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The Effects of Education on Beliefs about Racial Inequality

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Abstract

It is commonly hypothesized that education promotes more "enlightened" beliefs about racial inequality, and many prior studies document that white Americans with higher levels of education are more likely to agree with structural rather than individualist explanations for black disadvantages. Nevertheless, an alternative perspective contends that the ostensibly liberalizing effects of education are highly superficial, while yet another perspective cautions that any association observed between education and racial attitudes may be due to unobserved confounding. This study evaluates these perspectives by estimating the effects of education on beliefs about racial inequality from a set of cross-sectional, sibling, and panel models. Consistent with prior research, results from cross-sectional models fit to the General Social Survey (GSS) suggest that education promotes a genuine belief in structural over individualist explanations for racial inequality. However, results from sibling and individual fixed-effects models fit, respectively, to the 1994 Study of American Families and to the 2006–2010 GSS three-wave panels suggest that these effects may be superficial and are likely inflated by unobserved confounding.

Keywords

education, fixed effects, panel models, prejudice, race, sibling models, stratification beliefs

Beliefs about the causes of racial inequality have the potential to challenge and transform, or to legitimize and perpetuate, unequal relationships between different racial groups. Indeed, prior research suggests that beliefs about inequality are consequential for a wide range of other attitudes, including perceptions about the desirability of social change, expressions of prejudice, and prescriptions for social policy (Apostle et al. 1983; Hunt 2007; Kluegel 1990; Kluegel and Bobo 1993; Kluegel and Smith 1981, 1986; Krysan 2000). To better understand the forces sustaining racial inequality, analyses of stratification beliefs are essential.

Education is widely held to be a powerful determinant of beliefs about racial inequality, although the nature of its impact is contested. On one side of the debate, education is thought to have a profoundly liberalizing effect on beliefs about

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racial inequality (Apostle et al. 1983; Hyman and Sheatsley 1964; Hyman and Wright 1979; Hyman, Wright, and Reed 1975; Quinley and Glock 1979). According to the "enlightenment" perspective, education promotes beliefs about inequality that emphasize the importance of structural barriers over individual limitations by providing greater knowledge of the historical factors responsible for racial inequality, by teaching students to recognize discrimination and its consequences, and by facilitating interactions with diverse peer groups (Apostle et al. 1983; Dey 1996, 1997; Hyman and Wright 1979; Quinley and Glock 1979). Consistent with this perspective, many prior studies document that whites with higher levels of education are more likely to agree with structural explanations for racial inequality that emphasize the role of discrimination or limited access to quality schools, and they are less likely to agree with individualist explanations that emphasize the supposedly deficient personal traits of minority group members (Apostle et al. 1983; Hunt 2007; Kluegel 1990; Schuman et al. 1997).

On the other side of the debate, education is depicted as an institution that enables members of a dominant racial group to articulate a more sophisticated defense of their position in the social hierarchy (Jackman 1996; Jackman and Muha 1984; Kane and Kyyro 2001; Wodtke 2012). According to the "ideological refinement" perspective, education promotes only a superficial or merely symbolic endorsement of structural over individualist explanations for racial inequality. The association between education and agreement with structural over individualist explanations is held to be superficial or merely symbolic when it is not accompanied by a commitment to reduce the systemic inequalities from which dominant group members benefit. Consistent with this view, several studies find that white respondents with higher levels of education are no more likely than those with lower levels of education to support remedial policies aimed at overcoming barriers to minority group advancement, despite their affirmation of structural over individualist explanations for racial inequality (Jackman and Muha 1984; Kane and Kyyro 2001; Schuman et al. 1997; Wodtke 2012).

An important limitation of prior studies attempting to adjudicate between the enlightenment and ideological refinement perspectives is their inattention to the problem of bias due to unobserved confounding. Both theoretical perspectives posit distinct sets of causal effects, but prior studies rely exclusively on research designs that can identify these effects only under the strong assumption that all of the joint determinants of education and racial attitudes have been measured and controlled. Specifically, most prior studies attempt to identify the effects of education on racial attitudes by controlling for demographic traits and for measured aspects of an individual's family background in a generalized linear model (e.g., Apostle et al. 1983; Jackman and Muha 1984; Kane and Kyyro 2001; Wodtke 2012). Unfortunately, this approach to identifying the effects of education is likely inadequate, as individuals select into different levels of education based on many factors that affect their racial attitudes and that are difficult to measure and control. For example, a variety of financial, cultural, and social characteristics of an individual's family shape his or her sociopolitical beliefs and educational attainment (DiMaggio and Mohr 1985; Fraley et al. 2012; Hess and Torney 2009; Sewell, Haller, and Portes 1969). Because prior studies of education and racial attitudes do not sufficiently control for the financial, cultural, and social characteristics of an individual's family, they likely suffer from bias due to unobserved confounding.

This study provides a more defensible test of the enlightenment versus ideological refinement perspectives by estimating the effects of education on beliefs about racial inequality from sibling and panel models. Specifically, I estimate the effects of education using sibling fixed-effects models fit to data from the 1994 Study of American Families (SAF) and using individual fixed-effects models fit to data from college-aged respondents in the 2006–2010 three-wave panels of the General Social Survey (GSS). Sibling and individual fixed-effects models control, respectively, for characteristics of the shared family environment and for stable characteristics of individuals, whether they are observed or not (Griliches 1979; Halaby 2004). Although they are not without limitations, these models resolve the types of unobserved confounding that are most concerning in studies of education and racial attitudes.

In the sections that follow, I begin by discussing the enlightenment and ideological refinement perspectives as they relate to the effects of education on beliefs about racial inequality, and then I develop a set of hypotheses to adjudicate between them. Next, I briefly explain the problem of unobserved confounding in studies of education and intergroup attitudes. Finally, with data from the SAF and GSS, I estimate the effects of education on beliefs about racial inequality among white Americans. Results from conventional models fit for comparative purposes to the 1994–2016 independent cross-sections of the GSS suggest that education promotes a genuine belief in structural over individualist explanations for racial inequality. Results from sibling and individual fixed-effects models fit to the 1994 SAF and to the 2006–2010 GSS panels, however, indicate that these effects may be superficial and that they are likely inflated by unobserved confounding.

DOES EDUCATION ENLIGHTEN?

The perspective that education is "enlightening" with respect to racial attitudes is premised largely on psychological models of intergroup relations, which argue that negative racial attitudes involve a set of faulty and inflexible views about racial outgroups that variously arise from individual deficiencies in personality, cognition, or social learning (Adorno et al. 1950; Allport 1958; Apostle et al. 1983). Education, then, is simply thought to help individuals overcome these deficiencies and to liberate them from their misguided beliefs about racial outgroups.

Specifically, education is thought to attenuate prejudice and promote structural rather than individualist explanations for racial inequality through several mechanisms. First, education may provide students with knowledge of the historical, social, and economic factors responsible for racial inequality via in-class instruction (Apostle et al. 1983; Quinley and Glock 1979; van Laar, Sidanius, and Levin 2008). Second, through classroom discussions, campus residential life, and extracurricular programs, postsecondary institutions may facilitate social interactions with racially diverse peer groups, which may in turn challenge negative stereotypes, encourage students to consider different viewpoints, and promote peer-to-peer diffusion of knowledge about the structural sources of inequality (Dey 1996, 1997; McClelland and Linnander 2006). Finally, education provides students with improved critical thinking skills, which may inoculate them against the narrow-minded appeals of negative stereotypes and improve their ability to recognize prejudice and understand its harmful consequences (Apostle et al. 1983; Hyman and Wright 1979; Quinley and Glock 1979). Consistent with these arguments, prior research indicates that education is associated with lower levels of prejudice, greater support for racial equality in principle, and greater recognition of the structural rather than individual determinants of racial inequality (Apostle et al. 1983; Hyman and Wright 1979; Kluegel 1990; Quinley and Glock 1979; Schuman et al. 1997).

Nevertheless, there remains a troubling inconsistency in the ostensibly liberalizing effects of education on racial attitudes. In particular, prior studies frequently find no association between education and support for policies aimed at reducing racial inequality in practice, such as government interventions to integrate schools, preferential treatment for minorities in hiring and promotion decisions, and other forms of race-targeted redistribution (Jackman 1996; Jackman and Muha 1984; Kane and Kyyro 2001; Schuman et al. 1997; Wodtke 2012). In fact, whites with higher levels of education often report significantly lower levels of support for these types of policies compared to their poorly educated counterparts (Jackman and Muha 1984; Kane and Kyyro 2001; Schuman et al. 1997).

In an attempt to reconcile these seemingly paradoxical effects, the ideological refinement perspective rejects the premise that negative intergroup attitudes arise from some "irrational pathology" (Krysan 2000:151). Rather, this perspective is based on group conflict theories of intergroup attitudes, which contend that negative racial attitudes are shaped primarily by competition over resources between distinct social groups that are stratified in a hierarchy based on inequalities of status and power (Blumer 1958; Bobo 1988; Bobo, Kluegel, and Smith 1997; Sherif et al. 1988). Within this competition, individuals possess objective interests based on the advantages or disadvantages likely to accrue to their group as a result of its dominant or subordinate position in the social hierarchy. Specifically, subordinate group members have an objective interest in challenging extant relations of inequality, while dominant group members have an objective interest in maintaining their advantaged social position, which they pursue in part by developing ideologies that legitimize the status quo or that mollify discontent among subordinate groups (Bobo 1988; Bobo et al. 1997; Jackman and Muha 1984; Wodtke 2012).

From this perspective, racial attitudes are "an integral part of the ideologies that privileged social groups routinely develop to legitimize and protect their interests," and education is not enlightening because "it does not release people from the concerns and interests imposed by the social fabric" (Jackman and Muha 1984:751–52). Education, however, does provide a higher level of intellectual acuity, a broader mastery of information, and a greater sensitivity to social norms governing intergroup relations, and in this way, "it equips its recipients to promote their interests more astutely—indeed, to become state-of-the-art apologists for their group's social position" (Jackman and Muha 1984:752). Thus, dominant group members are thought to learn, in part through a more advanced education, that the most effective means for defending their social position is to appear unprejudiced, reasonable, and responsive in the face of subordinate group discontent while making as few substantive concessions as possible. To this end, highly educated members of dominant groups avoid individualist explanations for racial inequality, but at the same time, they resist anything beyond merely symbolic attempts at overturning the inequalities from which they benefit.

In sum, for the enlightenment perspective, education is hypothesized to promote a sincere set of beliefs in structural over individualist explanations for racial inequality among white Americans, which is in turn expected to promote higher levels of support for various racial policies. For the ideological refinement perspective, by contrast, education is hypothesized to promote only a superficial set of beliefs in structural over individualist explanations for racial inequality that are not accompanied by any greater support for policies aimed at overcoming structural impediments to minority group advancement.

THE CHALLENGE OF UNOBSERVED CONFOUNDING

Both the enlightenment and ideological refinement perspectives posit distinct patterns of causal effects for education on racial attitudes, but identifying and estimating these effects is challenging due to unobserved confounding. Specifically, the central challenge is that individuals select into different levels of education based on many factors that also likely affect racial attitudes. As a result, comparing individuals with higher versus lower levels of education may reveal attitudinal differences that would occur even if those with higher levels of education had not in fact attained any more schooling.

Nearly all prior studies attempt to identify and estimate the effects of education on racial attitudes by controlling for a set of observed demographic and family characteristics in a generalized linear model (Apostle et al. 1983; Jackman and Muha 1984; Kane and Kyyro 2001; Kluegel 1990; Schuman et al. 1997; Wodtke 2012). This approach yields unbiased estimates only when all joint determinants of educational attainment and racial attitudes have been measured and controlled, which is difficult to accomplish in practice. For example, many characteristics of families, such as their financial resources, cultural capital, and social connections, affect both the educational attainment (DiMaggio and Mohr 1985; Jencks 1972; Sewell et al. 1969) and the sociopolitical attitudes of their children (Fraley et al. 2012; Hess and Torney 2009). Similarly, children with more advanced cognitive abilities tend to progress further in school (Jencks 1972; Sewell and Hauser 1976; Sewell et al. 1969), and cognitive ability also affects racial attitudes in complex ways (Dhont and Hodson 2014; Lick, Alter, and Freeman 2018; Wodtke 2016). Because prior studies of education and racial attitudes do not measure and control for cognitive ability or for many characteristics of the family environment, they likely suffer from bias due to unobserved confounding.

Consistent with these arguments, several studies estimate the effects of education on civic engagement, political preferences, and gender role attitudes using sibling fixed-effects models, and they find that these estimates are typically much smaller than those obtained from conventional regression models (Campbell and Horowitz 2016; Schnittker and Behrman 2012; Sieben and de Graaf 2004). The smaller estimates obtained from sibling fixed-effects models, which control for unobserved dimensions of the shared family environment by comparing siblings within the same family, indicate that conventional estimates are inflated due to unobserved confounding by family background. Few prior studies employ a research design that sufficiently controls for selection on unmeasured individual traits, such as cognitive ability, even though this would also appear important for estimating the effects of education on attitudes.

METHODS

Data

To estimate the effects of education on beliefs about racial inequality, I use data from white respondents, including those who identify ethnically as Hispanic, in the 1994–2016 independent cross-sections of the GSS, the 1994 SAF, and the 2006–2010 three-wave panels of the GSS (Hauser and Mare 1994; Smith et al. 2017). I focus on white respondents because these surveys lack sufficiently large samples of racial minority groups. The 1994–2016 independent cross-sections of the GSS are based on a series of nationally representative surveys that collect information about a broad range of topics, including beliefs about racial inequality. These surveys contain information from a total of $n = 25,568$ white respondents, but analytic sample sizes vary by outcome and are typically smaller by about one half because the GSS uses a rotational split-ballot design.

The SAF is a companion survey to the GSS that interviewed respondents' siblings. Specifically, in 1994, the GSS collected identifying information for a randomly selected sibling from each respondent with at least one sibling older than age 25. The SAF then conducted phone interviews with the siblings it was able to successfully contact, asking many of the same questions included in the GSS. For example, the SAF asked the exact same set of questions about racial stratification beliefs and several of the same questions dealing with racial policy attitudes. Combining the SAF and the 1994 wave of the GSS yields information on $n = 1,994$ white respondents in $k = 997$ sibling pairs.

Between 2006 and 2014, the GSS adopted a three-wave rotating panel design, where each wave consists of a new cross-sectional sample interviewed for the first time, a re-interview of respondents initially selected two years earlier, and then a second re-interview of respondents initially selected four years earlier. During this period, the GSS completed interviews with three separate three-wave panels: one composed of respondents first interviewed in 2006, a second composed of respondents first interviewed in 2008, and a third composed of respondents first interviewed in 2010. Combining these panels yields an analytic sample of $n = 3228$ interviews with $k = 1076$ white respondents who were between age 18 and 34 at baseline. I focus on respondents between age 18 and 34 because this defines the population targeted by the GSS that is most susceptible to changes in educational attainment.[1]

Measures

The response variables considered in this analysis involve beliefs about racial inequality and, in particular, beliefs about the underlying causes of black disadvantages in the United States. These measures come from questions that begin by stating, "On the average, blacks have worse jobs, income, and housing than white people," and then present four possible explanations for these differences, each in the form of a separate item with which respondents may agree or disagree. The items ask whether respondents think differences are "mainly due to discrimination" or whether they exist because most blacks "have less in-born ability to learn," "don't have the chance for education," or "don't have motivation or will power." Each item is asked regardless of previous responses, and thus the series allows respondents to agree with multiple explanations. The items can be organized in terms of the degree to which they locate the source of racial inequalities in the personal attributes of individuals versus features of the broader social

[1]Only about 15 percent of postsecondary students are older than age 34, while nearly 60 percent are between age 18 and 24 and another 25 percent are between age 25 and 34 (National Center for Education Statistics 2014).

structure. Explanations referring to discrimination and education are "structural" in emphasis, whereas items referring to motivation and ability are "individualist" (Kluegel 1990; Schuman et al. 1997). Responses to each item are coded 1 if a respondent agreed with the explanation and 0 if he or she disagreed.

In addition to analyzing beliefs about racial inequality, I examine attitudes toward several racial policies. Specifically, I measure support for "preferential hiring and promotion of blacks" and for an open housing law dictating that "a homeowner cannot refuse to sell to someone because of their race or color." The ordinal response scale used to measure attitudes toward racial preferences is recoded into a binary variable, where 1 denotes a favorable attitude and 0 denotes an unfavorable attitude.[2] Support for open housing laws is also measured with a binary variable coded 1 if a respondent indicated he or she would vote for such a law and 0 otherwise. Part A of the online supplement provides the exact survey items used to measure each racial attitude considered in this analysis.[3]

Education is the independent variable of interest and is measured in years, although to account for potential nonlinearities, I also use a binary measure of education coded 1 for respondents with at least 16 years of education and 0 otherwise.[4] The control variables included in multivariate analyses are gender, age, ethnic background, parental education and occupational status, the type of residence and geographic region in which a respondent lived at age 16, and the income earned by a respondent's family when he or she was age 16. Gender is coded 1 for female and 0 for male. Age is measured in years, as are the education levels of both parents. Ethnic background is coded 1 for Hispanic and 0 otherwise.[5] The occupational status of a respondent's father is measured using the Hodge-Siegel-Rossi rating system (Siegel 1971). Characteristics of a respondent's residence at age 16 are captured using two sets of dummy variables. The first set captures whether a respondent lived in a rural area, a town with less than 50,000 residents, or a city with more than 50,000 residents, and the second set captures whether a respondent lived in the Eastern, Western, Southern, or Midwestern census division. A respondent's family income at age 16 is expressed as a series of dummy variables that encode whether his or her family had a "below average," "average," or "above average" income.[6]

A Graphical Causal Model

Figure 1 presents a directed acyclic graph (Pearl 2009) that depicts a set of hypothesized causal relationships between education, racial attitudes, and a set of both observed and unobserved characteristics of an individual and his or her family of origin. Specifically, in this figure and henceforth, A_j and B_j, respectively, denote

[2]Analyses based on linear ordinal mean models for attitudes toward racial preferences yield similar results.

[3]Please see the online supplement in the online version of the article.

[4]Analyses based on an alternative binary measure of education, coded 1 for respondents with at least 13 years of education and 0 otherwise, yield similar results.

[5]Analyses based on samples that exclude white respondents who identify as Hispanic altogether yield similar results.

[6]I do not adjust for several variables that are typically, albeit inappropriately, included as controls in research on education and racial attitudes, such as a respondent's current income, occupation, and political ideology. This is because these variables are outcomes, rather than determinants, of educational attainment, and controlling for variables affected by education may lead to bias from over-control or endogenous selection (Morgan and Winship 2015).

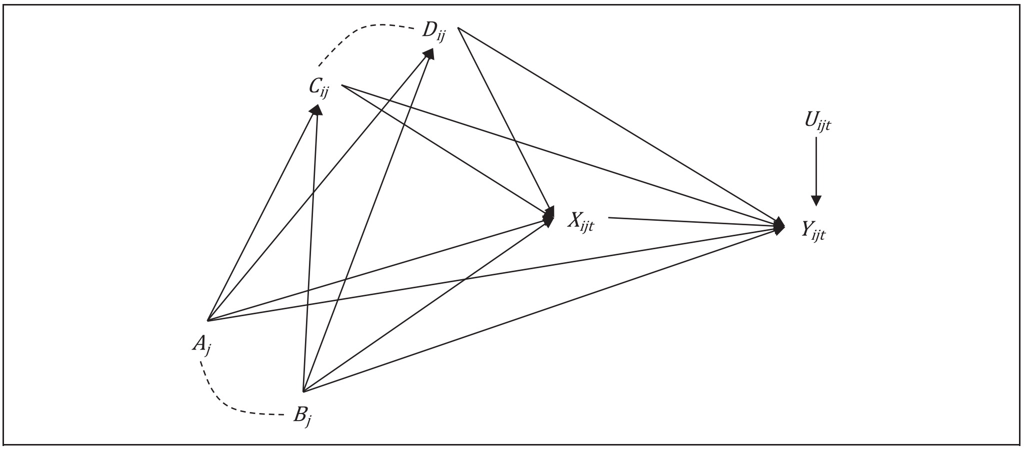

Figure 1. Directed Acyclic Graph Depicting a Set of Hypothesized Causal Relationships between Family Background, Individual Characteristics, Education, and Racial Attitudes
Note: Directed arrows represent causal effects, and undirected dashed lines are a shorthand device used to indicate that two variables are mutually dependent on one or more unobserved common causes. A_j and B_j, respectively, denote observed and unobserved characteristics of family j; C_{ij} and D_{ij}, respectively, denote observed and unobserved characteristics of individual i in family j; X_{ijt} denotes the education level of individual i in family j at time t; Y_{ijt} is a measure of racial attitudes for individual i in family j at time t; and finally, U_{ijt} denotes a set of unobserved time-varying determinants of the outcome.

observed and unobserved characteristics of family j; C_{ij} and D_{ij}, respectively, denote observed and unobserved characteristics of individual i in family j that are stable over time; X_{ijt} and Y_{ijt}, respectively, denote the education level and racial attitudes of individual i in family j at time t; and finally, U_{ijt} denotes all unobserved determinants of racial attitudes that vary over time.

As indicated in Figure 1, education is hypothesized to have a causal effect on racial attitudes. In addition, both observed and unobserved characteristics of an individual and his or her family of origin are hypothesized to affect racial attitudes and educational attainment. This implies that the effects of education on racial attitudes cannot be identified merely by adjusting for the observed covariates outlined previously; rather, adjustment for unobserved characteristics is also required, which informs my analytic strategy below.

Analysis

I estimate the effects of education on racial attitudes using three approaches, each of which is based on a different set of assumptions about unobserved confounding. First, I adopt the conventional approach used in prior research on racial attitudes and estimate the effects of education by fitting a set of covariate-adjusted linear probability models (LPMs) to data from the 1994–2016 GSS cross-sections. These models can be expressed as

$$Y_{ijt} = \alpha_0 + \alpha_1 t + \alpha_2' A_j + \alpha_3' C_{ij} + \alpha_4 X_{ijt} + \varepsilon_{ijt}, \quad (1)$$

where A_j, C_{ij}, X_{ijt}, and Y_{ijt} are defined as above; $\varepsilon_{ijt} = g(B_j, D_{ij}, U_{ijt})$ is a disturbance term for individual i in family j at time t; and $g(B_j, D_{ij}, U_{ijt})$ is an unknown function of all unobserved factors.[7] The causal

[7]Models with smooth nonlinear functions of time, rather than $\alpha_1 t$, yield similar results.

effects of interest are equal to $\alpha_4(x^* - x)$, where $(x^* - x)$ defines a contrast between different levels of education, only if equation 1 is correctly specified and only if unobserved characteristics of individuals and their families do not affect both racial attitudes and educational attainment, which is unlikely in this context.

Second, I estimate the effects of education by fitting a set of sibling fixed-effects LPMs to data from the 1994 SAF. These models can be expressed as

$$Y_{ijt=1994} = \beta_{0j} + \beta_1' C_{ij} + \beta_2 X_{ijt=1994} + \eta_{ijt=1994}, \quad (2)$$

where $\beta_{0j} = h(A_j, B_j)$ is an intercept term for family j; $h(A_j, B_j)$ is an arbitrary and unknown function of both observed and unobserved characteristics of the shared family environment; $\eta_{ijt=1994} = v(D_{ij}, U_{ijt=1994})$ is a disturbance term; and $v(D_{ij}, U_{ijt=1994})$ is an unknown function of individual-level characteristics that are unobserved. With this model, the causal effects of interest are equal to $\beta_2(x^* - x)$ if equation 2 is correctly specified and if unobserved characteristics of individuals do not affect both racial attitudes and educational attainment. By including a separate intercept term for every family, sibling fixed-effects models implicitly control for all aspects of the shared family environment, whether observed or not.

Finally, I estimate the effects of education by fitting a set of individual fixed-effects LPMs to data from college-aged respondents in the 2006–2010 GSS panels. These models can be expressed as

$$Y_{ijt} = \theta_{0ij} + \theta_1 t + \theta_2 X_{ijt} + \delta_{ijt}, \quad (3)$$

where $\theta_{0ij} = s(A_j, B_j, C_{ij}, D_{ij})$ is an intercept term for individual i in family j; $s(A_j, B_j, C_{ij}, D_{ij})$ is an arbitrary and unknown function of both observed and unobserved characteristics of the individual and his or her family of origin that are time invariant; $\delta_{ijt} = w(U_{ijt})$ is a disturbance term; and $w(U_{ijt})$ is an unknown function of unobserved characteristics that vary over time.[8] With this model, the causal effects of interest are equal to $\theta_2(x^* - x)$ if equation 3 is correctly specified and there are no unobserved time-varying confounders. By including a set of person-specific intercept terms, individual fixed-effects models implicitly control for all characteristics of the early family environment and for all characteristics of the individual that are invariant over time, whether observed or not.[9]

In all analyses, standard errors are adjusted for heteroscedasticity and, where appropriate, for the clustering of observations within families or individuals. Missing values due to item-specific nonresponse or panel attrition are simulated using multiple imputation with 50 replications, and estimates are then combined across complete data sets (Little and Rubin 2002). Overall, the proportion of missing information is roughly 15 percent in the GSS cross-sections, 25 percent in the SAF, and 25 percent in the GSS panels. Finally, although these surveys are based on complex sample designs, I focus on unweighted estimates because they are both similar to and more precise than weighted estimates. Part B of the online supplement reports weighted estimates for reference.

RESULTS

Sample Characteristics

Table 1 presents descriptive statistics for all covariates included in this analysis, separately for the GSS cross-sections,

[8]Models with more flexible functions of time, and those that exclude a period effect altogether, yield similar results.

[9]Experimentation with models that allow the effect of education to differ by age, gender, and geographic region suggests that my findings are robust to potential effect heterogeneity.

Table 1. Sample Characteristics

	1994–2016 GSS		1994 GSS-SAF		2006–2010 GSS Panels	
	n = 25,568		n = 1,994	(k = 997)	n = 3,228	(k = 1,076)
Variable	M	SD	M	SD	M	SD
Family background characteristics						
Father's years of education	11.42	4.06	11.06	4.11	12.91	3.70
Mother's years of education	11.57	3.43	11.29	3.16	13.08	3.39
Father's occupational status	44.77	12.59	44.43	12.51	43.63	17.79
Hispanic ethnicity	0.06	—	0.01	—	0.13	—
Region at age 16						
South	0.33	—	0.31	—	0.37	—
East	0.21	—	0.20	—	0.14	—
Midwest	0.29	—	0.33	—	0.26	—
West	0.17	—	0.16	—	0.22	—
Residence at age 16						
Rural	0.24	—	0.29	—	0.19	—
Town <50,000	0.33	—	0.33	—	0.35	—
City >50,000	0.43	—	0.39	—	0.47	—
Family income at age 16						
Below average	0.32	—	0.30	—	0.27	—
Average	0.47	—	0.49	—	0.45	—
Above average	0.21	—	0.20	—	0.28	—
Stable characteristics of individuals						
Respondent's age at survey entry	48.26	17.50	45.00	15.70	29.06	4.93
Respondent's gender (female)	0.55	—	0.52	—	0.57	—
Transitory characteristics of individuals						
Respondent's years of education	13.62	2.94	13.72	2.83	13.90	2.79

Note: GSS = General Social Survey; SAF = Study of American Families. Dashes indicate value is not applicable. Results are combined estimates from 50 multiple-imputation data sets.

SAF, and GSS panels. The upper rows of the table display descriptive statistics for characteristics of a respondent's family of origin. In general, the different analytic samples are comparable with regard to family background, except that GSS panel members are less likely to have grown up in rural areas, are more likely to report that their families had above-average incomes, and are more likely to identify as Hispanic. The middle rows of the table display descriptive statistics for characteristics of individuals that are stable over time, C_{ij}, including their gender and their age when they entered the sample. Between 52 and 57 percent of respondents across all samples are female. Sample members from the GSS panels are younger, by design, than those in the GSS cross-sections and the SAF.

The bottom row of Table 1 displays descriptive statistics for a respondent's years of education, X_{ijt}, which varies between individuals, within families, and over time. Across all samples, respondents earned between 13.6 and 13.9 years of education, on average. In addition, Figure 2 displays a set of bar graphs that show, first, the within-family distribution of educational differences across siblings in the SAF and, second, the within-individual distribution of educational changes over time in the GSS panels. This figure documents a considerable degree of variation in educational attainment across siblings and over time. For example, about 51 percent of siblings in the SAF differ in their educational attainment by at least 2 years, and about 19 percent of individuals in the GSS panels earn at least 2 additional

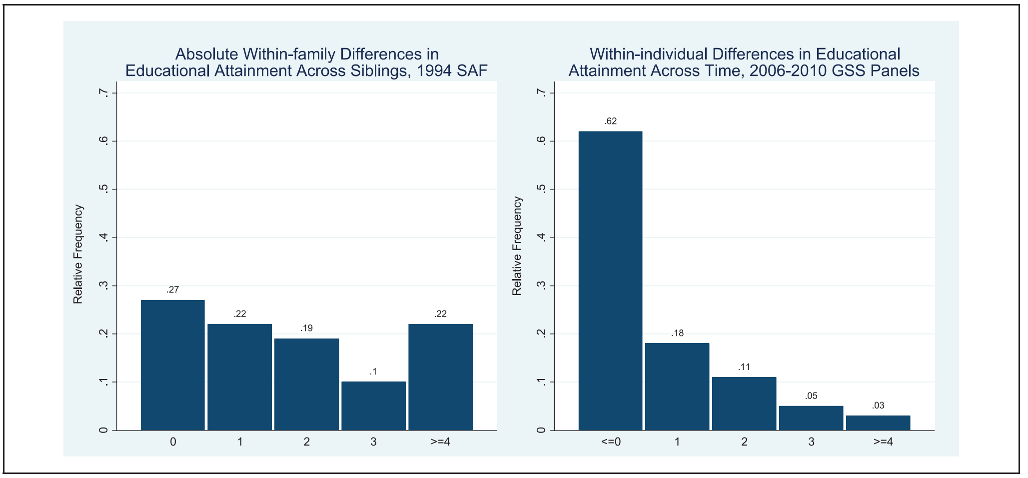

Figure 2. Differences in Educational Attainment across Siblings within Families and across Time within Individuals

Note: The within-individual differences in educational attainment across time from the 2006–2010 General Social Survey (GSS) panels compare the years of education reported at wave 3 of a panel to the years reported at wave 1. Some individuals in the GSS panels erroneously reported that they attained fewer years of education at wave 3 than at wave 1 and thus have negative differences between waves. These negative values have been left censored at 0 in the figure.

years of education between the first and third wave of the survey.[10]

Beliefs about Black-white Inequality and Racial Policy Attitudes

Table 2 presents descriptive statistics for the racial attitudes considered in this analysis, separately for the GSS cross-sections, the SAF, and the GSS panels. The upper rows of the table display the proportion of respondents who agree with each of the structural versus individualist explanations for black-white inequality, and the lower rows display the proportion of respondents who support different racial policies. Several patterns are evident in these data. First, few respondents endorse the individualist explanation for racial inequality that highlights differences in inborn ability. Second, within each mode of explanation, there is considerable variation in the degree to which respondents locate the source of racial inequality in specific structural versus individual factors. For example, although only 5 to 11 percent of respondents report that black disadvantages are due to inborn disability, between 42 and 50 percent of respondents attribute racial inequality to insufficient motivation on the part of blacks. Similarly, across all samples, 44 to 52 percent of respondents agree that racial inequality is due to limited access to education, but only 28 to 37 percent agree that discrimination is an important determinant. Finally, these results indicate that white respondents are more likely to support open housing laws than they are to support racial preferences.

Effects of Education on Racial Attitudes

Table 3 presents estimates for the effects of education on racial attitudes from the

[10]In the GSS panels, about 10 percent of sample members graduated from college (i.e., completed 16 years of education) during the study period. Among sample members who obtained additional schooling during the study period, about 45 percent had not completed any postsecondary education at baseline.

Table 2. Marginal Distribution of Racial Attitudes

Variable	1994–2016 GSS n = 14,749[a]	1994 GSS-SAF n = 1,994 (k = 997)	2006–2010 GSS Panels n = 3,228 (k = 1,076)
Beliefs about racial inequality			
Structural			
Differences due to discrimination	.33	.37	.28
Differences due to lack of education	.45	.52	.44
Individualist			
Differences due to lack of will	.49	.50	.42
Differences due to inborn disability	.10	.11	.05
Racial policy attitudes			
Support racial preferences	.13	.13	.17
Support open housing laws	.69	.65	.74

Note: GSS = General Social Survey; SAF = Study of American Families. Results are combined estimates from 50 multiple-imputation data sets. Cells contain the proportion of sample members who agree with each explanation for racial inequality or support each racial policy.
[a]n = 14,326 for attitudes toward racial preferences, and n = 10,315 for attitudes toward open housing laws.

GSS cross-sections. Consider first the left-hand columns, which present estimated effects from a set of unadjusted LPMs. These estimates indicate that white Americans with higher levels of education, compared to those with lower levels of education, are significantly more likely to agree with structural explanations for racial inequality and are significantly less likely to agree with individualist explanations. For example, compared to those with fewer than 16 years of education, whites who completed at least 16 years of education (i.e., "college graduates") are about 21 percentage points more likely to agree that black disadvantages are due to a lack of quality education. By contrast, white college graduates are about 24 percentage points less likely than those with fewer than 16 years of education to agree that racial inequality is due to a lack of will power on the part of blacks. Unadjusted estimates from the GSS cross-sections also indicate that whites with higher levels of education are significantly more likely than those with lower levels of education to support remedial policies for racial inequality. For example, white college graduates are about 8 percentage points more likely to support open housing laws compared to those with lower levels of education.

The right-hand columns of Table 3 present estimated effects from a set of covariate-adjusted LPMs fit to the GSS cross-sections. These estimates are based on essentially the same methods employed in most prior research on education and racial attitudes. Although somewhat less pronounced, they are similar to the unadjusted estimates discussed previously. They suggest that, among white Americans, attaining a higher rather than a lower level of education significantly increases agreement with structural explanations for racial inequality and reduces agreement with individualist explanations. For example, completing at least 16 years of education (i.e., "graduating from college") is estimated to increase the probability of attributing black-white inequalities to discrimination by about five percentage points and to decrease the probability of attributing racial inequalities to differences in ability by about seven percentage points. The covariate-adjusted estimates also suggest that education significantly increases support for racial preference policies and open housing laws. Specifically, graduating from college is estimated to increase support for racial preferences and open housing laws by about four and six percentage points, respectively.

Table 3. Estimated Effects of Education on Racial Attitudes, 1994–2016 General Social Survey cross-sections (n = 14,749[a])

	Unadjusted Estimates		Covariate-adjusted Estimates	
Variable	Years of Education	College Graduates	Years of Education	College Graduates
Beliefs about racial inequality				
Structural				
Differences due to discrimination	.005**	.051***	.003*	.045***
	(.001)	(.009)	(.002)	(.009)
Differences due to lack of education	.030***	.207***	.023***	.167***
	(.001)	(.009)	(.002)	(.010)
Individualist				
Differences due to lack of will	–.040***	–.236***	–.030***	–.185***
	(.001)	(.009)	(.002)	(.010)
Differences due to inborn disability	–.021***	–.094***	–.016***	–.070***
	(.001)	(.004)	(.001)	(.005)
Racial policy attitudes				
Support racial preferences	.002	.034***	.002	.038***
	(.001)	(.006)	(.001)	(.007)
Support open housing laws	.012***	.075***	.008***	.059***
	(.002)	(.010)	(.002)	(.010)

Note: Results are combined estimates from 50 multiple-imputation data sets. Standard errors are adjusted for heteroscedasticity and are displayed in parentheses.
[a]n = 14,326 for attitudes toward racial preferences, and n = 10,315 for attitudes toward open housing laws.
*$p < .05$. **$p < .01$. ***$p < .001$.

In sum, results from the GSS cross-sections are consistent with the enlightenment perspective, which contends that education promotes structural over individualist beliefs about racial inequality and higher levels of racial policy support. A causal interpretation of these results, however, is premised on the unlikely assumption that unobserved characteristics of individuals and their families do not affect both their racial attitudes and educational attainment. This assumption is relaxed in analyses of sibling and panel data, which are discussed below.

Table 4 presents estimates for the effects of education on racial attitudes from the SAF. For comparative purposes, the left-hand and middle columns, respectively, present estimated effects from a set of unadjusted and covariate-adjusted LPMs fit to these data. Similar to results from the GSS cross-sections, these estimates suggest that white Americans with higher rather than lower levels of education are more likely to agree with structural explanations and less likely to agree with individualist explanations for racial inequality. With a few exceptions, these estimates are substantively large and statistically significant. In addition, both the unadjusted and covariate-adjusted estimates from the SAF suggest that whites with higher levels of education are more likely to support remedial policies for racial inequality and, in particular, open housing laws.

The right-hand columns of Table 4 present estimates from sibling fixed-effects LPMs, which control for both observed and unobserved characteristics of the shared family environment and for the observed characteristics of individuals outlined previously. Although they are less precise, sibling estimates for the effects of education on stratification beliefs are generally similar to both the unadjusted and covariate-adjusted estimates from the SAF, as they too suggest that attaining higher rather than lower levels of education increases agreement

Table 4. Estimated Effects of Education on Racial Attitudes, 1994 Study of American Families (n =1,994, k = 997)

	Unadjusted Estimates		Covariate-adjusted Estimates		Sibling Fixed-effects Estimates	
Variable	Years of Education	College Graduates	Years of Education	College Graduates	Years of Education	College Graduates
Beliefs about racial inequality						
Structural						
Differences due to discrimination	.009†	.055†	.002	.030	–.003	.044
	(.005)	(.029)	(.006)	(.030)	(.009)	(.049)
Differences due to lack of education	.029***	.158***	.020***	.114***	.024*	.151**
	(.005)	(.027)	(.005)	(.029)	(.009)	(.048)
Individualist						
Differences due to lack of will	–.046***	–.226***	–.035***	–.166***	–.035***	–.161**
	(.005)	(.030)	(.006)	(.032)	(.009)	(.049)
Differences due to inborn disability	–.023***	–.100***	–.015***	–.062***	–.013*	–.031
	(.003)	(.014)	(.003)	(.015)	(.006)	(.027)
Racial policy attitudes						
Support racial preferences	.004	.045*	–.002	.021	.002	.060
	(.004)	(.022)	(.004)	(.023)	(.007)	(.038)
Support open housing laws	.019***	.089**	.010*	.058*	.003	.029
	(.005)	(.026)	(.005)	(.028)	(.009)	(.046)

Note: Results are combined estimates from 50 multiple-imputation data sets. Standard errors, in parentheses, are adjusted for heteroscedasticity and for nonindependence within families.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

with structural explanations and reduces agreement with individualist explanations for racial inequality. Several of these estimates, however, are substantively small and fail to reach conventional thresholds for statistical significance. Nevertheless, the weight of the evidence from these analyses indicates that education promotes structural over individualist explanations for racial inequality and that its effects are strongest for explanations highlighting the role of educational access rather than personal motivation.

Yet despite these ostensibly liberalizing effects of education on beliefs about racial inequality, sibling fixed-effects models fit to the SAF data provide little evidence that education promotes support for policies designed to mitigate racial inequality. Specifically, in contrast to the estimates discussed previously, estimates from sibling fixed-effects models of racial policy support are all substantively small and statistically insignificant, although this is due in part to their greater variability. Nevertheless, compared with results from the GSS cross-sections and "naive" estimates from the SAF, sibling fixed-effects estimates are less consistent with the enlightenment perspective. Rather, these estimates align more closely with the ideological refinement perspective, which posits that education promotes only a superficial endorsement of structural over individualist explanations for racial inequality that is unaccompanied by greater support for remedial policies. These conclusions are somewhat tentative, however, owing to the imprecision with which some effects are estimated in this analysis.

In addition, analyses of the SAF suggest that observed differences in racial attitudes across levels of education are confounded by unobserved characteristics of an individual's family of origin. For example, although covariate-adjusted estimates from the SAF indicate that white college graduates are about six percentage points more likely to support

Table 5. Estimated Effects of Education on Racial Attitudes, 2006–2010 General Social Survey Panels (n = 3,228, k = 1,076)

	Unadjusted Estimates		Covariate-adjusted Estimates		Individual Fixed-effects Estimates	
Variable	Years of Education	College Graduates	Years of Education	College Graduates	Years of Education	College Graduates
Beliefs about racial inequality						
Structural						
Differences due to discrimination	.003	–.013	.000	.007	–.004	–.032
	(.005)	(.022)	(.006)	(.023)	(.010)	(.033)
Differences due to lack of education	.048***	.184***	.040***	.162***	.005	–.012
	(.005)	(.028)	(.006)	(.029)	(.010)	(.037)
Individualist						
Differences due to lack of will	–.040***	–.136***	–.031***	–.106***	–.002	.025
	(.006)	(.027)	(.006)	(.028)	(.010)	(.035)
Differences due to inborn disability	–.011**	–.027*	–.009**	–.019	–.001	–.006
	(.004)	(.012)	(.003)	(.013)	(.005)	(.022)
Racial policy attitudes						
Support racial preferences	.000	.005	–.004	–.005	–.003	–.026
	(.004)	(.020)	(.005)	(.021)	(.007)	(.026)
Support open housing laws	.002	.006	.003	.018	–.004	–.018
	(.005)	(.024)	(.006)	(.026)	(.009)	(.032)

Note: Results are combined estimates from 50 multiple-imputation data sets. Standard errors, in parentheses, are adjusted for heteroscedasticity and for nonindependence within individuals.
*p < .05. **p < .01. ***p < .001.

open housing laws compared to their counterparts with lower levels of education, sibling fixed-effects estimates indicate that graduating from college increases policy support by less than three percentage points, which is not statistically significant at conventional thresholds.

Table 5 presents estimates for the effects of education on racial attitudes from the GSS panels. The left-hand and middle columns, respectively, report estimates from a set of unadjusted and covariate-adjusted LPMs fit to these data for comparative purposes, while the right-hand columns present estimates from individual fixed-effects models, which control for family background characteristics and for stable characteristics of individuals, whether observed or not. The unadjusted and covariate-adjusted estimates from the GSS panels are similar to those from both the GSS cross-sections and the SAF, as they also suggest that whites with higher rather than lower levels of education are significantly more likely to endorse structural over individualist explanations for racial inequality. At the same time, both the unadjusted and covariate-adjusted estimates from the GSS panels provide no indication of differences in racial policy support across levels of education, and the individual fixed-effects estimates from these data provide little evidence that education has a meaningful impact on *any* of the racial attitudes considered in this analysis.

Specifically, the individual fixed-effects estimates suggest that the unadjusted estimates, covariate-adjusted estimates, and estimates from the sibling fixed-effects models discussed previously are all confounded by unobserved characteristics of individuals that are stable over time. For example, covariate-adjusted estimates from the GSS panels, along with estimates—adjusted or not—from the GSS cross-sections and the SAF, all suggest that graduating from college reduces the probability of attributing black-white inequalities to personal differences in will power by at least 10 percentage points. Individual fixed-effects estimates from the GSS panels, by contrast, indicate that attaining a higher level of education does not reduce the probability of such attributions whatsoever, as all of these estimates are close to zero and statistically insignificant.

To summarize, individual fixed-effects estimates from the GSS panels are inconsistent with both the enlightenment and ideological refinement perspectives in that they provide no evidence that education affects any of the racial attitudes considered in this analysis. Rather, when contrasted with estimates based on covariate-adjusted and sibling fixed-effects models, they suggest that the large attitudinal differences observed across levels of education in these analyses may simply be the result of confounding by unobserved characteristics of individuals.

Robustness Checks

In addition to assumptions about the absence of unobserved confounding, causal inferences from this analysis are premised on several assumptions about the absence of model misspecification, the absence of measurement error, and the absence of nonrandom missing data. If any of these assumptions are violated, then estimated effects may be biased, even if the confounding assumptions on which they are based are satisfied. To assess the robustness of my findings to potential violations of these assumptions, this section presents a series of ancillary analyses based on alternative specifications, adjustments for measurement error, and adjustments for missing data.

First, part C of the online supplement presents effect estimates from alternative model specifications. Specifically, it presents results from conventional logit models fit to the GSS cross-sections and from conditional fixed-effects logit models fit to the SAF and the GSS panels, which are less powerful and more difficult to interpret than fixed-effects LPMs but have the advantage of appropriately constraining the conditional probabilities to fall within the unit interval. Estimates for the effect of education on racial attitudes from these alternative specifications are substantively similar to those reported previously.

Second, if education is measured with error, then effect estimates are biased, in this case toward zero. Bias due to measurement error is especially concerning with fixed-effects models because they compound the problem by disproportionately filtering out variation due to true differences in education levels rather than artificial differences associated with mismeasurement. Part D of the online supplement presents results based on several adjustments for measurement error in education. Estimates based on these adjustments are similar to those reported previously, which suggests that my findings are robust to measurement error.

A related concern with fixed-effects models is that hypothesis tests based thereon may not possess sufficient statistical power to detect the true effects of education. This is because these methods rely on a smaller fraction of the variation in education to estimate its effects on attitudes, which can inflate sampling variance and thereby limit statistical power. Although standard errors for the fixed-effects estimates reported previously are larger than those from conventional regression models, post hoc power calculations suggest that these analyses are not especially underpowered. For example, in Table 5, the standard error of the individual fixed-effects estimate for the impact of graduating college on beliefs about whether black disadvantages are due to a lack of will power is .035. This indicates that the fixed-effects analysis could detect a true effect as small as

$\pm.098$ (i.e., 2.8 times the standard error) at the .05 significance level with 80 percent power (Bloom 1995). The minimum effect detectable with 80 percent power in the individual fixed-effects analysis is therefore smaller than all of the covariate-adjusted point estimates for the same outcome. In other words, if the true effect were equal to that estimated from the conventional regression models, the individual fixed-effects analysis would be able to detect it at least 80 percent of the time in repeated sampling. With a few exceptions, the minimum effects detectable with 80 percent power in the fixed effects analyses are less than or comparable to the effects estimated using conventional regression.

Finally, because of survey nonresponse, sibling nonresponse, and panel attrition, some sample members are missing data for the variables of interest. To account for the uncertainty and potential biases associated with missing data, I report combined estimates based on multiple imputation. Part E of the online supplement presents estimates based on alternative methods of adjusting for missing data, including inverse probability weighting, multiple imputation then deletion, last-observation-carried-forward imputation, and complete case analysis (Little and Rubin 2002; von Hippel 2007). Results indicate that effect estimates are stable across these different procedures for handling missing data.

DISCUSSION

The effect of education on racial attitudes is a contested topic. The enlightenment perspective contends that education promotes belief in structural rather than individualist explanations for racial inequality, which, in turn, engenders support for policies designed to overcome structural barriers to minority advancement. The ideological refinement perspective, by contrast, contends that education merely enables members of a dominant racial group to articulate a more sophisticated legitimizing ideology for racial inequality characterized by superficial endorsement of structural over individualist explanations for racial inequality and by limited support for remedial policies. Yet another perspective cautions that education may not have any meaningful effects on racial attitudes and that the differences in stratification beliefs commonly observed across levels of education may simply reflect unobserved confounding. This study evaluates these perspectives by estimating the effects of education with several methods and data sources.

Results from conventional regression models fit to the GSS cross-sections, which indicate that education promotes structural over individualist beliefs about racial inequality and greater support for several remedial policies, are highly consistent with the enlightenment perspective. These analyses, however, are premised on strong and arguably unrealistic assumptions about the absence of confounding by unobserved characteristics of individuals and their family of origin. By contrast, results from sibling fixed-effects models fit to the SAF, which avoid bias due to confounding by unobserved characteristics of the shared family environment, also suggest that education promotes structural over individualist beliefs about racial inequality, but they provide no evidence that education affects policy support, consistent with the ideological refinement perspective. Results from individual fixed-effects models fit to the GSS panels, which additionally avoid bias due to unobserved confounding by stable characteristics of individuals, provide little evidence that education affects any of the racial attitudes considered in this analysis, consistent with arguments highlighting the distortionary influence of unobserved confounding.

Although it provides new and more defensible evidence about the attitudinal effects of education, this study is not without limitations. First, although fixed-effects analyses control for several types of unobserved confounding, they are premised on several strong modeling assumptions that are difficult to evaluate. In particular, these methods implicitly assume the absence of "dynamic causal relationships" between different measures of the outcome and treatment (Imai and Kim 2016). In fixed-effects analyses of the SAF, this implies, for example, that the racial attitudes of a respondent's sibling must not causally affect the respondent's own racial attitudes or schooling decisions. In fixed-effects analyses of the GSS panels, this implies, for example, that an individual's beliefs about racial inequality at the end of high school must not causally affect the individual's decision to attend college. Because racial attitudes may diffuse from one sibling to another and/or affect future schooling decisions, fixed-effects estimates may be biased. The same assumption, however, is required of conventional covariate-adjusted models, as it is subsumed by the stronger and more general assumption of no unobserved confounding. Thus, although not beyond critique, the assumptions that motivate fixed-effects models are still considerably weaker than those required of other methods commonly employed in research on education and racial attitudes.

Second, the target population for the GSS does not cover individuals living in "group quarters," which includes students residing in college dormitories. If the effect of education on racial attitudes differs for students living on versus off campus, then individual fixed-effects estimates from the GSS panels may be biased. Only about 12 percent of students live on campus in university housing (National Center for Education Statistics 2014; National Research Council 2012); thus, the GSS target population still covers the vast majority of individuals enrolled at postsecondary institutions, and the changes in education observed in these data are not atypical. This implies that any bias due to the exclusion of the on-campus population is likely to be small, and it suggests that effect estimates based on temporal variation in completed schooling among college-aged adults in the GSS panels are broadly, if not perfectly, representative.[11]

A related concern with the GSS panels is that they sample only individuals age 18 or older and then conduct follow-up interviews only at two and four years after baseline, which artificially restricts the range of possible changes in education over time. Although the GSS panels capture the changes in education most likely to affect racial attitudes (i.e., the receipt of a university education during early adulthood), range restrictions still may artificially suppress estimates based on fixed-effects models fit to these data.

To address these limitations, part F of the online supplement presents additional evidence of confounding bias in conventional estimates of education effects on intergroup attitudes from the 1979 National Longitudinal Survey of Youth (NLSY79; Bureau of Labor Statistics 2016). The NLSY79 avoids the limitations outlined previously, as its sample design covered all youth age 14 to 22 in 1979, regardless of whether they lived in group quarters, and follow-up interviews have been conducted through 2014. Unfortunately, the NLSY79 does not include questions about racial attitudes, precluding an exact replication with these

[11]This is because the true population average effect is a weighted combination of effects in the subpopulation with zero probability of sample selection and in the subpopulation with positive probability of selection, with weights equal to the relative size of the subpopulations.

data. It does, however, include questions about gender role attitudes, which are commonly hypothesized to be affected by education in much the same way as racial attitudes (e.g., Banks 1995; Campbell and Horowitz 2016). Results from a parallel analysis of education effects on gender role attitudes in the NLSY79 are highly consistent with findings from the GSS panels: they too indicate that conventional estimates are substantially inflated by unobserved confounding (see the online supplement on the SAGE SPQ website). These ancillary results attenuate concerns that my findings from the GSS panels are simply due to the peculiarities of their design. Rather, they provide additional evidence of a more generic problem with confounding bias in studies of education effects on sociopolitical attitudes.

Finally, this analysis is based only on attitudes and lacks measures of behavior. What people say and what people do are often very different (Jerolmack and Kahn 2014). If survey-assessed attitudes do not reflect, for example, how individuals actually vote on racially charged issues, then the results of this analysis could be somewhat misleading. Social desirability bias also could distort responses to questions about racial policies in the same way it does for stratification beliefs, although this bias is likely much less pronounced because norms regulating policy attitudes are not as strong and because there are ostensibly race-neutral justifications for opposing affirmative action policies.

The cumulative weight of these limitations dictates caution when drawing strong conclusions from my results, and future research should attempt to improve upon the present study by evaluating the effects of education on racial attitudes with more rigorous quasi-experimental designs. This might involve a difference-in-difference analysis of graduating high school seniors with a sufficiently long follow-up period or an instrumental-variables analysis that instruments for years of completed education using a measure of distance to the nearest university, among other possibilities. In addition, future research should continue to investigate the theoretical foundations of the enlightenment and ideological refinement perspectives by, for example, testing whether the effects of education on racial attitudes differ depending on the local intensity of intergroup political conflict or competition over resources. Another important direction for future research will be to examine the effects of education on behavioral measures of prejudice and discrimination.

Despite its limitations, the present study provides nontrivial evidence that education may not be as “enlightening” with regard to beliefs about racial inequality as is commonly assumed and that unobserved characteristics of individuals and their families of origin may play an important confounding role in analyses of education and racial attitudes. These findings suggest that a reconsideration of the large literature purporting to document strong liberalizing effects of education may be in order.

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