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The Genomic Revolution and Beliefs about Essential Racial Differences: A Backdoor to Eugenics?

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Abstract

Could the explosion of genetic research in recent decades affect our conceptions of race? In *Backdoor to Eugenics*, Duster argues that reports of specific racial differences in genetic bases of disease, in part because they are presented as objective facts whose social implications are not readily apparent, may heighten public belief in more pervasive racial differences. We tested this hypothesis with a multi-method study. A content analysis showed that news articles discussing racial differences in genetic bases of disease increased significantly between 1985 and 2008 and were significantly less likely than non–health-related articles about race and genetics to discuss social implications. A survey experiment conducted with a nationally representative sample of 559 adults found that a news-story vignette reporting a specific racial difference in genetic risk for heart attacks (the Backdoor Vignette) produced significantly greater belief in essential racial differences than did a vignette portraying race as a social construction or a no-vignette condition. The Backdoor Vignette produced beliefs in essential racial differences that were virtually identical to those produced by a vignette portraying race as a genetic reality. These results suggest that an unintended consequence of the genomic revolution may be the reinvigoration of age-old beliefs in essential racial differences.

Keywords

genetics; genomics; genomic revolution; media impact; racial attitudes; racism; social psychology

Race is associated with profound levels of social and economic stratification that pre-date the founding of our country and survive robustly to this day. Even with the recent reelection of our first African American president in what some call a post-racial society, residential segregation remains extreme, and racial inequalities in educational and occupational attainment, income, home ownership, quality of life, health, and mortality remain stark (Farley and Frey 1994; Feagin 2001; Massey and Denton 1998; Oliver and Shapiro 2006; Sorlie, Backlund, and Keller 1995; Thomas and Hughes 1998; Williams and Collins 1995).

Sociologists have played a central role in understanding the complex process of racism that created and maintains these inequalities. This process has many intertwined components, but

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the categorization of people into us–them racial groups and the belief that these groups differ essentially from one another are key (Brewer and Brown 1998; Feagin 2001; Link and Phelan 2001; Omi and Winant 1994).

One contemporary social phenomenon with the potential to significantly alter beliefs about essential racial differences is the Human Genome Project (HGP), begun in 1990, and the explosion of research on the human genome that continues to the present. Why might this phenomenon affect beliefs about essential racial differences? Scholars have argued that the genomic revolution carries in its wake a genetic-essentialist worldview in which our genes are viewed not only as determining our behavior and characteristics but as defining our essential nature and identity. In this worldview, we are our genes. Within the genetic-essentialist framework, reports and discussion of genetic differences between racial groups carry heavy baggage. They imply more than just difference on a particular attribute: they imply more essential differences.

Although the HGP initially focused on improving health for all humans and was not concerned with racial differences, attention has increasingly centered on racial differences in genetic aspects of diseases. As part of his broader thesis that modern genetic research may open a “backdoor to eugenics,” Duster argues that public claims of differential distributions by race of genes that affect disease may lead the public to conclude that many other types of genes—not only those related to disease—probably also vary among racial groups (Duster 1990a, 2003a). In this way, Duster argues, such claims may increase public beliefs regarding much broader racial differences.[1] Given the central place of beliefs in essential racial differences for the overall process of racism and the apparent ubiquity of messages linking race, genes, and health, the possibility raised by Duster is an important cause for concern. Increased belief in essential racial differences could provide a renewed justification for racial inequality, reviving the old but powerful idea that blacks and whites are fundamentally different and that blacks are inferior.

A growing empirical literature examines beliefs and attitudes about race and genetics, focusing, for example, on the role of genetics in conceptualizations of race (Condit et al. 2004; Morning 2009); the connection between genetic attributions for racial differences and other racial attitudes (Bastian and Haslam 2006; Jayaratne et al. 2006; Kluegel 1990); news coverage of race and genetics (Lynch and Condit 2006); the effects of messages about race and genetics on racial attitudes (Bates et al. 2004; Condit and Bates 2005; Condit et al. 2004; Keller 2005; Williams and Eberhardt 2008); and how the racial distribution of particular genetic disorders shapes public response to those disorders (Duster 1990a, 2003a; Wailoo and Pemberton 2006). A direct test of Duster’s idea constitutes an important contribution to this literature because of its potentially significant social impact. Moreover, without shining a light on this issue, its impact would likely fly under the radar screen, or in Duster’s words, come in through the back door, increasing public beliefs in essential racial differences without our knowing how or why it happened.

[1]We refer to this argument throughout the article as the “backdoor-to-eugenics hypothesis.” It is important to note, however, that this is only one aspect of Duster’s broader thesis about the genomic revolution as a backdoor to eugenics. This article does not directly address eugenics as an outcome but, consistent with Duster’s ideas, addresses belief in essential racial differences as a potential stepping-stone to eugenics.

Direct arguments for broad and significant genetic differences between racial groups, such as those put forward in *The Bell Curve* (Hernstein and Murray 1994), may influence public attitudes, but they are less likely to do so precisely because their messages are obvious, can easily be placed in an appropriate political context, and can be publically countered. In contrast, without Duster's insight, it would not occur to most of us that scientific reports of racial differences in very specific genetic factors related to health could seriously exacerbate beliefs in essential racial differences. To our knowledge, Duster's idea has not been directly tested. In this article, we describe a two-phase study we conducted to provide such a test. Testing the hypothesis requires assessing two phenomena, each of which is a necessary component of the backdoor to eugenics and each of which requires a distinct research approach. First, we used a content analysis to assess whether the genomic revolution is associated with increased media reports claiming that disease-related genes are differentially distributed by race. Second, we used a survey experiment administered to a nationally representative sample to assess whether exposure to news stories reporting such differential distributions increases the public's belief that racial groups are essentially different. If our findings confirm neither or only one of these two phenomena, our concern about a backdoor to eugenics will be lessened. If both phenomena appear to be operating, our concern will be heightened.

BELIEFS IN RACIAL DIFFERENCE AS A CENTRAL COMPONENT OF RACISM

The social significance of the backdoor-to-eugenics hypothesis hinges on the idea that beliefs in racial difference are not a peripheral but a key element of racism. Are they? Beliefs in racial difference occupy a central place in the sociology of racism. According to Omi and Winant (1994:71), "A racial project can be defined as *racist* if and only if it *creates or reproduces structures of domination based on essentialist categories of race*" (emphasis in original). In Feagin's (2001:70) theory of systemic racism in the United States, "the perpetuation of systemic racism requires an intertemporal reproducing not only of racist institutions and structures but also of the ideological apparatus that buttresses them." Categorization of people into distinct groups (such as black and white) is so central to social psychological theory on prejudice that the *Handbook of Social Psychology* (Brewer and Brown 1998:556) states that "social categorization, as a fundamental cognitive process, is the sine qua non for all current theories and research in intergroup relations."

Another indicator of the central role beliefs in racial difference play in racism is the historical connection between the extremity of racist ideology and the severity of discrimination. In what Omi and Winant (1994) identify as the scientific racial formation of the eighteenth and nineteenth centuries, renowned intellectuals provided a litany of statements on essential difference between racial groups, especially blacks and whites. For example, "the negro race is a species of men as different from ours . . . as the breed of spaniels is from that of greyhounds" (Voltaire, quoted in Gossett 1965:45) and "there is nothing remotely humanized in the Negro's character" (Hegel, quoted in Fanon 1967:116). These ideas were expressed at a time when slavery was common and slaves' well-being, indeed, their very lives, counted for little in the eyes of whites. More recently, data show

that declines in overt racism from the 1970s to the 1990s were accompanied by declines in attribution of racial socioeconomic status differences to innate factors (Kluegel 1990; Schuman et al. 1997).

These historical associations do not imply a unidirectional causal path from belief in racial difference to other facets of racism. Feagin (2001) argues that slavery was considered an economic necessity by the wealthy founders of our country and that racist beliefs developed to justify it, and Omi and Winant (1994) describe racial meanings as being constantly transformed by political struggle. However, Link and Phelan (2001) conceptualize stigma (in this case racism) as the co-occurrence of reciprocally interrelated components such that changes in any one component can affect other components and in turn the overall level of stigma. In this way, increased belief in the distinctiveness of black and white people, whatever the source of the changed beliefs, may exacerbate all aspects of racism, including structural and individual discrimination, stereotypes, and negative emotions.

RACE AND THE GENOMIC REVOLUTION

In the late twentieth century, the Human Genome Project (HGP) emerged as a scientific undertaking of unprecedented proportions; according to Kevles and Hood (1992), it is the largest biological project in history. Although the human genome map was completed in 2003, research on the human genome continues to expand under the National Human Genome Research Institute of the National Institutes of Health. What bearing might modern genetic research have on the trajectory of racism?

Genetics and Essentialism

Psychological essentialism—Rothbart and Taylor (1992) propose that some categories of things, “natural kind” categories, are viewed by humans as having an essence, while other categories of things, “human artifact” categories, are not. According to this concept of psychological essentialism, people view natural kinds as possessing underlying unique essences that are specific to the category and as being immutable (e.g., a skunk cannot be changed into a raccoon). By contrast, human artifact categories are seen as mutable and not having an underlying nature (e.g., a chair can be changed into a bird feeder). Important for our argument, Rothbart and Taylor (1992) argue that people tend to view social categories, such as race and gender, as natural kinds and that a perceived genetic underpinning further increases the tendency to view a social category in essential terms. Hoffman and Hurst (1990) and Martin and Parker (1995) provide supporting evidence.

Genetic essentialism—In an independent but related strand of thinking, some observers of the unfolding genomic revolution argue that one of its unanticipated consequences is the ascendancy of a genetic-essentialist worldview in which genes come to define the essence of humans and other living creatures, the distinctions and commonalities among them. In a genetic-essentialist view, we are our genes. Genes are what make one individual different from another (Nelkin and Lindee 1995) and one species different from another (as expressed by James Watson, cited in Lindee [2003:434], the human genome reveals “what makes us human”).[2]

To the extent that we use genes to identify our essential nature as individuals and as a species, surely that same thinking will apply at levels intermediate between the individual and the species, to subgroups of humans such as racial groups (Rothman 1998). Evidence from the human genome suggesting that racial groups differ genetically should lead to the view that racial groups are essentially and fundamentally different; conversely, evidence that racial groups are genetically similar should lead to the view that racial groups are essentially the same. If we are indeed living in an increasingly genetic-essentialist world, then our reading of the human genome with regard to racial differences should have a critical impact on beliefs about essential racial differences that are key to the perpetuation of racism and racial inequality. An important question then arises: What messages have emerged from modern genetic research regarding racial differences or similarities?

BACKDOOR TO EUGENICS

Scientific racism of the nineteenth century, the eugenics movement of the late-nineteenth and early-twentieth centuries, and their revival in the late 1960s and 1970s by figures such as Arthur Jensen, William Shockley, and Richard Hernstein (Kevles 1985) were largely concerned with genetic superiority and inferiority based on race and thus were obviously, especially in retrospect, part of the ideological machinery of racism. By contrast, the HGP was initiated with the goal of sequencing DNA base pairs in the human genome. The project had a strong focus on improving population health and a notable inattention to hierarchy based on race or other social categories. The very phrase "*the* human genome" implies a focus on commonalities among humans. At the widely publicized unveiling of the draft of the human genome map in 2000, Bill Clinton said, "one of the great truths to emerge from this triumphant expedition . . . is that in genetic terms, all human beings, regardless of race, are more than 99.9 percent the same. What that means is that modern science has confirmed . . . the most important fact of life on this Earth is our common humanity" (National Human Genome Research Institute 2013). Craig Venter, president of the private company that competed with the HGP to complete the map, stated that "the concept of race has no genetic or scientific basis" (National Human Genome Research Institute 2013). Similar statements have been made by many social scientists and geneticists (Omi 2001; Schwartz 2001; Wilson et al. 2001).

As the genomic revolution continued, however, attention increasingly turned to the .1 percent of the human genome that is not shared, and research has increasingly looked to racial (or Asian, European, or African "population") differences as the basis for variation in that small portion of the genome (Abu El-Haj 2007; Duster 2003a; Frank 2007; Fullwiley 2007). Examples include haplotype mapping of the human genome (International HapMap Consortium 2003) and other work looking at the continental clustering of genetic variation in relation to biomedical research (see Risch et al. 2002), as well as racial ancestry testing (Bolnick et al. 2007). In keeping with the HGP's emphasis on health, a major direction of

[2]The genomic revolution has also been credited with increasing genetic determinism or "geneticization" (Lippman 1991), that is, the degree to which people believe that human characteristics are caused by genes. We focus on the related but distinct concept of genetic essentialism. Here the idea is that, to the extent a characteristic is viewed as genetic in origin (i.e., it is geneticized), people view the characteristic as part of the person's underlying nature and identity, as more immutable, and as making the person more essentially distinct from those who do not share the characteristic.

this research is the search for genetic bases of differences in disease outcomes between racial groups.[3] Such differences have been reported for a number of characteristics, including lung, breast, colorectal, and prostate cancers; heart attack; congestive heart failure; stroke; and diabetes (Chang 2006; Grady 2006; Haney 1995; Kolata 2002; Neergaard 1996; O'Neil 2004; Wade 2005, 2006).

This article draws on Duster's ideas about the genomic revolution as a backdoor to eugenics to examine the potential of this last type of research—research focused on genetic bases for racial differences in disease outcomes or risk—to exacerbate racism by increasing public belief in essential racial differences. The following excerpts from an Associated Press article illustrate how results of these studies are typically reported in the news media:

> A newly located gene that triggers inherited prostate cancer appears to be especially common among black men and may explain their heavy burden of this disease. Prostate cancer . . . occurs about one-third more often among blacks than whites and is more aggressively fatal in blacks, too. Some suspect that genetic factors may play a role in this difference. Now, scientists have preliminary evidence of what one of these genetic triggers might be. Last November, researchers announced they had pinpointed the location of a gene, which they dubbed HPC1, that appears to cause about one-third of all inherited prostate cancer. . . . In a presentation Tuesday at the American Association for Cancer Research, Isaacs said the gene appears to be a much bigger factor in black families than in whites with the disease.
>
> (Haney 1997)

Such reports may seem far removed from the concerns that motivate this article—genetic essentialism, beliefs in essential racial differences, and racism. However, if we consider what is communicated in these messages and how the public is likely to react, a compelling rationale emerges for Duster's (1990, 2003a) warning that modern genetic research, despite its apparent disinterest in racial difference and hierarchy, may provide a backdoor to eugenics.

First, these reports communicate, with the authoritative voice of science and medicine (Morning 2008), that race is a valid and useful way of categorizing humans. In addition, rather than focusing on similarities among racial groups, these reports alert us to critical, even life-threatening differences. The basic message is that race is real and that by attending to differences between racial groups, we can improve health and save lives.

Second, although these reports focus on genetic influences on disease, it is unlikely that consumers of these media reports will limit their conclusions and interpretations to disease outcomes. As Duster (2003a:5) argues, when exposed to such messages, people will

[3]This increased attention to genetically based racial differences in health can be traced in part to legislation passed in 2000, the very year Clinton and Venter were renouncing the connection between race and genetics. The Minority Health and Health Disparities Research and Education Act of 2000 mandated the National Institutes of Health (which includes the National Human Genome Research Institute) to support research on health inequalities between groups categorized by race and ethnicity (Epstein 2007). Our findings suggest this legislation, which was motivated by a desire to reduce inequalities that disadvantage racial and ethnic minority groups, had an unintended consequence.

naturally ask themselves: “If genetic disorders are differentially distributed by race and ethnicity, why aren’t other human traits and characteristics?” In this way, research and public discussion endorsing genetically based racial differences of any sort—including health—may end up accentuating the idea that very general biological differences exist among racial groups. Also, from an essentialist perspective, when racial differences are attributed to genetics, messages emphasizing differentness should have an especially powerful influence on us–them categories, because they point not merely to a difference but to a fundamental and essential difference. In this way, a focus on genetically based racial differences in health may reinscribe earlier essentialist notions of race in terms of DNA (Abu El-haj 2007; Morning 2008)—notions that have, according to Duster (2003b), been “buried alive” in today’s sciences.

Finally, acceptance of these messages and their generalization to broader and deeper conclusions are facilitated by the manner in which they are communicated, that is, as objective and scientific, as apolitical and non-ideological, and as informational rather than persuasive. Consistent with Duster’s thinking, Lynch and Condit (2006) found that the media tend to present scientific accounts of race and genetics positively and do not challenge these accounts. This approach buries social implications and deflects both public discussion and private consideration of the political and social issues involved. Duster (2003a:131) illustrates this phenomenon:

> Today, about as much [debate] as we get in the public sphere is a Nobel laureate in molecular genetics debating on public television . . . a “critic” who wants to shut down the gears of the new science technology. The former is going to “win” every time. By win, I mean that the discourse is always in terms of the medical, health, and scientific benefits, skewing the grounds upon which an informed debate about other social, cultural, and political questions can arise.

Just as public debate is hampered, so is an individual’s consideration of these messages’ social implications. In particular, individuals whose preexisting social and racial attitudes might cause them to question and possibly reject direct statements about general or essential racial differences (Morley 1994) may accept these messages and draw broader conclusions about them without a thought, because these messages’ connection to social issues is not apparent. The apparently scientific, objective, nonideological, and apolitical nature of reports of genetically based racial differences and their apparent disjunction from broader racial attitudes and beliefs may thus be an important wedge in opening the backdoor to eugenics. We will refer to media reports with these features, as illustrated earlier by the Associated Press article on prostate cancer, as “backdoor” articles.

RESEARCH STRATEGY AND HYPOTHESES

If Duster is correct, there may be far-reaching implications. Seemingly innocuous information about or discussion of racial differences in the health arena may change our whole way of thinking about race and racial differences, magnifying the degree, generality, profundity, and essentialness of the racial differences we perceive to exist.

But there are several reasons to think Duster might be wrong. Perhaps media reports about race, health, and genetics are not actually as common as they seem to observers who fear negative social effects of modern genetic research. Perhaps these media reports are common but do not alter public beliefs about more essential racial differences. Finally, research suggests that the public is more inclined to attribute physical and health-related characteristics to genetic factors than outcomes such as talent and success in life (Condit et al. 2004; Jayaratne et al. 2009; Parrott et al. 2005; Singer, Corning, and Lamias 1998); this may limit the extent to which messages about racial differences related to genetics and health will generalize to more general racial differences.

This article provides an empirical test of Duster's backdoor-to-eugenics hypothesis. Testing of the hypothesis is not straightforward. As indicated earlier, support depends on the convergence of two related phenomena. First, the modern genetic research enterprise must increase the public's exposure to statements indicating that racial groups differ in terms of genetically influenced diseases. Second, the public must respond to these statements with an increased belief that racial groups differ more essentially, in ways that go beyond health. We conducted a multi-method study to evaluate both of these possibilities. To evaluate the first, we conducted a media content analysis. To address the second, we constructed news-account vignettes based on news stories identified in the content analysis and carried out an experiment assessing the impact of reading different news accounts on belief in essential racial differences.

Content Analysis

To evaluate whether news stories about race, genetics, and disease have increased with the genomic revolution, we conducted a media content analysis beginning in 1985, five years prior to the HGP's initiation, and continuing through 2008.

Hypothesis 1 The number of articles discussing race, genes, and health significantly increased between 1985 and 2008.

Hypothesis 2 The number of articles resembling the Backdoor Vignette (described in the Appendix) significantly increased between 1985 and 2008.

To assess Duster's idea that messages about race, health, and genetics tend to be framed in an objective and apolitical manner, increasing the likelihood that they slip through the backdoor, we developed an article ratings system to test a third hypothesis.

Hypothesis 3 Articles that discuss health-related differences are less likely to discuss racism or other ethical concerns than are other articles about race and genetics; genetic causes of health-related racial differences are more likely to be presented without questioning or refuting their conclusions than are genetic causes of other types of racial difference.

Survey Experiment

We conducted an experiment embedded in a large, nationally representative Internet survey, thus combining the strong internal validity of the experiment with a level of external validity not often obtained in experimental studies in social psychology. The Internet format has two

pertinent advantages over a telephone or face-to-face survey. First, the visual presentation and self-administration of the Internet survey closely mimics the way a newspaper article would be encountered in real life. The presentation is visual, and participants may read and re-read the article at their own pace. Second, the Internet format provides a high level of anonymity, thereby reducing the risk of social desirability bias.

Participants were randomly assigned to read one of three mock newspaper articles or no article. All three vignettes represent messages about race and genetics that have risen from the genomic revolution and that have been prominent in scientific and public media discourse (see Duster 2003a; Risch et al. 2002; Schwartz 2001). The vignette of primary interest—the Backdoor Vignette—describes a genetic variant that is more strongly associated with heart attack in African Americans than in white Americans. This vignette was constructed with features that would most strongly test Duster's hypothesis. We wish to evaluate whether an article that makes no mention of essential racial differences nevertheless increases belief in such differences. Accordingly, the vignette clearly endorses the idea of a genetically based racial difference in a serious health outcome but makes no statements about more general genetic differences between racial groups. Also key for a backdoor message, the vignette has no apparent ideological or persuasive content. If this vignette elevates beliefs in essential differences between racial groups, Duster's hypothesis will be supported more strongly than if the vignette contained content that directly suggested essential differences between racial groups.

We evaluated the effect of the Backdoor Vignette relative to a control condition in which no vignette was presented and two vignettes that provide strategic points of comparison. The first comparison (the Race-as-Social-Construction Vignette) represents the position that race is socially constructed and not biologically meaningful. This is the view expressed at the press conference unveiling the draft human genome map, referenced earlier, and that has been expressed by many social scientists and geneticists (Omi 2001). The second comparison vignette (the Race-as-Genetic-Reality Vignette) represents the position that broad genetic differences exist between racial groups and asserts that genetic research confirms the validity of traditionally defined racial groups. This approach is seen in the scientific literature with increasing frequency and is well summarized by Risch and colleagues (2002). The two comparison vignettes represent contrasting and explicitly stated positions that racial groups do or do not vary genetically. In contrast to the Backdoor Vignette, which limits its focus to a single genetic variant, these vignettes argue that differences between racial groups are broad and general. We constructed a reliable multi-item measure of beliefs in essential racial differences, including several items developed for this study, that served as the primary outcome measure.

We employed multiple comparisons to evaluate the impact of the Backdoor Vignette. Comparison to the no-vignette condition will tell us whether reading the Backdoor Vignette elevates belief in essential racial differences, but it is possible that any discussion of race and genetics, or simply of race, would have a similar effect. By comparing the Backdoor Vignette to the two other vignettes, we can test Duster's hypothesis more precisely. If participants are influenced by the messages directly stated in the two comparison vignettes, those reading the Race-as-Social-Construction Vignette should be more likely to express

beliefs that racial groups are essentially similar, and those reading the Race-as-Genetic-Reality Vignette should be more likely to express beliefs that racial groups are essentially different. If the Backdoor Vignette has the effects hypothesized by Duster—that is, messages about genetically based racial differences in specific health outcomes generalize beyond health to affect broader beliefs about racial differences—it should have effects similar to the Race-as-Genetic-Reality Vignette, elevating belief in essential racial differences, and these effects should differ significantly from the Race-as-Social-Construction Vignette.

Hypothesis 4 Participants assigned to the Backdoor Vignette or the Race-as-Genetic-Reality Vignette will be significantly more likely than those assigned to the Race-as-Social-Construction Vignette or the no-vignette control condition to report beliefs that racial groups are essentially different.

Hypothesis 5 Duster reasons that messages about health, race, and genetics enter through the backdoor to affect more general racial beliefs in part because the social implications of these messages are not readily apparent. Because the Backdoor Vignette has no stated or obvious relevance to social issues surrounding race, preexisting levels of racial bias should not be related to beliefs in essential racial differences in this vignette condition and participants should accept the vignette as being accurate and unbiased.

Our final hypothesis pertains to the social significance of the backdoor-to-eugenics phenomenon. We have argued that a belief in essential differences between racial groups is a key component of the overall process of racism. However, if beliefs in racial difference are not strongly connected to other components of racism, then even if Duster's hypothesis is correct, it may not have a meaningful impact on the larger problem of racism. To assess this, we examined whether our core dependent variable—belief in essential racial differences—is significantly associated with three other measures of racism among non-Hispanic whites.[4]

Hypothesis 6 Among non-Hispanic whites, belief in essential racial differences will be significantly related to measures of explicit racism, social distance from black people, and a measure of implicit racism that relies not on verbal reporting of racial attitudes but on reactions to blacks and whites that are measured indirectly and that people may be unaware of.

For the backdoor-to-eugenics explanation to be supported, predictions pertaining to both components of the study must be realized. Additionally, if the relationship between belief in essential racial differences and other measures of racial prejudice is weak and non-significant, its significance for racial discrimination and inequality will not be compelling. Finally, we must consider that our test of the impact of backdoor messages may be too conservative and thus may not demonstrate support for the hypothesis even if it is correct. It

[4]We restricted this analysis of anti-black racism to non-Hispanic whites because the survey questions did not allow self-identified Hispanics to also identify their race, and the other racial categories (other and multiracial) were small and likely heterogeneous.

is fully possible that Duster's prediction would be borne out when people are exposed day after day and year after year to messages about genes, race, and health but that our onetime intervention of reading a single news story is simply not powerful enough to demonstrate this effect. Thus there are many empirical hurdles for the hypothesis to surmount. If we find support for both necessary components of the hypothesis and additionally find a connection between belief in essential racial differences and other important components of racism, this will provide evidence that the genomic revolution may exacerbate the racial stigma, prejudice, discrimination, and inequalities in life chances that have been such an important social problem since our country's inception.

METHODS

Content Analysis

Sample and data collection—We used Nexis to search for articles published in the *New York Times* and the Associated Press from January 1, 1985 through December 31, 2008 with the subject terms (race or racial or ethnic or Caucasian or African) and (genetic or genes or genomic). All articles selected by Nexis were read by one of two researchers trained to ascertain whether an article discussed genetic causes of a racial difference or discussed racial differences or similarities in genetic makeup (race per se). Inter-rater reliability (Cohen's kappa) for selection of articles was .90. Among the Nexis-selected articles, 189 met our selection criteria. Detailed selection criteria and coding instructions for all variables are available from the first author.

Four researchers (two per article), trained to rate the articles on multiple dimensions, achieved adequate to excellent inter-rater reliability. A consensus decision was reached for each disagreement between raters for use in all analyses. Articles were purposely not coded in chronological order of publication; coders were aware of articles' publication dates but not the hypotheses regarding publication date.

Measures

Publication date and source—We used quarter-year as the unit of analysis. Dates range from January 1, 1985 to December 31, 2008 for a total of 96 quarters. The *New York Times* provided 110 articles, 79 articles came from the Associated Press.

Ratings—We assessed whether each article (1) discussed genetic causes of health-related racial differences (kappa = .92); whether the article (2) resembled the Backdoor Vignette on a scale from 1 (very dissimilar) to 7 (very similar to the vignette), dichotomized as resembling (rating of 4 or higher) or not resembling (rating of 3 or lower) the vignette (kappa = .74); (3) mentioned racism, prejudice, or similar concepts (definitely yes = 2, possibly yes = 1, definitely no = 0; intra-class correlation (ICC) = .88); (4) discussed ethical concerns, such as discrimination, prejudice, stereotyping, or eugenics (2 = definitely yes, 1 = possibly yes, 0 = definitely no; ICC = .78); and (5) endorsed genetic causes of the racial difference in question (1 = all statements refute genetic causation; 2 = most statements refute genetic causation, although endorsing statements are included; 3 = neutral; 4 = most

statements endorse genetic causation, although refuting statements are included; 5 = all statements endorse genetic causation; ICC = .66).

Survey Experiment

Sample and data collection—We constructed a survey instrument, administered by Knowledge Networks as part of the American National Election Studies (ANES). The ANES panel was recruited to be representative of the U.S. population age 18 years and older living in households with telephones. Households without Internet access were offered access in return for completing monthly surveys. ANES panel members were invited to complete one survey monthly, receiving $10 for each survey completed (DeBell, Krosnick, and Lupia 2010). Between April 9 and May 7, 2009, 2,409 participants completed our ANES survey in English, with a completion rate of 66 percent. A random subsample of 559 participants completed the survey experiment we analyze in this article.

Weighting—Results were weighted to account for sampling design features and, through post-stratification, for nonresponse and non-coverage that resulted from the study-specific sample design. To evaluate sample selection bias, we compared the weighted analysis sample with 2010 Census data for gender, educational attainment, and age (see Table 1). Correspondence with the Census is excellent in terms of gender, but the sample somewhat underrepresents young people and overrepresents people with higher educational attainment. To assess the possibility that sampling biases affected the findings, we examine results for their generality across age, education, and gender groups.

Vignettes—All 2,409 participants were randomly assigned to one of two survey experiments; the 559 participants whose responses we analyze here took part in the race-and-genetics experiment and were randomly assigned to one of four vignette conditions. The other 1,850 participants took part in a different experiment not described here. The vignettes were based on articles identified in the content analysis and were constructed to make them similar in length, to standardize the prestige of sources referred to in the articles (e.g., academic affiliation of scientists cited), and to lower the reading level required to comprehend the articles. Assignment to vignette condition was random, but the probability of being assigned to the no-vignette control was intentionally set at a lower level (.16) than the three vignettes (.28 for each). Immediately preceding the vignette, participants were instructed: “Please read the following news article.” Vignettes were presented in the form of a two-column newspaper article (see the Appendix).

Control condition (N = 95)—These participants were asked the same questions as the other participants, but the questions were not preceded by a vignette.

Debriefing—After completing the interview, participants were told that the article they read was constructed from a variety of different news articles and reflected only one viewpoint among many views on the issue.

Dependent Variable

We constructed five items for this study and adopted two from the General Social Survey to assess our key dependent measure, belief in essential racial differences. One of the items lowered Cronbach's alpha and was excluded from the scale. The final scale (Cronbach's alpha = .78) was the mean of the following six items: [1] Although black and white people may be alike in many ways, there is something about black people that is essentially different from white people. [2] Different racial groups are all basically alike "under the skin" (reverse scored). [3] There are very few genetic differences among racial groups (reverse scored). [4] Racial and ethnic minority groups in the United States are very distinct and very different from one another. [5] Whites as a group are very distinct and different from racial and ethnic minority groups. Response options for the above measures were strongly agree (4), somewhat agree (3), somewhat disagree (2), and strongly disagree (1). [6] When you compare black and white people, you think they are very similar (1), somewhat similar (2), not very similar (3), or not similar at all (4).

Other Attitude Measures

Acceptance of vignette message (alpha = .64) was the mean of two items: [1] In your opinion, the article provided an accurate account of the topics it discussed. [2] The article struck you as biased and inaccurate (reverse scored). Responses were strongly agree (4), somewhat agree (3), somewhat disagree (2), and strongly disagree (1).

Social distance from blacks (alpha = .76 among non-Hispanic whites) was the mean of five items addressing racial intermarriage; racial residential segregation; adopting a child with a different racial background; receiving a blood transfusion; and receiving an organ transplant from someone with a different racial background.

Explicit racism (alpha = .74) was the mean of six items adopted from the Color-Blind Racial Attitudes Scale (Neville et al. 2000) focusing on whether racism is currently a problem in the United States, whether it is important for schools and political leaders to address problems of racism, and whether racial minorities are advantaged by their race.

Implicit racism was measured with the Affect Misattribution Procedure (AMP) (Payne et al. 2005). After seeing a photograph of a young male black or white face for 75 milliseconds, participants saw a Chinese character for 100 milliseconds, followed by a patterned screen. Participants then indicated whether they found the Chinese character pleasant or unpleasant. The AMP score is the percent of characters associated with black faces judged to be unpleasant minus the percent of characters associated with white faces judged to be unpleasant. Cronbach's alpha = .77 for the difference between pleasantness ratings associated with black and white faces for 24 paired trials.

To examine implicit and explicit racism as moderators of each vignette's impact, we wanted to be sure that their values were not affected by vignette version. We thus assessed explicit racism before presenting the vignette in our survey and used an implicit measure administered to the same participants approximately six months prior to the other data analyzed here. Because 52 participants were missing data on the AMP, we replaced their

missing values with an AMP score predicted by regressing AMP on explicit racism, age, age squared, race, education, region of residence, and household size (*R*-square = .105).

Sociodemographic Control Variables

Because the vignettes were randomly assigned, confounding would only be an issue if randomization failed. Still, we included several sociodemographic variables as well as implicit racism (1) to increase precision of the estimate of vignette effects and (2) to assess the generality of the vignettes' effects across demographic groups. The sociodemographic variables (weighted data) were age (mean = 47.6 years; range = 18 to 90 years); gender (50.1 percent female); educational attainment (7.9 percent 12th grade or less with no diploma; 31.3 percent high school diploma or equivalent; 20.4 percent some college; 10.0 percent associate's degree; 20.4 percent bachelor's degree; 7.5 percent master's degree; and 2.5 percent professional or doctoral degree); and race/ethnicity (79.8 percent white non-Hispanic; 11.8 percent black non-Hispanic; 2.1 percent other non-Hispanic; 2.5 percent two or more races, non-Hispanic; and 3.8 percent Hispanic). Because the race of participants identifying as Hispanic cannot be determined from the ANES questions on race and ethnicity, and the "other" and multiracial groups are small and likely heterogeneous, analyses that focus on racial subgroups were restricted to non-Hispanic whites and non-Hispanic blacks. We used analyses available in SPSS 18.0 that produce standard errors that take the complex survey design into account.

RESULTS

Content Analysis

Hypotheses 1 and 2 state that the number of articles combining the topics of race, genetics, and health and the number of articles resembling the Backdoor Vignette increased significantly from 1985 to 2008. Figure 1 shows results pertaining to these hypotheses, as well as the total number of articles on race and genetics over this time period. Consistent with our hypotheses, a time-trend analysis, using General Estimating Equations to adjust for time-related correlated error, found that, despite clearly visible fluctuations over time, the number of articles increased significantly from 1985 through 2008 for each type of article ($p < .001$ for health-related articles and total articles about race and genetics; $p < .01$ for articles resembling the Backdoor Vignette).

Hypothesis 3 states that articles about race and genetics that are health-related will be framed in a more objective, scientific manner and have less controversy or ideological content than articles not related to health. Consistent with this expectation, Table 2 shows that articles discussing health-related racial differences were significantly less likely to mention racism (mean rating .51 for health-related versus .94 for non–health-related; $p < .01$) or discuss ethical concerns (mean rating .63 for health-related versus 1.03 for non–health-related; $p < .001$). Genetic causes were presented in much more affirmative terms—that is, endorsing rather than refuting genetic causes—when the outcome in question was a health-related racial difference (mean endorsement rating = 4.28) than when the outcome was not health-related (mean endorsement rating = 2.76; $p < .001$). The magnitude of all these differences is large. The two types of articles differ by nearly half a standard deviation

for racism and ethical concerns and by more than one standard deviation for endorsement of genetic cause. Hypothesis 3 is thus strongly supported.

To assess whether our results held for both the *New York Times* and Associated Press, we conducted time-trend analyses separately for each. Increases in each type of article were somewhat larger in the *New York Times* but not significantly so. Despite the smaller number of articles for analyses broken down by source ($N = 110$ for the *New York Times* and 79 for the Associated Press), increases in the number of health-related articles remained statistically significant for both sources; however, the increase in the number of articles resembling the Backdoor Vignette was significant only at the .10 level for the lower-powered Associated Press analysis. Results for mentions of racism, discussion of ethical issues, and endorsement of genetic cause did not differ significantly by source.

Survey Experiment

Hypothesis 4 states that participants randomly assigned to the Backdoor Vignette will be significantly more likely than those assigned to the Race-as-Social-Construction Vignette or the no-vignette control condition to endorse beliefs that racial groups are essentially different, but they will not differ significantly from those assigned to the Race-as-Genetic-Reality Vignette. Results shown in Figure 2 support this hypothesis. Controlling for age, educational attainment, gender, race (non-Hispanic white versus other), and implicit racism, mean belief in essential racial differences varied significantly among the four vignette conditions ($p < .01$). More specifically, comparing the Backdoor Vignette with the other three experimental conditions, we see that mean level of belief in essential racial differences was nearly identical (and not significantly different) for participants assigned to the Backdoor Vignette (2.32 on a four-point scale) and the Race-as-Genetic-Reality Vignette (2.33). Belief in essential racial differences was substantially lower among participants assigned to the Race-as-Social-Construction Vignette (2.09; differs from the Backdoor Vignette at $p < .01$) and to a lesser degree among the no-vignette control condition (2.16; differs from the Backdoor Vignette at $p < .05$). The hypothesized differences are substantial in magnitude. The difference between the Backdoor Vignette and the Race-as-Social-Construction Vignette is more than two-fifths of a standard deviation in belief in essential racial differences, and the difference from the no-vignette control is over one-fourth of a standard deviation.

Does this pattern hold only for certain subgroups or is it relatively constant across race, age, gender, and education? Previous research has found such variables are related to attitudes about both genetics and race and therefore might condition the vignettes' effects on belief in essential racial differences (Hunt 2007; Jayaratne et al. 2006; Parrott et al. 2005; Shostak et al. 2009). Because our outcome measure asks about racial differences, the pattern might particularly be expected to differ by race, and we address this question first.

For non-Hispanic blacks and whites only, we assessed whether the effect of vignette version on belief in essential racial differences varied depending on the participant's race and found a significant interaction between race and vignette condition ($p < .05$) (see Table 3). The significance of the interaction was due to a racial difference in results for the no-vignette control condition; there was no significant race by vignette interaction when the no-vignette

control was removed from the analysis. For black participants, all vignettes lowered belief in essential racial differences relative to the control condition, whereas for white participants, all vignettes raised belief in essential racial differences. This suggests that blacks and whites may have different baseline beliefs in essential racial differences, but the impact of the Backdoor Vignette relative to the two comparison vignettes is similar for both groups. None of the other sociodemographic variables (age, gender, and education) interacted significantly with vignette version, suggesting that the Backdoor Vignette affects men and women, the old and the young, and those with more and less education in much the same way.

Hypothesis 5 states that, because the Backdoor Vignette has no obvious relevance to social issues surrounding race, participants will not read this vignette through the lens of their racial beliefs. Consequently, preexisting levels of racial bias should not predict belief in essential racial differences in the Backdoor Vignette condition. For the same reason, acceptance of the Backdoor Vignette's validity should be relatively high because it describes medical research that should be well accepted and that should raise no red flags for people either high or low on racial bias that the vignette disputes their existing racial attitudes and therefore should be deemed invalid.

Controlling for age, gender, education, and race, we assessed the relationship between both implicit and explicit racism and belief in essential racial differences among participants who were assigned the Backdoor Vignette. As the backdoor hypothesis would suggest, the relationship was small and non-significant for both bias measures (coefficient = .172 for implicit racism; coefficient = −.065 for explicit racism). In contrast to the Backdoor Vignette, the social relevance of the Race-as-Social-Construction and Race-as-Genetic-Reality Vignettes should be more obvious to participants, and these vignettes could possibly bring participants' preexisting racial attitudes into play. If so, racial bias might be associated with belief in essential racial differences for participants assigned to the two comparison vignettes. Consistent with this possibility, implicit racism was positively and significantly related to belief in racial difference for both comparison vignettes (coefficient = .465 and $p < .05$ for Social Construction; coefficient = .460 and $p < .01$ for Genetic Reality). However, the relationship between explicit racism and belief in essential racial differences was small and nonsignificant for both comparison vignettes (coefficient = .031 for Social Construction; coefficient = −.156 for Genetic Reality). Implicit (but not explicit) racism thus played a role in shaping responses to the two comparison vignettes, whose social relevance is more obvious than that of the Backdoor Vignette.

We also hypothesized that, because of the scientific and value-neutral presentation of the Backdoor Vignette, participants would evaluate it as relatively accurate and unbiased. Table 4 shows that, controlling for age, gender, education, race, and implicit racism, acceptance of the three vignettes differed significantly ($p < .001$). Acceptance was highest (mean of 3.19 on a four-point scale) for the Race-as-Social-Construction Vignette and lowest (2.80) for the Race-as-Genetic-Reality Vignette. Acceptance of the Backdoor Vignette (3.07) did not differ significantly from acceptance of the Social-Construction Vignette but was much higher ($p < .001$) than acceptance of the Genetic-Reality Vignette. This pattern did not differ significantly by race or by explicit or implicit racism among whites. Viewing participants' acceptance of the vignette as a measure of the message's social desirability or acceptability,

these results suggest the Backdoor Vignette was viewed as significantly more socially acceptable than the Race-as-Genetic-Reality Vignette. Participants did not identify any similarities in the underlying messages of the Backdoor and Race-as-Social-Construction Vignettes that would cause them to view the Backdoor Vignette as biased, even though the two vignettes produced virtually identical levels of belief in essential racial differences. This pattern of findings is consistent with Duster's argument that backdoor articles, because of their objective and nonideological presentation, are not viewed as related to racial attitudes and not evaluated on that basis, but they nevertheless affect beliefs about racial differences in a manner similar to messages that are not considered socially acceptable.

We have argued that, even if correct, the backdoor-to-eugenics hypothesis may have substantial social significance only if the belief that racial groups differ essentially is related to other aspects of racism. Hypothesis 6 states that belief in essential racial differences will be significantly related to three measures of racism in our dataset—explicit racism, implicit racism, and social distance from black people. This analysis was restricted to non-Hispanic whites ($N = 469$). Belief in essential racial differences and social distance from blacks were measured after participants read the vignette, so we controlled vignette version in this analysis. Because these analyses are based on observational rather than experimental data and are subject to confounding, we report results with and without sociodemographic controls (gender, age, and educational attainment) to observe the extent to which relationships among attitude variables are explained by sociodemographic factors. The standardized coefficient predicting explicit racism from belief in essential racial differences was nonsignificant both before (−.06) and after (−.11) sociodemographic controls. However, coefficients for implicit racism and social distance were significant with (.15 and .31, respectively) and without (.14 and .29) sociodemographic controls. These results indicate that belief in essential racial differences is significantly related to other important indicators of racism.

DISCUSSION

Racism remains one of our most serious social problems. However, if we take a broad historical perspective, there has clearly been a marked improvement since the days of slavery when prominent intellectuals made statements such as "there is nothing remotely humanized in the Negro's character" (Hegel, quoted in Fanon 1967:116). This article was motivated by a concern that the modern genomic revolution could revive beliefs in stark differences between racial groups and in this way reinvigorate racism more generally. Specifically, we addressed Duster's (1990, 2003a) concern that, on being repeatedly exposed to reports of differential racial distribution of genes related to disease, people would generalize from those reports and conclude that racial groups must differ genetically in much broader terms. Duster warned that modern genetic research could thus serve as a backdoor to eugenics.

Our findings suggest that such a backdoor-to-eugenics process may be underway. First, a content analysis of news articles published between 1985 and 2008 revealed that articles about race, genetics, and health in general, and more specifically articles resembling our Backdoor Vignette, which focused on a specific health-related genetic difference between

blacks and whites, increased significantly over the study period. These findings cohere with those of Morning (2008), who found that messages such as those described by Duster largely account for the reemergence of the subject of race in high school biology textbooks in the 1990s. Remarkably, indirect discussions of race in the context of medical disorders (i.e., backdoor messages) appeared in 0 percent of textbooks from 1952 to 1962 but appeared in 93 percent of textbooks from 1993 to 2002. Moreover, as expected from Duster's perspective, we found that articles about race, genetics, and health were significantly less likely to mention racism, to raise ethical issues, or to raise questions about the validity of genetic causation than articles that did not discuss health.

Second, in a survey experiment, we found that participants randomly assigned to read the Backdoor Vignette had beliefs in essential racial differences that were very close to those of participants assigned to read a vignette emphasizing Race-as-Genetic-Reality but were significantly higher than participants who read a vignette emphasizing Race-as-Social-Construction or participants who did not read a vignette. This suggests that the very specific message in the Backdoor Vignette had an impact on very broad beliefs about racial differences, of the same magnitude as a vignette that explicitly argued for broadly based genetic differences between racial groups.

The Backdoor Vignette's influence on belief in essential racial differences did not vary significantly by participants' level of explicit or implicit racial bias. This result is contrary to what we would expect if participants' responses to the vignette were being filtered and modulated by their preexisting racial attitudes. However, it is entirely consistent with the idea that messages like those embodied in the Backdoor Vignette affect beliefs about racial difference in part because their noncontroversial presentation does not call up prior social or racial attitudes. This shows that the process is not limited to people who are highly racially biased but has a much broader impact.

Strengths, Limitations, and Remaining Questions

We set out to construct a test of the backdoor hypothesis that conferred as much internal and external validity as possible. In this regard, the methodology of the content analysis is sound, and its results are clear-cut. Because of the experimental design employed in the survey component of the study, the observed associations between the type of article read and belief in essential racial differences cannot be attributed to confounding factors, and we can be confident that these associations reflect the causal impact of the story content. Because the experiment was embedded in a nationally representative survey and because the results were relatively constant across sociodemographic subgroups of the population, we can conclude that the findings are reasonably representative of the adult U.S. population.

One validity concern is the possibility of social desirability bias in the survey experiment. Belief in essential racial difference was not related to explicit racism, as it was predicted to be, although it was related to implicit racism and social distance from black people. One possible explanation for this null association is that the content of the explicit racism items —with their more general, less personal focus on the extent to which racism is a problem in society at large—is further removed from belief in essential racial differences than are the two other racism measures, which entail immediate reactions to black and white faces and

preferences regarding personal closeness with black people. A second possibility is that the explicit racism questions too obviously measure racial bias and social desirability bias thus renders them a poor measure. Due to concerns about social desirability bias, studies have largely replaced direct measures of racial prejudice (e.g., opposition to racial integration and endorsement of racial stereotypes) with more indirect questions about prejudice as well as implicit measures of racial bias. Our measure of explicit racism, although among the recent generation of racial bias measures that attempt to circumvent social desirability bias, may nevertheless have been affected by this bias. Whatever the explanation, the lack of association between belief in racial difference and explicit racism is consistent with Parrott and colleagues' (2005) finding that belief in genetically based racial differences was uncorrelated with modern racism, a measure that is similar to our explicit racism measure.

Concerning our key outcome—belief in essential racial differences—we are not aware of any evaluations of the extent to which such measures may be subject to social desirability bias. However, two facts minimize our concern about such bias in our assessment. First, our conclusions rest on differences in belief in racial differences between groups that have been randomly assigned to read different news stories. Any social desirability bias should affect all groups to a similar extent and should not affect differences between groups. Second, this measure varied significantly, as predicted, among vignette conditions and did so in a pattern quite different from the pattern of stated acceptance of each vignette's validity, which indicates participants' interpretation of the social acceptability of the vignette message. If social desirability bias strongly affected stated belief in racial differences, we would expect the patterns for acceptance and for belief in racial difference to be similar—a finding we did not observe.

We must be more tentative in concluding that the processes we found to operate in our data are taking place in the general population. Our survey experiment demonstrates how people react when exposed to race, genes, and health content like that found in news accounts. We have shown that this content is represented in the news and that its presence has increased with progression of the genomic revolution. However, we lack a direct measure of public exposure to the messages represented by our vignettes. Having such data would strengthen our confidence that the backdoor effect is underway in the general population. If the public is increasingly exposed to these messages, which we believe is a reasonable assumption given their increased presence, then our results probably underestimate their effects on belief in essential racial differences for two reasons. First, our findings are based on a single presentation of a single story about race, genes, and health. Although we do not know whether exposure to such items has a lasting effect on attitudes, our content analysis suggests these messages are repeated again and again, leading us to expect that message impact will be reinforced and strengthened over time. Second, we created our vignettes from news items in two outlets respected for balanced and thorough reporting, the *New York Times* and Associated Press. Television, where the majority of people turn for the news (Pew Research Center for the People and the Press 2013), likely reports backdoor messages in an even more simplified, stark, and dramatized manner. The messages the majority of people actually receive may thus be even more likely to engender beliefs in essential racial differences than the ones represented in this study.

A second unanswered question regarding the social implications of our findings is how far backdoor effects will reach, in terms of the range of attitudes, behaviors, and policies affected. Duster (2003a) suggests that messages about genetically based racial differences, and the beliefs in racial difference that they engender, may lead to such broad policy outcomes as diminishment of funding for health, education, and social programs that serve African Americans and exclusion of blacks from certain occupations. Such far-ranging consequences are certainly supported by theory. Omi and Winant (1994) argue that essentialist categories of race create and reproduce structures of domination. Feagin (2001) argues that belief in racial difference legitimates discrimination. Social psychologists (Brewer and Brown 1998) consider social categorization to be at the heart of prejudice and discrimination. Link and Phelan (2001) propose that changes in any component of stigma likely affect others, reinforcing the overall impact of stigma-related processes. More specific to the questions addressed in this article, Condit and Bates (2005) proposed a conceptual model in which messages linking genes, race, and health lead to perceived racial difference, and in turn to hierarchicalization and then racism. Some but not all of these links have been established empirically. In this article, we demonstrated a causal effect of backdoor messages on belief in racial differences. In an experimental study, Condit and colleagues (2004) constructed a vignette presenting what we identify as a backdoor message (although their article did not draw explicitly on Duster's ideas): if a message about a connection between genes and heart disease specified race when describing this connection, measures of genetic attributions for racial differences, denial of racism, modern racism, and support for genetic discrimination were higher than if the message did not mention race. Condit and colleagues' study thus shows an effect of media messages on outcomes that are further along the path toward policies than the beliefs we measured in the present study. Several studies, including ours, demonstrate that belief in racial differences and belief that racial differences are genetically based are correlated with, but not necessarily causal of, several measures of racism, some of which (e.g., acceptance of racial inequalities, modern racism) measure policy attitudes (Bastian and Haslam 2006; Jayaratne et al. 2006; Kluegel 1990; Williams and Eberhardt 2008). There is, to our knowledge, no demonstrated causal pathway between backdoor messages and policy outcomes. However, the theory and research cited here give ample reason to expect, and thus motivation to explore, such a connection. Even without a demonstration of such far-reaching policy influence, the causal effects of backdoor messages that have been shown—on belief in racial differences, genetic attributions for racial differences, denial of racism, modern racism, and support for genetic discrimination—are quite significant in their own right.

CONCLUSIONS

We believe this article makes two primary contributions. First, we tested and supported some specific ideas put forward by Duster, namely that research reports and media stories about race, health, and genetics have grown over time and are now common; that these reports are presented in a neutral, non-ideological manner; that this neutral presentation circumvents our usual tendency to check incoming persuasive messages against our preexisting social attitudes; and that the public generalizes messages about specific,

genetically based racial differences in health to broader, more fundamental or essential, genetic differences between racial groups.

More broadly, our results contribute to a small body of research demonstrating *just how little it takes*, when it comes to introducing information about genetics, to trigger divisive racial beliefs and attitudes. To illustrate, there is a second important finding from our survey experiment that we have not emphasized. In addition to the Backdoor Vignette, our Race-as-Genetic-Reality Vignette also increased belief in essential racial differences when compared to the Race-as-Social-Construction Vignette and the no-vignette control condition. Similarly, Williams and Eberhardt (2008) found that reading an article titled "Scientists Pinpoint Genetic Underpinnings of Race" significantly influenced racial attitudes and beliefs. These vignettes represent an increasingly common approach taken by geneticists to the issue of racial variation—an approach that examines genetic variation based on continent of origin and has reported a correspondence between genetic clustering by continent and traditionally defined racial groups (Nassir et al. 2009; Risch et al. 2002). Although we are concerned about the effects of such messages, we are less concerned than we are about the backdoor effects we focused on here. The Race-as-Genetic-Reality Vignette—like Hernstein and Murray's (1994) arguments about race, genetics, and IQ—operates through the front door. The message of essential racial differences is clear to see, and scholars are already well aware of these messages' possibly harmful effects (Nelson 2008). The message of essential racial differences in the Backdoor Vignette is not at all clear to see, yet its effect on belief in these differences is nearly identical to that of the Race-as-Genetic-Reality Vignette. Similarly, Condit and colleagues (2004) found that mentioning a specific race-related genetic difference in a health outcome was enough to heighten several measures of racism. Two other studies (Keller 2005; Lynch et al. 2008) found that exposure to messages emphasizing the importance of genetics *with no mention of race* increased, respectively, racial stereotypes and belief in genetic determination of racial differences. Along with our findings and Condit and colleagues' (2004), these studies illustrate just how small a dose of genetics it takes to affect racial attitudes and how unexpected these effects can be.

Although overtly expressed racial bias has diminished dramatically over time (Schuman et al. 1997), social scientists have uncovered several forms of racism that have gone underground, processes that are subtle and that probably operate outside the awareness of those involved. Important examples include aversive racism (Gaertner and Dovidio 1986), in which white liberals may be unaware of their early-learned negative attitudes about blacks and how those attitudes shape their behavior; stereotype threat (Steele and Aronson 1995), in which the intellectual performance of high-aspiring and achieving African Americans is hampered by their concern over confirming negative stereotypes about their racial group; and the unspoken processes through which performance expectations associated with status identifiers such as race work through interpersonal interactions to produce different performance evaluations that reinforce preexisting social hierarchies (Ridgeway and Erickson 2000). The back-door-to-eugenics stands among these phenomena. Our findings warrant concern that the modern genomic revolution, in both obvious and subtle ways, may enable a resurgence of the idea that racial groups are importantly and essentially different (Morning 2008).

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Biographies

Jo C. Phelan is Professor of sociomedical sciences in the Columbia University Mailman School of Public Health. Her research focuses on social conditions as fundamental causes of inequalities in health and mortality; stigma, prejudice, and discrimination, especially with respect to mental illness; and the impact of the genomic revolution on stigma and racial attitudes. She is particularly interested in the interplay between structural conditions and social psychological processes in the creation and reproduction of inequalities.

Bruce G. Link is Professor of epidemiology and socio-medical sciences in the Columbia University Mailman School of Public Health and a research scientist at the New York State Psychiatric Institute. His interests include the nature and consequences of stigma for people with mental illnesses, the connection between mental illnesses and violent behaviors, and explanations for associations between social conditions and morbidity and mortality.

Naumi M. Feldman is a doctoral student in the Department of Sociomedical Sciences in the Columbia University Mailman School of Public Health. Her dissertation examines public attitudes toward race-based medicine, with a focus on racial differences in those attitudes.

APPENDIX

The following vignettes were presented in the form of two-column newspaper articles.

Backdoor Vignette (N = 171)

Genes May Cause Racial Difference in Heart Attacks

Doctors have long known that African Americans are prone to heart attacks. In fact, not only are African Americans more likely to suffer from heart attacks, their heart attacks are more likely to be fatal, compared to Caucasians.

A recent study suggests that genetics may help explain this racial difference.

Dr. Bruce Firman and other geneticists at Columbia University detected a version of a gene that raises the risk of heart attack in African Americans by more than 250 percent. That means the gene more than doubles the risk of heart attack in African Americans.

Results of the study were published yesterday in the journal *Nature Genetics.*

The gene identified by the researchers is called leukotriene A4 hydrolase. The gene is involved in inflammation.

Inflammation, which we commonly see as swelling, redness and pain, is the process by which the body responds to injury or infection. Inflammation is usually beneficial to health. But new evidence shows that inflammation plays a key role in causing heart attacks. Too much inflammation seems to damage the lining of artery walls and contribute to the buildup of fatty deposits (called plaque) inside the artery.

Plaques block the flow of blood through the arteries, leading to heart attacks. Inflammation can also cause plaques to burst, which scientists think is a cause of heart attacks.

Dr. Firman said that the gene they identified is much more strongly associated with heart attack in African Americans than in Caucasians.

“These findings,” said Dr. Firman, “offer strong evidence that genetic factors are important in explaining the higher rates of heart attack in African Americans.”

Race-as-Social-Construction Vignette (N = 149)

Is Race Real? Genes Say ‘No’

Most people would agree it is easy to tell at a glance if a person is Caucasian, African or Asian.

But a recent study suggests that it is not so easy to make these distinctions when one probes beneath surface characteristics and looks for DNA markers of “race.”

Results of the study were published yesterday in the journal *Nature Genetics*. The study was conducted by Dr. Bruce Firman and other geneticists at Columbia University.

Analyzing the genes of people from around the world, the researchers found that the people in the sample were about 99.9 percent the same at the DNA level. “That means that the

percentage of genes that vary among humans is around .01 percent, or one in ten thousand. This is a tiny fraction of our genetic make-up as humans," noted Dr. Firman.

The researchers also found that there is more genetic variation within each racial or ethnic group than there is between the average genomes of different racial or ethnic groups.

Why the discrepancy between the ease of distinguishing "racial" groups visually and the difficulty of distinguishing them at a genetic level?

Traits like skin and eye color, or nose width are controlled by a small number of genes. Thus, these traits have been able to change quickly in response to extreme environmental pressures during the short course of human history.

But the genes that control our external appearance are only a small fraction of all the genes that make up the human genome.

Traits like intelligence, artistic talent and social skills are likely to be shaped by thousands, if not tens of thousands of genes, all working together in complex ways. For this reason, these traits cannot respond quickly to different environmental pressures in different parts of the world.

This is why the differences that we see in skin color do not translate into widespread biological differences that are unique to groups and why Dr. Firman says "the standard labels used to distinguish people by 'race' have little or no biological meaning."

Race-as-Genetic-Reality Vignette (N = 144)

Is Race Real? Genes Say 'Yes'

Most people would agree it is easy to tell at a glance if a person is Caucasian, African or Asian.

A recent study suggests that the same racial groups we can identify do in fact correspond with broad genetic differences between groups.

Results of the study were published yesterday in the journal *Nature Genetics*. The study was conducted by Dr. Bruce Firman and other geneticists at Columbia University.

Dr. Firman says that racial differences exist because early humans in Africa spread throughout the world 40,000 years ago, resulting in geographical barriers that prevented interbreeding. On each continent, natural selection and the random change between generations known as genetic drift, caused peoples to diverge away from their ancestors, creating the major races.

The effects of this natural selection and genetic drift that have followed different pathways on each continent can be seen by looking at people from different racial groups as traditionally defined. Certain skin colors tend to go with certain kinds of eyes, noses, skulls and bodies.

When we glance at a stranger's face we use those associations to guess what continent, or even what country, he or his ancestors come from—and we usually get it right.

What Dr. Firman and his colleagues showed was that genetic variations that aren't written on our faces—that can be seen only in our genes—show similar patterns.

The researchers sorted by computer a sample of people from around the world into five groups on the basis of genetic similarity. The groups that emerged were native to Europe, East Asia, Africa, America and Australasia—the major races of traditional anthropology.

Hence, Dr. Firman says, "race matches the branches on the human family tree as described by geneticists."

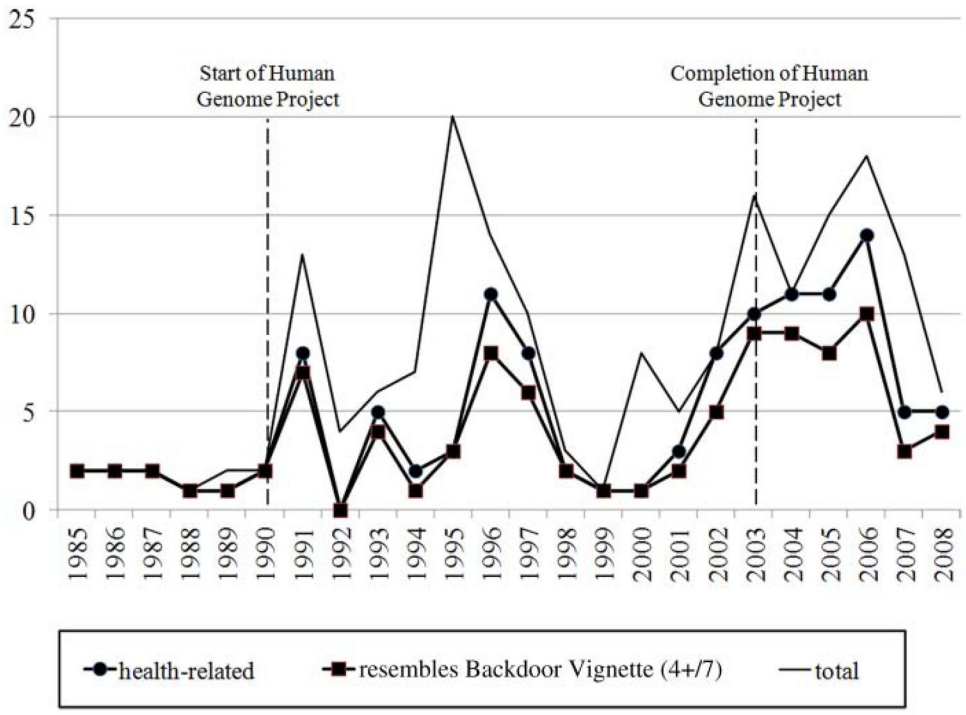

Figure 1.

Number of Articles on Race and Genomics in the *New York Times* and Associated Press, 1985 to 2008 (Generalized Estimating Equations)

Note: Increase is significant at $p < .001$ for health-related and total articles and $p < .01$ for articles resembling the Backdoor Vignette. Analysis is based on quarter-years but graphed in one-year units to simplify presentation.

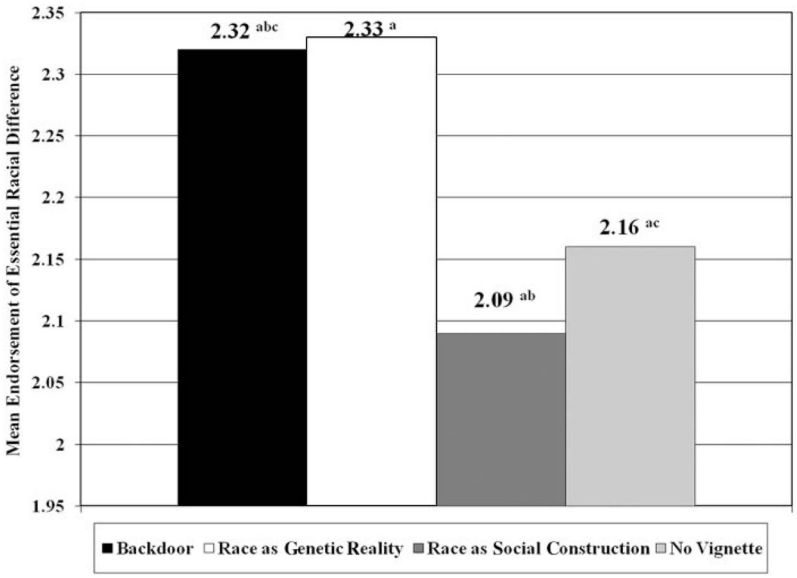

Figure 2.

Mean Endorsement of Essential Racial Difference by Vignette (1 to 4 Scale)

Note: Means adjusted by age, education, gender, non-Hispanic white race, and implicit racism.

[a]Overall difference among means $p < .01$.

[b]Difference between Backdoor and Race-as-Social-Construction Vignettes $p < .01$.

[c]Difference between Backdoor Vignette and No-Vignette Control $p < .05$, two-tailed tests.

Table 1

Comparison of Selected Characteristics of Sample (N = 559)[a] with 2010 Census Data for Individuals 18 Years or Older

	Weighted Sample (%)	Census (%)
Female	50	51
Some college or more among those 25 years or older[b]	65	55
Age		
18 to 44	43	48
45 to 64	40	35
65 and older	17	17

[a] The sample described here includes only participants who responded to one of the three vignettes or were in the no-vignette control group analyzed in this article.

[b] The Census reports educational attainment for individuals who are 25 years or older.

Table 2

Differences in Mean Mention of Racism, Discussion of Ethical Issues, and Endorsement of Genetic Cause for Health-Related versus Other Types of Differences

	Mentions of Racism (*N* = 189)	**Discussion of Ethical Issues (*N* = 189)**	**Endorsement of Genetic Cause (*N* = 229)[a]**
Health-Related Outcome	.51	.63	4.28
Non–Health-Related Outcome	.94**	1.03***	2.76***

[a] Racism and ethical issues were rated once per article, whereas endorsement of genetic cause could be rated for more than one racial difference per article, hence the difference in numbers. Analysis of endorsement of genetic cause used General Estimating Equations to account for the possibility of within-article correlations between ratings.

** $p < .01$;

*** $p < .001$ (two-tailed tests).

Table 3

Mean Belief in Essential Racial Differences by Vignette and Race

	Non-Hispanic Blacks (*N* = 66)	Non-Hispanic Whites (*N* = 444)
Backdoor Vignette	2.45	2.34
Race-as-Genetic-Reality Vignette	2.30	2.34
Race-as-Social-Construction Vignette	1.85	2.09
No-Vignette Control	2.55	2.07

Note: $p < .01$ for vignette version; $p < .05$ for race by vignette interaction (two-tailed tests). Means adjusted by age, education, gender, and implicit racism.

Table 4

Mean Acceptance of Vignette (Evaluation of Vignette as Accurate and Unbiased) by Vignette Condition; Statistical Significance Reported for Each Comparison Condition Contrasted with the Backdoor Vignette

	Acceptance of Vignette (*N* = 462)
Backdoor Vignette	3.07
Race-as-Genetic-Reality Vignette	2.80***
Race-as-Social-Construction Vignette	3.20

Note: $p < .001$ for overall variation in acceptance between vignettes. Means adjusted for age, education, gender, non-Hispanic white race, and implicit racism.

*** $p < .001$ (two-tailed tests).