

# COGNITIVE ABILITY AND SOCIO-POLITICAL BELIEFS AND ATTITUDES

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# Cognitive Ability and Socio-political Beliefs and Attitudes

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## ABSTRACT

The contribution of this thesis is to demonstrate the importance of cognitive ability (and psychometric traits in general) for understanding the distribution of socio-political beliefs and attitudes within society. For at least the past hundred years, sociologists have sought to explain social phenomena primarily, or indeed exclusively, with reference to social structures that can be considered as external to the individual. While this explanatory paradigm has proved invaluable for understanding many social phenomena, it is not without theoretical deficiency. Certain phenomena can only be fully understood with reference to stable psychological differences between individuals—what psychometricians call individual differences. Toward this end, the present thesis addresses the following research questions. First, are generalized trust and political attitudes associated with cognitive ability? Second, what are the functional forms of any relationships between cognitive ability and socio-political beliefs and attitudes? Third, does cognitive ability explain variance in these traits over and above the effect of traditional sociological covariates, such as age, gender and socio-economic status? Fourth, can psychometric differences between individuals help to explain one particular well-documented empirical regularity (of very large effect size), namely the fact that individuals with liberal and left-wing views are overrepresented in academia? The thesis comprises nine separate papers: the first two chapters examine generalized trust, while the subsequent seven focus on political attitudes. It concludes by summarising the main findings, discussing important limitations, and outlining avenues for further research.

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## CHAPTER 1

# INTRODUCTION

### 1. Theoretical background

This thesis comprises nine separate papers, all of which pertain to the relationship between cognitive ability (and other psychometric traits) on the one hand, and socio-political beliefs and attitudes on the other. The first two chapters examine generalized trust, while the subsequent seven investigate political attitudes. Generalized trust refers to trust in members of the wider society, as opposed to trust in one's family and close friends. While the importance of generalized trust has been emphasised by various social theorists throughout history (Smith, 1776; de Tocqueville, 1835; Parsons, 1937), in recent years its quantitative measurement via the so-called generalized trust question<sup>1</sup> has spawned a vast empirical literature (Kawachi, et al., 2008; Algan & Cahuc, 2013; Bjornskov & Meon, 2013). Political attitudes have been a subject of sociological inquiry ever since the French revolution of 1789, when the terms 'left' and 'right' originated; in the French National Assembly, those supportive of the revolution sat on the left of the chair, while those loyal to the king sat on the right (Gauchet, 1997). Although the first public opinion polls were conducted in as early as the mid 19<sup>th</sup> century, it wasn't until the mid 20<sup>th</sup> century—after the discovery of representative sampling, and the invention of the Likert scale (among other things)—that surveys of political attitudes became truly informative (Squire, 1988). Today, such surveys are ubiquitous, and scholarly interest in understanding the nature and causes of individual differences in political attitudes is intense (Jost et al., 2009; Feldman & Johnston, 2014).

The main contribution of this thesis is to demonstrate the importance of cognitive ability (and psychometric traits in general) for understanding the distribution of socio-political beliefs and attitudes within society. For at least the past hundred years, sociologists have sought to explain social

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<sup>1</sup> This question is as follows: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" It is featured in many large social surveys, such as the U.S. General Social Survey, the European Social Survey, and the World Values Survey.

phenomena primarily, or indeed exclusively, with reference to social structures that can be considered as external to the individual<sup>2</sup>: norms enforced by members of the community, processes of socialisation within the family, systems of entrenched disadvantage transmitted from one generation to the next. This explanatory paradigm can be traced back to the very foundations of the discipline: Marx (1867), Durkheim (1895) and Weber (1905). Marx's (1867) theory of historical materialism arguably represents the apogee of socio-structural explanation: it assigns causal agency to theoretical objects that are about as conceptually far from the individual actor as it is possible to be, namely the "material conditions of society" and the "mode of production of society". Similarly, in his seminal work *The Protestant Ethic and the Spirit of Capitalism*, Weber (1905) emphasises the causal importance of living under one particular religious denomination within Europe—a theoretical object not much conceptually closer to the individual actor than those invoked by Marx (1867). Finally, Durkheim (1895) of course famously proclaimed that sociology is the "science of social facts"; social facts being defined as macro-level objects like institutions, norms and cultural customs that constrain and shape the behaviour of actors at the micro-level. It is perhaps not going too far to say that an explanatory emphasis on social structures external to the individual is what demarcates sociology as a discipline.

However, while the explanatory paradigm described above has proved invaluable for understanding many social phenomena, it is not without theoretical deficiency. Some social phenomena can only be fully understood with reference to stable psychological differences between individuals—what psychometricians call *individual differences* (Burks & Kelly, 1928; Jensen, 1998; Pinker, 2002).<sup>3</sup> Toward this end, the present thesis addresses the following four research questions. First, are generalized trust and political attitudes associated with cognitive ability? Second, what are the functional forms of any relationships between cognitive ability and socio-political beliefs and attitudes? Third, does cognitive ability explain variance in these traits over and above the effect of

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<sup>2</sup> Another way of stating this would be to say that sociologists generally postulate an external locus of control, rather than an internal one. Interestingly, research shows that individuals with left-wing views are much more likely to postulate an internal locus of control (Solon, 2014; Clarkson et al., 2015). For example, leftists are much more likely to attribute an individual's failings to circumstances outside of her control. The overwhelming left-wing skew of sociology (see Chapter 8) may therefore help to explain why the discipline has historically shied away from studying individual differences, and socio-genetics (see Jensen, 1998; Pinker, 2002).

<sup>3</sup> A more precise way of saying this is that at least some of the variance is stable between-individual variance that co-varies with psychometric traits.

traditional sociological covariates, such as age, gender, and socio-economic status? Fourth, can psychometric differences between individuals help to explain one particular well-documented empirical regularity (of very large effect size), namely the fact that individuals with liberal and left-wing views are overrepresented in academia?

## **2. Cognitive ability as a psychometric trait**

The primary psychometric trait with which this thesis is concerned, as indicated in the title, is cognitive ability.<sup>4</sup> Depending on the specific cognitive tests administered, and the lexical preferences of the researcher, cognitive ability is known variously as intelligence, general intelligence, IQ, cognitive skill, cognitive competence, general cognitive ability, or general mental ability. The term ‘intelligence’ was once almost ubiquitous, but in the last few decades ‘cognitive ability’ appears to have gained currency within the psychometrics literature, most likely due to the negative connotations of the term ‘intelligence’.<sup>5</sup> This can be seen clearly in the Ngram plots for the two terms.<sup>6</sup> Note that some researchers prefer to use ‘intelligence’ to denote any factor or dimension that has been extracted from multiple test-score variables, and to use ‘cognitive ability’ to denote any one of those individual test-score variables (Rindermann et al., 2013).

Just as there is no consensus about exactly how different words for cognitive ability are to be used, there is no consensus about exactly how ‘cognitive ability’ or ‘intelligence’ is to be defined (Herrnstein & Murray, 1994; Jensen, 1998). Nonetheless, a widely cited definition is the one given by Gottfredson (1994):

Intelligence is a very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. It is not merely book learning, a narrow

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<sup>4</sup> In addition to cognitive ability, some of the chapters utilise the personality trait openness to experience (Goldberg, 1993).

<sup>5</sup> Interestingly, the eschewal of the term ‘intelligence’, and increasing preference for the alternative term ‘cognitive ability’, appears to have given rise to an interesting misnomer within the sociological and economics literatures, namely that traits such as time preference, conscientious and motivation have come to be referred to by the rather absurd label ‘non-cognitive skills’.

<sup>6</sup> The reader is advised to go to the Google Ngram page online. The plot for ‘intelligence’ shows a bumpy but secular downward trend in the use of the term. By contrast, the plot for ‘cognitive ability’ shows a marked uptick in usage since the late 1960s.

academic skill, or test-taking smarts. Rather, it reflects a broader and deeper capability for comprehending our surroundings—“catching on,” “making sense” of things, or “figuring out” what to do.

An alternative definition, which emphasises the statistical properties of intelligence, is the one given by Jensen (1979):

A working definition of intelligence, then, is that it is the  $g$  factor of an indefinitely large and varied battery of mental tests.

The advantage of Jensen’s definition is that captures the central fact about intelligence that was discovered over 100 years ago by Spearman (1904), namely that scores on all tests of mental ability (reaction time, vocabulary, mental rotation, numeric ability, verbal reasoning, etc.) are positively correlated with one another. This means that, on average within the population, individuals who score higher on reaction time also tend to score higher on vocabulary, mental rotation, numeric ability, and verbal reasoning. Therefore, when a battery of mental tests is analysed, the variance can be partitioned into a general component (i.e., the general intelligence factor,  $g$ ) and a number of test-specific components. The general component of variance extracted from PCA or factor analysis typically captures between 40 and 60% of the variance (Jensen, 1979, 1998).

The theory that there are multiple intelligences (i.e., that there is not a single  $g$  factor), which was put forward by Gardner (1983), is given very little credence within the psychometrics community. As Deary (2001) notes,

Among psychologists working in this field there is no longer any substantial debate about the structure of human mental ability differences... A general factor emerges that accounts for about half of the individual differences among the scores for a group of people, and there are group factors that are narrower abilities, and then very specific factors below that.

Indeed, it has been shown that when several different batteries of tests are administered to a sample of individuals, and separate  $g$ -factors are extracted from those batteries of tests, they correlate with one another at around  $r = .95$  (Johnson et al., 2004; Johnson et al., 2008). Note that the  $g$  factor is highly

stable over the life course ( $r > .70$  from age 11 to age 77), meaning that between-individual differences in cognitive ability observed within cohort are largely preserved from childhood (e.g., age 11) to old-age (e.g., age 77). This does not of course imply that an individual's IQ remains the same over her life course: IQ obviously increases during childhood and adolescence, remains relatively constant through adulthood, and then declines in old-age. Interestingly different sub-dimensions of cognitive decline at different rates: memory deteriorates somewhat faster than numerical reasoning (Whitely et al., 2016). In addition, cognitive ability is about 40–60% heritable, and is predictive of many important life outcomes, such as educational attainment, job performance, income, intellectual production, and mortality (Deary, 2012; Deary & Brett, 2015).

### **3. Overview of chapters**

Chapter 2 replicates the association between cognitive ability and generalized trust using data from the U.S. General Social Survey, and confirms that it is robust to controlling for a variety of different individual characteristics. This finding indicates that the association likely derives from the greater social perspicacity of those with higher cognitive ability, rather than because such individuals are less likely to interact with people who are materially better off. Chapter 3 provides evidence that the putatively causal association between average trust and economic development may in fact be explained by cognitive ability, either because cognitive ability causes both trust and development, or because development enhances cognitive ability which in turn gives rise to greater trust. While the paper's findings are not definitive, they illustrate the importance of testing alternative explanations, and contribute to the debate about the macro-level impacts of social capital (Putnam, 1993; Bjornskov & Meon, 2013; Tabellini, 2008).

Chapters 3–7 use U.S. survey data to study differences in cognitive ability by partisan affiliation, and to characterise the political views of individuals at different points on the distribution of cognitive ability. Three rely primarily on the General Social Survey; the other utilises the American National Election Study. Consistent with contemporaneous studies from other countries, the papers show that cognitive ability has positive associations with both socially liberal beliefs and

economically liberal (rightist) beliefs. While the relationships with socially liberal beliefs are monotonically positive, some of the relationships with economically liberal beliefs are non-monotonic. For example, compared to Americans of high cognitive ability, those of highest cognitive ability (roughly, above the 90th percentile) appear to be more favourable toward welfare for the poor and affirmative action for minorities. In many but not all of the regressions, cognitive ability remains a significant predictor even after controlling for the respondent's demographic characteristics and socio-economic position. These results demonstrate that cognitive ability can explain variance in political views over and above the effects of traditional sociological covariates. They bolster growing evidence that a single ideological axis is insufficient to characterise the distribution of political beliefs in countries such as the U.S. And they add to our understanding of the so-called cognitive elite, highlighting another salient domain in which they differ from ordinary Americans (Herrnstein & Murray, 1994; *The Economist*, 2011).

Building on the findings outlined above, Chapters 8–10 investigate why socially liberal, economically left-wing views are overrepresented in academia—a long-standing question within sociology (Lipset, 1982; Halsey, 1992). Chapter 8 focuses on the U.S., while Chapters 9 and 10 focus on the U.K. By bringing together data on the political views of both academics and a representative sample of cognitively elite Americans, Chapter 8 attempts to discern what fraction of this overrepresentation can be accounted for by cognitive ability. It concludes that cognitive ability can account for most of the overrepresentation of socially liberal views, but cannot account for even half the overrepresentation of economically left-wing views. Chapter 9 tests one of the alternative explanations that has been put forward for the overrepresentation of liberal/left-wing views in academia, namely that cognitively elite individuals who score high on the personality trait openness to experience tend to be more politically liberal/left-wing. Using data from the large Understanding Society dataset, it finds support for the hypothesis, which shows how cognitive ability and personality may interact to explain an interesting sociological phenomenon. Chapter 10 responds to published criticism of Chapter 9. It confirms that British academics are both more socially liberal and more economically leftist than the general population, and that these differences are partly explained by education and openness to experiences.

Eight out of the nine papers are already published, and the ninth is under review. Chapter 2, which was co-authored with my former supervisor Professor Francesco Billari, is published in the journal *PLoS One*. Chapters 3–6 and Chapter 8 are all published in the journal *Intelligence*. Chapter 7 is published in the journal *Personality and Individual Differences*. Chapter 9 is published as a briefing paper by the *Adam Smith Institute* (a think tank based in London). Chapter 10 is under review at the journal *Open Quantitative Sociology & Political Science*.

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## CHAPTER 2

# GENERALIZED TRUST AND INTELLIGENCE IN THE UNITED STATES

### **Abstract**

Generalized trust refers to trust in other members of society; it may be distinguished from particularized trust, which corresponds to trust in the family and close friends. An extensive empirical literature has established that generalized trust is an important aspect of civic culture. It has been linked to a variety of positive outcomes at the individual level, such as entrepreneurship, volunteering, self-rated health, and happiness. However, two recent studies have found that it is highly correlated with intelligence, which raises the possibility that the other relationships in which it has been implicated may be spurious. Here we replicate the association between intelligence and generalized trust in a large, nationally representative sample of U.S. adults. We also show that, after adjusting for intelligence, generalized trust continues to be strongly associated with both self-rated health and happiness. In the context of substantial variation across countries, these results bolster the view that generalized trust is a valuable social resource, not only for the individual but for the wider society as well.

## 1. Introduction

The idea that trust in other members of society facilitates commerce and exchange goes back at least to Adam Smith (1776), who noted that a merchant often prefers to trade within his own country because there “he can know better the character and situation of the persons whom he trusts.” Consistent with Smith’s intuition, an extensive empirical literature has established that generalized trust is an important aspect of civic culture—or social capital as it is also known (Putnam, 1993; Tabellini, 2008; Algan & Cahuc, 2010; Bjornskov, 2012). Research has found, for example, that countries whose citizens place greater trust in one another have more efficient public institutions (Putnam, 1993; Tabellini, 2008) and experience higher rates of economic growth (Algan & Cahuc, 2010; Bjornskov, 2012). In addition, research has found that individuals who place greater trust in their fellow citizens are more likely to start a business (Guiso et al., 2006), perform voluntary work more often (Bekkers, 2012), report better physical health (Giurdano & Lindstrom, 2012), and claim to be happier with their lives overall (Helliwell & Wang, 2011). The study of generalized trust therefore has profound implications for public policy, as well as being of inherent scientific interest (Putnam, 1993).

In social surveys, generalized trust is typically assessed with the question, “Generally speaking would you say that most people can be trusted or that you can’t be too careful in dealing with people?” The number of response categories and the precise wording of the question vary from one survey to another. Two of the most well-studied correlates of generalized trust are self-rated health and happiness. Like generalized trust, they are measured using simple survey items. Self-rated health and happiness have been shown to constitute valid proxies for physical health and evaluated well-being, respectively (DeSalvo et al., 2006; Oswald & Wu, 2010). Furthermore, the finding that people who trust others are happier and enjoy better self-rated health has been made in a diverse array of societies, using a range of statistical techniques (Giurdano & Lindstrom, 2012; Helliwell & Wang, 2011; Tokuda et al., 2008; Ronconi et al., 2012; Calvo et al., 2012; Jen et al., 2010).

Two recent studies have documented a strong correlation between generalized trust and intelligence (Sturgis et al., 2010; Hooghe et al., 2012). Sturgis et al. analyse data from the U.K., and show that intelligence at age 10-11 predicts generalized trust at age 34, even after conditioning on a large number of socio-economic variables, including self-rated health and happiness. Similarly, Hooghe et al. examine Dutch data, and find that a large part of the association between generalized trust and education is accounted for by cognitive ability. These results raise the possibility that previous studies have overestimated the effect of generalized trust on outcomes such as self-rated health and happiness, due to omitted variable bias. Indeed, the latest evidence from the U.K. suggests not just that more intelligent people are happier, but that the relationship between IQ and happiness is partly mediated by self-rated health (Ali et al., 2013).

## **2. Methods**

### *2.1. Data*

The data we analyse are from the General Social Survey (GSS), a public opinion survey that has been administered to a nationally-representative sample of U.S. adults every 1-2 years since 1972. The GSS contains questions on respondents' socio-economic characteristics, behaviours, and social attitudes. It has been used in the past to analyse both generalized trust (Algan & Cahuc, 2010; Simpson, 2006; Fairbrother & Martin, 2013) and intelligence (Lynn, 2004; Huang, 2009; Beaujean & Sheng, 2010). However, the present study is the first to have used it to analyse the relationship between generalized trust and intelligence. Extensive documentation about the GSS, including the entire GSS codebook (Smith et al., 2012), can be downloaded for free at the National Opinion Research Centre's website.

### *2.2. Measures*

Our first measure of intelligence is a 10-word vocabulary test in which the respondent is asked to identify which of five phrases supplies the correct definition of a given word (Smith et al., 2012). Despite its brevity, the test has a correlation of 0.71 with the Army General Classification Test, an IQ exam developed by the U.S. Military (Wofle, 1980). In addition, there is abundant psychometric evidence that individuals with higher IQs have larger vocabularies (Jensen, 2001; Caplan & Miller, 2010). Prior to taking the vocabulary test, the respondent is told the following by the interviewer (Smith et al., 2012):

We would like to know something about how people go about guessing words they do not know. On this card are listed some words—you may know some of them, and you may not know quite a few of them. On each line the first word is in capital letters—like BEAST. Then there are five other words. Tell me the number of the word that comes closest to the meaning of the word in capital letters. For example, if the word in capital letters is BEAST, you would say “4” since “animal” come closer to BEAST than any of the other words. If you wish, I will read the words to you. These words are difficult for almost everyone—just give me your best guess if you are not sure of the answer.

The respondent is assigned a score between 0 and 10, corresponding to the number of words she defined correctly.

Our second measure of intelligence is an assessment by the interviewer of how well the respondent understood the survey questions. The interviewer notes down whether the respondent’s understanding of the survey questions was “good”, “fair” or “poor” (Smith et al., 2012). We refer to our first measure as ‘verbal ability’ and our second measure as ‘question comprehension’. The Pearson correlation between these two variables is 0.37 ( $p < 0.001$ ), meaning that they are moderately positively correlated. The strength of their correlation is depicted in Table 1, a simple cross-tabulation. It indicates that 98% of those scoring 10 out of 10 in the vocabulary test have a good understanding of the survey questions, yet only 36% of those scoring 0 out of 10 have a good understanding of them.

**Table 1.** Cross-tabulation of verbal ability by question comprehension.

Verbal ability	Question comprehension		
	Good	Fair	Poor
0	35.8	46.4	17.9
1	34.4	44.0	21.6
2	45.5	41.7	12.9
3	59.1	33.7	7.2
4	71.2	25.0	3.8
5	81.0	17.7	1.4
6	87.7	11.5	0.8
7	91.9	7.7	0.4
8	94.5	5.4	0.2
9	95.2	4.0	0.8
10	97.8	2.2	0.0

*Notes:* Values are row percentages. All respondents for whom data were available were included.  $n = 26,649$ .

Generalized trust is assessed with the question (Smith et al., 2012): “Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?” The respondent may answer “can trust”, “cannot trust” or “it depends”. Consistent with previous studies, we convert generalized trust into a binary variable by assigning the value ‘1’ to all respondents who answered “can trust”, and assigning the value ‘0’ to all those who answered “cannot trust” or “it depends”. Self-rated health is assessed with the question (Smith et al., 2012): “Would you say your own health, in general, is excellent, good, fair, or poor?” The respondent may answer “excellent”, “good”, “fair” or “poor”. We convert self-rated health into a binary variable by assigning the value ‘1’ to all respondents who answered “excellent” or “good”, and assigning the value ‘0’ to all those who answered “fair” or “poor”. Happiness is assessed with question (Smith et al., 2012): “Taken all together, how would you say things are these days—would you say that you are very happy, pretty happy, or not too happy?” The respondent may answer “very happy”, “pretty happy” or “not too happy”. Once again, we convert happiness into a binary variable by assigning the value ‘1’ to all respondents who answered “very happy”, and assigning the value ‘0’ to all those who answered “pretty happy” or “not too happy”. (Our main results are not sensitive to whether we treat self-rated health and happiness as binary variables or quasi-continuous variables.)

Our control variables comprise: gender, age, age squared, race, language, highest level of educational attainment, marital status and log of household income. We also control for region fixed-effects and wave fixed-effects. The GSS distinguishes between three racial categories: “white”, “black” and “other”. It distinguishes between five levels of educational attainment: “less than high school”, “high school”, “junior college”, “bachelor” and “graduate”. It distinguishes between five marital statuses: “married”, “widowed”, “divorced”, “separated” and “never married”. Log of family income is the natural log of a respondent’s family income, given in constant 1986 dollars (Ligon, 1994). Beginning in 2006, the GSS began to sample Spanish speakers ( $n = 513$ ), alongside English speakers. Language is a dummy variable equal to 1 if the interview was conducted in Spanish. The GSS recognises nine U.S. regions: “New England”, “Middle Atlantic”, “East North Central”, “West North Central”, “South Atlantic”, “East South Central”, “West South Central”, “Mountain” and

“Pacific”. It comprises 29 waves in total. However, the number of wave dummies included in our models varies depending on the number of waves for which data on our variables were available.

### *2.3. Weights*

The GSS’s sampling scheme is designed to give each household an equal probability of selection, meaning that the GSS sample is self-weighting for household-level variables (Smith et al., 2012). However, because only one interview is conducted within each household, individuals living in larger households have a lower probability of selection. This bias can be compensated for by weighting each interview in proportion to the number of adults in the household (Stephenson, 1978). Specifically, one can utilise the variable ADULTS, which is included in the GSS data file, when estimating statistical models. Furthermore, the 2004 and 2006 waves of the GSS employed non-respondent sub-sampling (Smith et al., 2012). There are several alternative variables one can utilise in order to compensate for this bias. We make use of the variable WTSALL, which takes into account not only the sub-sampling of non-respondents in the 2004 and 2006 waves, but also the number of adults per household in all waves of the survey. In particular, all of our models are weighted by WTSALL. (Our main results are not sensitive to whether we weight our models.)

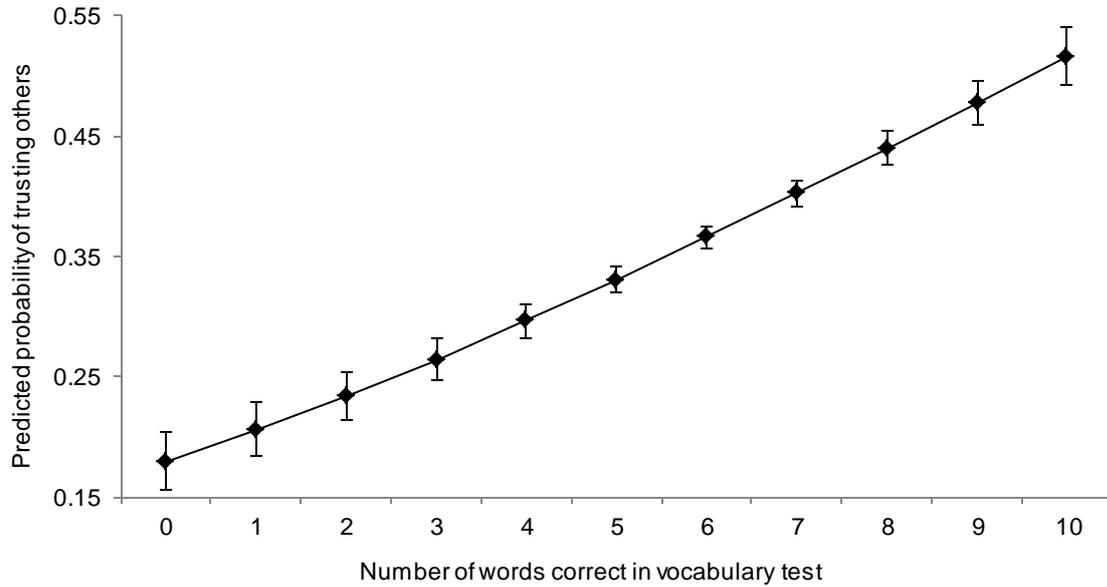
We intentionally exclude a relatively small number of respondents from our analyses. In 1982 and 1987, black respondents were oversampled as part of a National Science Foundation research project (Smith et al., 2012). Consequently, the 1982 and 1987 samples are not nationally representative of the U.S. population. We therefore exclude all the oversampled respondents ( $n = 707$ ) from our analyses. (Our main results are not sensitive to whether these respondents are excluded.)

## **3. Main results**

### *3.1. Figures*

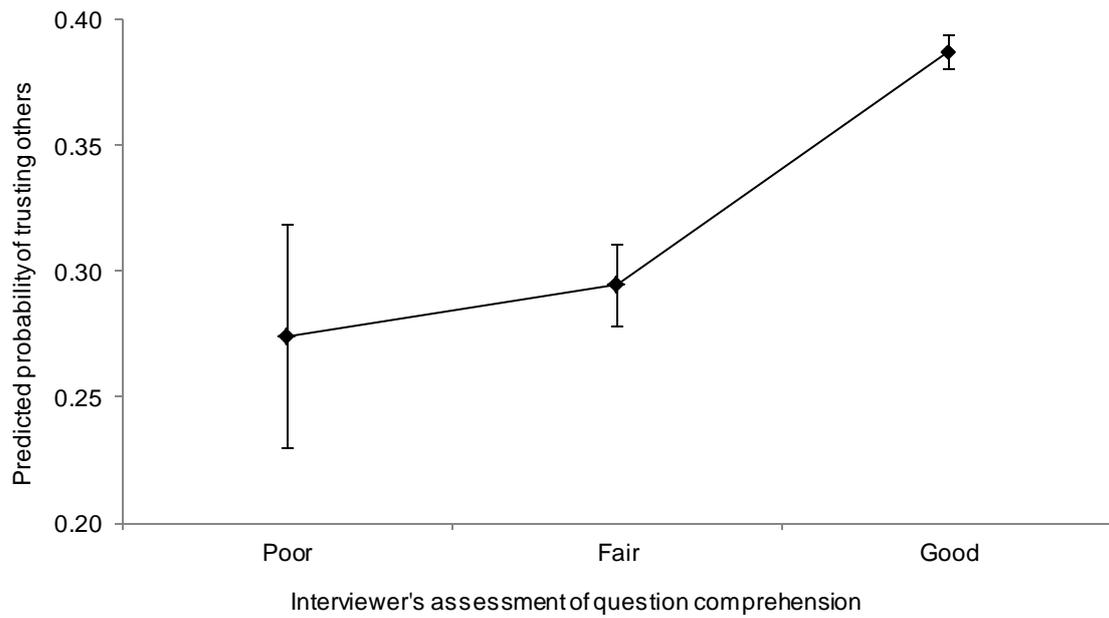
Figure 1 plots the relationship between generalized trust and verbal ability, conditional on socio-economic characteristics. The association between the two variables is strong and positive. An individual with the highest verbal ability is 34 percentage-points more likely to trust others than an individual with the lowest verbal ability. Figure 2 plots the conditional relationship between generalized trust and question comprehension. Once again, the association is positive. An individual with a good understanding of the survey questions is 11 percentage-points more likely to trust others than an individual with a poor understanding of them. Both associations are robust to controlling for parents' education, spouse's education, and several indicators of socio-economic position at age 16 (Tables 2-3). Furthermore, the relationship holds among both men and women, among both blacks and whites, among the young, the middle-aged and the old, and in all five decades since the GSS began (see Appendix A).

**Figure 1.** Predicted probability of trusting others by verbal ability.



*Notes:* Predicted probabilities were estimated using a weighted probit model of generalized trust, with all other covariates held at their means. Other covariates comprise: gender, age, age squared, race, language, education, marital status, log of real household income, region fixed-effects and wave fixed-effects. Bars denote 95% confidence intervals, which were calculated using robust standard-errors. Generalized trust ( $y$ -axis) is a binary variable equal to 1 if the respondent “can trust others” and equal to 0 if she “cannot trust others” or if “it depends”. Verbal ability ( $x$ -axis) is entered as a continuous variable. Black respondents oversampled in 1982 and 1987 ( $n = 707$ ) were excluded from the analysis. After exclusions,  $n = 13,568$ .

**Figure 2.** Predicted probability of trusting others by question comprehension.

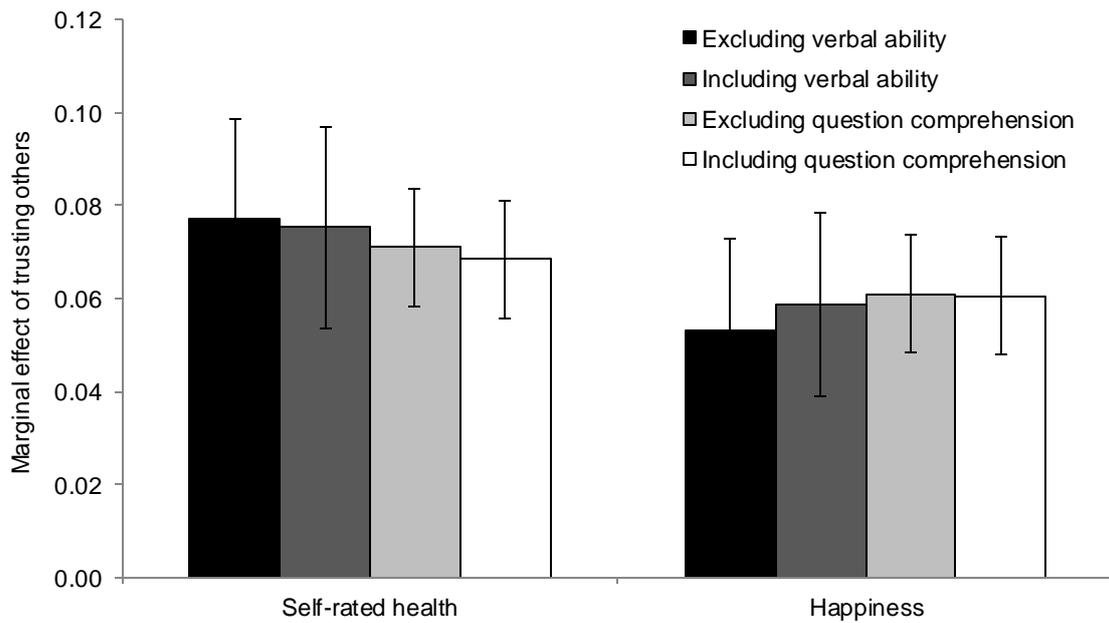


Predicted probabilities were estimated using a weighted probit model of generalized trust, with all other covariates held at their means. Other covariates comprise: gender, age, age squared, race, language, education, marital status, log of real household income, region fixed-effects and wave fixed-effects. Bars denote 95% confidence intervals, which were calculated using robust standard-errors. Generalized trust (y-axis) is a binary variable equal to 1 if the respondent “can trust others” and equal to 0 if she “cannot trust others” or if “it depends”. Question comprehension (x-axis) is entered as a set of binary variables. Black respondents oversampled in 1982 and 1987 were excluded from the analysis. After exclusions,  $n = 32,982$ .

Why is there such a strong correlation between generalized trust and intelligence? One explanation is that intelligent individuals are better at evaluating others' trustworthiness, meaning that they tend to select into relationships with people who are unlikely to betray their trust (Yamagishi, 2001; Cosmides et al., 2010). Another possible explanation is that intelligent individuals are less likely to trust people to do things that someone being trusted might have a strong incentive not to do (e.g., repay a large sum of money). In other words, they may be better at identifying when any particular person would be likely to act untrustworthily, based on the characteristics of the prospective interaction (e.g., material payoffs, discount rates). Alternatively, it may simply be that intelligent individuals have a greater chance of interacting with people who are materially better-off, and who therefore have less to gain from acting untrustworthily. However, this seems quite implausible given that the relationship is robust to controlling for a great many different indicators of socio-economic position.

Fig. 3 displays the conditional effects of generalized trust on self-rated health and happiness, respectively, with and without controls for intelligence. In every model, the effect of generalized trust is positive and highly significant, which is in keeping with the prior literature (Giurdano & Lindstrom, 2012; Helliwell & Wang, 2011; Tokuda et al., 2008; Ronconi et al., 2012; Calvo et al., 2012; Jen et al., 2010). Individuals who trust others are approximately 7 percentage-points more likely to report good or excellent health, as opposed to fair or poor health. And they are approximately 6 percentage-points more likely to be very happy, rather than pretty happy or not too happy. Furthermore, controlling for intelligence does not change the strength of generalized trust's effect on either self-rated health or happiness. The point-estimate of generalized trust's effect on self-rated health is 3% lower when controlling for verbal ability, and is 4% lower when controlling for question comprehension. The point-estimate of generalized trust's effect on happiness is 11% higher when controlling for verbal ability, and is <1% lower when controlling for question comprehension. In all four comparisons, the confidence intervals overlap substantially. These results provide compelling evidence that the effects of generalized trust on self-rated health and happiness are not due to confounding by intelligence.

**Figure 3.** Marginal effects of trusting others on self-rated health and happiness.



*Notes:* Marginal effects of generalized trust were estimated using weighted probit models, with all other covariates held at their means. Other covariates comprise: gender, age, age squared, race, language, education, marital status, log of real household income, region fixed-effects and wave fixed-effects. Bars denote 95% confidence intervals, which were calculated using robust standard-errors. Self-rated health is a binary variable equal to 1 if the respondent reports “good” or “excellent” health and equal to 0 if she reports “fair” or “poor” health. Happiness is a binary variable equal to 1 if the respondent is “very happy” and equal to 0 if she is “pretty happy” or “not too happy”. Generalized trust is a binary variable equal to 1 if the respondent “can trust others” and equal to 0 if she “cannot trust others” or if “it depends”. Verbal ability is entered as a continuous variable. Question comprehension is entered as a set of binary variables. Black respondents oversampled in 1982 and 1987 were excluded from the analyses. Models of self-rated health with and without verbal ability:  $n = 6,648$  after exclusions. Models of self-rated health with and without question comprehension:  $n = 22,187$  after exclusions. Models of happiness with and without verbal ability:  $n = 13,463$  after exclusions. Models of happiness with and without question comprehension:  $n = 31,562$  after exclusions.

### 3.2. Models

Table 2 displays marginal effects of verbal ability from three weighted probit models of generalized trust. In every model, the marginal effect of verbal ability is positive and highly significant ( $p < 0.001$ ). Model 1 does not include any controls. The estimate from this model implies that the probability of trusting others increases by 6 percentage-points for each correctly-defined word in the vocabulary test, holding other covariates at their means. Model 2, which includes socio-economic characteristics, region fixed-effects and wave fixed-effects, yields our preferred estimates. These are presented in Fig. 1. The estimate from model 2 implies that the probability of trusting others increases by 3.6 percentage points for each correctly-defined word in the vocabulary test, holding all other covariates at their means.

**Table 2.** Marginal effects of verbal ability from weighted probit models of generalized trust.

	Dependent variable: Generalized trust indicator		
	(1)	(2)	(3)
Verbal ability	0.061*** (0.002)	0.036*** (0.003)	0.035*** (0.005)
Parents' educations			Yes
Spouse's education			Yes
Socio-economic resources at age 16			Yes
Individual controls		Yes	Yes
Region and wave fixed-effects		Yes	Yes
Observations	14,999	13,568	4,435

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, age, age squared, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

The estimate from model 3, which is approximately identical to the one from model 2, confirms that that our preferred estimates are robust to the inclusion of additional socio-economic controls, namely parents' educations, spouse's education, and three indicators of socio-economic resources at age 16. Parent's educations and spouse's education are measured the same way as the respondent's education. Our three measures of socio-economic resources at age 16 are: type of residence at age 16, family income at age 16, and a dummy for whether the respondent was living with both of her parents at age 16. The GSS distinguishes between six different types of residence at age 16: "country non-farm", "farm", "town with less than 50,000 people", "town with 50,000 to 250,000 people", "big city suburb" and "city with more than 250,000 people". And it distinguishes between five categories of family income at age 16, ranging from "far below average" to "far above average". We take our preferred estimates from model 2 since these are very similar to those from model 3, yet are estimated more precisely, and are based on a substantially larger number of respondents.

Table 3 displays marginal effects of question comprehension from weighted probit models of generalized trust. The marginal effect of good question comprehension is positive and significant in all three models ( $p < 0.001$  in models 1 and 2, while  $p < 0.05$  in model 3). The estimates from model 1 imply that the probability of trusting others is 7 percentage-points higher among those with a fair understanding of the questions than among those with a poor understanding of them, and is 24 percentage-points higher among those with a good understanding, holding all other covariates at their means. Once again, model 2 yields our preferred estimates, which are presented in Fig. 2. These imply that the probability of trusting others is 2 percentage-points higher among those with a fair understanding of the questions, and is 11 percentage-points higher among those with a good understanding, holding all other covariates at their means. (The marginal effect of fair question comprehension is not significantly different from zero.) Once again, the estimates from model 3 confirm that our preferred estimates are robust to the inclusion of the additional socio-economic variables.

**Table 3.** Marginal effects of question comprehension from weighted probit models of generalized trust.

	Dependent variable: Generalized trust indicator		
	(1)	(2)	(3)
Fair understanding of questions	0.067*** (0.015)	0.020 (0.024)	-0.005 (0.048)
Good understanding of questions	0.236*** (0.014)	0.113*** (0.023)	0.105* (0.047)
Parents' educations			Yes
Spouse's education			Yes
Socio-economic resources at age 16			Yes
Individual controls		Yes	Yes
Region and wave fixed-effects		Yes	Yes
Observations	36,759	32,982	11,163

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, age, age squared, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

Table 4 displays marginal effects of generalized trust from four weighted probit models of self-rated health. In every model, the marginal effect of generalized trust is positive and highly significant ( $p < 0.001$ ). Models 1 and 2 exclude and include verbal ability, respectively. The estimate from model 2 is only 3% lower than the one from model 1. Models 3 and 4 exclude and include question comprehension, respectively. The estimate from model 4 is only 4% lower than the one from model 1. Table 5 displays marginal effects of generalized trust from four weighted probit models of happiness. Once again, the marginal effect of generalized trust is positive and highly significant ( $p < 0.001$ ) in every model. The estimate from model 2, which excludes verbal ability, is 11% higher than the one from model 1, which includes verbal ability. Similarly, the estimate from model 4, which excludes question comprehension, is approximately identical to the one from model 1, which includes question comprehension. In all four comparisons the confidence intervals around the two estimates overlap considerably (Fig. 3). These results confirm that the effects of generalized trust on self-rated health and happiness are not confounded by intelligence in the GSS. They therefore strongly suggest that previous studies have not over-estimated the impact of generalized trust on health and well-being.

**Table 4.** Marginal effects of generalized trust from weighted probit models of self-rated health.

	Dependent variable: Self-rated health indicator			
	(1)	(2)	(3)	(4)
Generalized trust	0.077*** (0.011)	0.075*** (0.011)	0.071*** (0.006)	0.068*** (0.006)
Verbal ability		Yes		
Question comprehension				Yes
Individual controls	Yes	Yes	Yes	Yes
Region and wave fixed-effects	Yes	Yes	Yes	Yes
Observations	6,648	6,648	22,187	22,187

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, age, age squared, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

**Table 5.** Marginal effects of generalized trust from weighted probit models of happiness.

	Dependent variable: Happiness indicator			
	(1)	(2)	(3)	(4)
Generalized trust	0.053*** (0.010)	0.059*** (0.010)	0.061*** (0.006)	0.061*** (0.006)
Verbal ability		Yes		
Question comprehension				Yes
Individual controls	Yes	Yes	Yes	Yes
Region and wave fixed-effects	Yes	Yes	Yes	Yes
Observations	13,463	13,463	31,562	31,562

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, age, age squared, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

## 5. Conclusion

The finding that generalized trust is highly correlated with intelligence, even after conditioning on socio-economic characteristics such as marital status, education and income, supports the hypothesis that being able to evaluate someone's quality as a trading partner is a distinct component of human intelligence, which evolved through natural selection (Yamagishi, 2001; Cosmides et al., 2010). However, there are other possible explanations for the correlation, and further research is needed to gauge the relative importance of each one. The finding that generalized trust continues to be associated with self-rated health and happiness after adjusting for intelligence reinforces the view that generalized trust is a valuable social resource—one which governments, religious groups and civic organisations should strive to cultivate (Putnam, 1993). Future research should focus on delineating the precise mechanisms by which generalised trust enhances people's health and well-being.

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## Appendix A

Table A.1 displays marginal effects of verbal ability from weighted probit models of generalized trust for men and women. In both models, the marginal effect of verbal ability is positive and highly significant ( $p < 0.001$ ). The estimate for women is nearly twice as large as the estimate for men. Table A.2 displays marginal effects of question comprehension from weighted probit models of generalized trust for men and women. In both models, the marginal effect of good question comprehension is positive and significant ( $p < 0.01$ ). The estimate for women is approximately the same size as the estimate for men.

**Table A.1.** Marginal effects of verbal ability from weighted probit models of generalized trust for men and women.

	Dependent variable: Generalized trust indicator	
	Men	Women
Verbal ability	0.025*** (0.004)	0.046*** (0.004)
Individual controls	Yes	Yes
Region and wavefixed-effects	Yes	Yes
Observations	5,973	7,595

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: age, age-squared, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

**Table A.2.** Marginal effects of question comprehension from weighted probit models of generalized trust for men and women.

	Dependent variable: Generalized trust indicator	
	Men	Women
Fair understanding of questions	0.028 (0.038)	0.016 (0.029)
Good understanding of questions	0.118** (0.037)	0.110*** (0.028)
Individual controls	Yes	Yes
Region and wavefixed-effects	Yes	Yes
Observations	15,008	17,974

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: age, age squared, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

Table A.3 displays marginal effects of verbal ability from weighted probit models of generalized trust for blacks and whites. In both models, the marginal effect of verbal ability is positive and significant ( $p < 0.001$  in the model for whites, while  $p < 0.05$  in the model for blacks). The estimate for whites is substantially larger than the estimate for blacks. Table A.4 displays marginal effects of question comprehension from weighted probit models of generalized trust for men and women. In the model for whites, the marginal effect of good question comprehension is positive and highly significant ( $p < 0.001$ ), yet in the model for blacks it is negative and not statistically different from zero. This is probably attributable to the small number of black respondents and the noisiness of the intelligence measure.

**Table A.3.** Marginal effects of verbal ability from weighted probit models of generalized trust for blacks and whites.

	Dependent variable: Generalized trust indicator	
	Blacks	Whites
Verbal ability	0.012* (0.006)	0.041*** (0.003)
Individual controls	Yes	Yes
Region and wavefixed-effects	Yes	Yes
Observations	1,602	11,316

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, age, age-squared, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

**Table A.4.** Marginal effects of question comprehension from weighted probit models of generalized trust for blacks and whites.

	Dependent variable: Generalized trust indicator	
	Blacks	Whites
Fair understanding of questions	-0.056 (0.039)	0.046† (0.027)
Good understanding of questions	-0.030 (0.039)	0.157*** (0.026)
Individual controls	Yes	Yes
Region and wavefixed-effects	Yes	Yes
Observations	4,073	27,297

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, age, age-squared, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

Table A.5 displays marginal effects of verbal ability from weighted probit models of generalized trust for the young, the middle-aged and the old. In all three models, the marginal effect of verbal ability is positive and highly significant ( $p < 0.001$ ). The three estimates are approximately equal in magnitude. Table A.6 displays marginal effects of question comprehension from weighted probit models of generalized trust for the young, the middle-aged and the old. In all three models, the marginal effect of good question comprehension is positive. However, while it is significant in the models for the middle-aged ( $p < 0.05$ ) and the old ( $p < 0.001$ ), it is not statistically different from zero in the model for the young. This is probably attributable to the relatively small number of young respondents and the noisiness of the intelligence measure.

**Table A.5.** Marginal effects of verbal ability from weighted probit models of generalized trust for different age-groups.

	Dependent variable: Generalized trust indicator		
	18-35	36-50	51-89
Verbal ability	0.036*** (0.005)	0.035*** (0.005)	0.036*** (0.004)
Individual controls	Yes	Yes	Yes
Region and wavefixed-effects	Yes	Yes	Yes
Observations	4,961	3,923	4,684

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

**Table A.6.** Marginal effects of question comprehension from weighted probit models of generalized trust for different age-groups.

	Dependent variable: Generalized trust indicator		
	18-35	36-50	51-89
Fair understanding of questions	-0.042 (0.050)	-0.008 (0.049)	0.068* (0.031)
Good understanding of questions	0.041 (0.048)	0.094* (0.047)	0.153*** (0.030)
Individual controls	Yes	Yes	Yes
Region and wavefixed-effects	Yes	Yes	Yes
Observations	11,619	9,608	11,755

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded.

Table A.7 displays marginal effects of verbal ability from weighted probit models of generalized trust for each decade since the GSS began. In all five models, the marginal effect of verbal ability is positive and significant ( $p < 0.01$ ). The estimates for the three later periods are slightly lower than those for the two earlier periods. Table A.8 displays marginal effects of question comprehension from weighted probit models of generalized trust for each decade since the GSS began. The marginal effect of good question comprehension is positive and significant in the models for the 1970s ( $p < 0.001$ ), the 1980s ( $p < 0.05$ ) and the 2000s ( $p < 0.001$ ). However, it is not statistically different from zero in the models for the 1990s and the 2010s. Once again, this is probably attributable to the small sample sizes and the noisy intelligence measure.

**Table A.7.** Marginal effects of verbal ability from weighted probit models of generalized trust for different decades.

	Dependent variable: Generalized trust indicator				
	1970s	1980s	1990s	2000s	2010s
Verbal ability	0.049*** (0.006)	0.045*** (0.005)	0.030*** (0.005)	0.027*** (0.007)	0.030** (0.009)
Individual controls	Yes	Yes	Yes	Yes	Yes
Region fixed-effects	Yes	Yes	Yes	Yes	Yes
Observations	2,723	3,460	4,081	2,065	1,239

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, age, age squared, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded. Survey waves in 1970s: 1976, 1978. Survey waves in 1980s: 1984, 1987, 1988, 1989. Survey waves in 1990s: 1990, 1991, 1993, 1994, 1996, 1998. Survey waves in 2000s: 2000, 2006, 2008. Survey waves in 2010s: 2010, 2012.

**Table A.8.** Marginal effects of question comprehension from weighted probit models of generalized trust for different decades.

	Dependent variable: Generalized trust indicator				
	1970s	1980s	1990s	2000s	2010s
Fair understanding	0.084† (0.047)	-0.028 (0.045)	-0.017 (0.048)	0.095* (0.047)	-0.083 (0.107)
Good understanding	0.190*** (0.046)	0.091* (0.044)	0.056 (0.046)	0.169*** (0.045)	-0.039 (0.103)
Individual controls	Yes	Yes	Yes	Yes	Yes
Region fixed-effects	Yes	Yes	Yes	Yes	Yes
Observations	6,957	7,768	8,108	7,764	2,385

*Notes:* Marginal effects were estimated with all other covariates held at their means. Robust standard-errors are reported in parentheses. Significance levels: † 10%, \* 5%, \*\* 1%, \*\*\* 0.1%. Individual controls: gender, age, age squared, race dummies, a language dummy, education dummies, marital status dummies and log of real household income. Black respondents oversampled in 1982 and 1987 were excluded. Survey waves in 1970s: 1972, 1973, 1975, 1976, 1978. Survey waves in 1980s: 1980, 1983, 1984, 1986, 1987, 1988, 1989. Survey waves in 1990s: 1990, 1991, 1993, 1994, 1996, 1998. Survey waves in 2000s: 2000, 2002, 2004, 2006, 2008. Survey waves in 2010s: 2010, 2012.

# DOES INTELLIGENCE EXPLAIN THE ASSOCIATION BETWEEN GENERALIZED TRUST AND ECONOMIC DEVELOPMENT?

## **Abstract**

Both generalized trust and intelligence are correlated with economic development. However, recent research has shown that trust and intelligence are themselves correlated, both across countries and among individuals. Theory suggests that causality runs from intelligence to trust at the individual level, which raises the possibility that the association between trust and development is explained by intelligence. Indeed, intelligence may cause both trust and development. Alternatively, development may lead to higher intelligence, which in turn gives rise to greater trust. Note that intelligence may cause trust not only because individuals with higher intelligence tend to report greater trust, but also because such individuals tend to be more trustworthy. This study analyzes data on trust, intelligence and economic development for 15 Spanish regions, 20 Italian regions, 50 US states, and 107 countries. In all four domains, there is a statistically significant positive relationship between trust and intelligence ( $r = .74$ ,  $r = .74$ ,  $r = .72$  and  $r = .50$ , respectively). Moreover, partial correlations suggest that intelligence accounts for some or all of the association between trust and development in at least two out of the four domains.

## 1. Introduction

Generalized trust refers to trust in other citizens and members of the wider society (Putnam, 1993; Yamagishi & Yamagishi, 1994). In cross-national surveys such as the World Values Survey, it is assessed with the question: “Generally speaking would you say that most people can be trusted or that you can’t be too careful in dealing with people?” A burgeoning literature in economics contends that generalized trust has a positive effect on economic development (Knack & Keefer, 1997; Whiteley, 2000; Zak & Knack, 2001; Beugelsdijk, de Groot & van Shaik, 2004; Algan & Cahuc, 2010; Tabellini, 2010; Guiso, Sapienza & Zingales, 2011; Bjornskov, 2012; Bjornskov & Meon, 2013; Horvath, 2013; Algan & Cahuc, 2013; but see Roth, 2009). For example, Algan and Cahuc (2013) assert that “trust does indeed appear to constitute a decisive determinant of growth”, while Bjornskov and Meon (2013) go so far as to claim that, “trust is the missing root relating education, institutions and economic development.” There are several mechanisms by which trust is thought to promote economic growth, namely: lowering transaction costs, obviating the need for onerous regulations, and fostering norms of generalized morality (Guiso et al., 2011; Algan & Cahuc, 2013).

At the same time, a large literature in psychology has shown that intelligence is positively correlated with economic development (Wicherts, Borsboom & Dolan, 2010a; Meisenberg & Lynn, 2011; Lynn & Vanhanen, 2012a; Lynn & Vanhanen, 2012b; Rindermann, Woodley & Stratford, 2012; Woodley, Rindermann, Bell, Stratford & Piffer, 2014). This is true not just across countries, but also among regions within a country (Lynn, 2010; Pesta, McDaniel & Bertsch, 2010; Lynn, 2012a; Kura, 2013; Lynn & Cheng, 2013; Dutton & Lynn, 2014). Some have argued that intelligence stimulates development via mechanisms such as scientific-technological accomplishment, and the adoption of capitalist institutions (Rindermann & Thompson, 2011; Rindermann, 2012; Burhan, Mohamad, Kurniawan & Sidek, 2014). Others have asserted that, in fact, development enhances intelligence through pathways such as better nutrition and superior education (Wicherts et al., 2010a; Wicherts, Borsboom & Dolan, 2010b; Daniele, 2013). Still others have suggested that both

intelligence and development are influenced by a third factor, namely the incidence of infectious disease (Eppig, Fincher & Thornhill, 2010; Eppig, Fincher & Thornhill, 2011).

However, recent research has shown that trust and intelligence are themselves correlated, both across countries and among individuals. Combining data on trust from Inglehart (1997) with data on intelligence from both Lynn and Vanhanen (2006) and several international student assessments, Rindermann (2008) reports a correlation between trust and intelligence of  $r = .49$  in a sample of 41 countries. And at least four recent studies have documented an association between trust and intelligence among individuals. Sturgis, Read & Allum (2010) report one in the United Kingdom; Hooghe, Marien and de Vroome (2012) report one in the Netherlands ( $r = .30, n = 1,931$ ); Oskarsson, Dawes, Johannesson and Magnusson (2012) report one in Sweden ( $r = .25$ ); and Carl and Billari (2014) report one in the United States.

There are two main, related explanations for the association between trust and intelligence among individuals (Yamagishi, Kikuchi & Kosugi, 1999; Yamagishi, 2001; Cosmides, Barret & Tooby, 2010). First, individuals with higher intelligence may be better at evaluating others' trustworthiness, meaning that they tend to have relationships with people who are unlikely to betray their trust. Second, they may be better at identifying when any particular person has a strong incentive not to reciprocate trust, based on the characteristics of the prospective interaction. Another possibility is that they are simply more likely to interact with people who have less to gain from acting untrustworthily. Yet this seems unlikely given that the association between trust and intelligence persists after controlling for many different indicators of socio-economic position (Sturgis et al., 2010; Carl & Billari, 2014).

The finding that individuals with higher intelligence are more trusting, and the existence of plausible explanations for why, raises the possibility that previous studies have overestimated the effect of trust on development. In particular, the association between trust and development may be confounded by intelligence (see Lynn, 2010). Holding the level of trustworthiness constant, if individuals with higher intelligence tend to have their trust betrayed less often, a population with higher average intelligence should have greater average trust. And this should be true irrespective of whether intelligence causes development, development causes intelligence, or there is bi-directional

causality between intelligence and development. Another mechanism through which intelligence might explain the association between trust and development is the tendency for individuals with higher intelligence to behave less selfishly in strategic encounters and to be more norm-abiding in general (Segal & Hershberger, 1999; Jones, 2008; Frisell, Pawitan & Langstrom, 2012; Chen, Chiu, Smith & Yamada, 2013). Specifically, if individuals with higher intelligence tend to betray one another's trust less often, a population with higher average intelligence should again have greater average trust.<sup>7</sup> An alternative hypothesis, which has been advanced by Bjornksov (2012), is that greater trust leads to higher intelligence through better schooling. Using data on 15 Spanish regions, 20 Italian regions, 50 US states, and 107 countries, this study presents preliminary evidence as to whether the association between trust and development is in fact explained by intelligence.

## **2. Method<sup>8</sup>**

### *2.1 Data for Spanish and Italian regions*

Data on intelligence in 15 Spanish regions and 20 Italian regions were taken from the 2009 and 2012 PISA tests (OECD, 2010; OECD, 2014). In particular, each region's average intelligence was obtained by first averaging scores across the three components (mathematics, reading and science) within each year, and then averaging across the two years (2009 and 2012). These data are very similar to the ones used by Lynn (2010, 2012b), who investigated the socio-economic correlates of intelligence among the regions of Italy. Lynn (2010) used data from the 2006 PISA tests, which were available for only 12 Italian regions, while Lynn (2012b) used data from the 2009 PISA tests. Because Lynn's data (2010, 2012b) have been subjected to a number of criticisms (Beraldo, 2010; Felice & Giugliano, 2011; Cornoldi, Giofre & Martini, 2013; but see Lynn & Piffer, 2014), I check the robustness of my results for Italy against an alternative dataset that was compiled by Templer

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<sup>7</sup> I owe this point to an anonymous reviewer.

<sup>8</sup> The data used in this study are available in an online appendix.

(2012) from a nationwide IQ survey<sup>9</sup>; to my knowledge, no alternative dataset exists for Spain. Encouragingly, the Pearson correlation between Templer's (2012) measure of intelligence and the measure calculated from the 2009 and 2012 PISA tests is very high, namely  $r = .88$  ( $p < 0.001$ ). Data on trust were taken from Tabellini (2007), who calculated the average trust in a large number of European regions using the World Values Survey. Data on economic development were taken from Eurostat (2014). Specifically, each region's GDP per capita at PPP over the years 2000-2011 was obtained from the database. 2000-2011 was the longest time range on which GDP data were available for all four domains (Spanish regions, Italian regions, US states, and countries).

## *2.2 Data for US states*

Data on intelligence were taken from McDaniel (2006a), who computed the average intelligence in all 50 states using scores from the National Assessment of Educational Progress. This measure has been shown to have greater validity than alternative measures based on scores from the SAT or ACT (Kanazawa, 2006; McDaniel, 2006b). Data on trust were taken from Fairbrother and Martin (2013), who calculated the average trust in all 50 states for 1980, 1990 and 2000, using the General Social Survey. Values were averaged across the three time-points, yielding a single value for each state. This was done on the basis that the Pearson correlation between trust in 1980 and trust in 2000 is extremely high, namely  $r = .97$  ( $p < 0.001$ ). Indeed, previous studies have found that the average trust in a country is highly stable over time (Bjorksoy, 2006; Uslaner, 2008). Data on economic development were taken from the US Department of Commerce (2014). Specifically, each state's GDP per capita over the years 2000-2011 was obtained from the database.

## *2.3 Data for countries*

The total sample comprises 107 countries for which data on both intelligence and trust were available. Data on intelligence were taken from Lynn and Vanhanen (2012b), who estimated the

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<sup>9</sup> This dataset comprises 19 Italian regions.

average intelligence in 160 countries using a combination of national IQ tests, local IQ tests and scores from international student assessments. Because Lynn and Vanhanen's (2006) data have received a substantial amount of criticism (Wicherts, Dolan, Carlson & Van der Maas, 2010c,d; Wicherts, Dolan & Van der Maas, 2010e,f), I check the robustness of my results against an alternative dataset<sup>10</sup> that was assembled by Rindermann, Sailer and Thompson (2009) from several international student assessments. Encouragingly, the Pearson correlation between Lynn and Vanhanen's (2012b) measure of intelligence and Rindermann et al.'s (2009) measure is again very high, namely  $r = .95$  ( $p < 0.001$ ). Data on trust were taken from Algan and Cahuc (2013), who calculated average trust in 111 countries using the World Values Survey, the European Values Study, and the Afrobarometer survey. Data on economic development for 104 countries were taken from the World Bank (2014). Specifically, each country's GDP per capita at PPP over the years 2000-2011 was obtained from the database. In the cases of Argentina and Taiwan, GDP per capita at PPP over the years 2000-2010 was obtained from Heston, Summers and Aten (2012). GDP data were not available for Andorra.

#### *2.4 Statistical methodology*

I begin by calculating Pearson correlations between average trust and average intelligence separately for Spanish regions, Italian regions, US states, and countries. Scatterplots of these relationships are included as visual accompaniments. I then compute correlations and partial correlations of average trust and average intelligence with log average GDP per capita, separately for the four domains. Finally, I carry out a number of robustness checks. First, the analysis of Italian regions is repeated using the measure of intelligence constructed by Templer (2012), while the analysis of countries is repeated using two alternative measures of intelligence: the one constructed by Rindermann et al. (2009), and a Winsorization of Lynn and Vanhanen's (2012b) measure with minimum IQ set to 80 (see Jones & Potrafke, 2014). Second, all four analyses of the associations between trust, intelligence and economic development are repeated using log GDP per capita in 2000

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<sup>10</sup> Data on trust were available for 76 of the countries in Rindermann et al.'s (2009) dataset.

and log GDP per capita in 2011. Third, the analysis of countries is repeated with potentially problematic observations omitted.

One important statistical issue that has recently been brought to the attention of intelligence researchers is that of spatial autocorrelation, or spatial dependence as it is also known (Gelade, 2008; Hassall & Sherratt, 2011). Interestingly, the issue was originally identified by Sir Francis Galton at a meeting of the Royal Anthropological Society in 1889 (Naroll, 1961). Because of common descent and borrowing, neighbouring countries tend to be more similar to one another than would be expected purely on the basis of chance. As a consequence, the assumption of statistical independence between data points is violated, meaning that standard errors and  $p$ -values will be biased downwards.

In their recent paper, Hassall and Sherratt (2011) addressed the issue of spatial dependence by re-calculating  $p$ -values based on the method put forward by Clifford, Richardson and Hemon (1989). One alternative approach is to calculate  $p$ -values based on so-called clustered standard errors (Primo, Jacobmeier & Milyo 2007; Wooldridge, 2010, pp. 863-894). This procedure is appropriate when the data points are nested within a certain number of non-overlapping clusters. Standard errors are corrected for both heteroskedasticity and within-cluster correlation, while degrees of freedom are adjusted downward. In *Stata* (the software used to carry out the present analyses), degrees of freedom for  $t$ -tests are reduced to  $G - 1$ , where  $G$  is the number of clusters. It is important to note, however, that clustered standard errors may not be valid when the number of clusters is small (Primo et al., 2007; Wooldridge, 2010, pp. 884-894). Consequently, I report  $p$ -values based on both classical and clustered standard errors in all the analyses.

Countries tend to bunch together by continent when plotted along a dimension of national intelligence (Hassall & Sherratt, 2011). This suggests one grouping according to which standard errors might be clustered in a cross-national analysis, namely continents. And indeed, the authors of recent study on the historical development of cognitive skills do cluster standard errors by continent (Baten & Juif, 2014). My analysis of countries exploits a similar though slightly more detailed grouping, namely UN sub-regions (UN, 2012). There are 21 UN sub-regions in total, but only 17 are represented among the countries in my sample. US states are grouped into their 9 census divisions for

the purpose of clustering (US Census Bureau, 2014), while Spanish and Italian regions are grouped into 5 areas based on geographical proximity. For further details, see Appendix A.

### **3. Results**

#### *3.1 Correlations between trust and intelligence*

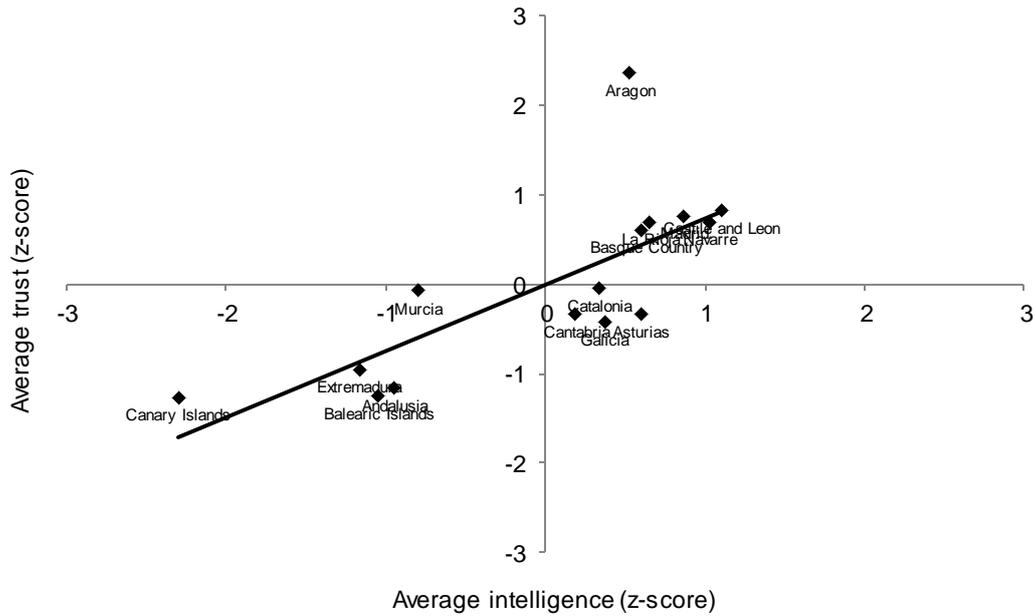
Table 1 displays correlations between average trust and average intelligence for Spanish regions, Italian regions, US states, and countries. The correlations are all large in magnitude, ranging from  $r = .50$  among countries to  $r = .74$  among Spanish and Italian regions. These relationships are plotted in Figures 1-4. The points around the best-fit lines appear to be well-behaved; there is no evidence of major outliers. Furthermore, all four correlations are statistically significant both before and after clustering standard errors. It is worth briefly commenting on the difference between the corrected and uncorrected  $p$ -values. In the case of Spanish regions, the corrected  $p$ -value is only slightly larger than the uncorrected one, which may be attributable to the small number of clusters, as well as the small number of actual data points (see Primo et al., 2007; Wooldridge, 2010, pp. 884-894). In the case of Italian regions, however, the corrected  $p$ -value is 2 orders of magnitude larger than the uncorrected one. In the case of US states, the corrected  $p$ -value is 5 orders of magnitude larger than the uncorrected one (though this is concealed in the table). And in the case of countries, the corrected  $p$ -value is 4 orders of magnitude larger than the uncorrected one. Overall, these results provide strong evidence for an association between trust and intelligence in four separate domains.

**Table 1.** Correlations between average trust and average intelligence.

	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value
Spanish regions (15)	.743	0.002	0.003
Italian regions (20)	.742	<0.001	0.038
US states (50)	.718	<0.001	<0.001
Countries (107)	.496	<0.001	<0.001

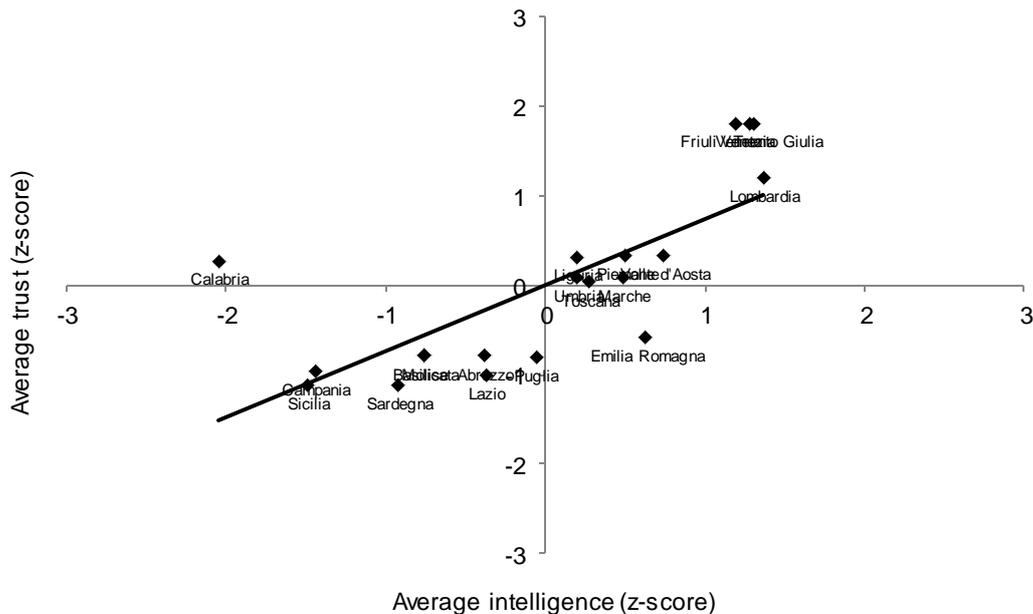
Notes: Values in the column headed ‘*p*-value’ are based on classical standard errors. Values in the column headed ‘corrected *p*-value’ are based on clustered standard errors. Spanish regions and Italian regions are clustered into 5 areas based on geographical proximity. US states are clustered into 9 census divisions. Countries are clustered into 17 UN sub-regions.

**Figure 1.** Scatterplot of average trust and average intelligence for 15 Spanish regions.



Notes: The line is the least-squares regression slope. Both variables are standardized.

**Figure 2.** Scatterplot of average trust and average intelligence for 20 Italian regions.



Notes: The line is the least-squares regression slope. Both variables are standardized.



### *3.2. Correlations and partial correlations of trust and intelligence with economic development*

The first and fourth columns in Table 2 display correlations of average trust and average intelligence with log average GDP per capita, 2000-2011, for Spanish regions, Italian regions, US states, and countries. Both average trust and average intelligence are positively related to log average GDP per capita in all four domains. The correlations between average trust and log average GDP per capita range from  $r = .25$  among US states to  $r = .62$  among Italian regions, while the correlations between average intelligence and log GDP per capita range from  $r = .28$  among US states to  $r = .88$  among Italian regions. In the cases of Italian regions and countries, the correlations of both average trust and average intelligence with log average GDP per capita are statistically significant even after clustering standard errors. However, in the case of Spanish regions, the correlation between average trust and log average GDP per capita only reaches significance at the 10% level after clustering standard errors<sup>11</sup>, while in the case of US states, neither correlation reaches significance after clustering standard errors. Overall, these results provide weak evidence that trust and intelligence are associated with economic development across Spanish regions and US states, and strong evidence that trust and intelligence are associated with economic development across Italian regions and countries.

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<sup>11</sup> Since the corrected  $p$ -value for the correlation between average intelligence and log average GDP per capita among Spanish regions is smaller than the uncorrected one, it should probably be regarded with scepticism.

**Table 2.** Correlations and partial correlations of average trust and average intelligence with log average GDP per capita, 2000-2011.

	Log average GDP per capita, 2000-2011								
	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value	<i>r<sub>p</sub></i>	<i>p</i> -value	corrected <i>p</i> -value
<i>Spanish regions (15)</i>									
Average trust	.558	0.031	0.066				.248	n.s.	n.s.
Average intelligence				.567	0.027	0.018	.275	n.s.	n.s.
<i>Italian regions (20)</i>									
Average trust	.624	0.003	0.044				-.081	n.s.	n.s.
Average intelligence				.876	<0.001	<0.001	.788	<0.001	0.005
<i>US states (50)</i>									
Average trust	.253	0.076	n.s.				.074	n.s.	n.s.
Average intelligence				.283	0.046	n.s.	.151	n.s.	n.s.
<i>Countries (106)</i>									
Average trust	.469	<0.001	0.007				.114	n.s.	n.s.
Average intelligence				.826	<0.001	<0.001	.773	<0.001	<0.001

*Notes:* Values in the column headed '*p*-value' are based on classical standard errors. Values in the column headed 'corrected *p*-value' are based on clustered standard errors. Spanish regions and Italian regions are clustered into 5 areas based on geographical proximity. US states are clustered into 9 census divisions. Countries are clustered into 17 UN sub-regions. 'n.s.' denotes a non-significant result.

The seventh column in Table 2 displays partial correlations of average trust and average intelligence with log average GDP per capita, separately for the four domains. Here again, the results for Spanish regions and US states differ from the results for Italian regions and countries. In the former cases, none of the partial correlations is significant, meaning that it cannot be confidently said whether intelligence explains the association between trust and economic development or trust explains the association between intelligence and economic development. In the latter cases by contrast, the partial correlations between average intelligence and log average GDP per capita are large and significant ( $r_p = .79$  and  $r_p = .77$ , respectively), while the partial correlations between average trust and log average GDP per capita are small and non-significant ( $r_p = -.08$  and  $r_p = .11$ , respectively). Overall, these results provide weak evidence that intelligence explains the association between trust and economic development across Spanish regions (e.g., Tabellini, 2010) and US states (e.g., Algan & Cahuc, 2013), and strong evidence that intelligence explains the association between trust and economic development across Italian regions (e.g., Tabellini, 2010) and countries (e.g., Guiso et al., 2011).

### *3.3 Robustness checks*

Table 3 displays correlations between average trust and average intelligence for the four domains using alternative measures of intelligence. The analysis of Italian regions uses Templer's (2012) measure of intelligence; the analysis of 76 countries uses Rindermann et al.'s (2009) measure of intelligence; and the analysis of 106 countries uses a Winsorization of Lynn and Vanhanen's (2012b) measure of intelligence with minimum IQ set to 80. The correlations are all large in magnitude, ranging from  $r = .50$  among countries to  $r = .72$  among Italian regions. Encouragingly, each one is highly similar to its counterpart in Table 1. Moreover, as in Table 1, all three correlations are statistically significant both before and after clustering standard errors.

**Table 3.** Correlations between average trust and average intelligence using alternative measures of intelligence.

	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value
<i>Italian regions</i> (19)	.716	<0.001	0.028
<i>Countries</i> (76)	.493	<0.001	0.002
<i>Countries</i> (106)	.528	<0.001	<0.001

*Notes:* Values in the column headed '*p*-value' are based on classical standard errors. Values in the column headed 'corrected *p*-value' are based on clustered standard errors. Italian regions are clustered into 5 areas based on geographical proximity. Countries are clustered into 16 UN sub-regions. The analysis of 19 Italian regions uses Templer's (2012) measure of intelligence. The analysis of 76 countries uses Rindermann et al.'s (2009) measure of intelligence. The analysis of 106 countries uses a Winsorization of Lynn and Vanhanen's (2012b) measure of intelligence with minimum IQ set to 80.

Table 4 displays correlations and partial correlations of average trust and average intelligence with log average GDP per capita, 2000-2011. As in Table 2, both average trust and average intelligence are positively related to log average GDP per capita in Italian regions as well as countries. Also as in Table 2, the partial correlations between average intelligence and log average GDP per capita are large and significant ( $r = .62$ ,  $r = .62$  and  $r = .68$ , respectively). Here however, while the partial correlation between average trust and log average GDP per capita is small and non-significant in the analysis of Italian regions ( $r = .15$ ) and the analysis of 106 countries ( $r = .12$ ), it is moderate and significant in the analysis of 76 countries ( $r = .33$ ). Yet of the three cross-national analyses, the one using a Winsorization of Lynn and Vanhanen's (2012b) measure of intelligence should probably be regarded as the most robust. This is because it involves 106 countries, as well as the most conservative estimates of IQ for countries in the left tail of the distribution.

**Table 4.** Correlations and partial correlations of average trust and average intelligence with log average GDP per capita, 2000-2011, using alternative measures of intelligence.

	Log average GDP per capita, 2000-2011								
	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value	<i>r<sub>p</sub></i>	<i>p</i> -value	corrected <i>p</i> -value
<i>Italian regions (19)</i>									
Average trust	.628	0.004	0.033				.151	n.s.	n.s.
Average intelligence				.787	<0.001	0.002	.621	0.005	0.006
<i>Countries (76)</i>									
Average trust	.555	<0.001	<0.001				.331	0.004	0.043
Average intelligence				.721	<0.001	<0.001	.619	<0.001	<0.001
<i>Countries (106)</i>									
Average trust	.469	<0.001	0.007				.116	n.s.	n.s.
Average intelligence				.760	<0.001	<0.001	.683	<0.001	<0.001

*Notes:* Values in the column headed '*p*-value' are based on classical standard errors. Values in the column headed 'corrected *p*-value' are based on clustered standard errors. Italian regions are clustered into 5 areas based on geographical proximity. Countries are clustered into 16 UN sub-regions. 'n.s.' denotes a non-significant result. The analysis of 19 Italian regions uses Templer's (2012) measure of intelligence. The analysis of 76 countries uses Rindermann et al.'s (2009) measure of intelligence. The analysis of 106 countries uses a Winsorization of Lynn and Vanhanen's (2012b) measure of intelligence with minimum IQ set to 80.

Tables B.1 and B.2 in the Appendix display correlations and partial correlations of average trust and average intelligence with log GDP per capita in 2000 and log GDP per capita in 2011, respectively, rather than log average GDP per capita. The results are generally very similar to those from Tables 2 and 4, providing weak evidence that intelligence explains the associations between trust and economic development across Spanish regions and US states, and strong evidence that intelligence explains the associations between trust and economic development across Italian regions and countries. Lastly, average trust may have been overestimated in a small number of countries, notably Thailand, South Korea and China (Delhey, Newton & Welzel, 2011). Encouragingly, when the analyses of countries were repeated with these three countries omitted, the results were essentially identical (not reported).

#### **4. Discussion**

A large literature in economics contends that generalized trust promotes economic development (Knack & Keefer, 1997; Whiteley, 2000; Zak & Knack, 2001; Beugelsdijk et al., 2004; Algan & Cahuc, 2010; Tabellini, 2010; Guiso et al., 2011; Bjornskov, 2012; Bjornskov & Meon, 2013; Horvath, 2013; Algan & Cahuc, 2013). At the same time, many studies in psychology have documented a positive correlation between intelligence and economic development (Wicherts et al., 2010a; Lynn, 2010; Pesta et al., 2010; Meisenberg & Lynn, 2011; Lynn, 2012a; Lynn, 2012b; Lynn & Vanhanen, 2012a; Lynn & Vanhanen, 2012b; Rindermann, et al., 2012; Kyra, 2013; Lynn & Cheng, 2013; Dutton & Lynn, 2014; Woodley et al., 2014). However, recent research has shown that trust and intelligence are themselves correlated, both across countries and among individuals (Rindermann, 2008; Sturgis et al., 2010; Hooghe et al., 2012; Oskarsson et al., 2012; Carl & Billari, 2014). Theory suggests that causality runs from intelligence to trust at the individual level (Yamagishi et al., 1999; Yamagishi, 2001; Cosmides et al., 2010) rather than the other way around, which raises the possibility that the association between trust and development is explained by intelligence. Moreover, there is evidence that individuals with higher intelligence tend to be more trustworthy (Segal & Hershberger,

1999; Jones, 2008; Frisell et al., 2012; Chen et al., 2013), which provides another mechanism through which intelligence might explain the association between trust and development.

This study has confirmed that average generalized trust and average intelligence test performance are positively correlated across 15 Spanish regions ( $r = .74$ ), 20 Italian regions ( $r = .74$ ), 50 US states ( $r = .72$ ), and 107 countries ( $r = .50$ ). It has also shown that, in two out of the four cases, the correlation between average trust and economic development becomes much smaller after adjusting for average intelligence, yet the correlation between average intelligence and economic development remains large and significant after adjusting for average trust. In the other two cases, it cannot be reliably concluded whether average intelligence explains the association between average trust and economic development or average trust explains the association between average intelligence and economic development. These findings offer preliminary evidence that at least part of the association between trust and development is explained by intelligence. Indeed, intelligence may cause both trust and development. Alternatively, development may lead to higher intelligence, which in turn gives rise to greater trust. Future studies employing different methodologies will be needed to further disentangle the various effects.

An important caveat is that, although various proxies for average intelligence (such as national IQ tests and scores from international student assessments) are strongly correlated with one another and load onto a single factor at the aggregate level (Rindermann, 2007), differences in average intelligence between countries or regions cannot necessarily be assumed to reflect differences on a uni-dimensional construct (such as  $g$ ) among individuals (Wicherts & Wilhelm, 2007). Crucially, specific tests may not be measurement invariant across countries, while groups of tests may not possess the same factor structure in different countries.

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## Appendix A

The 17 UN sub-regions represented among the countries in my sample are: Eastern Africa, Northern Africa, Southern Africa, Western Africa, Eastern Asia, South-Central Asia, South-Eastern Asia, Western Asia, Eastern Europe, Northern Europe, Southern Europe, Western Europe, Caribbean, Central America, South America, Northern America, Australia and New Zealand (UN, 2012). The 9 US census divisions are: Pacific, Mountain, West North Central, West South Central, East North Central, East South Central, Middle Atlantic, South Atlantic, New England (US Census Bureau, 2014). Spanish and Italian regions are grouped into 5 areas based on geographical proximity. The five groups of Spanish regions are as follows: Andalusia, Canary Islands, Extremadura; Balearic Islands, Catalonia, Murcia; Asturias, Cantabria, Galicia; Aragon, Basque Country, Navarre; Castile and Leon, La Rioja, Madrid. The five groups of Italian regions are as follows: Basilicata, Calabria, Sardegna, Sicilia; Abruzzo, Campania, Molise, Puglia; Lazio, Marche, Toscana, Umbria; Emilia Romagna, Friuli Venezia Giulia, Trento, Veneto; Liguria, Lombardia, Piemonte, Valle d'Aosta.

Table A.1 displays intra-class correlations for average trust, average intelligence and log average GDP per capita, 2000-2011. Except in the case of log average GDP per capita among US states, all the values are sizable. Overall, half or more of the variance is between clusters. This indicates that the groupings utilised here capture at least some of the spatial dependence present in the data. As a further indication of the groupings' validity, Table A.2 displays between-effects correlations for average trust and average intelligence. All four correlations are very large in magnitude, ranging from  $r = .78$  to  $r = .93$ . Moreover, in spite of the small sample sizes, three out of four are statistically significant at the 5% level or lower; the fourth is significant at the 10% level. Compared to other methods for dealing with spatial dependence, one disadvantage of clustering standard errors is that only within-cluster correlation is accounted for; countries in different clusters are assumed to be statistically independent. However, in the present context this is arguably not a major problem as most of the variation appears to be between clusters. To take one illustrative example, a country like Spain is much more culturally and genetically similar to France than it is to

Morocco, despite being located a similar geographic distance from each of them (Inglehart & Welzel, 2005, pp. 15-148; Rosenberg, Pritchard, Weber, Cann, Kidd et al., 2002; Li, Absher, Tang, Southwick, Casto et al., 2008).

**Table A.1.** Intra-class correlations for average trust, average intelligence and log average GDP per capita, 2000-2011.

	Average trust	Average intelligence	Log average GDP per capita, 2000-2011
<i>Spanish regions (15)</i>	.790	.824	.669
<i>Italian regions (20)</i>	.627	.815	.896
<i>US states (50)</i>	.668	.534	.294
<i>Countries (107)</i>	.522	.874	.780

*Notes:* The intra-class correlation is the proportion of total variance that is between cluster means. Spanish regions and Italian regions are clustered into 5 areas based on geographical proximity. US states are clustered into 9 census divisions. Countries are clustered into 17 UN sub-regions.

**Table A.2.** Between-effects correlations for average trust and average intelligence.

	<i>r</i>	<i>p</i> -value
<i>Areas of Spain (5)</i>	.873	0.053
<i>Areas of Italy (5)</i>	.925	0.024
<i>US census divisions (9)</i>	.807	0.009
<i>UN sub-regions (17)</i>	.784	<0.001

*Notes:* The between-effects correlation is the correlation across cluster means. *p*-values are based on classical standard errors.

## Appendix B

**Table B.1.** Correlations and partial correlations of average trust and average intelligence with log GDP per capita in 2000.

	Log GDP per capita in 2000								
	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value	<i>r<sub>p</sub></i>	<i>p</i> -value	corrected <i>p</i> -value
<i>Spanish regions (15)</i>									
Average trust	.444	0.098	n.s.				.218	n.s.	n.s.
Average intelligence				.419	n.s.	0.060	.149	n.s.	n.s.
<i>Italian regions (20)</i>									
Average trust	.636	0.003	0.034				-.096	n.s.	n.s.
Average intelligence				.896	<0.001	<0.001	.819	<0.001	0.003
<i>US states (50)</i>									
Average trust	.172	n.s.	n.s.				.022	n.s.	n.s.
Average intelligence				.219	n.s.	n.s.	.140	n.s.	n.s.
<i>Countries (106)</i>									
Average trust	.468	<0.001	0.006				.133	n.s.	n.s.
Average intelligence				.795	<0.001	<0.001	.732	<0.001	<0.001

*Notes:* Values in the column headed '*p*-value' are based on classical standard errors. Values in the column headed 'corrected *p*-value' are based on clustered standard errors. Spanish regions and Italian regions are clustered into 5 areas based on geographical proximity. US states are clustered into 9 census divisions. Countries are clustered into 17 UN sub-regions. 'n.s.' denotes a non-significant result.

**Table B.2.** Correlations and partial correlations of average trust and average intelligence with log GDP per capita in 2011.

	Log GDP per capita in 2011								
	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value	<i>r</i>	<i>p</i> -value	corrected <i>p</i> -value	<i>r<sub>p</sub></i>	<i>p</i> -value	corrected <i>p</i> -value
<i>Spanish regions (15)</i>									
Average trust	.633	0.011	0.039				.256	n.s.	n.s.
Average intelligence				.684	0.005	0.006	.412	n.s.	n.s.
<i>Italian regions (20)</i>									
Average trust	.623	0.003	0.043				-.082	n.s.	n.s.
Average intelligence				.875	<0.001	<0.001	.787	<0.001	0.004
<i>US states (50)</i>									
Average trust	.340	0.016	0.040				.107	n.s.	n.s.
Average intelligence				.377	0.007	0.048	.204	n.s.	n.s.
<i>Countries (106)</i>									
Average trust	.469	<0.001	0.007				.107	n.s.	n.s.
Average intelligence				.835	<0.001	<0.001	.785	<0.001	<0.001

*Notes:* Values in the column headed '*p*-value' are based on classical standard errors. Values in the column headed 'corrected *p*-value' are based on clustered standard errors. Spanish regions and Italian regions are clustered into 5 areas based on geographical proximity. US states are clustered into 9 census divisions. Countries are clustered into 17 UN sub-regions. 'n.s.' denotes a non-significant result.

## CHAPTER 4

# VERBAL INTELLIGENCE IS CORRELATED WITH SOCIALY AND ECONOMICALLY LIBERAL BELIEFS

### **Abstract**

Research has consistently shown that intelligence is positively correlated with socially liberal beliefs and negatively correlated with religious beliefs. This should lead one to expect that Republicans are less intelligent than Democrats. However, I find that individuals who identify as Republican have slightly higher verbal intelligence than those who identify as Democrat (3-5 IQ points), and that individuals who supported the Republican Party in elections have slightly higher verbal intelligence than those who supported the Democratic Party (2 IQ points). I reconcile these findings with the previous literature by showing that verbal intelligence is correlated with both socially and economically liberal beliefs ( $\beta = .10-.32$ ). My findings suggest that higher intelligence among classically liberal Republicans compensates for lower intelligence among socially conservative Republicans.

## 1. Introduction

Over the last few years, scholarly interest in the relationship between intelligence and political beliefs has grown considerably. A consistent finding is that people with higher intelligence tend to be more socially liberal (Deary, Batty & Gale, 2008a; Deary, Batty & Gale, 2008b; Stankov, 2009; Kanazawa, 2010; Schoon, Cheng, Gale, Batty & Deary, 2010; Heaven, Ciarrochi & Leeson, 2011; Hodson & Busseri, 2012). Another consistent finding is that people with higher intelligence tend to be less religious (Bell, 2002; Lynn, Harvey & Nyborg, 2009; Nyborg, 2009; Ganzach, Ellis & Gotlibovski, 2013; Zuckerman, Silberman & Hall, 2013). Given that Republicans tend to be both more religious and more socially conservative than Democrats (Newport, 2007; Saad, 2012), these two findings should lead one to expect that Republicans have lower intelligence. Consistent with this hypothesis, Republicans are less likely to believe in widely accepted scientific ideas such as climate change and the theory of evolution (Kohut, Doherty & Dimmock, 2009). Indeed, Mooney (2005) argues that, over the last couple of decades, members of the Republican Party have attempted to systematically undermine certain fields of scientific research. And in his latest book, Mooney (2012, pp. 59-126) contends that Republicans' denial of science stems not only from perceived political advantage, but from psychological traits that incline Republicans to prize certainty above all else.

However, there is evidence pointing in the other direction. To begin with, education is correlated with the tendency to think like an economist, which could be considered a centre-right characteristic (Caplan, 2001; Caplan, 2007, pp. 50-93; Caplan & Miller, 2012). More importantly, intelligence itself is correlated with the tendency to think like an economist, at least in the United States (Caplan & Miller, 2010). For example, Americans with higher intelligence are less likely to agree with statements such as "it is the government's responsibility to provide a job for everyone who wants one", and "corporations should pay more of their profits to workers and less to shareholders". They are also less likely to agree with the statement, "it is the government's responsibility to reduce the differences in income between people with high incomes and those with low incomes" (Kanazawa, 2010). Furthermore, Rindermann, Flores-Mendoza and Woodley (2012) analyzed data

from Brazil, and found that mean IQ was highest among individuals who described themselves as centre-right. In addition, there is evidence that libertarians, who are more likely to vote for the Republican Party (Kirby & Boaz, 2010), have higher intelligence than both conservatives and progressives (Kemmelmeier, 2008; Iyer, Koleva, Graham, Ditto & Haidt, 2012). Finally, Republicans have better objective political knowledge than Democrats (Kohut, Doherty, Dimmock & Keeter, 2012). And just like conservatives, progressives are prone to logical fallacies and unscientific thinking (Berezow & Campbell, 2012).

Pinker (2011, pp. 662-664), drawing on some of the evidence outlined above, argues that intelligence is actually correlated with classically liberal beliefs. According to McLean & McMillan (2009, pp. 306-308), classical liberalism is “the belief that it is the aim of politics to preserve individual rights and maximise freedom of choice” (see also Miller, 2003, pp. 55-73). Classical liberals define ‘liberty’ in the negative sense, as freedom from coercion and interference (Berlin, 1969, pp. 123-4). They hold both socially and economically liberal beliefs (Friedman, 1962, pp. 5-6). Socially liberal beliefs are predicated on the idea that an individual should be free to pursue his own values and make his own lifestyle choices. Economically liberal beliefs are predicated on the idea that an individual should be free to engage in voluntary transactions with others and to enjoy the fruits of her labour. Pinker’s (2011) hypothesis predicts that intelligence should be associated with economically liberal beliefs, as well as socially liberal beliefs.

## **2. Method**

### *2.1 Data*

I analyze data from the General Social Survey (GSS), a public-opinion survey that has been administered to a nationally representative sample of American adults every 1-2 years since 1972. The GSS contains questions on respondents’ socio-economic characteristics, behaviours, and social attitudes. It has been used by numerous previous studies to examine intelligence (e.g., Kanazawa,

2010; Caplan & Miller, 2010; Carl & Billari, 2014). Each wave of the GSS provides data on a cross-section of the U.S. population in a particular year. Sample sizes range from 1,372 respondents in 1990 to 4,510 respondents in 2006; the mean sample size is just under 2,000 respondents.

## *2.2 Measures*

The primary measure of intelligence available in the GSS is a 10-word vocabulary test in which the respondent is asked to identify which of five phrases supplies the correct definition of a given word (see Smith, Marsden, Hout & Kim, 2012). Notwithstanding its brevity, the test has a correlation of .71 with the Army General Classification Test (Wolfe, 1980). In addition, there is a huge amount of psychometric evidence that individuals with higher IQs have larger vocabularies (Jensen, 2001). Vocabulary tests load more strongly onto the crystallized factor of intelligence than onto the fluid factor, so the test included in the GSS is most appropriately described as a measure of verbal intelligence, rather than problem-solving ability (Cattell, 1963; Horn & Cattell, 1966). For a longer discussion of the measure's validity, see Caplan and Miller (2010). Prior to analysis, I transform the measure so that it has a mean of 100 and a standard deviation of 15, which is the convention for normalizing IQ scores.

In the GSS, party identity is assessed with the question, "Do you think of yourself as a Republican, Democrat, Independent, or what?" (Smith et al., 2012). There are eight response categories: "strong Democrat", "not strong Democrat", "Independent, near Democrat", "Independent", "Independent, near Republican", "not strong Republican", "strong Republican", and "other". I create three binary variables, corresponding to three alternative definitions of party identity. The first variable, which uses a narrow definition of party identity, takes the value '1' if a respondent answered "strong Republican" and takes the value '0' if he answered "strong Democrat". The second, which uses an intermediate definition, takes the value '1' if a respondent answered "strong Republican" or "Not strong Republican" and takes the value '0' if he answered "strong Democrat" or "not strong Democrat". The third, which uses a broad definition, takes the value '1' if a respondent answered "strong Republican", "not strong Republican" or "Independent, near Republican" and takes

the value '0' if he answered "strong Democrat", "not strong Democrat" or "Independent, near Democrat".

For each presidential election that took place between 1968 and 2008, the GSS contains at least one wave in which respondents were asked how they voted in that election or how they would have voted if they did not (Smith et al., 2012). For example, respondents interviewed in 1987, 1988 and 1989 were asked how they voted or would have voted in the 1984 election, while those interviewed in 1989, 1990, 1991 and 1993 were asked how they voted or would have voted in the 1988 election. Notice that respondents interviewed in 1989 were asked about the 1984 election, as well as the 1988 election. I create two binary variables, corresponding to those who voted and those who did not vote, respectively. The first takes the value '1' if a respondent voted Republican in the most recent election, and takes the value '0' if she voted Democrat. The second takes the value '1' if a respondent would have voted Republican in the most recent election, and takes the value '0' if she would have voted Democrat. In each case, every respondent who was asked about more than one election retains the observation corresponding to the most recent election.

A number of covariates are included in some of the models, namely: age, age squared, gender, race, language, marital status, education, and household income, as well as region and year effects (Smith et al., 2012). The GSS distinguishes between three racial categories: "white", "black" and "other". It distinguishes between five levels of educational attainment: "less than high school", "high school", "junior college", "bachelor" and "graduate". It distinguishes between five marital statuses: "married", "widowed", "divorced", "separated" and "never married". Household income is the natural log of a respondent's household income, given in constant 2000 dollars. Beginning in 2006, the GSS began to sample Spanish speakers ( $n = 513$ ), alongside English speakers. Language is a dummy variable equal to 1 if the interview was conducted in Spanish.

I utilise six measures of socially liberal beliefs, namely: attitude toward homosexuality, attitude toward marijuana legalisation, attitude toward abortion, attitude toward free speech for communists, attitude toward free speech for racists, and attitude toward free speech for militarists (Smith et al., 2012). The first is assessed with the question, "What about sexual relations between two adults of the same sex—do you think it is always wrong, almost always wrong, wrong only

sometimes, or not wrong at all?” The second is assessed with the question, “Do you think the use of marijuana should be made legal or not?” The third is assessed with the question, “Tell me whether you think it should be possible for a pregnant woman to obtain a legal abortion if she wants it for any reason.” The Fourth is assessed with the question, “Suppose an admitted communist wanted to make a speech in your community. Should he be allowed to or not?” The fifth is assessed with the question, “If a person wanted to make a speech in your community claiming that blacks are inferior, should he be allowed to or not?” And the sixth is assessed with the question, “Consider a person who advocates doing away with elections and letting the military run the country. If such a person wanted to make a speech in your community, should he be allowed to or not?”

I utilise six measures of economically liberal beliefs, namely: attitude toward government provision of jobs, attitude toward government assistance of industry, attitude toward government redistribution of income, attitude toward price controls, attitude toward labour unions, and attitude toward military spending (Smith et al., 2012). The first is assessed with the question, “Do you think it should or should not be the government’s responsibility to provide a job for everyone who wants one?” The second is assessed with the question, “Do you think it should or should not be the government’s responsibility to provide industry with the help it needs to grow?” The third is assessed with the question, “Do you think it should or should not be the government’s responsibility to reduce income differences between rich and poor?” The fourth is assessed with the question, “Do you think it should or should not be the government’s responsibility to keep prices under control?” The fifth is assessed with the question, “To what extent do you agree or disagree that unions in this country have too little power?” And the sixth is assessed with the question, “Are we spending too little, about the right amount, or too much on the military, armaments and defence?” Descriptive statistics on the measures of social and economic beliefs are provided in Appendix A.

### *2.3 Models*

In the first stage of the analysis, OLS regression is used to compute the difference in mean verbal intelligence between those who identify as Republican and those who identify as Democrat,

separately for the three definitions of party identity. Differences are computed both before and after adjusting for socio-economic characteristics. In the second stage of the analysis, OLS regression is used to compute the difference in mean verbal intelligence between those who supported the Republican Party in elections and those who supported the Democratic Party, separately for voters and non-voters. Again, differences are computed both before and after adjusting for socio-economic characteristics. In the third stage of the analysis, verbal intelligence is included as an independent variable in OLS models of social and economic beliefs.

A relatively small number of respondents are intentionally excluded from the analysis. In 1982 and 1987, blacks were oversampled as part of a National Science Foundation research project (Smith et al., 2012). Because the samples from these years are not representative of the U.S. population, all oversampled respondents ( $n = 707$ ) are excluded from the analysis. Respondents for whom at least one of the covariates took a missing value are also excluded. Estimates from the models without covariates are qualitatively identical if these respondents are included (results not shown). In addition, the regression models are weighted as a way of compensating for bias due to unequal household size, and bias due to non-respondent sub-sampling in 2004 and 2006 (Stephenson, 1978; Smith et al., 2012). The estimates are qualitatively identical if unweighted models are estimated (results not shown).

### **3. Results**

Table 1 displays the difference in mean verbal intelligence between those who identify as Republican and those who identify as Democrat, separately for the three definitions of party identity. Under the narrow definition, mean verbal intelligence is 5.48 IQ points ( $d = 0.37$ ) higher among Republicans. This difference falls to 1.26 IQ points ( $d = 0.08$ ) when covariates are included. Under the intermediate definition, mean verbal intelligence is 3.47 IQ points ( $d = 0.23$ ) higher among Republicans. This difference falls to 0.52 IQ points ( $d = 0.03$ ) when covariates are included. Under the broad definition, mean verbal intelligence is 2.47 IQ points ( $d = 0.16$ ) higher among Republicans.

This difference disappears completely when covariates are included. The preceding results imply that the difference in verbal intelligence between Republicans and Democrats is largest when the comparison is restricted to those with the strongest partisan identity, and is smallest when the comparison is extended to those with the weakest partisan identity. In addition, they suggest that the effect of verbal intelligence on party identity is largely accounted for by socio-economic characteristics. People with higher verbal intelligence tend to have better education, higher incomes, and are more likely to be married (Herrnstein & Murray, 1994; Deary, 2012). And such people are more likely to identify as Republican.

**Table 1.** Difference in mean verbal intelligence between those who identify as Republican and those who identify as Democrat for three definitions of party identity

	Narrow definition	Intermediate definition	Broad definition
Without covariates	5.48***	3.47***	2.47***
With covariates	1.26**	0.52*	-0.00
Observations	5,985	14,887	20,025

*Notes:* Each value is the Republican advantage in IQ points. Estimates are from weighted OLS models of verbal intelligence. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. Covariates: age, age squared, gender, race, language, marital status, education, log of real household income, region effects, year effects.

Table 2 displays the difference in mean verbal intelligence between those who supported the Republican Party in elections and those who supported the Democratic Party, separately for voters and non-voters. In the case of voters, mean verbal intelligence is 1.82 IQ points ( $d = 0.12$ ) higher among Republicans. This difference reverses and ceases to be statistically significant when covariates are included. In the case of non-voters, mean verbal intelligence is 1.86 IQ points ( $d = 0.12$ ) higher among Republicans. Again, this difference ceases to be statistically significant when covariates are included. The preceding results indicate that the effect of verbal intelligence on voting decision is entirely accounted for by socio-economic characteristics. As a robustness check, Appendix B repeats the analysis using only white respondents.

**Table 2.** Difference in mean verbal intelligence between those who supported the Republican Party in elections and those who supported the Democratic Party for voters and non-voters.

	Voters	Non-voters
Without covariates	1.82***	1.86***
With covariates	-0.42	0.34
Observations	14,231	5,660

*Notes:* Each value is the Republican advantage in IQ points. Estimates are from weighted OLS models of verbal intelligence. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. Covariates: age, age squared, gender, race, language, marital status, education, log of real household income, region effects, year effects.

Table 3 displays standardized effects of verbal intelligence on social beliefs. There is strong evidence that Americans with higher verbal intelligence tend to be more socially liberal. They are less likely to believe that homosexual relations are wrong ( $\beta = -.24$ ), that marijuana should be illegal ( $\beta = -.12$ ), that women should not be able to get an abortion ( $\beta = -.17$ ), that communists should not be able to speak freely ( $\beta = -.32$ ), that racists should not be able to speak freely ( $\beta = -.21$ ), and that militarists should not be able to speak freely ( $\beta = -.25$ ). Table 4 displays standardized effects of verbal intelligence on economic beliefs. Once again, there is strong evidence that Americans with higher verbal intelligence tend to be more economically liberal. They are less likely to believe that the government should provide a job for everyone ( $\beta = -.27$ ), that the government should assist industrial growth ( $\beta = -.16$ ), that the government should reduce income differences ( $\beta = -.22$ ), that the government should control prices ( $\beta = -.31$ ), that unions do not have enough power ( $\beta = -.27$ ), and that military spending is not high enough ( $\beta = -.10$ ).

**Table 3.** Standardized effects of verbal intelligence on six measures of social beliefs

	Homosexual relations are wrong	Marijuana should be illegal	Women should not be able to get an abortion	Communists should not be able to speak freely	Racists should not be able to speak freely	Militarists should not be able to speak freely
Without covariates	-.239***	-.115***	-.168***	-.317***	-.208***	-.254***
With covariates	-.165***	-.118***	-.092***	-.234***	-.139***	-.170***
Observations	13,610	12,610	12,589	14,024	12,783	12,774

*Notes:* Each value is the standardized coefficient on verbal intelligence. Estimates are from weighted OLS models. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. Covariates: age, age squared, gender, race, language, marital status, education, log of real household income, region effects, year effects.

**Table 4.** Standardized effects of verbal intelligence on six measures of economic beliefs.

	Government should provide a job for everyone	Government should assist industrial growth	Government should reduce income differences	Government should control prices	Unions do not have enough power	Military spending is not high enough
Without covariates	-.267***	-.162***	-.219***	-.309***	-.273***	-.103***
With covariates	-.154***	-.088*	-.131***	-.173***	-.210***	-.096***
Observations	2,904	1,342	2,096	1,375	807	13,409

*Notes:* Each value is the standardized coefficient on verbal intelligence. Estimates are from weighted OLS models. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. Covariates: age, age squared, gender, race, language, marital status, education, log of real household income, region effects, year effects.

The fact that the correlation between verbal intelligence and economically liberal beliefs persists after controlling for characteristics like race, education and income suggests it cannot simply be attributed to selfishness on the parts of people with higher verbal intelligence. In particular, it contradicts the hypothesis that such people only have economically liberal beliefs because they believe they have personally benefitted from economically liberal policies. On the other hand, if conditional on current income, verbal intelligence is correlated with a tendency to believe one's future income will be higher under economically liberal policies, the correlation between verbal intelligence and economically liberal beliefs could be explained by selfishness, at least in part.

Table 5 displays standardized effects of verbal intelligence on a principal component of social beliefs (social conservatism) and a principal component of economic beliefs (economic statism). Social conservatism was obtained by extracting the first principal component from a PCA on all six measures of social beliefs. Economic statism was obtained by extracting the first principal component from a PCA on four measures of economic beliefs: attitude toward government provision of jobs, attitude toward government assistance of industrial growth, attitude toward government redistribution of income, and attitude toward price controls. The two other measures of economic beliefs were omitted because including them dramatically reduced the number of available cases. Insofar as many of the questions on social and economic beliefs were asked at different waves, it was not possible to estimate models using a single dimension of classically liberal beliefs. Verbal intelligence has a moderate negative effect on both social conservatism and economic statism. Before adjusting for covariates,  $\beta = -.35$  in the model of social conservatism and  $\beta = -.34$  in the model of economic statism. After adjusting for covariates,  $\beta = -.26$  in the model of social conservatism and  $\beta = -.21$  in the model of economic statism. For further discussion of the relationships between intelligence and social beliefs, and between intelligence and economic beliefs, I refer the reader to Kanazawa (2010) and Caplan and Miller (2010), respectively.

**Table 5.** Standardized effects of verbal intelligence on principal components of social and economic beliefs

	Social conservatism	Economic statism
Without covariates	-.350***	-.338***
With covariates	-.264***	-.210***
Observations	3,220	1,247

*Notes:* Each value is the standardized coefficient on verbal intelligence. Estimates are from weighted OLS models. Social conservatism had an eigenvalue of 2.51 and explained 42% of the variance. Economic statism had an eigenvalue of 2.25 and explained 56% of the variance. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. Covariates: age, age squared, gender, race, language, marital status, education, log of real household income, region effects, year effects.

#### 4. Discussion

Previous studies have documented that people with higher intelligence tend to be more socially liberal (Deary et al., 2008a; Deary et al., 2008b; Stankov, 2009; Kanazawa, 2010; Schoon et al., 2010; Heaven et al., 2011; Hodson & Busseri, 2012) and less religious (Bell, 2002; Lynn et al., 2009; Nyborg, 2009; Ganzach et al., 2013; Zuckerman et al., 2013). This should lead one to expect that Republicans are less intelligent than Democrats. However, looking at data from the General Social Survey, I find that Republicans have slightly higher verbal intelligence than Democrats. In particular, individuals who identify as Republican have slightly higher verbal intelligence than those who identify as Democrat (3-5 IQ points), and individuals who supported the Republican Party in elections have slightly higher verbal intelligence than those who supported the Democratic Party (2 IQ points). I reconcile these findings with the previous literature by showing that, consistent with Pinker's (2011) hypothesis, Americans with higher verbal intelligence tend to have more socially liberal beliefs and more economically liberal beliefs ( $\beta = .10-.32$ ).

Overall, my findings suggest that higher intelligence among classically liberal Republicans compensates for lower intelligence among socially conservative Republicans. Interestingly, the difference in verbal intelligence between those who supported the Republican Party in elections and those who supported the Democratic Party (2 IQ points) is somewhat smaller than the difference between those who identify as Republican and those who identify as Democrat (3-5 IQ points). One possible explanation is that Independents with higher intelligence are more likely to support the Democratic Party in elections. Future research should test this prediction. It should also address the more complex question of why intelligence happens to be correlated with particular kinds of social and economics beliefs (Charlton, 2009; Kanazawa, 2010; Woodley, 2010; Dutton, 2013).

Two important caveats should be attached to my conclusions. First, a 10-word vocabulary test is at best an imperfect measure of verbal intelligence, let alone general intelligence. Indeed, there is already evidence that the correlation between intelligence and political beliefs varies with the sub-dimension of intelligence under scrutiny. Specifically, Kimmelman (2008) found that although

libertarian social attitudes were positively related to verbal SAT scores, they were unrelated to math SAT scores. Second, most of the effects I observe are small by conventional standards, especially the differences in verbal intelligence between Republicans and Democrats. According to convention, a standardized difference of 0.20 constitutes a small effect size; by contrast, a standardized difference of 0.50 is considered moderate, while a standardized difference of 0.80 or greater is considered large (Cohen, 1988, pp. 24-8).

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## Appendix A

**Table A.1.** Descriptive statistics for measures of social and economic beliefs

	Minimum	Maximum	Mean	Standard deviation	Observations
Homosexual relations are wrong	1	4	3.14	1.26	13,610
Marijuana should be illegal	1	2	1.72	0.45	12,610
Women should not be able to get an abortion	1	2	1.59	0.49	12,589
Communists should not be able to speak freely	1	2	1.35	0.48	14,024
Racists should not be able to speak freely	1	2	1.38	0.48	12,783
Militarists should not be able to speak freely	1	2	1.37	0.48	12,774
Government should provide a job for everyone	1	4	2.34	1.03	2,904
Government should assist industrial growth	1	4	2.78	0.79	1,342
Government should reduce income differences	1	4	2.38	1.06	2,096
Government should control prices	1	4	2.87	0.87	1,375
Unions do not have enough power	1	4	2.24	0.77	807
Military spending is not high enough	1	3	1.88	0.74	13,409

## Appendix B

It is well-documented that blacks score lower than whites on the GSS measure of verbal intelligence (Lynn, 1998; Huang & Hauser, 2001). Part of this disparity is probably due to downward bias in the test scores of blacks (Huang, 2009). There may be other racial biases in the GSS measure of verbal intelligence as well. To check whether the results concerning Republicans and Democrats are attributable to lower test scores among non-whites, who are more likely to be Democrats (Newport, 2013), I repeat the analysis using only white respondents.

Table B.1 displays the difference in mean verbal intelligence between whites who identify as Republican and whites who identify as Democrat, separately for the three definitions of party identity. Under the narrow definition, mean verbal intelligence is 3.32 IQ points ( $d = 0.22$ ) higher among Republicans before adjustments, and 1.6 IQ points ( $d = 0.11$ ) higher after. Under the intermediate definition, mean verbal intelligence is 2.01 IQ points ( $d = 0.13$ ) higher among Republicans before adjustments, and 0.71 IQ points ( $d = 0.05$ ) higher after. Under the broad definition, mean verbal intelligence is 1.2 IQ points ( $d = 0.08$ ) higher among Republicans before adjustments, and not significantly higher after. The preceding estimates are smaller than those in Table 1, which suggests that the difference in verbal intelligence by party identity may be partly attributable to lower test scores among non-whites. However, a statistically significant Republican advantage remains even when non-white respondents are excluded.

**Table B.1.** Difference in mean verbal intelligence between whites who identify as Republican and whites who identify as Democrat for three definitions of party identity

	Narrow definition	Intermediate definition	Broad definition
Without covariates	3.32***	2.01***	1.20***
With covariates	1.60***	0.71**	0.24
Observations	4,600	12,192	16,667

*Notes:* Each value is the Republican advantage in IQ points. Estimates are from weighted OLS models of verbal intelligence. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. Covariates: age, age squared, gender, language, marital status, education, log of real household income, region effects, year effects.

Table B.2 displays the difference in mean verbal intelligence between whites who supported the Republican Party in elections and whites who supported the Democratic Party, separately for voters and non-voters. In the case of voters, the Republican advantage is negative, while in the case of non-voters, it is very small. This suggests that the difference in verbal intelligence by voting decision may be entirely attributable to lower test scores among non-whites. Overall, the results from Tables B.1 and B.2 reinforce the prediction that Independents with higher intelligence are more likely to support the Democratic Party in elections.

**Table B.2.** Difference in mean verbal intelligence between whites who supported the Republican Party in elections and whites who supported the Democratic Party for voters and non-voters

	Voters	Non-voters
Without covariates	-0.25	0.73
With covariates	-0.43	1.00*
Observations	12,174	4,324

*Notes:* Each value is the Republican advantage in IQ points. Estimates are from weighted OLS models of verbal intelligence. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. Covariates: age, age squared, gender, language, marital status, education, log of real household income, region effects, year effects.

## CHAPTER 5

# COGNITIVE ABILITY AND PARTY IDENTITY IN THE UNITED STATES

### **Abstract**

Carl (2014) analysed data from the U.S. General Social Survey (GSS), and found that individuals who identify as Republican have slightly higher verbal intelligence than those who identify as Democrat. An important qualification was that the measure of verbal intelligence used was relatively crude, namely a 10-word vocabulary test. This study examines three other measures of cognitive ability from the GSS: a test of probability knowledge, a test of verbal reasoning, and an assessment by the interviewer of how well the respondent understood the survey questions. In all three cases, I find that individuals who identify as Republican score slightly higher than those who identify as Democrat; the unadjusted differences are 1-3 IQ points, 2-4 IQ points and 2-3 IQ points, respectively. Path analyses indicate that the associations between cognitive ability and party identity are largely but not totally accounted for by socio-economic position: individuals with higher cognitive ability tend to have better socio-economic positions, and individuals with better socio-economic positions are more likely to identify as Republican. These results are consistent with Carl's (2014) hypothesis that higher intelligence among classically liberal Republicans compensates for lower intelligence among socially conservative Republicans.

## 1. Introduction

Research has consistently shown that people with higher cognitive ability tend to be more socially liberal (Deary, Batty & Gale, 2008a; Deary, Batty & Gale, 2008b; Stankov, 2009; Kanazawa, 2010; Schoon, Cheng, Gale, Batty & Deary, 2010; Pesta, McDaniel & Bertsch, 2010; Heaven, Ciarrochi & Leeson, 2011; Hodson & Busseri, 2012; Pesta & McDaniel, 2014) and less religious (Bell, 2002; Lynn, Harvey & Nyborg, 2009; Nyborg, 2009; Kanazawa, 2010; Ganzach, Ellis & Gotlibovski, 2013; Zuckerman, Silberman & Hall, 2013; Pesta & McDaniel, 2014). Given that individuals who identify as Republican tend to be both more religious and more socially conservative than those who identify as Democrat (Newport, 2007; Saad, 2012), this should lead one to expect that Republicans have lower cognitive ability. However, people with higher cognitive ability tend to think more like an economist, which could be considered a centre-right characteristic (Caplan & Miller, 2010; Rindermann, Flores-Mendoza & Woodley, 2012). Furthermore, evidence suggests that libertarians, who are more likely to vote Republican (Kirby & Boaz, 2010), have higher cognitive ability than both conservatives and progressives (Kemmelmeier, 2008; Iyer, Koleva, Graham, Ditto & Haidt, 2012; see also Weakliem, 2002; Feldman & Johnston, 2014). In addition, mean IQ is positively correlated with measures of economic freedom across countries (Rindermann & Thompson, 2011; Rindermann, 2012; Lynn & Vanhanen, 2012).

Carl (2014) analysed data from the General Social Survey (GSS) in the United States, and found that individuals who identify as Republican have slightly higher verbal intelligence than those who identify as Democrat. The difference ranged from 2.47 IQ points to 5.48 IQ points, depending on the definition of party identity. Carl (2014) reconciled this finding with the previous literature by suggesting that higher cognitive ability among classically liberal Republicans compensates for lower cognitive ability among socially conservative Republicans. One important qualification was that the measure of verbal intelligence used was relatively crude, namely a 10-word vocabulary test. This matters because the association between cognitive ability and political beliefs may vary with the sub-dimension of intelligence under scrutiny. Indeed, Kemmelmeier (2008) found that libertarian social

attitudes were positively related to verbal SAT scores but were unrelated to math SAT scores. The present study investigates whether individuals who identify as Republican differ from those who identify as Democrat on three other measures of cognitive ability from the GSS. It also investigates the extent to which the association between party identity and cognitive ability is accounted for by socio-economic position.

## **2. Method**

### *2.1 Data and measures*

Data are from the GSS, a public-opinion survey that has been administered to a nationally representative sample of American adults every 1-2 years since 1972 (see Smith, Marsden, Hout & Kim, 2012). As in Carl (2014), three alternative definitions of party identity are utilised. Each of these is derived from the GSS question on party identity, namely, “Do you think of yourself as a Republican, Democrat, Independent, or what?” This question has eight response categories: “strong Democrat”, “not strong Democrat”, “Independent, near Democrat”, “Independent”, “Independent, near Republican”, “not strong Republican”, “strong Republican”, and “other”. The first definition of party identity is narrow, corresponding to a variable that takes the value ‘1’ if a respondent answered “strong Republican” and takes the value ‘0’ if he answered “strong Democrat”. The second definition is intermediate, corresponding to a variable that takes the value ‘1’ if a respondent answered “strong Republican” or “not strong Republican” and takes the value ‘0’ if he answered “strong Democrat” or “not strong Democrat”. The third definition is broad, corresponding to a variable that takes the value ‘1’ if a respondent answered “strong Republican”, “not strong Republican” or “Independent, near Republican” and takes the value ‘0’ if he answered “strong Democrat”, “not strong Democrat” or “Independent, near Democrat”.

The first measure of cognitive ability is a test of probability knowledge. In the 2006-2012 waves of the GSS, some respondents were asked the following two questions, each of which is

prefaced with the statement, “A doctor tells a couple that their genetic makeup means they’ve got one in four chances of having a child with an inherited illness” (Smith et al., 2012). First, “Does this mean that if their first child has the illness, the next three will not have the illness?” And second, “Does this mean that each of the couple’s children will have the same risk of suffering from the illness?” There are two response categories: “yes”, and “no”. The correct answers are “no” and “yes”, respectively. In each case, the value ‘1’ is assigned to the correct answer and the value ‘0’ is assigned to the incorrect answer. Respondents’ scores are then summed, yielding a variable that ranges from 0 to 2. A disadvantage of this measure is that neither question is particularly discriminating; 90% answer the first one correctly, and 79% answer the second one correctly.

The second measure of cognitive ability is a test of verbal reasoning. In the 1994 wave of the GSS, respondents were administered 8 of the similarities items from the WAIS-R (see Huang and Hauser, 2001; Smith et al., 2012). Each item takes the form of a question about what two particular objects have in common. For example, the first item asks, “In what way are an orange and a banana alike?” Answers deemed completely right (e.g., “fruit”) are assigned the value ‘2’, those deemed partially right (e.g., “food”) are assigned the value ‘1’, and those deemed completely wrong (e.g. “round”) are assigned the value ‘0’. Respondents’ scores are then summed, yielding a variable that ranges from 0 to 16. A disadvantage of this measure is that the number of available cases is relatively small. This matters because the expected effect sizes are also relatively small (Carl, 2014), meaning that a difference test on the measure probably has quite low statistical power.

The third measure of cognitive ability is an assessment by the interviewer of how well the respondent understood the survey questions. The interviewer writes down whether the respondent’s understanding was “good”, “fair”, or “poor”. Somewhat arbitrarily, the value ‘3’ is assigned to “good”, the value ‘2’ is assigned to “fair” and the value ‘1’ is assigned to “poor”. As explained below, the relevant results do not depend on this particular assignment of values. A disadvantage of the measure is that it is based on the interviewer’s subjective judgement. However, studies have shown that observer-ratings of intelligence are positively related to objective measures (Borkenau & Liebler, 1993; Hall, Andrzejewski, Murphy, Mast & Feinstein, 2008).

A fourth measure of cognitive ability is the vocabulary score utilised by Carl (2014), as well as Kanazawa (2010) and Caplan and Miller (2010). The respondent is given a 10-word vocabulary test in which he must identify which of five phrases supplies the correct definition of each word. Table 1 displays Pearson correlations between the four measures of cognitive ability. The correlations range from small in the case of question comprehension and probability knowledge to large in the case of verbal reasoning and vocabulary score; all are positive and statistically significant. Prior to analysis, each measure is transformed so that it has a mean of 100 and a standard deviation of 15, which is the convention for standardizing IQ scores. Appendix A provides Pearson correlations between the three measures of party identity and the four measures of cognitive ability.

**Table 1.** Correlations between measures of cognitive ability in the GSS.

	Probability know ledge		Verbal reasoning		Question comprehension		Vocabulary score	
	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>
Probability know ledge	1	4631						
Verbal reasoning			1	2192				
Question comprehension	.190***	4622	.274***	2179	1	55,794		
Vocabulary score	.251***	2400	.427***	1403	.363***	26,048	1	26,308

*Notes:* The cells in the second row of the first column are empty because there are no waves in which both probability knowledge and verbal reasoning were assessed. Sample weights are applied. Significance levels: \* 5%, \*\* 1%, \*\*\* 0.1%.

Finally, some of the models include a variable which I refer to as socio-economic position. This variable is simply the first principal component from a PCA on two alternative measures of socio-economic position, namely: total years of education completed, and the natural logarithm of real household income (see Smith et al., 2012). These two measures have a Pearson correlation of  $r = .37$  ( $p < 0.001$ ). In the PCA, socio-economic position had an eigenvalue of 1.39 and explained 69% of the variance. One obvious shortcoming of the measure is that it does not encompass all the various dimensions of socio-economic position (Saegert, Adler, Bullock, Cauce, Liu et al., 2007).

## *2.2 Models*

The analysis itself comprises two stages. In the first stage, OLS regression is used to calculate differences in mean cognitive ability between those who identify as Republican and those who identify as Democrat, separately for the three definitions of party identity. Then in the second stage, path analysis is used to decompose the associations between cognitive ability and party identity into their direct and indirect components. Respondents for whom at least one of the variables took a missing value are excluded, along with black respondents oversampled in 1982 and 1987 (Smith et al., 2012). Sampling weights are applied in order to correct for unequal probabilities of selection (Stephenson, 1978; Smith et al., 2012). Differences are qualitatively identical when unweighted models are estimated, as well as when respondents with missing values are included (results not shown).

## **3. Results**

### *3.2 Differences in mean cognitive ability by party identity*

Table 2 displays differences in mean cognitive ability between those who identify as Republican and those who identify as Democrat, separately for the three definitions of party identity. The first row displays differences in mean probability knowledge. Under the narrow definition, mean

probability knowledge is 2.93 IQ points ( $d = 0.20$ )<sup>12</sup> higher among Republicans; under the intermediate definition, it is 2.32 IQ points ( $d = 0.15$ ) higher; and under the broad definition, it is 1.38 IQ points ( $d = 0.09$ ) higher. The second row displays differences in mean verbal reasoning. Under the narrow definition, mean verbal reasoning is 3.57 IQ points ( $d = 0.24$ ) higher among Republicans; under the intermediate definition, it is 3.12 IQ points ( $d = 0.21$ ) higher; and under the broad definition, it is 1.93 IQ points ( $d = 0.13$ ) higher. The third row displays differences in mean question comprehension. Under the narrow definition, mean question comprehension is 3.10 IQ points ( $d = 0.21$ ) higher among Republicans; under the intermediate definition, it is 2.30 IQ points ( $d = 0.15$ ) higher; and under the broad definition, it is 1.90 IQ points ( $d = 0.13$ ) higher. As noted, a possible objection to the use of this measure is that numerical values were assigned somewhat arbitrarily to the three assessment categories. Encouragingly however, estimates were approximately identical in both size and significance when the measure was collapsed into a binary variable that demarcated those with a good understanding of the survey questions from those with a fair or poor understanding (results not shown).

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<sup>12</sup> Note that  $d = d_{IQ}/15$ .

**Table 2.** Differences in cognitive ability by party identity for four measures of cognitive ability and three measures of party identity.

	Narrow definition		Intermediate definition		Broad definition	
	$d_{IQ}$	$n$	$d_{IQ}$	$n$	$d_{IQ}$	$n$
Probability knowledge	2.93*	1108	2.32**	2448	1.38*	3325
Verbal reasoning	3.57*	466	3.12***	1227	1.93*	1684
Question comprehension	3.10***	12,751	2.30***	31,501	1.90***	42,008
Vocabulary score	5.32***	5994	3.41***	14,907	2.45***	20,048

*Notes:*  $d_{IQ}$  denotes the Republican advantage in IQ points. Estimates are from weighted OLS models with year fixed-effects. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%.

For comparison, the fourth row of Table 2 displays differences in mean vocabulary score. Note that these deviate very slightly from the values reported by Carl (2014) due to estimation with year fixed-effects and the exclusion of fewer cases via listwise deletion<sup>13</sup>. Overall, the preceding results mirror those of Carl (2014) in two key respects. First, differences in cognitive ability between Republicans and Democrats are generally small in magnitude (Cohen, 1988, pp. 24-8). Yet it is worth noting that, insofar as the measures of cognitive ability and party identity examined here are not perfectly reliable, the observed differences should probably be considered lower bounds. Second, differences are largest when the comparison is restricted to those with the strongest partisan identity, and are smallest when the comparison is extended to those with the weakest partisan identity. As a robustness check, Appendix B repeats the analysis using only white respondents.

### *3.2 Path analyses of associations between cognitive ability and party identity*

Table 3-5 display estimates from path analyses where the effect of cognitive ability on party identity is decomposed into a direct component and an indirect component via socio-economic position. Table 3 displays estimates for the narrow definition of party identity. Each row in the table comprises a separate analysis. The first column displays an estimate of the direct effect of cognitive ability on party identity. The second and third columns display estimates of the effect of cognitive ability on socio-economic position and the effect of socio-economic position on party identity, respectively. Multiplying the values in these two columns yields the indirect effect of cognitive ability on party identity; i.e., indirect effect =  $\beta_{CA \rightarrow SP} \times \beta_{SP \rightarrow RI}$ . The fourth column displays the percentage of the total effect that is indirect (e.g., Hodson & Busseri, 2012). It is important to keep in mind that the path from cognitive ability to socio-economic position, namely  $\beta_{CA \rightarrow SP}$ , probably reflects some causality from socio-economic position to cognitive ability. For example, while childhood intelligence is very highly correlated with later educational attainment (Herrnstein & Murray, 1994; Deary, Strand, Smith & Fernandez, 2007; Deary, 2012), there is evidence that education has a lasting impact

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<sup>13</sup> Fewer cases were excluded via listwise deletion simply because fewer variables were utilised in total.

on cognitive ability (Brinch & Galloway, 2011; Schneeweis, Skirbekk & Winter-Ebmer, 2014; but see Lucas & Mbiti, 2014).

**Table 3.** Path analyses of the associations between measures of cognitive ability and the narrow definition of party identity.

	$\beta_{CA \rightarrow RI}$	$\beta_{CA \rightarrow SP}$	$\beta_{SP \rightarrow RI}$	Percentage indirect	<i>n</i>
Probability know ledge	.064	.201***	.113***	26	1108
Verbal reasoning	.022	.419***	.219***	81	466
Question comprehension	.032***	.380***	.199***	70	12,751
Vocabulary score	.093***	.478***	.163***	46	5994

*Notes:* CA denotes cognitive ability, RI denotes Republican identity, and SP denotes socio-economic position.  $\beta_{CA \rightarrow RI}$  denotes the effect of cognitive ability on Republican identity net of socio-economic position.  $\beta_{CA \rightarrow SP}$  denotes the effect of cognitive ability on socio-economic position.  $\beta_{SP \rightarrow RI}$  denotes the effect of socio-economic position on Republican identity net of cognitive ability. Estimates are from weighted OLS models with year fixed-effects. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%.

**Table 4.** Path analyses of the associations between measures of cognitive ability and the intermediate definition of party identity.

	$\beta_{CA \rightarrow RI}$	$\beta_{CA \rightarrow SP}$	$\beta_{SP \rightarrow RI}$	Percentage indirect	<i>n</i>
Probability know ledge	.055*	.203***	.106***	28	2448
Verbal reasoning	.049	.360***	.161***	54	1227
Question comprehension	.028***	.367***	.150***	66	31,501
Vocabulary score	.058***	.450***	.127***	50	14,907

*Notes:* CA denotes cognitive ability, RI denotes Republican identity, and SP denotes socio-economic position.  $\beta_{CA \rightarrow RI}$  denotes the effect of cognitive ability on Republican identity net of socio-economic position.  $\beta_{CA \rightarrow SP}$  denotes the effect of cognitive ability on socio-economic position.  $\beta_{SP \rightarrow RI}$  denotes the effect of socio-economic position on Republican identity net of cognitive ability. Estimates are from weighted OLS models with year fixed-effects. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%.

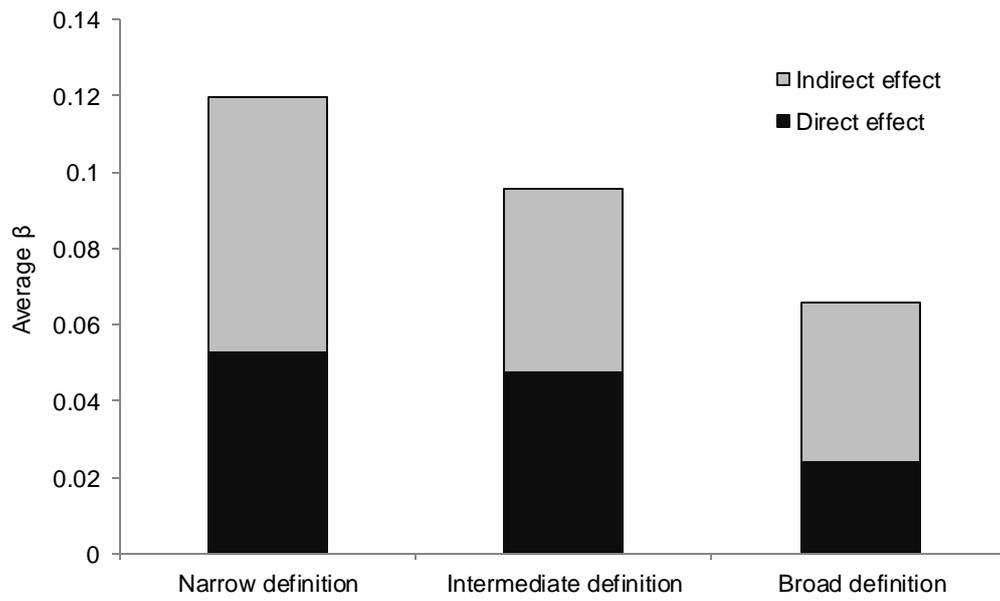
**Table 5.** Path analyses of the associations between measures of cognitive ability and the broad definition of party identity.

	$\beta_{CA \rightarrow RI}$	$\beta_{CA \rightarrow SP}$	$\beta_{SP \rightarrow RI}$	Percentage indirect	<i>n</i>
Probability know ledge	.026	.221***	.087***	43	3325
Verbal reasoning	.016	.354***	.142***	76	1684
Question comprehension	.023***	.361***	.128***	67	42,008
Vocabulary score	.030***	.449***	.117***	64	20,048

*Notes:* CA denotes cognitive ability, RI denotes Republican identity, and SP denotes socio-economic position.  $\beta_{CA \rightarrow RI}$  denotes the effect of cognitive ability on Republican identity net of socio-economic position.  $\beta_{CA \rightarrow SP}$  denotes the effect of cognitive ability on socio-economic position.  $\beta_{SP \rightarrow RI}$  denotes the effect of socio-economic position on Republican identity net of cognitive ability. Estimates are from weighted OLS models with year fixed-effects. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%.

As the fourth column of Table 3 indicates, 26-81% (mean = 56%) of the association between cognitive ability and the narrow definition of party identity is accounted for by socio-economic position. The value for probability knowledge, namely 26%, is appreciably lower than the values for the other three measures, and should perhaps therefore be regarded with greater scepticism. Tables 4 and 5 display estimates for the intermediate and broad definitions of party identity, respectively. 28-66% (mean = 50%) of the association between cognitive ability and the intermediate definition of party identity is accounted for by socio-economic position, while 43-76% (mean = 63%) of the association between cognitive ability and the broad definition of party identity is accounted for by socio-economic position. Figure 1 plots the average effect of cognitive ability, separately for the three definitions of party identity. These results imply that individuals with higher cognitive ability tend to have better socio-economic positions, and that individuals with better socio-economic positions are more likely to identify as Republican. Overall, more than half the effect of cognitive ability on party identity appears to work through socio-economic position. Moreover, given that socio-economic position was operationalized somewhat narrowly (Saegert et al., 2007), this is probably an underestimate of the true extent to which the effect works through socio-economic position.

**Figure 1.** The average effect of cognitive ability on party identity for three measures of party identity.



*Notes:* Each bar corresponds to the unweighted average over four measures of cognitive ability.

## 4. Discussion

Carl (2014) analysed data from the GSS, and found that individuals who identify as Republican have slightly higher verbal intelligence than those who identify as Democrat. Consistent with this result, the present study finds that individuals who identify as Republican score slightly higher than those who identify as Democrat on three other measures of cognitive ability from the GSS: a test of probability knowledge (1-3 IQ points), a test of verbal reasoning (2-4 IQ points), and an assessment by the interviewer of how well the respondent understood the survey questions (2-3 IQ points). It also finds that the associations between cognitive ability and party identity are largely but not totally accounted for by socio-economic position: individuals with higher cognitive ability tend to have better socio-economic positions, and individuals with better socio-economic positions are more likely to identify as Republican.

Previous studies have documented that cognitive ability is positively correlated with socially liberal beliefs (Deary et al., 2008a; Deary et al., 2008b; Stankov, 2009; Kanazawa, 2010; Schoon et al., 2010; Pesta et al., 2010; Heaven et al., 2011; Hodson & Busseri, 2012; Pesta & McDaniel, 2014), and negatively correlated with religious beliefs (Bell, 2002; Lynn et al., 2009; Nyborg, 2009; Ganzach et al., 2013; Zuckerman et al., 2013; Pesta & McDaniel, 2014). The Republican advantage is therefore somewhat unexpected. However, cognitive ability is associated with both socially and economically liberal beliefs, which suggests that higher cognitive ability among classically liberal Republicans may compensate for lower cognitive ability among socially conservative Republicans (Carl, 2014).

Several major caveats are in order. First, all four measures of cognitive ability examined here are rather crude; none can be considered a measure of general intelligence. And while the correlations between them (Table 1) are positive and statistically significant, most are only moderate in size (Cohen, 1988, pp. 81-2). Second, the differences I observe are not large by conventional standards. Indeed, many fall below  $d = 0.20$ , which is generally considered small (Cohen, 1988, pp. 24-8). Third, given the possibility of bidirectional causality between cognitive ability and socio-economic position, conclusions from the path analyses (Tables 3-5) should be treated as particularly tentative.

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## Appendix A

The first three columns in Table A.1 display Pearson correlations between the three measures of party identity and the four measures of cognitive ability. The correlations range from  $r = .047$  to  $r = .177$ ; they are all positive and statistically significant. Another way to quantify the association between cognitive ability and party identity is to treat party identity as a linear scale running from '1' for "strong Democrat" to '7' for "strong Republican". Yet this is problematic because it assumes that every person who identifies as Independent necessarily lies somewhere between those who identify as Democrat and those who identify as Republican. In reality, some people who identify as Independent may do so because they do not believe the Democratic Party is progressive enough, whereas others may do so because they do not believe the Republican Party is conservative or libertarian enough. Nonetheless, as the fourth column in Table A.1 reports, Pearson correlations between the linear scale of party identity and the four measures of cognitive ability are all positive and statistically significant as well.

**Table A.1.** Correlations between measures of party identity and measures of cognitive ability.

	Narrow definition		Intermediate definition		Broad definition		Linear scale	
	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>
Probability know ledge	.090*	1108	.079***	2448	.047*	3325	.058**	4016
Verbal reasoning	.114*	466	.106***	1227	.066*	1684	.076**	1919
Question comprehension	.119***	12,751	.091***	31,501	.075***	42,008	.072***	49,120
Vocabulary score	.177***	5994	.119***	14,907	.084***	20,048	.093***	23,351

*Notes:* *r* denotes the correlation between Republican identity and cognitive ability. Sample weights are applied. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%.

## **Appendix B**

There may be racial biases in the measures of cognitive ability examined here, especially question comprehension, which relies on the interviewer's subjective judgement. This matters because non-whites are more likely to be Democrats (Newport, 2013). I therefore repeat the analysis of differences in mean cognitive ability using only white respondents. Table B.1 displays differences in mean cognitive ability between whites who identify as Republican and whites who identify as Democrat, separately for the three definitions of party identity. Differences in mean vocabulary score are displayed in the fourth row for comparison. In the case of probability knowledge, two of the estimates are negative, and none are statistically significant. In the case of verbal reasoning, all three estimates are positive, yet only the intermediate definition yields a significant difference. The lack of significance under the narrow definition is probably due to the small sample size. In the case of question comprehension, all three estimates are both positive and significant.

**Table B.1.** Differences in cognitive ability by party identity among whites.

	Narrow definition		Intermediate definition		Broad definition	
	$d_{IQ}$	$n$	$d_{IQ}$	$n$	$d_{IQ}$	$n$
Probability know ledge	-0.11	772	0.27	1849	-0.32	2548
Verbal reasoning	2.73	382	2.55**	1056	1.42	1468
Question comprehension	2.34***	9784	1.65***	25,720	1.30***	34,849
Vocabulary score	2.88***	4602	1.84***	12,203	1.10***	16,681

*Notes:*  $d_{IQ}$  denotes the Republican advantage in IQ points. Estimates are from weighted OLS models with year fixed-effects. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%.

The preceding estimates are smaller than the corresponding estimates in Table 2, which suggests that the difference in cognitive ability between Republicans and Democrats may be partly attributable to lower scores among non-whites. In particular, the difference in probability knowledge may be entirely attributable to lower scores among non-whites. A minor caveat is that this measure is not very discriminating; 78% of whites answered both questions correctly, and only 3% answered neither question correctly. Somewhat surprisingly, differences in question comprehension are only slightly smaller and still significant when non-white respondents are excluded. This is surprising because one might have expected question comprehension, a subjective measure, to exhibit the greatest racial bias.

# DOES INTELLIGENCE HAVE A U-SHAPED RELATIONSHIP WITH LEFTISM?

## **Abstract**

Solon (2014) makes an interesting and thoughtful contribution to the literature on intelligence and political beliefs. He concludes that there is a U-shaped relationship between intelligence and leftism such that people with very low and very high intelligence tend to be more left-wing. One piece of evidence he cites is the prevalence of support for the Democratic Party among scholarly elites in the United States. Here I propose a number of qualifications to Solon's (2014) conclusion. I begin by noting that Solon (2014) employs quite a specific definition of 'left', which does not reflect how the term is often used in political discourse. I then analyse the functional form of the relationship between verbal intelligence and 23 separate measures of political beliefs from the U.S. General Social Survey. Some of the results support Solon's (2014) thesis, while others do not. I also review previous studies that have found evidence contradicting Solon's (2014) thesis. Finally, I outline several reasons why the prevalence of support for the Democratic Party among scholarly elites does not constitute overly compelling evidence that there is a U-shaped relationship between intelligence and leftism.

## **1. Introductory remarks**

Solon (2014) reviews the evidence on intelligence and political beliefs. He concludes that there is a U-shaped relationship between intelligence and leftism such that people with very low and very high intelligence tend to be more left-wing. To quote Solon's (2014) abstract, "Individuals of most or least intelligence consistently orient further to the left politically than those of middle intelligence, producing a U-shaped curve." Here I propose a number of qualifications to this conclusion.

In the first section, I note that Solon (2014) employs quite a specific definition of 'left', which does not reflect how the term is often used in political discourse. In the next section, I analyse data on verbal intelligence and political beliefs from the U.S. General Social Survey, finding some evidence that supports Solon's (2014) thesis, and some that does not. I also review previous studies that have found evidence contradicting Solon's (2014) thesis. In the final section, I outline several reasons why the prevalence of support for the Democratic Party among scholarly elites in the United States, a key facet of Solon's (2014) argument, does not constitute overly compelling evidence for his central conclusion. Notwithstanding these comments, I thank Solon (2014) for making an interesting and thoughtful contribution to the literature.

## **2. Defining the term 'left'**

In Section 2 of his paper, Solon (2014) writes the following:

Across a vast section of political issues, the relationship between educational attainment and leftism is consistently characterized by monotonic, positive correlation, except when rights for a substantial, less-educated segment are at issue. On these latter issues (e.g., those that concern economic and racial minorities), a U-shaped curve consistently occurs, with the most educated segment joined on the left by the least educated segment, as the leftist position disproportionately benefits less educated individuals. Accordingly, no material, lower-educated segment is at the focus of the following issues, and opinions relating to these issues are characterized by a monotonically positive relationship between educational attainment and left inclination: gay marriage, abortion, capital

punishment, euthanasia, embryonic stem cell research, immigration, environmental concerns, and foreign policy. By contrast, health care, minimum wage, affirmative action, and fiscal policy involve rights conferred to economic and racial minorities, which, traditionally, are lower-educated demographics, and opinions on these issues are characterized by a U-shaped curve.

Here Solon (2014) argues that the relationship between intelligence and leftism is U-shaped on issues where economic or racial minorities are concerned (e.g., affirmative action), and is monotonically positive on issues where such groups are not concerned (e.g., abortion). In Section 3 of his paper, Solon (2014) goes on to explain that one should not expect intelligence to be associated with extreme left-wing positions such as socialism or government control of the economy because these represent authoritarianism, rigidity and dogmatism. According to Solon (2014, p. 47), the single feature that distinguishes issues on which a U-shaped relationship between intelligence and leftism obtains is pertinence to economic or racial minorities. Indeed, Solon (2014) essentially uses ‘leftist’ as synonymous with ‘liberal’, by which he of course means ‘American social democrat’ rather than ‘European liberal’ or ‘classical liberal’.<sup>14</sup>

Arguably however, this does not reflect how ‘left’ has been used historically, nor how it is used in many countries around the world (see Greenberg & Jonas, 2003; Malka et al., 2014). In *The Penguin Dictionary of Politics*, Robertson (1987, p. 181) writes, “a ‘left-wing’ position in modern politics would involve leaning toward such positions as the following, in some mix or other: nationalisation of industry; state control of the economy; highly redistributive tax policies; pacifism or arms reduction; egalitarian policies in education; a preference for ecological rather than industrial expansionist policies; positive discrimination towards minority groups; and so on”. Similarly, in *The Concise Oxford Dictionary of Politics*, McLean and McMillan (2009, p. 303) emphasise “egalitarianism, support for the (organised) working class, support for nationalisation of industry, hostility to markers of hierarchy, opposition to nationalistic foreign or defence policy”.

At least three prominent models of political ideology postulate a left-right dimension going from *laissez-faire* and capitalist at one end to interventionist and socialist at the other. For example,

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<sup>14</sup> In Europe, Australia and New Zealand, ‘liberal’ is typically used in its classical sense, namely a belief in civil liberties, private property, the rule of law, and relatively *laissez-faire* economic policy (Mill, 1859; Berlin, 1969, pp. 123-4; Miller, 2003, pp. 55-73). As Klein (2014) shows, ‘liberal’ was first used politically in the 1760s and 1770s by Scottish classical liberals such as the historian William Robertson and the economist Adam Smith.

the Pournelle chart (Pournelle, 1964) includes a dimension that goes from “State as ultimate evil” to “State worship”, while both the Nolan chart (Doherty, 2007, p. 321) and the well-known political compass (Political Compass, 2014) include an economic axis that runs between the more capitalist “right” and the more socialist “left” (see also Friedman, 1962, pp. 7-21). In short, having left-wing views usually entails being pro-redistribution, pro-intervention and pro-nationalisation; rarely does it simply entail being an American social democrat (and see Cohen, 2001; Jones, 2012).

Both the Nolan chart and the political compass also postulate a dimension of personal freedom going from libertarian at one end to authoritarian or totalitarian at the other; this dimension of personal freedom is conceptualised as being largely orthogonal to the left-right dimension (Doherty, 2007; Political Compass, 2014; Friedman, 1962). Consistent with such a schema, Feldman and Johnston (2014) present evidence that the distribution of political beliefs in the U.S. is better characterised as having at least two separate axes, one economic and one social, than by a single liberal-conservative axis (see also Malka et al., 2014). Thus, while many social democrats may be in favour of abortion rights, gay marriage, and marijuana legalisation, these are not strictly left-wing positions<sup>15</sup>; after all, they are also held by libertarians and classical liberals, very few of whom identify as left-wing<sup>16</sup> (Friedman, 1962, pp. 5-21; Miron, 2010; Kirby & Boaz, 2010; Iyer et al., 2012).

### **3. Analysis of data from the General Social Survey and review of the literature on intelligence and political beliefs**

#### *3.1 Remarks on statistical methodology*

Here I analyse the functional form of the relationship between verbal intelligence and 23 separate measures of political beliefs, using data from the U.S. General Social Survey (GSS). The

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<sup>15</sup> In addition, as Solon (2014, p. 45) himself points out, many individuals who support the ostensibly left-wing Democratic Party, notably those from low-income groups and ethnic minorities, are actually quite socially conservative.

<sup>16</sup> Libertarians tend to be both socially liberal and economically *laissez-faire*. ‘Libertarian’ is often used synonymously with ‘classical liberal’, though it is sometimes considered more extreme (Friedman, 1962, pp. 5-6). Some individuals identify as ‘left-libertarian’, but this appears to be quite rare (see Vallentyne & Steiner, 2001).

GSS is a public opinion survey that has been administered to a nationally representative sample of American adults every 1-2 years since 1972 (see Smith et al., 2012). Verbal intelligence is measured using a 10-word vocabulary test where the respondent must identify which of five phrases supplies the correct definition of a given word (see Kanazawa, 2010; Caplan & Miller, 2010; Carl, 2014a,b; Carl & Billari, 2014).

My analyses focus on the unconditional relationship between verbal intelligence and political beliefs in the general population; except where indicated, I utilise all available respondents and do not include socio-economic controls. To avoid excessive presentation of results, robustness checks and other supplementary tables are confined to Appendix A. Because I am interested in the exact functional form of the relationship between verbal intelligence and particular beliefs, I enter verbal intelligence into each model as a set of dummy variables.<sup>17</sup> First, due to the small number of respondents scoring very low on verbal intelligence, I collapse scores 0, 1 and 2 into a single category, so that the variable comprises 9 categories. Second, I designate the reference category as whichever score happens to be the most right-wing or the most socially conservative on average. (6 out of 10 is the median and the mode.) Finally, where data availability permits, I examine the relationship separately for three different time periods: the 1970s and 1980s; the 1990s; and the 2000s and 2010s. This is important because the functional form of the relationship may not be stable over time. As Meisenberg (under review) shows, the once positive association between verbal intelligence and Republican identity among whites fell to zero in the 1990s.

### *3.2 Analysis and literature review*

Studies typically find that individuals with centre-right views have higher average intelligence than those with left-wing views. In the US, cognitive ability is higher among Republicans than among Democrats (Schweizer, 2008, pp. 157-181; Carl, 2014a,b). Deary et al. (2008a) found

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<sup>17</sup> An alternative method of examining functional form is to compare  $R^2$  values before and after including a quadratic term in the model. However, entering verbal intelligence as a set of dummy variables is arguably preferable in the present context because the alternative method does not allow one to reliably distinguish between a U-shaped relationship and one that flattens out.

that, of the three main parties in the U.K., intelligence was highest among supporters of the socially liberal, economically centrist party, the Liberal Democrats, and was lowest among supporters of the left-wing party, Labour. In Brazil, Rindermann et al. (2012) observed the highest average intelligence among those identifying as centre-right, and the lowest among those identifying as right. Compared to liberals and conservatives, Iyer et al. (2012) documented higher cognitive ability, a greater need for cognition, and a stronger proclivity for systemizing among libertarians. And Karadja et al. (2014) found that IQ was positively associated with support for a right-wing party in Sweden. However as Solon (2014) points out, these results are perfectly compatible with a U-shaped curve relating intelligence and leftism, given that the left-wing average is pulled down by leftist beneficiaries, who tend to have low intelligence.

Table 1 displays the relationship between verbal intelligence and Democratic identity in the GSS. Consistent with Solon (2014), there is a U-shaped curve in all three time periods: respondents scoring 10 are more likely to identify as Democrat than those scoring 8. However, only in the latest time period is the difference significant; in the two earlier time periods, the differences between those scoring 8 and those scoring 9 or 10 are small and non-significant. Those scoring 0-2 or 3 are consistently the most likely to identify as Democrat, and they are more likely to identify as Democrat than those scoring 9 or 10. Table A.1 in the Appendix repeats the preceding analysis using two alternative definitions of party identity, and finds broadly the same results.

**Table 1.** Effect of vocabulary score on party identity.

	Democrat rather than Republican identity			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.46***	0.51***	0.35***	0.49***
3 out of 10	0.43***	0.42***	0.42***	0.44***
4 out of 10	0.31***	0.39***	0.24***	0.25***
5 out of 10	0.27***	0.36***	0.22***	0.19**
6 out of 10	0.16***	0.25***	0.12*	0.11
7 out of 10	0.06	0.14*	0.02	0.02
8 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
9 out of 10	0.06	0.08	0.01	0.09
10 out of 10	0.11*	0.06	0.12	0.20*
<i>n</i>	16,402	6685	4993	4724

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, corresponds to the intermediate definition in Carl (2014a). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

To my knowledge, Kanazawa (2010) was the first to identify a positive association between verbal intelligence and liberal ideology in the GSS. This association is confirmed by Meisenberg (under review). Evidence of a positive association between education, a rough proxy for intelligence, and liberal ideology was obtained by Gerber et al. (2010). In addition, Woodley of Menie and Dunkel (under review) replicate the positive association between intelligence and liberal ideology in another data-set, suggesting that it is quite robust. Table 2 displays the relationship between verbal intelligence and liberal ideology in the GSS. Although there is evidence of a slightly U-shaped curve in all three time periods, within the later two time periods the association is roughly flat until a score of 8 and then takes an upward turn. Respondents scoring 10 are consistently the most likely to identify as liberal. However, neither Democratic identity nor liberal ideology is arguably a very informative measure, since respondents' answers will depend on the extent to which they prioritise social issues versus economic ones. As noted, theory and evidence suggests that a single ideological axis is insufficient to characterise the landscape of political beliefs in the United States, and probably other countries as well (Pournelle, 1964; Doherty, 2007; Political Compass, 2014; Friedman, 1962; Feldman & Johnston, 2014; Malka et al., 2014).

**Table 2.** Effect of vocabulary score on political ideology

	Liberal rather than conservative ideology			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.09*	0.16**	0.12	0.08
3 out of 10	0.09*	0.12*	0.10	0.16*
4 out of 10	0.01	0.06	<i>Ref.</i>	0.06
5 out of 10	0.03	0.12**	0.04	<i>Ref.</i>
6 out of 10	0.02	0.08*	0.04	0.02
7 out of 10	0.02	0.09*	0.01	0.06
8 out of 10	<i>Ref.</i>	<i>Ref.</i>	0.06	0.05
9 out of 10	0.14***	0.21***	0.09	0.22***
10 out of 10	0.24***	0.22***	0.28***	0.36***
<i>n</i>	23,875	10,006	7591	6278

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was a measured on a scale from 1 (“Extremely conservative”) to 7 (“Extremely liberal”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

Using GSS data, Caplan and Miller (2010) showed that verbal intelligence is positively associated with the tendency to think like an economist. Across many but not all of the measures under scrutiny, Americans with higher verbal intelligence were less susceptible to anti-market bias, anti-foreign bias, make-work bias, and pessimistic bias (and see Caplan, 2007; Carl, 2014a; Pinker, 2011, pp. 662-664). Similarly, in an analysis of World Values Survey (WVS) data, Weakliem (2002) found that individuals with higher education were more likely to believe in incentives rather than equality, individual rather than state responsibility, pay differences for productivity, private ownership of business, and economic competition. And in Denmark, Morton et al. (2011) observed that intelligence was positively associated with a belief in individual rather than state responsibility and with the view that economic competition is not harmful (see also Miles et al., 2000; Oskarsson et al., 2014).

Table 3 displays the relationship between verbal intelligence and five measures of economically statist attitudes. In all five cases, there is an approximately monotonic and linear negative association. Table A.2 in the Appendix, which is based on data from the International Social Survey Programme and uses university education as a proxy for intelligence (ISSP Research Group, 2008), shows that these negative associations hold in a great many different countries (across 33 countries, all five fixed-effects estimates are negative, and four are statistically significant).<sup>18</sup> Thus, on measures of economically statist attitudes, which arguably capture part of what is conventionally meant by ‘left’ (Robertson, 1987; McLean and McMillan, 2009; Pournelle, 1964; Doherty, 2007; Political Compass, 2014; Cohen, 2001; Jones, 2012), there is little evidence that respondents scoring 9 or 10 lean further left than those scoring 8 or lower. And though none of the measures refers explicitly to economic and racial minorities, policies such as price controls, make-work projects and government bail-outs have frequently been implemented with the intention of helping disadvantaged groups (Williams, 1982; Friedman & Friedman, 1990; Norton, 2008; Sowell, 2011; Jones, 2012, pp. 215-269).

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<sup>18</sup> Admittedly, using university education as a proxy for intelligence does not allow me to directly test for a U-shaped relationship.

**Table 3.** Effect of vocabulary score on five measures of economically statist beliefs

	Govt. should control prices	Govt. should provide a job for everyone	Govt. should help industry to grow	Govt. should support declining industries	Govt. should finance projects to create jobs
0-2 out of 10	1.03***	0.93***	0.58***	1.01***	0.43**
3 out of 10	0.95***	0.81***	0.54***	1.03***	0.37*
4 out of 10	0.91***	0.74***	0.61***	0.97***	0.49***
5 out of 10	0.84***	0.54***	0.45***	0.82***	0.41**
6 out of 10	0.68***	0.47***	0.32**	0.78***	0.33**
7 out of 10	0.49***	0.24**	0.24*	0.57***	0.22
8 out of 10	0.25*	0.12	0.16	0.29*	0.08
9 out of 10	0.15	0.04	0.09	<i>Ref.</i>	0.10
10 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	0.05	<i>Ref.</i>
<i>n</i>	1533	2346	1489	1604	1605

*Notes:* The left-hand column gives the score in the vocabulary test. All five dependent variables are standardised. The first three were measured on a scale from 1 (“Definitely should not”) to 4 (“Definitely should”); the next two were measured on a scale from 1 (“Strongly against”) to 5 (“Strongly in favour”). All data are from the 1990s. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

It was again Kanazawa (2010) who first identified a negative association in the GSS between verbal intelligence and the belief that government should reduce income differences between rich and poor (and see Carl, 2014a). Alesina and Giuliano (2011) analysed data from the WVS, and found that individuals with university education were less likely to favour income redistribution. In addition, a negative association between intelligence and preference for redistribution was documented by Mollerstrom and Seim (2014) in Sweden, as well as by Oskarsson et al. (2014) in Denmark. Both of these associations were reportedly monotonic and approximately linear (Mollerstrom and Seim, 2014, p. 2; Sven Oskarsson, personal communication).

Table 4 displays the relationship between verbal intelligence and the belief that government should reduce income differences between rich and poor. In the earliest time period, there is a monotonically linear negative association. In the two later time periods, there is evidence of a slightly U-shaped curve: respondents scoring 10 are more supportive of redistribution than those scoring 9. Yet the differences are small and non-significant. Respondents scoring 0-2, 3 or 4 are consistently the most supportive of redistribution, and they are more supportive than those scoring 9 or 10. Table A.3 in the Appendix documents a more-or-less identical pattern of results when controlling for log family income. One speculative explanation for the finding that those scoring 10 may have become slightly more supportive of redistribution over time is that income inequality has risen substantially in the U.S. since the 1980s (Piketty & Saez, 2003; CBO, 2011).

**Table 4.** Effect of vocabulary score on attitude toward redistribution

	The government should reduce income differences between rich and poor			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.51***	0.66***	0.54***	0.43***
3 out of 10	0.51***	0.58***	0.67***	0.37***
4 out of 10	0.50***	0.53***	0.61***	0.48***
5 out of 10	0.37***	0.49***	0.43***	0.30***
6 out of 10	0.22***	0.30***	0.32***	0.16*
7 out of 10	0.13**	0.17*	0.25***	0.09
8 out of 10	0.03	0.02	0.17*	0.04
9 out of 10	<i>Ref.</i>	0.12	<i>Ref.</i>	<i>Ref.</i>
10 out of 10	0.01	<i>Ref.</i>	0.08	0.13
<i>n</i>	12,232	4404	4077	3751

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was a measured on a scale from 1 (“No govt. action”) to 7 (“Govt. should reduce differences”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

Table 5 displays the relationship between verbal intelligence and beliefs about provision for the sick, the elderly and the unemployed. In all three cases, there is evidence of a slightly U-shaped curve: those scoring 10 are more supportive of government provision than those scoring 8 or 9. Yet only in the case of government provision for the unemployed is the difference between those scoring 9 and those scoring 10 significant. Respondents scoring 0-2, 3 or 4 are consistently the most supportive of government provision, and they are more supportive of government provision than those scoring 9 or 10.

**Table 5.** Effect of vocabulary score on beliefs about provision for the sick, the elderly and the unemployed

	Govt. should provide healthcare for sick	Govt. should provide for elderly	Govt. should provide for unemployed
0-2 out of 10	0.59***	0.48**	0.73***
3 out of 10	0.31*	0.42**	0.62***
4 out of 10	0.38**	0.55***	0.60***
5 out of 10	0.36***	0.46***	0.46***
6 out of 10	0.30**	0.39***	0.25*
7 out of 10	0.18	0.23*	0.12
8 out of 10	<i>Ref.</i>	0.08	0.13
9 out of 10	0.07	<i>Ref.</i>	<i>Ref.</i>
10 out of 10	0.13	0.09	0.31*
<i>n</i>	1548	1558	1502

*Notes:* The left-hand column gives the score in the vocabulary test. All three dependent variables, which are standardised, were measured on a scale from 1 (“Definitely should not”) to 4 (“Definitely should”). All data are from the 1990s. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

Table 6 displays the relationship between verbal intelligence and the belief that welfare spending is too low. Here again, there is evidence of a U-shaped curve in all three time periods: those scoring 10 are more likely to believe that welfare spending is too low than those scoring 7 or 8. But the differences are not significant. (In the latest time period, those scoring 8 are significantly more likely to believe that welfare spending is too low than those scoring 7.) However, as Table A.4 in the Appendix shows, when the measure is recoded so that answers of “Too much” are compared to those of “Too little” or “About right”, the relationship assumes a pronounced U-shape, just as predicted by Solon (2014). The preceding two results indicate that those scoring 10 are not significantly more likely than those scoring 7 or 8 to believe that welfare spending is too low, but they are significantly less likely to believe that it is too high.

**Table 6.** Effect of vocabulary score on attitude toward welfare spending

	Government spending on welfare is too low			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.42***	0.53***	0.38***	0.43***
3 out of 10	0.40***	0.45***	0.38***	0.49***
4 out of 10	0.21***	0.22***	0.22**	0.37***
5 out of 10	0.15***	0.15**	0.13*	0.31***
6 out of 10	0.04	0.06	0.04	0.14**
7 out of 10	0.00	0.06	0.08	<i>Ref.</i>
8 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	0.15*
9 out of 10	0.04	0.10	0.08	0.07
10 out of 10	0.03	0.07	0.05	0.16
<i>n</i>	14,818	7309	3729	3780

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 0 (“About right” or “Too much”) to 1 (“Too little”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

Kanazawa (2010) reported that Americans with higher verbal intelligence were less likely to believe that their federal income tax was too high. Similarly, Caplan (2001) observed a negative association between education and concern about high taxes and welfare. In addition, Gerber et al. (2010) found that Americans with a postgraduate education were more likely to favour higher taxes on top earners (see also TNS Sofres, 2005; but see Oskarsson et al., 2014). Table 7 displays the relationship between verbal intelligence and the belief that one's federal income tax is about right. Although there is evidence of a slightly U-shaped curve in all three time periods, within the earliest and latest time periods the association is roughly flat until a score of 7 and then takes an upward turn. Note that virtually no respondents thought their income tax was too low; the effect is driven by respondents of high ability being more likely to think their income tax is about right. This may be because individuals with higher intelligence favour progressive taxation<sup>19</sup> and, despite facing steeper tax rates than those with lower intelligence (Lynn & Vanhanen, 2012, pp. 71-75), still end up with greater after-tax incomes (Herrnstein & Murray, 1994; Strenze, 2007). Interestingly, the relationship is somewhat flatter during the 1990s. One possible explanation for this is the passing of the Omnibus Reconciliation Act of 1993, which raised taxes on top earners.<sup>20</sup>

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<sup>19</sup> Even Adam Smith stated, "A tax upon house-rents, therefore, would in general fall heaviest upon the rich; and in this sort of inequality there would not, perhaps, be anything very unreasonable. It is not very unreasonable that the rich should contribute to the public expense, not only in proportion to their revenue, but something more than in that proportion" (Smith, 1776, Book 5, Ch. 2).

<sup>20</sup> In fact, taxes on top earners were cut during both of the other time periods: twice during the 1980s, with the Economic Recovery Tax Act of 1981 and the Tax Reform Act of 1986; and twice during the 2000s, with the Economic Growth and Tax Relief Reconciliation Act of 2001 and the Jobs and Growth Tax Relief Reconciliation Act of 2003.

**Table 7.** Effect of vocabulary score on attitude toward my federal income tax

	My federal income tax is about right			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.11*	0.10	0.20*	0.08
3 out of 10	0.09	0.09	0.13	0.10
4 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	0.04
5 out of 10	0.05	0.06	0.10	0.01
6 out of 10	0.05	0.06	0.10	<i>Ref.</i>
7 out of 10	0.06	0.08	0.05	0.04
8 out of 10	0.17***	0.16**	0.16*	0.20**
9 out of 10	0.20***	0.20***	0.21**	0.23**
10 out of 10	0.26***	0.29***	0.16	0.42***
<i>n</i>	13,582	6169	3932	3481

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 0 (“Too high”) to 1 (“About right”). Respondents who answered “Too low” (<1%) or “Don’t pay income tax” (<1%) were excluded, along with black respondents oversampled in 1982 and 1987. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

Kanazawa (2010) observed that non-black Americans with higher verbal intelligence were more likely to think that blacks have been discriminated against for so long that government has special obligation to help them. This relationship is displayed in Table 8 for the general population. There is evidence of a pronounced U-shaped curve in all three time periods: respondents scoring less than 5 or greater than 8 are the most likely to believe that government has a special obligation to help blacks. Table A.5 in the Appendix shows that the relationship becomes much flatter when non-white respondents are excluded (though there is still evidence of a U-shaped curve in the two later time periods). While the result in Table 8 undoubtedly constitutes support for Solon's (2014) thesis, it is not clear how much of the effect is due to individuals of highest ability being more left-wing, as opposed to whites of lower ability simply being more racist (see Deary et al., 2008b; Schoon et al., 2010; Hodson & Busseri, 2012). Indeed, groups that practice internal redistribution are often actively hostile and even xenophobic toward outsiders, indicating that racism can be motivated by a preference for within-group egalitarianism (Rushton, 1989; Alesina et al., 2001; Lieberman, 2003; Meisenberg, 2007; Howe, 2007; Abramitzky, 2008; Salter & Harpending, 2013; Weyl, 2014).

**Table 8.** Effect of vocabulary score on attitude toward government help for blacks

	The government has a special obligation to help blacks			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.36***	0.25**	0.34***	0.49***
3 out of 10	0.28***	0.34***	0.24**	0.26**
4 out of 10	0.11**	0.09	0.05	0.22**
5 out of 10	0.08*	0.05	0.01	0.21***
6 out of 10	0.02	0.03	<i>Ref.</i>	0.06
7 out of 10	<i>Ref.</i>	<i>Ref.</i>	0.00	<i>Ref.</i>
8 out of 10	0.07	0.01	0.03	0.17*
9 out of 10	0.15***	0.24**	0.07	0.15
10 out of 10	0.31***	0.29***	0.24***	0.43***
<i>n</i>	11,733	3609	4445	3679

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 1 (“No special treatment”) to 5 (“Government should help blacks”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

Kemmelmeier (2008) found that college students with higher standardised test scores were more opposed to restrictions on free speech. Likewise, Carl (2014a) reported a positive association between verbal intelligence and a belief in free speech for communists, racists and militarists. Interestingly, free speech appears to have become one of the few social issues where, at least in Britain and the United States, many individuals on the left are now less liberal than those on the right. Numerous scholars have traced the emergence of a marked opposition towards free speech among certain sections of the left (Bawer, 2012; Browne, 2006; Bruce, 2003; Charlton, 2011; Fearman, 2012; Kors, 1999; Lukianoff, 2014a; Lukianoff, 2014b; Payne, 2012; Rauch, 1995; Goldberg, 2009). Consistent with Solon (2014), leftist arguments against free speech are typically framed in terms of the need to protect vulnerable groups, notably women along with racial and economic minorities (see Pinker, 2002, pp. 105-120; Alexander, 2005; Yong, 2011; Waldron, 2012). Table 9 displays the relationship between verbal intelligence and a composite measure of the belief that racists should not have free speech. It is monotonically negative and approximately linear in all three time periods: respondents scoring 9 or 10 are the most supportive of free speech for racists. Table A.6 in the Appendix shows that the relationship is approximately identical when non-white respondents are excluded.

**Table 9.** Effect of vocabulary score on attitude toward free speech for racists

	Racists should not have free speech			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.80***	0.76***	0.74***	0.98***
3 out of 10	0.87***	0.84***	0.93***	0.87***
4 out of 10	0.82***	0.86***	0.79***	0.79***
5 out of 10	0.76***	0.75***	0.79***	0.78***
6 out of 10	0.64***	0.65***	0.61***	0.67***
7 out of 10	0.55***	0.55***	0.52***	0.60***
8 out of 10	0.43***	0.49***	0.31***	0.49***
9 out of 10	0.26***	0.33***	0.19	0.21
10 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
<i>n</i>	13,880	6361	3980	3539

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, took the value 1 for respondents who would not allow racists to speak, would not allow racists to teach, or would not allow racist books in the library; it took the value 0 for those who would allow all three of these. Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

There is a robust positive association between intelligence and socially liberal attitudes. Recall that social liberalism (or personal freedom) is the second of two dimensions postulated by several prominent models of political ideology (Pournelle, 1964; Doherty, 2007; Political Compass, 2014; Friedman, 1962; Feldman & Johnston, 2014; Malka et al., 2014). Deary et al. (2008b), Stankov (2009), Schoon et al. (2010), Heaven et al. (2011), and Hodson and Busseri (2012) all documented negative associations between intelligence on the one the hand and socially conservative, authoritarian attitudes on the other. Kimmelmeier (2008) found that students with higher test scores were less supportive of traditional gender roles but were also less supportive of federal gun control. An informal survey of the Triple Nine Society (an organisation for people with IQs at or above the 99.9<sup>th</sup> percentile) that was carried out in 2000 documented widespread opposition to restrictions on activities such as gambling, prostitution, pornography, drug use, and gun ownership (Miles et al., 2000).<sup>21</sup> In addition, Carl (2014a) found that Americans with higher verbal intelligence were more supportive of abortion rights and marijuana legalisation, and were less likely to believe that homosexuality is wrong.

Tables 10-13 displays the relationship between verbal intelligence and four measures of socially liberal attitudes: the belief that women working is not a problem, the belief that a woman should be able to get an abortion for any reason, the belief that homosexuality is not wrong, and the belief that marijuana should be legal. In keeping with the previous literature, the first association is negative, while the latter three are positive. With the exception of belief about abortion in the 1990s, all four are approximately linear; respondents scoring 9 or 10 are by far the most socially liberal. Table A.7 in the Appendix shows that the association between verbal intelligence and the belief that women working is not a problem remains linearly positive when female respondents are excluded.

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<sup>21</sup> It should be noted that the survey was based on a small ( $n = 57$ ), possibly self-selected sample, and attained only a low response rate (16% of  $n = 357$ ).

**Table 10.** Effect of vocabulary score on attitude toward women working

	Disagree that men should work and women should tend home			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
3 out of 10	0.15**	0.16	0.20**	0.07
4 out of 10	0.23***	0.25*	0.26***	0.17*
5 out of 10	0.37***	0.43***	0.38***	0.34***
6 out of 10	0.46***	0.33**	0.50***	0.44***
7 out of 10	0.49***	0.48***	0.52***	0.43***
8 out of 10	0.56***	0.51***	0.59***	0.53***
9 out of 10	0.72***	0.68***	0.73***	0.72***
10 out of 10	0.76***	0.63***	0.80***	0.75***
<i>n</i>	14,640	1848	7258	5534

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 1 (“Strongly agree”) to 4 (“Strongly disagree”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table 11.** Effect of vocabulary score on attitude toward abortion for any reason

	A woman should be able to get an abortion for any reason			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.04	0.07	0.08	<i>Ref.</i>
3 out of 10	<i>Ref.</i>	<i>Ref.</i>	0.15***	0.07
4 out of 10	0.08	0.17**	<i>Ref.</i>	0.11
5 out of 10	0.15***	0.16**	0.17*	0.21*
6 out of 10	0.21***	0.28***	0.15*	0.25***
7 out of 10	0.29***	0.38***	0.21**	0.33***
8 out of 10	0.39***	0.38***	0.52***	0.38***
9 out of 10	0.55***	0.62***	0.51***	0.58***
10 out of 10	0.61***	0.69***	0.52***	0.74***
<i>n</i>	13,866	6385	3968	3513

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 0 (“No”) to 1 (“Yes”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table 12.** Effect of vocabulary score on attitude toward homosexuality

	Homosexuality is not wrong at all			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	<i>Ref.</i>	<i>Ref.</i>	0.04	0.09
3 out of 10	0.01	0.04	0.07	<i>Ref.</i>
4 out of 10	0.06	0.07	<i>Ref.</i>	0.22*
5 out of 10	0.17***	0.18***	0.17**	0.21*
6 out of 10	0.26***	0.21***	0.26***	0.38***
7 out of 10	0.44***	0.37***	0.38***	0.67***
8 out of 10	0.52***	0.46***	0.53***	0.65***
9 out of 10	0.74***	0.72***	0.71***	0.92***
10 out of 10	0.83***	0.81***	0.96***	1.01***
<i>n</i>	14,966	7656	3884	3426

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 1 (“Always wrong”) to 4 (“Not wrong at all”). Respondents who answered “Other” (<1%) were excluded, along with black respondents oversampled in 1982 and 1987. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table 13.** Effect of vocabulary score on attitude toward marijuana legalisation

	Marijuana should be legal			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	0.04
3 out of 10	0.04	0.06	0.06	<i>Ref.</i>
4 out of 10	0.06	0.03	0.07	0.13
5 out of 10	0.12**	0.13*	0.06	0.18*
6 out of 10	0.17***	0.12*	0.07	0.38***
7 out of 10	0.24***	0.24***	0.16*	0.36***
8 out of 10	0.19***	0.14*	0.06	0.39***
9 out of 10	0.41***	0.47***	0.21*	0.55***
10 out of 10	0.47***	0.50***	0.32***	0.68***
<i>n</i>	13,885	6410	3973	3502

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 0 (“Not legal”) to 1 (“Legal”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

Carl (2014a) reported a negative association between verbal intelligence and the belief that military spending is not high enough. Despite involving government money, military spending arguably has more in common with social issues such as gay marriage and abortion rights than with economic issues like price controls and income redistribution. The reason being that, as on many social issues, social democrats and others on the left tend to agree with libertarians and classical liberals that military spending is too high; this is in contrast to most economic issues, where libertarians and classical liberals tend to favour right-wing policies along with conservatives (see Friedman, 1962; Miron, 2010; Kirby & Boaz, 2010; Iyer et al., 2012). Table 14 displays the relationship between verbal intelligence and the belief that military spending is too high. It is monotonically positive in the two earlier time periods, and slightly U-shaped in the latest time period. The particularly strong relationship seen in the 1970s and 1980s may be attributable to the Reagan military build-up of the 1980s (see Schneider & Merle, 2004). Respondents scoring 9 or 10 are consistently the most likely to believe that military spending is too high. Table A.8 in the Appendix shows that when the measure is recoded so that answers of “Too little” are compared to those of “About right” or “Too much”, the differences between those scoring 8 or lower and those scoring 9 or 10 are noticeably smaller.

**Table 14.** Effect of vocabulary score on attitude toward military spending

	Government spending on the military is too high			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.01	<i>Ref.</i>	<i>Ref.</i>	0.22*
3 out of 10	0.05	0.10	0.11	0.09
4 out of 10	<i>Ref.</i>	0.08	0.02	0.02
5 out of 10	0.01	0.10	0.00	<i>Ref.</i>
6 out of 10	0.09**	0.19***	0.11	0.06
7 out of 10	0.13***	0.27***	0.14	0.04
8 out of 10	0.19***	0.32***	0.16	0.12
9 out of 10	0.39***	0.59***	0.25*	0.35***
10 out of 10	0.45***	0.56***	0.48***	0.35***
<i>n</i>	14,716	7185	3731	3800

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 0 (“Too little” or “About right”) to 1 (“Too much”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

Using WVS data, Weakleim (2002) found that individuals with higher education were more willing to give up income and pay higher taxes in order to protect the environment. And in their study of U.K. political parties, Deary et al. (2008a) observed the highest average intelligence among the Greens, a small environmentalist party. On the other hand, Kahan et al. (2012) documented a weak negative relationship between scientific literacy and concern about climate change among Americans. Table 15 displays the relationship between verbal intelligence and the belief that environmental spending is too low. It is positive in all three time periods, but relatively flat above a score of 4 within the two earlier time periods. Table A.9 in the Appendix shows that when the measure is recoded so that answers of “Too much” are compared to those of “Too little” or “About right”, the relationship is completely flat in the two earlier time periods, and only weakly negative in the latest time period.

**Table 15.** Effect of vocabulary score on attitude toward spending on the environment

	Government spending on the environment is too low			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
3 out of 10	0.24***	0.19**	0.31**	0.28*
4 out of 10	0.16**	0.14*	0.10	0.24*
5 out of 10	0.25***	0.22***	0.30**	0.26**
6 out of 10	0.28***	0.23***	0.31***	0.34***
7 out of 10	0.28***	0.24***	0.30**	0.34***
8 out of 10	0.26***	0.23**	0.31**	0.26**
9 out of 10	0.36***	0.34***	0.29**	0.49***
10 out of 10	0.34***	0.33***	0.23*	0.52***
<i>n</i>	14,816	7253	3747	3816

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 0 (“About right” or “Too much”) to 1 (“Too little”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

To my knowledge, no previous study has examined the association between intelligence and concern about animal welfare. In line with Solon's (2014) claim that seeking to protect vulnerable groups lies at the core of leftism, safeguarding the welfare of animals is widely considered a left-wing cause (Schweizer, 2008, pp. 184-208; Huling, 2008; Torres, 2008; Berezow and Campbell, 2014). Table 16 displays the relationship between verbal intelligence and two measures of attitudes toward animal welfare: the belief that animals have rights too, and the belief that testing on animals to save humans is not okay. Both associations are approximately monotonic and negative. The first is linear, while the second flattens out above a score of 6. Respondents scoring 9 or 10 are the least concerned about animal welfare. These results contradict the claim that individuals of highest ability are uniformly more concerned about vulnerable groups, but they are compatible with the view that such individuals prioritise the welfare of vulnerable humans.

**Table 16.** Effect of vocabulary score on two measures of attitudes toward animal welfare

	Animals have rights too	Testing on animals to save humans is not okay
0-2 out of 10	0.67***	0.30**
3 out of 10	0.67***	0.24*
4 out of 10	0.54***	0.28**
5 out of 10	0.44***	0.29***
6 out of 10	0.40***	0.26**
7 out of 10	0.27*	0.15
8 out of 10	0.23	0.13
9 out of 10	0.07	<i>Ref.</i>
10 out of 10	<i>Ref.</i>	0.01
<i>n</i>	1756	2858

*Notes:* The left-hand column gives the score in the vocabulary test. Both dependent variables, which are standardised, were measured on a scale from 1 (“Strongly disagree”) to 5 (“Strongly agree”). Data for the first measure are from the 1990s; data for the second measure are from the 1990s and 2000. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

### *3.3 Summary of the analysis*

Verbal intelligence had a pronounced U-shaped relationship with: Democratic identity in the latest time period, liberal ideology in the earliest time period, the belief that government should provide for the unemployed, the belief that government has a special obligation to help blacks, and the belief that welfare spending is too high. On these three measures, respondents of lowest and highest ability were substantially more left-wing than those of average or high ability. Verbal intelligence had a slightly U-shaped relationship with: Democratic identity in the two earlier time periods, the belief that government should reduce income differences in the two later time periods, the beliefs that government should provide for the sick and for the elderly, and the belief that welfare spending is too low. On these measures, respondents of highest ability were sometimes more left-wing than those of high ability, but the differences were relatively small and non-significant.

Verbal intelligence had an approximately monotonic negative relationship with: five measures of economically statist attitudes, the belief that government should reduce income differences in the earliest time period, the belief that racists should not have free speech, and two measures of concern for the welfare of animals. On these measures, respondents of highest ability were generally the most right-wing. The relationships with the five measures of economically statist attitudes, the belief that government should reduce income differences in the earliest time period, the belief that racists should not have free speech, and the belief that animals have rights too, were more-or-less linear.

Verbal intelligence had an approximately monotonic positive relationship with: liberal ideology in the two later time periods, the belief that one's federal income tax is about right, four measures of socially liberal attitudes, the belief that military spending is too high, and the belief that environmental spending is too low. On these measures, respondents of highest ability were the most socially liberal, or left-wing in the case of belief about environmental spending. Yet there was evidence of a slight U-shape in the relationships with liberal ideology and the belief that one's federal income tax is about right. The relationships with the four measures of socially liberal attitudes were

more-or-less linear. Verbal intelligence had a weak negative relationship with the belief that military spending is too low, and the belief that environmental spending is too high.

Overall, the results of the analysis partially confirm Solon's (2014) argument that intelligence has a U-shaped relation to American social democratic views on issues where economic or racial minorities are concerned, and a monotonically positive relation on other issues. The results for Democratic identity in the latest time period, the belief that government should provide for the unemployed, the belief that government has a special obligation to help blacks, and the belief that welfare spending is too high, offer rather compelling confirmation. On the other hand, the results for the belief that government should reduce income differences in the earliest time period, and the belief that racists should not have free speech, seem to contradict his thesis. Also of interest are the results for economically statist attitudes, which disconfirm the view that individuals of highest ability lean left when using a more conventional definition of 'left'; these results also contradict the idea that most highly intelligent people are "clever sillies" (Charlton, 2009; Woodley, 2010; and see Caplan, 2007; Caplan & Miller, 2010; Weakliem, 2002, p. 148).

The uniformly linear associations observed between verbal intelligence and socially liberal attitudes are wholly consonant with the previous literature (Miles et al., 2000; Deary et al., 2008b; Kimmelmeyer, 2008; Stankov, 2009; Schoon et al., 2010; Heaven et al., 2011; Hodson & Busseri, 2012; Carl, 2014a). So too is the almost monotonically positive association observed between verbal intelligence and liberal ideology (Kanazawa, 2010; Meisenberg, under review; Woodley of Menie & Dunkel, under review; and see Gerber et al., 2010). Finally, recall that respondents of highest ability may have become slightly more supportive of redistribution over time. It was suggested that this might be attributable to the rise in income inequality in the U.S. since the 1980s (Piketty & Saez, 2003; CBO, 2011). Relevant here is the aforementioned finding of an approximately linear negative association between intelligence and preference for redistribution in both Sweden and Denmark (Mollerstrom & Seim, 2014; Oskarsson et al., 2014), two countries where inequality is considerably lower than the United States (OECD, 2008; Weyl, 2014).<sup>22</sup>

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<sup>22</sup> The fact that the association between intelligence and preference for redistribution may be less strongly negative in the U.S. than in Sweden and Denmark, where social attitudes and welfare policy are more egalitarian (Alesina & Angeletos,

#### **4. Remarks on the prevalence of support for the Democratic Party among U.S. scholarly elites**

Solon (2014) correctly points out that academics and other scholarly elites tend to have very high IQs, and that they lean overwhelmingly toward the Democratic Party in the United States (see also Cardiff & Klein, 2005; Gross, 2013; Dutton & Lynn, 2014). For example, the ratio of Democrats to Republicans is greater than unity in essentially all academic subjects except Business, Finance, and Military Science (Cardiff & Klein, 2005). And as Solon (2014) points out, scholarly elites such as Nobel laureates, Pulitzer Prize winners and Putnam fellows have donated to the Democratic Party far more often than they have donated to the Republican Party. In addition, there is the commonly observed datum that, while Americans with a bachelor's degree are more likely to vote Republican, those with a postgraduate degree are more likely to vote Democrat (Solon, 2014, pp. 45-46). Combined with the fact that individuals of low intelligence are more likely to support the Democrats (Schweizer, 2008; Carl, 2014a,b), these findings seem to suggest there is in fact a U-shaped relationship between intelligence and leftism. However, there are several reasons why they do not constitute overly compelling evidence that such a relationship exists.

First, academics and other scholarly elites are unlikely to constitute a random sample of the highly intelligent. There are many other high-IQ professions alongside academia, such as law, finance, medicine, engineering and senior management (Herrnstein & Murray, 1994; Hauser, 2002; Terkel, 2011; Adams et al., 2014). And it is possible that the typical person in some or all of these professions leans toward the Republican Party. As Duarte et al. (2014) explain, the personality trait most-strongly correlated with political liberalism is openness to experience, a trait that predisposes individuals with high cognitive ability to pursue scholarship instead of other, less intellectually stimulating professions. Therefore, it may simply be that self-selection on personality leads highly intelligent individuals with Democratic views to become concentrated in academia. Duarte et al.

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2005), arguably constitutes evidence against the cultural mediation hypothesis (Woodley, 2010; Dutton, 2013; Woodley of Menie & Dunkel, under review).

(2014) suggest that this mechanism may be amplified by social homophily: the tendency for individuals to associate with those who share their characteristics.

Second, as a number of other scholars have argued and documented, there is a history of bias against politically incorrect (i.e., non-left-wing) ideas within academia, at least in Britain and the United States (Pinker, 2002, pp. 105-120; Rushton, 2002; Nyborg, 2011; Gottfredson, 2012; Gross, 2013; Duarte et al., 2014; Yancey, 2011). This manifests itself in both discrimination against individuals who hold unacceptable views, and censorship of research that is marked as taboo. Regarding the former, a considerable number of the social psychologists in Inbar and Lammers' (2012) survey openly admitted that they would discriminate against conservative academics in paper and grant reviews, symposium invitations, and hiring decisions (for more examples, see Yancey, 2011; Duarte et al., 2014). Regarding the latter, many scholars have been subject to damaging witch-hunts over the years, typically under accusations of fascism, elitism, sexism or racism. Prominent examples include: Lawrence Summers (see Nyborg, 2011), E.O. Wilson (see Pinker, 2002, pp. 105-120), J.P. Rushton (see Gottfredson, 2012), and Samuel Morton (see Lewis et al., 2011).<sup>23</sup> To his credit, Solon (2014) acknowledges bias as an explanation for the preponderance of Democratic views among scholarly elites, yet he discounts it as being relatively unimportant.

Third, and perhaps most importantly, some high-IQ individuals support the Democratic Party primarily because they object to the socially conservative, evangelical Christian elements within the Republican Party, rather than because they are firmly left-wing on economic issues (see Carl, 2014a,b; Duarte et al., 2014). Indeed, Rockey (2014) analysed data from the WVS, and found that despite educated people's greater support for capitalism (see Weakliem, 2002), they were less likely to identify as right-wing on a left-to-right continuum. An obvious explanation is that educated people reject the label 'right-wing' due to its connotations with social and religious conservatism. Also pertinent in this vein is Inbar and Lammers (2012) finding that whilst only 9% of social psychologists hold socially conservative beliefs, 37% consider themselves moderate or conservative on the economy.

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<sup>23</sup> Other examples of academics that have been attacked on moralistic grounds include: Cyril Burt, Arthur Jensen, Raymond Cattell, James Watson, Helmuth Nyborg, Michael Bailey, Richard Lynn, Charles Murray, Richard Herrnstein, Satoshi Kanazawa, Richard Dawkins, Napoleon Chagnon and James Neel (see Rushton, 2002; Pinker, 2002; Nyborg, 2011).

Furthermore, with respect to a conventional definition of ‘left’ (Robertson, 1987; McLean and McMillan, 2009; Cohen, 2001; Jones, 2012), the Democrats are not a particularly left-wing party (see Davis, 1980; Kazin, 2012). According to Ware (1996, pp. 25-26), one can even make the argument that both the Democrats and the Republicans are examples of liberal parties; in his words, “both practice bourgeois, business-oriented politics typical of European Liberalism”. And Singham (2012) goes as far as contending that “When measured against its historical meanings, what the U.S. has is a centre-right party (the Democrats) and a radical right-wing party (The Republicans)”. This can be explained with reference to the fact that, compared to the citizens of most other countries, Americans are more likely to believe that success is determined by individual effort as opposed to luck (Alesina et al., 2001; Alesina & Glaeser, 2004; Alesina & Angeletos, 2005).

## **5. Concluding remarks**

Solon (2014) concludes that there is a U-shaped relationship between intelligence and leftism such that people with very low and very high intelligence tend to be more left-wing. This paper has proposed a number of qualifications to his conclusion. First, it has noted that Solon (2014) employs quite a specific definition of ‘left’, which does not reflect how the term is often used in political discourse. Specifically, he uses the term ‘leftist’ as more-or-less synonymous with ‘American social democrat’, whereas it commonly entails being in favour of (among other things) state control over the economy, or at the very least being in favour of greater state intervention than American social democrats typically advocate.

Second, analysing data on verbal intelligence and political beliefs from the U.S. General Social Survey, the paper has found some evidence that supports Solon’s (2014) thesis, and some that does not. For example, while verbal intelligence had a pronounced U-shaped relation to the belief that government should help blacks, it had a linear positive association with the belief that racists should have free speech. And consistent with earlier work (Caplan & Miller, 2010; Carl, 2014a), verbal intelligence was monotonically and negatively associated with measures of economically statist beliefs, which arguably capture part of what is conventionally meant by ‘left’. In addition, it has

reviewed previous studies that obtained findings contradicting Solon's (2014) thesis (e.g., Mollerstrom & Seim, 2014; Oskarsson et al., 2014; Miles et al., 2000).

Third, the paper has outlined several reasons why the prevalence of support for the Democratic Party among American scholarly elites, a key facet of Solon's (2014) argument, does not constitute overly compelling evidence for his central conclusion. Academics and other scholarly elites are unlikely to constitute a random sample of those with very high IQs (Duarte et al., 2014). There is a history of bias against non-left-wing ideas within academia, at least in Britain and the United States (Pinker, 2002; Rushton, 2002; Nyborg, 2011; Gottfredson, 2012; Inbar & Lammers, 2012; Gross, 2013; Yancey, 2011; Duarte et al., 2014). And finally, some high-IQ individuals support the Democratic Party primarily because they hold socially liberal beliefs, rather than because they are firmly leftist on the economy. Indeed, by global and historical standards, the Democrats are not a particularly left-wing party (Davis, 1980; Kazin, 2012; Ware, 1996; Singham, 2012).

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## Appendix A

**Table A.1.** Effect of vocabulary score on party identity using narrow and broad definitions

	Narrow definition		Broad definition	
	1970s and 1980s	2000s and 2010s	1970s and 1980s	2000s and 2010s
0-2 out of 10	0.71***	0.57***	0.41***	0.38***
3 out of 10	0.67***	0.49***	0.34***	0.42***
4 out of 10	0.64***	0.36***	0.29***	0.19**
5 out of 10	0.53***	0.29**	0.29***	0.21***
6 out of 10	0.40***	0.06	0.19***	0.15**
7 out of 10	0.26**	0.00	0.13**	0.03
8 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
9 out of 10	0.08	0.05	0.08	0.17*
10 out of 10	0.08	0.23	0.09	0.18*
<i>n</i>	2535	2192	8991	6339

*Notes:* The left-hand column gives the score in the vocabulary test. Both dependent variables are standardised. The first corresponds to the narrow definition in Carl (2014a); the second corresponds to the broad definition in Carl (2014a). Estimates for the middle time period are omitted for the sake of brevity. Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table A.2.** Effect of university education on five measures of economically statist beliefs in 33 countries

	Govt. should control prices	Govt. should provide a job for everyone	Govt. should help industry to grow	Govt. should support declining industries	Govt. should finance projects to create jobs
Australia	-0.38***	-0.17***	-0.10*	-0.53***	-0.16***
Canada	-0.39***	-0.13	-0.17*	-0.53***	-0.32***
Chile	-0.12	-0.19*	0.00	0.00	0.03
Taiwan	0.03	-0.10*	0.01	-0.33***	-0.03
Croatia	-0.31*	-0.31***	-0.24*	-0.45***	-0.01
Czech Rep.	-0.71***	-0.54***	-0.28**	-0.33***	-0.09
Denmark	-0.28**	-0.11	-0.28***	-0.28***	-0.02
Dominican Rep.	0.16***	-0.07	-0.04	0.17**	0.19***
Finland	-0.65***	-0.73***	-0.17	-0.47***	-0.07
France	-0.59***	-0.49***	0.08	-0.57***	-0.15*
Germany	-0.55***	-0.43***	-0.33***	-0.63***	-0.11
Hungary	-0.59**	-0.24*	-0.33*	-0.16	0.17
Ireland	-0.41**	-0.38**	0.08	-0.15	0.06
Israel	-0.32***	-0.26***	-0.19**	-0.19**	-0.14
Japan	-0.26***	-0.12	0.12	-0.27**	0.10
South Korea	0.00	-0.21***	0.03	-0.32***	0.07
Latvia	-0.24*	-0.29***	-0.03	-0.28**	0.11
Netherlands	-0.76***	-0.36**	-0.33**	-0.65***	-0.21
New Zealand	-0.37***	-0.05	-0.10	-0.30***	-0.11
Norway	-0.32***	-0.37***	-0.27***	-0.40***	-0.17**
Philippines	0.08	-0.19*	0.00	0.12	0.14
Poland	-0.73***	-0.50***	-0.41***	-0.85***	-0.01
Portugal	-0.22**	-0.18	0.01	-0.14*	0.18**
Russia	-0.14*	-0.13**	-0.19**	-0.41***	0.05
Slovenia	-0.55***	-0.49***	-0.38***	-0.76***	0.08
South Africa	-0.09	-0.25*	0.12	-0.14	-0.16
Spain	-0.44***	-0.40***	-0.20***	-0.37***	0.01
Sweden	-0.31***	-0.59***	-0.27***	-0.52***	-0.44***
Switzerland	-0.21	-0.27**	-0.26*	-0.27*	0.11
Britain	-0.37***	-0.28**	-0.39***	-0.49***	-0.12
United States	-0.89***	-0.43***	-0.37***	-0.51***	-0.12
Uruguay	-0.68***	-0.59***	-0.36**	-0.41***	-0.03
Venezuela	-0.22*	-0.15	0.01	0.00	0.30***

*Notes:* Each value is the difference in mean attitude between those with a university degree and those without one. All five dependent variables are standardised. The first three were measured on a scale from 1 (“Definitely should not”) to 4 (“Definitely should”); the next two were measured on a scale from 1 (“Strongly against”) to 5 (“Strongly in favour”). All models include gender (because women might be arbitrarily excluded from university in some countries). Respondents younger than 23 are excluded (because they will not have had time to complete a degree yet). All data are from 2006. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%. From left to right, fixed-effects estimates are:  $d = -0.34$  ( $p < 0.001$ ,  $n = 42,537$ ),  $d = -0.29$  ( $p < 0.001$ ,  $n = 42,285$ ),  $d = -0.15$  ( $p < 0.001$ ,  $n = 41,715$ ),  $d = -0.37$  ( $p < 0.001$ ,  $n = 41,645$ ),  $d = -0.05$  ( $p > 0.1$ ,  $n = 42,239$ );  $p$ -values for fixed-effects estimates are based on clustered standard errors.

**Table A.3.** Effect of vocabulary score on attitude toward redistribution controlling for log family income

	The government should reduce income differences between rich and poor			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.39***	0.58***	0.31**	0.31**
3 out of 10	0.38***	0.45***	0.48***	0.29*
4 out of 10	0.42***	0.44***	0.49***	0.42***
5 out of 10	0.30***	0.42***	0.31***	0.24**
6 out of 10	0.18***	0.26***	0.26***	0.09
7 out of 10	0.10*	0.14	0.19*	0.05
8 out of 10	0.03	0.03	0.11	0.05
9 out of 10	<i>Ref.</i>	0.09	<i>Ref.</i>	<i>Ref.</i>
10 out of 10	0.03	<i>Ref.</i>	0.07	0.19
<i>n</i>	11,068	4118	3655	3295

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 1 (“Govt. should reduce differences”) to 7 (“No govt. action”). All models include log family income. Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table A.4.** Effect of vocabulary score on an alternative measure of attitude toward welfare spending

	Government spending on welfare is too high			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	-0.38***	-0.51***	-0.35***	-0.24**
3 out of 10	-0.27***	-0.34***	-0.41***	-0.09
4 out of 10	-0.11**	-0.12**	-0.19*	-0.11
5 out of 10	-0.08**	-0.09*	-0.10	-0.10
6 out of 10	<i>Ref.</i>	<i>Ref.</i>	-0.05	-0.01
7 out of 10	-0.03	-0.03	-0.10	<i>Ref.</i>
8 out of 10	-0.03	-0.03	<i>Ref.</i>	-0.13
9 out of 10	-0.16***	-0.13**	-0.19*	-0.28***
10 out of 10	-0.19***	-0.18**	-0.25**	-0.39***
<i>n</i>	14,818	7309	3729	3780

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 0 (“Too little” or “About right”) to 1 (“Too much”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table A.5.** Effect of vocabulary score on attitude toward government help for blacks among white respondents

	The government has a special obligation to help blacks			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.17*	0.15	0.22*	0.26*
3 out of 10	0.17**	0.15	0.25*	0.21
4 out of 10	<i>Ref.</i>	<i>Ref.</i>	0.01	0.10
5 out of 10	0.01	0.03	<i>Ref.</i>	0.09
6 out of 10	0.03	0.02	0.10*	0.05
7 out of 10	0.03	0.08	0.09	<i>Ref.</i>
8 out of 10	0.13**	0.14	0.18**	0.17*
9 out of 10	0.24***	0.35***	0.23***	0.24**
10 out of 10	0.42***	0.43***	0.42***	0.53***
<i>n</i>	9586	3073	3706	2807

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 1 (“No special treatment”) to 5 (“Government should help blacks”). Non-white respondents are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table A.6.** Effect of vocabulary score on attitude toward free speech for racists among white respondents

	Racists should not have free speech			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	0.73***	0.72***	0.64***	0.90***
3 out of 10	0.82***	0.80***	0.88***	0.83***
4 out of 10	0.79***	0.83***	0.73***	0.80***
5 out of 10	0.73***	0.75***	0.74***	0.72***
6 out of 10	0.63***	0.66***	0.57***	0.68***
7 out of 10	0.54***	0.53***	0.53***	0.59***
8 out of 10	0.42***	0.48***	0.31***	0.48***
9 out of 10	0.27***	0.33***	0.21*	0.23
10 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
<i>n</i>	11,514	5536	3288	2690

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, took the value 1 for respondents who would not allow racists to speak, would not allow racists to teach, or would not allow racist books in the library; it took the value 0 for those who would allow all three of these. Non-white respondents are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table A.7.** Effect of vocabulary score on attitude toward women working among male respondents

	Disagree that men should work and women should tend home			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
3 out of 10	0.19*	0.10	0.18	0.22
4 out of 10	0.25***	0.30	0.18	0.32*
5 out of 10	0.38***	0.37*	0.29***	0.50***
6 out of 10	0.51***	0.27	0.47***	0.64***
7 out of 10	0.47***	0.35*	0.45***	0.54***
8 out of 10	0.59***	0.51**	0.55***	0.66***
9 out of 10	0.78***	0.55**	0.71***	0.93***
10 out of 10	0.84***	0.57**	0.82***	0.96***
<i>n</i>	6317	797	3073	2447

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 1 (“Strongly disagree”) to 4 (“Strongly agree”). Female respondents are excluded, along with black respondents oversampled in 1982 and 1987. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table A.8.** Effect of vocabulary score on an alternative measure of attitude toward military spending

	Government spending on the military is too low			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	-0.01	-0.01	-0.05	-0.14
3 out of 10	-0.01	-0.06	<i>Ref.</i>	-0.04
4 out of 10	-0.01	<i>Ref.</i>	-0.09	-0.10
5 out of 10	<i>Ref.</i>	-0.03	-0.09	<i>Ref.</i>
6 out of 10	-0.04	-0.06	-0.12	-0.06
7 out of 10	-0.02	-0.07	-0.09	-0.02
8 out of 10	-0.10**	-0.21***	-0.09	-0.06
9 out of 10	-0.19***	-0.28***	-0.12	-0.20*
10 out of 10	-0.23***	-0.28***	-0.21*	-0.26**
<i>n</i>	14,716	7185	3731	3800

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 0 (“About right” or “Too much”) to 1 (“Too little”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

**Table A.9.** Effect of vocabulary score on an alternative measure of attitude toward spending on the environment

	Government spending on the environment is too high			
	Pooled	1970s and 1980s	1990s	2000s and 2010s
0-2 out of 10	<i>Ref.</i>	<i>Ref.</i>	-0.06	<i>Ref.</i>
3 out of 10	-0.09	-0.10	-0.16	-0.02
4 out of 10	-0.06	-0.06	-0.02	-0.17
5 out of 10	-0.05	-0.06	-0.02	-0.12
6 out of 10	-0.09	-0.09	-0.08	-0.15
7 out of 10	-0.07	-0.08	-0.06	-0.13
8 out of 10	-0.02	-0.04	<i>Ref.</i>	-0.06
9 out of 10	-0.12*	-0.17*	-0.04	-0.15
10 out of 10	-0.13*	-0.11	-0.07	-0.33**
<i>n</i>	14,816	7253	3747	3816

*Notes:* The left-hand column gives the score in the vocabulary test. The dependent variable, which is standardised, was measured on a scale from 0 (“Too little” or “About right”) to 1 (“Too much”). Black respondents oversampled in 1982 and 1987 are excluded. Sample weights are applied. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

# COGNITIVE ABILITY AND POLITICAL BELIEFS IN THE UNITED STATES

## **Abstract**

Recent evidence indicates that cognitive ability has a monotonically positive relation to socially liberal beliefs and some measures of fiscally conservative beliefs, and that it has a non-monotonic relation to other measures of fiscally conservative beliefs. This study examines the relationship between cognitive ability and political beliefs in a recent, nationally representative sample of American adults. It finds that cognitive ability is positively associated with both socially liberal beliefs and fiscally conservative beliefs. The relationships with socially liberal beliefs are monotonically positive. In contrast, some of the relationships with fiscally conservative beliefs are non-monotonic: Americans of highest ability are less fiscally conservative than those of high ability. The association between cognitive ability and a dimension of fiscal conservatism is reduced substantially when controlling for socio-economic position.

## 1. Introduction

Numerous studies have found that individuals with higher cognitive ability tend to be more socially liberal on issues such as gay marriage, abortion, working women, free speech and marijuana legalisation (Deary et al., 2008; Kemmelmeier; 2008; Stankov, 2009; Schoon et al., 2010; Kanazawa, 2010; Heaven et al., 2011; Hodson & Busseri, 2012; Carl, 2014). At the same time, some studies have found that individuals with higher cognitive ability tend to be more fiscally conservative<sup>24</sup> in areas such as redistribution of income and government intervention in the economy (Caplan & Miller, 2010; Rindermann et al., 2012; Mollerstrom & Seim, 2014; Oskarsson et al., 2014; Carl, 2014). On the other hand, Solon (2014) argues that there is actually U-shaped relationship between cognitive ability and leftism such that people with very high cognitive ability tend to be more left-wing than those of only high ability. In support of this argument, he points out that academics and other scholarly elites lean overwhelmingly toward the Democratic Party in the United States. Responding to Solon's (2014) article, Carl (2015) finds that cognitive ability has a pronounced U-shaped relation to some measures of leftism, a slightly U-shaped relation to others, and a monotonic negative relation to still others.

The finding that cognitive ability has a positive relation to both socially liberal beliefs and at least some measures of fiscally conservative beliefs is consistent with evidence that a single ideological axis (from left to right, or from liberal to conservative) is insufficient to characterise the distribution of political beliefs within countries such as the United States (Feldman & Johnston, 2014; Carl, 2015). What's more, cognitive ability is not the only psychological trait that has been identified with this pattern of associations: Malka et al. (2014) find that need for security and certainty is positively associated with socially conservative attitudes, but negatively associated with right-wing economic attitudes. The present study examines the relationship between cognitive ability and political beliefs in a recent, nationally representative sample of American adults.

## 2. Method

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<sup>24</sup> Confusingly, 'fiscal conservatism' is also known as 'economic liberalism' (see Klein, 2014).

## *2.1 Data*

Data are from the 2012 wave of the American National Election Study (ANES): a biennial/triennial survey concerned with Americans' political attitudes and behaviours. In the 2012 wave, two separate nationally representative samples were collected, one via face-to-face interviewing, and one via the internet. The present study only utilises the face-to-face sample because one of the cognitive ability measures is not available for the internet sample. Respondents in the face-to-face sample were interviewed twice: before and then after the presidential election. Precise details of the sampling design employed for the 2012 wave of the ANES are provided in the survey's codebook (ANES, 2014a).

## *2.2 Measurement of cognitive ability*

Two measures of cognitive ability are available in the 2012 wave of the ANES. The first is a 10-item vocabulary test in which the respondent must identify which of five phrases supplies the correct definition of a given word. It was administered to respondents once, during the pre-election interviews. In general, vocabulary tests load more strongly onto the crystallised factor of general intelligence than onto the fluid factor (Cattell, 1963). They tend to have high heritabilities and high *g*-loadings, relative to other subtests (Jensen, 2001). For a longer discussion of the measure's validity, see Caplan and Miller (2010).

The second measure of cognitive ability is a rating by the interviewer of the respondent's apparent intelligence. In particular, the interviewer assesses whether the respondent's intelligence appears to be "very low", "fairly low", "average", "fairly high" or "very high". These categories were re-coded from '1' to '5', respectively. Because assessments were made during both the pre-election and post-election interviews, I utilise each respondent's average rating. Encouragingly, the Pearson

correlation between the two ratings is strong, namely  $r = .69$  ( $p < 0.001$ ,  $n = 1,906$ )<sup>25</sup>. Whilst the measure obviously relies on the interviewer's subjective judgement, studies have demonstrated that observer ratings of intelligence are positively correlated with actual test scores (Borkenau & Liebler, 1993; Hall et al., 2008). Furthermore, it was recently employed by Urbatsch (2012) in a successful replication of the association between cognitive ability and electoral turnout.

Because both measures of cognitive ability are somewhat crude, I combine the two using principal components analysis (PCA). Specifically, I extract the first principal component from a PCA on vocabulary test score, measured from 0 to 10, and average interviewer rating, measured from 1 to 5. This component had an eigenvalue of 1.41 and explained 71% of the variance. It is approximately normally distributed, with a slight left skew (mean = 0, median = -0.09). The Pearson correlation between the two original measures is moderate-to-large, namely  $r = .39$  ( $p < 0.001$ ,  $n = 1,862$ ).

### *2.3 Measurement of political beliefs*

Seven measures of socially liberal beliefs are utilised. These encompass attitudes toward gay marriage, abortion, immigration, marijuana legalisation, the death penalty, torture, and government wiretaps. Twenty-four measures of fiscally conservative beliefs are utilised. These encompass attitudes toward the size and scope of government, the free market, business regulation, income redistribution, government spending, the Affordable Care Act, the budget deficit, the top rate of income tax, and affirmative action. Details about each measure can be found in the survey's pre-election and post-election questionnaires (ANES, 2014b,c).

## **3. Results**

The first column in Table 1 displays correlations between cognitive ability and seven measures of socially liberal beliefs. In all seven cases, the correlation is positive and statistically significant. The second column in Table 1 shows whether or not a quadratic term in cognitive ability

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<sup>25</sup> All reported  $n$ 's are unweighted.

enters significantly at the 5% level, along with its sign if it does so. In three cases, the quadratic term is positive and significant, which implies that the effect of cognitive ability becomes stronger at higher levels of cognitive ability. The third column in Table 1 indicates which decile of cognitive ability is the most socially liberal on average. In all seven cases, social liberalism peaks in the 10<sup>th</sup> decile.

**Table 1.** Relationships between cognitive ability and seven measures of socially liberal beliefs.

	Correlation with cognitive ability	Quadratic term: significant <i>t</i> -test, sign	Most socially liberal decile
Favour legal recognition of gay relationships (1–3)	.09**	yes, positive	10 <sup>th</sup>
Favour legal abortion (1–9)	.14***	no	10 <sup>th</sup>
Favour increasing immigration (1–5)	.20***	yes, positive	10 <sup>th</sup>
Favour legalizing marijuana (1–3)	.08*	no	10 <sup>th</sup>
Oppose the death penalty (1–2)	.13***	yes, positive	10 <sup>th</sup>
Oppose torture of terrorist suspects (1–3)	.09**	no	10 <sup>th</sup>
Government wiretaps have gone too far (1–3)	.16***	no	10 <sup>th</sup>

*Notes:* Estimates are from weighted OLS models. *n*'s range from 1,646 to 1,841. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%. Tests on quadratic terms were conducted at the 5% level.

The first column in Table 2 displays correlations between cognitive ability and twenty-four measures of fiscally conservative beliefs. In twenty-two cases, the correlation is positive, and in twenty cases, positive and significant. In one case, namely attitude toward federal spending on science and technology, the correlation is significantly negative. The second column in Table 2 shows whether or not a quadratic term in cognitive ability enters significantly at the 5% level, along with its sign if it does so. In nine cases, the quadratic term is negative and significant, while in four cases it is positive and significant. The third column in Table 2 indicates which decile of cognitive ability is the most fiscally conservative on average. In sixteen cases, fiscal conservatism peaks before the 10<sup>th</sup> decile. The difference in average fiscal conservatism between the most fiscally conservative decile and the 10<sup>th</sup> decile is significant at the 5% level in four cases: attitude toward public expenditure on welfare, attitude toward federal spending on welfare, attitude toward federal spending on science and technology, and attitude toward affirmative action at work.

**Table 2.** Relationships between cognitive ability and twenty-four measures of fiscally conservative beliefs.

	Correlation with cognitive ability	Quadratic term: significant <i>t</i> -test, sign	Most fiscally conservative decile
The less government the better (1–2)	.32***	yes, negative	9 <sup>th</sup>
Free market can handle complex problems (1–2)	.14***	no	8 <sup>th</sup>
Government should provide fewer services (1–7)	.19***	yes, negative	9 <sup>th</sup>
Government should let each person get ahead on their own (1–7)	.23***	yes, negative	9 <sup>th</sup>
Less government regulation of business (1–5)	.08*	yes, negative	4 <sup>th</sup>
Government should not take action on income inequality (1–5)	.29***	no	8 <sup>th</sup>
Health insurance should be paid for privately (1–7)	.10**	yes, negative	7 <sup>th</sup>
Less public expenditure on education (1–5)	.07*	no	10 <sup>th</sup>
Less public expenditure on welfare (1–5)	.18***	yes, negative	7 <sup>th</sup>
Less public expenditure on law enforcement (1–5)	.05	no	9 <sup>th</sup>
Less public expenditure on Social Security (1–5)	.27***	no	10 <sup>th</sup>
Less public expenditure on defence (1–5)	.21***	yes, positive	10 <sup>th</sup>
Less public expenditure on business and industry (1–5)	.24***	no	10 <sup>th</sup>
Decrease federal spending on public schools (1–3)	.14***	yes, positive	10 <sup>th</sup>
Decrease federal spending on welfare (1–3)	.14***	yes, negative	7 <sup>th</sup>
Decrease federal spending on crime (1–3)	.22***	yes, positive	10 <sup>th</sup>
Decrease federal spending on pensions (1–3)	.27***	yes, positive	10 <sup>th</sup>
Decrease federal spending on the environment (1–3)	.14***	no	9 <sup>th</sup>
Decrease federal spending on science and technology (1–3)	–.11***	no	4 <sup>th</sup>
Oppose the Affordable Care Act (1–7)	.05	no	8 <sup>th</sup>
Favour reducing the budget deficit (1–7)	.26***	no	10 <sup>th</sup>
Oppose increasing the income tax on millionaires (1–7)	.00	no	1 <sup>st</sup>
Oppose affirmative action at work (1–7)	.10**	yes, negative	8 <sup>th</sup>
Oppose affirmative action at universities (1–7)	.12***	yes, negative	7 <sup>th</sup>

*Notes:* Estimates are from weighted OLS models. *n*'s range from 1,559 to 1,844. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%. Tests on quadratic terms were conducted at the 5% level.

A dimension of social liberalism was obtained by extracting the first principal component from a PCA on the seven measures of socially liberal beliefs. This component had an eigenvalue of 1.73 and explained 25% of the variance; all factors loadings had positive signs. Likewise, a dimension of fiscal conservatism was obtained by extracting the first principal component from a PCA on the twenty-four measures of fiscally conservative beliefs. This component had an eigenvalue of 6.08 and also explained 25% of the variance; all factor loadings except one (attitude toward public spending on defence) had positive signs.

There is a moderate negative association between social liberalism and fiscal conservatism:  $r = -.36$  ( $p < 0.001$ ,  $n = 990$ ). Consistent with the results from Tables 1 and 2, cognitive ability has a small-to-moderate positive correlation with both social liberalism ( $r = .22$ ,  $p < 0.001$ ,  $n = 1,449$ ) and fiscal conservatism ( $r = .22$ ,  $p < 0.001$ ,  $n = 1,095$ ).<sup>26</sup> Correlations of the two sub-dimensions of cognitive ability with social liberalism and fiscal conservatism are comparable in magnitude (see Appendix A.1). A quadratic term in cognitive ability is significant and positive in the model of social liberalism, but is not significant in the model of fiscal conservatism. Social liberalism peaks in the 10<sup>th</sup> decile of cognitive ability. In comparison, fiscal conservatism peaks in the 9<sup>th</sup> decile; the difference between the 9<sup>th</sup> and 10<sup>th</sup> deciles is relatively small and non-significant ( $d = 0.14$ ,  $p > 0.1$ ).

Table 3 displays estimates from multiple linear regression models of social liberalism and fiscal conservatism. Adjusting for a dimension of socio-economic position reduces the standardized effect of cognitive ability on social liberalism by only 19%, but reduces the standardized effect of cognitive ability on fiscal conservatism by 55% and renders it non-significant. (A correlation matrix for these variables is provided in Appendix B.1). Adjusting for the exogenous variables of age, gender and race in addition to socio-economic position does not reduce the standardized effect of cognitive ability on social liberalism, but reduces the standardized effect of cognitive ability on fiscal conservatism by 78% and renders it non-significant.

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<sup>26</sup> It has a moderate-to-large correlation with the positive manifold of social liberalism and fiscal conservatism (the second principal component):  $r = .40$  ( $p < 0.001$ ,  $n = 965$ ).

**Table 3.** Standardized effects of cognitive ability, socio-economic position, gender, age and race on social liberalism and fiscal conservatism

	Social liberalism			Fiscal conservatism		
Cognitive ability	0.23***	0.18***	0.25***	0.21***	0.10	0.05
Socio-economic position		0.07	0.08		0.21***	0.15***
Female			-0.04			-0.08
Age 30-39			-0.04			-0.05
Age 40-59			-0.19***			-0.04
Age 60-90			-0.27***			-0.01
Black			0.10***			-0.32***
Hispanic			0.05			-0.17***
Other			0.05			-0.08**
<i>n</i>	1,353	1,353	1,353	1,017	1,017	1,017
<i>R</i> <sup>2</sup>	0.05	0.05	0.13	0.05	0.08	0.20

*Notes:* Socio-economic position was obtained by extracting the first principal component from a PCA on highest level of educational attainment, measured from 1 (“Less than First Grade”) to 16 (“Doctoral degree”), and annual family income, measured from 1 (“Under \$5,000”) to 28 (“\$250,000 or more”). This component had an eigenvalue of 1.39 and explained 70% of the variance. The correlation between highest level of educational attainment and annual family income was  $r = .40$  ( $p < 0.001$ ,  $n = 1,932$ ). Male is the reference category for gender. Age 17-29 is the reference category for age. White is the reference category for race. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%.

## 4. Discussion

Cognitive ability was positively associated with both socially liberal beliefs and fiscally conservative beliefs. The relationships with socially liberal beliefs were monotonically positive. In contrast, some of the relationships with fiscally conservative beliefs were non-monotonic: Americans of highest ability were less fiscally conservative than those of high ability (see Rindermann et al., 2012; Solon, 2014; Carl, 2015). Cognitive ability was correlated at  $r = .22$  with dimensions of social liberalism and fiscal conservatism. These correlations would generally be regarded as small-to-moderate (Cohen, 1988); they are comparable to other effect sizes in the literature (see Heaven et al., 2011; Carl, 2014; Oskarsson et al., 2014). The association between cognitive ability and fiscal conservatism was reduced substantially when controlling for socio-economic position, which suggests that it arises at least partly from economic self-interest.

There are of course several important limitations to this study. First, the measure of cognitive ability utilised can at best provide no more than a rough gauge of general intelligence: it was constructed from just two variables, neither of which evaluated respondents' abstract reasoning ability through analytical tests. Second, as noted above, none of the effect sizes observed is particularly large. Third, the results correspond to a particular country in a particular time period; they cannot be assumed to hold universally. As Woodley (2011) argues, the association between cognitive ability and political beliefs may vary depending on prevailing cultural values and social norms.

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## Appendix A

**Table A.1.** Correlations of vocabulary test score and average interviewer rating with social liberalism and fiscal conservatism.

	Social liberalism	Fiscal conservatism
Vocabulary test score	.24***	.19***
Average interviewer rating	.12***	.18***

*Notes:* Estimates are from weighted OLS models. A quadratic term in vocabulary test score was positive and significant in the model of social liberalism. In the other three models, the quadratic term in cognitive ability was not significant. *n*'s range from 1,107 to 1,479. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

## **Appendix B**

**Table B.1** Correlations of vocabulary test score and average interviewer rating with social liberalism and fiscal conservatism.

	Cognitive ability	Socio-economic position	Social liberalism	Fiscal conservatism
Cognitive ability	1			
Socio-economic position	.55***	1		
Social liberalism	.24***	.16***	1	
Fiscal conservatism	.21***	.26***	-.36***	1

*Notes:* Estimates are from weighted OLS models. *n* equals 925. Significance levels, based on robust standard errors: \*5%, \*\*1%, \*\*\*0.1%.

# CAN INTELLIGENCE EXPLAIN THE OVERREPRESENTATION OF LIBERALS AND LEFTISTS IN AMERICAN ACADEMIA?

## **Abstract**

It is well known that individuals with so-called liberal or leftist views are overrepresented in American academia. By bringing together data on American academics, the general population and a high-IQ population, the present study investigates how much of this overrepresentation can be explained by intelligence. It finds that intelligence can account for most of the disparity between academics and the general population on the issues of abortion, homosexuality and traditional gender roles. By contrast, it finds that intelligence cannot account for any of the disparity between academics and the general population on the issue of income inequality. But for methodological reasons, this finding is tentative. Furthermore, the paper finds that intelligence may account for less than half of the disparity on liberal versus conservative ideology, and much less than half the disparity on Democrat versus Republican identity. Overall, the findings of this study suggest that intelligence explains some but not all of the overrepresentation of liberals and leftists in American academia.

Between economics and political science, sociology is not social science. It is rather scientific socialism... Our role as sociologists is to watch, engage and challenge an unequal world... So sociologists of the world, unite!

—Michael Burawoy,

Presidential address at the 2014 International Sociological Association World Congress of Sociology

## 1. Introduction

### *1.1 The extent of liberal and leftist overrepresentation*

In contemporary American politics, a distinction is commonly made between liberals<sup>27</sup>, who tend to favour more socially liberal and economically leftist policies, and conservatives, who tend to favour more socially conservative and economically rightist policies. Liberals typically support the Democratic Party at elections, while conservatives typically support the Republican Party. Numerous studies have documented that individuals identifying as liberal or as Democrat are overrepresented in American academia<sup>28</sup> (Buckley Jr., 1951; Lazarsfeld & Thielens, 1958; Ladd & Lipset, 1976; Lipset, 1982; Brookings Institution, 2001; Horowitz & Lehrer, 2003; Cardiff & Klein, 2005; Klein, Stern & Western, 2005; Tobin & Weinberg, 2006; Zipp & Fenwick, 2006; Gross & Simmons, 2007; Rothman & Lichter, 2009; Yancey, 2011; Gross & Fosse, 2012; Darcy, 2012; Gross, 2013; Solon, 2014; Duarte et al., 2014; Lindgren, 2015; Coyle, 2015; Aspelund et al., 2015). Moreover, academics' views on specific issues such as gay marriage and income inequality are much more socially liberal and economically leftist than those of the general population (Gross & Simmons, 2007).

Overrepresentation of liberals and Democrats appears to be largest in the humanities, the social sciences, and the arts (particularly sociology, anthropology and the performing arts), and appears to be smallest in economics, business, computer science, engineering and military science (Cardiff & Klein, 2005; Klein & Stern, 2005; Gross & Simmons, 2007; Rothman & Lichter, 2009). For example, the ratio of liberal to conservative English literature professors may be as high as 28:1

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<sup>27</sup> 'Liberal' in this context is taken to mean 'progressive'. For a discussion of the alternative meaning of 'liberal' see Klein (2014).

<sup>28</sup> While the present study focuses on the United States, there is evidence that individuals favoring social liberalism and economic leftism are overrepresented among academics in a number of other Western countries as well (see Gross, 2013; Solon, 2014; Solon, 2015).

(Rothman & Lichter, 2009), while the ratio of Democrat to Republican sociology professors may be as high as 44:1 (Cardiff & Klein, 2005). Overrepresentation in the physical sciences, the biological sciences and mathematics appears to be intermediate, though still considerable (Cardiff & Klein, 2005; Klein, Stern & Western, 2005; Gross & Simmons, 2007; Rothman & Lichter, 2009).

After reviewing the political affiliations of American law professors, Lindgren (2015) concluded that, “By some measures, in 1997 the most underrepresented racially defined groups were Non-Hispanic white Republicans and non-Hispanic white Protestants”. He also noted that, “though women were strongly underrepresented compared to the full-time working population, all of that underrepresentation was among Republican women, who were—and are—almost missing from law teaching.” Similarly, when the psychologist Jonathan Haidt asked attendees at the 2011 meeting of the Society for Personality and Social Psychology to indicate their political affiliations via a show of hands, he counted only 3 conservatives and only 12 libertarians, but approximately 800 liberals (Duarte et al., 2014).<sup>29</sup>

Overrepresentation of liberals and Democrats is evident not just in surveys of political views and voting behaviour, but also in databases of campaign contributions and commencement speaker invitations. In the 2012 election cycle, around 85% of campaign contributions from faculty and staff at Ivy League colleges reportedly went to President Barack Obama’s election campaign (Darcy, 2012). And a disparity of almost identical magnitude was observed in a 2015 analysis of political donations by the faculty of Harvard University (Aspelund et al., 2015). The 23<sup>rd</sup> annual Commencement Speakers Survey carried out by Young America’s Foundation documented a ratio of six liberal speakers for every one conservative speaker among the top 100 universities (Coyle, 2015). And notably in 2014, invitations to at least six prominent commencement speakers’ were met with protests on campus from liberal or leftist student groups, leading to the cancellation of four<sup>30</sup> (Strauss, 2014; Chotiner, 2014).

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<sup>29</sup> The authors do state, however, that “in this non-anonymous survey, many conservatives may have been reluctant to raise their hands” (Duarte et al., 2014).

<sup>30</sup> The six speakers were: Colorado state Senator, Michael Johnston; television host, Bill Maher; newspaper columnist, George Will; former secretary of state, Condoleezza Rice; head of the IMF, Christine Lagarde; and former chancellor of UC Berkeley, Robert J. Birgeneau. Rice, Lagarde and Birgeneau reportedly rescinded their invitations; Will was uninvited (Strauss, 2014; Chotiner, 2014). In fact, numerous scholars have traced the emergence of a marked opposition towards free

## *1.2 Intelligence as an explanation for liberal and leftist overrepresentation*

One hypothesis that has been put forward to explain the overrepresentation of liberals and leftists in American academia is that they tend to have higher intelligence than conservatives and rightists (Solon, 2014; Solon, 2015; see also Charlton, 2009; Gross & Fosse, 2012; Gross, 2013; Fosse, Freese & Gross, 2014). Academic advancement requires very high intelligence, and since very few individuals with conservative or rightist views possess very high intelligence, such individuals are comparatively scarce within the academy. At present, there is a certain amount of circumstantial evidence for this hypothesis. Numerous studies have found that individuals with higher intelligence to be more socially liberal on issues such as gay marriage, abortion, working women, free speech and marijuana legalisation (Miles et al., 2000; Deary, Batty, & Gale, 2008; Kemmelmeier, 2008; Stankov, 2009; Schoon, Cheng, Gale, Batty, & Deary, 2010; Kanazawa, 2010; Heaven, Ciarrochi, & Leeson, 2011; Hodson & Busseri, 2012; Carl, 2014; Carl, 2015a,b). Americans with higher intelligence are apparently more likely to identify as liberal on a liberal/conservatism scale (Kanazawa, 2010; Carl, 2015a; Woodley of Menie & Dunkel, 2015; Meisenberg, 2015). And compared to Americans with only high intelligence, those with the highest intelligence are more likely to identify as Democrat, more likely to support welfare for the poor, and more likely to favour affirmative action for minorities (Carl, 2015a,b; see also Caplan, 2001; Gerber et al., 2010). In addition, scholarly elites such as Nobel laureates, Pulitzer Prize winners and Putnam fellows have donated to the Democratic Party far more often than they have donated to the Republican Party (Solon, 2014; Solon, 2015).

However, there is also some circumstantial evidence against the hypothesis. In particular, several studies have found that individuals with higher intelligence tend to be more economically rightist in areas such as redistribution of income and government control of the economy (Miles et al., 2000; Caplan & Miller, 2010; Iyer et al., 2012; Carl, 2014a,b; Schweizer, 2008; Mollerstrom & Seim, 2014; Oskarsson et al., 2014; Rindermann et al., 2012; Carl, 2015a,b; Karadja et al., 2014; Morton et

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speech among certain sections of the left (Bawer, 2012; Browne, 2006; Bruce, 2003; Charlton, 2011; Fearman, 2012; Goldberg, 2009; Kors & Silvergate, 1999; Lukianoff, 2014a, 2014b; Payne, 2012; Rauch, 1995; Sacks & Thiel, 1999; Powers, 2015; Gottfredson, 2010).

al., 2011; see also Weakliem, 2002; Alesina & Giuliano, 2011; Malka et al., 2014; and see Rindermann & Thompson, 2011). Furthermore, it has been argued that a single ideological axis running from liberal to conservative is insufficient to characterise the distribution of political beliefs in countries such as the United States<sup>31</sup> (Feldman & Johnston, 2014; Carl, 2015a,b; see also Malka et al., 2014). Indeed in the US, intelligence appears to have a monotonically positive relationship with both socially liberal beliefs and at least some measures of economically rightist beliefs (Carl, 2015a,b). As mentioned above, other measures of economic rightist beliefs, especially those pertaining to welfare and affirmative action, appear to have non-monotonic relation to intelligence such that Americans of high intelligence lean further right than those of highest intelligence (Solon, 2014; Solon, 2015; Carl, 2015a,b).

In fact, there is not only circumstantial evidence against the hypothesis, but at least three partial disconfirmations. Gross and Fosse (2012) identified professors in the US General Social Survey data, and attempted to gauge how much of the difference in liberalism between them and the general population could be explained by each of several characteristics, one of which was intelligence (measured by a 10-word vocabulary test). They found that “the greater average verbal ability of professors does nothing to account for the political gap between professors and other Americans”. Similarly, Gross (2013, p. 99, Table S-2.81) analyzed data on students’ career aspirations from the Higher Education Research Institute (HERI) College Senior Survey, and found that “in a statistical model predicting the likelihood of aspiring to be a professor, the effect of political liberalism was little changed when students’ SAT scores were factored in”. Finally, Fosse et al. (2014) examined which of several characteristics might explain the association between liberal self-identification and graduate school attendance, using data from the National Longitudinal Study of Adolescent Health. They found that adjusting for both high school GPA and intelligence (measured by an 87-item picture vocabulary test) only modestly attenuated the effect of liberal self-identification

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<sup>31</sup> In a fascinating recent study of political beliefs in China, Pan & Xu (2015) document a single ideological dimension running from nationalistic, socially conservative and pro-communist at one end, to globalist, socially liberal and pro-capitalist at the other. This is in contrast to the United States and other Western countries, where individuals with socially liberal beliefs tend to be less rather than more pro-capitalist.

on graduate school attendance; indeed, the former remained a significant predictor of the latter after adjustment (and see Gross, 2013, p. 99, p. 342).

However, there are arguably methodological limitations to each of these studies. First, all three operationalized political ideology as a single dimension running from very liberal to very conservative. As noted, this may be problematic, given that intelligence appears to be positively associated with both socially liberal beliefs and at least some measures of economically rightist beliefs (Carl, 2015a,b; see also Miles et al., 2000; Weakliem, 2002; Oskarsson et al., 2014; Feldman & Johnston, 2014; Malka et al., 2014). Second, all three estimated multivariate models that included many covariates. While multivariate estimation is of course perfectly defensible, some of the covariates included (such as race and family background<sup>32</sup>) are causally prior to intelligence, so their inclusion may have reduced the extent to which adjusting for intelligence attenuated the effect of political beliefs. Third, Both Gross (2013) and Fosse et al. (2014) studied graduate school attendance rather than employment within the academy per se. While these two outcomes are closely related, they are obviously not one and the same. Fourth, Gross and Fosse (2012) obtained a surprisingly low average score on the vocabulary test among the professors in their sample, namely 8.04 out of 10. This corresponds to a mean IQ of only ~115, which is substantially lower than previous IQ estimates for academics that have been reported in the literature (see Dutton & Lynn, 2014).

The present study investigates how much of the overrepresentation of liberals and leftists in American academia can be explained by intelligence. Section 2 describes the data and statistical methodology. Section 3 presents the main results, along with a few sensitivity checks. And Section 4 provides a general discussion. This final section summarises the results of the analysis, details the study's methodological limitations, and reviews eight alternative explanations for the overrepresentation of liberals and leftists in American academia.

## 2. Method

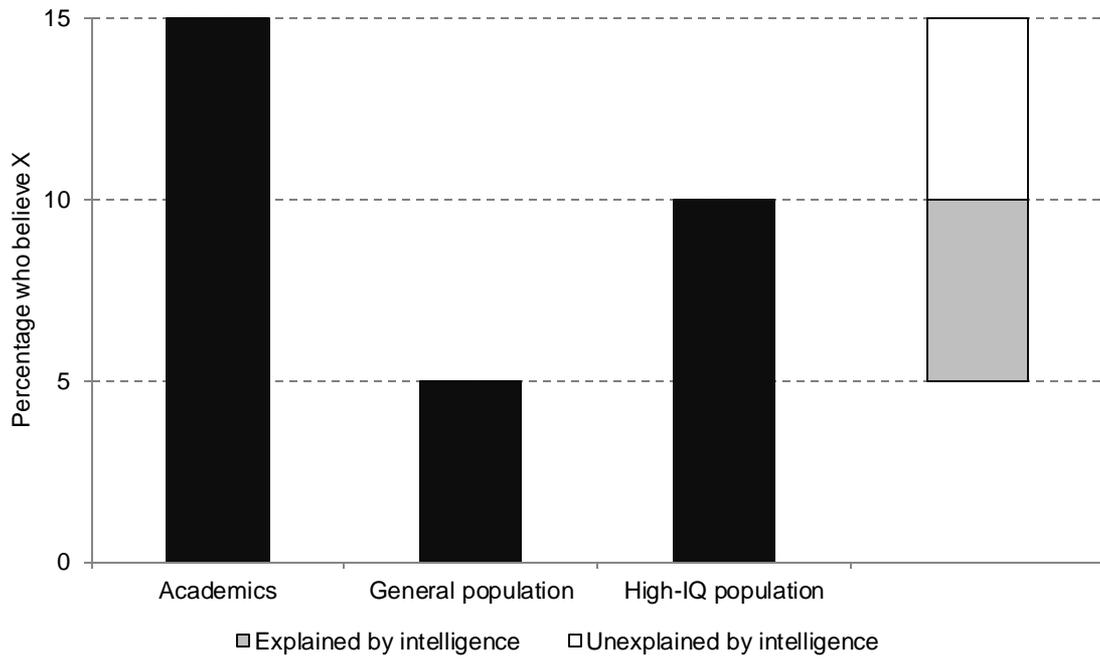
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<sup>32</sup> Indicators of family background (such as father's occupation) are causally prior to intelligence in two senses (see Jensen, 1973; Harris, 1998; Pinker, 2002; Trzaskowski et al, 2014). First, family background may have a direct effect on intelligence via socialization. Second, family background may serve as a proxy for inherited genetic factors that influence the intelligence of both parents and children.

## *2.1 Method for testing whether intelligence can explain liberal and leftist overrepresentation*

Figure 1 illustrates the method used for assessing how much of the overrepresentation of liberals and leftists in American academia can be explained by intelligence. I first bring together data on the political beliefs of three separate populations: academics, the general population, and a high-IQ population. I then calculate the proportion of each population that identifies with various political positions (e.g., thinking of oneself as a liberal, supporting the Democratic Party). The extent of overrepresentation for any particular position is simply the percentage-point difference between academics and the general population (i.e., the total length of the right-hand bar in Figure 1). And the fraction of this overrepresentation that can be explained by intelligence is simply the percentage-point difference between the high-IQ population and the general population divided by the percentage-point difference between academics and the general population (i.e., the grey portion of the right-hand bar divided by the total length of the bar). In the hypothetical case of Figure 1, there is a 10 percentage-point gap between academics and the general population of which 50% (i.e., 5 percentage points) can be explained by intelligence.

**Figure 1.** Hypothetical example to illustrate method for assessing the fraction of academics' liberalism/leftism that can be explained by intelligence.



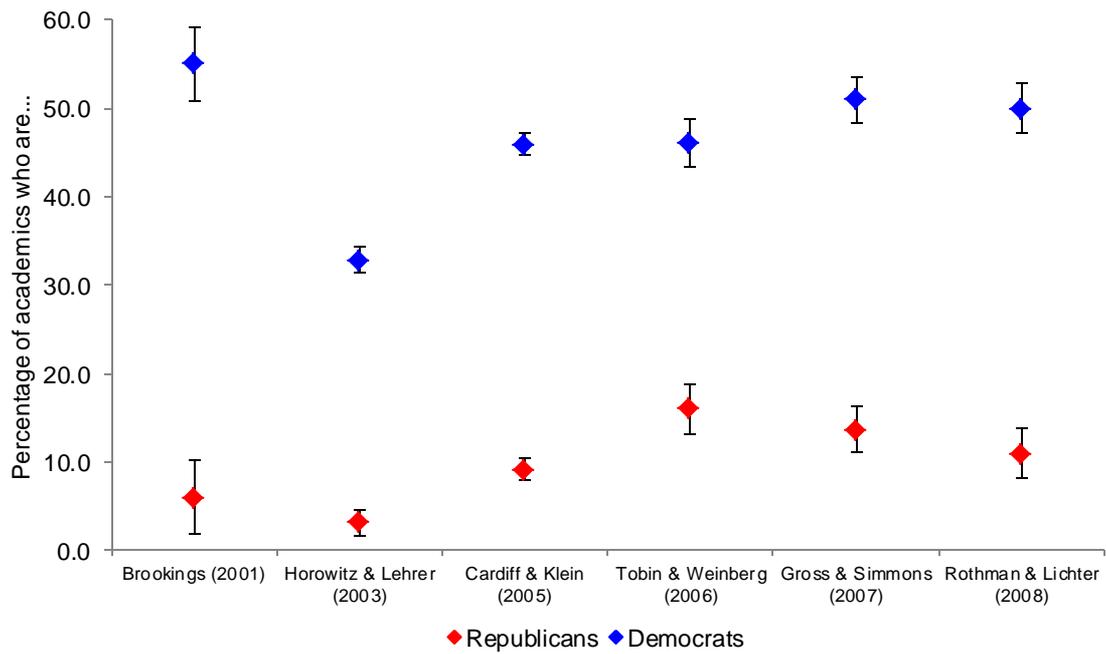
## *2.2 Data on the political beliefs of academics*

Data on the political beliefs of academics were taken from Gross and Simmons (2007), who in the mid 2000s conducted a survey (Politics of the American Professoriate) into the political beliefs of American college professors. These authors obtained their sample by: stratifying degree-awarding schools into four categories (community colleges, four-year colleges, non-elite research universities, elite research universities); randomly selecting schools from each of these four categories using data from the National Centre for Education Statistics; identifying the department or program within the selected school that most closely matched each one of a large number of disciplines; randomly selecting a faculty member from within the selected department or program to be included in the study. Invitation letters were then sent to 2,958 academics, along with the chance to win a \$100 gift certificate as an incentive. Participants took part in the survey by filling out a questionnaire online. A final response rate of 51% was attained. After eliminating 54 academics with part-time appointments, they were left with 1,417 valid cases (for additional details, see Gross & Simmons, 2007).

There are several key advantages to using Gross and Simmons' (2007) data, as opposed to the data collected by any of the other studies on the political beliefs of American academics (e.g., Lazarsfeld & Thielens, 1958; Ladd & Lipset, 1976; Lipset, 1982; Brookings Institution, 2001; Horowitz & Lehrer, 2003; Cardiff & Klein, 2005; Klein, Stern & Western, 2005; Tobin & Weinberg, 2006; Zipp & Fenwick, 2006; Rothman & Lichter, 2009). First, it is one of the most recent studies in the relevant area, which permits inferences to be drawn about the current state of affairs. Second, it is arguably the most rigorously collected and representative survey to date. For example, weights were applied in order to improve representativeness. And as Gross and Simmons (2007) point out, several previous studies (namely Horowitz & Lehrer, 2003; Cardiff & Klein, 2005; Tobin & Weinberg, 2006) may have been afflicted by sampling and non-response biases. Third, and most importantly, it included questions from the US General Social Survey (GSS), the source from where data on the political beliefs of the general population and a high-IQ population were taken. Figure 2, which displays the proportion of academics identifying as Republican and Democrat in six recent studies,

indicates that Gross and Simmons' (2007) figures are broadly consistent with those reported by other authors.

**Figure 2.** Proportion of academics who were Republicans and Democrats in six recent studies.



*Notes:* 95% confidence intervals were calculated from reported proportions and sample sizes; they do not take into account weighting. Brookings (2001) corresponds to just political scientists, economists, historians and sociologists, rather than to all academics. Horowitz and Lehrer (2003) and Cardiff and Klein (2005) are based on voter registration. The other studies are based on respondent self-identification.

### *2.3 Data on the political beliefs of the general population and a high-IQ population*

The GSS is a public opinion survey that has been administered to a nationally representative sample of American adults every 1-2 years since 1972 (see Smith et al., 2014). It contains questions on respondents' socio-economic characteristics, behaviours, and social attitudes. Many waves also include a 10-word vocabulary test where the respondent is asked to identify which of five phrases supplies the correct definition of a given word. Despite its crudeness, the test reportedly has a strong correlation with general intelligence (Wolfe, 1980; and see Caplan & Miller, 2010). In general, vocabulary tests load more strongly onto the crystallised factor of general intelligence than onto the fluid factor (Cattell, 1963; Horn & Cattell, 1966). But they tend to have high heritabilities and high  $g$ -loadings, relative to other subtests (Jensen, 2001). After correction for reliability and validity, Woodley of Menie et al. (2015) estimated the  $g$ -loading of the GSS vocabulary test at  $r = .93$ . In addition, the GSS vocabulary test is correlated with the other measures of cognitive ability that have been featured in various waves of the survey (Carl, 2014b).

Accordingly, I define the high-IQ population as the roughly 4% of GSS respondents who scored 10 out of 10 in the vocabulary test. Note that a score of 10 equates to a mean IQ of  $\sim 128$ , which is just under two standard deviations above the population mean. This is in line with estimates for the average IQ of academics that have been reported in the literature, though it may understate the intelligence of academics in the physical sciences, whilst possibly overstating the intelligence of academics in the social sciences and humanities (see Dutton & Lynn, 2014). Gibson and Light (1967) tested 148 male academics at Cambridge University, and reported a mean IQ of  $\sim 128$  among physicists, and of  $\sim 122$  among social scientists. Note that these figures could be biased downward due to ceiling effects, low prior test exposure, or poor test attitudes (Woodley of Menie, private communication). Harmon (1961) collated the school records of about 80% of American PhD graduates from the class of 1958, and documented (after correction) a mean IQ of  $\sim 130$  among physics PhDs, and of  $\sim 124$  among social science PhDs. Of course, since these figures correspond to all PhDs, they are likely to understate the intelligence of those PhDs who went on to become academics. Several bloggers have reported mean IQs for different subjects derived from scores on the

Graduate Record Examination, a standardised test taken by those applying to American graduate schools (Hsu, 2005; Sailer, 2007; Olson, 2014; and see Khan, 2012). The typical finding is a mean IQ of ~130 among physicists, and of ~115 among social scientists. While these figures again correspond to all applicants, rather than just those who went to become academics, they likely overstate the intelligence of individuals in more quantitative fields (see Sailer, 2007). Lastly, there is some evidence that more eminent scholars, who presumably have higher intelligence, tend to be more liberal than their less eminent colleagues (see Rothman, Kelly-Woessner & Woessner, 2011, pp. 63-156; Solon, 2014; Solon, 2015).

#### *2.4 Calculation of proportions for each population*

Seven GSS questions that were included in Gross and Simmons' (2007) survey were available in the GSS for a relatively large number of respondents over the time period 2000-2014. First, "I'm going to show you a seven-point scale on which the political views that people might hold are arranged from extremely liberal—point 1—to extremely conservative—point 7. Where would you place yourself on this scale?" Second, "Generally speaking, do you think of yourself as a Republican, Democrat, Independent, or what?" Third, "Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. Here is a card with a scale from 1 to 7. Think of a score of 1 as meaning that the government ought to reduce the income differences between rich and poor, and a score of 7 meaning that the government should not concern itself with reducing income differences. What score between 1 and 7 comes closest to the way you feel?" Fourth, "What about sexual relations between two adults of the same sex—do you think it is always wrong, almost always wrong, wrong only sometimes, or not wrong at all?" Fifth, the respondent is asked to say whether he or she "strongly agrees", "agrees", "disagrees" or "strongly disagrees" with the statement, "It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family." Sixth, the respondent is asked

say whether he or she “strongly agrees”, “agrees”, “disagrees” or “strongly disagrees” with the statement, “A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.”<sup>33</sup> Seventh, “Please tell me whether or not you think it should be possible for a pregnant woman to obtain a legal abortion if she wants it for any reason.”

Answers to the first, second and third questions were divided into those corresponding to one or other of two alternative political positions. For the first question, liberals were defined as those answering “extremely liberal”, “liberal” or “slightly liberal”, while conservatives were defined as those answering “slightly conservative”, “conservative” or “extremely conservative”. For the second question, Democrats were defined as those answering “strong Democrat” or “weak Democrat”, while Republicans were defined as those answering “weak Republican” or “strong Republican”. For the third question, a problem was encountered in that Gross and Simmons (2007) do not report percentages separately for each of the seven response categories, but rather for three aggregated categories: “reduce inequality”, “neither” and “don’t reduce inequality”. And they do not explain how they recoded the original seven-point scale into their three-category schema.<sup>34</sup> For reasons I explain later, I defined individuals in favour of reducing inequality as those answering “1” or “2” on the seven-point scale, and individuals opposed to reducing inequality as those answering “6” or “7”. However, I also report results where individuals in favour of reducing inequality are defined as those answering “1”, “2” or “3” on the seven-point scale, and individuals opposed to reducing inequality as those answering “5”, “6” or “7”.

Answers to the fourth, fifth, sixth and seventh questions were reclassified in such a way as to identify as single political position. For the fourth question, individuals who believe that homosexuality is not wrong at all were defined as those answering “not wrong at all”, as opposed to “wrong only sometimes”, “almost always wrong” or “always wrong”. For the fifth question, individuals opposed to traditional gender roles were defined as those answering “disagree” or “strongly disagree”, as opposed to “strongly agree” or “agree”. For the sixth question, individuals who believe that a mother working does not harm her children were defined as those answering

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<sup>33</sup> Note that the first and sixth questions were worded slightly differently in Gross and Simmons’ (2007) survey.

<sup>34</sup> Both authors were emailed in an attempt to find out how the responses were coded, but neither replied.

“strongly agree” or “agree”, as opposed to “disagree” or “strongly disagree”. And for the seventh question, individuals in favour of abortion were defined as those answering “yes”, as opposed to “no”.

The proportion of academics identifying with each of the ten political positions was obtained by simply summing up the relevant percentages reported by Gross and Simmons (2007). For example, the proportion of academics identifying as liberal was computed as  $9.4\% + 34.7\% + 18.1\% = 62\%$  (see their Table 1). The proportion of the general population identifying with each political position was obtained by computing the appropriate percentages from the GSS data: averages were taken over all available respondents for the time period 2000-2014. The proportion of the high-IQ population identifying with each political position was also obtained by computing the appropriate percentage from the GSS data: averages were taken over all respondents scoring 10 out of 10 in the vocabulary test for the time period 2000-2014. Sampling weights were applied when computing percentages from the GSS data in order to attain representativeness (see Smith et al., 2014).

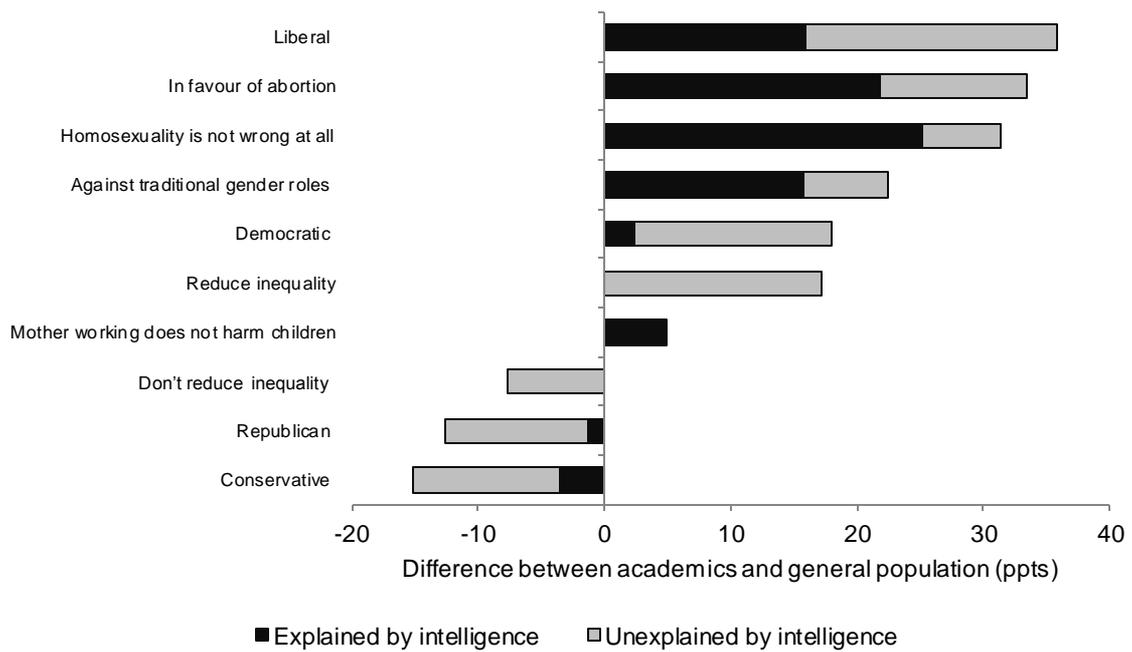
### **3. Results**

#### *3.1 Main results*

Figure 3 displays the results of the analysis outlined in Section 2.1. From top to bottom, the various political positions are ordered by extent of liberal or leftist overrepresentation. Starting from the top, academics are 36 percentage-points more likely than the general population to identify as liberal, and 44% of this gap (16 percentage-points) can be explained by intelligence. They are 33 percentage-points more likely to be in favour of abortion, and 66% of this gap (22 percentage-points) can be explained by intelligence. They are 31 percentage-points more likely to believe that homosexuality is not wrong at all, and 80% of this gap (25 percentage-points) can be explained by intelligence. They are 22 percentage-points more likely to oppose traditional gender roles, and 70% of this gap (16 percentage-points) can be explained by intelligence. They are 18 percentage-points more likely to identify as Democrat, and 13% of this gap (2.4 percentage-points) can be explained by intelligence. They are 17 percentage points more likely to support reducing inequality, and 0% of this

gap can be explained by intelligence. They are 5 percentage-points more likely to believe that a mother working does not harm her children, and 100% of this gap can be explained by intelligence. They are 8 percentage-points less likely to support not reducing inequality, and 0% of this gap can be explained by intelligence. They are 13 percentage-points less likely to identify as Republican, and 11% (1.3 percentage-points) of this gap can be explained by intelligence. Finally, they are 15 percentage-points less likely to identify as conservative, and 23% (3.5 percentage-points) of this gap can be explained by intelligence. The raw percentages from which Figure 3 was constructed, along with confidence intervals, are provided in Appendix A.

**Figure 3.** Fraction of academics' liberalism/leftism that can be explained by intelligence.



*Notes:* The total length of each bar is equal to the difference between academics and the general population. The length of the grey portion is equal to the difference between academics and those scoring 10 out of 10 in the vocabulary test. This is set equal to zero for 'Mother working does not harm children', and is set equal to the difference between academics and the general population for 'Reduce inequality' and 'Don't reduce inequality'.

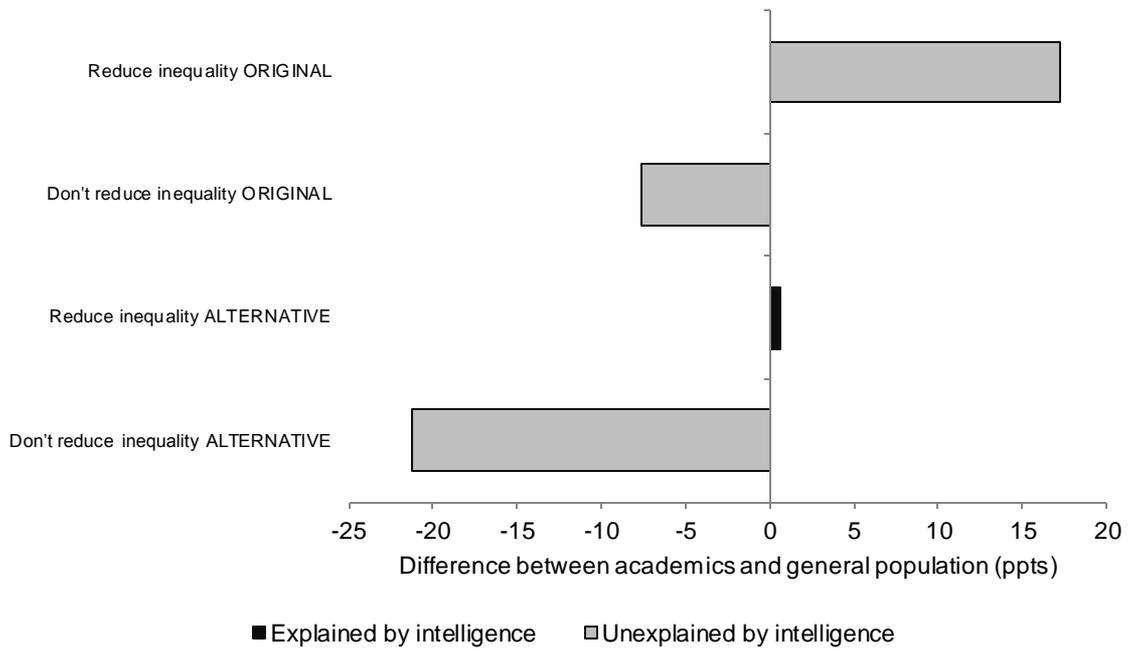
Three main conclusions can be drawn from the results in Figure 3. First, consistent with decades of previous research, liberals and leftists are indeed overrepresented in American academia. Second, intelligence can explain some but not all of this overrepresentation. Third, the fraction of the overrepresentation that can be explained by intelligence differs noticeably from one issue to another. Overall, intelligence may account for: most of the disparity between academics and the general population on the issues of abortion, homosexuality and traditional gender roles; none of the disparity on the issue of income inequality (but see Section 3.2); less than half the disparity on liberal versus conservative ideology; and much less than half the disparity on Democrat versus Republican identity.

### *3.2 Caveat concerning the issue of income inequality*

As noted in Section 2.4, Gross and Simmons' (2007) do not explain how they recoded the original seven-point scale for the question on income inequality into their three-category schema. I defined individuals in favour of reducing inequality as those answering "1" or "2" on the seven-point scale, and individuals opposed to reducing inequality as those answering "6" or "7". In other words, I assumed that Gross and Simmons (2007) had recoded: "1" or "2" into "reduce inequality", "3", "4" and "5" into "neither", and "6" and "7" into "don't reduce inequality". The reason I did so is illustrated in Figure 4, which compares the results that obtain under my original coding (i.e, the results displayed in Figure 3) to the results that obtain under an alternative coding where individuals in favour of reducing inequality are defined as those answering "1", "2" or "3", and individuals opposed to reducing inequality as those answering "5", "6" or "7". Under my original coding, academics are both appreciably more likely than the general population to support reducing inequality and appreciably less likely to support not reducing inequality. Under the alternative coding by contrast, they are about as likely as the general population to support reducing inequality but are massively less likely to support not reducing inequality. It seems rather implausible that there would be such a small difference at one end of the seven-point scale and such a vast difference at the other. I therefore believe it is more likely that Gross and Simmons' (2007) employed my original coding than that they employed the alternative one. However, if they in fact employed the alternative coding, then

intelligence may explain 100% of the only ~1 percentage-point gap on reducing inequality, while still explaining none of the ~21 percentage-point gap on not reducing inequality.

**Figure 4.** Comparison of original and alternative ways of coding responses to question on income inequality.

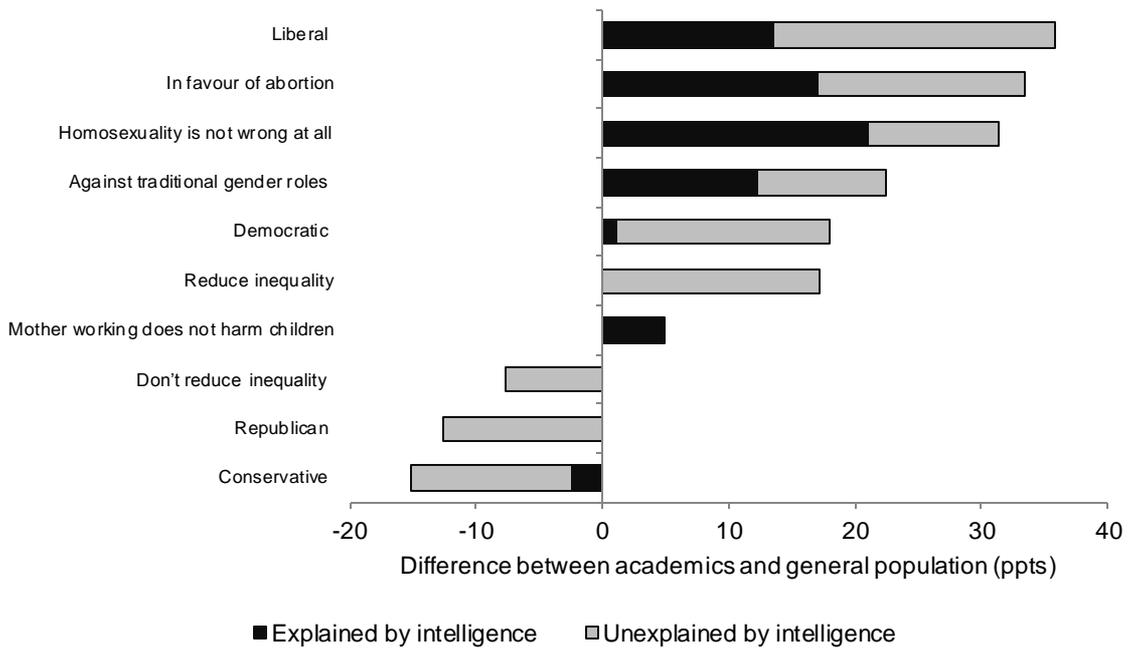


*Notes:* The total length of each bar is equal to the difference between academics and the general population. The length of the grey portion is equal to the difference between academics and those scoring 10 out of 10 in the vocabulary test. This is set equal to zero for 'Reduce inequality ALTERNATIVE', and is set equal to the difference between academics and the general population for the other three.

### *3.3 Sensitivity to an alternative definition of the high-IQ population*

As noted in Section 2.3, I defined the high-IQ population as the roughly 4% of GSS respondents who scored 10 out of 10 in the vocabulary test, a score of 10 equating to a mean IQ of ~128. However, it is possible (though unlikely) that this overstates the intelligence of academics, at least in some disciplines (see Dutton & Lynn, 2014). For example, as mentioned in Section 1.2, Fosse and Gross (2012) obtained a mean IQ among American college professors of only ~115. Accordingly, Figure 5 displays the results of an alternative analysis where the high-IQ population is defined as the roughly 11% of GSS respondents who scored 9 or 10 out of 10 in the vocabulary test. Note that a score of 9 or 10 equates to a mean IQ of ~124, which is just over 1.6 standard deviations above the population mean. Because respondents scoring 9 are slightly more socially conservative than those scoring 10 (see Carl, 2015a), in almost every case the percentage of the gap between academics and the general population that can be explained by intelligence is lower. Overall however, the results are substantively similar to those displayed in Figure 3.

**Figure 5.** Fraction of academics' liberalism/leftism that can be explained by intelligence when assuming lower average intelligence for academics.



*Notes:* The total length of each bar is equal to the difference between academics and the general population. The length of the grey portion is equal to the difference between academics and those scoring 9 or 10 out of 10 in the vocabulary test. This is set equal to zero for 'Mother working does not harm children', and is set equal to the difference between academics and the general population for 'Reduce inequality' and 'Don't reduce inequality'.

### *3.4 Additional sensitivity checks*

The results in Sections 3.1-3.3 were all based on the beliefs of academics on average. Yet, as noted in Section 1, overrepresentation of liberals and leftists appears to be much larger within some subjects, such as sociology and anthropology, than within others, such as economics and military science. It also appears to vary between different types of university (e.g., community colleges versus liberal arts schools). One major advantage of considering all academics together is that it obviates the low cell counts that arise when figures are disaggregated, which may lead to potentially unreliable estimates. Another advantage of considering all academics together is that it is useful to have an overall summary of the extent to which intelligence explains liberal/leftist overrepresentation within the academy; after all, the proportions of academics in each of the disciplinary and collegiate categories are not equal. Nevertheless, Table B.1 in the Appendix displays results disaggregated by type of university, and Tables C.1-C.2 in the Appendix display results disaggregated by field of study.

Furthermore, some of the results in Sections 3.1 were based on political positions that had been identified by lumping together distinct response categories (e.g., “Democrat” with “Strong Democrat”). Once again, the main advantage of combining categories is that it obviates low cell counts, which may lead to potentially unreliable estimates. Another advantage is that it averages over ordinal sub-categories of some broader category that may be subject to greater differences in perceived meaning than the broader category itself. For example, there is likely to be less agreement among individuals over what it means to be a “Strong Democrat” as opposed to a “Democrat” than over what it means to be a “Democrat” as opposed to a “Republican”. Nevertheless, Figure D.1 in the Appendix displays results for political positions corresponding to distinct response categories.

## **4. Discussion**

### *4.1 Conclusions from the analysis*

By bringing together data on American academics, the general population and a high-IQ population, the analysis investigated how much of liberal and leftist overrepresentation in American academia can be explained by intelligence. Three main conclusions could be drawn. First, consistent with decades of previous research (Buckley Jr., 1951; Lazarsfeld & Thielens, 1958; Ladd & Lipset, 1976; Lipset, 1982; Brookings Institution, 2001; Horowitz & Lehrer, 2003; Cardiff & Klein, 2005; Klein, Stern & Western, 2005; Tobin & Weinberg, 2006; Zipp & Fenwick, 2006; Gross & Simmons, 2007; Rothman & Lichter, 2009; Yancey, 2011; Gross & Fosse, 2012; Darcy, 2012; Gross, 2013; Solon, 2014; Duarte et al., 2014; Lindgren, 2015; Coyle, 2015; Aspelund et al., 2015), liberals and leftists are indeed overrepresented in American academia. Second, intelligence can explain some but not all of this overrepresentation. Third, the fraction of the overrepresentation that can be explained by intelligence differs noticeably from one issue to another. Overall, intelligence may account for: most of the disparity between academics and the general population on the issues of abortion, homosexuality and traditional gender roles; none of the disparity on the issue of income inequality; less than half the disparity on liberal versus conservative ideology; and much less than half the disparity on Democrat versus Republican identity. A caveat was that, for methodological reasons, the finding that intelligence explains none of the disparity on the issue of income inequality should be considered tentative.

#### *4.2 Limitations to the analysis*

There are of course several important limitations to this study. First, the measure of intelligence used was a short vocabulary test, not a comprehensive assessment of IQ. It obviously taps the verbal sub-dimension of intelligence more than, say, the mathematical or visuospatial sub-dimensions. This means that if liberals/leftists have disproportionately higher mathematical or visuospatial intelligence than conservatives/rightists then relying on such a test will have understated the intelligence of the former group relative to the latter. However, there is in fact some evidence to the contrary, namely that the liberal advantage on cognitive ability (Kanazawa, 2010; Carl, 2015a; Meisenberg, 2015; Woodley of Menie & Dunkel, 2015) does not show up on tests of mathematical

proficiency. Kimmelman (2008) found that while conservative attitudes were negatively associated with SAT-V scores, they were unrelated to SAT-M scores. Similarly, Heaven et al. (2011) observed a negative association between right-wing authoritarianism and verbal ability, but no association between right-wing authoritarianism and numerical ability (and see Woodley, 2011). And Gross (2013) reported that conservative students in the HERI College Senior Survey scored 9 points higher than liberal students on the math portion of the SAT, despite scoring 14 points lower on the verbal portion. Therefore if anything, relying on a vocabulary test may have overstated the relative intelligence of liberals.

Second, as noted in Sections 2.3 and 3.3, a score of 10 out of 10 on the vocabulary test, corresponding to a mean IQ of ~128, may not constitute an accurate estimate of academics' intelligence. While there is some reason to suspect that it may be an overestimate (see Fosse & Gross, 2012), there is also evidence that more eminent scholars, who presumably have higher intelligence, tend to be more liberal than their less eminent colleagues (Rothman et al., 2011; Solon, 2014; Solon, 2015). Third, survey mode was not held constant across the two sources of data on beliefs: academics answered Gross and Simmons' (2007) questionnaire over the internet, yet GSS respondents are usually interviewed face-to-face (Smith et al., 2014). It is possible that, due to the absence of anonymity in a face-to-face survey, members of the general and high-IQ population gave more socially desirable (i.e., more liberal or leftist) responses than they would have done had they completed an internet survey (see Streb et al., 2008; Janus, 2010; Powell, 2013; but see Dodou & de Winter, 2014). Fourth, the analysis was only able to show what fraction of liberal and leftist overrepresentation intelligence can explain, not how much it does explain. Aggregated data from two different sources were combined, so it was not possible to examine the explanatory contribution of intelligence to academics' political beliefs at the individual level.

#### *4.3 Other explanations for liberal and leftist overrepresentation*

Assuming the results of the analysis are approximately correct and intelligence cannot explain all of the liberal/leftist overrepresentation in American academia, the remaining overrepresentation

(particularly on income inequality and Democrat versus Republican identity) must be accounted for by other factors. And indeed, a number of alternative or additional hypotheses have been put forward in the literature. To begin with, several related hypotheses contend that liberal/leftist overrepresentation is attributable to some form of self-selection, either on personality, interests, cognitive style or preferences (Woessner & Kelly-Woessner, 2009; Dutton, 2013; Duarte et al., 2014; Charlton, 2009; Dutton & van der Linden, 2015; Mooney, 2005; Mooney, 2012; Gross & Fosse, 2012; Gross, 2013; Fosse et al., 2014). In other words, characteristics that predispose individuals with high intelligence to pursue scholarship (instead of other professions such as law, finance, medicine, engineering or senior management) tend to be more common among liberals and leftists than among conservatives and rightists.

First, individuals who identify as liberal tend to score higher on the personality trait openness to experience (Jost et al., 2003; Carney et al., 2008; but see Woodley of Menie & Dunkel, 2015), which may predispose them toward intellectually stimulating careers, including academia (Duarte et al., 2014; and see Charlton, 2009; Dutton & van der Linden, 2015). A caveat is that individuals who identify as libertarian<sup>35</sup> score just as high as liberals on openness to experience (and higher on cognitive ability; see Iyer et al., 2012) so this hypothesis would predict that they too should be overrepresented in the academy, which appears not to be the case. Second, liberals tend to be less interested in financial success and raising a family than their conservative peers, and more interested in penning original works and making a contribution to science, which probably stems from their higher openness to experience (Woessner & Kelly-Woessner, 2009; see Duarte et al., 2014). In addition, since liberals tend to be less satisfied with the status quo, and generally want to uproot traditional institutions rather than preserve them (Wolff et al., 1969; Pinker, 2002; Levin, 2013), they may be more attracted to professions such as academia and journalism that afford them opportunities to influence public opinion, and thereby shift the Overton window.

Third, drawing on diverse research in psychology and political science, Mooney (2005, 2012) suggests that the cognitive style exhibited by conservatives and Republicans, namely an inflexible

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<sup>35</sup> Libertarians tend to be both socially liberal and economically laissez-faire. 'Libertarian' is often used synonymously with 'classical liberal', though it is sometimes considered more extreme (Friedman, 1962, pp. 5–6). Some individuals identify as 'left-libertarian', but this appears to be quite rare (see Vallentyne & Steiner, 2001).

predilection for certainty (and corresponding aversion to novelty and ambiguity), makes them ill-suited for scholarly endeavour, especially in the Sciences (see also Jost et al., 2003). Whilst this hypothesis could plausibly explain liberal/leftist overrepresentation in the academy, many recent studies have shown that liberals are frequently no less biased in their analytical reasoning than conservatives, and sometimes more so (Graham et al., 2012; Crawford, 2012; Kahan, 2013; McRight et al., 2013; Nisbet et al., 2015; Brandt et al., 2014; Berezow and Campbell, 2014; Chambers et al., 2015; Toner et al., 2013; Wetherell et al., 2013; Van Prooijen et al., 2015; Crawford, 2014; Chambers et al., 2013; Crawford & Pilanski, 2014; Hochschild & Sen, 2015; and see Greenberg & Jonas, 2003; Cofnas, 2015; Marin, 2015; Duarte et al., 2014).

Fourth, self-selection into academia by liberals and leftists may have been amplified by processes of social homophily and political typing (Gross & Fosse, 2012; Gross, 2013; Fosse et al., 2014; Duarte et al., 2014). Social homophily, a pervasive phenomenon in human networks, is simply the tendency for individuals to associate with those who share their characteristics (McPherson et al., 2001; and see Rushton, 1989; Bell & Kandler, 2015). Political typing refers to the tendency outlined by Gross & Fosse (2012; and see Gross, 2013; Fosse et al., 2014) for certain occupations to develop a reputation as being suitable for either liberals or conservatives, just as certain occupations have developed a reputation as being suitable for either men or women. For example, while academia may be heavily skewed toward liberals and leftists, the military is heavily skewed toward conservatives, especially at the highest ranks (Urban, 2010; Tilghman, 2012; Dinan, 2012).<sup>36</sup> Logically of course, neither social homophily nor political typing can explain the initial skew toward liberals/leftists that would have been required for the two processes to get started. One obvious possibility is that the initial skew came about via self-selection on intelligence or personality. Indeed, network models show that extremely skewed, power-law distributions can emerge from small, antecedent non-uniformities if new vertices preferentially attach to those that are already well-connected (Barabasi & Albert, 1999; Papadopoulos et al., 2012).

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<sup>36</sup> In 2012, five hundred retired admirals and generals placed an ad in the *Washington Times* endorsing the Republican nominee, Mitt Romney, for president (Dinan, 2012).

A fifth self-selection-based explanation for liberal/leftist overrepresentation in the academy, albeit a highly speculative one, is that individuals with egalitarian views tend to be smaller in stature and physically weaker than their rightist counterparts (see Sell et al., 2012; Petersen et al., 2013; see also Price et al., 2015). For example, Sell et al. (2012) documented that, within the strongly Democrat-leaning Hollywood film-industry, action stars (particularly those known for their muscularity or machismo, such as Arnold Schwarzenegger, Bruce Willis and Clint Eastwood) tend to support the Republican Party. And in three different samples, Petersen et al. (2013) observed an interaction effect whereby physical strength was associated with higher support for redistribution among men of low SES but with lower support for redistribution among men of high SES. They argue that men follow a self-serving, evolutionary heuristic that is conditional on their social position: if their social position happens to be high, greater strength predisposes them toward rightist beliefs since such beliefs would have enhanced the reproductive success of high-ranking males in our ancestral environment (and vice versa for low-ranking males). Under the assumption that strength and stature are relatively less important for advancement within academia than within other high-status professions (particularly business, senior management and the military; see Lindqvist, 2012; Blaker et al., 2013; Adams et al., 2015)<sup>37</sup>, highly intelligent individuals of limited strength and stature should be more likely to choose an academic career, all else being equal.

Moving on from self-selection, a sixth explanation for the liberal/leftist skew is that academics become more liberal and leftist as a consequence of exposure to prevailing attitudes, values and mores within the academy (Klein & Stern, 2009; Woodley, 2010; Woodley, 2011; Duarte et al., 2014; and see Dutton, 2013). Individuals who enter academia as conservatives or rightists may gradually (or even rapidly) reorient their views toward the liberal/leftist majority viewpoint, due to some combination of concerns over funding and promotion, peer pressure from colleagues, or simply a willingness to conform. As in the cases of social homophily and political typing, conformity to the majority viewpoint cannot logically explain the majority viewpoint itself; again, one would have to invoke self-selection on intelligence or personality to account for the initial liberal/leftist skew. But

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<sup>37</sup> In a widely viewed TED talk, the educationalist Sir Ken Robinson quips: “There’s something curious about professors. In my experience, not all of them, but typically, they live in their heads... They’re disembodied in a kind of literal way. They look upon their body as a form of transport for their heads.” (and see Charlton, 2009).

beginning with a slight or moderate tilt toward liberalism/leftism, the pressures of conformity could have helped to produce the marked imbalance that we now observe. Indeed, many social settings are characterised by self-organising dynamics whereby individual conformity leads to a reduction in the diversity of viewpoints through attitudinal consolidation (Cialdini & Goldstein, 2004; and see McPherson et al., 2001). In extreme cases, such dynamics can give rise to groupthink, a dysfunctional atmosphere where key assumptions go unquestioned, dissenting opinions are neutralised, and favoured beliefs are held as sacrosanct (Park, 1990; Klein & Stern, 2009; Haidt, 2012).

Seventh, the liberal/leftist leanings of academics may derive from a peculiarity of their social-class positions, namely that they receive low incomes relative to their advanced educational attainment and rich cultural capital (Goffman, 1957; Gouldner, 1982; Bourdieu, 1988; and see Gross & Fosse, 2012; Gross, 2013). The closer society gets to laissez-faire capitalism, the more status, power and influence will be tied to individuals' earnings and commercial achievements, and the less academics will earn relative to those in other occupations vying for social influence (lawyers, bankers, doctors, engineers, managers etc.). Consequently, academics generally prefer policies that minimise differences in earnings across occupations, the better to safeguard their own influence. According to some versions of this hypothesis, academics embrace non-traditional social attitudes (such as espousing unconventional family arrangements) purely in order to differentiate themselves from members of the bourgeoisie (see Gross & Fosse, 2012). One major criticism of the hypothesis is that many American academics are actually quite well paid. Full professors at elite colleges (which are among the most liberal) typically make six-figure salaries, and they often enjoy more autonomy and job security than their private-sector counterparts. In 2013-14 for example, the average full professor at Harvard earned over \$200,000 before taxes<sup>38</sup> (Chronicle of Higher Education, 2015). Furthermore, Gross and Fosse (2012) found that a measure of status inconsistency, computed as standardized education minus standardized income, "explained only a modest proportion of the political gap between professors and non-professors".

The eighth and final explanation for liberal/leftist overrepresentation is that conservatives and rightists are discriminated against in the processes of hiring, funding and promotion (Yancey, 2011;

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<sup>38</sup> In 2014, the average CEO earned only \$180,000 before taxes (Bureau of Labor Statistics, 2015).

Inbar & Lammers, 2012; Duarte et al., 2014; Jussim et al., 2015; Lindgren, 2015; McGinnis, 2015). A considerable number of the social psychologists in Inbar and Lammers' (2012) survey openly admitted that they would discriminate against conservative academics in paper and grant reviews, symposium invitations, and hiring decisions. Similarly, almost a third of the sociologists interviewed by Yancey (2011) stated that they would disfavour hiring a Republican, while a comparable fraction said they would look favourably upon a prospective candidate's membership of the ACLU. In addition, many scholars seen to be promoting politically incorrect ideas (i.e., those deemed antithetical to left-wing objectives) have been subject to damaging witch-hunts over the years (Rushton, 2002; Pinker, 2002, pp. 105-120; Nyborg, 2011; Gottfredson, 2012; Lewis et al., 2011; and see Carl, 2015a). On the other hand, Fosse, Gross and Ma (2011) conducted an audit study of graduate study directors, and found little evidence of discrimination against students who mentioned volunteering for the Republican John McCain's presidential campaign (and see Lee, 2006). Yet Tetlock & Mitchell (2015) suggest that various aspects of Fosse et al.'s (2011) methodology militated against them detecting any overt, discriminatory behaviour (and see Yancey, 2012). It is important to note that, like social homophily, political typing and individual conformity, discrimination functions as an amplifying force rather than as a prime mover.

#### *4.4 Overall conclusion*

Individuals with liberal and leftist views are overrepresented in American academia, especially in the humanities, the social sciences (except economics) and the arts. The present study has investigated how much of this overrepresentation can be explained by intelligence. It has found that intelligence can account for most of the disparity between academics and the general population on the issues of abortion, homosexuality and traditional gender roles. By contrast, it has found that intelligence cannot account for any of the disparity between academics and the general population on the issue of income inequality. Furthermore, the paper has found that intelligence may account for less than half of the disparity on liberal versus conservative ideology, and much less than half the disparity on Democrat versus Republican identity. Possible explanations for the remaining

overrepresentation comprise: self-selection on personality, interests, cognitive style or preferences; social homophily and political typing; self-selection on strength and stature; individual conformity; status inconsistency; and discrimination.

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## Appendix A

**Table A.1.** Proportion of academics, general population and high-IQ population who identify with various political positions.

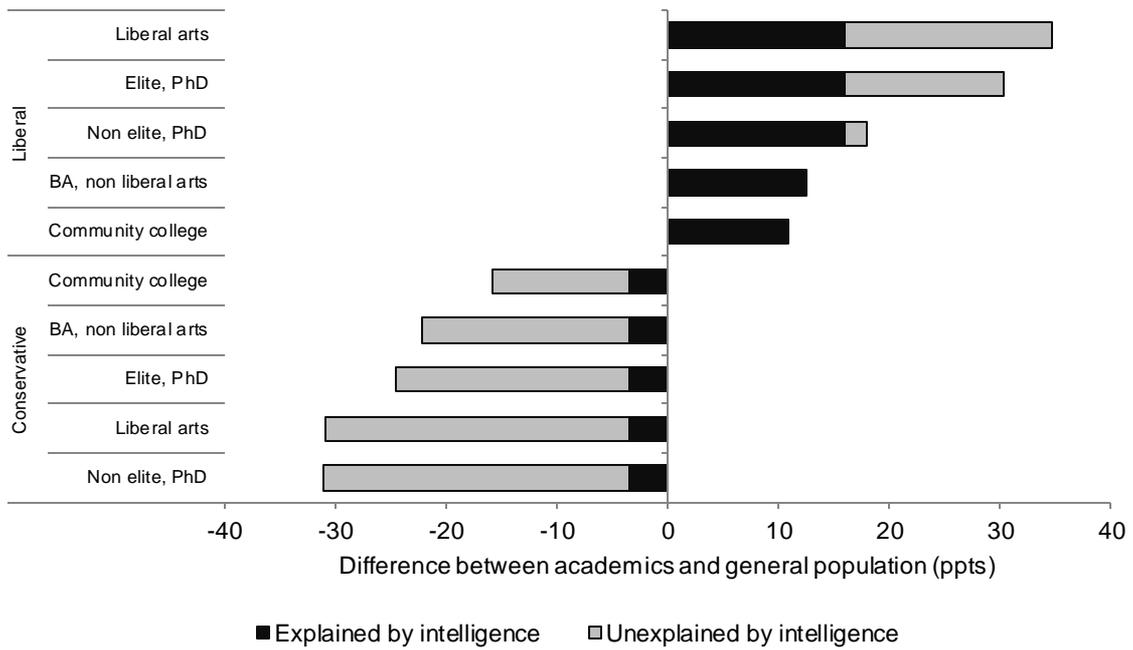
	Academics	General population	High-IQ population
Liberal	0.62 [0.60, 0.65]	0.26 [0.26, 0.27]	0.42 [0.36, 0.48]
In favour of abortion	0.75 [0.72, 0.77]	0.41 [0.40, 0.42]	0.63 [0.55, 0.72]
Homosexuality is not wrong at all	0.69 [0.66, 0.71]	0.37 [0.36, 0.38]	0.62 [0.54, 0.71]
Against traditional gender roles	0.87 [0.85, 0.89]	0.65 [0.64, 0.66]	0.80 [0.75, 0.85]
Democratic	0.51 [0.48, 0.54]	0.33 [0.32, 0.34]	0.35 [0.30, 0.41]
Reduce inequality	0.47 [0.44, 0.49]	0.30 [0.29, 0.31]	0.25 [0.19, 0.32]
Mother working does not harm children	0.74 [0.72, 0.76]	0.69 [0.68, 0.70]	0.77 [0.72, 0.83]
Don't reduce inequality	0.14 [0.12, 0.15]	0.21 [0.20, 0.22]	0.22 [0.16, 0.28]
Republican	0.14 [0.12, 0.15]	0.26 [0.26, 0.27]	0.25 [0.20, 0.30]
Conservative	0.20 [0.18, 0.22]	0.35 [0.34, 0.36]	0.31 [0.26, 0.37]

*Notes:* 95% confidence intervals are given in square brackets. In the case of academics, these were calculated from the proportions and sample size reported in Gross & Simmons (2007); they do not take into account weighting.

## **Appendix B**

Gross and Simmons (2007) only report a breakdown of percentages by type of university for the question concerning liberal versus conservative identity. Figure B.1 shows that intelligence explains a higher percentage of the gap between academics and the general population in community colleges (where the gap is smaller), and a lower percentage of the gap in liberal arts schools (where the gap is larger). Note that cell counts for academics are quite small.

**Figure B.1.** Fraction of academics' liberalism that can be explained by intelligence when disaggregating by type of university.

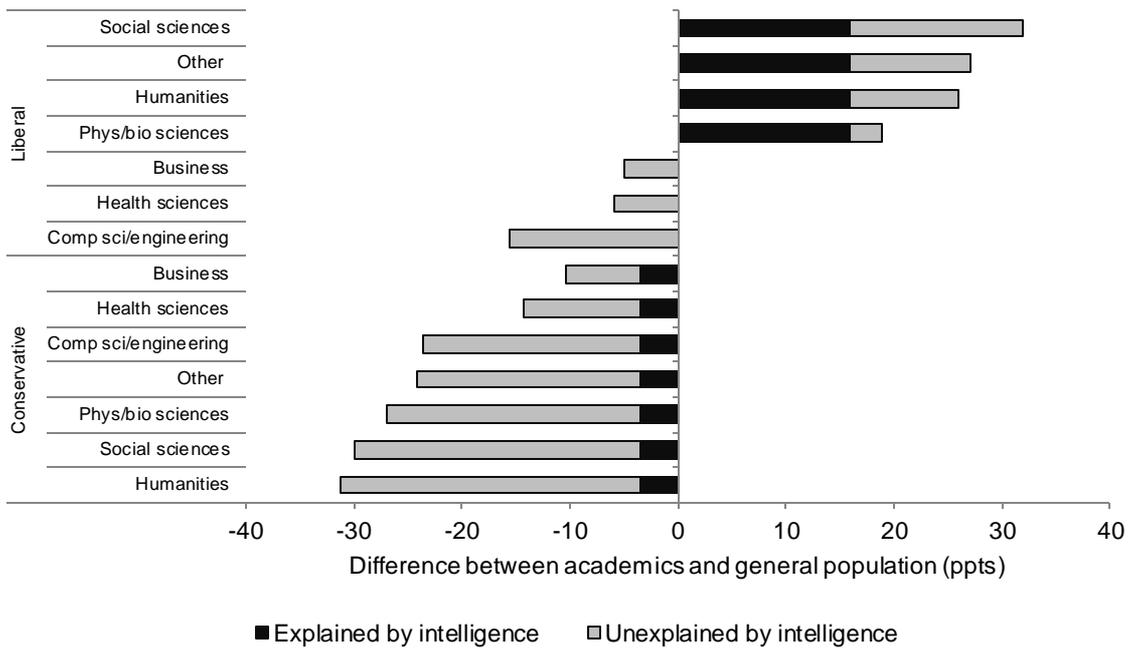


*Notes:* The total length of each bar is equal to the difference between academics and the general population. The length of the grey portion is equal to the difference between academics and those scoring 10 out of 10 in the vocabulary test. This is set equal to zero for 'Liberal' in the case of 'BA, non liberal arts' and 'Community college'.

## **Appendix C**

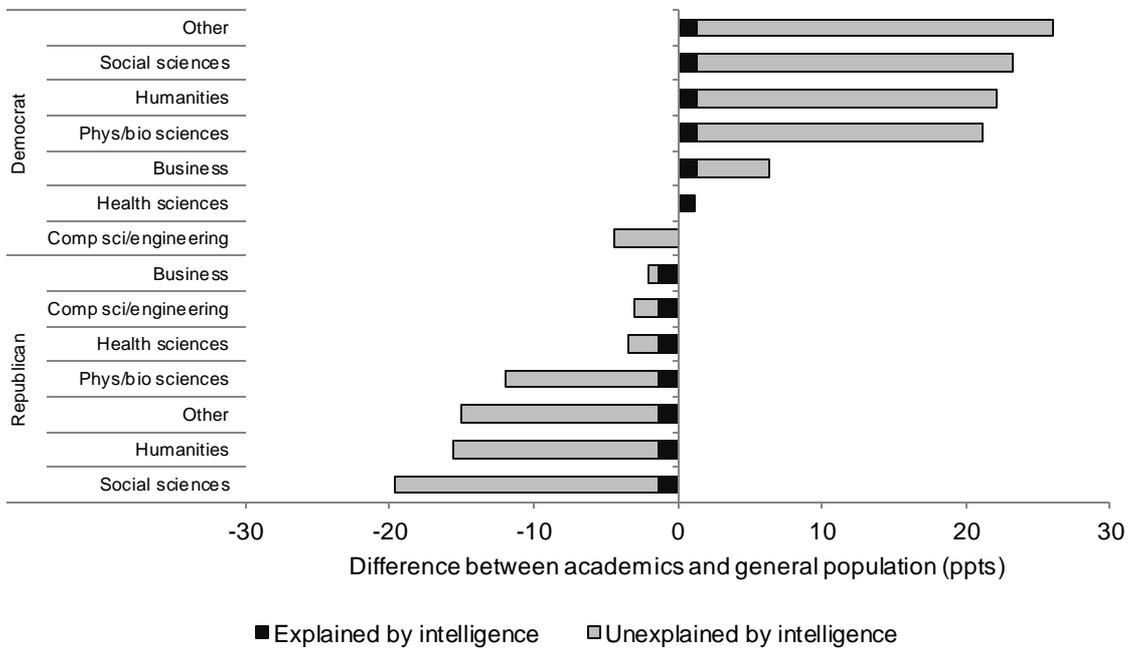
Gross and Simmons (2007) only report a breakdown of percentages by field of study for the question concerning liberal versus conservative identity and the question concerning Republican versus Democrat identity. Figures C.1-C.2 show that intelligence explains a higher percentage of the gap between academics and the general population in computer science/engineering (where the gap is smaller, or even negative), and lower percentage of the gap in social sciences (where the gap is larger). Note that cell counts for academics are quite small.

**Figure C.1.** Fraction of academics' liberalism that can be explained by intelligence when disaggregating by field of study.



*Notes:* The total length of each bar is equal to the difference between academics and the general population. The length of the grey portion is equal to the difference between academics and those scoring 10 out of 10 in the vocabulary test.

**Figure C.2** Fraction of academics' leftism that can be explained by intelligence when disaggregating by field of study.

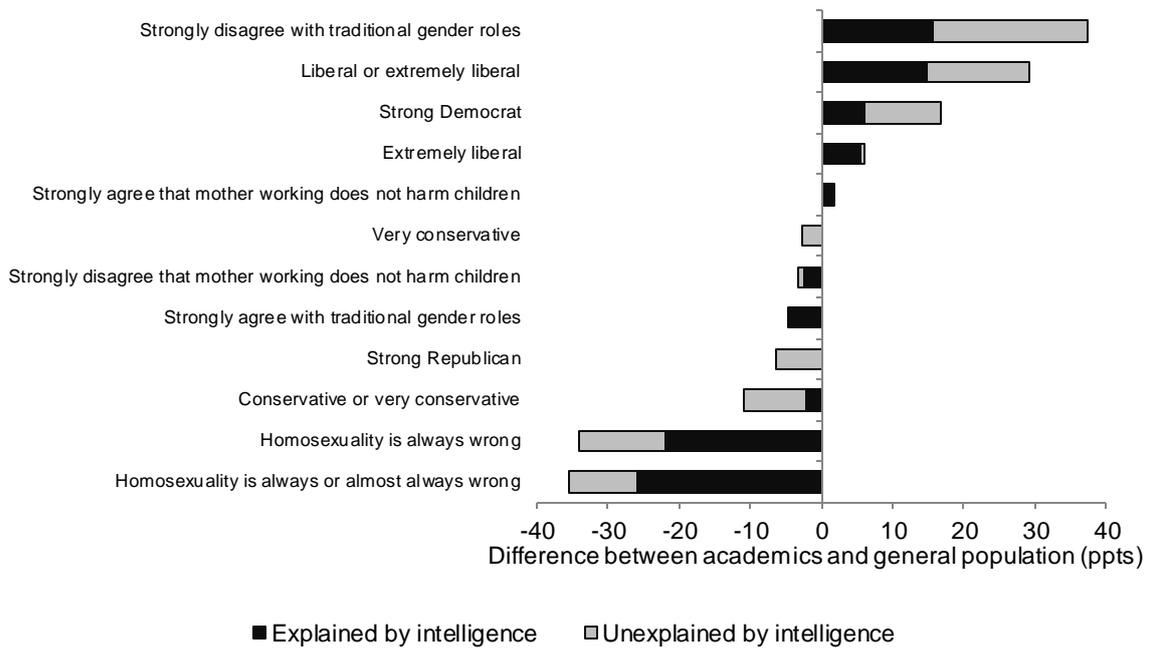


*Notes:* The total length of each bar is equal to the difference between academics and the general population. The length of the grey portion is equal to the difference between academics and those scoring 10 out of 10 in the vocabulary test. This is set equal to zero for 'Democrat' in the case of 'Health Sciences', and for 'Republican' in the case of 'Business'.

## Appendix D

Only outer response categories (e.g., “Extremely liberal”, “Liberal or extremely liberal”) are examined due to the fact that if more respondents chose an outer category, then by definition fewer will have chosen an inner category. For example, if all liberal academics answered “Extremely liberal”, and all liberal members of the general population answered “Liberal” then the general population would appear to be more liberal with respect to the category “Liberal”, but only because all academics had selected a more extreme liberal response. Figure D.1 shows that, as in Section 3.1, intelligence explains most of the gap between academics and the general population on the issues of homosexuality and traditional gender roles; less than half the gap on liberal versus conservative ideology; and much less than half the gap on Democrat versus Republican identity.

**Figure D.1.** Fraction of academics' liberalism/leftism that can be explained by intelligence when excluding categories denoting weak political preferences.



*Notes:* The total length of each bar is equal to the difference between academics and the general population. The length of the grey portion is equal to the difference between academics and those scoring 10 out of 10 in the vocabulary test. This is set equal to zero for 'Strongly agree that mother working does not harm children' and 'Strongly disagree that mother working does not harm children', and is set equal to the difference between academics and the general population for 'Very conservative' and 'Strong Republican'.

## CHAPTER 9

# THE LEFT-LIBERAL SKEW OF BRITISH ACADEMIA

### **Abstract**

Individuals with left-wing and liberal views are overrepresented in British academia. Those with right-wing and conservative views are correspondingly underrepresented. Around 50% of the general public supports right-wing or conservative parties, compared to less than 12% of academics. Conservative and right-wing academics are particularly scarce in the social sciences, the humanities and the arts. Though relatively few relevant data are available, evidence suggests that the overrepresentation of left-liberal views has increased since the 1960s. The proportion of academics who support the Conservatives may have declined by as much as 25 percentage points since 1964. The left-liberal skew of British academia cannot be primarily explained by intelligence. The distribution of party support within the top 5% of IQ is relatively similar to the distribution of party support within the general population. The left-liberal skew may be partly explained by openness to experience. Individuals who score high on the personality trait openness to experience tend to pursue intellectually stimulating careers like academia. And within the top 5% of IQ, openness to experience predicts support for left-wing parties. Other plausible explanations for left-liberal overrepresentation include: social homophily and political typing; individual conformity; status inconsistency; and discrimination. Ideological homogeneity within the academy may have had a number of adverse consequences: systematic biases in scholarship; curtailments of free speech on university campuses; and defunding of academic research by right-wing governments. Recommendations include: raising awareness; being alert to double standards; encouraging adversarial collaborations; and emphasizing the benefits of ideological heterogeneity within the academy.

It is a strange fact, but it is unquestionably true, that almost any English intellectual would feel more ashamed of standing to attention during ‘God save the King’ than of stealing from a poor box.

—George Orwell,  
*England Your England*

## 1. Introduction

As the quote above from Orwell indicates, it has been assumed for some time that individuals with left-wing and liberal views are overrepresented in British academia. Indeed, *England your England*—the source of the quote—was published back in 1941. 75 years on, articles in right-wing newspapers frequently bemoan the academy’s left-liberal skew. James Bartholomew, writing in the *Spectator* last year, observed the following of former Tanzanian president Julius Nyerere: “it was his country’s misfortune that he read economics and history at Edinburgh... Naturally he was surrounded by leftist academics.” Eleanor Harding, writing in the *Daily Mail*, noted that “Universities have become breeding grounds for intolerance where anyone challenging Left-wing views is ‘shouted down’”. And Allister Heath, writing in the *Telegraph*, opined as follows: “There was a time when universities set the political agenda; today, too many appear to be mere angry onlookers, giant Left-wing content factories with little practical relevance.”

This paper investigates the left-liberal skew of British academia, drawing on evidence from polls of academics, the large Understanding Society dataset, and the wider scholarly literature. It begins by defining key terms, and classifying British political parties with respect to a two-axis model of policy positions. It then examines the scale of left-liberal overrepresentation, as well as how it has changed over time. It proceeds to evaluate two prominent explanations for left-liberal overrepresentation: first, that academics tend to be left-wing and liberal because of their high intelligence; and second, that they tend to be left-wing and liberal because of their high openness to experience. The paper then reviews other possible explanations for the left-liberal skew. It goes on to discuss various adverse consequences that ideological homogeneity within the academy may have had. The paper concludes by summarising the main points, and offering recommendations to academics and other university gatekeepers.

Before examining the scale of left-liberal overrepresentation, it is necessary to explain what is meant by the terms ‘left-wing’ and ‘right-wing’, and the terms ‘liberal’ and ‘conservative’. While there are no unanimously accepted definitions for these terms, a widely used model of policy positions distinguishes between a left/right *economic* axis and a liberal/conservative *social* axis (Carl, 2015a)<sup>39</sup> The economic axis goes from left-wing or socialist at one end to right-wing or capitalist at the other end, while the social axis goes from liberal and internationalist at one end to conservative and nationalist at the other end. For example, left-wing positions include nationalisation of industry, reduction of income inequality through redistribution, higher taxes, and more regulation over employment; while liberal positions include legal recognition of gay relationships, free speech, higher immigration, and more international cooperation. Note that, according to this model of policy positions, it is possible for someone to be left-wing on economic issues but conservative on social issues, and for someone to be right-wing on economic issues but liberal on social issues. (The latter position, advocated by the Adam Smith Institute itself, is sometimes termed libertarianism or classical liberalism).

Of course, in everyday political discourse, people often distinguish simply between *the left* on the one hand and *the right* on the other. In such cases, ‘left’ is taken to encompass socially liberal as well as left-wing views, while ‘right’ is taken to encompass socially conservative as well as right-wing views. This broad-brush distinction is somewhat justified, given that the left/right axis and the liberal/conservative axis independently predict support for the Conservatives (Evans et al., 1996), and that the two axes are associated with one another, at least weakly (Evans & Heath, 1995). Indeed, the two main parties in Britain comprise a relatively more left-wing and liberal party, Labour, and a relatively more right-wing and conservative party, the Conservatives. However, there is nothing inevitable about this arrangement. For example, the increasingly popular National Front party in France has a platform that combines socially conservative policies on crime and immigration with economically leftist policies on trade and welfare (Shields, 2007, Chapter 10). And in China,

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<sup>39</sup> Kling (2013) has advanced a model of political ideology that demarcates three alternative languages of politics: the progressive language, which frames issues in terms of victimisation versus oppression; the conservative language, which frames issues in terms of civilisation versus barbarism; and the libertarian language, which frames issues in terms of liberty versus coercion. This model, in the author’s opinion, has a large degree of truth to it. However, since it applies to individuals’ underlying justifications rather than to their explicit policy preferences, the conventional two-axis model will be employed here.

individuals with socially conservative beliefs are actually more likely to support state control of the economy, and to oppose market-oriented reforms, than their socially liberal counterparts (Pan & Xu, 2016). In fact, groups that practice internal redistribution are often actively hostile toward outsiders, the better to safeguard their own resources (Weyl, 2016). Thus, for the purposes of this paper, the terms ‘left-wing’, ‘right-wing’, ‘liberal’ and ‘conservative’ will be used as outlined above.

It is also necessary, at the outset, to classify the major political parties in Britain with respect to the two-axis model of policy positions. At the last general election, the six largest parties by vote share were: the Conservatives with 37%, Labour with 30%, UKIP with 13%, the Liberal Democrats (Lib Dems) with 8%, the Scottish National Party (SNP) with 5%, and the Greens with 4%. The Conservatives and UKIP are both right-wing and socially conservative. The Conservatives are probably further right than UKIP, while UKIP are clearly more socially conservative than the Conservatives (Ford & Goodwin, 2014). Labour and the Greens are both left-wing and socially liberal. The Greens are both more left-wing and more socially liberal than Labour (Dennison, 2017). The Lib Dems are a socially liberal, economically centrist party. They are perhaps the most socially liberal party in Britain, with the possible exception of the Greens. Though sometimes classified as centre-left on the economy, from 2007 to 2015, the party was dominated by its classical liberal wing—the so-called Orange Bookers—who advocated market solutions to many societal problems (Marshall & Laws, 2004).

## **2. Left-liberal overrepresentation in British academia**

Relatively few good data are available on the political views of British academics. Nonetheless, those that are available point to a sizable left-liberal skew.<sup>40</sup> In April of 2015, the *Times Higher Education (THE)* ran an online poll open to anyone with a UK university email address, which asked respondents whom they intended to vote for in the upcoming election: 46% said Labour, 22% said Green, 11% said the Conservatives, 9% said the Lib Dems, 6% said the SNP, 1% said Plaid

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<sup>40</sup> Note that there is also a large and well-documented left-liberal skew in American academia (Carl, 2015b; Solon, 2014; Gross, 2013; Langbert et al., 2016).

Cymru, and 5% said other or that they did not intend to vote; only 0.4% said UKIP. It should be noted that these figures correspond to all respondents with a university email address, which includes some professional and support staff, as well as academics themselves. Indeed, in an article describing the results of the poll, the *THE* reported that, among academics, support for Labour was 45% and support for the Conservatives was 8%. However, since it did not give figures for the remaining parties, this paper focuses on the overall percentages, assuming them to be approximately representative of academia as a whole.<sup>41</sup> If anything, utilising the overall percentages understates the academy's left-liberal skew. It should also be noted that the poll was self-selecting. For further details about the data and statistics used in this paper, see the Methodological Appendix.

Relative to the outcome of the last general election then, British academia shows a considerable left-liberal skew. At least 50% of the general public voted for right-wing or conservative parties in 2015, compared to less than 12% of academics. Since the distribution of party support in the general election reflects the views of only those who turned out to vote, rather than all those eligible to vote, it is not a completely accurate representation of views within the population at large: evidence suggests that Labour supporters were less likely to turnout than Conservative ones (Mellon & Prosser, 2015). It is nonetheless accurate enough for a meaningful comparison with the poll of academics (see also Table 3 in the next section). Interestingly, and consistent with evidence from the United States (Carl, 2015b), left-liberal overrepresentation varies systematically across subject areas: the percentage of respondents supporting the Conservatives was highest in business and law (though still less than 20%), was low in the social sciences (at less than 10%), and was lowest of all in the humanities and arts (at less than 5%).

Furthermore, in June of 2016, the *THE* ran another online poll of university staff, which asked respondents how they planned to vote in the upcoming EU referendum: 89% of respondents said they planned to vote Remain, while only 10% said they planned to vote Leave. Although Leave was advocated by some prominent self-identified liberals (Hannan, 2016), Remain was arguably the more liberal position in the sense that, for the vast majority of people, it connoted higher immigration, more

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<sup>41</sup> The author emailed the *THE* in an attempt to obtain figures on academics' support for the parties other than Labour and the Conservatives, but they were not forthcoming.

openness and greater international co-operation. Of course, in the referendum itself, 52% of voters opted for the more conservative position, Leave, a difference with academics of nearly 40 percentage points.

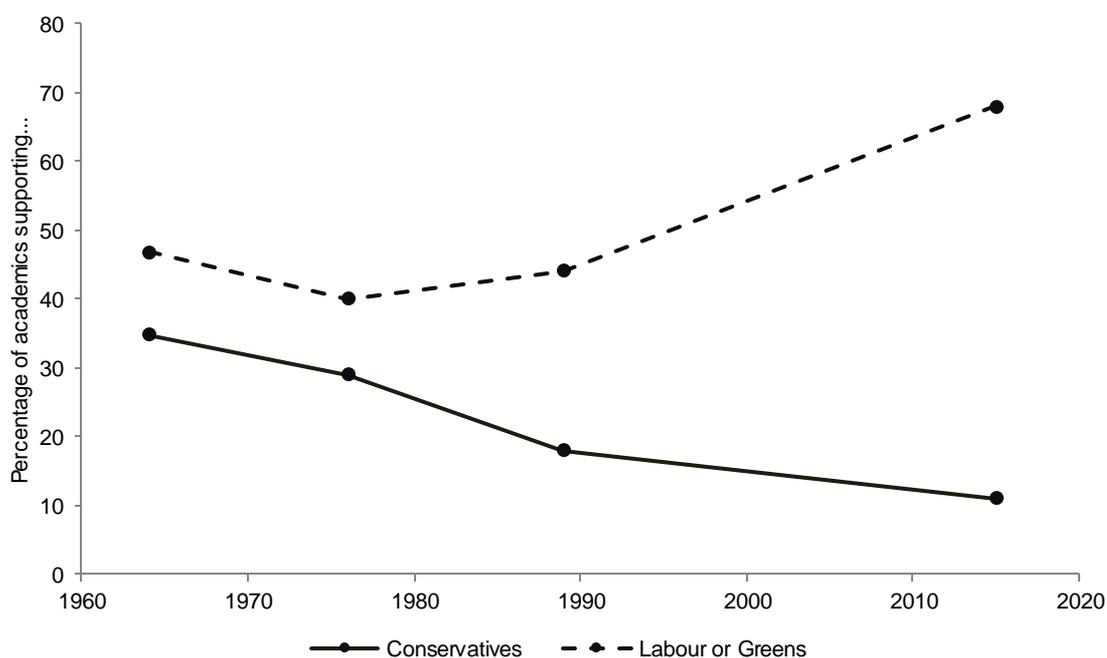
Is there evidence that the political views of academics have changed over time? The Sociologist A.H. Halsey surveyed British academics in three different time periods, in each case asking about their party preferences. His figures are displayed in Table 1, along with the results of the 2015 *THE* poll. To the extent that these figures can be meaningfully compared, they show a gradual decline in support for the Conservatives over the last half century, and a concomitant rise in support for the Greens, particularly since 1990. The divergence of academics from the general public along the left/right axis is depicted more clearly in Figure 1. It is important to be aware that Halsey sampled his respondents differently to the *THE*, and posed a slightly different question, which means the comparison over time should be treated with a certain amount of caution. Furthermore, Halsey also asked academics about left/right self-placement, and in that case observed very little change over time, as shown in Table 2. However, left/right self-placement is a rather unsatisfactory measure, since it conflates the economic and social axes, and likely does so differentially from one time period to the next.

**Table 1.** Distribution of party support among academics over time.

	1964	1976	1989	2015
Conservative	35	29	18	11
Labour	47	40	37	46
Lib Dem/Liberal/SDP	17	27	35	9
Greens	0	0	7	22
Other	1	4	3	12

*Notes:* Figures for 1964, 1976 and 1989 are from Halsey (1992, Chapter 11, Appendix 1). Note that each figure for 1964 was divided by 92 and multiplied by 100 because for the years 1976 and 1989 Halsey excluded respondents answering 'None' when calculating percentages, but did not do so for the year 1964 (when 8 per cent answered 'None'). The Figures for 2015 are from *THE* (2015).

**Figure 1.** Percentage of academics supporting the Conservatives and major left-wing parties over time.



*Notes:* Figures are from Halsey (1992, Chapter 11, Appendix 1) and *THE* (2015).

**Table 2.** Distribution of left/right orientation among academics over time.

	1964	1976	1989
Far left	5	4	4
Moderate left	48	40	43
Centre	28	33	35
Moderate right	18	21	18
Far right	1	1	0

*Notes:* Figures are from Halsey (1992, Chapter 11, Appendix 1).

### 3. Intelligence as an explanation for left-liberal overrepresentation

One explanation that has been put forward to explain the overrepresentation of individuals with left-wing and liberal views in academia is that they tend to have higher intelligence. Academic advancement requires very high intelligence and since few individuals with right-wing and conservative views possess very high intelligence, such individuals are comparatively scarce within the academy (Solon, 2014; Solon, 2015; Charlton, 2009; Gross, 2013). Several recent studies from the US, where the academy also has a sizable left-liberal skew, have concluded that intelligence does not contribute much to explaining the skew (Gross & Fosse, 2012; Gross, 2013; Fosse et al., 2014). On the other hand, using a slightly different method, Carl (2015b) found that intelligence may account for more than half of the overrepresentation of socially liberal views, but may not account for any of the overrepresentation of economically left-wing views. His finding is consistent with evidence that cognitive ability is positively related to both socially liberal beliefs and at least some measures of economically right-wing beliefs (Carl, 2015a).

Unfortunately, there do not appear to have been any surveys of British academics asking about specific policy issues, either economic (e.g., nationalisation of industry) or social (e.g., immigration). Only the distribution of party support among academics is available, which as noted above points to an overrepresentation of both left-wing views and liberal views. To see whether intelligence contributes to explaining the left-liberal skew of party support among academics, I calculated the distribution of party support for individuals within the top 5% of IQ<sup>42</sup>, using data from the Understanding Society survey. This is shown in Table 3, along with the distribution of party support within the general population, also calculated from the Understanding Society data, as well as the distribution among academics. Note that the distribution within the general population differs from the outcome of the general election; this is probably due to the phrasing of the question posed in Understanding Society, to the sample being slightly unrepresentative, to the timing of the data collection, and to differential turnout by party. However, what is of primary interest is the comparison between the figures for the general population and those for the top 5% of IQ, which were both

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<sup>42</sup> The top 5% of IQ equates to a mean IQ of 127. This is 1.8 standard deviations above the population mean, and is in line with estimates of the average IQ of academics that have been reported in the scholarly literature (Carl, 2015b).

calculated from the same data. Conservative supporters are about as well represented within the top 5% of IQ as they are within the general population, Labour supporters are slightly underrepresented, UKIP supporters are underrepresented, Lib Dem supporters are overrepresented, and Green supporters are overrepresented.

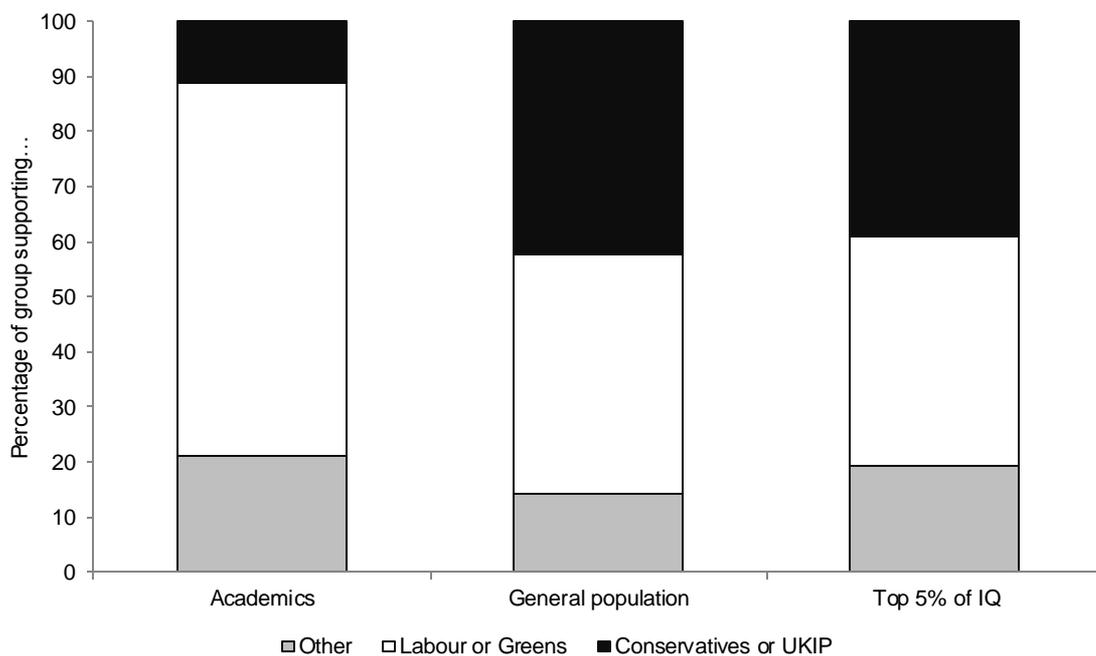
Overall, as Figure 2 illustrates, the distribution of left/right orientation within the top 5% of IQ is relatively similar to the distribution within the general population. While intelligence may account for *some* of the underrepresentation of UKIP supporters among academics, and *some* of the overrepresentation of Green supporters (Deary et al., 2008), it cannot account for the substantial underrepresentation of Conservative supporters. To the extent that the Conservatives are a less socially conservative party than UKIP, the figures in Table 3 are consistent with Carl's (2015b) finding that intelligence may contribute to explaining the underrepresentation of socially conservative views in American academia, but not necessarily the underrepresentation of economically right-wing views. Somewhat surprising is the relative scarcity of Lib Dem supporters among academics, given their overrepresentation within the top 5% of IQ. This may be attributable to the fact that, as noted above, the Lib Dem party was until recently dominated by its classically liberal wing, which espoused comparatively more right-wing policies, which may not have been appealing to academics. On the other hand, it may simply be due to sampling error.

**Table 3.** Distribution of party support among academics, the general population and cognitive elites.

	Academics	General population	Top 5% of IQ
Conservatives	11	35	36
Labour	46	41	35
UKIP	<1	7	3
Lib Dems	9	8	14
Greens	22	3	7
SNP	6	3	3
Other	6	3	3

*Notes:* Figures are for 2015. Figures for academics are from *THE* (2015). Figures for the general population and cognitive elites were calculated by the author using data from Understanding Society (University of Essex, 2015). For further details, see the Methodological Appendix.

**Figure 2.** Percentages of academics, the general population and cognitive elites supporting major right-wing parties and left-wing parties.



*Notes:* Figures are for 2015. Figures for academics are from *THE* (2015). Figures for the general population and cognitive elites were calculated by the author using data from Understanding Society (University of Essex, 2015). For further details, see the Methodological Appendix.

#### 4. Openness to experience as an explanation for left-liberal overrepresentation

Another explanation that has been put forward to explain the overrepresentation of individuals with left-wing and liberal views in academia is that they tend to score higher on the personality trait openness to experience (Duarte et al., 2014). Openness to experience, or just openness, is one of the five traits postulated by the five-factor model of personality. People high on openness are more artistic, creative and intellectually curious, and tend to prefer novelty and variety over familiarity and sameness. As a consequence, they may be predisposed toward intellectually stimulating careers, such as academia (McCrae, 1996; Woessner & Kelly-Woessner, 2009). At the same time, evidence from a variety of countries indicates that individuals high on openness are more likely to support left-wing and liberal parties (Gerber et al., 2011; Schoen & Schumann, 2007; Ackermann et al., 2016). However, to the author's knowledge, no direct evidence that openness predicts left-liberal views *within the right tail* of intelligence—i.e., the sub-population from which academics are selected—has been presented in the scholarly literature.

To see whether openness contributes to explaining the left-liberal skew of party support among academics, I calculated the distribution of party support for individuals within the top 5% of IQ and the top 20% of openness, and for those within the top 5% of IQ and the bottom 20% of openness, using data from the Understanding Society survey. This is shown in Table 4, along with the distribution of party support among academics. Within the top 5% of IQ, Labour supporters, Lib Dem supporters and Green supporters are all better represented within the top 20% of openness than within the bottom 20% of openness; by contrast, Conservative supporters are better represented within the bottom 20% of openness. Unexpectedly, UKIP supporters are better represented within the top 20% of openness, but this is probably attributable to sampling error.

Overall, as Figure 3 illustrates, the distribution of left/right orientation within the top 5% of IQ and the top 20% of openness is much closer to the distribution among academics than is the distribution within the top 5% of IQ and the bottom 20% of openness. Of course, the top and bottom quintiles of openness are somewhat arbitrary categories; they were chosen based on a trade-off between extremity of contrast and availability of observations. To gauge the association between

openness and party support more precisely, Table 5 displays estimates from linear probability models of support for major right-wing and left-wing parties within the top 5% of IQ. The estimates in the first and second columns imply that, for each one standard deviation<sup>43</sup> increase in openness, the probability that an individual supports a major right-wing party, rather than any other party, decreases by 8–9 percentage points. The estimates in the third and fourth columns imply that, for each one standard deviation increase in openness, the probability that an individual supports a major left-wing party, rather than any other party, increases by 8 percentage points. Statistically controlling for the respondent's age, gender and race does not appear to affect the estimates.

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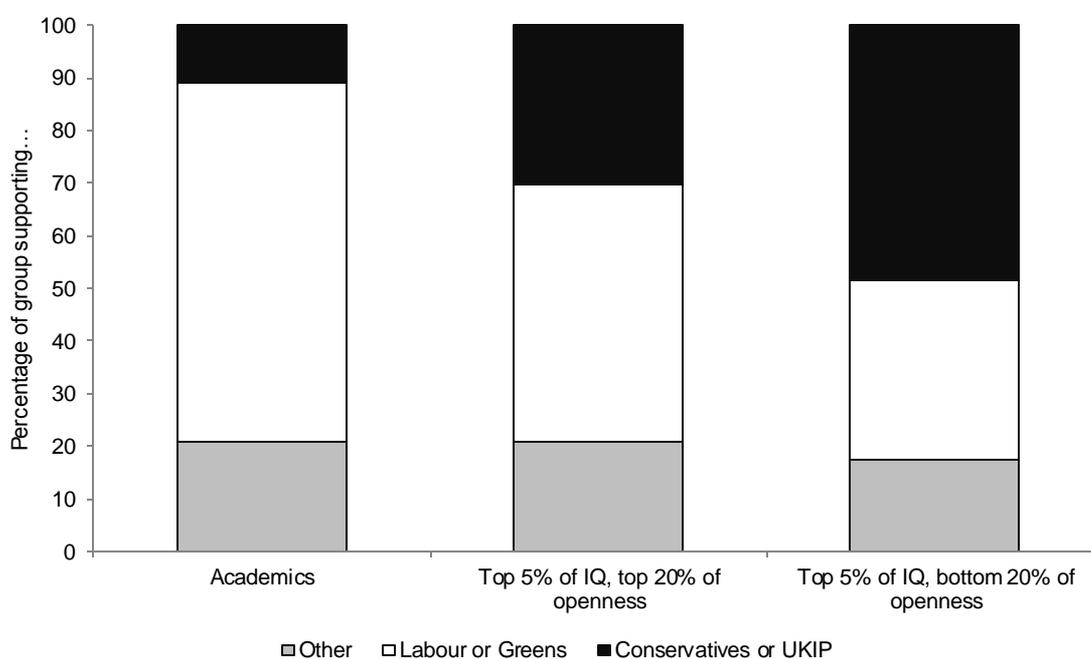
<sup>43</sup> The standard deviation is a metric that quantifies how spread out the data are around the mean. A useful rule is that 68% of the data are expected to lie within +/- 1 standard deviation of the mean, and 95% are expected to lie within +/- 2 standard deviations of the mean.

**Table 4.** Distribution of party support among academics, cognitive elites with high openness and cognitive elites with low openness.

	Academics	Top 5% of IQ, top 20% of openness	Top 5% of IQ, bottom 20% of openness
Conservatives	11	27	49
Labour	46	39	30
UKIP	<1	3	0
Lib Dems	9	17	12
Greens	22	10	4
SNP	6	2	4
Other	6	2	2

*Notes:* Figures are for 2015. Figures for academics are from *THE* (2015). Figures for the general population and cognitive elites were calculated by the author using data from Understanding Society (University of Essex, 2015). For further details, see the Methodological Appendix.

**Figure 3.** Percentages of academics, cognitive elites with high openness and cognitive elites with low openness supporting major right-wing and left-wing parties.



*Notes:* Figures are for 2015. Figures for academics are from Times Higher Education (2015). Figures for the general population and cognitive elites were calculated by the author using data from Understanding Society (University of Essex, 2015). For further details, see the Methodological Appendix.

**Table 5.** Linear probability models of support for major right-wing and left-wing parties among cognitive elites.

	Support Conservatives or UKIP	Support Conservatives or UKIP	Support Labour or Greens	Support Labour or Greens
Openness (z-score)	-0.08***	-0.09***	0.08***	0.08***
Age, gender, race		Yes		Yes
Unweighted <i>n</i>	1070	1062	1070	1062

*Notes:* The sample comprises individuals in the top 5% of IQ. \*\*\* denotes statistical significance at the 0.1% level. Analyses were conducted by the author using data from Understanding Society (University of Essex, 2015). For further details, see the Methodological Appendix.

## 5. Other explanations for left-liberal overrepresentation

It seems unlikely that intelligence and openness can by themselves explain all the overrepresentation of left-liberal views in academia.<sup>44</sup> And indeed, a number of other explanations have been put forward in the scholarly literature (Gross, 2013; Carl, 2015b). First, it has been argued that conservatives exhibit a cognitive style that makes them ill-suited for scholarly endeavour, namely an inflexible predilection for certainty and corresponding aversion to novelty and ambiguity (Mooney, 2012). Aside from there being considerable evidence that individuals with left-wing and liberal views are no less prone to biases in their analytical reasoning than their right-wing and conservative counterparts (Carl 2015b, p.188), exhibiting a predilection for certainty could be actively beneficial in areas like set theory, epistemology and aeronautical engineering, yet in these areas conservatives are still underrepresented. For example, an experimental study widely reported in the British press found that conservatives were much less likely than liberals to say that an almost circular shape was in fact a circle (Okimoto & Gromet, 2016). In mathematics, being able to recognise the subtle distinctions between two very similar objects is an essential skill.

Second, self-selection into academia by those with left-liberal views may have been amplified by processes of social homophily and political typing (Gross, 2013). Social homophily refers to the tendency for individuals to associate with those who share their characteristics. Political typing refers to the tendency for certain occupations to develop a reputation as being suitable for either liberals or conservatives, just as certain occupations have developed a reputation as being suitable for either men or women. The American senior military brass, for example, appears to be overwhelmingly conservative (Carl, 2015b, p.188). Logically of course, neither social homophily nor political typing can explain the initial left-liberal skew that would have been required for the two processes to get started. One obvious possibility is that the initial skew came about via self-selection on intelligence or personality.

Third, academics may become more left-wing and liberal as a consequence of exposure to prevailing attitudes, values and mores within the academy. Individuals who enter academia as

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<sup>44</sup> Much of this section is paraphrased or directly quoted from Carl (2015b). Please see that source for more references and additional detail.

conservatives or rightists may gradually (or even rapidly) reorient their views toward the left-liberal majority viewpoint due to some combination of concerns over funding and promotion, peer pressure from colleagues, or simply a willingness to conform. As in the cases of social homophily and political typing, conformity to the majority viewpoint cannot logically explain the majority viewpoint itself; again, one would have to invoke self-selection on intelligence or personality to account for the initial left-liberal skew.

Fourth, the left-liberal leanings of academics may derive from a peculiarity of their social-class positions, namely that they receive low incomes relative to their advanced educational attainment and rich cultural capital (Gross, 2013). The closer society gets to laissez-faire capitalism, the more status, power and influence will be tied to individuals' earnings and commercial achievements, and the less academics will earn relative to those in other occupations vying for social influence (lawyers, doctors, managers etc.). Consequently, academics generally prefer policies that minimise differences in earnings across occupations, the better to safeguard their own influence. According to some versions of this hypothesis, academics embrace non-traditional social attitudes (such as espousing unconventional family arrangements) purely in order to differentiate themselves from members of the bourgeoisie.

Fifth, there is growing evidence from the US that individuals with right-wing and conservative views are discriminated against in the processes of hiring, funding and promotion. When Inbar and Lammers (2012) conducted a political survey of social psychologists, a considerable number of the respondents openly admitted that they would discriminate against conservative academics in paper and grant reviews, symposium initiations, and hiring decisions. Moreover, 82% of the 17 conservative respondents felt there was a hostile climate towards their political beliefs within the field, compared to just 7% of the 266 liberal respondents. In a replication study, Honeycutt & Freburg (2016) found that conservative and liberal academics were similarly willing to discriminate against their ideological counterparts, but that conservative academics reported experiencing more hostility than liberal ones.<sup>45</sup> Similarly, almost a third of the sociologists interviewed by Yancey (2011)

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<sup>45</sup> Since 85% of the academics in their sampled identified as liberal, whereas only 6% identified as conservative, the net effect of discriminatory tendencies among academics is a large anti-conservative bias.

stated that they would disfavour hiring a Republican, while a comparable fraction said they would look favorably upon a prospective candidate's membership of the ACLU (a socially liberally non-profit organization). In addition, Phillips (2016) found that conservative and libertarian law professors, despite being underrepresented in the American legal academy, produce more publications and are cited more often than their left-wing and liberal counterparts, which suggests that they are held to a higher standard by university gatekeepers. On the other hand, Fosse et al. (2014) conducted a matched-CV study of graduate study directors, and found little evidence of discrimination against students who mentioned volunteering for the Republican John McCain's presidential campaign. Yet other scholars have argued that various aspects of Fosse et al. (2014) methodology militated against them detecting any overt, discriminatory behavior (Tetlock & Mitchell, 2015, p.29).

## **6. Adverse consequences of ideological homogeneity**

The left-liberal skew of British academia, and consequent ideological homogeneity, may have had a number of adverse consequences. One, it has arguably led to systematic biases in scholarship (Scruton, 1985). Two main forms of bias are evident. First, in subjects like psychology and sociology, scientific theories have become imbued with left-liberal values. In a long review article titled 'Political Diversity Will Improve Social Psychological Science', Duarte et al. (2014) supply several examples of where scholars have equated rejecting left-liberal values to denying objective facts. One study characterised respondents who agreed with statements such as, "the earth has plenty has plenty of natural resources if we just learn how to develop them" as "denying environmental realities". Another study characterised respondents who disagreed with the statement, "hard work doesn't generally bring success—it's more a matter of luck" as "rationalising inequality". On this point, it is worth quoting Duarte et al. (2014):

Imagine a counterfactual social psychology field in which conservative political views were treated as "scientific facts" and disagreements with conservative views treated as denial or error. In this field, scholars might regularly publish studies on "the denial of

the benefits of free market capitalism” or “the denial of the benefits of a strong military” or “the denial of the benefits of church attendance.”

In another review article titled ‘How Ideology Has Hindered Sociological Insight’, Martin (2015) provides some telling examples from sociology. For instance, the term ‘white privilege’ has gained currency within the field as a label for the putative unearned advantages that whites enjoy in virtue of their skin-colour and majority status. However, as Martin (2015) notes, by referring to *white* privilege in particular, the term erroneously implies that whites are advantaged relative to all other groups. Whereas in actual fact, Asian Americans are more advantaged than whites along a number of important sociological dimensions: they have higher average incomes, better educational outcomes, and a lower likelihood of crime victimisation. In addition, Martin (2015) points out that much of the vocabulary in sociology is not ideologically neutral; terms used to describe features of society that liberals tend to oppose, but which conservatives might support, typically have negative connotations:

Sociologists speak of constraints, as though people were physically fenced in; they speak of social controls, as though some entity manipulated people; and they speak of social structure, as though people could be located inside a physical edifice. These linguistic devices are useful, but being metaphors, they also have limitations... What if we described society as comprehensible (constrained) rather than overwhelming (unconstrained), as shaped (structured) rather than formless (unstructured), as predictable (with social control) rather than volatile (without social control), and as ordered (hierarchical) rather than anarchic (equal)?

The second main form of bias is that areas of research deemed politically unpalatable by left-liberal academics have been ignored, mischaracterised or even angrily expostulated. Textbooks in organisational behaviour devote twice as many paragraphs to emotional intelligence than to general intelligence (i.e., cognitive ability), despite the fact that the latter predicts organisational success far more strongly than the former (Pesta et al., 2015). Introductory economics textbooks give market failure six times as much coverage as government failure, and only half acknowledge the presence of government failure at all (Fike & Gwartney, 2015). The field of evolutionary psychology, which postulates that some aspects of human behaviour (e.g., higher male aggression, greater female empathy) can be understood as evolutionary adaptations, is persistently mischaracterised by

sociologists of sex and gender (Winegard et al., 2014; Stern, 2016). In social psychology, preeminent researchers frequently assert that people's everyday stereotypes are wildly inaccurate, despite overwhelming evidence to the contrary (Jussim, 2012). And in psychometrics, theories relating to group differences in intelligence are often rejected on explicitly moral grounds, for example that they might be misused by racists (Cofnas, 2016).

Furthermore, there is a long history of witch-hunts against scholars seen to be promoting politically incorrect ideas, i.e., those antithetical to left-liberal values (Pinker, 2002; Nyborg, 2011). Following the publication of his book 'Sociobiology', which applied concepts from evolutionary biology to human society and culture, E.O. Wilson was slandered by fellow academics for attempting to justify genocide, and subjected to a campaign of harassment by irate student activists: defamatory leaflets were handed out, his lectures were invaded, and one occasion he was doused with a pitcher of water (Pinker, 2002). When Napoleon Chagnon published a treatise documenting the high levels of inter-group violence among the Yanomamo people of Amazonia, other anthropologists publicly accused him of fabricating data, stirring up violence himself, and even deliberately infecting the Yanomamo with measles (Pinker, 2002). After Lawrence Summers entertained the hypothesis that higher male variance in intelligence might help to explain the overrepresentation of men in STEM subjects, he was denounced by colleagues and commentators nationwide as a sexist; the condemnation proved so severe that he was eventually forced to resign as a president of Harvard (Nyborg, 2011). When Charles Murray published his book 'The Bell Curve', which discussed studies of race differences in intelligence, he was roundly excoriated for trying to demonstrate that blacks were genetically inferior to whites, an accusation that is still levelled at him 20 years later (Winegard & Winegard 2016).<sup>46</sup>

As numerous scholars have noted, social settings characterised by too little diversity of viewpoints are liable to become afflicted by groupthink, a dysfunctional atmosphere where key assumptions go unquestioned, dissenting opinions are neutralized, and favored beliefs are held as sacrosanct (Park, 1990; Klein & Stern, 2009; Haidt, 2012). In a working paper titled 'A social science

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<sup>46</sup> Other scholars who have been attacked on moralistic grounds include: Cyril Burt, Arthur Jensen, J.P. Rushton, Raymond Cattell, James Watson, Hans Eysenck, Helmuth Nyborg, Michael Bailey, Richard Lynn, Richard Herrnstein, Satoshi Kanazawa, Richard Dawkins, and James Neel.

without sacred values', Winegard and Winegard (2016) go as far to suggest that a substantial number of academic social scientists have become "paranoid egalitarian meliorists": individuals who espouse a narrative in which society progresses ever closer toward a state of natural equality (between the genders, classes, races etc.), and who are hypersensitive to any scholarship that might threaten the intellectual foundations of this narrative.

It should be recognised, of course, that all the evidence of bias cited above is from the social sciences; the physical sciences and mathematics do not appear to have been afflicted by ideological homogeneity in the same way. This is perhaps not surprising, however, given the objective nature of the physical sciences and mathematics, as well as the obvious fact that the social sciences relate directly to the sphere with which politics itself is concerned, namely human behaviour and society. Having said that, it is worth reemphasising that the social sciences—especially sociology, cultural anthropology and social psychology—are among the subject areas generally found to have the lowest representation of right-wing and conservative academics (Carl, 2015b; *THE*, 2015).

The second adverse consequence of ideological homogeneity within academia has been the trend toward increasing curtailments of free speech on university campuses (Browne, 2006; Hume, 2015; Pinker, 2015). As numerous commentators have catalogued, over the last few years there has been an explosion of efforts to restrict the ability of individuals within the scholarly community to speak freely and exchange ideas openly. Many US colleges have adopted full-blown speech *codes*: documents that outline, sometimes in intricate detail, what sort of statements are and are not permissible on campus. According to the University of California speech code, for example, seemingly innocuous statements such as "America is a land of opportunity" constitute harmful micro-aggressions that should be avoided for fear that they might insult women or ethnic minorities (*LA Times*, 2015). On both sides of the Atlantic, lecturers have begun issuing so-called trigger warnings before they discuss potentially upsetting material. Reportedly, law students at the University of Oxford were warned that they might find the content of lectures about sexual offences distressing, and were given the opportunity to leave beforehand (Manning & Wace, 2015). Another concerning development is the rise of no-platforming, where activists insist that speakers not be given a public platform to make potentially offensive arguments. Maryam Namazie was interrupted, heckled and

ultimately prevented from speaking by students at Goldsmiths University when she came to give a talk that was critical of Islam (Ali, 2015). According to the online magazine *Spiked*, which has begun compiling an annual ranking of 115 British universities, 90% censored speech in one form or another during 2016 (*Spiked*, 2016).

Admittedly, the academy's left-liberal skew is probably not the only factor behind the rise of free speech restrictions and political correctness at universities. Another likely explanation is the increase in university tuition, which has occurred both in Britain and the United States. Because they now have to pay hefty fees upfront, students are increasingly treated like consumers, rather than prospective scholars, so that when they demand restrictions on free speech, universities supply those restrictions accordingly (Cohen, 2015). Nevertheless, the left-liberal skew of academia has almost certainly contributed to the rise. First, it has occurred at a time when left-liberal overrepresentation appears to have reached new highs (Abrams, 2016). And second, arguments made in support of the various measures taken by universities are nearly always couched in the "progressive language of politics" (Kling, 2013), i.e., with reference to concepts such as victimhood, oppression and privilege (Sacks & Theil, 1999; Campbell & Manning, 2014).

The third adverse consequence of ideological homogeneity within academia is that it may have influenced attempts by right-wing arguments to defund academic research. Both the Conservatives in the UK and the Republicans in the US have been accused of misguidedly cutting public funding for academic research, especially for the social sciences and humanities (Preston, 2015; Sides, 2015). Although there is not necessarily any direct evidence that such funding cuts have been motivated by a desire to stymie critics of right-wing government policy—of whom there are many within the academy—it stands to reason that, once in power, a party will reward interest groups that helped it get elected, while punishing those that lobbied for its rivals (Buchanan & Tullock, 1962; Becker, 1983). Of course, one could argue that if the research being produced by academics in the social sciences and humanities is in fact biased and partisan, then it *should* be defunded. However, it is almost certainly not true that *all* research being done in the social sciences and humanities is biased and partisan. Indiscriminate cuts could therefore make society worse off if basic knowledge is a

public good (Mattey, 1998), and the benefits conferred by good-quality research are sufficiently large relative to the opportunity cost of funding for bad research.

## **7. Conclusion**

Individuals with left-wing and liberal views are overrepresented in British academia. Those with right-wing and conservative views are correspondingly underrepresented. Around 50% of the general public supports right-wing or conservative parties, compared to less than 12% of academics. Conservative and right-wing academics are particularly scarce in the social sciences, the humanities and the arts. Though relatively few relevant data are available, evidence suggests that the overrepresentation of left-liberal views may have increased since the 1960s. British academia's left-liberal skew cannot be primarily explained by intelligence. However, it may be partly explained by openness to experience. Other plausible explanations include: social homophily and political typing; individual conformity; status inconsistency; and discrimination. Ideological homogeneity within the academy may have had a number of adverse consequences: systematic biases in scholarship, especially in the social sciences; curtailments of free speech on university campuses; and defunding of academic research by right-wing governments.

What, if anything, should be done about the British academy's left-liberal skew? First, it is important to simply raise awareness about the phenomenon. In social settings where dissenting opinions have been all but weeded out, most individuals may not be cognizant of large disparities of representation, and those that are may not see them as troubling. Second, academics—in their capacities as researchers, reviewers and journal editors—should be alert to double standards. As Duarte et al. (2014) note, “findings that are at odds with liberal values are at risk of being judged more harshly than they deserve; findings that support liberal values are at risk of being waived through without sufficiently critical review”. Third, academics should embrace adversarial collaborations. For example, if one researcher believes the evidence supports a left-wing policy position and another believes it supports a right-wing policy position, the two could co-write a paper in which they sought to resolve their dispute. In the same vein, scholars should encourage one another to take what

economist Bryan Caplan calls the Ideological Turing Test: a liberal answers questions posing as a conservative (or vice versa), and if impartial judges cannot tell the difference between his answers and those of a genuine conservative, he is said to correctly understand the opposing viewpoint. Fourth, university gatekeepers, along with sympathetic minded academics, should emphasize the benefits of ideological heterogeneity within the academy. These include: greater public trust in scholarly expertise; a bulwark against groupthink; and more alternative perspectives and ways of conceptualizing a problem. Universities often take great pains to point out their commitment to diversity with respect to gender, class and race; going forward, they would be wise not to eschew political diversity.

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## **Methodological Appendix**

### *Table 1*

As noted above, the *THE* poll (2015) was open to anyone with a UK university email address, including non-academic staff, and was self-selecting. The question posed by the *THE* poll (2015) was not stated explicitly in the write-up, but one can infer from the text that it asked respondents which party they intended to vote for, rather than which party they felt closest to. By contrast, Halsey (1992, Appendix 1) asked about party closeness, not vote intention. In addition, his data were collected systematically, namely by selecting every  $n^{\text{th}}$  name from the Commonwealth Universities Yearbook (where  $n$  varied according to gender and seniority). Insofar as the question posed by Halsey (1992) was different to the one posed by the *THE* poll (2015), the two sets of figures are not directly comparable. Nonetheless, since most people will tend to vote for the party to whom they feel closest, the comparison is reasonably legitimate.

### *Tables 3, 4 and 5*

The variable utilised for calculating party support within the general population and the top 5% of IQ is based on two questions, which were asked sequentially. First, respondents were asked whether they supported any party, and—if so—which one. Those who answered 'No' were then asked which party they felt closest to. IQ was obtained by extracting the first principal component from a PCA on six separate measures of cognitive ability (McFall, 2013): immediate word recall, delayed

word recall, serial subtraction, number series, verbal fluency, and numeracy. This component explained 46% of the variance across the six measures. Openness to experience was obtained by extracting the first principal component from a PCA on three measures of openness: a self-rating of how original the respondent believes he is; a self-rating of how artistic the respondent believes he is; and a self-rating of how active an imagination the respondent believes he has. This component explained 60% of the variance across the three measures. Cross-sectional sampling weights were applied when calculating the figures in order attain representativeness (Knies, 2014). The IQ variable and the openness variable were taken from Wave 3, while the party support variable was taken from Wave 5.

## CHAPTER 10

# THE POLITICAL ATTITUDES OF BRITISH ACADEMICS

### **Abstract**

Carl (2017) recently published a report claiming that individuals with left-wing and liberal views are overrepresented in British academia. One weakness of this report was that it relied almost exclusively on party support data. Using data from the 2015 wave of the British Election Study Panel, the present study confirms that the political attitudes of British academics are somewhat more economically left-wing (0.38sd), and are substantially more socially liberal (0.84sd), than those of the general population. It also documents that British academics are substantially more likely to read *The Guardian* newspaper (the UK's most left-liberal newspaper) than members of the general population (31 ppts). Adjusting for demographic characteristics, education and openness to experience reduces the difference on social liberalism by 0.20sd, and reduces the difference on *Guardian* readership by 5 ppts, but increases the difference on economic leftism by 0.07sd.

## **1. Introduction**

Carl (2017a) recently published a report claiming that individuals with left-wing and liberal views are overrepresented in British academia. This report was subjected to several criticisms (Morgan, 2017; Byrne, 2017; and see Carl, 2017b,c). Indeed, one of its major weaknesses was that it relied almost exclusively on party support data. Specifically, it cited evidence that British academics are substantially less likely than the general population to support the UK's two main right-wing parties: The Conservatives and The United Kingdom Independence Party (UKIP). Yet, except for one poll showing that British academics were overwhelmingly opposed to the UK leaving the European Union, it did not cite any evidence pertaining to their attitudes on specific political issues. Using data from the 2015 wave of the British Election Study Panel, the present study confirms that the political attitudes of British academics are indeed both more left-wing and more liberal than those of the general population.

## **2. Method**

Data from the 2015 wave (Wave 6) of the British Election Study Panel (Fieldhouse et al., 2015) were utilized for analysis. The British Election Study Panel (BES) is an internet-based survey that administers questions about political attitudes, party support, and political behavior to a large, nationally representative sample of the British population. While the study tracks the same individuals over time, each wave can be treated as a cross-sectional survey. There are two key reasons why the BES dataset was utilized: first, it contains a rich set of questions on political attitudes (unlike the Understanding Society dataset utilized by Carl, 2017a); and second, unlike some other social surveys in the UK, it has large sample size ( $n = \sim 30,000$ ), which allows enough individual academics to be identified for a reasonably reliable analysis.

The BES includes a variable that assigns all respondents who are currently employed to an occupation, based on the 2010 Standard Occupational Classification (ONS, 2010). Academics were

defined as those in the occupational category 2311: 'Higher education teaching professionals' ( $n = 107$ ). As the ONS (2010) notes:

Higher education teaching professionals deliver lectures and teach students to at least first degree level, undertake research and write journal articles and books in their chosen field of study.

A dummy variable was created that took the value 1 if the respondent was an academic, and took the value 0 if not. Insofar as academics comprise such a small share of the sample (0.3%), the reference category for this variable can be considered to be the general population.

Three dependent variables were constructed. First, a dimension of economic leftism was obtained by extracting the first principal component from a PCA on nine measures of left-right attitudes. This component had an eigenvalue of 4.5, and explained 50% of the variance. Second, a dimension of social liberalism was obtained by extracting the first principal component from a PCA on nine measures of liberal-conservative attitudes. This component had an eigenvalue of 4.1, and explained 46% of the variance. Both of the preceding dimensions were standardized prior to analysis. Correlation matrices for their constituent variables are given in Appendix A. Third, a dummy variable was created that took the value 1 if the respondent said that her daily newspaper was *The Guardian*, and took the value 0 if she said that it was any other newspaper (respondents who said that they did not read a daily newspaper were coded as missing). *The Guardian* is the UK's most left-liberal newspaper (Smith, 2017). The following covariates were utilized: age, gender, ethnicity, region, education, self-rated openness to experience.

### **3. Results**

Table 1 displays estimates from OLS models of economic leftism. Academics are significantly more economically left-wing in all four models. The coefficient in the first column implies that academics are 0.38sd more economically left-wing than the general population. Adjusting for demographic characteristics, education and openness to experience increases this difference to

0.45sd. That increase is attributable to the fact that academics tend to have very high levels of education, yet people higher education tend to be more economically right-wing than those with lower education (see Carl, 2015a).

Table 2 displays estimates from OLS models of social liberalism. Academics are significantly more socially liberal in all four models. The coefficient in the first column implies that academics are 0.84sd more socially liberal than the general population. Adjusting for demographic characteristics, education and openness to experience reduces this difference to 0.64sd. That decrease is attributable to the fact that academics tend to have very high levels of education, and people with higher education tend to be more socially liberal than those with lower education (see Carl, 2015a).

Table 3 displays estimates from OLS models of *Guardian* readership. Academics are significantly more likely to read *The Guardian* in all four models. The coefficient in the first column implies that academics are 31 percentage points more likely to read *The Guardian* than the general population. Adjusting for demographic characteristics, education and openness to experience reduces this difference to 26 percentage points.

An important caveat is that two of the results in Table 1 (specifically, those in the first and second columns) were not robust to applying sampling weights; indeed, they were rendered non-significant by doing so. (Full weighted results are given in Appendix B.) This is somewhat surprising, since one would have expected that, if the difference observed in the first column were attributable to non-random sampling, then it would have disappeared after controlling for demographic characteristics such as age, gender, ethnicity and region (as in the second column). Appendix C shows that the distribution of party support among academics in the BES is more similar to the distribution of party support among academics in Understanding Society (see Hanretty, 2017) when sampling weights are not applied than when they are, which provides some justification for not applying sampling weights to the models in Tables 1, 2 and 3.

**Table 1.** Estimates from OLS models of economic leftism.

	Economic leftism (z-score)	Economic leftism (z-score)	Economic leftism (z-score)	Economic leftism (z-score)
Academic	0.38***	0.36***	0.47***	0.45***
Age, age <sup>2</sup> , gender, ethnicity, region		Yes	Yes	Yes
Education dummies			Yes	Yes
Openness to experience				Yes
<i>n</i>	22,096	22,096	22,096	22,096
<i>R</i> <sup>2</sup>	0.00	0.04	0.05	0.06

Notes: Entries are unstandardized coefficients. Models are unweighted. Significance levels: \* 0.05, \*\* 0.01, \*\*\* 0.001.

**Table 2.** Estimates from OLS models of social liberalism.

	Social liberalism (z-score)	Social liberalism (z-score)	Social liberalism (z-score)	Social liberalism (z-score)
Academic	0.84***	0.91***	0.69***	0.64***
Age, age <sup>2</sup> , gender, ethnicity, region		Yes	Yes	Yes
Education dummies			Yes	Yes
Openness to experience				Yes
<i>n</i>	23,160	23,160	23,160	23,160
<i>R</i> <sup>2</sup>	0.00	0.13	0.18	0.20

Notes: Entries are unstandardized coefficients. Models are unweighted. Significance levels: \* 0.05, \*\* 0.01, \*\*\* 0.001.

**Table 3.** Estimates from OLS models of *Guardian* readership.

	<i>Guardian</i> is daily new spaper			
Academic	0.31***	0.32***	0.27***	0.26***
Age, age <sup>2</sup> , gender, ethnicity, region		Yes	Yes	Yes
Education dummies			Yes	Yes
Openness to experience				Yes
<i>n</i>	19,585	19,585	19,585	19,585
<i>R</i> <sup>2</sup>	0.00	0.06	0.10	0.10

Notes: Entries are unstandardized coefficients. Models are unweighted. Significance levels: \* 0.05, \*\* 0.01, \*\*\* 0.001.

## 4. Conclusion

Carl (2017) recently published a report which claimed that individuals with left-wing and liberal views are overrepresented in British academia. One weakness of this report was that it relied almost exclusively on party support data. Using data from the 2015 wave of the British Election Study Panel, the present study has confirmed that the political attitudes of British academics are somewhat more economically left-wing (0.38sd), and are substantially more socially liberal (0.84sd), than those of the general population. It has also documented that British academics are substantially more likely to read *The Guardian* newspaper than members of the general population (31 ppts). Adjusting for demographic characteristics, education and openness to experience reduced the difference on social liberalism by 0.20sd, and reduced the difference on *Guardian* readership by 5 ppts, but increased the difference on economic leftism by 0.07sd. The fact that sizable differences remained after adjusting for covariates indicates that the left-liberal skew of British academia cannot be explained simply by academics' high levels of education, or—apparently—by their high levels of openness to experience (see Carl, 2017a).<sup>47</sup> This suggests that the remainder of skew is likely to be attributable to one or more of the following: social homophily and political typing, individual conformity, status inconsistency, and discrimination (see Carl, 2015b; Carl, 2017a).

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<sup>47</sup> It should be noted that the measure of openness used in the present study was rather crude.

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## Appendix A

**Table A.1.** Correlation matrix for measures of economic leftism.

	Govt. should redistribute income	Big business takes advantage	Ordinary people do not get fair share	One law for rich, one for poor	Management exploits employees	Cuts have gone too far	Privatisation has gone too far	Zero hours cons. should be illegal	Enviro. protect. not gone far enough
Govt. should redist. income	1								
Big business takes advantage	.49***	1							
Ordinary people do not get fair share	.61***	.59***	1						
One law for rich, one for poor	.57***	.61***	.66***	1					
Management exploits emps.	.39***	.56***	.50***	.51***	1				
Cuts have gone too far	.52***	.39***	.47***	.45***	.33***	1			
Privatisation has gone too far	.45***	.42***	.45***	.45***	.32***	.65***	1		
Zero hours cons. should be illegal	.38***	.34***	.40***	.39***	.32***	.47***	.45***	1	
Enviro. protect. Not gone far enough	.26***	.17***	.18***	.14***	.08***	.30***	.27***	.19***	1

*Notes:* Entries are Pearson correlations. Sampling weights were not applied. Significance levels: \* 0.05, \*\* 0.01, \*\*\* 0.001.

**Table A.2.** Correlation matrix for measures of social liberalism.

	Young people respect Brit. values	Against death penalty	Schools should not teach kids to obey	Against censorship of films and mags.	Against harsher criminal sentences	More immigration	Equal opportunities for blacks	Equal opportunities for women	Equal opportunities for gays
Young people resp. Brit. values	1								
Against death penalty	.51***	1							
Schools should not teach kids to obey	.60***	.45***	1						
Against censorship of films and mags.	.38***	.32***	.39***	1					
Against harsher criminal sentences	.58***	.59***	.54***	.36***	1				
More immigration	.41***	.41***	.34***	.26***	.40***	1			
Equal opps. For blacks	.44***	.45***	.38***	.24***	.41***	.46***	1		
Equal opps. For women	.25***	.26***	.23***	.11***	.22***	.23***	.49***	1	
Equal opps. For gays	.35***	.35***	.32***	.26***	.30***	.35***	.61***	.52***	1

*Notes:* Entries are Pearson correlations. Sampling weights were not applied. Significance levels: \* 0.05, \*\* 0.01, \*\*\* 0.001.

## Appendix B

**Table B.1.** Estimates from weighted OLS models of economic leftism.

	Economic leftism (z-score)	Economic leftism (z-score)	Economic leftism (z-score)	Economic leftism (z-score)
Academic	0.28	0.26	0.43*	0.41*
Age, age <sup>2</sup> , gender, ethnicity, region		Yes	Yes	Yes
Education dummies			Yes	Yes
Openness to experience				Yes
<i>n</i>	22,096	22,096	22,096	22,096
<i>R</i> <sup>2</sup>	0.00	0.04	0.05	0.06

*Notes:* Entries are unstandardized coefficients. Cross-sectional sampling weights were applied. Significance levels: \* 0.05, \*\* 0.01, \*\*\* 0.001.

**Table B.2.** Estimates from weighted OLS models of social liberalism.

	Social liberalism (z-score)	Social liberalism (z-score)	Social liberalism (z-score)	Social liberalism (z-score)
Academic	0.74***	0.92***	0.72***	0.71***
Age, age <sup>2</sup> , gender, ethnicity, region		Yes	Yes	Yes
Education dummies			Yes	Yes
Openness to experience				Yes
<i>n</i>	23,160	23,160	23,160	23,160
<i>R</i> <sup>2</sup>	0.00	0.12	0.15	0.16

*Notes:* Entries are unstandardized coefficients. Cross-sectional sampling weights were applied. Significance levels: \* 0.05, \*\* 0.01, \*\*\* 0.001.

**Table B.3.** Estimates from weighted OLS models of *Guardian* readership.

	<i>Guardian</i> is daily new spaper			
Academic	0.19***	0.20***	0.17***	0.17***
Age, age <sup>2</sup> , gender, ethnicity, region		Yes	Yes	Yes
Education dummies			Yes	Yes
Openness to experience				Yes
<i>n</i>	19,585	19,585	19,585	19,585
<i>R</i> <sup>2</sup>	0.00	0.04	0.05	0.05

*Notes:* Entries are unstandardized coefficients. Cross-sectional sampling weights were applied. Significance levels: \* 0.05, \*\* 0.01, \*\*\* 0.001.

## Appendix C

Another weakness of Carl's (2017) report was that it relied on a self-selecting poll of academics from 2015 (Morgan, 2017; Byrne, 2017; and see Carl, 2017b,c). If academics' political views are correlated with their propensity to respond to online polls, then the distribution of party support uncovered by a self-selecting poll might be biased. However, Hanretty (2017) identified academics in the Understanding Society dataset (University of Essex, 2015), and showed that the distribution of party support among these individuals is actually quite similar to the distribution of party support among those who responded to the 2015 poll cited by Carl (2017). As Hanretty (2017) notes:

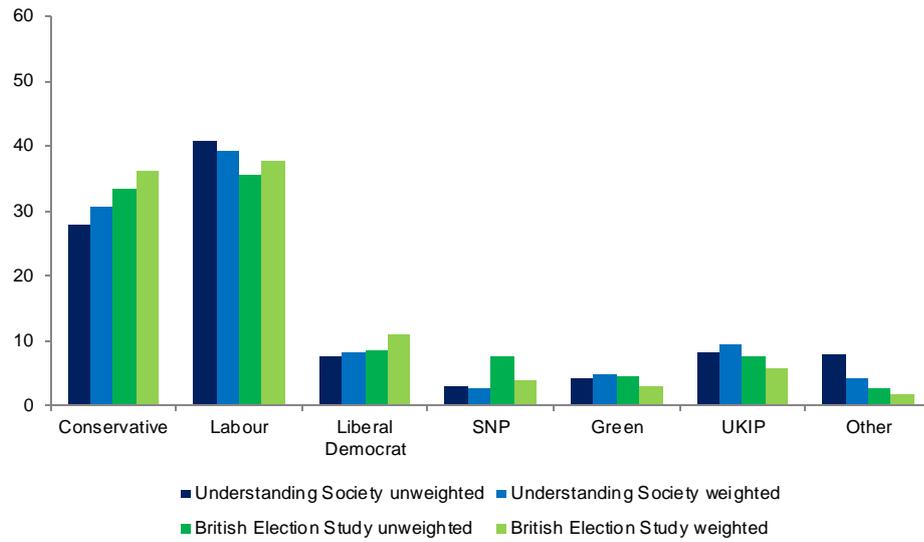
There is, therefore good evidence—which is not derived from a self-selecting sample—to suggest that left-wing opinions are over-represented in academia when compared to the general population.

This section compares—for both the general population and academics, with and without sampling weights—the distribution of party support in the BES data to the distribution of party support in Wave 5 the Understanding Society data. In the BES, party support was measured using the party ID variable: respondents are asked to say which party, if any, they identify with. In Understanding Society, two definitions of party support were utilized: first, a broad definition, corresponding to the one used by Hanretty (2017), and second, a narrow definition, corresponding to the one used by Carl (2017). Party support in this dataset is based on three questions, asked sequentially. First, respondents are asked whether they support any party, and—if so—which one. Second, those who answer 'No' are then asked which party they feel closest to. Third, those who say they don't feel closest to any party are then asked which party they would vote for tomorrow, if they had to. The broad definition of party support results from combining answers to all three questions, while the narrow definition of party support results combining answers to just the first two questions.

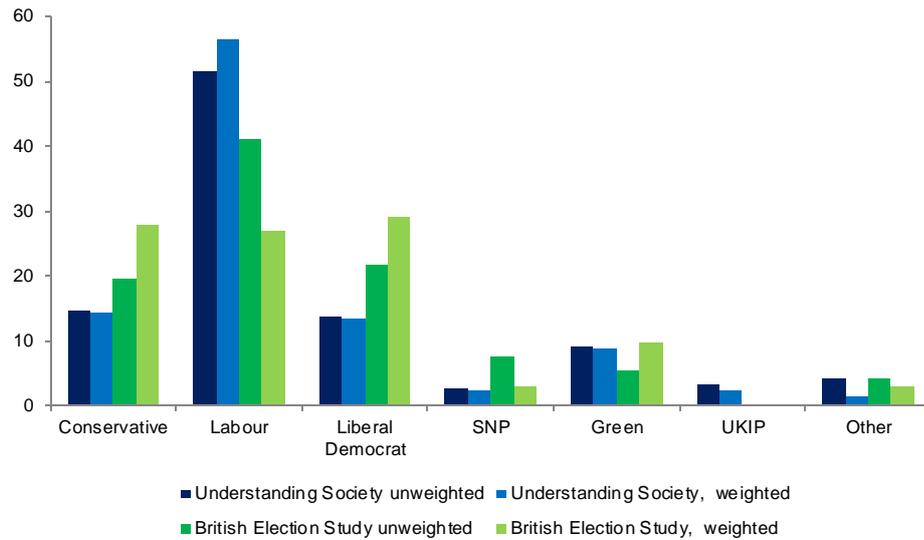
Figure C.1 compares the distribution of party support within the general population, between Understanding Society and the BES, using the broad definition of party support from Understanding

Society. Figure C.3 provides the corresponding comparison for the narrow definition of party support. Figure C.2 compares the distribution of party support among academics, between the BES and Understanding Society, using the broad definition of party support from Understanding Society. Figure C.4 provides the corresponding comparison for the narrow definition of party support. As Figure C.1 and Figure C.3 show, the distribution of party support within the general population is quite similar across the two datasets, with and without weights. However, as Figure C.2 and Figure C.4 show, the distribution of party support among academics differs between the two datasets: in Understanding Society, relatively more academics support Labour, whereas in the BES, relatively more support the Liberal Democrats. Moreover, the differences between the two datasets are much larger when sampling weights are applied than when they are not. Since, the weighted figures from the BES are the most aberrant, it is arguably more appropriate to estimate unweighted models. Note that the weighted figures from the BES also deviate most from the figures from the 2015 poll cited by Carl (2017; THE, 2015).

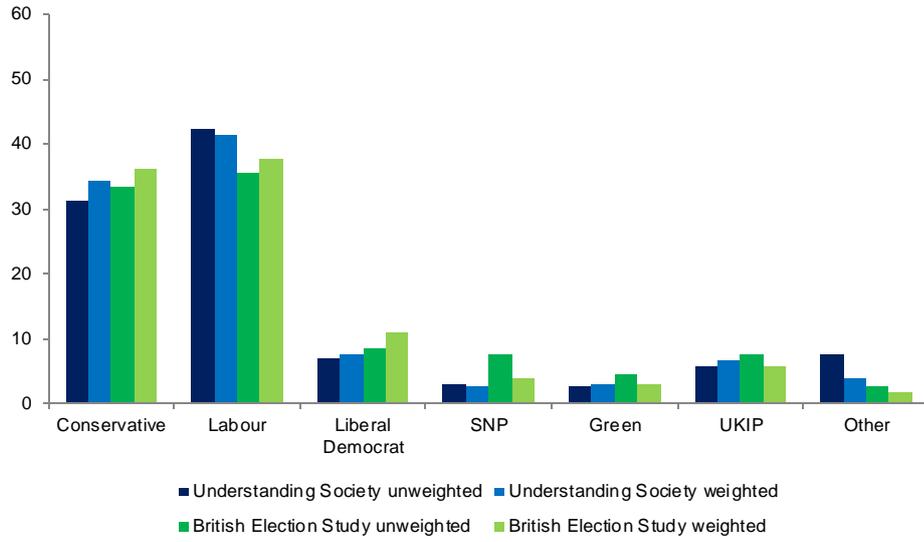
**Figure C.1.** Distribution of party support within the general population using broad definition of party support from Understanding Society



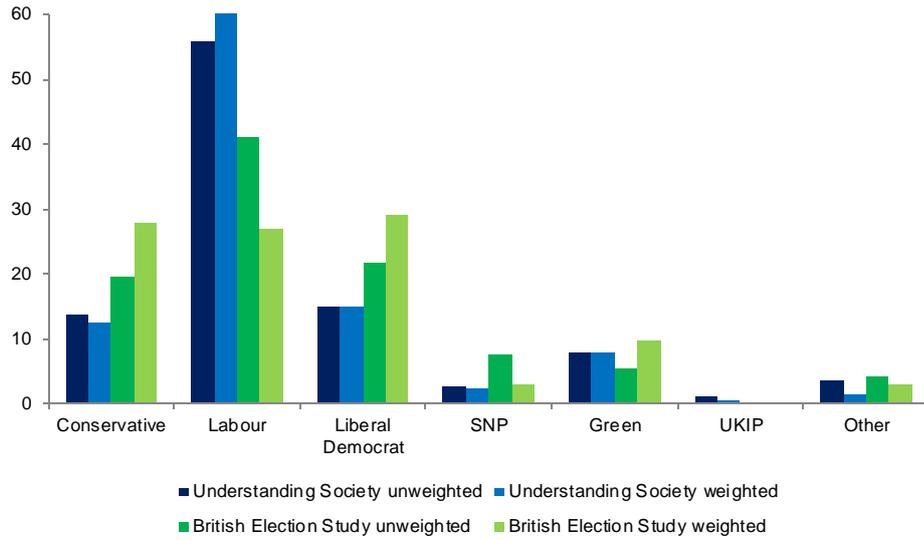
**Figure C.2.** Distribution of party support among academics using broad definition of party support from Understanding Society



**Figure C.3.** Distribution of party support within the general population using narrow definition of party support from Understanding Society



**Figure C.4.** Distribution of party support among academics using narrow definition of party support from Understanding Society



# CONCLUSION

## 1. Summary of findings

This thesis sought to address four main research questions. The first of these was: Are generalized trust and political attitudes associated with cognitive ability? In answer to this question, it has shown that cognitive ability is positively associated with generalized trust, not only across individuals, but also across countries and regions within a country. Similarly, it has shown that cognitive ability is positively associated with measures of socially liberal beliefs (such as being supportive of immigration, abortion and free speech), and with measures of economically liberal beliefs (such as being opposed to nationalisation, and protectionism and redistribution of income). The second main research question was: What are the functional forms of any relationships between cognitive ability and socio-political beliefs and attitudes? In answer to this question, the thesis has shown that cognitive ability has an approximately linear relationship with generalized trust. It has shown that cognitive ability has a monotonic relationship with measures of socially liberal beliefs, but in many cases a non-linear one driven by individuals in the right-hand tail of the distribution being more socially liberal than those in the lower 75% of the distribution. And it has shown that cognitive ability has a monotonic relationship with some measures of economically liberal beliefs (e.g., opposition to protectionism), but, with others (e.g., opposition to affirmative action), a non-monotonic relationship whereby individuals in the far-right tail are less economically liberal than their counterparts around the 70–90<sup>th</sup> percentiles of the distribution.

The third main research question was: Does cognitive ability explain variance in socio-political beliefs and attitudes over and above the effect of traditional sociological covariates, such as age, gender, and socio-economic status? In answer to this question, the thesis has shown that the association between cognitive ability and generalized trust is highly robust at the individual level, but is less robust at the aggregate level. It has shown that the associations between cognitive ability and

measures of socially liberal beliefs are also highly robust. And it has shown that the associations between cognitive ability and measures of economically liberal beliefs are less robust. In most cases, part of the association is attributable to race and socio-economic status, whites and those with higher socio-economic status tending to have both higher cognitive ability and more economically liberal beliefs.

Furthermore, as Tables 1 & 2 (overleaf) indicate, about 40% of the effect of education on political attitudes is explained by cognitive ability. Given that these measures of cognitive ability are somewhat noisy, the true fraction explained by cognitive ability is likely to be even higher. This suggests that previous studies have over-estimated the effect of education on political attitudes (see Weakliem, 2002; Van de Werfhorst & De Graaf, 2004). Of course, it could be the case that completing a college degree enhances one's cognitive ability, and therefore that estimates in the even columns represent the separate direct and indirect effects of college education. However, there are a number of reasons to doubt this. First, cognitive ability is highly stable from early adulthood to middle age (Neisser et al., 1996; Larsen et al., 2008), and indeed from late childhood to old age (Deary & Brett, 2015). Second, IQ measured at age 11 is extremely predictive of later educational performance ( $r > .80$ ; Deary et al., 2007). Third, there is reason to believe that higher education functions primarily as a signal of individual's underlying characteristics, exerting only a weak or null effect on her human capital (Spence, 1973; Caplan, 2017). One particularly compelling piece of evidence for this so-called signalling model is the phenomenon of sheepskin effects, namely that the wage premium from completing all four years of college is substantially larger than four times the wage premium from going to college but dropping out after the first year (Jaeger & Page, 1996; Herault & Zakirova, 2011; and see Caplan, 2017).<sup>48</sup>

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<sup>48</sup> If the whole effect of education were due to an increase in human capital then, on average, individuals dropping out after year  $n$  should enjoy a wage premium  $n/4$  as large as the premium enjoyed by those who complete all four years. Yet they in fact enjoy one substantially smaller than this.

**Table 1.** Effects of education on political attitudes, before and after controlling for cognitive ability (GSS data)

	Social liberalism (z-score)	Social liberalism (z-score)	Social liberalism (z-score)	Social liberalism (z-score)	Economic liberalism (z-score)	Economic liberalism (z-score)	Economic liberalism (z-score)	Economic liberalism (z-score)
High-school degree	0.48***	0.31***	0.36***	0.19***	0.48***	0.32***	0.40***	0.29**
College degree	1.02***	0.65***	0.86***	0.50***	0.93***	0.56***	0.72***	0.46***
Cognitive ability (z-score)		0.26***		0.28***		0.12***		0.09***
Socio-economic characteristics			Yes	Yes			Yes	Yes
Unweighted <i>n</i>	3,220	3,220	3,220	3,220	1,247	1,247	1,247	1,247

*Notes:* Data are from the GSS (various waves). The reference category for education is 'less than a high school degree'. Social liberalism is a dimension of socially liberal attitudes constructed from six measures. Economic liberalism is a dimension of economically liberal attitudes constructed from four measures. Cognitive ability is score on the Wordsum vocabulary test. Socio-economic characteristics are: age, age squared, gender, race, and income. Sampling weights were applied. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. For further details, see Chapter 4.

**Table 2.** Effects of education on political attitudes, before and after controlling for cognitive ability (ANES data)

	Social liberalism (z-score)	Social liberalism (z-score)	Social liberalism (z-score)	Social liberalism (z-score)	Economic liberalism (z-score)	Economic liberalism (z-score)	Economic liberalism (z-score)	Economic liberalism (z-score)
High-school degree	0.09	0.04	0.01	-0.05	0.34*	0.26	0.28	0.26
College degree	0.61***	0.40**	0.59***	0.34*	0.61***	0.36	0.33	0.27
Cognitive ability (z-score)		0.16**		0.24***		0.19**		0.06
Socio-economic characteristics			Yes	Yes			Yes	Yes
Unweighted <i>n</i>	1,353	1,353	1,353	1,353	1,017	1,017	1,017	1,017

*Notes:* Data are from the 2012 ANES. The reference category for education is ‘less than a high school degree’. Social liberalism is a dimension of socially liberal attitudes constructed from seven measures. Economic liberalism is a dimension of economically liberal attitudes constructed from twenty-four measures. Cognitive ability is a dimension constructed from two measures: interviewer’s assessment of intelligence, and score on the Wordsum vocabulary test. Socio-economic characteristics are: age, age squared, gender, race, and income. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. Sampling weights were applied. For further details, see Chapter 7.

The fourth main research question was: Can psychometric differences between individuals help to explain one particular well-documented empirical regularity (of very large effect size), namely the fact that individuals with liberal and left-wing views are overrepresented in academia? The thesis has shown that, in the United States, cognitive ability can explain more than half the disparity between academics and the general population on the issues of abortion, homosexuality and traditional gender roles, but that it may account for much less than half disparity on the issue of income inequality, and on Democrat versus Republican identity. And it has shown that, in the United Kingdom, cognitive ability cannot explain much, if any, of the underrepresentation of supporters of the Conservative Party, but that openness to experience may be able to account for some of this disparity.

## **2. Limitations**

There are a number of important limitations to the analyses in this thesis. The first is that comparably few social surveys were available in the English language that include both a rigorous measure of cognitive ability and a rich set of questions on socio-political attitudes. For example, the Understanding Society dataset (utilised in Chapters 9 and 10) includes what is, by the standards of social surveys, a very comprehensive measure of cognitive ability (one based on six separate cognitive tests), yet does not include the generalized trust question, nor any measures of political attitudes other than party support. By contrast, the General Social Survey (GSS) dataset (utilised in Chapters 2, 4–6 and 8) includes a very rich set of questions on socio-political attitudes, yet only includes a 10-word vocabulary test (as well as interviewer-rated question comprehension) in a large number of waves. In this regard, it should be noted that a full-scale IQ test (such as the Raven's Progressive Matrices, or the Wechsler Adult Intelligence Scale) may take an hour or more to administer—much more time than is typically available in a household survey. Internet surveys are not generally constrained by the cost of the interviewer's time, yet one must be wary of including cognitive items insofar as some respondents may cheat, and the tendency to cheat may be correlated

with other outcomes of interest (such as respondents' political views).

The second major limitation is the inherent difficulty of investigating causality in the domain of psychometrics, insofar as one cannot randomly assign psychometric traits to individuals. For example, it would of course be possible to study the impact of cognitive ability by exogenously impeding the cognitive development of a group of individuals, but doing so would be grossly unethical. And panel data generally does not provide much more explanatory purchase than cross-sectional data, given the stability of cognitive ability over the life-course (Deary & Brett, 2015). In fact, much of the within-individual variation in cognitive ability is probably measurement error (Neisser et al., 1996). By contrast, in the domain of education, one can at least exploit natural experiments such as legislative changes in the age of compulsory schooling that affect a cohort born in year  $t$ , but not the cohort born in year  $t - 1$  (Brinch & Galloway, 2011).

Having said that, there are in fact a number of approaches that one might use to identify the causal effect of IQ. Yet all of them are unsatisfactory in the present context (i.e., for examining cognitive ability's associations with socio-political beliefs and attitudes). First, one could exploit within-individual variation in cognitive ability caused by exogenous events such as head injuries. Aside from the obvious problem of finding sufficiently many such individuals for a reliable analysis, one would have to show that the head injury reduced cognitive ability without affecting any of the individual's other relevant characteristics (e.g., his appearance)—which would be a rather tall order. Second, one could exploit between-cohort variation caused by, say, legislative changes in the age of compulsory schooling, by using years of education as an instrument for cognitive ability. The main problem with this approach is the implausibility of education satisfying the exclusion restriction of instrumentation (Wooldridge, 2010): sociological theory would lead one to suppose that education influences socio-political beliefs and attitudes, at least to some extent, through channels other than cognitive ability (e.g., teachers imparting their own political values to students without making them any cleverer). A third, and somewhat more promising approach, is the one taken by Murray (2002), who utilised a variant of sibling fixed-effects to identify the causal effect of IQ on income, marriage and extra-marital childbearing:

The procedure [...] begins by identifying every sibling pair in which one sibling had scored in the normal range, defined as a tested IQ of 90-109, and the other member of the pair had scored somewhere outside that range. Those in the normal range were used as the reference group against which sibling outcomes were compared. I then limited the sample to full biological siblings, to take genetics out of the picture, and further limited the sample to sibling pairs in which the siblings had lived with both biological parents for at least seven years after birth, to minimize differential family backgrounds arising from divorce and remarriage... I lopped off the sibling pairs whose parents were anywhere in the bottom 25 percent of the income distribution

Murray proceeded to examine differences in outcomes between siblings who had scored in the normal IQ range (90–109) and those who had scored outside that range in this restricted sample, which he dubbed ‘the utopian sample’.<sup>49</sup> The main problem with applying Murray’s approach to the study of cognitive ability’s associations with socio-political beliefs and attitudes is, once again, the paucity of available data; datasets with matched siblings that include measures of cognitive ability and socio-political attitudes are hard to come by.

The third major limitation, which pertains to Chapters 8–10, is the fact that it was not possible to provide a definitive alternative explanation for the left-liberal skew of academia—insofar as cognitive ability (and openness) could not account for all of that skew. As argued in Chapters 8 and 9, it seems plausible that the academy’s left-liberal skew came about in something like the following way. When society became more meritocratic during the middle of the 20<sup>th</sup> century, an initial left-liberal skew emerged, due to self-selection on cognitive ability<sup>50</sup> and personality. This skew was then amplified over time by three main processes: social homophily and political typing, the tendency for individuals with left-liberal views to select into the academy insofar as they found the comparatively left-liberal atmosphere congenial; individual conformity, the tendency for apolitical scholars to become more left-liberal as a consequence of exposure to prevailing attitudes within the academy; and discrimination, the tendency for conservative and right-wing academics to be treated disparately in the domains of funding, hiring and promotion. As plausible as this account sounds, no direct evidence over and above that adduced by other scholars was provided for it in the thesis. Indeed, it was not

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<sup>49</sup> Incidentally, he found that the sibling fixed-effects relationships between IQ and later life outcomes (mean family income, percentage married, percentage with children out-of-wedlock) within the utopian sample were of almost identical magnitude to the corresponding relationships within the complete sample of sibling pairs.

<sup>50</sup> Self-selection on cognitive ability might have produced an initial skew towards socially liberal beliefs, but not necessarily economically leftist beliefs.

possible, given the paucity of data on representative samples of academics, to quantitatively evaluate the relative importance of three processes described above, say through some sort of decomposition analysis.

### **3. Points of further clarification**

A number of issues that pertain to several of the chapters require further clarification. The first such issue is the treatment of missing values. In the GSS, there are three generic types of missing value: .i for respondents who were not asked a specific question; .d for respondents who answered ‘don’t know’, and .n for respondents who did not give an answer. Similarly, In the ANES, there are two generic types of missing value: ‘-9’ for ‘don’t know’ and ‘-8’ for respondents who refused to give an answer. Tables 3 and 4 provide information about missing values for a selection of variables from the GSS and the ANES, respectively. In general, respondents coded as missing have lower cognitive ability than the general population, though in a couple of cases they have higher cognitive ability (e.g., those who answered ‘don’t know’ to the homosexuality variable in the GSS). The general tendency for respondents coded as missing to have lower average cognitive ability is consistent with evidence that cognitive ability is positively correlated with political interest (Denny & Doyle, 2005). The most important point to emphasise from Tables 3 and 4, however, is that there are very few missing values in both datasets: about 1–5%, depending on the variable. There is therefore little reason to suppose that their exclusion has seriously impacted the main results.

**Table 3.** Information about missing values for a selection of GSS variables

Variable	Total non-missing cases	Total 'don't know'	Mean Wordsum for 'don't know' (z-score)	Total no answer	Mean Wordsum for no answer (z-score)
Party ID	26,196	103	-0.11	9	-0.54
Political views	23,875	881	-0.79	113	-0.22
Income redistribution	12,232	166	-0.53	38	-0.15
Welfare	14,818	595	-0.16	48	0.09
Abortion	13,866	485	-0.12	66	0.16
Homosexuality	15,016	717	0.01	85	0.10

*Notes:* Data are from the GSS (various waves). Information was obtained after excluding all cases with a missing value on the Wordsum test. Figures are unweighted.

**Table 4.** Information about missing values for a selection of ANES variables

Variable	Total non-missing cases	Total 'don't know'	Mean cognitive ability for 'don't know' (z-score)	Total refused	Mean cognitive ability for refused (z-score)
Business regulations	1,862	41	-0.75	1	-0.84
Income inequality	1,862	55	-0.47	0	n/a
Government spending	1,862	12	-1.01	2	0.61
Immigration	1,862	75	0.00	6	-0.16
Gay marriage	1,862	33	-0.52	17	-0.25
Death penalty	1,862	96	-0.18	19	-0.17

*Notes:* Data are from the 2012 wave of the ANES. Information was obtained after excluding all cases with a missing value on the cognitive ability variable (see Chapter 7). Figures are unweighted.

The second issue requiring further clarification is why particular covariates were included in some of the multivariate models. First, it is important to note that all the relevant models were presented both with and without covariates, thereby allowing the reader to compare the simple bivariate associations to more complex conditional ones. The conventional demographic variables of sex, age and race can be considered exogenous. Sex and race differences in cognitive ability are matter of ongoing debate amongst psychometricians (Deary, 2012). Differences in average cognitive ability between men and women are small in magnitude for most subtests (Halpern, 2011), so are unlikely to have had much influence on the results. As noted in Appendix B to Chapter 4, lower cognitive ability among American blacks, who tend to vote overwhelmingly for the Democrats, is one of the reasons why average cognitive ability is higher among those who identify as Republican—or at least was up until the 2012 election.<sup>51</sup> There is a case for controlling for age in any analysis of cognitive ability and political attitudes, due to the existence of the so-called Flynn effect (Herrnstein & Murray, 1994). This is the name for the fact that average scores on some IQ subtests have trended upward for the last few decades in most countries around the world. The causes of the Flynn effect are still not well-understood (Flynn, 2012), but to the extent that some researchers (e.g., te Nijenhuis & van der Flier, 2013) argue that Flynn effect gains are not “on *g*”—i.e., do not necessarily represent meaningful increases in the *g* factor itself—one can make an argument for partialling them out in a model of political attitudes.

Variables such as education and income are, of course, partly endogenous. As noted in Chapter 5, the effect of cognitive ability on political identity can be decomposed into a direct effect and indirect effect via socio-economic position: individuals with higher cognitive ability tend to have better socio-economic positions, and individuals with better socio-economic positions are more likely to identify as Republican. The reason being that the Republican Party’s policies (e.g., lower taxes, fewer regulations on business, less government spending) are more appealing, on average, to people with higher socio-economic positions. Furthermore, insofar as there is evidence that education has a

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<sup>51</sup> In the most recent presidential election, low-educated white voters reportedly swung strongly from the Democrats to the Republicans (Silver, 2016). Insofar as such individuals tend to have lower cognitive ability, the Republican advantage in average cognitive ability may not have been present in the most recent election.

lasting impact on cognitive ability (see Brinch & Galloway, 2011; Schneeweis, Skirbekk & Winter-Ebmer, 2014), the aforementioned variables cannot be considered wholly endogenous. Consequently, it may be of interest to see how robust any effects of cognitive ability on political attitudes are to conditioning upon them. Finally, the variable region can again be considered partly endogenous. On the one hand, it is possible that individuals who grow up in certain regions receive worse schooling than their counterparts growing up in other regions (e.g., Chetty et al., 2014), and hence that region is a cause of cognitive ability. But on the other hand, it is possible that individuals self-select into particular regions on the basis of their adult-level of cognitive ability (e.g., Jokela, 2014), and therefore that cognitive ability causes region.

The third issue requiring further clarification is whether tiredness may have induced a spurious correlation between cognitive ability and socio-political attitudes. Severe tiredness is known to impede cognitive function, and is therefore associated with lower cognitive test scores (Kahol et al., 2008). If tiredness happens to be associated with particular socio-political views, then the presence of large numbers of fatigued respondents in the sample (e.g., Bleijenberg, 2003) may have biased the estimates of cognitive ability's effect on socio-political views. To the author's knowledge, there is not yet any firm evidence as to the impact of tiredness on socio-political attitudes. It seems plausible, however, that tiredness might lead to more left-wing views, say, by reducing one's perceived conscientiousness (see Carney et al., 2008), or that tiredness might lead to more socially conservative views, say, by reducing one's tolerance for ambiguity (see Jost et al., 2003).

The possibility of short-run effects from tiredness can be tested by analysing data from the ANES. As noted in Chapter 7, an interviewer rating of intelligence is available in both the pre-election and post-election waves. Likewise, some of the measures of political attitudes are featured in the pre-election wave, whereas others are featured in the post-election wave. Since data collection for these two waves was separated by a couple of months, any respondent who happened to be fatigued during the first interview (i.e., due to chance) is unlikely to have also been fatigued during the second interview. Table 5 displays correlations of pre- and post-election interviewer intelligence rating with pre- and post-election measures of social and economic liberalism. Comparing the first row to the second row, one can see that the correlations are highly similar in all four cases, and that the

confidence intervals overlap substantially. In other words, the pre-election interviewer rating was no more predictive of pre-election political attitudes than the post-election interview rating, and the post-election interviewer rating was no more predictive of post-election political attitudes than the pre-election interview rating. Having said that, it should be noted that interviewer ratings of intelligence are less than ideal; actual cognitive test scores would be preferable. Furthermore, the ANES data do not allow one to rule out the possibility of long-run effects from tiredness.

Long-run effects from tiredness (i.e., chronic fatigue) could be investigated by asking respondents about their levels of fatigue in a future survey, and then statistically controlling for them in a multivariate model of socio-political attitudes. The relation of tiredness to cognitive ability and socio-political attitudes could also be investigated using experimental methods. One could recruit participants for a study, and then randomly assign some to a treatment group and others to a control group. Those assigned to the treatment group would be asked to refrain from sleeping for a night, say, while those in the control group would be asked to sleep for their normal number of hours. Both groups would be administered a cognitive test, as well as a battery of socio-political items, before and after treatment. To ensure that respondents' answers on the post-treatment items were not unduly influenced by their memories of how they answered the pre-treatment items, the following protocol would be most expedient: administer the pre-treatment items; wait 30 days; ask participants in the treatment group to refrain from sleeping; administer the post-treatment items to both groups the next day.

**Table 5.** Correlations of pre- and post-election interviewer intelligence rating with pre- and post-election measures of social and economic liberalism

	Social liberalism		Economic liberalism	
	Pre-election measures	Post-election measures	Pre-election measures	Post-election measures
Pre-election interviewer rating	.07 [-.01, .15]	.14*** [.06, .21]	.15** [.05, .24]	.26*** [.18, .34]
Post-election interviewer rating	.05 [-.02, .13]	.16*** [.08, .24]	.13** [.04, .22]	.22*** [.14, .31]

*Notes:* Entries are Pearson correlations. Values in square brackets are 95% confidence intervals. For both social liberalism and economic liberalism, pre-election measures comprise the measures from Chapter 7 that were asked in the pre-election interview, while post-election measures comprise those that were asked in the post-election interview. Each column corresponds to a principal component of political attitudes. Significance levels, based on robust standard errors: \* 5%, \*\* 1%, \*\*\* 0.1%. Sampling weights were applied.

#### 4. Avenues for further research

There are a number of ways in which the studies in this thesis could be extended or built upon in further research. First, in order to attain a more precise understanding of the functional forms of relationships between cognitive ability and political attitudes within the UK, cognitive ability data from Wave 3 of Understanding Society could be linked to the British Household Panel Survey (BHPS) waves that contain questions about specific political issues.<sup>52</sup> The idea would be to replicate the analyses of Chapter 7 in a UK context, and see whether the same pattern of results obtained. Specifically, one would first seek to identify a dimension of social attitudes and a dimension of economic attitudes via correlation and principal components analyses. One would then regress each dimension, respectively, on cognitive ability, as well as a vector of socio-economic characteristics, using the following OLS model:

$$att_i = \beta_1 cog_i + \beta_2 \mathbf{X}_i + \varepsilon_i,$$

where  $att_i$  denotes individual  $i$ 's score on an attitudinal dimension,  $cog_i$  denotes her cognitive ability,  $\mathbf{X}_i$  denotes a vector of socio-economic characteristics, and  $\varepsilon_i$  denotes the error term.

Second, in order to identify the causal impact of IQ on political attitudes, or at least its effect net of socio-economic characteristics, a method similar to the one utilised by Murray (2002) could be employed. This would require locating a survey that included: a satisfactory measure of cognitive ability, a reasonably rich set of questions on political attitudes, and—crucially—matched sibling data. Having identified a measure of political attitudes, one would then regress it on cognitive ability, as well as other covariates, using the following OLS model:

$$att_{ij} = \beta_1 cog_i + \beta_2 \mathbf{X}_i + sib_j + \varepsilon_i,$$

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<sup>52</sup> The BHPS is a long-running panel survey, most of whose participants went on to participate in the much larger Understanding Society panel survey.

where  $att_i$  denotes the score on a measure of political attitudes for individual  $i$  in sibling group  $j$ ,  $cog_i$  denotes individual  $i$ 's cognitive ability,  $\mathbf{X}_i$  denotes a vector of socio-economic characteristics specific to individual  $i$ ,  $sib_j$  denotes a fixed effect for sibling group  $j$ , and  $\varepsilon_i$  denotes the error term. One could check the sensitivity of the results to the sort of sample restrictions outlined by Murray (2002).

Third, in order to examine whether the process of individual conformity plays any role in explaining the left-liberal skew of the American academy, one could analyse data from the Carnegie Commission National Survey of Education. This is a longitudinal study that was administered to a large sample of American college students in the 1960s. The first wave was administered after matriculation but before classes began, while the second was administered 0.5 to 3.5 years later; students were asked several political questions in both waves. A paper by Biggs (2016) shows that it is possible to link students to their colleges, which would allow one to test for a contextual effect of incoming students' political views on the change in a student's own political views during her transition through college. In other words, one could look to see whether students who enrol at colleges where fellow incoming students are more liberal/left-wing tend to become more liberal/left-wing themselves, using the following OLS model:

$$\Delta att_{ij} = \beta_1 coll\_att_j + \beta_2 \mathbf{X}_i + \varepsilon_i,$$

where  $\Delta att_i$  denotes the change in a measure of political attitudes from the first year to the fourth year for individual  $i$  at college  $j$ ,  $coll\_att_j$  denotes an aggregate-level measure of political attitudes among all students enrolled at college  $j$  (e.g., the mean) based on data from the first year,  $\mathbf{X}_i$  denotes a vector of personal characteristics specific to individual  $i$ , and  $\varepsilon_i$  denotes the error term. Such a model would effectively test for positive feedback in political attitudes. While not directly pertinent to academics themselves, it would shed light on the question of whether political attitudes tend to homogenise in educational settings over time.

Fourth, in order to further explore the importance of psychometric traits for understanding the consequences of the academy's left-liberal skew, one could examine whether locus of control (Rotter, 1966; Steca & Monzani, 2014) contributes to explaining differences in the nature of conjectured

explanations across scholars in different fields. One would first administer a locus of control instrument, as well as a battery of political questions, to academics in a number of different germane disciplines (say sociology, psychology, economics, anthropology). One would then have an independent judge or judges code those academics' research papers on a locus of control scale, i.e., according to how much explanatory importance they assigned to factors internal versus external to the individual actor. One could then look to see whether academics with more left-wing political views were more likely to assign explanatory importance to factors external to the individual actor, and whether—if so—the association was mediated by locus of control.

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