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Colorism Revisited: The Effects of Skin Color on Educational and Labor Market Outcomes in the United States

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Abstract: Studies of colorism—the idea that racial hierarchies coexist with gradational inequalities based on skin color—consistently find that darker skin correlates with lower socioeconomic outcomes. Despite the causal nature of this debate, evidence remains predominantly associational. This study revisits the colorism literature by proposing a causal model underlying these theories. It discusses conditions under which associations may reflect contemporary causal effects of skin color and evaluates strategies for identifying these effects. Using data from the AddHealth and NLSY97 surveys and applying two identification strategies, the study estimates the causal effects of skin color on college degree attainment, personal earnings, and family income among White, Black, and Hispanic populations in the United States. Results show that darker skin correlates with poorer educational and economic outcomes within racial groups. However, evidence of contemporary causal effects of skin color is partial, limited to college attainment of Whites and family income of Hispanics. For Blacks, results suggest a generalized penalty associated with being Black rather than gradation based on skin tone. Methodologically, the article advocates using sensitivity analyses to account for unobserved confounders in models for skin color effects and uses sibling fixed-effects as a secondary complementary strategy.

Keywords: colorism; skin color; race; inequality; causal effects

Replication Package: The code necessary for reproducing the data manipulation, modeling, and findings is accessible at https://osf.io/vm647/?view_only=5b6477b89c284a889d9e3c77fc6e8fe1.

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The study of racial stratification in the United States is generally the study of inequalities between discrete groups with boundaries sharply demarcated by common ancestry. Yet, race scholars have long noticed that categorical racial hierarchies coexist with a fuzzier gradational order based on phenotypic characteristics, of which skin color is the most salient. This phenomenon, termed "colorism," is rooted in an ingrained system of social valuation that privileges people with light skin and other phenotypic markers deemed "European" over their darker counterparts. Like racism, colorism operates through various forms of discrimination, but, unlike racism, it can occur both between and within racial groups.

Animated by this theory, a large body of empirical studies has examined and consistently found that, above and beyond well-documented racial inequalities, having a darker skin tone is associated with myriad adverse outcomes, from poorer health to less schooling and lower earnings than lighter same-race individuals (Monk, 2021b). Yet, although theories of colorism are causal in nature—as is evident in recurring framing in terms of skin tone discrimination, preference for whiteness, and returns to lightness—the vast majority of studies are unable to establish a causal link between an individual's skin tone and her socioeconomic outcomes. In particular, a critical challenge for scholars of colorism is to disentangle contemporary skin color discrimination from the accumulated consequences of historical racism—that is, demonstrating that differences in socioeconomic achievement by skin color are produced by current skin color discrimination rather than by inherited disadvantage due to race and color-based discrimination in previous generations (Flores and Telles, 2012). Although the former relates to the effects of present-day societal attitudes, legal frameworks, and institutional practices that perpetuate skin color discrimination, the latter points to the enduring consequences of historical racism's legacy, which consolidates racial and socioeconomic disadvantages over generations.

In this spirit, the present study revisits the sociological literature on colorism by proposing a general causal model underpinning colorism research. Building on this model, the article discusses conditions under which skin color associations would capture the contemporary causal effects of skin color, and evaluates two empirical strategies for the identification of these effects: regression adjustment models supplemented by sensitivity analysis for unobserved confounding and sibling fixed-effects (SFE) models. Using data from the National Longitudinal Study of Adolescent to Adult Health (AddHealth) and the National Longitudinal Survey of Youth 1997 cohort (NLSY97), the article aims to estimate the contemporary causal effects of skin color on college degree attainment, personal earnings, and family income among White, Black, and Hispanic populations, the three major racial groups in the United States.

In line with previous research, I find that lighter skin tone is strongly associated with better educational and economic outcomes across all ethnoracial groups, although with ostensible variability in strength. I interpret these associations as capturing both the contemporary causal effect of skin color on socioeconomic outcomes and inherited disadvantage due to race- and color-based discrimination in past generations. Crucially, however, when trying to disentangle these two sources of skin color stratification, this study finds only partial evidence of contemporary causal effects of skin color on educational and economic outcomes, limited to the college attainment of Whites and the family income of Hispanics. These results also suggest that skin color has null or minor contemporary effects on Black Americans' educational and economic attainment, indicating a generalized penalty associated with being Black rather than a gradation based on skin tone. In the case of Hispanics, it can be argued that skin color and other visible markers assume a heightened significance in determining life chances, likely due to the Hispanic identity in the United States not being as rigidly defined by a history of institutionalized and categorical racism. Furthermore, the observed influence of skin color on the educational attainment of Whites aligns with prior evidence of colorism within this group Branigan et al. (2013), challenging the prevalent belief that skin color is inconsequential for the socioeconomic trajectories of White Americans.

Evidence from sibling fixed-effects model is in partial agreement with the above patterns but lacks precision, hindering the ability to draw substantive conclusions. Methodologically, the article advocates the use of sensitivity analyses to account for unobserved confounders in regression models for skin color effects and uses sibling fixed-effects models as a secondary complementary strategy.

Overall, these findings suggest that the observable associations between skin color and socioeconomic outcomes partially reflect the consequences of color-based stratification in previous generations. As for the contemporary causal effects of skin color, findings indicate that skin lightness positively affects the educational attainment of Whites and the family income of Hispanics. These results highlight the difficulty of identifying the causal effects of skin tone with observational data and suggest that scholars should be careful when interpreting findings of contemporary inequality within the colorism literature.

Skin Color and Race

Racial distinctions in the United States have long been construed as primarily based on ancestry rather than phenotype. Most studies operationalize race as clearly demarcated discrete groups with boundaries determined by common ancestry (e.g., Whites, Blacks, Asians). Yet, race scholars have long noticed that categorical hierarchies among racial groups coexist with a more subtle gradational order based on phenotypic characteristics, of which skin color is the most salient [1] (Telles et al., 2015; Bailey et al., 2016). This phenomenon, termed "colorism," would be rooted in an ingrained system of social valuation privileging people of lighter complexion over their darker counterparts. Like racism, scholars argue, colorism would operate through "overt and covert actions, outright acts of discrimination, and subtle cues of disfavor" (Maddox, 2004; Hunter, 2008; Monk, 2021b, 2022). However, unlike racism, colorism might involve discrimination from both out-groups and members of a person's own ethnoracial group (Monk, 2021a).

The historical origins of colorism vary across racial groups in the United States (Dixon and Telles, 2017). In the case of African Americans, it has been extensively documented that the preference for lighter skin dates at least back to slavery, when it was seen as evidence of White ancestry and a signal of higher intellect (Reuter, 1918, p.378). On this basis, in the antebellum South mulattoes and lighter-tone Black individuals were generally assigned to domestic service instead of manual labor, a privilege that gave them access to basic education and training Davis (1991). These privileges accumulated over generations through intermarriage, the right to save money, and the intergenerational transmission of service occupations, positioning mulattoes and fairer-skin Blacks at the top of the social hierarchy among Black communities (Wirth and Goldhammer, 1944; Steinbruck, 1978; Keith and Herring, 1991; Hill, 2000). Although the civil rights and Black Power movements might have contributed to attenuating the significance of skin tone among African Americans (Gullickson, 2005), a majority of studies suggest that color-based stratification persists in the aftermath of the civil rights movements (Dixon and Telles, 2017).

Similarly, the phenomenon of colorism among Hispanics has colonial origins. Colorism in Latin America is the product of a history of continued mixing between descendants of European settlers, indigenous peoples, and, in some countries, African slaves. Despite the colonizers' early attempts to put in place a fine-grained system of racial categories, in the long run, sustained miscegenation created a color continuum with blurry boundaries among previously categorized populations (Wade, 2010, p.27). The erasure of strict racial boundaries was further spurred by “ideologies of mestizaje,” heavily promoted by the newly independent republics in their nation-making efforts (de la Fuente, 2011, p.16,Telles et al., 2014). Nevertheless, despite state efforts, these societies remained de facto stratified by color, featuring a White elite at the top, a heterogeneous mixed-race majority in the middle, and indigenous people or African decedents at the bottom. To date, socioeconomic, political power, and social prestige have been intimately linked to European ancestry (Villarreal, 2010; Campos-Vazquez and Medina-Cortina, 2019). Consequently, recent scholarship has characterized Latin American countries’ racial order as “pigmentocracy“ (Telles et al., 2015; Bailey et al., 2016), in which the color continuum is the primary “category of practice” for the understanding of race (Wade, 2010, p.55 Wade, 2005; Sue, 2009), and where a lighter tone is a marker of higher socioeconomic status and a feature deemed desirable by individuals of all phenotypic complexions (Murguia and Telles, 1996; Uhlmann et al., 2002).

Although diverse in origins, a “preference for whiteness” would be therefore expected for the two main minority groups in the United States. In the case of more recent migrant groups (i.e., Hispanics and Asians), preexisting racial biases may coincide with the racial schema already in place in the United States, hence perpetuating assumptions about the higher value of “whiteness” among themselves and White Americans.

We know much less regarding how Whites are evaluated on the basis of skin color. Race scholars typically treat whiteness as a reference category with respect to which minorities obtain advantages or disadvantages depending on their phenotypic proximity to it. The White population itself, however, has been assumed to be a relatively homogeneous group that is socially privileged with respect to minorities but within which skin tone is more or less irrelevant for socioeconomic attainment (Branigan et al., 2013, 2017). Although this might have been the case in the past, when “White” was a more restrictive racial category, it is possible that skin color has become more relevant for socioeconomic attainment among Whites due to the increased flexibility of the White racial category in the United States. The “White” category has historically expanded to include populations previously racialized and stigmatized as non-Whites, such as Irish and Southern Italians (Jacobson, 2019; Alba, 1985). More recently, scholarly work shows that Middle Eastern– and North African–origin populations are both officially considered White (in the Census) but not generally perceived and treated as such in everyday life. Thus, ongoing migration from these regions may contribute to ambiguity and complexity within who counts as White in the United States (Lee and Bean, 2007, 2004; Maghbouleh, 2020; Maghbouleh et al., 2022).

Skin Color and Life Chances

Several studies in the United States have reported that darker skin tone is associated with poorer outcomes in education, health, labor markets, wealth accumulation, and the criminal justice system, among others. Most of these studies focus on Blacks or Hispanics separately, sometimes including Whites for comparison.

Darker-skinned Blacks attain significantly less education than their lighter counterparts (Branigan et al., 2013; Monk, 2014) and are more likely to experience disciplinary problems in school (Hannon et al., 2013). Consistently, the White–Black educational attainment gap tends to close as skin tone lightens (Hersch, 2006). In these studies, accounting for available measures of parental background tends to reduce, yet does not eliminate, the impact of skin tone, suggesting that the educational advantages observed among lighter-skinned Black individuals stem from a combination of their more favorable socioeconomic backgrounds and differential treatment based on skin color. Newer evidence, however, complicates findings on colorism: Thompson and McDonald (2016) finds that the negative effect of a darker skin tone on educational achievement applies to all ethnoracial groups but Blacks. This result suggests a categorical penalty of Blackness whereby the mere fact of being Black results in disadvantage, even after accounting for socioeconomic background and contextual effects. Branigan et al. (2017) report a similar pattern regarding the likelihood of arrest.

Skin color stratification also takes place in the labor market. Findings regarding the effect of skin color on hiring decisions and employment status are mixed (Wade et al., 2004; Hersch, 2006; Monk, 2014; Kreisman and Rangel, 2015; Abascal and Garcia, 2022), but evidence of a dark skin wage penalty is extensive. White workers earn substantially more than comparable medium or dark-skinned Black workers (Hersch, 2006; Keith and Herring, 1991), but this gap is smaller with respect to lighter-skinned Blacks (Goldsmith et al., 2006, 2007). These disparities are robust to adjusting for traditional wage-related factors such as education and experience, as well as parental education. Similarly, looking at household income, (Monk, 2014) documents a three percent increase in the income of African Americans associated with a unit increase on a one to seven lightness scale, a result that holds after controlling for sociodemographic variables, educational attainment, and the mother's education. (Kreisman and Rangel, 2015) observed that the wage gap between darker- and lighter-skinned Black workers increases with age. Similarly, (Adames, 2023) finds that this trend extends to wealth accumulation patterns, finding that Black individuals with darker skin accumulate wealth at a slower pace than their lighter-skinned peers.

A largely independent branch of sociological research has reported similar patterns for the effect of skin color on the life chances of Hispanic Americans (Arce et al., 1987). Lighter-skinned, more European-looking Mexican Americans complete more years of schooling than those with darker skin and more indigenous physical complexion (Flores and Telles, 2012; Villarreal, 2010; Murguia and Telles, 1996)—a gap that remains after controlling for available information on socioeconomic background. Likewise, Mexican Americans of lighter complexion tend to earn more than darker coethnics with comparable human and social capital (Telles and Murguía, 1992; Murguia and Telles, 1996). More recently, Frank et al. (2010) have shown that Hispanic immigrants of lighter skin earn, on average, $2,500 more per year than their darker-skinned counterparts. Darker-skinned Cuban and Mexican Americans are also more likely to be employed in less prestigious occupations than their lighter counterparts (Espino and Franz, 2002).

The bulk of literature focuses on Blacks and Hispanics, and we know very little about the socioeconomic consequences of skin color for other racial groups in the United States (see (Ryabov, 2016) for the case of Asian Americans). To my knowledge, only one article has focused on White Americans. Branigan et al. (2013) investigate the relationship between skin color and educational attainment for native-born White and Black Americans, finding a color penalty among White women comparable to that found for Blacks. Their results question the widely held assumption that skin color among Whites is inconsequential for life chances.

Causal Mechanisms: Skin Tone Discrimination

Theories of colorism are causal at their core: they state that the life chances of an individual who belongs to a given ethnoracial group would be better/worse off if her skin color were lighter/darker. Within this literature, such skin color effects are not limited to skin pigmentation but also capture the effects of other racialized phenotypic traits correlated with color, such as facial features or type of hair (Monk, 2021b, p.78).

Scholarship on the topic identifies a plurality of possible causal mechanisms for the damaging effect of darker skin tone on socioeconomic outcomes. They all, however, point to forms of discrimination, whether in the form of "differential treatment" or "disparate impact" (Wang et al., 2013; Pager and Shepherd, 2008). In the first case, darker-skinned individuals receive poorer treatment than their lighter counterparts because of their skin tone. In the second case, such disparities do not arise from color preferences but rather from behaviors and social practices that adversely impact people of darker skin tone.

Differential treatment could be rooted in a generalized preference for whiteness (i.e., taste-based discrimination). That is, gatekeepers to opportunity—teachers, employers, or even families—may favor lighter complexion individuals on the sole basis of their skin tone. As Rangel (2015) finds in Brazil, unequal treatment may begin in early childhood when parents themselves, having internalized the social valuation of whiteness, favor lighter children over their darker-skinned siblings. Differential treatment may also stem from (inaccurate) "statistical discrimination," where skin tone is used as a surrogate for valuable traits, such as intelligence, motivation, or productivity. In educational environments, stereotypes can lead educators to perceive light-skinned students as more intelligent, better prepared, and more well-behaved compared to their darker-skinned counterparts. This biased perception may result in less attention being given to darker-skinned students, which in turn could discourage them from pursuing opportunities for educational advancement. Likewise, employers might prefer whiter applicants because they are seen as better prepared and are more likely to come from an advantaged social background. Relatedly, if employers anticipate colleagues and customers/clients to act on a preference for whiteness, they might be more likely to hire and pay better such employees because of the expected higher return for their work.

Discrimination may as well originate from behaviors and practices that (dis)favor traits correlated with skin tone (i.e., disparate impact). In this line, it has been argued that physical attractiveness might be a crucial mediator in the relationship between skin tone and socioeconomic achievement. Since perceived attractiveness is deeply entangled with phenotypic traits such as skin tone (van den Berghe and Frost, 1986; Hunter, 2002; Hill, 2002), the fact that attractiveness is valued and rewarded in school and the labor market (Webster and Driskell, 1983; Hamermesh and Biddle, 1994; Liu and Sierminska, 2015; Talamas et al., 2016) might have a disparate impact on individuals of different skin color, privileging lighter-skinned individuals while disadvantaging those with darker skin (Monk et al., 2021).

A Causal Model for Skin Color Effects

Following Holland's famous "no causation without manipulation" (Holland, 1986), causality scholars have often argued that the effects of "immutable" attributes such as gender and race cannot be meaningfully interpreted through counterfactual reasoning (i.e., questions of the type "if all else were equal, what would individual *i*'s income be if she were Black instead of White?"). More recently, however, some researchers have proposed a more flexible causal framework that interprets race-related effects through a nonessentialist lens (VanderWeele and Robinson, 2014). Specifically, understanding race as a "bundle of sticks" makes it possible to single out constitutive elements of race—such as physical and cultural traits—and facilitates the undertaking of sensible counterfactual analysis within groups of individuals sharing similar circumstances, like those in a racial group (Sen and Wasow, 2016; Katz et al., 2020). Although often implicit, this is precisely the aim of most research on colorism, which is ultimately concerned with counterfactual questions of the type: "all things being equal, how would individual *i*'s income differ if she were a brown-skinned Black person rather than a dark-skinned Black person?"

Yet, despite the causal nature of the questions animating the colorism literature—as is evident in recurring framing in terms of skin tone discrimination, preference for whiteness, and returns to lightness—the vast majority of available studies on the topic offer associational evidence. Scholars of colorism consistently report that having a darker skin tone is predictive of depressed life chances but carefully avoid causal statements when communicating findings[2]. This notable disconnect between theoretical motivation and empirical execution speaks to the difficulty of the task at hand.

Indeed, establishing the causal status of the observable association between skin color and socioeconomic outcomes poses several challenges for causal inference. In what follows, I rely on directed acyclic graphs (DAGs) to illustrate some of these challenges and evaluate possible identification strategies for skin color effects. Figure 1 represents a nonparametric structural model encoding my understanding of the relevant causal relationships linking skin color and socioeconomic outcomes. In this model, a person's socioeconomic outcome (Y_1) is directly caused by her skin color (C_1), various dimensions of socioeconomic background (Y_0, W_0; say income and wealth of her parents), and individual characteristics such as age and gender (X_1). In addition, personal ability (A_1) and other factors (U_1) also cause a person's socioeconomic outcomes.

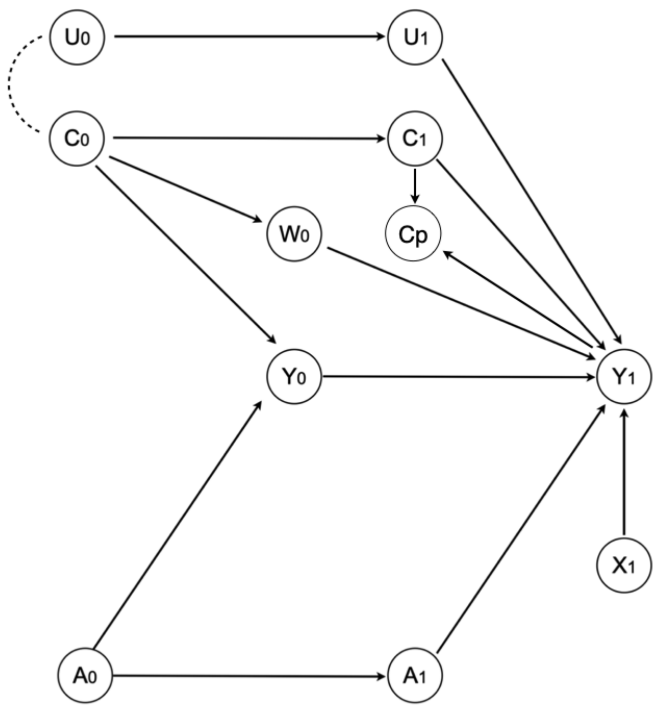

Figure 1: Causal graph of the effect of skin color on socioeconomic outcomes. Y_1 = socioeconomic outcome of interest, C_1 = an individual's skin color, C_0 = parental skin color, $\{Y_0,W_0\}$ = different dimensions of parents' socioeconomic status. U_1 = factors that affect socioeconomic attainment and are correlated with skin color C_1 due to unobserved causal processes in past generations. X_1 = individual attributes unrelated to skin color, A_1 and A_0 = individual and parental ability, respectively. Finally, C_p = interviewer's perception of an individual's skin color.

This causal model also considers processes of intergenerational transmission. For simplicity, I illustrate these processes in a two-generations model, but intergenerational transmission could be traced back an arbitrarily large number of generations. In this model the skin color of parents (C_0) is a direct cause of their own socioeconomic attainment (Y_0 and W_0) and of the skin color of children (C_1). Consequently, parental skin tone is also an indirect cause of children socioeconomic outcomes: $C_0 \rightarrow \{Y_0, W_0\} \rightarrow Y_1$. Likewise, parental ability (A_0) is a direct cause of their socioeconomic attainment (Y_0 and W_0) as well as of their children's ability (A_1) and thus, parental ability is another indirect cause of children's socioeconomic outcomes: $A_0 \rightarrow \{Y_0, W_0, A_1\} \rightarrow Y_1$. Finally, U_1 represents other factors that causally affect socioeconomic attainment Y_1 and are, at the same time, correlated with skin color C_1 due to complex unobserved causal processes in past generations (e.g., cultural traits, place of residence).

Although not a part of the causal process but rather a measurement concern, the graph also incorporates the interviewer's perception of an individual's skin color C_p. If perceived color is influenced by both the individual's skin color C_1 and her socioeconomic achievement Y_1, measuring color through interviewer perception would induce an endogenous association between skin color and outcomes. This issue is further discussed in the measurement section.

Several features of the causal process represented in Figure 1 complicate the identification of skin tone effects on socioeconomic outcomes (the arc $C_1 \rightarrow Y_1$). The most evident challenge is to demonstrate that differences in socioeconomic achievement by skin color are produced by current discrimination rather than inherited disadvantage due to color-based stratification in past generations (Flores and Telles, 2012). If skin tone was a determinant of life chances in previous generations, then, given the intergenerational transmission of both color and socioeconomic attainment, one would still find an association between skin color and socioeconomic outcomes in the current generation, even if skin color had no contemporary effects. In such a case, a skin color gradient in socioeconomic outcomes would capture the legacy of race and color-based discrimination in the past[3]. In the DAG, this spurious association between skin color and socioeconomic achievement is expressed by the open backdoor paths $C_1 \leftarrow C_0 \rightarrow Y_0 \rightarrow Y_1$ and $C_1 \leftarrow C_0 \rightarrow W_0 \rightarrow Y_1$.

In order to alleviate this problem in the identification of contemporary skin color effects, most studies control for some dimension of socioeconomic background, such as parental occupation (Arce et al., 1987; Keith and Herring, 1991; Flores and Telles, 2012; Branigan et al., 2013) or parental education (Keith and Herring, 1991; Monk, 2014; Murguia and Telles, 1996; Hersch, 2006; Goldsmith et al., 2007; Branigan et al., 2013; Goldsmith et al., 2006). In such cases, the aim is to block noncausal paths by adjusting for socioeconomic variables that "descend" from parental skin color—here Y_0 and W_0. However, such a strategy is limited in at least two ways. First, fully adjusting for parental socioeconomic standings is a data-demanding task. In empirical settings, the battery of available controls is often limited, with parental income and wealth systematically absent in previous studies (see Abascal and Garcia (2022) for an exception). Thus, given the likely positive association between parents' color (measured as lightness) and their socioeconomic status, failing to control for a relevant dimension of social origins will upwardly bias estimates of the skin color effect—for example, if parental income is adjusted for but other parental socioeconomic dimensions are unobserved.

A second, often unnoticed, limitation is that controlling for parental background might alleviate the risk of confounding but could induce "collider bias." In the structural model described in the DAG, parental income Y_0 is the product of both parent's ability A_0 and their skin color C_0, thus Y_0 is a collider on that path. As a consequence, if parental ability A_0 or another similarly located variable is unobserved—as is often the case—adjusting for Y_0 will induce spurious correlation between parental ability and parental skin color, opening a noncausal path between skin color and the socioeconomic outcome of interest: $A_1 \rightarrow A_0 \rightarrow Y_0 \leftarrow C_0 \rightarrow C_1 \rightarrow Y_1$. In this particular example, since both skin lightness C_0 and ability A_0 plausibly have positive effects on parental socioeconomic outcomes Y_0, conditioning on Y_0 would induce a negative correlation between these two variables[4]. Hence, if parental skin color, children's skin color, and children's socioeconomic achievement $\{C_0, C_1, Y_1\}$ were all positively correlated, conditioning on socioeconomic background Y_0 would induce downward bias to estimates of the skin color effect—assuming effects are monotonic (Vanderweele and Robins, 2010). In sum, adjusting for socioeconomic background can work as a double-edged sword, simultaneously inducing upward and downward bias to estimates of the skin color effects, with a net balance that is unknown a priori.

An important assumption encoded in the DAG in Figure 1 is the absence of ancestors of the focal causal variable C_1, other than C_0. This assumption implies that only parental skin color (and other race-related factors) can be plausibly thought of as a cause of an individual's color, thus precluding the possibility of other common causes of skin tone and socioeconomic outcomes. However, a different type of confounders complicates the identification of contemporary skin color effects. Such confounders—denoted as U_1—would be factors that causally affect socioeconomic attainment Y_1 and are, at the same time, correlated with skin color C_1 due to unobserved causal processes that took place in past generations (potentially in a large time scale). In the DAG, I represent this relationship with a dashed arc between C_0 and U_0, which is shorthand for unmeasured causes or correlation between the treatment and outcome variables. Although U_1 is not, strictly speaking, a common cause of skin color and socioeconomic attainment, not adjusting for it would induce bias through the noncausal path $C_1 \leftarrow C_0 \cdots U_0 \rightarrow U_1 \rightarrow Y_1$.

One such confounder might be the place of residence. Building on an argument advanced by Laidley et al. (2019), one could expect skin tone to be spuriously associated with earning if African Americans living in the South were darker-skinned than those in other regions[5] and average wages were lower in the South. Likewise, selective migration of Latino populations to different U.S. regions could induce similarly spurious associations[6]. In addition, it is also possible for cultural traits to confound the relationship between skin color and socioeconomic outcomes. For example, regional accents are subject to discrimination in particular contexts (Grogger et al., 2021). Thus, to the extent that penalized/rewarded accents or other cultural traits are correlated with phenotypic features, as both are constitutive elements of ethnoracial grouping, one might find an association between skin color and socioeconomic outcomes even if discrimination has no basis on phenotypic features—for example, if Southern Italian were discriminated based on accent (Secchi and Seri, 2017) but not for being darker-skinned than Northern Italians.

Adjusting for confounder U_1 would block noncausal paths (e.g., controlling for place of residence). However, failing to do so would result in biased estimates of skin color effects. In such a case, the substantive interpretation of the noncausal association between skin color and socioeconomic outcomes would be contingent on the confounder one is failing to control for. For example, bias induced by not adjusting for place of residence might merely distort interpretations of skin color effects. Instead, not controlling for cultural traits correlated with skin color would result in estimates that still have substantive interpretation in terms of ethnoracial discrimination, more generally.

Finally, the DAG shows that adjusting for parental skin color C_0 would be enough to block all aforementioned noncausal paths. This strategy would yield an unbiased estimate of the causal effect of skin color on socioeconomic achievement, $C_1 \rightarrow Y_1$. However, to the best of my knowledge, information on the skin color of both parents and children is not available in existing surveys. Consequently, researchers are often left with only one feasible alternative: controlling for variables indexing socioeconomic origins and other potential confounders. Building on the discussion above, a Monte Carlo experiment in the online supplement illustrates the potential biases associated with three empirical strategies: (1) adjusting for socioeconomic background to avoid confounding skin tone discrimination with inherited race-based social stratification, (2) not adjusting for socioeconomic background to prevent biases due to conditioning for a collider, and (3) adjusting only for parental skin color. The results confirm that, given the proposed causal model, adjusting for parental skin color would yield an unbiased estimate of the skin color effect. In addition, these results suggest that—assuming only social origins confounders are at play and plausible parameters choice—confounding is likely to dominate collider bias. Thus, the first strategy (adjusting for socioeconomic origins) is preferable (see first section of online supplement for details); that is, it is expected to produce less bias.

Identification Strategies

Expanding upon the preceding discussion, this section delineates and examines the empirical strategies used in this article to estimate the contemporary causal impact of skin color on three distinct yet interrelated outcomes: attainment of a college degree, individual earnings, and household income.

The article uses two strategies to identify these effects: firstly and most importantly, I use regression adjustment to control for relevant pretreatment covariates potentially linked with skin color and socioeconomic outcomes. Given the susceptibility of this approach to omitted variable bias, I supplement this analysis with newly developed methods to assess sensitivity to unobserved confounders in ordinary least squares (OLS) models. Secondly, I apply SFE models to account for observed and unobserved factors that are shared when belonging to the same family. The empirical estimands behind these strategies are distinct, each with specific interpretations and limitations. However, for reasons explained below, regression adjustment, enhanced by sensitivity analyses for unobserved confounders, stands out as the preferred method in this context. On the other hand, I advise caution when using sibling fixed-effects models.

Regression Adjustment and Analysis of Sensitivity to Unobserved Confounders

Existing studies on the effects of skin color on socioeconomic outcomes typically include statistical controls to adjust for pre-“treatment” covariates. Because self-selection into skin color is not possible, pretreatment covariates refer to social origins and sociodemographic variables that might be associated with both skin color and socioeconomic outcome. The goal is to prevent confounding the effect of skin color on socioeconomic attainment with that of social background, which would lead to overestimating skin color effects. However, the limited availability of parental information in surveys measuring skin color makes it unfeasible to exhaustively account for all relevant dimensions of socioeconomic background or other potential confounders, opening room for biases due to unobserved heterogeneity. Compared to previous work, I advance this strategy in two ways: first, I control for a richer set of social background variables, including family income during individuals' adolescence, family structure, parents' educational achievement, and parents' use of public assistance (welfare). Second, I evaluate the sensitivity of regression results to omitted and unobserved confounders. Specifically, I estimate the following linear regression model:

$$y_{ir} = \alpha_r + \theta_r C_{ir} + \boldsymbol{F}_{ir}^{\prime} \boldsymbol{\delta}_r + \boldsymbol{U}_{ir}^{\prime} \boldsymbol{\beta}_r + \varepsilon_{ir} \tag{1}$$

Here y_{ir} is a socioeconomic outcome (e.g., college degree attainment) for respondent i belonging to the ethnoracial group r. C_{ir} is a measure of skin color (higher values correspond to lighter skin) and θ_r is an estimate of its causal effect on y within that ethnoracial group. Likewise, $\boldsymbol{F}_{ir}$ is a vector of socioeconomic background covariates and $\boldsymbol{U}_{ir}$ contains potential confounders unrelated to social origins (referred to as U in the DAG) and basic demographic covariates. $\boldsymbol{\delta}_r$ and $\boldsymbol{\beta}_r$ are its corresponding coefficients. In this setting, $\hat{\theta}_r$ measures the difference in average outcome across individuals that differ in skin color but are otherwise equivalent in observed characteristics. Formally:

$$\theta_r = \mathbb{E}(y_{ir} \mid C_{ir} = c, \boldsymbol{F}_{ir}, \boldsymbol{U}_{ir}) - \mathbb{E}(y_{ir} \mid C_{ir} = c - 1, \boldsymbol{F}_{ir}, \boldsymbol{U}_{ir}) \tag{2}$$

where c is an arbitrary value in the domain of the skin color variable, which varies across ethnoracial groups (see Figure A2 in online supplement).

Note that the regression estimate of θ_r will only correspond to the average causal effect of skin color on the socioeconomic outcome of interest if, within strata defined by combinations of covariate values (e.g., Black men of the same age with similarly educated parents), skin color can be treated as randomly "assigned" to individuals—an assumption often referred to as unconfoundedness or conditional exchangeability. Since unconfoundedness is unlikely to hold even after exhaustive adjustment, I supplemented results from regression models with insights from newly developed methods to evaluate the sensitivity of regression estimates to the omission of any number confounders (possibly all) acting together. Specifically, this type of sensitivity analysis measures the strength that unobserved confounder(s) would need to have in order to nullify the models' results—both point and interval estimates—and assesses the plausibility of such magnitude of confounding by reference to the effects of relevant observed predictors (Cinelli and Hazlett, 2020).

In fitting both regression adjustment models, I actively omit individual features that might be caused by the person's skin color (e.g., physical attractiveness) in order not to distort estimates of the total effect of skin color with posttreatment adjustments (Rosenbaum, 2002; Sen and Wasow, 2016).

Sibling Fixed-Effects Models

An alternative approach is to exploit exogenous between-siblings/within-family heterogeneity in skin tone to estimate its effect on socioeconomic outcomes, removing the influence of factors that are shared across siblings due to the very fact of belonging to the same family (see Kizer (2017), Laidley et al. (2019) and Abascal and Garcia (2022) for a similar approach). As described in the DAG, these observed and unobserved factors include variables that "descend" from parental skin color (e.g., parental income/education Y_0 and wealth W_0), and factors possibly correlated with skin color and outcomes (e.g., place of residence, cultural traits, U_1). If the structural model described above holds, an SFE approach would condition simultaneously on all these factors, allowing us to identify the causal effect of skin color. In addition, an SFE approach would also control for parental skin color C_0 (which is invariant within family), thus carrying out the other available identification strategy simultaneously. Specifically, I estimate the following models:

$$y_{ifr} = \alpha_{fr} + \lambda_r C_{ifr} + \boldsymbol{X}'_{ifr}\boldsymbol{\gamma_r} + \epsilon_{ifr} \tag{3}$$

Here y_{ir} is a socioeconomic outcome (e.g., college degree attainment) for respondent i belonging to family f in ethnoracial group r. On the righthand side of the equation, α_{fr} is a family fixed effect capturing the combined influence of family-level factors on the socioeconomic outcome of interest, $\mathbf{X}_{ifr}$ is a vector of individual-level covariates, and γ_r is the respective coefficients vector. It follows from this specification that, after adjusting for individual characteristics, the expected difference in the outcomes of two siblings is only a function of their difference in skin color[7]. Formally:

$$\lambda_r = \mathbb{E}(y_{ifr} \mid C_{ifr} = c, \boldsymbol{X}_{ifr}, \alpha_{fr}) - \mathbb{E}(y_{ifr} \mid C_{ifr} = c - 1, \boldsymbol{X}_{ifr}, \alpha_{fr}) \tag{4}$$

Although SFEs offer several advantages compared to regression adjustment, this strategy has some noteworthy drawbacks. Regarding external validity, it is important to notice that SFEs estimates are identified within families with children who vary in terms of skin color (hereafter, the identification sample). Since families act not merely as units of grouping but also as environments affecting siblings' outcomes, the effects of skin color identified in this context might not coincide with those observed in the larger population. Such would be the case if, for example, a fraction of parents make conscious efforts to compensate for the consequences of external color-based discrimination (e.g., investing more intensively in their darker-skinned sibling), whereas others reinforce the effects of skin color differences (e.g., investing more intensively in their lighter-skinned sibling). In such a case, the average within-family effect could deviate in unpredictable directions from the population-level effect, depending on the share of parents reinforcing and compensating for skin color inequalities (Engzell and Hällsten, 2022). In addition, since the identification sample (families that exhibit variation in the skin color) may systematically differ from the overall sample (e.g., larger families are overrepresented, as well as intact families), an SFEs approach could induce "selection into identification" (Miller Na'ama Shenhav et al., 2019). Thus, if skin color effects were heterogeneous, the SFEs estimates would be biased with respect to the average causal effect in the population. Table 1 reports descriptive statistics on identification samples for each ethnoracial group.

Another potential drawback of SFE models is that they might inadvertently adjust for within-family shared mediators, thus influencing estimates of the overall impact of skin color. More seriously, these models could activate shared collider variables, potentially introducing bias into the analysis (Sjölander et al., 2022).

Finally, SFE models are susceptible to low statistical power and attenuation bias due to measurement errors (Angrist and Pischke, 2019; Sjölander et al., 2022). Given that siblings typically share similar skin tones, families with siblings of discordant color represent only a fraction of the population (see Figure A3 in online supplement), leading to increased uncertainty around estimates. Similarly, the limited variation in skin color makes these models more prone to measurement error, thus introducing a downward bias into SFE estimates.

Given this context, I prioritize regression adjustment complemented by sensitivity analysis for its direct control of confounders while considering the results from SFE models as supportive but secondary evidence. This strategy strikes a balance between reliability and insight, recognizing the auxiliary yet cautious role of SFE models.

Data, Measures, and Estimation

This article draws on data from two U.S. surveys pivotal in skin color research: the National Longitudinal Study of Adolescent to Adult Health (Harris et al., 2019) and the National Longitudinal Survey of Youth 1997 cohort. AddHealth is a nationally representative sample of students in grades 7 to 12 during the 1994 to 1995 school year, covering ages 12 to 19. The NLSY97, on the other hand, is a cohort study of individuals born between 1980 and 1984, who were between 12 and 17 years old at the start of the survey in 1997. Both surveys collect detailed information on a wide range of topics, including but not limited to the education and labor market outcomes of both parents and children. Importantly, these are, to the best of my knowledge, the only two U.S. surveys that combine information on skin color and sibling data.

The three dependent variables of this study are college degree attainment, personal earnings, and total household income. College degree attainment measures whether an individual has achieved a bachelor's degree or higher. Personal earnings are determined by the earnings before taxes as reported by the interviewee, covering wages or salaries, tips, bonuses, overtime pay, and self-employment income. Total household income is the combined pretax income of all household members contributing to household expenses. I contend that personal income may be more directly affected by skin tone discrimination in the labor market, whereas family income would reflect the combined impact of labor market discrimination and assortative mating based on skin color. In the AddHealth study, I obtained all dependent variables[8] from Wave 5, the most recent wave, when participants aged between 33 and 44 years. For the NLSY97, to align with the approach outlined in Abascal and Garcia (2022) and ensure comparability, I computed the three-year average incomes for the years 2010, 2011, and 2013. For college attainment, I recorded the highest educational level attained by the participants as of 2013.

To assess skin color—the focal independent variable in this study—both surveys relied on interviewer assessments of respondents' skin tones. In Wave 3 of AddHealth, when respondents were aged 18 to 26, they were categorized into the following groups: “black,” “dark brown,” “medium brown,” “light brown,” and “white.” I then coded these categories on a continuous scale ranging from darker (1) to lighter (5) tones. On the other hand, interviewers in the NLSY97 used a 10-point color palette, where 1 denotes the lightest color and 10 the darkest. This rating occurred during the 12th to 14th rounds of NLSY97, when respondents were aged 24 to 30[9]. To align the two measures of skin color, I rescale NLSY97’s 10-point scale to a 1-to-5 scale, mirroring the scale used in AddHealth, with the range extending from darker to lighter tones[10].

Covariates in the statistical analyses include individual characteristics such as age, gender, and race, as well as several variables indicating socioeconomic origin and other possible confounder variables. My measure of respondent’s race corresponds to self-reported race/ethnicity. Because both surveys ask about Hispanicity in a separate question, I established dominance of Hispanicity over racial categories. Throughout the article, I refer to non-Hispanic Whites and non-Hispanic Blacks as Whites and Blacks, respectively.

For social background, I include information on parental education, parental income, parents’ public assistance use (welfare), and family structure. I measure parental education as the level completed by the biological parent with the highest educational achievement. Parental income is defined as the total pretax household income from 1994 in AddHealth and 1997 in NLSY97, including earnings from all household members[11]. In addition, I include a variable indicating whether resident parent(s) received public assistance (defined as “currently” in AddHealth and “ever” in NLSY97). As for family structure, I include a variable indicating whether or not the respondent was a member of an intact family, meaning both biological parents reside in the household.

To account for the potential influence of confounders unrelated to social origins (referred to generically as U_1 in the DAG), all models control for the nativity status of the parents and the place of residence of the interviewee. I measure the parents’ nativity status with an indicator of whether each biological parent was born in the United States (0) or in a foreign country (1). To measure the place of residence, I use the census region of residence at the beginning of each survey. Since individuals might choose their adult place of residence based on their skin color, controlling for residence in later waves might induce distortion due to posttreatment adjustments, and is thus not advisable.

A common concern regarding interviewer-coded measures of skin color is that the perception can be affected by the socioeconomic status of the respondent. In particular, it is believed that “money whitens,” that is, that better-off non-White individuals are more likely to be seen as whiter than their poorer counterparts (Penner and Saperstein, 2008; Schwartzman, 2007). If this endogenous relationship exists, estimates of skin color effects on socioeconomic outcomes would be upwardly biased (Flores and Telles, 2012; Hill, 2000). The longitudinal design of the present research helps mitigate—but not eliminate—this type of bias: phenotypic traits are measured in years prior to the dependent variables[12]. More importantly, since phenotypic traits were measured at an age when participants’ socioeconomic status is still linked to that of their parents—which I control for—it is unlikely that socioeconomic status in adolescence and young adulthood confounds the relationship between skin color and later socioeconomic outcomes.

A related concern with interviewer-coded measures of racial phenotype is that they might be affected by the interviewer's own sociodemographic characteristics, such as her race or social class. In order to account for this possibility, all regression adjustment models control for the race of the interviewer.

The analytic sample is restricted to White, Black, and Hispanic individuals who are not enrolled in an educational institution. Analyses based on regression adjustment are conducted on these samples (hereafter, full samples). In addition, sibling fixed-effects models are estimated on the subsample of all respondents with a full sibling in the sample, including twins. I must stress that the SFE models' skin color effects are identified only from the subset of families that have variation in skin color (the sibling identification sample). Thus, the effective sample size for these models is substantially smaller than the sibling samples, with an average of one-third of the corresponding sibling sample, ranging from 202 observation in NLSY97 Black sibling sample to just 26 observations in AddHealth White sibling sample. Furthermore, the composition of the sibling identification samples differs from that of the full samples, as highlighted by (Miller Na'ama Shenhav et al., 2019). These samples predominantly consist of children from intact families (by design), with parents who are more affluent and educated, especially in White and Black families. Descriptive statistics for the full sample, the sibling sample, and the siblings identification sample are presented in Table 1.

All outcomes are analyzed using linear regression models. College attainment is represented as a binary variable, transforming these regressions into linear probability models. Income variables are logged to ensure a more normal distribution of values. To generate accurate point estimates and standard errors, the analysis accounts for the design structure of each survey. The code necessary for reproducing the data manipulation, modeling, and findings with both data sets is accessible here.[13]

Findings

Sources of Variation in Skin Color

Given that the two empirical strategies used in this article rely on different sources of variation, assessing the composition of skin color variance is important. Regression adjustment taps into within-racial-group skin tone variations but ignores differences across and within families of the same group. In contrast, sibling fixed-effects models focus exclusively on skin color variation among full siblings within a family. Table 2 reports results from variance decomposition of skin color.

These models decompose the total variance into three components: variance between racial groups, variance between families within the same racial group, and variance within families. In addition, I compute the variance in skin color for each racial group separately and then break it down into between-family and within-family components. The findings reveal that the lion's share of skin tone variation is observed between racial groups, with only a small portion occurring within

Table 1: Descriptive Statistics: Full Sample, Siblings Sample, and Identification Sibling Sample

	AddHealth			NLSY97		
Variables	White	Black	Hispanic	White	Black	Hispanic
Full Sample						
Age	28.82	28.89	29.31	27.98	28.04	27.97
Gender	0.45	0.37	0.43	0.53	0.51	0.5
Skin Color	4.96	2.34	4.38	4.3	2.51	3.88
College Degree	0.44	0.35	0.32	0.34	0.15	0.15
log Earnings	10.56	10.18	10.56	10.23	9.72	10.05
log Household Income	10.7	9.74	10.48	10.97	10.2	10.72
Parents Schooling (max)	14.48	13.9	12.18	13.65	11.22	9.78
Family income 1994	3.76	3.22	3.29	5.8	2.87	2.96
Public assistance	0.06	0.16	0.16	0.41	0.71	0.57
Foreign mother	0.04	0.06	0.62	0.03	0.04	0.52
Foreign father	0.04	0.06	0.65	0.04	0.07	0.54
Intact family	0.6	0.35	0.56	0.57	0.25	0.53
N	6473	2118	1464	3079	1737	1401
Siblings Sample						
Age	28.84	28.9	29.29	27.91	28.03	27.98
Gender	0.45	0.37	0.43	0.54	0.54	0.52
Skin Color	4.97	2.15	4.35	4.27	2.48	3.9
College Degree	0.49	0.31	0.34	0.43	0.19	0.14
log Earnings	10.57	10.03	10.54	10.32	10.02	10.03
log Household Income	10.77	9.35	10.3	11.09	10.48	10.82
Parents Schooling (max)	14.59	13.52	11.8	14.09	13.09	9.07
Family income 1994	3.78	3.01	3.48	6.54	4.27	2.98
Public assistance	0.07	0.2	0.16	0.33	0.49	0.51
Foreign mother	0.03	0.02	0.66	0.03	0.05	0.67
Foreign father	0.04	0.04	0.69	0.04	0.07	0.7
Intact family	0.7	0.43	0.69	1	1	1
N	921	220	119	600	145	326
Identification Sibling Sample						
Age	28.97	28.88	28.96	27.94	28.12	28.03
Gender	0.33	0.46	0.42	0.51	0.51	0.5
Skin Color	4.35	2.29	3.94	4.24	2.51	3.84
College Degree	0.5	0.28	0.28	0.47	0.21	0.13
log Earnings	10.64	9.96	10.61	10.39	10.04	9.97
log Household Income	11.08	9.38	10.58	11.07	10.5	10.93
Parents Schooling (max)	15.6	13.53	11.5	13.95	13.24	9.04
Family income 1994	3.81	3.06	3.58	6.5	4.35	2.71
Public assistance	0	0.21	0.11	0.32	0.5	0.52
Foreign mother	0.15	0.01	0.58	0.04	0.06	0.65
Foreign father	0.08	0.03	0.64	0.04	0.1	0.65
Intact family	0.69	0.39	0.59	1	1	1
N	26	86	36	202	110	143

Age measurements correspond to the years 2008-2009 for AddHealth and to the year 2010 for NLSY97.

Table 2: Sources of variation in skin color

	Variance	% Between Race	% Between Family	% Within Family	Sibling Correlation
AddHealth					
Total	2.47	89.28	5.69	5.03	0.47
White	0.03		25.74	74.26	0.74
Black	0.97		53.28	46.72	0.47
Hispanic	0.77		74.42	25.58	0.26
NLSY97					
Total	1.15	76.45	10.74	12.81	0.54
White	0.18		65.98	34.02	0.34
Black	0.69		33.56	66.44	0.66
Hispanic	0.24		36.01	63.99	0.64

groups (11 percent in AddHealth and 23 percent in NLSY97). Within families, the overall correlation in skin color among full siblings is recorded at 0.47 in AddHealth and 0.54 in NLSY97, with significant variability across racial groups and the two surveys.

Separating by race reveals important differences in skin color variation (see also Figure A2 in online supplement): interviewer-reported skin color shows little variation among Whites but significant heterogeneity among Blacks and, to a lesser extent, Hispanics. These findings mirror the social construction of racial categories in the United States, where whiteness is defined by the one-drop rule, and individuals of mixed ancestry are typically classified into non-White groups (Fox and Guglielmo, 2012). Additionally, using an interviewer coding color scale may emphasize homogeneity within the White category (Branigan et al., 2017). Despite potential biases introduced by employing a discrete measure of skin color, these findings align with prior research that uses light reflected off the skin as a continuous measure of color (Branigan et al., 2013).

These results highlight a fundamental challenge for the study of skin color effects, namely the limited heterogeneity that remains after accounting for racial grouping. This constraint is intensified by the required inclusion of statistical controls in regression models. Conversely, sibling fixed-effects models avoid the need for family-level controls, yet this benefit is offset by their reliance solely on within-family variance in skin tone, accounting for merely five percent to 13 percent of the overall variance in skin color.

Skin Color Effects on Socioeconomic Outcomes

A fundamental challenge in skin color research is to disentangle the contemporary causal effect of skin tone from inherited disadvantage due to color-based stratification in past generations. Consequently, to approximate these contemporary causal effects of skin tone, all regression adjustment models reported below proceed in two steps: first, I estimate the effect of skin color net of potential confounders unrelated to social origins (region of residence and nativity status of parents). Assuming no relevant variable is omitted, I interpret these estimates as capturing both contemporary and inherited skin color effects. Second, I reestimate these models by adjusting for possible socioeconomic origin confounders (descendants of parental skin color), such as parental education, income, family structure, and public assistance use. If no confounder is omitted, these estimates will capture the contemporary effects of skin color on socioeconomic attainment. Given that such an assumption may not hold, I supplement these results with sensitivity analyses of unobserved confounders. Finally, using SFE models, I leverage within-family skin color variation as a secondary strategy to identify contemporary skin color effects.

Skin Color and College Attainment

The regression adjustment models—Table A1 in online supplement, under the "Baseline" columns—reveal that, after accounting for factors like age, gender, place of living, parents' place of birth, and the race of the interviewer, there is a positive link between skin color and obtaining a college degree for Whites and Hispanics, but this association does not hold for Blacks. Specifically, for Whites, each unit increase in skin lightness corresponds to a 9 and 13 percentage point rise in the likelihood of possessing a college degree in the AddHealth and NLSY97 studies, respectively [14]. For Hispanics, a one-unit increase in skin lightness is associated with a seven percentage point rise in the likelihood of obtaining a college degree in the AddHealth study, though no such correlation is observed in the NLSY97 data. These relationships are statistically significant at conventional levels. Regarding Blacks, the estimated associations are negligible and not statistically significant. These results are visually represented by blue dots in panel (A) of Figure 2. Assuming the conditions mentioned, these correlations reflect the combined effects of current and historical influences of skin color.

To approximate the contemporary effect of skin color, I model the association between skin color and college degree attainment net of socioeconomic background variables—see Table A1 in online supplement, under "SB-adjusted" columns. Concretely, these models adjust for parental income, parental education, public assistance use, and family structure. The findings show that the association between skin color and college degree attainment for Whites and Hispanics shifts only slightly when socioeconomic background is considered. The stability of the skin color coefficients indicates that the relationship between college attainment and skin color reflects more than just the association with socioeconomic status in the previous generation or other potential sources of noncausal correlation. These results are visually represented by red dots in panel (A) of Figure 2.

However, even after adjusting for various aspects of socioeconomic background, we cannot guarantee that all potential confounders have been accounted for, leaving the possibility of bias from unobserved confounders. To address this, I employ a newly developed method to evaluate how sensitive the estimates are to potential omitted variable bias in OLS models (Cinelli and Hazlett, 2020). Specifically, I calculate the robustness value, which represents the minimum association strength an unobserved confounder(s) would need to have with both the treatment (skin

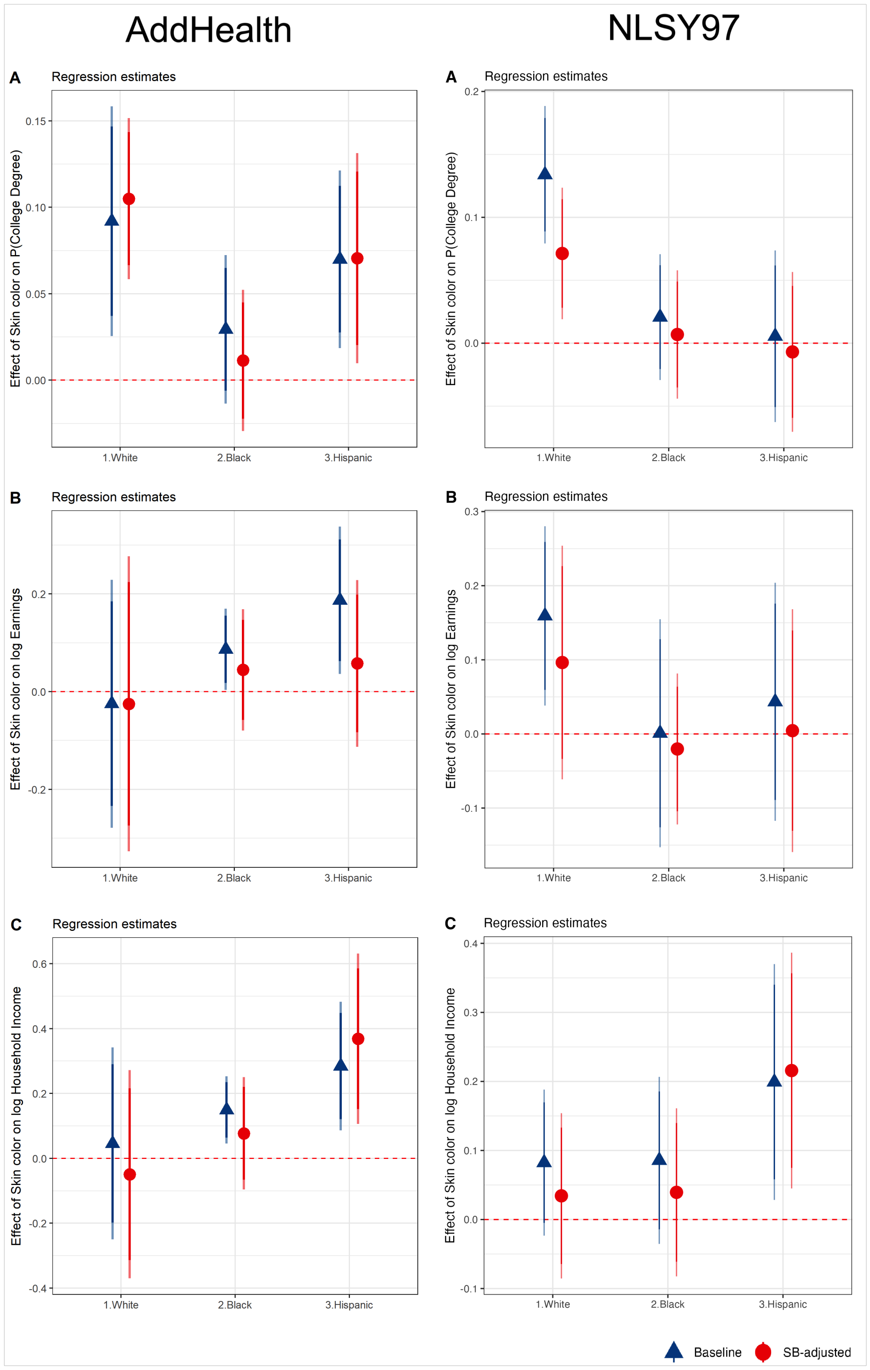

Figure 2: OLS estimates of skin color effect on college degree attainment (Panel **A**), log earnings (Panel **B**) and log household income (Panel **C**). The "Baseline" model incorporates controls for age, gender, region of residence, nativity status of parents, and race of interviewer. "SB-adjusted" models add socioeconomic covariates. Bars represent 90% and 95% confidence interval.

color) and the outcome (college degree attainment) to either nullify the observed effect ($RV_{q=1}$) or make the effect statistically indistinguishable from zero at a certain significance level α, ($RV_{q=1,\alpha}$). To interpret these robustness values effectively, I compare them against parental income as a benchmark. Given that parental income is a significant predictor of socioeconomic success (the outcome) but has a weak association with skin color (the treatment), any omitted confounder(s) with a similar joint influence should be considered weak confounding. This approach provides a liberal test against interpreting the effects of skin color on educational attainment as causal.

The results in Table 3 indicate that, to completely nullify the observed effects of skin color for Whites (i.e., bring point estimates to zero), an unobserved confounder(s) would need to account for more than 30 percent of the residual variance in both skin color and college degree achievement. To render these effects statistically insignificant, it would need to cover at least 10 percent of these residual variances. Regarding the impact on Hispanics as identified in AddHealth data, unobserved confounders would have to explain 25 percent of the residual variance in both the treatment and outcome to eliminate the estimated effect, and at least five percent to make it statistically indistinguishable from zero. For context on the significance of these associations, I use the influence of parental income (YP) as a benchmark. Table 3 and Figure A4 in online supplement (first row) reveal that unobserved confounder(s) with a joint magnitude akin to that of parental income would not be enough to nullify the observed effects (point estimates) of skin color on the college attainment of Whites and Hispanics (as seen in AddHealth data).

Sibling fixed-effects models provide an alternative assessment of this relationship. These models exploit random skin tone variation among siblings and correlate it with differences in the probability of having a college degree. Because these analyses only use variation within families, the estimated effects are uncorrelated with environmental and family background characteristics. Figure 3 and Table A4 in online supplement show results from SFE models, which, in contrast to earlier regression analyses, reveal considerably smaller effect sizes and greater uncertainty in the estimates. Point estimates indicate a negligible impact of skin color on college degree attainment for Blacks and Hispanics, and a slight positive effect for Whites (two to three percentage points), albeit with a wide confidence interval. This finding aligns with those from regression adjustment model estimates. The significant uncertainty surrounding fixed-effects estimates stems from the restricted variation in skin tone within families—particularly among Whites—and the limited size of sibling identification samples.

Skin Color and Personal Earnings

Baseline regression models—see Table A2 in online supplement—adjusting for factors such as age, gender, geographic location, parental nativity, and interviewer race, show a positive correlation between skin tone and personal earnings across all racial groups. Specifically, I find a strong and statistically significant association between skin color and earnings for Blacks and Hispanics in the AddHealth data, and for Whites in the NLSY97 data: a one-unit increase in skin lightness corresponds

Table 3: College Degree attainment

AddHealth

White

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.105	0.023	4.502	16.6%	35.7%	21.9%
df = 102	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 37.2%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%					

Black

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.011	0.02	0.556	0.5%	6.5%	0%
df = 68	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 5.9%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0.4%					

Hispanic

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.071	0.03	2.32	8%	25.4%	3.8%
df = 62	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 5.8%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%					

NLSY97

White

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.071	0.026	2.729	13.7%	32.7%	9.6%
df = 47	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 35.4%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0.5%					

Black

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.007	0.025	0.271	0.3%	4.9%	0%
df = 29	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 23.7%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%					

Hispanic

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	-0.007	0.032	0.218	0.1%	3.8%	0%
df = 32	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 33.4%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0.2%					

Note: θ is the estimated effect of the treatment (skin color) on the outcome (having a college degree), and SE_θ is its standard error. The robustness value $RV_{q=1}$ corresponds to the percentage of the residual variance of both treatment and outcome that unobserved confounders would need to explain in order to bring the observed effect to zero. Likewise, the robustness value $RV_{q=1,\alpha=0.05}$ is the strength of association needed to bring the lower bound of the confidence interval to zero (at a chosen significance level). At the bottom of the table $R^2_{Y\sim Z|\mathbf{X},D}$ and $R^2_{D\sim Z|\mathbf{X}}$ report, respectively, the partial association of the outcome and the treatment with the benchmarking variable (here parental income YP).

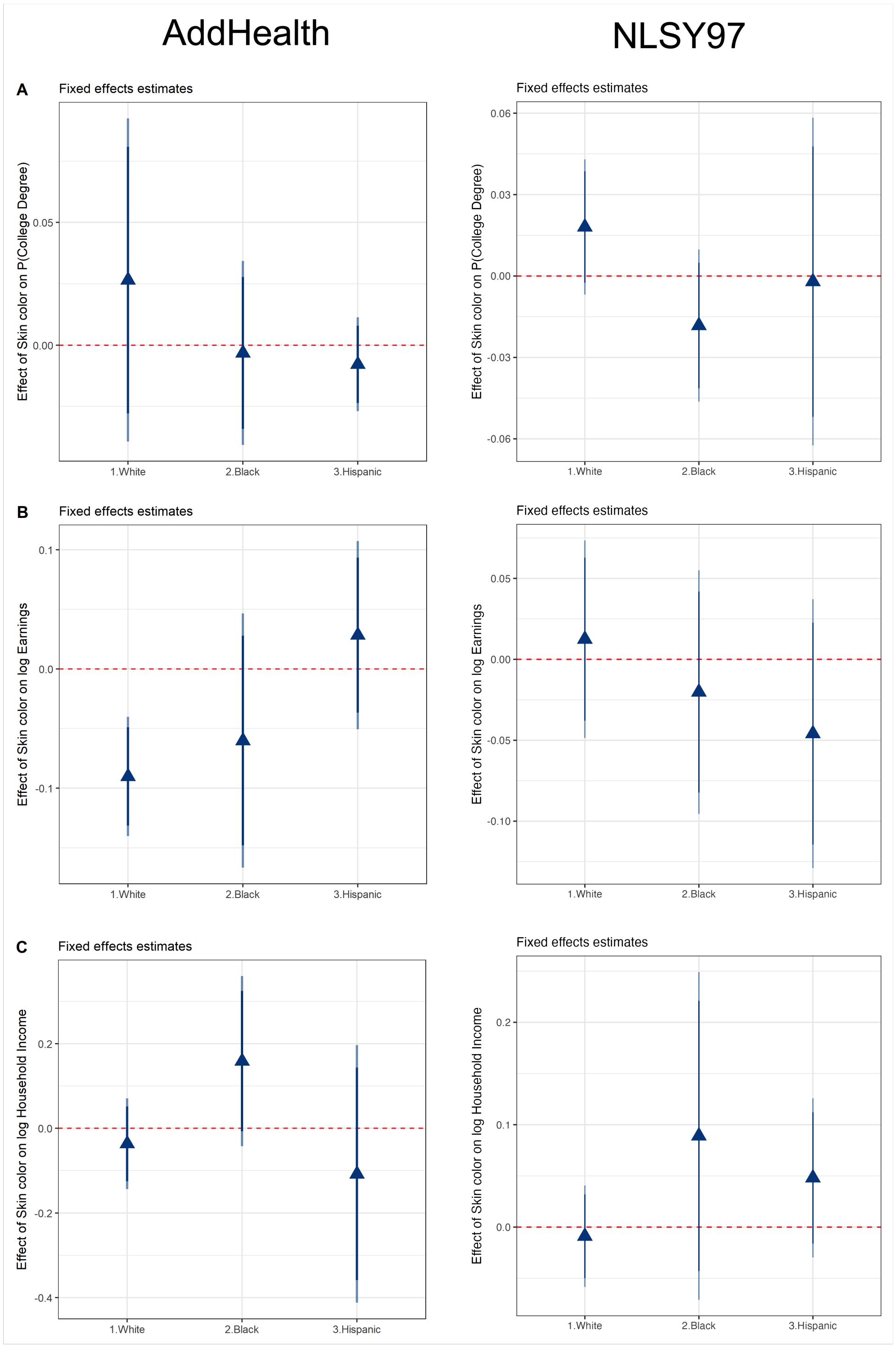

Figure 3: Sibling fixed-effect model estimates of skin color effect on college degree attainment (Panel **A**), log earnings (Panel **B**) and log household income (Panel **C**). Bars represent 90% and 95% confidence interval.

to earnings increases of nine percent, 19 percent, and 16 percent, respectively. The blue dots in panel (B) of Figure 2 visualize these results. Assuming that all relevant external confounders have been controlled for, I interpret these correlations as reflecting both current and inherited effects of skin color on personal labor market income. However, upon adjusting for potential socioeconomic background factors to gauge the contemporary influence of skin color, the once-strong correlations significantly weaken, remaining positive yet losing their statistical significance. Correspondingly, sensitivity analyses indicate that even a minimal unobserved confounder could entirely cancel the estimated effects of skin color on personal income across all racial groups (as per-point estimates). When benchmarking these findings against the impact of parental income, it becomes apparent that unobserved confounder(s) as weak as parental income would eliminate the observed effects (point estimates) of skin color for Whites, and nearly erase the effects for Blacks and Hispanics (refer to Table 4 and Figure A4 in online supplement, second row).

In line with results from regression adjustment models, sibling fixed-effects models generally indicate small, both positive and negative, nonsignificant impacts on personal earnings. Exceptionally, within the AddHealth data set, I find a significant negative effect of skin color on White individuals' earnings. The rest of the estimates feature broad confidence intervals, which prevent the rejection of the hypothesis of a null skin color effect.

Skin Color and Household Income

Baseline regression models reveal a strong association between skin color and the household income of Blacks and Hispanics—see Table A3 in online supplement, under "baseline" columns. After controlling for variables such as age, gender, geographic location, parental nativity, and interviewer's race, a one-unit increase in skin lightness correlates with a statistically significant rise of 20 percent and 29 percent in household income for Hispanics in the AddHealth and NLSY97 data sets, respectively. For Blacks, a one-unit increase in lightness is significantly associated with a 15 percent increase in household income in AddHealth, and nine percent in NLSY97, although this result is not significant. In the case of Whites, associations are positive but small and not significantly different from zero at conventional levels. Under the assumptions stated above, these associations capture both contemporary and inherited skin color effects.

After adjusting for potential socioeconomic background confounders, the association of skin color and household income persists positively for both Hispanics and Blacks. For Hispanics, this effect strengthens (from 0.28 to 0.37 in AddHealth and from 0.2 to 0.22 in NLSY97), maintaining its statistical significance. In contrast, among Blacks, the point estimate significantly drops after accounting for socioeconomic factors and becomes statistically insignificant. Among Whites, the estimated effect remains small and statistically indistinguishable from zero—see Table A3 in online supplement, under "SB-adjusted" columns.

Sensitivity analyses for unobserved confounders reveal that only the estimated effect of skin color on Hispanics would require strong confounding—explaining more than 30 percent of the residual variance in both the treatment and outcome—to

Table 4: Personal Earnings

AddHealth

White

Treatment:	θ	SE_{θ}	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	-0.025	0.151	-0.166	0%	1.6%	0%
df = 102				*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 29.5%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%		

Black

Treatment:	θ	SE_{θ}	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.045	0.062	0.719	0.8%	8.3%	0%
df = 68				*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 2.1%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0.3%		

Hispanic

Treatment:	θ	SE_{θ}	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.058	0.085	0.677	0.7%	8.3%	0%
df = 61				*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 13.9%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%		

NLSY97

White

Treatment:	θ	SE_{θ}	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.096	0.079	1.223	3.1%	16.5%	0%
df = 46				*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 85%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0.8%		

Black

Treatment:	θ	SE_{θ}	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	-0.02	0.051	0.399	0.6%	7.5%	0%
df = 26				*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 6.3%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%		

Hispanic

Treatment:	θ	SE_{θ}	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.004	0.082	0.054	0%	1%	0%
df = 29				*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 66.5%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%		

θ is the estimated effect of the treatment (skin color) on the outcome (personal earnings), and SE_{θ} is its standard error. The robustness value $RV_{q=1}$ corresponds to the percentage of the residual variance of both treatment and outcome that unobserved confounders would need to explain in order to bring the observed effect to zero. Likewise, the robustness value $RV_{q=1,\alpha=0.05}$ is the strength of association needed to bring the lower bound of the confidence interval to zero (at a chosen significance level). At the bottom of the table $R^2_{Y\sim Z|\mathbf{X},D}$ and $R^2_{D\sim Z|\mathbf{X}}$ report, respectively, the partial association of the outcome and the treatment with the benchmarking variable (here parental income YP).

nullify its effect, and moderately sized confounder(s)—accounting for about seven percent of the residual variances—to render the effect statistically indistinguishable from zero. For Whites and Blacks, it would take minor confounder(s) to explain away all observed effects (point estimates) of skin color on household income. To contextualize these figures, Table 5 and Figure A4 in online supplement (third row) demonstrate that in the presence of unobserved confounder(s) akin to parental income in (joint) magnitude, only the estimated effect on household income for Hispanics would remain sizeable and significant at the 95 percent confidence level.

Sibling fixed-effects models present a slightly different pattern from the regression adjustment approach. Findings from these models indicate that skin color essentially has no impact on the household income of Whites. For Hispanics, the effect varies, being either positive or negative based on the data source, but it consistently shows a positive influence on the household income of Blacks. Although none of these estimates reach statistical significance at the 95 percent confidence level, the effect on Blacks is borderline significant at the 90 percent level in the AddHealth data.

Overall, the results show that individuals with lighter skin tones tend to have better educational and economic outcomes across different ethnoracial groups, albeit with ostensible variation in the strength of these associations. Specifically, lighter skin tone is linked to a higher likelihood of attaining a college degree, especially among Whites and Hispanics. Similarly, I find evidence of a positive correlation between lighter skin and higher personal earnings and family income within each racial group (depending on the data source). I interpret these findings as reflecting both the contemporary causal influence of skin color on socioeconomic outcomes and the accumulated effects of historical discrimination based on skin color and race.

Nevertheless, after adjusting for socioeconomic backgrounds to gauge the current influence of skin color, I find significant and substantial effects of skin color on the college achievement of Whites and the family income of Hispanics. These findings are consistent across both the AddHealth and NLSY97 data sets. Sensitivity analysis indicates that these results are robust against the influence of strong unobserved confounders, making it reasonable to conclude that skin color currently exerts a nonneglectable causal effect on these outcomes, although the magnitude of these effects might be smaller than those reported in regression analyses. By contrast, associations between skin color and other outcomes would wane and become statistically insignificant in the face of even weak unobserved confounders. Notably, I have found no significant evidence that skin color affects personal income across any ethnoracial groups. Most importantly—and contrary to previous research findings—for Blacks, I find no discernible effect of skin color on any of the examined outcomes. This suggests a uniform penalty associated with Blackness, irrespective of skin color and socioeconomic background.

Finally, estimates from SFE models are in partial agreement with the above patterns but lack precision—evidenced by large confidence intervals—hindering the ability to draw substantive conclusions. Although these findings align with previous studies using SFE models (Abascal and Garcia, 2022), I approach these results cautiously, viewing them as complementary evidence.

Table 5: Household Income

AddHealth

White

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	-0.049	0.161	-0.305	0.1%	3%	0%
df = 101	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 16.3%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%					

Black

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.077	0.087	0.89	1.2%	10.2%	0%
df = 68	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 0.6%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0.4%					

Hispanic

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.369	0.131	2.808	11.4%	30.1%	9.6%
df = 61	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 17.1%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%					

NLSY97

White

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.034	0.06	0.573	0.7%	8%	0%
df = 47	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 47%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0.6%					

Black

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.039	0.061	0.647	1.4%	11.1%	0%
df = 30	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 9.3%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0%					

Hispanic

Treatment:	θ	SE_θ	t-value	$R^2_{Y\sim D\|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
SkinColor	0.216	0.085	2.527	16.2%	35.4%	7.7%
df = 33	*Bound (1x YP)*: $R^2_{Y\sim Z\|\mathbf{X},D}$ = 49.2%, $R^2_{D\sim Z\|\mathbf{X}}$ = 0.1%					

θ is the estimated effect of the treatment (skin color) on the outcome (household income), and SE_θ is its standard error. The robustness value $RV_{q=1}$ corresponds to the percentage of the residual variance of both treatment and outcome that unobserved confounders would need to explain in order to bring the observed effect to zero. Likewise, the robustness value $RV_{q=1,\alpha=0.05}$ is the strength of association needed to bring the lower bound of the confidence interval to zero (at a chosen significance level). At the bottom of the table $R^2_{Y\sim Z|\mathbf{X},D}$ and $R^2_{D\sim Z|\mathbf{X}}$ report, respectively, the partial association of the outcome and the treatment with the benchmarking variable (here parental income YP).

Discussion

The present study revisits the literature on colorism in search of a causal answer to its most basic question, namely, whether skin color affects individuals' life chances above and beyond disparities by race.

Race scholars have long noticed that socioeconomic disparities between discrete ethnoracial groups in the United States coexist with within-group gradational inequalities based on phenotypic traits, of which skin color is the most salient. Colorism, scholars argue, operates through various forms of discrimination that privilege people of light skin and other phenotypic markers deemed "European" over their darker counterparts. In line with the theory, empirical studies in the United States repeatedly find that, above and beyond well-documented racial inequalities, having a darker skin tone is associated with poorer outcomes, be it educational attainment (Branigan et al., 2013; Monk, 2014), earnings and income (Hersch, 2006; Goldsmith et al., 2006; Monk, 2014), hypertension (Laidley et al., 2019), perceived discrimination, and mental health (Monk, 2015), among others. Yet, although theories of color-based discrimination are causal in nature, the vast majority of empirical evidence on the topic is associational. Among others, a critical challenge for the study of colorism is to disentangle contemporary skin color discrimination from inherited disadvantage due to race- and color-based stratification in previous generations (Flores and Telles, 2012). Beyond the scope of academic inquiry, identifying the root causes of skin color stratification is crucial for guiding effective policy. Although policies addressing contemporary discrimination based on skin color must confront current societal attitudes, laws, and institutional practices (e.g., antidiscrimination legislation), addressing the long-lasting impacts of historical legacies underscores the necessity for interventions that tackle both present-day discrimination as well as systemic changes, such as reparations policies and progressive investments in historically disadvantaged groups.

To help fill the gap between theoretical motivation and empirical execution, I propose a general causal model underlying much of the literature on colorism. Building on this model, I discuss the conditions under which associations may capture contemporary causal effects of skin color and evaluate strategies for identifying these effects. Using data from the two main U.S. surveys recording skin color—AddHealth and NLSY97—and applying two identification strategies, I study estimates of the causal effects of skin color on college degree attainment, personal earnings, and family income among major White, Black, and Hispanic populations in the United States.

In line with previous research, I find that a lighter skin tone is associated with a higher likelihood of attaining a college degree, higher personal earnings, and family income across all ethnoracial groups. Crucially, however, I find only partial evidence of causal contemporary skin color effects on educational and economic outcomes. Specifically, results indicate a causal effect of skin color on the likelihood of college attainment for Whites and the family income of Hispanics. Importantly, however, these results also suggest that skin color has null or minor contemporary effects on Black Americans' educational and economic attainment. One might speculate that skin color is more consequential for the life chances of Hispanics precisely because the Hispanic category in the United States lacks the sharp boundaries resulting from a historical legacy of institutionalized and categorical racism. Thus, the racial categorization of Hispanics may in practice rely more heavily on physical and cultural markers. Conversely, the limited effect of skin color among African Americans may indicate a categorical penalty of Blackness whereby the mere fact of being Black results in disadvantage, regardless of skin color and socioeconomic origins. Finally, the identified effect of skin color for the college attainment of Whites is in agreement with previous research highlighting colorism's impact on this group Branigan et al. (2013), challenging the widespread assumption that skin color plays no significant role in shaping the socioeconomic paths of White Americans.

Many reasons might explain why these findings are at odds with prior evidence. The main argument throughout the article is that previous studies likely overestimate contemporary skin color effects due to the conflation of the former with inherited color-based inequality and other sources of spurious association. Yet another possibility is that skin color effects are heterogeneous and subject-specific. It seems reasonable to expect the extent and type of skin color discrimination (or the lack thereof) will vary depending on social settings, ethnoracial groups, and specific subpopulations. For example, skin color effects may be stronger in social settings where visual cues facilitate discrimination, in occupations where physical appearance is a relevant asset, and among subgroups most affected by idiosyncratic, color-related stereotypes. Consequently, sizeable but "local" skin color effects might be concealed in aggregated analyses. Future scholarship on colorism will benefit from analytic approaches better suited to capture possibly heterogeneous skin color effects on life chances. In tandem, the theory of colorism should grow in complexity to elaborate on the conditions that may favor or inhibit color-based discrimination across social settings, ethnoracial groups, and subpopulations.

Notes

1 Although skin color has traditionally been the most prominent racial marker in the American context (Maddox, 2004; Branigan et al., 2013), other phenotypic characteristics such as facial features, hair, and eye color plausibly play a similar role in indexing individuals' positions in the continuous racial spectrum (Hunter, 2008).

2 For some exceptions, see Katz et al. (2020), who uses changes in skin tone due to sun exposure to investigate the effect of skin tone on the likelihood of employment. Laidley et al. (2019) use family fixed-effects design to determine the effect of skin darkness on hypertension among siblings

3 Assuming confounders unrelated to social origins are not at play

4 The intuition is as follows: conditioning on parental income Y_0 is equivalent to set parental income to a fixed value. Thus, given the separate effects of parental skin color and ability, two parents will have the same income only if (1) they have the same ability and skin color, or (2) if a higher value in any of these features is compensated with a lower value in the other. For example, parents of darker skin color must have a higher ability to achieve the same income level as their lighter counterparts

5 African Americans who remained in the South during the Great Migration had less European ancestry than movers (Baharian et al., 2016)

6 For example, since Cuban and Argentinian Americans are lighter-skinned than other Hispanic populations (Manichaikul et al., 2012), and these groups are disproportionally concentrated in the Miami and New York areas (Lee and Martin, 2019), differences in earnings or educational attainments across regional areas could be confounded with skin color effects

7 In fact, the model in Equation 3 can be equivalently expressed as deviations from means: $y_{ifr} - \overline{y_{fr}} = \lambda_r(C_{ifr} - \overline{C_{fr}}) + (\boldsymbol{X}'_{ifr} - \overline{\boldsymbol{X}'_{fr}})\boldsymbol{\gamma_r} + (\epsilon_{ifr} - \overline{\epsilon_{fr}})$

8 In AddHealth, earnings and household income reports are measured using income bins. To transform income bins into dollar values, I create income midpoints using the robust Pareto midpoint estimator proposed by Von Hippel et al. (2016).

9 Each year, interviewers rated the skin tones of respondents who had not been recorded in earlier assessments.

10 To map the original 10-point scale into a 5-point scale, I applied the following transformation: $\text{skincolor}_{\text{new}} = 5 - 0.4 * \text{skincolor}_{\text{original}}$.

11 In AddHealth, adolescent earnings are minor, contributing only about 0.3 percent to the household's total income. Almost 98 percent of working adolescents contribute less than one percent to this total. In NLSY97, only five percent of the cases involved young respondents working for pay.

12 Except for the year 2010 in the NLSY, from which I extract measures of skin color and outcomes.

13 Please be aware that accessing AddHealth data is subject to restrictions, and acquiring it involves a formal application process.

14 In interpreting these and other results it is crucial to bear in mind that the skin color spectrum is different for different ethnoracial groups and thus, the "one unit increase in lightness" cited above means different things for Blacks, Hispanics, and Whites

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