVO * children		-5.665**	-6.564**	
		(2.678)	(2.962)	
Controls	No	No	All	Select
Observations	6,634	6,634	5,217	5,217
R^2	0.000	0.003	0.046	0.033

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.10: How much should the government spend on secondary education?

	(1)	(2)	(3)	(4)
SVO	4.309***	4.737***	3.963***	3.254***
	(1.057)	(1.239)	(1.436)	(1.202)
Children		70.34	48.43	
		(73.10)	(87.06)	
SVO * children		-1.448	-1.726	
		(2.378)	(2.672)	
Controls	No	No	All	Select
Observations	6,631	6,631	5,217	5,217
R^2	0.003	0.003	0.031	0.020

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.11: How much should the government spend on tertiary education?

	(1)	(2)	(3)	(4)
SVO	5.599***	6.596***	3.268*	
	(1.280)	(1.557)	(1.814)	
Children		-45.77	-25.20	
		(84.65)	(103.6)	
SVO * children		-3.628	-1.950	
		(2.737)	(3.075)	
Controls	No	No	All	Select
Observations	6,632	6,632	5,217	5,217
R^2	0.003	0.005	0.044	0.032

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.12: How high should the state pension be?

	(1)	(2)	(3)	(4)	(5)	(6)
SVO	-0.0912	-0.164	-0.0955	-0.0744	-0.290	-0.212***
	(0.0630)	(0.163)	(0.0710)	(0.0666)	(0.243)	(0.0675)
Age		-1.013***			-1.359***	-1.216***
		(0.120)			(0.222)	(0.118)
SVO * age		0.000134			0.00298	
		(0.00373)			(0.00676)	
pension			-24.77***		11.08	9.933**
			(4.638)		(8.516)	(4.257)
SVO * pension			-0.0763		-0.00795	
			(0.150)		(0.276)	
Retired				-24.85***	10.52	
				(6.193)	(9.329)	
SVO * retired				-0.167	-0.218	
				(0.198)	(0.273)	
Controls	No	No	No	No	All	Select
Observations	6,754	6,754	6,754	6,754	5,375	5,375
R^2	0.000	0.035	0.017	0.012	0.086	0.078

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.13: How high should the tax on petrol and diesel be?

	(1)	(2)	(3)	(4)
SVO	-0.0412	0.164	0.254	0.419**
	(0.0764)	(0.236)	(0.252)	(0.189)
Concern		4.155***	4.779***	5.670***
		(1.060)	(1.137)	(0.649)
SVO * concern		0.0501	0.0375	
		(0.0349)	(0.0375)	
Affected		14.79***	12.96***	12.66***
		(1.034)	(1.116)	(1.038)
SVO * affected		-0.129***	-0.112***	-0.0986***
		(0.0335)	(0.0362)	(0.0323)
Controls	No	No	All	Select
Observations	6,785	6,785	5,299	5,299
R^2	0.000	0.102	0.208	0.199

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.14: How high should the tax on home heating fuel be?

	(1)	(2)	(3)	(4)
SVO	-0.00544	-0.0395	-0.0333	
	(0.0164)	(0.0508)	(0.0546)	
Concern		0.644***	0.654***	0.698***
		(0.229)	(0.246)	(0.208)
SVO * concern		0.0176**	0.0184**	0.0168***
		(0.00753)	(0.00813)	(0.00609)
Affected		2.998***	2.637***	2.758***
		(0.223)	(0.242)	(0.231)
SVO * affected		-0.0215***	-0.0222***	-0.0260***
		(0.00721)	(0.00783)	(0.00733)
Controls	No	No	All	Select
Observations	6,785	6,785	5,299	5,299
R^2	0.000	0.097	0.182	0.173

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.15: How much should the government spend on health care?

	(1)	(2)	(3)	(4)
SVO	0.0849	0.0293	-0.0978	
	(0.632)	(1.803)	(2.068)	
Health		0.0749*	0.0688	
		(0.0417)	(0.0670)	
SVO * health		-0.00191	-0.00195	
		(0.00129)	(0.00187)	
Exercise		0.0251	0.0374*	
		(0.0173)	(0.0223)	
SVO * exercise		-0.000755	-0.00105	
		(0.000585)	(0.000757)	
BMI		1.497	0.958	
		(1.865)	(2.112)	
SVO * BMI		0.0272	0.0317	
		(0.0587)	(0.0662)	
Controls	No	No	All	Select
Observations	6,777	4,956	3,953	3,953
R^2	0.000	0.003	0.033	0.015

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1