Does Biology Justify Ideology? The Politics of Genetic Attribution

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ABSTRACT

Conventional wisdom suggests that political conservatives are likelier than liberals to endorse genetic explanations for many human characteristics and behaviors. Whether and to what extent this is true has received surprisingly limited systematic attention. We examine evidence from a large U.S. public opinion survey that measured the extent to which respondents believed genetic explanations account for a variety of differences among individuals as well as groups in society. We find that conservatives were indeed more likely than liberals to endorse genetic explanations for perceived race and class differences in characteristics often associated with socioeconomic inequality (intelligence, math skills, drive, and violence). Different ideological divisions emerged, however, with respect to respondents' explanations for sexual orientation. Here, liberals were more likely than conservatives to say that sexual orientation is due to genes and less likely to say it is due to choice or the environment. These patterns suggest that conservative and liberal ideologues will tend to endorse genetic explanations where their policy positions are bolstered by "naturalizing" human differences. That said, debates over genetic influence may be more politicized with respect to race, class, and sexual orientation than population differences generally: We find that left-right political ideology was *not* significantly associated with genetic (or other) attributions for individual differences in intelligence, math skills, drive, or violence. We conclude that conceptions of the proper role of government are closely intertwined with assumptions about the causes of human difference, but that this relationship is a complex one.

In academic as well as public discourse, genetic explanations for human differences have grown increasingly popular in recent decades (Kaplan and Rogers 2003). Much received wisdom and some academic research (e.g., Hofstadter [1944] 1992; Lewontin, Rose, and Kamin 1984) have suggested that political conservatives are more likely than liberals to endorse such explanations. However, only a few scholars have actually tested this hypothesis to see if it holds among the lay public (see Keller 2005; Shostak et al. 2009).

In this article, we draw on data from a national survey of black and white Americans' opinions to investigate the association between left-right political ideology and genetic explanations for differences between people. There is good reason, generally speaking, to expect politically conservative and liberal citizens to take opposing sides in debates over genetic explanations. We contend, however, that the relationship between political ideology and genetic explanations is more complex than frequently assumed, varying according to the type of difference being explained. We examine three domains of difference with strong social and political significance: perceived differences in characteristics commonly associated with socioeconomic inequality between blacks and whites as well as the rich and poor; differences in characteristics commonly associated with socioeconomic inequality among individuals generally; and, finally, differences in sexual orientation.

Our approach recognizes that, for most people, invoking genes to account for differences between social groups or among individuals implies that those differences are inherent and stable (Dar-Nimrod and Heine 2011; Haslam, Rothschild, and Ernst 2004). Thus, genetic explanations have significant political meaning, potentially legitimizing differences that are perceived as "natural" and discouraging efforts to equalize (i.e., reduce or eliminate) differences. Many scholars have therefore viewed genes as a likely "conservative" force in public opinion because

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they serve to justify the status quo (see especially Hofstadter [1944] 1992; Lewontin et al. 1984). We do not disagree. We do argue, however, that liberal views may also be justified by genetic attribution in some cases, especially where such attribution evokes sympathy or reduces blame. In sum, we posit that ideologues, both on the left and right, will be drawn to genetic explanations when "naturalizing" human variability can bolster their policy preferences.

POLITICAL IDEOLOGY AND GENETIC EXPLANATIONS

An extensive literature documents a long-standing link in the United States between politics and genetic explanations for human characteristics (e.g., Black 2003; Gould [1981] 1996; Hofstadter [1944] 1992; Kevles 1985; Lewontin et al. 1984; Paul 1998). Politics have often intersected with "essentialism" in particular — the belief that social group members are highly similar and that similarities are primarily inherited and immutable (Haslam, Rothschild, and Ernst 2004; Rothbart and Taylor 1992). Biological racism, for example, justified the enslavement of African Americans and, later, racial segregation and blacks' limited political rights (Gould [1981] 1996; Kinder and Sanders 1996). In the latter decades of the 19th century, many laissez-faire conservatives championed "survival of the fittest," drawing on the ideas of Charles Darwin, Herbert Spencer, and others to justify limited help for the "genetically inferior" lower classes (Hofstadter [1944] 1992). Social Darwinism influenced the eugenics movement, popular during the early 20th century. This movement's goal was to improve the human species and society by using various methods, including forced sterilization, to weed out genes linked to "undesirable" traits (Black 2003; Kevles 1985). Many groups were targeted, including the poor, immigrants, African and Native Americans, criminals, and the mentally ill (Black 2003; Paul 1998).

The eugenics movement eventually diminished and genetic explanations fell out of favor, in part due to Nazi atrocities during World War II (Paul 1998). However, beginning in the latter

decades of the 20th century, many prominent conservatives embraced sociobiology and arguments for the genetic basis of intelligence (e.g., Gould [1981] 1996; Kevles 1985; Lewontin et al. 1984). For example, in *The Bell Curve*, Herrnstein and Murray (1994) argued that intelligence could be attributed mainly to genetic endowment and that blacks were, on average, less intelligent than whites. They also advocated for changing welfare and reproductive policies to decrease the number of children born to women with low IQs (548-9).

Genetic arguments have not been made exclusively on the right. During the 19th century, leftist writers drew on Darwin's discussion of the biological roots of cooperation to argue that a more egalitarian society may be natural (Hofstadter [1944] 1992). Many progressives and socialists joined conservatives during the early 20th century in their support for eugenic policies, some with the goal of "equalizing" society (Paul 1998). In more recent decades, supporters of gay rights have increasingly embraced scientific evidence suggesting a genetic basis for homosexuality, likely in part for political reasons (Haider-Markel and Joslyn 2008).

Explaining the Political Ideology-Genetic Attribution Link

Why are genetic attributions so often intertwined with politics? The extent to which genes are believed to influence various human characteristics and behaviors often has important empirical and normative implications for governmental policy. Thus, beliefs in genetic explanations may influence public policy preferences, and such preferences may also influence those same beliefs.

Many of the researchers who have examined the association between Americans' political and genetic beliefs have argued the latter, viewing it through the lens of "motivated reasoning." That term describes a theory arising from numerous empirical studies that show how

political values can color the interpretation of facts,[1] causing people to react *more* critically to evidence for politically inconvenient truths and *less* critically to evidence for politically convenient ones (e.g., Lodge and Taber 2005; Skitka et al. 2002). Beliefs regarding the origins of human characteristics indeed appear to be influenced by normative demands (e.g., Hofstadter [1944] 1992; Lewontin et al. 1984; Ramsey, Achter, and Condit 2001). While motivated reasoning is a compelling explanation for why ideology and attributions may be associated in general, the theory does not suggest any specific linkages between political ideology and genetic explanations, per se. To better understand such linkages, we examine research on popular understandings of genetics and the political implications of such understandings.

Research indicates that perceiving genetic causes of a characteristic or behavior is associated with deterministic thinking (Dar-Nimrod and Heine 2011; Jayaratne et al. 2009). For example, if a person believes an illness is influenced by genes, then he or she is more likely to believe the disease cannot be avoided through modified behavior or treatment (Jeong 2007; Phelan, Cruz-rojas, and Reiff 2002). If certain human differences are "genetic," then efforts to enact change are fruitless. People are thereby offered a pragmatic reason to oppose attempts by the government (or others) to ameliorate differences they perceive to be problematic (Hofstadter [1944] 1992; Lewontin et al. 1984). In other words, genetic determinism justifies laissez-faire conservatism.

People also tend to subscribe to a "naturalistic fallacy" whereby they derive positive ethical properties ("good," "moral") from things that are perceived to be natural or the product of natural selection (Dar-Nimrod and Heine 2011; Lewontin et al. 1984). For this reason, genetic

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[1] While the motivated reasoning framework carries with it strong claims about causal direction, our data do not allow us to determine causation. We address this issue in the Discussion.

attributions may work to justify opposition to government efforts to enact change for normative

reasons. Indeed, many political theorists have argued that government has a moral obligation to

remedy systematic inequalities brought about by societal forces but that it should allow

inequalities created by nature (or God) to flourish (e.g., Burke [1790] 1953; Rousseau [1754]

1988).

So far, we have suggested two reasons for a convergence between genetic explanations

and resistance to government intervention into societal problems, a stance associated with

conservatism in the U.S., especially in the socioeconomic realm. However, there is an additional

causal force discussed in the literature with more complicated political implications: Genetic

attributions may also marginalize the role of personal responsibility, as individuals not in control

of their behavior or circumstances cannot be blamed or held accountable, leading to greater

sympathy for those who engage in "morally suspect" behaviors or who are experiencing negative

life events, such as poverty or disease (Shostak et al. 2009; Weiner 1995). This line of reasoning

justifies a variety of governmental policies normally associated with liberalism in the U.S.,

including less punitive treatment of criminals, greater governmental resources allocated for the

care and comfort of those experiencing health problems or poverty, and the protection of LGBT

rights.

Domains of Difference

In this section, we develop hypotheses regarding the genes-politics link with respect to several

kinds of differences: perceived race and class differences associated with socioeconomic

inequality, individual differences associated with socioeconomic inequality, and differences in

sexual orientation. We chose these differences because they are potentially politically significant

and perhaps, for that reason, are frequently discussed in the academic and popular literatures on

genetic attribution. We discuss these three domains separately below and develop specific hypotheses for each because they are qualitatively distinct (Haslam, Rothschild, and Ernst 2004), both in terms of their history in public discourse and their political implications.

Genetic Explanations for Perceived Race and Class Differences

In the U.S., a variety of stereotypes are commonly associated with racial groups and socioeconomic classes. We examine genetic explanations for perceived race and class differences with respect to four characteristics: intelligence, mathematical ability, drive for success, and a tendency toward violence. We chose these characteristics because they are perceived by many to vary according to race and class (e.g., see Hunt 2007; Herrnstein and Murray 1994; Kinder and Kam 2009) and have been frequently attributed to genetics in the past (e.g., Alper et al. 2002; Parens, Chapman, and Press 2006).

We expect that Americans who self-identify as political conservatives will be more likely than liberals to draw on genetic explanations to account for perceived race and class differences. This hypothesis has both empirical and theoretical bases. Research shows that political conservatives have in the past "essentialized" race and class more often than liberals (Gould [1981] 1996; Hofstadter [1944] 1992; Lewontin et al. 1984). Moreover, proponents of conservative policy are likelier than others to blame blacks and the poor, as opposed to structural inequalities or discrimination, for negative life outcomes (Hunt 2007; Kinder and Sanders 1996; Kluegel and Smith 1986). Theoretically, as suggested above, genetic explanations for perceived race and class differences justify opposition to government efforts to address race and class inequities, as inequalities determined by nature cannot (and perhaps should not) be ameliorated by government policy. Of course, genetic explanations for race and class differences could also be associated with "bleeding heart" liberalism if used to generate sympathy for relatively

disadvantaged groups (Weiner 1995). However, the literature contains many more examples of the former argument (i.e., genetic attributions justify smaller government) than the latter (e.g., Hofstadter [1944] 1992; Jacoby and Glauberman 1995; Lewontin et al. 1984).

Genetic Explanations for Individual Differences

We extend our analysis beyond perceived race and class differences in intelligence, math ability, drive, and violence to examine genetic explanations for individual differences[2] in these same four characteristics. If conservatives endorse genetic explanations for perceived race and class differences, will they do the same for general population differences?

Here, we make no firm prediction. On the one hand, much evidence suggests conservatives are more likely than liberals to believe in genetic explanations for differences associated with socioeconomic inequality, with the attendant implication that there is not much the government can or should do about it. On the other hand, there is only one published study of which we are aware that systematically examines the association between political ideology and genetic explanations for individual differences, and it finds no association between the two constructs (Shostak et al. 2009). Such a finding is in sync with a historical record suggesting that genetic arguments for race and class differences are more consistently politicized than genetic arguments for differences among individuals. It may also be the case that liberals are more willing to adopt genetic attributions for individual than race and class differences because individual genetic attributions are more widely accepted by scientists and lay people (Condit, Parrott, and Harris 2002) and less associated with prejudice.

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[2] "Individual differences" is a term psychologists use to describe characteristics that vary across individuals within a population. It is often contrasted with the notion of "group differences," i.e., how characteristics vary on average between preexisting groups within a population.

Genetic Explanations for Sexual Orientation

The final difference we examine is sexual orientation. In this domain, evidence points toward a greater likelihood that liberals, who tend to support gay rights, hold genetic explanations. First, a belief in genetic determinism suggests sexual orientation is difficult to change, meaning that societal attempts to "reform" lesbians and gays will likely fail. Second, a genetic explanation for homosexuality is perceived to lessen choice, thereby lessening any "fault" from gays for their actions (Haider-Markel and Joslyn 2008; Jayaratne et al. 2009; Lewis 2009). Third, some gay rights advocates have drawn on genetic explanations for homosexuality to make the legal argument that lesbians and gays deserve special protections under the Fourteenth Amendment. Genetic immutability invites comparisons to other minority groups and has been incorporated into arguments for "suspect class" status (Brookey 2002; Knauer 2003).[3]

Recent research shows that Americans who are liberal and who hold progressive views on gay rights are more likely than others to believe that sexual orientation is genetic and largely immutable (Haider-Markel and Joslyn 2008; Haslam and Levy 2006; Lewis 2009). Of course, not all liberals are in favor of gay rights, and not all conservatives oppose them. In particular, libertarianism is associated with support for gay rights (Tygart 2000). To the extent that social libertarians identify as "conservative" on our political ideology measure (discussed below), the link between liberalism and explanations for sexual orientation may be dampened.

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[3] We do not mean to imply that only a genetic argument can justify social liberalism on the topic of homosexuality or that only liberals have employed genetic arguments in this area. For example, some who oppose homosexuality argue that it is a genetic disease (Sheldon et al. 2007).

Choice and Environmental Explanations

Genetic attributions for human characteristics and behaviors are often considered alongside other types of causal forces, including free will (or choice) and the environment (Jayaratne et al. 2009). The embrace of one category does not automatically imply a rejection of the other two (Condit et al. 2009; Jayaratne et al. 2009), but individuals often vary in the extent to which they emphasize one category of explanation over another.

Building on our discussion above, we develop some tentative hypotheses for when we might expect left-right political divisions to arise over choice and environmental explanations for human difference. Here we focus only on individual differences linked to socioeconomic inequality as well as differences in sexual orientation. (Our dataset does not include choice or environmental explanations for perceived race or class differences.)

Individual Differences

In public discourse, the role of genes in shaping human characteristics often has been contrasted with the role of the environment. While we are unaware of any published studies linking political ideology in the public at large to environmental explanations for the individual differences we examine, extant research weighs in favor of an association between liberalism and environmental explanations for such differences. In academic debates over "nature vs. nurture," liberals clearly have been more likely than others to reject genetic explanations in favor of environmental ones (Segerstråle 2000). Among lay people, liberals have been more likely than others to argue that racial and socioeconomic inequality are mainly the fault of society (e.g., Kinder and Sanders 1996). These political differences may exist because a belief that differences are shaped by society complements the stance that government ought to work to correct inequalities.

In addition, given that individualism is one of American conservatism's most important tenets (e.g., Mead 1985), we might expect conservatives to be more likely than others to embrace choice as an explanation for individual differences related to socioeconomic inequality.

Sexual Orientation

Popular discourse has focused much attention in recent years on the debate over whether differences in sexual orientation result from genetic variation or other factors. Previous research has found that those with conservative views on gay rights tend to believe that the main cause of homosexuality is choice or the environment (Green 2000; Haider-Markel and Joslyn 2008). Such beliefs imply that sexual orientation can be modified and, thus, may justify governmental intervention in this arena — for example, restrictions on homosexual sex and/or attempts to "reform" lesbians and gays — among those who disapprove of homosexuality. While we expect political conservatism to be associated with choice and environmental explanations in this domain, we acknowledge that this association is likely driven in part by American conservatives' relatively greater religiosity. Note that we control for religiosity throughout our analyses to rule out its potentially confounding influence.

METHODS

Survey Sample and Procedure

We examine data from a nationally representative survey of black and white Americans (*Beliefs About and Understandings of Genetics Project*) conducted by University of Michigan researchers in the spring and summer of 2001. Respondents were selected using two separate sampling methods. A main sample was obtained utilizing random digit dialing (RDD) methods, drawing from the continental U.S. (whites n=600, blacks n=58; AAPOR adjusted response rate #3=31.89). In addition, an oversample of black respondents (n=542; AAPOR adjusted response

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rate #3=32.94) was obtained using RDD methods within targeted population areas of higher

black density from across the U.S. While the response rate was lower than ideal, surveys with

similar response rates have been shown to be representative (Pew Research Center for the People

& the Press 2004).

Respondents were interviewed over the phone by professionally trained interviewers at

Market Strategies International. Interviews averaged 40 minutes in length. Each respondent

received $15 compensation (or $20 for refusal conversions). Within each household, adult

respondents were randomly selected. Race was assessed through self-report, and only individuals

identifying as primarily white or black (or African American) were invited to participate.

[TABLE 1 HERE]

See Table 1 for a description of the unweighted sample. To adjust for representation of

the target population, we utilize post-stratification weights based on the 2000 U.S. census for

race, education, and age in all regression analyses.

Measures

All measures are described in detail in the Appendix. For the dependent variables, we include

weighted means and frequency distributions as well. All variables were placed on the 0 to 1

interval.

Genetic Explanations for Difference

We examined four sets of questions that assessed respondents' beliefs about the extent to which

genes explain differences among people. The first two sets of questions targeted genetic

explanations for perceived differences between racial and socioeconomic groups. Specifically,

we asked respondents whether and to what extent perceived racial and class differences in

intelligence, mathematical ability, drive, and a tendency toward violence could be attributed to

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genetics. A third set of questions asked whether and to what extent individual differences in these four characteristics across the population *generally* were due to genetics. The final set of questions assessed genetic explanations for differences in sexual orientation.

Beliefs regarding the extent to which genes account for perceived race or class differences were assessed with a series of two-part questions. Respondents were first asked whether they thought a particular perceived difference between racial or class groups was attributable to genes (answer categories: yes, no); if the respondent did believe genes played a role, then he or she was asked to what extent genes did so (answer categories: very little, some, a lot, or just about all). For each of the four characteristics examined — intelligence, mathematical ability, drive, and a tendency toward violence — the answers to the two-part series were combined to create a single variable ranging from 0 (genes account for none of the difference) to 4 (genes account for just about all of the difference). Because race and class were asked about separately, this resulted in two sets of four genetic explanation variables (intelligence, math, drive, violence) from which we created two additive scales: Genetic Explanation for Race Differences (GERD) (α = .85) and Genetic Explanation for Class Differences (GECD) (α = .79).

Genetic explanations for individual differences were assessed similarly, except that respondents were asked whether and to what extent people in general differ from one another with respect to the four characteristics above. Answers to these four two-part questions were combined to form the Genetic Explanation for Individual Differences (GEID) scale (α = .75).

Genetic explanations for differences in sexual orientation were assessed somewhat differently. Contemporary public discourse on attributions for homosexuality tends to focus narrowly on the causes of same-sex sexual attraction rather than on stereotypes associated with sexual orientation (e.g., see Conrad and Markens 2001). Thus, our measure of genetic

explanations for sexual orientation combined a two-part question (formatted similar to the above) that simply asked whether and to what extent genes account for differences between homosexuals and heterosexuals with a Likert-type agree/disagree item on whether homosexuality is genetic. We averaged responses to create the Genetic Explanation for Sexual Orientation (GESO) scale ($\alpha = .78$).

Choice and Environmental Explanations for Difference

We created a Choice Explanation for Individual Differences (CEID) scale from four two-part questions asking respondents to what extent they believed intelligence, math ability, drive, and violence are due to people's choices ($\alpha = .68$). In a similar manner, we created an Environmental Explanation for Individual Differences (EEID) scale from four two-part questions asking respondents to what extent they believed intelligence, math ability, drive, and violence are due to people's environments ($\alpha = .71$). The construction of these variables was identical to the GEID scale above. An Environmental Explanation for Sexual Orientation (EESO) variable was created from a single two-part question asking respondents to what extent they believed differences in sexual orientation are due to people's environments. Finally, a Choice Explanation for Sexual Orientation (CESO) variable was similarly based on a two-part question asking respondents to what extent differences between homosexuals and heterosexuals are due to people's choices.

Independent Variables

Political ideology was measured with a standard five-point question asking the respondent to indicate whether he or she views himself or herself as very liberal, somewhat liberal, middle-of-the-road, somewhat conservative, or very conservative. We refer to this variable as Conservatism to make clear that relative conservatism takes on higher values. In addition, we included control variables for race (black = 1), sex (female = 1), age, income, education, and religiosity. (The

latter four control variables were coded intuitively, with greater age, income, education, and religiosity taking on higher values.) Each of the control variables has been linked to political ideology in past research and may be associated with genetic or other explanations for the characteristics we examine. Therefore, we include them to avoid omitted variable bias.

RESULTS

The Relationship between Political Ideology and Genetic Explanations

Race and Class Differences

To test whether a positive association exists between political conservatism and the belief that genes influence perceived race and class differences, we regressed the two scales representing genetic explanations for perceived race and class differences (GERD and GECD) on Conservatism and the control variables. We used Tobit regression here because responses to these two dependent variables disproportionally cluster at 0, suggesting they are censored at this value.[4] The results are in the first two columns of Table 2.

[TABLE 2 HERE]

Consistent with our predictions, Conservatism is significantly associated with greater emphasis on genetic explanations for both perceived race and class differences. With respect to

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[4] This will bias the intercept upward and the absolute value of the coefficients downward. Tobit regression assumes that there is an observed variable, Y_i, and an unobserved latent variable Y_i^*. We assume that $Y_i^* = \beta X_i + \varepsilon_i$ and $\varepsilon_i \sim N(0, \sigma^2)$. $Y_i = Y_i^*$ if $Y_i^* > 0$, and $Y_i = 0$ if $Y_i^* \leq 0$. The Tobit coefficients reported in this subsection and the next represent marginal effects holding the other variables in the equation at their means. Note that the results using OLS regression were similar to those using Tobit throughout, although the coefficients were smaller with OLS in the race and class differences analyses.

race, $b_{conservative} = .13$ ($p \leq .05$) and with respect to class, $b_{conservative} = .13$ ($p \leq .01$). On average (and holding the control variables constant at their means), the very conservative were 13% higher than the very liberal on the two genetic explanation scales.

Individual Differences

Next, we investigated the relationship between political ideology and genetic explanations for individual differences by regressing the GEID scale on Conservatism and the control variables. We again used Tobit regression, although the clustering at 0 is less extreme than in the previous cases. Results, shown in the third column in Table 2, indicate that conservatism is *not* significantly associated with genetic explanations for individual differences ($b_{conservative} = -.05$, p = .148).

Differences in Sexual Orientation

Finally, we examined the relationship between political ideology and genetic explanations for differences in sexual orientation (see the fourth column in Table 2). We again used Tobit regression due to censoring, setting the lower bound at 0. As expected, there is a negative relationship between Conservatism and the GESO scale ($b_{conservative} = -.21$, $p \leq .001$), demonstrating that liberals were more likely than conservatives to invoke genetic explanations for sexual orientation. On average, and holding the control variables at their means, those who said they were "very liberal" were more than 20% higher than the "very conservative" on the Genetic Explanation for Sexual Orientation scale.

The Relationship between Political Ideology and Choice and Environmental Explanations

Individual Differences

To examine the relationship between political ideology and choice and environmental explanations for individual differences we substituted the CEID and EEID scales for the

dependent variable in the models above. Given the uncensored distributions of these variables, we used OLS regression. As shown in Table 3, Conservatism bears *no* relationship to either choice (p > .3) or environmental explanations (p > .4).

[TABLE 3 HERE]

Differences in Sexual Orientation

Finally, we examined the association between political ideology and choice and environmental explanations for differences in sexual orientation (CESO and EESO). We used ordered logit regression for these analyses because each dependent variable contains only five (ordered) categories. Results are shown in Table 4. In line with expectations, Conservatism is positively associated with both choice ($b_{conservative}$ = .82, p ≤ .001) and environmental ($b_{conservative}$ = .63, p ≤ .05) explanations for sexual orientation. Again, these relationships are over and above the effects of the various control variables; of particular note is the fact that these associations emerged despite controlling for religiosity.

[TABLE 4 HERE]

Given the difficulty of straight-forward substantive interpretation of ordered logit coefficients, predicted probabilities were calculated and are displayed in Table 5 for the CESO and EESO variables. The very liberal were nearly twice as likely as the very conservative to say that sexual orientation has nothing to do with choice, while the very conservative were nearly twice as likely as the very liberal to report that sexual orientation is due almost entirely to choice. The pattern is similar, although not quite as strong, for an environmental explanation.

[TABLE 5 HERE]

DISCUSSION AND CONCLUSION

While popular discourse holds that conservatives are more likely than liberals to believe that genes influence human characteristics, the results of our analysis show that any association between political ideology and genetic explanations is far from straight-forward; it depends on the target of explanation. That is, what is the difference that is being explained?

Specifically, we found that conservatives were more likely than liberals to endorse genetic explanations for perceived race and class differences with respect to a combination of four characteristics — intelligence, mathematical ability, drive, and violence.[5] Thus, our study confirms conventional wisdom regarding political ideology and genetic explanations of race and class stereotypes, although the results were modest in size.

In contrast, we found no support for an association between political ideology and genetic, environmental, or choice attributions for *individual* differences in the same four characteristics. The null results for environmental and choice influences were especially surprising given the emphasis on "free will" among many conservatives as well as the importance placed on environmental explanations among many liberals in public discourse. Had we been able to examine the link between political ideology and choice and environmental explanations for perceived race and class differences, and not just individual differences, it is

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[5] Some may suspect that this finding hints of disingenuousness among "politically correct" liberals. We probed for this possibility by looking to see whether ideology interacted with the race of the interviewer to predict belief in genetic explanations for race differences. Liberals concerned about social desirability should have been more likely to admit to genetic attributions when being interviewed by a white interviewer (compared to a black interviewer). We found no such interaction effects with respect to the actual *or* perceived race of the interviewer.

possible we would have discovered such associations, in keeping with recent studies of racial attitudes in particular (Kinder and Sanders 1996; Tesler and Sears 2010).

Finally, our investigation showed that liberals were more likely than conservatives to invoke genetic factors when it came to explaining differences in sexual orientation. In this context, conservatives were more likely than liberals to emphasize choice and the environment. The fact that liberals and conservatives "switch sides" on genetic attributions for sexual orientation strongly suggests politically motivated reasoning is at work. That said, the politicized structure of attributional beliefs is not perfectly parallel across the race/class and sexual orientation domains. Public discourse on the genetics of sexual orientation tends to focus narrowly on the causes of same-sex sexual attraction, not on negative stereotypes associated with lesbians and gays (as with race and class), and our empirical measures reflect this difference.

The focus here on left-right political ideology is not meant to suggest that the association between other variables and causal explanations for human difference are unimportant. We observed a number of strong relationships between our control variables and genetic, choice, and environmental explanations. These findings, available in the statistical tables, suggest that it is not just liberals and conservatives who may engage in politicized "motivated reasoning" in these arenas. Space considerations limit our ability to discuss these additional findings. We direct the interested reader to previous studies that have examined in detail the relationships between demographic variables associated with social and economic advantage in particular (e.g., sex, income, race) and genetic explanations (e.g., Jayaratne et al. 2006; Shostak et al. 2009).

Study Limitations

While we have been able to cover a great deal of ground with respect to the association between political ideology and genetic (and other) attributions for difference, our conclusions are limited by our dataset to some degree.

First, our data are cross-sectional and cannot determine whether political ideologies shape genetic explanations or vice versa. Surely both causal stories have some validity, but we believe that political ideologies likely do more to shape explanations. Political ideology tends to emerge at a young age and remain fairly stable over time (Sears and Levy 2003), and, as we noted previously, ideology biases the interpretation of new information, including genetic information specifically (Ramsey et al. 2001). While orientations to see the world as changeable or not are also formed early in life (Dweck and Leggett 1988), these general orientations cannot explain the complicated relationship between political ideology and genetic explanations we observe. In addition, at the societal level, beliefs regarding genetics often go in and out of style rather abruptly (e.g., see Gallup 2011; Kinder and Sanders 1996; Paul 1998), whereas the proportion of self-identified liberals and conservatives in the population shifts more slowly.

Second, the data we examine were collected during the first half of 2001. It is conceivable that, were we to conduct this study today, our findings would differ. For example, if genetic explanations were unusually salient in public discourse in 2001, then the left-right rifts we report might be particular to that time period. However, a search of *The New York Times* for stories on the topics of "genes" and "genetics" suggests that the salience of discussions of genetic explanations in the popular media remained relatively unchanged between 2001 (334 such stories) and 2010 (329 stories). Another concern is that the lay public today may possess more sophisticated knowledge of genetics, making the biases we describe less likely; however,

the public today does not appear to be better informed on this topic. People still tend to believe that genes are deterministic, and most individuals are largely ignorant of the complex ways in which genes and the environment interact (Condit et al. 2009; Condit and Shen 2011; Dar-Nimrod and Heine 2011). A final concern related to study timing is that political attitudes may have changed in such a way that our findings might be dampened today. We argue, however, that political trends suggest, if anything, the opposite. Polarization between left and right has increased in recent years (Abramowitz 2011), a phenomenon that extends to racial resentment (Tesler and Sears 2010), making the type of motivated reasoning we describe more likely.

A third potential limitation concerns our measurement of genetic explanations for race and class differences. We assessed these constructs by asking whether and to what extent genetic explanations account for perceived differences in specific stereotyped traits between blacks and whites, and between the rich and poor. The survey did not ask respondents *if* differences existed prior to asking about genetic influence because pre-testing indicated that social desirability effects caused many respondents to say that differences did not exist, particularly with respect to race. Although we excluded the small percentage of individuals who volunteered the belief that no differences existed,[6] it is possible that some who did not perceive race or class differences did not volunteer this information and instead indicated that genes (or other factors) play no role in causing differences. The fact that a majority of individuals fell into the "zero" category for the

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[6] Thirty people (2.5% of the sample) said "no difference" to one or more race/class difference questions. These respondents were unremarkable politically (but tended to identify as white).

GERD and GECD scales could reflect such measurement error. That said, prior literature and additional empirical investigation suggests that this is not a cause for concern.[7]

Implications

Our findings indicate that Americans' political perspectives and their beliefs regarding genetic influence are often intertwined. If differences in human characteristics and behaviors are perceived as natural, then they are more likely to be perceived as good and as difficult or even impossible to change. Thus, the dominant political thrust of beliefs about genetic explanations seems to be a libertarian one. In present-day American politics, this suggests that genetic explanations bolster both economic conservatism *and* social liberalism. That said, there are other commonly understood implications of perceived genetic causation that complicate this simple political narrative. Genetic causes are perceived as removing fault from individuals. This

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[7] Our finding that conservatives were more likely than liberals to say that genes influence race and class differences might be inflated if liberals were more likely than conservatives to place themselves in the "no genetic influence" category to avoid endorsing negative stereotypes. We examined distributions of the GERD and GECD scales by political ideology and found that the proportions of liberals and conservatives in the zero category nearly matched their proportions in the sample, with conservatives slightly more likely than liberals to occupy the zero category (in the entire sample and also among whites only). In addition, the measure of genetic explanations for race differences has good predictive validity; among whites, it has a much stronger association with "old fashioned" (biological) racism than symbolic racism (see Brown et al. 2009). Finally, our distributions for the race and class variables echo previous findings that genetic explanations for such differences have become unpopular in recent years (e.g., Kinder and Sanders 1996; Small, Harding, and Lamont 2010).

particular interpretation of genetic attribution justifies much liberal policy, although not necessarily libertarian policy. Individuals engaging in non-normative behavior or suffering from a variety of ills perhaps deserve sympathy and assistance if their "problem" is driven by genes rather than poor choices.

The evidence is strong that genetic as well as other explanations for certain salient human differences are interpreted in political ways, but this evidence emerged *only* with respect to perceived differences between racial groups, the wealthy and the poor, and gay and straight people. It did not emerge with respect to individual differences. This pattern echoes previous findings that people perceive variation in characteristics within a population differently from variation in those characteristics between social groups (Condit et al. 2002; Singer et al. 2010). Public thinking about differences in race, class, and sexual orientation is likely more politicized than public thinking about individual differences. Relative to those who are more or less intelligent or who have more or less drive (etc.), blacks and whites, the rich and the poor, and gay and straight people are seen as constituting "entitative" groups (Campbell 1958). These groups are perceived as coherent entities with sharp boundaries; their members have distinct, salient political interests. For these reasons, explanations for why differences among these groups exist may carry more political meaning than explanations for general population differences. We argue that causal attributions for inequalities between such social groups have clearer implications for policy and, thus, are better connected to left-right political ideology.

Our findings contribute to an extensive, longstanding body of research indicating that citizens' ideas about what government ought to do are empirically linked to their beliefs about human nature. Given the important policy implications of different types of causal forces, this linkage is sensible so long as the available information about causes of difference is accurate and

the interpretation of such information is not influenced by motivated reasoning. We have already indicated that the latter probably does not hold, that the public picks and chooses from a variety of available messages about influences on human characteristics with an eye toward justifying their preexisting political stances. This tendency likely reinforces political polarization in the electorate, with ideologues of all stripes believing that the science of human difference is on their side. We hope future research will investigate this causal claim more fully, along with its political implications.

We are also concerned about the dissemination of knowledge. Too often, a handful of empirical studies is touted as solving some long-simmering debate over whether nature *or* nurture *or* choice is responsible for a particular difference. However, almost never is there just one type of causal influence responsible for a given characteristic or behavior. In fact, some scientists argue that genes and the environment interact in such complex ways that it may be empirically impossible even to say which is most influential in any given domain (Fox Keller 2010; Lewontin et al. 1984). Choice deserves a seat at the table as well, although the precise nature of its causal role continues to be debated by philosophers and psychologists (Fischer, Kane, Pereboom, and Vargas 2007; Wegner 2002). In sum, influences on human characteristics and behaviors are exceedingly complex. Researchers and the media should not encourage ideologues on the left or right to think otherwise by framing scientific studies in overly reductionistic terms.

Dependent Variables

Genetic Explanation for Race Differences (GERD) Scale

"Now I'd like to ask about some ways that whites might tend to differ from blacks….Some people think whites tend to differ from blacks[8] in [ASKED SEPARATELY]

- their drive to succeed

- how good they are in math

- their tendency to act violently

- intelligence

Although there are many reasons why they might differ, do you think their genes or genetic makeup has anything to do with this difference?"[9]

[If yes] "In your opinion, how much of this difference between whites and blacks do you think is due to their genes? Would you say very little, some, a lot, or just about all?"

---

[8] Here and with respect to the series on class differences, the ordering of whites/blacks (rich/poor) was randomized and then consistent throughout the series.

[9] This wording was used for the first question in each of the three genetic explanation series. The wording thereafter was: "Do you think their genes have anything to do with this difference?"

Weighted mean: .152

Table A1. Frequencies for GERD Scale by Race and for Total Sample

```
   GERD |     White      Black |     Total
--------+--------------------+----------
      0 |       283        372 |       655
  .0625 |        18         13 |        31
   .125 |        50         34 |        84
  .1875 |        31         11 |        42
    .25 |        33         36 |        69
  .3125 |        16         13 |        29
   .375 |        30         20 |        50
  .4375 |        11         13 |        24
     .5 |        57         29 |        86
  .5625 |        13          7 |        20
   .625 |         4         10 |        14
  .6875 |         7          7 |        14
    .75 |        10         16 |        26
  .8125 |         1          2 |         3
      1 |         1          3 |         4
--------+--------------------+----------
  Total |       565        586 |     1,151
```

Genetic Explanation for Class Differences (GECD) Scale

"Now I'd like to ask about some ways that the rich might tend to differ from the poor….Some people think the rich tend to differ from the poor in [ASKED SEPARATELY]

- their drive to succeed

- how good they are in math

- their tendency to act violently

- intelligence

Although there are many reasons why they might differ, do you think their genes or genetic makeup has anything to do with this difference?"

[If yes] "In your opinion, how much of this difference between the rich and the poor is due to their genes? Would you say very little, some, a lot or just about all?"

Weighted mean: .138

Table A2. Frequencies for GECD Scale by Race and for Total Sample

GECD	White	Black	Total
0	267	374	641
.0625	18	13	31
.125	66	52	118
.1875	24	17	41
.25	54	38	92
.3125	17	13	30
.375	36	14	50
.4375	18	11	29

```
       .5 |          33          19 |          52
    .5625 |          16           9 |          25
     .625 |           9          11 |          20
    .6875 |           5           3 |           8
      .75 |           3           8 |          11
    .8125 |           1           1 |           2
     .875 |           0           2 |           2
    .9375 |           0           1 |           1
        1 |           0           1 |           1
-----------+--------------------------+----------
    Total |         567         587 |       1,154
```

"Next, we'd like to hear your opinions about why people are different from one another on certain characteristics….What about the difference between people who [ASKED SEPARATELY]

- have a strong drive to succeed and those who don't have any drive to succeed at all

- are really good in math and those who aren't at all good in math

- have a tendency to act violently and those who don't have this tendency at all

- are very intelligent and those who aren't at all intelligent

Although there are many reasons why they might differ, do you think their genes or genetic makeup has anything to do with this difference?"

[If yes] "How much of this difference do you think is due to their genes? Would you say very little, some, a lot, or just about all?"

Weighted mean: .379

Table A3. Frequencies for GEID Scale by Race and for Total Sample

GEID	White	Black	Total
0	44	109	153
.0625	10	8	18
.125	33	56	89
.1875	21	35	56
.25	39	53	92

```
    .3125 |        37         41 |        78
     .375 |        63         55 |       118
    .4375 |        58         44 |       102
       .5 |        86         52 |       138
    .5625 |        51         31 |        82
     .625 |        57         26 |        83
    .6875 |        35         32 |        67
      .75 |        40         27 |        67
    .8125 |         6          7 |        13
     .875 |         1          0 |         1
    .9375 |         2          3 |         5
        1 |         1          2 |         3
-----------+----------------------+----------
    Total |       584        581 |     1,165
```

"What about the difference between people who are homosexual and those who are heterosexual? Do you think their genes have anything to do with this difference?"

[If yes] "How much of this difference do you think is due to their genes? Would you say very little, some, a lot or just about all?"

"Next, please tell me how much you agree or disagree with the following statements…. Homosexuality is genetic." (Strongly agree, somewhat agree, neither agree nor disagree [volunteered], somewhat disagree, strongly disagree)

Weighted mean: .308

Table A4. Frequencies for GESO Scale by Race and for Total Sample

GESO	White	Black	Total
0	164	231	395
.125	14	22	36
.16665	74	84	158
.25	12	17	29
.29165	17	12	29
.3333	26	28	54
.375	3	13	16
.41665	19	18	37
.4583	13	21	34
.5	10	14	24
.54165	3	2	5
.5833	86	42	128
.625	0	2	2
.66665	2	4	6

```
     .7083 |          39          20 |          59
       .75 |          16           7 |          23
     .8333 |           3           2 |           5
      .875 |          42          22 |          64
         1 |          23          12 |          35
-----------+--------------------------+----------
     Total |         566         573 |       1,139
```

"Next, we'd like to ask about these same differences between people, but this time, we'd like to know how much you think each difference is due to someone's environment, that is, the society in which they live, the people in their lives, and how they were raised."

See Genetic Explanation for Individual Differences Scale; substitute "environment" for "genes"

Weighted mean: .496

Table A5. Frequencies for EEID Scale by Race and for Total Sample

```
    EEID |     White      Black |      Total
---------+----------------------+----------
       0 |        12         38 |         50
   .0625 |         3          6 |          9
    .125 |         8         31 |         39
   .1875 |        15         25 |         40
     .25 |        23         42 |         65
   .3125 |        28         30 |         58
    .375 |        55         74 |        129
   .4375 |        46         35 |         81
      .5 |        83         67 |        150
   .5625 |        78         52 |        130
    .625 |        91         56 |        147
   .6875 |        64         39 |        103
     .75 |        54         67 |        121
   .8125 |        20         17 |         37
    .875 |         6          5 |         11
   .9375 |         3          5 |          8
       1 |         4          4 |          8
---------+----------------------+----------
   Total |       593        593 |      1,186
```

Environmental Explanation for Sexual Orientation (EESO)

"What about the difference between people who are homosexual and those who are heterosexual? Do you think their environment has anything to do with this difference?"

[If yes] "How much of this difference do you think is due to their environment? Would you say very little, some, a lot or just about all?"

Weighted mean: .308

Table A6. Frequencies for EESO Variable by Race and for Total Sample

```
    EESO |      White       Black |      Total
---------+--------------------------+----------
       0 |        237         283 |        520
     .25 |         73          67 |        140
      .5 |        155         122 |        277
     .75 |         85          92 |        177
       1 |         31          22 |         53
---------+--------------------------+----------
   Total |        581         586 |      1,167
```

Choice Explanation for Individual Differences (CEID) Scale

"Now we'd like to know how much you think each of these same differences is due to the choices that people make, that is, how much someone chooses to be one way or another."

See Genetic Explanation for Individual Differences Scale; substitute "choices" for "genes"

Weighted mean: .514

Table A7. Frequencies for CEID Scale by Race and for Total Sample

```
     CEID |     White      Black |     Total
----------+--------------------+----------
        0 |        11         33 |        44
    .0625 |         5          3 |         8
     .125 |        13         15 |        28
    .1875 |        25         17 |        42
      .25 |        30         17 |        47
    .3125 |        31         24 |        55
     .375 |        69         47 |       116
    .4375 |        55         46 |       101
       .5 |        84         65 |       149
    .5625 |        65         69 |       134
     .625 |        87         68 |       155
    .6875 |        37         62 |        99
      .75 |        48         75 |       123
    .8125 |        11         13 |        24
     .875 |         5         18 |        23
    .9375 |         2          5 |         7
        1 |        12         12 |        24
----------+--------------------+----------
    Total |       590        589 |     1,179
```

Choice Explanation for Sexual Orientation (CESO)

See Environmental Explanation for Sexual Orientation; substitute "choices" for "environment"

Weighted mean: .516

Table A8. Frequencies for CESO Variable by Race and for Total Sample

```
    CESO |      White      Black |     Total
---------+--------------------+----------
       0 |        156        136 |       292
     .25 |         55         47 |       102
      .5 |        128         95 |       223
     .75 |        170        189 |       359
       1 |         80        120 |       200
---------+--------------------+----------
   Total |        589        587 |     1,176
```

Description of Independent Variables

Conservatism

"Compared to other people, do you generally think of yourself politically as very liberal, somewhat liberal, middle-of-the-road, somewhat conservative, or very conservative?"

Weighted mean = .53

Demographic Variables

Black

"Do you consider yourself White, Black, Asian, some other race or are you multi-racial?" [If multi-racial]: "Which races do you consider yourself? Of these, is there one you primarily identify with? [If yes]: With which race do you primarily identify?" (White; Black/African American; Hispanic; Asian or Pacific Islander; American Indian or Alaskan Native; Other)

Female

Assessed by interviewer. If any ambiguity, respondent was asked for their sex. (Male, Female)

Age

"In what year were you born?" (Recoded to reflect age of respondent by subtracting year of birth from 2001)

Income

"Now, including yourself and all family members in your household, what was your total family income for 2000 before taxes? For this question we just need a range. Stop me when I read the right category." (Less than $5,000; $5,000-9,999; $10,000-19,999; $20,000-29,999; $30,000-39,999; $40,000-49,999; $50,000-59,999; $60,000-69,999; $70,000-79,999; $80,000-99,999; $100,000 or more)

Education

"What is the highest grade of school or year of college you've completed?" [If attended college] "What is the highest degree that you have earned?" (Less than 12th grade; Graduated high school, GED, or 12th grade; Some college, no degree; Associate's degree; Bachelor's degree; Master's degree; Professional or doctoral degree)

Religiosity

"Generally do you think of yourself as very religious, somewhat religious, not very religious, or not religious at all?" (Reverse coded; "very religious" at high end of scale)

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Table 1: Description of Survey Sample by Race

	Whites (n = 600)	Blacks (n = 600)
Sex		
Men	50%	50%
Women	50%	50%
Education		
Less than 12th grade	10%	15%
Graduated HS, GED	24%	28%
Some college or Associate's	33%	37%
Bachelor's degree	22%	12%
Advanced degree	11%	8%
Political Orientation[10]		
Very liberal or somewhat liberal	28%	34%
Middle-of-the-road	31%	26%
Very conservative or somewhat conservative	40%	40%[11]
Religiosity		
Not at all religious or not very religious	22%	13%
Somewhat religious	54%	52%
Very religious	24%	35%
Age (Mean)	47	42
Income range (Median)	$40,000-$49,999	$20,000-$29,999

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[10] Percentages do not add to 100 in first column due to rounding.

[11] The study may overrepresent black conservatives. Previous studies have found that fewer than one-third of black Americans who self-identify ideologically say they are conservative (e.g., Tate 1996).

Table 2: Associations between Political Ideology and Genetic Explanations for Perceived Differences (Tobit Regression Coefficients with Robust Standard Errors in Parentheses)

	Genetic explanation for *race* differences	Genetic explanation for *class* differences	Genetic explanation for *individual* differences	Genetic explanation for differences in *sexual orientation*
N	1052	1055	1063	1045
Conservatism	.126* (.060)	.134** (.053)	-.049 (.034)	-.211*** (.060)
Black	-.040 (.031)	-.067* (.027)	-.051** (.018)	-.032 (.031)
Female	-.010 (.033)	-.039 (.029)	.005 (.018)	.086** (.033)
Age	.387*** (.068)	.362*** (.059)	.274*** (.038)	.350*** (.071)
Income	.086 (.069)	-.072 (.062)	.044 (.035)	.107 (.074)
Education	-.169* (.070)	.146* (.062)	.156*** (.037)	.282*** (.073)
Religiosity	-.013 (.059)	-.075 (.051)	.003 (.033)	-.269*** (.062)
Constant	-.185** (.070)	-.140* (.063)	.235*** (.035)	.207** (.069)
Pseudo R^2	.060	.076	.504	.099
No. left-censored	598	582	131	353

* p≤.05, ** p≤.01, *** p≤.001 (two-tailed).

Table 3: Associations between Political Ideology and Choice and Environmental Explanations for Individual Differences (OLS Regression Coefficients with Robust Standard Errors in Parentheses)

	Choice explanation for individual differences	Environmental explanation for individual differences
N	1079	1081
Conservatism	.029 (.030)	-.021 (.029)
Black	-.005 (.015)	-.084*** (.015)
Female	-.033* (.016)	-.013 (.016)
Age	-.063 (.037)	-.077* (.033)
Income	-.075* (.033)	-.038 (.032)
Education	-.030 (.034)	.136*** (.032)
Religiosity	.086** (.033)	.028 (.031)
Constant	.525*** (.035)	.529*** (.034)
R^2	.037	.054

* p≤.05, ** p≤.01, *** p≤.001 (two-tailed).

Table 4: Associations between Political Ideology and Choice and Environmental Explanations for Sexual Orientation (Ordered Logit Regression Coefficients with Robust Standard Errors in Parentheses)

	Choice explanation for sexual orientation	Environmental explanation for sexual orientation
N	1077	1067
Conservatism	.820*** (.254)	.629* (.288)
Black	.154 (.135)	-.430** (.141)
Female	-.316* (.144)	-.531*** (.157)
Age	-.717* (.341)	-1.096*** (.339)
Income	.251 (.299)	-.188 (.316)
Education	-.751** (.303)	1.168*** (.323)
Religiosity	1.276*** (.288)	.856** (.316)
Pseudo-R^2	.027	.028

* p≤.05, ** p≤.01, *** p≤.001 (two-tailed).

Table 5: Predicted Probabilities for Sexual Orientation Explanations by Political Ideology

Choice explanation for sexual orientation					
	None	Very little	Some	A lot	Just about all
Very liberal	0.30	0.09	0.22	0.27	0.11
Somewhat liberal	0.26	0.09	0.22	0.30	0.13
Middle of the road	0.22	0.08	0.21	0.33	0.15
Somewhat conservative	0.19	0.07	0.21	0.35	0.18
Very conservative	0.16	0.06	0.19	0.37	0.21

Environmental explanation for sexual orientation					
	None	Very little	Some	A lot	Just about all
Very liberal	0.42	0.12	0.26	0.15	0.05
Somewhat liberal	0.38	0.12	0.27	0.17	0.06
Middle of the road	0.34	0.12	0.28	0.19	0.07
Somewhat conservative	0.31	0.11	0.29	0.21	0.08
Very conservative	0.28	0.11	0.30	0.23	0.09

Predicted probabilities are for white males; all other variables held at their means.