

**The Politics of the Gene: Social Status and Beliefs about Genetics for Individual Outcomes**

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## **Abstract**

Social scientists have predicted that individuals who occupy socially privileged positions or who have conservative political orientations are most likely to endorse the idea that genes are the root cause of differences among individuals. Drawing on a nationally representative sample of the US population, this study examines belief in the importance of genes for understanding individual differences in a series of broad domains: physical illness, serious mental illness, intelligence, personality, and success in life. We also assess whether the belief that genetics are important for these outcomes is more common among those in relatively advantaged positions or among those who are more politically conservative. Finally, we consider whether such beliefs predict attitudes toward genetics-related social policies. Our analyses suggest that belief in the importance of genetics for individual differences may well have a substantial effect on attitudes toward genetics-related policies, independent of political orientation or other measures. Our study identifies high levels of endorsement for genes as causes of health and social outcomes. We describe a cultural schema in which outcomes that are “closer to the body” are more commonly attributed to genetics. Contrary to expectations, however, we find little evidence that it is more common for whites, the socioeconomically advantaged, or political conservatives to believe that genetics are important for health and social outcomes.

What can genetic information explain about human differences? Surveys show that people believe genes contribute to variation in a range of human characteristics. But do people believe that genetic makeup is equally important for understanding varied individual traits such as physical illness, intelligence, and success in life? Are some people more likely than others to consider genetic information to be very important in shaping such outcomes? And how do beliefs about genetics shape opinions about public policies? While researchers debate the importance of genetic differences for health and social outcomes, people outside the academy have their own views about the role of genes in creating individual and group differences. Understanding these views is important for social scientists and policy makers.

For social psychologists, genetic attribution provides an intriguing subject of study because of the multiple ways in which people understand genes as causes of individual and group differences (Freese 2006). In regard to these differences, do people construe genes as internal to individuals (and therefore subject to individual control) or external to the individual (and therefore beyond individual control)? Genes are physically internal, however they otherwise share characteristics of external attributions and therefore may be interpreted as influencing outcomes in ways that mitigate perceptions of individual responsibility. Considering the prevalence of genetic information, a second issue is how genetic and biological variation may enter into processes of system justification, whether through explanations for health disparities (Sankar et al. 2004) or ideologies of social group dominance (Jost and Hunyady 2005).

A third, and related question, is under what conditions individuals generalize information about individual biological and genetic variations to defined social groups (Sterthal, Jayaratne, and Feldbaum, N.d.), a process that reasonably might be anticipated to reify social categories.

Beliefs about genetic causation are also important from a policy perspective. Social scientists have warned that beliefs about genetic causation will promote “essentialism” (Alper and Beckwith 1993; Lippman 1992; Nelkin and Lindee 1995), “naturalize” differential treatment, (Condit and Bates 2005; Duster 2003a, b; Nelkin and Lindee 1995), and provide “legitimizing myths” that justify existing inequalities (Jayaratne et al. 2006). Relatedly, some analysts have argued that beliefs in genetic causation are likely to resonate most strongly with the world views of people who occupy socially privileged positions or who have conservative political orientations (Jayaratne et al. 2006; Nelkin and Lindee 1995). Additionally, many important policy issues – including public support for genetic testing programs or for funding large projects like the Human Genome Project – may be intimately connected to how important individuals believe genetic differences are to understanding differences in individual fates.

Three questions orient our analyses. First, we evaluate whether genetic attributions are more common for specific individual outcomes, including physical illness, mental illness, intelligence, personality, and success in life. Second, we consider whether beliefs in the importance of genetics are more common either among people in relatively advantaged socioeconomic positions or among those who are more politically

conservative. Third, we consider whether beliefs about genetics predict attitudes toward genetics-related social policies, independent of political orientation or other measures. Our analyses identify significant variation in genetic attributions for specific outcomes. However, we find little evidence that genetic attributions are more common among whites, the socioeconomically advantaged, or political conservatives. Lastly, one's beliefs about the importance of genetics for human outcomes are related to one's attitudes on genetics-related policy questions.

## **BACKGROUND**

There is no extensive data on beliefs about genes as causes of human health, behaviors, abilities, and social outcomes or on the consequences of such beliefs for policy orientations. However, some studies emphasize the variation of genetic beliefs among different sociodemographic groups. In a telephone survey of 1,200 black and white respondents, researchers found that whites were significantly more likely than blacks to report genetic attributions for group differences in traits such as athleticism, math performance, drive to succeed, and tendency toward violence, intelligence, and sexual orientation (Jayaratne 2002). The nationally representative General Social Survey (GSS) presented respondents with a vignette featuring an individual suffering from symptoms consistent with one of four mental illnesses (schizophrenia, major depression, drug problem, or alcohol dependence). An analysis of this data found that blacks endorse

genetic explanations of mental illness significantly less than whites (Schnittker, Freese, and Powell 2000).

These studies demonstrate the importance of understanding whether beliefs about genetic causality vary for specific health or social conditions. For example, do people think that genetics plays a similar role in causing diseases, height, athleticism, intelligence, and personality differences? Previous research shows that “people do not make a global ‘deterministic’ evaluation of the role of genes in human characteristics, but rather understand that the relative role of genes and other factors varies for different traits” (Parrott et al. 2003: 1103). When asked to make comparisons, generally people assigned a greater role to personal behavior than to genetics (Condit et al. 2004).

Very few studies examine the relationship between genetic attributions and attitudes towards others. Some research finds that attributing genetic causes to perceived racial group differences is associated with a greater likelihood of expressing prejudice towards blacks (Jayaratne et al. 2006; Keller 2005). In contrast, genetic attributions to differences in sexual orientation are associated with greater tolerance toward homosexual men and women. Other factors that shape the relationship between attributions and attitudes are education, political conservatism, age, gender, residence in the South, and religiosity (Jayaratne et al. 2006).

What we do know from previous studies is that genetics is becoming more important to how Americans think about individual differences. Polls show that the likelihood of attributing individual differences to genetics has increased since 1980.

Understanding how these beliefs relate to attitudes on genetics-related questions is one of the questions we address in this paper.

## **HYPOTHESES**

Our analysis takes up three lines of inquiry, focusing on: (1) variation in genetic attributions by different types of outcomes (such as disease and personality traits); (2) associations between individual sociodemographic characteristics and the likelihood of making genetic contributions; and (3) relationships between genetic causal attributions and the endorsement of specific policies.

First, previous studies suggest that the greatest role for genetics is in determining physical characteristics, followed by psychological characteristics, with social attainment being seen as the least likely to be strongly influenced by genetic causes (Condit et al. 2004; Parrott et al. 2003; Singer, Corning, and Lamias 1998). From a sociological perspective, this would seem to raise the idea of a cultural schema, or system of meaning, whereby individual characteristics are perceived as more genetic the more closely they are identified with the body. This cultural schema also receives support from popular and scientific rationales for genetic research, which emphasize the potential of genetic information to prevent and cure common diseases (Collins and McCusick 2001; Guttmacher and Collins 2005).

In the data we examine, respondents were asked for generic judgments of the importance of genetics to: (1) physical illness, (2) serious mental illness, (3) intelligence,

(4) personality, and (5) success in life. Applying to these items the idea of a cultural schema in which individual characteristics perceived as closer to the body more often are seen as caused by genetics, we can make the following predictions:

*Hypothesis 1a: Genetic makeup will be perceived as more important for physical illnesses than for psychological characteristics (mental illness, personality, intelligence).*

*Hypothesis 1b: Genetic makeup will be perceived as more important for psychological characteristics than for success in life.*

Among psychological characteristics, we posit that serious mental illness will be perceived as closer to physical characteristics and thus more likely to be seen as genetically caused than personality and intelligence.

*Hypothesis 2: Genetic attributions for mental illness will be greater than for personality or intelligence.*

In sum, we hypothesize that genetic makeup will be perceived as most important for physical illnesses, then for mental illness, followed by personality and intelligence, and least important for success in life.

Second, we earlier discussed historical and contextual literature that highlights the use of genetics as a legitimating rationale for extant inequalities. Social psychological literature on the tendencies of individuals to exhibit self-serving cognitive biases might then lead us to infer that genetic explanations of

outcomes will be most appealing to those already in positions of privilege.

Moreover, we predict that groups which have historically been denigrated, marginalized, and disenfranchised based on alleged genetic inferiority will be less likely to make genetic attributions. This leads to two specific hypotheses:

*Hypothesis 3. People of higher socioeconomic status will regard genetic makeup as more important for individual outcomes than people of lower status.*

*Hypothesis 4: African Americans and Latinos will regard genetic makeup as less important for individual outcomes than do whites.*

In addition to differences by socioeconomic status and race, previous speculation about the relationship between genetic attributions and ideology might also lead us to expect that genetic explanations will be regarded more favorably among those with conservative political orientation.

*Hypothesis 5: People who identify as political conservatives will perceive genetic differences as more important for determining individual outcomes than those who are politically liberal.*

In posing Hypotheses 3-5, we recognize that one could imagine other possible relationships between either socioeconomic privilege or political orientation and beliefs about genes as causes. Nonetheless, the hypotheses we articulate reflect potential relationships invoked by scholars who have been particularly concerned with negative

social implications of public belief that genetics are important for explaining differences in human outcomes (Duster 2006; Hubbard and Wald 1999; Nelkin and Lindee 2004).

Lastly, we predict that those individuals who attribute differences in individual outcomes to genetics will be more favorably disposed to policies that support the production of genetic information and/or seek to integrate its uses in health and social policy. We propose that such beliefs may be relevant for predicting policy attitudes, regardless of individual political orientation.

*Hypothesis 6: Greater belief in the importance of genetics for human outcomes will be positively related to support for policies that are predicated on genetic causes being important.*

In this study, we consider specifically attitudes towards the following policies: (1) support for the Human Genome Project; (2) requiring genetic testing before marriage; and (3) knowing a partner's family history of mental illness before marriage. If there is a relationship between genetic beliefs and support for genetic-related policy, understanding variation in genetics attributions could have broader social applications.

## **DATA AND MEASURES**

The Genetics, Disease, and Stigma survey (GDS) is a telephone interview of 1,241 respondents conducted in 2002-3. The sample was obtained through random-digit-dialing with a 62 percent response rate. Interviews averaged twenty minutes in length,

and respondents were offered \$10 for their participation. Interviews were conducted in English, Spanish, Mandarin, or Cantonese.

Beliefs about genetic causation were measured by five questions sharing the same stem: “How important do you think a person’s genetic makeup is in influencing [attribute]?” The question was completed with the following phrases: “the major illnesses they will develop in life,” “whether or not they will develop a serious mental illness,” “their personality,” “their intelligence,” and “their success in life”. Responses were “very important,” “somewhat important,” “not very important,” and “not at all important.”

We use three items to assess beliefs about specific policies: (1) “Overall, do you think the Human Genome Project and other research on human genetics is likely to be helpful or harmful?” with four response categories ranging from “very helpful” to “very harmful”; (2) “Every person should be required to have a genetic screening test before he or she can get married,”; and (3) “When thinking about choosing a marriage partner, it is important to know whether the person has a history of mental illness in the family.” The latter two questions have four response categories ranging from “strongly disagree” to “strongly agree.”

Other variables that were included in the analysis include: age; sex; education; race/ethnicity; family income; and political orientation (assessed on a five-point scale from “very liberal” to “very conservative”). Reported race/ethnicity of respondents were

grouped in the categories: white (not Latino), black (not Latino), Latino, and other (largely comprised of Chinese Americans).

## **RESULTS**

Respondents were most likely to regard genetic makeup as very important for physical illnesses and least likely to regard it as very important for success in life. Respondents were more likely to regard genetic makeup as very important for mental illness than for intelligence, and more likely for intelligence than for personality. Results also emphasize the overall importance granted to genetic causes in the United States: over 90 percent of all respondents regard genetic makeup as at least somewhat important for physical illness, and almost two-thirds do for success in life.

We conducted statistical analyses of the relationship between beliefs about genetic causation and other variables: age, sex, education, and political orientation. We did not find as we expected that those in positions of social disadvantage are more skeptical of genetic explanations (Hypothesis 4). Instead, blacks, Latinos, and those who had not been to college all rated genetic makeup on average as more important for attributes than did whites and more educated individuals. Only among those with a high-school education or less do blacks and Latinos report stronger genetic beliefs than whites. Among whites, we found no relationship between level of education and belief in genetic causation.

In testing our hypothesis about political orientation (Hypothesis 5), we found that there was not a tendency for the importance of genetic makeup to be endorsed more by either liberals or conservatives.

We also hypothesized that individuals occupying disadvantaged social statuses would be relatively more skeptical of genetic explanations for success in life (Hypotheses 3 and 4). Instead, those with no college rated genetic makeup as relatively more important for success in life than did respondents with some college. Similarly, blacks and Latinos were not more skeptical of genetic explanations for success in life, but rather both groups instead reported genetic makeup as relatively more important for success in life than the other outcomes (for Latinos, significantly so). However, blacks did report that genetic makeup was relatively less important for intelligence than did whites, which might reflect the particularly troubled history of discussions about genetics and the intelligence of blacks. This result was the only instance in our analyses in which a socially disadvantaged group evinced a pattern suggestive of greater aversion to genetic explanation. Apart from this, we find little evidence for either Hypothesis 3 or 4.

Although we did not hypothesize that gender would have specific effects on assessment of genetic causation, we note that women are more likely than men to endorse genetic explanations for personality, intelligence, and success in life, relative to their endorsement of such explanations for physical or mental illness. This suggests that, if something like the cultural schema posited above does exist, it has greater support among women than men.

We also sought to assess whether one's belief in genetic causation was related to support for policies that may be premised on the importance of genetic causes. We found a relationship between strong belief in genetic causation and support for policy measures to further Human Genome research, genetic testing before marriage, and knowledge of a partner's history of mental illness. Strong beliefs in genetic causality are related to support for genetic-policy measures. Our results show that belief in genetic causation is a stronger predictor of each policy outcome than is political orientation.

## **DISCUSSION**

Many social scientists identify with liberal political positions (e.g., Rothman, Lichter, Nevitte 2005), especially regarding policies of help for the disadvantaged. Social scientists commonly perceive their work as standing against (as well as potentially threatened by) the recent surge of interest in genetics (Duster 2006). It might therefore be tempting to infer that laypersons who are politically more liberal or who belong to disadvantaged groups are likewise more broadly skeptical of the importance of genetics. That notion, however, is not supported in this study.

Instead, disadvantaged respondents, whether in terms of education or race/ethnicity, regard genetics as *more* important to the determination of life outcomes than members of advantaged groups. Moreover, the most disadvantaged respondents, in terms of education and ethnicity, regard genetics as most important. The only exception to this pattern that we observed is the lower importance given to genetic makeup for intelligence

among blacks. Political orientation appears unrelated to assessments of the importance of genetics. Our study raises the possibility that belief in the importance of genetics may lead to different evaluations of genetic policies than previous studies would suggest.

An area of potential concern for social scientists is that arguments about genetic causation may undermine social explanations of inequality, thereby eroding support for programs that attempt to address existing health or social inequalities. Over 90 percent of all respondents regard genetic makeup as at least somewhat important for physical illness, and almost two-thirds do for success in life, the trait that received the *lowest* level of genetic attribution. Consequently, there is good reason to be concerned that essentializing ideologies would resonate strongly with the beliefs of substantial proportions of the US population, including those who historically have been harmed and disadvantaged by such ideologies.

Various explanations can be offered for why blacks and Latinos with lower levels of education may regard genetics as more important to explaining individual outcomes than whites and people with more education. One possible explanation is offered by the classic social psychological concept of *locus of control*, which is intended to reflect the extent to which individuals regard their fates as caused by their agency versus external circumstances and events. Although genes are “inside” us, they tend to share characteristics of external attributions—they can be perceived in ways that mitigate perceptions of the responsibility of individuals. The external locus of control has been

consistently shown to be associated with social disadvantage (e.g., Shaw and Krause 2001; Bruce and Thornton 2004).

A second explanation is offered by system justification theory, which holds that “people are motivated to justify and rationalize the ways things are, so that existing social, economic, and political arrangements tend to be perceived as fair and legitimate” (Jost and Hunyady 2005:260; see also Della Fave 1986, 1991). Studies have shown that endorsement of system justifications is associated with increasing positive affect and satisfaction with one’s situation, reductions in moral outrage, guilt, and frustration, especially, though not exclusively, among the disadvantaged (Jost and Hunyady 2005:262).

A third explanation emerges from observations in our data and the concept of cultural schemas mentioned previously. We observed that those with less education, Latinos, and African Americans were less likely to follow the prevailing cultural schema, in which broad physical conditions are perceived as more genetically based than more psychological conditions, which in turn are seen as more genetically based than social attainments (with the exception of attributions for intelligence by African Americans). The divergence in responses by less educated African-American and Latino respondents may reflect their lower adherence to (and perhaps lower exposure to) this prevailing cultural schema. Since institutions of higher education are central to the socialization of individuals to dominant cultural beliefs about the causes of individual health and social outcomes, it is possible that having less education, especially for African Americans and

Latinos, may be particularly consequential for differences in the patterns of their genetic attributions (c.f. Phelan et al.1995).

The above are neither exclusive nor exhaustive possibilities. Our findings may diverge from other studies that indicate that genetic explanations for group differences can be associated with negative opinions of subordinate groups (Jayaratne et al. 2006; Schneider 2004). A commonly made point in discussions of genetic differences is that belief in the heritability of *individual* differences does not imply belief in heritability of *group* differences (e.g., Plomin et al. 2001; Fischer et al. 1996). What little research is available on this topic indicates that individuals who use genetic explanations for individual differences are significantly more likely than others to use genes to explain perceived group differences for that same trait (Sternthal, Jayaratne, Feldbaum, N.d.:13). Importantly, our study does not address attitudes about group traits or differences. Our data do make clear, however, that the public overall considers genetic makeup important across a range of broad individual life outcomes, from health to personality. It is important that future research examine relationships between how people explain individual differences and how they explain group differences. In the meanwhile, an implication of our work for those interested in combating prejudice is the importance of emphasizing the difference between causes of individual and group differences, especially as our data make clear that the public overall considers genetic makeup important across a range of broad individual life outcomes.

The study has several important limitations that we hope can be addressed in subsequent research. First, this study only asked respondents about the role of genetics in shaping outcomes. Asking parallel questions about the role of environmental factors would have allowed for a fuller assessment of how people weigh genetics against other factors. Second, the study would have benefited from considering a range of attitudes that distinguish liberals and conservatives. Third, more extensive measures of income and wealth—rather than just one five-category question about family income—might clarify whether financial resources truly are as irrelevant as this study indicates. Fourth, asking a broad array of genetics-related policy questions—and more questions that involve trade-offs (Krosnick 1999)—might allow strong inferences about the role of genetic beliefs in shaping these attitudes. Finally, while available data do not demonstrate a consistent relationship between genetic knowledge and attitudes towards genetics (Condit 2001:812), we anticipate that questions about genetic knowledge would augment our understanding of how informed respondents were about genetic policy issues.

We have every reason to imagine that genetic and other research will continue to produce new knowledge claims about humans at a rapid rate. We also expect the merits and implications of these claims will continue to be much debated in academia, with many competing interpretations offered to the broader public. Prevailing public interpretations, in turn, may have implications for funding priorities and the regulation of research. Social scientists have ample historical warrant for fears that belief in the

importance of genes for life outcomes can be used to justify inequalities and to wax pessimistic about the possibilities of social change. We hope social science will maintain its vigilant voice against oversimplified or deterministic views of the influence of genes. However, one common expression of concern—the idea that belief in the importance of genes is more appealing to privileged groups or to those with more conservative political orientations—is not supported by our data. Broader understanding of variation in individual beliefs about the importance of genes awaits future research. Moreover, how such beliefs will be affected by developments in genetic science is perhaps every bit as unknown as is what those developments will be. Genetics may thus be expected to be another exemplification of Hacking’s (1999: 108) conclusion that “When we get to the future, we will renegotiate our concepts as best we may, in ways we cannot predict.”

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