Does skin color affect educational and labor market outcomes in the United States?*

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The article revisits the sociological literature on colorism in the United States by studying the effect of skin color on schooling and early life earnings. In particular, it examines whether the association between skin color and socioeconomic outcomes reflects skin color premium or inherited advantages/ disadvantages due to skin color stratification in previous generations. Using standard regression models and sibling fixed-effects models, I find that skin color does not affect educational attainment net of the higher socioeconomic status of lighter skinned families. By contrast, having a lighter skin color has a positive effect on the income of Black men and women but no clear effect for other racial groups. Additionally, this study finds that Blacks are the group that displays the largest variability in skin color while Whites' skin tone is almost invariant, reflecting the social construction of racial categories in the United States. The article moves beyond associational evidence offered by previous studies to provide more plausibly causal estimates for the effect of skin color

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on socioeconomic outcomes.

Introduction

Increasing racial diversity in the United States has raised questions about the stability of existing racial categories and race-based socioeconomic stratification, and some race scholars contemplate a reconfiguration of existing discrete racial categories into new gradational forms of racial heterogeneity (Lee and Bean, 2007). In this process, skin color and other phenotypic traits would become more relevant both for racial boundaries and socioeconomic stratification. In the increasingly complex and multilayered American racial order, a critical endeavor for social scientists is to investigate how skin color affects individuals' life chances, above and beyond the effects of race and net of the effect of other dimensions of socioeconomic origins that might be correlated with both skin tone and socioeconomic attainment. In this spirit, the present article aims to assess the causal effects of skin tone on educational attainment and earnings. In particular, it asks two intertwined questions: first, do darker-skinned individuals experience a phenotype-based penalty in school and the labor market? Second, is such penalty (or the lack thereof) the same within different racial groups?

Previous research has addressed the relationship between skin color and several socioeconomic outcomes. However, the vast majority of these studies are limited to only Black or only Hispanic American samples. Moreover, the vast majority of these studies are associational, reporting correlations between skin tone and income or educational attainment but insufficiently controlling for important sources of unobserved heterogeneity. This study expands the scope of previous scholarship by estimating the causal effect of skin color on educational attainment and earnings across all main racial groups in the US. In order to do so, I implement two complementary empirical strategies: first, I use regression models with a richer set of socioeconomic

background covariates than previous work. Second, using sibling fixed-effect models I exploit random within-family variation in skin color to approximate the causal effects of skin tone on socioeconomic outcomes.

Background

Racial distinctions in the United States have long been thought to be primarily based on genotype rather than on phenotype. In fact, most studies operationalize race as clearly demarcated discrete groups whose boundaries are determined on the basis of 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., 2015). This phenomenon, termed "colorism" or "preference for whiteness", consists of an ingrained system of social valuation that privileges people of lighter complexion over their darker counterparts. Just like racism, colorism consists of both "overt and covert actions, outright acts of discrimination and subtle cues of disfavor" (Maddox, 2004; Hunter, 2008).

The historical origins of colorism varies across racial groups. In the case of Blacks, 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 signal of higher intellect. On this basis, mulattoes and lighter tone Blacks were generally assigned to domestic service instead of manual labor, a privilege that gave them access to basic education and training. 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

[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)

the social hierarchy among Black communities (Wirth and Goldhammer, 1944; Frazier, 1957; Keith and Herring, 1991; Hill, 2000).

Similarly, the phenomenon of colorism among Hispanics has colonial origins. It is the product of a history of continued mixing (*mestizaje*) between descendants of Spanish and other European settlers, indigenous peoples and (in some countries) African slaves. The practice of mestizaje created a color continuum with blurry and mutable boundaries among racial groups. Nevertheless, a hierarchy based on skin color was in place since early colonial times, with White elites at the top, a mestizo majority in the middle and indigenous people (or Blacks, depending on the country) at the bottom. Despite states' efforts to implant an "ideology of *mestizaje*" in Latin American countries (Telles, 2004; Telles et al., 2014), economic and political power as well as social prestige have remained intimately linked to European ancestry (Villarreal, 2010). Consequently, scholarship characterizes these countries' racial order as "pigmentocracy"(Telles et al., 2015; Bailey et al., 2015), where lighter tone is a sign of higher socioeconomic status and a feature deemed desirable by individuals of all phenotypic complexions (Murguia and Telles, 1996; Uhlmann et al., 2002). In Asian countries with European colonial history the value of whiteness –and other elements of Western culture– were enforced during colonial times. More generally, colorism in Asia is rooted in the association of darkness with peasant work and that of lighter tone with the leisure class (Hunter, 2008; Li et al., 2008).

Although diverse in origins, a "preference for whiteness" should be expected among all three main minority groups in the US. In the case of more recent migrant groups (viz., Hispanics and Asian), pre-existing racial biases may coincide with the racial schema already in place in the US, hence perpetuating assumptions about the higher value of "whiteness" both among themselves and White Americans.

We know much less regarding how Whites are evaluated on the basis of skin color. Race schol-

ars typically treat whiteness as a reference category with respect to which minorities obtain advantages or disadvantages depending of their phenotypical proximity to it. The White population itself, however, has long been assumed a relatively homogeneous group that is socially privileged with respect to minorities but within which color is more or less irrelevant for socioeconomic attainment (Branigan et al., 2013). While 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 as a result of the increasing flexibility of the White racial category in the US, which includes ethnic groups who recently achieved Whiteness (Lee and Bean, 2007, 2004).

Skin color and life chances Several studies in the US have reported that darker skin tone is associated with poorer outcomes in education, health, and the labor market, among others. Most of these studies focus on Blacks or Hispanics separately, sometimes including Whites for comparison.

While it has been argued that the importance of skin color for Blacks declined after the Civil Rights movements (Gullickson, 2005), an extensive body of contemporary research documents that skin tone continues to shape the opportunities of Black Americans. Darker skin color Blacks attain significantly less education than their lighter counterparts (Branigan et al., 2013; Monk, 2014). Consistently, the White-Black educational attainment gap tends to close as skin tone lightens (Hersch, 2009). As indicated by regression models, the effect of skin tone diminishes but remains robust after adjustment for some measures of parental background, suggesting that such educational advantage reflects both the more advantaged socioeconomic origin of lighter skin Blacks and contemporary differential treatment on the bases of skin tone.

Similar disadvantages take 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, 2009; Monk, 2014), but evidence of a dark skin wage penalty is extensive. White workers earn substantially more than comparable medium or dark-skinned Black workers (Hersch, 2009; Keith and Herring, 1991), but this gap is smaller with respect to lighter-skinned Blacks (Goldsmith et al., 2006). This pattern emerges because darker-skinned Blacks accrue lower returns for traditional wage-related factors such as education and experience. (Goldsmith et al., 2007). In other words, when choosing among workers with comparable human capital, employers would prefer light-skinned Blacks (Goldsmith et al., 2006). The wage penalty to darker skin color is robust to adjustment for some parental background variables such as mother's education (Monk, 2014).

The consequences of this "preference for whiteness" extends well beyond educational and labor market outcomes. Skin tone is a critical factor in both Blacks' and Whites' representations of Blacks (Neal and Wilson, 1989; Maddox and Gray, 2002). In particular, compared to lighter skin Blacks, those of darker tone are more likely to be associated with negative stereotypes such as aggressiveness, lack of intelligence, lack of education, and unattractiveness (Maddox and Gray, 2002). In addition, dark-skinned Blacks receive harsher sentences in the criminal justice system, enjoy less social prestige, and are less likely of holding elective office compared with lighter Blacks (Hochschild and Weaver, 2007). They are also more likely to have high blood pressure (Sweet et al., 2007), and worse self-reported physical and mental health (Monk, 2015, but see Borrell et al., 2006).

A largely independent branch of sociological research has long reported similar patterns for the effect of skin color on the life chances of Hispanic Americans (Arce et al., 1987). Lighter skin, 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 robust after controlling for some dimensions of

socioeconomic background. Likewise, Mexican Americans of lighter complexion and European features tend to earn more than darker co-ethnics with comparable human and social capital (Telles and Murguía, 1992; Murguia and Telles, 1996), a result that also holds for Puerto Rican and Dominican men but not for women (Gómez, 2000). 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 US. To my knowledge, no research has examined colorism among native-born Asian Americans, and 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: differential treatment and the disparate impact of racialized beauty

The possible causal mechanisms for the damaging effect of darker skin color on socioeconomic outcomes are many. They all represent forms of discrimination, whether in the form of "differential treatment" or because of "disparate impact" (Wang et al., 2013; Pager and Shepherd, 2008). In the first case, darker-skinned individuals would receive poorer treatment than their lighter counterparts *because* of their racial phenotype. In the second case, such disparities may not themselves arise from color preferences but rather from behavior and social practices that have an adverse impact on people of darker skin tone.

In the "differential treatment" argument, skin-tone disparities emerge because teachers, employers and, in general, gatekeepers exercise preferential treatment on the basis of a generalized taste for whiteness. It is also possible that skin tone is used as a proxy for other traits that are valuable for attainment, such as ability, motivation or productivity. In the academic context, this would be the case if teachers and principals form expectations on the basis of stereotypes that expect light-skinned students to be smarter, more prepared and better behaved than darker-skinned students. Consequently, teachers might pay less attention to darker skin tone students, might discourage them from going into advanced academic tracks or attending college. Similarly, employers might prefer whiter applicants because these are seen as better prepared and are more likely to come from a more advantaged social background. Moreover, if colleagues and customers/clients are assumed to have a preference for lighter workers, employers might be more likely to hire and pay better such employees because of the expected higher return of their work.

Another possibility is that the effect of skin color on life chances is mediated by physical attractiveness. Since attractiveness is rewarded in school and the labor market (Hamermesh and Biddle, 1994; Liu and Liu, 2014; Wong and Penner, 2016), and through the association between lighter skin tone and beauty, it is possible for attractiveness to have a disparate negative impact on darker skinned individuals. We know that “attractiveness” is a construct influenced by racial aesthetics: phenotypic traits such as skin color, facial features and type of hair are important ingredients of the social standards of beauty (Hunter, 2002). In the US context, as in many others (Jones, 2008; van den Berghe and Frost, 1986), the standard of beauty significantly overlaps with phenotypic traits that are prevalent among Whites (such as fair skin) while features commonly encountered among Blacks and/or Hispanics (such as dark skin) are generally deemed as unattractive, both by Whites and Blacks/Hispanics themselves (Feinman and Gill, 1978; Hill, 2002; Hunter, 2002; Neal and Wilson, 1989). Hence, skin tone affects others’ perceptions of

attractiveness as well as personal perception of self-worth (Bond and Cash, 1992) in ways that disadvantage darker-skinned individuals with respect to their lighter counterparts. Although this phenomenon affects both men and women, studies indicate that the association between light skin and attractiveness is stronger for women (Feinman and Gill, 1978; Hill, 2002; Hunter, 2002).

Attractiveness, in turn, has been shown to pay off in different spheres of social life (Webster and Driskell, 1983; Langlois et al., 2000). Attractive students are seen by educators as more intelligent and more competent (Talamas et al., 2016; Parks and Kennedy, 2007). Consequently, teachers tend to have higher expectations about attractive students' academic and social performance, which may affect future performance (Clifford and Walster, 1973; Kenealy et al., 2001). Physical attractiveness is also consequential in the labor market. Physically attractive job candidates are preferred over unattractive ones (Kenealy et al., 2001), which implies that lighter-skinned applicants likely benefit from a halo effect of attractiveness. In addition, attractive individuals earn more than their less attractive counterparts (Wong and Penner, 2016; Liu and Liu, 2014). Several factors might explain this beauty premium: Employers might prefer good-looking employees or they may use beauty as a proxy for unobserved performance (Deryugina and Shurchkov, 2013). Also, in some occupations beauty might have higher returns because costumers prefer attractive employees (Pfann et al., 2000), and attractive individuals might self select into those occupations where attractiveness is more productive (Hamermesh and Biddle, 1994). In addition, it is possible for better looking individuals to be more productive workers due to higher confidence levels brought by attractiveness (Cipriani and Zago, 2011; Link et al., 2006).

In sum, to the extent that light skin color is an indicator of beauty, the aforementioned returns to physical attractiveness are expected to disadvantage darker skinned individuals.

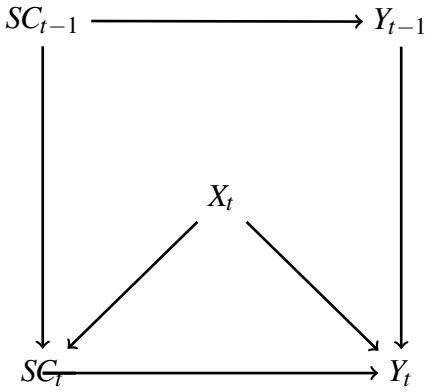
Potential Confounders: Socioeconomic Background Although researchers consistently find an association between skin color and socioeconomic achievement, the causal challenge of this literature is to demonstrate that socioeconomic differences by color are produced by skin tone discrimination rather than inherited disadvantage due to stratification by race in previous generations. In other words, if skin tone was a determinant of life chances in previous generations then, and 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 order to alleviate this problem, most studies include controls for socioeconomic origins, such as parental occupation (Arce et al., 1987; Keith and Herring, 1991; Flores and Telles, 2012; Branigan et al., 2013) and parental education (Keith and Herring, 1991; Monk, 2014; Murguia and Telles, 1996; Hersch, 2009; Goldsmith et al., 2007; Branigan et al., 2013; Goldsmith et al., 2006), as well as individual characteristics that may affect the outcome of interest (e.g. age, gender and human capital). In some cases, researchers also control for contextual variables that might be correlated with both racial phenotype and socioeconomic achievement, such as city or state of residence. However, the battery of such controls is often limited. Importantly, information about parental income and wealth are systematically absent in empirical studies, which could induce upward bias in estimates of the effect of skin color on various socioeconomic outcomes.

Figure 1 summarizes the causal relationships discussed above. As observed, estimates of these parameters would coincide with these true causal effects if one effectively controls for all relevant family background characteristics (Y_{t-1}) as well as contextual variables (X_t). Identification strategies that fail to control for family background might induce bias through the association between contemporary and parental socioeconomic status, the relationship between the

parental SES and parental phenotype and the effect of parental skin color on an individual's own color ($SC_t \leftarrow SC_{t-1} \rightarrow Y_{t-1} \rightarrow Y_t$). Likewise, failing to control for relevant contextual variables would induce spurious correlation between skin color and socioeconomic achievement ($SC_t \leftarrow X_t \rightarrow Y_t$).

Figure 1: Causal graph of the effect of racial phenotype on socioeconomic outcomes



This article asks the following questions:

- Do lighter skinned individuals attain more schooling and enjoy higher earnings than their darker counterparts of the same race?
- If so, do these benefits reflect skin color premia, or the higher socioeconomic upbringing of lighter skinned individuals?
- Do the effects of skin tone vary across racial groups?

The next section describes the data used in this research and details the strategies implemented to answer these questions.

Analytic strategy and methods

In order to approximate the causal effect of racial phenotype on educational attainment and income, I implement two complementary identification strategies.

1. *Regression Adjustment*: Following the conventional approach in the literature, I use regression adjustment to estimate the effect of phenotypic variables after controlling for a rich set of covariates measuring individual characteristics, socioeconomic origins and contextual effects. Formally, I estimate the following linear mixed model:

$$\mathbf{y}_{\mathbf{i(jk)}} = \alpha + \theta SC_{i(jk)} + \mathbf{X}'_{\mathbf{i(jk)}}\beta + \upsilon_j + \nu_k + \varepsilon_{i(jk)} \tag{1}$$

   Here $\mathbf{y}$ is a socioeconomic outcome (i.e. year of schooling or log-earnings) for respondent i, interviewed by interviewer j, residing in state k[2]. SC is a measure of skin color and θ its corresponding effect. I estimate this effect for all races combined and for each race separately. $\mathbf{X}$ and β are a vector of covariates and its coefficients, respectively. Finally, υ and ν are non-nested random effects for interviewer and state of residence, respectively[3].

   The regression estimate of θ would provide a causal estimate of the effect of skin color on schooling and earnings only if, after adjustment for pre-treatment covariates, an individual's skin color can be treated as randomly assigned[4]. Because self-selection into skin color is not possible, pre-treatment covariates refer to background characteristics that might be associated with both skin color and socioeconomic outcomes (see (Frank

[2] Indexation in parentheses denotes the crossclassification of interviewers and state.

[3] In order not to complicate notation unnecessarily k is said to index state of residence, however models were estimated with a random intercept for both region and state, where the latter are nested within the former. As a result, state estimates with few observations are stabilized by pulling them towards the estimate for the region of belonging.

[4] In the potential outcome framework this assumption is known as the unconfoundedness assumption, which for the case of many-valued treatments can be expressed as $P \perp \{Y(p)\}_{p \in \mathscr{P}} \mid \mathbf{X}$

et al., 2010) for a similar approach). This assumption is violated if the residual error ε is correlated with individual phenotype due to omitted relevant variables.

To prevent this possibility, existing studies typically include individual controls, such as demographic and human capital variables, and contextual effects (e.g. place of residence). However, they fail to exhaustively control for socioeconomic origins which, as discussed above, might confound the relationship between skin color and socioeconomic achievement. The present study innovates by controlling for different dimensions of socioeconomic origins, including family income during individuals' adolescence, educational achievement of parents and their nativity status. However, despite the inclusion of detailed information on parental background, as with all regression adjustment methods, estimation of the true causal effect depends on the assumption of exhaustive control for both observable and unobservable relevant factors, an assumption that is untestable and which violation would result in biased estimates.

2. *Sibling Fixed-Effects models*: In order to cope with the limitations imposed by the unconfoundedness assumption, my second empirical strategy consists of a sibling fixed-effects approach, which exploits exogenous within-family variation in skin color to estimate the effect of phenotypic factors on socioeconomic outcomes. In particular, the inclusion of sibling fixed-effects removes the effect of observed and unobserved factors that might influence the socioeconomic outcomes of interest and are shared by the very fact of belonging to the same family. In particular, I estimate the following model:

$$y_{if(jk)} = \alpha_f + \theta P_{if(jk)} + \mathbf{X}'_{\mathbf{if(jk)}}\beta + \upsilon_j + \nu_k + \varepsilon_{if(jk)} \tag{2}$$

where $\alpha_f = \bar{y}_f$ is a family fixed-effect capturing the combined influence of family-level factors on the socioeconomic outcome of interest, $\mathbf{X}$ is a vector of individual-level covari-

ates and β the respective coefficients vector. υ and ν are random effects for interviewer and state of residence, respectively. It follows from this specification that the expected difference in the outcomes of two siblings is only a function of their difference in skin color. I estimate this effect for all races combined and for each race separately. These analyses are conducted on the samples of same-sex full siblings. Because the main motivation for within-family analyses is to control for family background, it can be argued that ensuring that respondents shared a common environment is sufficient for our purpose, provided that idiosyncratic individual characteristics (especially genetic endowment) are not simultaneously correlated with both skin tone and socioeconomic achievement. Although this is a reasonable assumption, I eliminate this possibility by limiting the analysis to siblings of the same parents.

Sibling fixed-effects has been extensively used for causal inference in other research areas, but has seen almost no application to the study of race-based stratification (see (Francis-Tan, 2016) for an exception). An exception is a recent study showing that within-sibling racial heterogeneity occurs in 17-19% of families in Brazil, mostly because of racial discordance between parents. Moreover, the study finds that darker siblings aged 20-25 are less advantaged than their lighter brothers and sisters along a number of dimensions. They have significantly lower education, lower personal income, lower formal employment, and lower occupational status (Francis-Tan, 2016).

I fit all models separately by gender because women attain, on average, more schooling and have lower earnings than men, and the effect of skin tone is possibly different for men and women.

Data and Measures

This article uses data from the National Longitudinal Study of Adolescent to Adult Health (hereafter AddHealth), a longitudinal study of adolescents in the US. AddHealth started with a nationally representative sample of students in grades 7 to 12 during the 1994-1995 school year (Wave 1). The initial cohort has been re-interviewed in 1995 (Wave 2), 2001-2002 (Wave 3) and 2008 (Wave 4), covering their entire transition from adolescence into young adulthood. In the most recent wave, the sample was aged 24 to 32. AddHealth is ideal for the purpose of this research as it combines detailed information on kin relationships with rich sociodemographic data on both parents and children, as well as longitudinal records on several dimensions of achievement. It also contains measures of skin color, as described below.

The main dependent variables of this study are educational achievement and personal earnings. Educational achievement is measured as completed years of education, which are inferred from the highest level of education completed by the time of the last interview in 2008 (see Table 12 for details). Personal earnings are measured by the interviewee-reported earnings before taxes. These include wages or salaries, tips, bonuses, overtime pay, and income from self-employment. It is important to note that this measure corresponds to early-life earnings, which might be not be a good indicator of longer-term income. For this reason, results using this dependent variable might no be entirely comparable to other research studying the relationship between skin color and income.

To measure skin color, I use the interviewer's answers to a series of questions regarding the physical appearance of the interviewee. More specifically, in Wave III, conducted when respondents were aged 18 to 26, the interviewer was asked the following questions: (a)"*What is the respondent's skin color?*", where the possible answers were (1)"black", (2) "dark brown",

(3) “medium brown”, (4) “light brown”, (5) “white”. I coded these categories in a continuum running from darker to lighter tones so that higher values of each phenotypic trait indicate more lightness.

Covariates in the statistical analyses include individual characteristics such as age, gender and race, variables indicating socioeconomic origin and contextual variables. The individual characteristics include age; I also stratify the samples by gender. I also incorporate a measure of respondent’s “unique” race, which corresponds to self-reported race/ethnicity. In cases in which the respondent mentioned more than one race I assigned them the race they declared as their “main race”. Since Hispanicity is asked as a separate question in the survey, I established dominance of Hispanicity over racial categories. The resulting schema entails four groups: non-Hispanic Whites, non-Hispanic Blacks, Asians and Hispanics. Throughout the article I refer to the first two as Whites and Blacks, respectively.

For parental background I include information on parental education, income and nativity status[5]. I measure parental education as the years of schooling completed by the biological parent with the highest educational achievement. For single-parent households this is equivalent to the educational achievement of the parent at home. Parental income is measured as the total pre-tax household income earned in 1994, including the income of all household members, income from welfare benefits, dividends, and all other sources[6]. I include an indicator of whether each biological parent was born in the US (0) or in a foreign country (1). Information on educational attainment and nativity status is obtained from the family roster in Wave 1. Information on parental income is obtained from the Parent Questionnaire, which was asked of one parent, preferably the resident mother, of each adolescent interviewed in Wave 1. Contextual infor-

[5] I plan to add some measure of family composition as well.

[6] Although some adolescents report earnings from non-summer weeks, the average contribution to household income represents a 0.3% of total income, and about 98% of those who work for pay contribute less than 1% of the total household income.

mation includes state of residence at Wave 4, which is included as a random intercept in all regression models.

A common concern regarding interviewer-coded measures of racial phenotype is that the perception of phenotypic traits 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 like to be seen as whiter than their poorer counterparts. If this endogenous relationship exists, estimates of the effect of racial phenotype on socioeconomic outcomes would be upwardly biased (Flores and Telles, 2012; Hill, 2000). The longitudinal design of the present research helps preventing the risk of this type of bias: phenotypic traits are measured in Wave 3 (when respondents are 18 to 26) but the dependent variables of this study are observed in Wave 4 (when respondents are 24 to 32). Moreover, phenotypic traits were measured at an age in which participant's socioeconomic status is strongly linked to that of their parents, which I control for. 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 I add interviewer's random effects to all regression models.

The analytic sample is restricted to individuals who are not enrolled in an educational institution in Wave 4 (83% of the original sample). Analyses based on regression adjustment are conducted on this sample (hereafter, full sample), which consists of 6,519 women and 6,177 men. In addition, models that exploit within-family variation in phenotype are conducted on a sample of same-sex full siblings (612 brothers and 660 sisters). This sample (hereafter, siblings sample) includes all adolescents who have a full sibling of the same sex with an age difference of no more than 5 years (about 95% of dyads). Tables 1 and 2 display descriptive statistics for the full sample and the siblings sample. In each table all variables included in the statistical analyses

are described separately for men a women. In both cases the sub-sample of men and the sub-sample of women present a similar demographic composition but women have, on average, higher educational attainment and lower average earnings than men. Comparing across the full-sample and the sample of siblings also reveals a similar demographic composition, although respondents in the sibling sample are more likely to be White and, on average, are slightly lighter-skinned than those in the full sample.

[Table 1 here]

[Table 2 here]

Findings

Sources of variation in skin color Given that the two identification strategies used in this article rely on different sources of variation, assessing the composition of skin color variance is important. On one hand, regression adjustment exploits variation in skin tone within races but does not distinguish variation in skin tone between and within families of the same race. In contrast, sibling fixed-effects models only rely on skin color variation among members of the same family.

Table 3 reports results from variance decomposition of skin color. These models separate the total variance into three components: between races, between families of the same race and within families. In addition, skin color variance is computed separately for each racial group and partitioned into between and within family components. The results indicate that most of the variation in skin tone occurs between races and only about 20% happens within races. Separating by race reveals important differences in the extent of skin color variation: interviewer-reported skin color is almost invariant among Whites but is the most heterogeneous among Blacks. Asians

and Hispanics also present some variation in skin tone, but not as much as Blacks. These findings reflect the social construction of racial categories in the United States, where whiteness has historically been construed through the one-drop rule, while individuals of mixed ancestry are, by necessity, fit into non-White racial groups (Fox and Guglielmo, 2012). White it is possible that part of these results are driven by the used of a discrete truncated measure of skin color, these findings are consistent prior research that uses the percent of light reflected off skin as a continuous measures of color (Branigan et al., 2013).

These results highlight one fundamental challenge when studying the effect of skin color on socioeconomic outcomes, namely the limited heterogeneity that remains after accounting for race. Indeed, only one-fifth of the total variance in skin tone takes place within race, and such extent of variation markedly varies across racial groups. This limitation is further accentuated by the inclusion of necessary statistical controls in regression models. By comparison, sibling fixed-effect models do not require the inclusion of family-level controls. This advantage, however, comes at the expense of only using within-family variance in skin tone, which represents about 10% of the total skin color variance.

[Table 3 here]

Skin tone & educational attainment Regression models in 4 (columns 1 and 3) indicate that, holding race and age constant, having a lighter skin color translates into 0.2 year of schooling among men and 0.23 year among women. This means that moving from darkest to lightest on the skin tone spectrum is associated with a gain of one full additional year of schooling. As reported in 5 (columns 1 and 3), when the effect of skin color is allowed to vary by race, this only remains statistically significant among Blacks and Hispanics. Specifically, lighter skin color is associated with a 0.16 increase in years of schooling among Black men and a 0.13

increase among Black women. This effect is more than twice as large for both Hispanic men and women. For the remaining racial groups, the point estimates suggest a positive effect of skin tone, but the large confidence intervals prevent me from drawing substantive conclusion about these results. In particular, I cannot reject the hypothesis of a null skin color effect for these groups. Black dots in figure 2 depict these results.

Models in columns 2 and 4 in tables 4 add controls for individual socioeconomic background. Specifically, these models control for parental income, parental education and whether the mother and the father are foreign-born. The inclusion of these variables aims to account for the potentially confounding effect of socioeconomic background on the relationship between skin color and schooling. The findings suggest the confounding effect is substantial, and stronger than has been appreciated in the colorism literature. After controlling for socioeconomic background, the point estimate of the skin color effect markedly declines for both women and men (to 0.04 and 0.09, respectively) but these drops are not statistically significant. However, unlike the baseline specification, models that include socioeconomic controls show the effect of skin color to not be statistically different from zero[7].

Models allowing skin color to interact with race (table 5) indicate that, with the exception of White women, the inclusion of socioeconomic background variables shrinks the effect of skin color for all racial groups and gender. These declines in effect size are, however, not statistically significant. Particularly in the case of Blacks, the effect of skin color net of socioeconomic background is no longer different from zero. Blue dots in figure 2 depict these results. The decline in skin color effect size indicates that part of the association between skin color and years of schooling captures the correlation between phenotype and socioeconomic achievement in the parental generation (i.e. richer parents are lighter parents). The estimates' large standard

[7]For men the effect is only significant at the 90% confidence level

error arises from the limited variation in skin color among respondents of the same race and comparable socioeconomic origins.

[Table 4 here]

[Table 5 here]

[Figure 2 here]

Sibling fixed-effect models provide a complimentary assessment of this relationship. These models exploit random skin tone variation among siblings of the same sex and correlate it with differences in completed years of schooling. Because these analyses only use variation within families, the estimated effect is uncorrelated with environmental and family background characteristics. Table 6 summarizes findings using this approach. Unlike previous regression models, these results reveal a positive effect of skin color for women (0.16) but no effect for men. The positive effect for women is, however, not significantly different from zero [8]. When the skin color effect is allowed to vary by race (see table 7), no consistent pattern emerges and estimates display extremely large confidence intervals. This is a consequence of the very limited variation in skin tone within families.

[Table 6 here]

[Table 7 here]

[Figure 3 here]

Skin tone and personal earnings The results from regression models in table 8 indicate that having a lighter skin color is associated with a 9% increase in earnings among women but no increase among men, adjusting for age and race. After controlling for socioeconomic background,

[8] the effect is only significant at the 90% confidence level

the skin color effect among women increases in size (from 0.09 to 0.15) and remains statistically significant. This increase in not statistically significant but in both cases the skin color premium is significantly different from zero. In the case of men, controlling for socioeconomic background pulls the skin color effect even closer towards zero.

Models that allow the effect of skin color to vary by race (table 9) indicate that, controlling for socioeconomic background, the positive effect of skin tone on women's earnings holds for all racial groups but is only significant among Black women. For men, point estimates suggest an heterogeneous effect of skin color, where the effect is positive for Whites and Asians, negative for Blacks and null for Hispanics. Nevertheless, none of these differences is statistically significant, and these effects are not significantly different from zero. Blue dots in figure 4 depict these results.

[Table 8 here]

[Table 9 here]

[Figure 4 here]

Results from sibling fixed-effect models provide a different characterization of these patterns. These results suggest a small negative effect on women's earnings and a large positive effect on men's earnings. These estimates, however, are not significantly different from zero (table 10). When the effect of skin tone is allowed to vary by race, sibling fixed-effect point estimates suggest important heterogeneity across racial groups: Black men and women would experience a large skin color premium, while the opposite would occur among Asians. Estimates also indicate a positive effect among Whites, a negative effect for Hispanic women and a null effect for Hispanic men.

Because of the limited skin tone variation within families, these estimates display wide confi-

dence intervals and implausible effect sizes. As a result, most of these effects are not significantly different across races, and we cannot reject the hypothesis of a null effect. Nonetheless, the positive effect of skin tone on Black men's earnings is statistically significant, and the same holds for the negative effect for Asian men.

[Table 10 here]

[Table 11 here]

[Figure 5 here]

Discussion

The present article revisits the sociological literature on colorism in the US by studying the effect of skin color on schooling and early life earnings. The article innovates in two ways: First, unlike previous studies focusing only on Black (Keith and Herring, 1991; Goldsmith et al., 2007, 2006; Hersch, 2009; Monk, 2015) or Hispanic populations (Arce et al., 1987; Flores and Telles, 2012; Villarreal, 2010; Murguia and Telles, 1996), I examine the effect of skin color on socioeconomic achievement for all the main racial groups in the US - Whites, Blacks, Asian and Hispanics. Second, the article offered more plausibly causal estimates for the effect of skin color on socioeconomic achievement than the associational evidence reported in previous work. Here, the main causal challenge is to demonstrate that differential achievement by skin tone is produced by discrimination by skin color, above and beyond inherited disadvantages due to stratification by race in previous generations. I relied on two complementary empirical strategies. First, I fit regression models that estimate the effect of skin color adjusting for a rich set of socioeconomic background variables. Although previous research account for some parental background characteristics – such as mother's or father's education (Keith and Herring, 1991;

Monk, 2014), parents' education (Murguia and Telles, 1996; Hersch, 2009; Goldsmith et al., 2007; Branigan et al., 2013; Goldsmith et al., 2006) or parental occupation (Arce et al., 1987; Keith and Herring, 1991; Flores and Telles, 2012; Branigan et al., 2013) – most of them do not account for these variables jointly and, to the best of my knowledge, none include parental income. By contrast, this article studies the effect of skin color net of the effect of parents' schooling, income, and nativity status, as well as contextual effects given by state of residence. The second empirical strategy relies on sibling fixed-effect models, which automatically purge the effects of observed and unobserved family background factors by exploiting random within-family variation in skin tone. Findings regarding educational attainment suggest a positive association between skin color and years of schooling, where this association is significant for Blacks and Hispanics but not for other groups. However, after controlling for parental background, skin tone shows no clear effect on completed years of schooling. Although the declines in point estimates after adjusting for socioeconomic variables are not statistically significant, they suggest that part of the association between skin color and educational attainment is due to the positive correlation between parental background and skin color. These results hold across races and gender. Sibling fixed-effect models yield no consistent pattern, where all estimates display substantial uncertainty. These results question findings from previous studies that report a clear skin color educational premium (Flores and Telles, 2012; Villarreal, 2010; Murguia and Telles, 1996).

For earnings, findings reveal a skin color premium for Black women; moreover, this effect is robust to adjustment for socioeconomic background. For women of other racial groups however, I find no such positive effect. For men, these findings yield a pooled null effect of skin tone on income. Sibling fixed-effect models suggest an analogous pattern. These models reveal a positive effect of skin tone on Black men's and women's earnings and a negative effect on Asian men's earnings. For other groups, estimates display substantial heterogeneity, but none

of these effects are significant. These results provide support to studies that have reported a skin color wage premium among Blacks (Goldsmith et al., 2006; Monk, 2014), and reinforce the hypothesis that at least part of this premium reflects discrimination and not merely color based inequalities in the previous generation. By contrast, in the case of Hispanics, unlike previous studies (Telles and Murguía, 1992; Murguia and Telles, 1996; Frank et al., 2010), these findings indicate that after accounting for socioeconomic background – both via regression adjustment and fixed-effects – the effect of skin color on men's income is very weak. For Hispanic women, I find no significant effects whatsoever. This being said, it is important to note that these results concern early-life earnings, and as such, might not be entirely comparable to other research studying the relationship between skin color and income.

Overall, these results highlight the complexities of studying gradational racial inequalities occurring above and beyond categorical forms of racial disparities. Due to the social construction of racial categories in the United States, this study only finds sizable skin color heterogeneity among Blacks, and to a lesser extent, Hispanics and Asians. Second, I demonstrate that improper account of socioeconomic origins runs the risk of mistaking skin tone discrimination in the current generation for racial inequalities in the previous generation.

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Tables

Table 1: Descriptive statistics by gender - full sample

	Men			Women		
	N	Mean	St. Dev.	N	Mean	St. Dev.
Age	6,177	29.16	1.75	6,519	28.93	1.74
Skin Color	4,991	4.23	1.25	5,557	4.25	1.20
Years of Schooling	6,175	13.78	2.16	6,518	14.32	2.24
log Earnings	5,992	10.67	1.58	5,836	10.38	1.77
Parents Schooling (max)	4,775	13.91	2.54	5,003	13.79	2.60
Family income 1994	4,710	3.55	0.81	4,852	3.53	0.82
Foreign mother	6,177	0.18	0.38	6,519	0.17	0.37
Foreign father	6,177	0.18	0.38	6,519	0.17	0.37
Black	6,177	0.21	0.41	6,519	0.23	0.42
Asian	6,177	0.07	0.25	6,519	0.06	0.23
Hispanic	6,177	0.15	0.36	6,519	0.14	0.35
White	6,177	0.57	0.50	6,519	0.57	0.50

Table 2: Descriptive statistics by gender - full siblings sample

	Men			Women		
	N	Mean	St. Dev.	N	Mean	St. Dev.
Age	612	29.19	1.71	660	28.93	1.62
Skin Color	532	4.41	1.11	610	4.30	1.21
Years of Schooling	612	14.20	2.26	660	14.29	2.29
log Earnings	601	10.74	1.43	567	10.44	1.81
Parents Educ.	499	14.38	2.30	539	13.62	2.59
Family income 1994	484	3.69	0.68	513	3.55	0.84
Foreign mother	612	0.13	0.33	660	0.13	0.33
Foreign father	612	0.15	0.35	660	0.14	0.34
Black	612	0.15	0.35	660	0.20	0.40
Asian	612	0.07	0.26	660	0.04	0.19
Hispanic	612	0.12	0.32	660	0.13	0.33
White	612	0.66	0.47	660	0.63	0.48

Table 3: Components of variance in skin color, total and by race (full siblings sample)

		Variance	% Between Race	% Between Family	% Within Family
Men	Total	1.77	82.45	6.96	10.59
	White	0.05		31.22	68.78
	Black	1.00		34.39	65.61
	Asian	0.57		37.81	62.19
	Hispanic	0.47		61.14	38.86
Women	Total	1.67	82.44	10.17	7.39
	White	0.07		44.16	55.84
	Black	0.85		60.81	39.19
	Asian	0.63		60.12	39.88
	Hispanic	0.68		64.74	35.26

Table 4: Linear mixed model of years of schooling regressed on skin color

	Years of Schooling			
	Women		Men	
Skin color	0.20*** (0.05)	0.04 (0.06)	0.23*** (0.05)	0.09* (0.05)
Age	1.57*** (0.51)	0.88 (0.60)	0.79 (0.49)	0.33 (0.55)
Age2	−0.03*** (0.01)	−0.01 (0.01)	−0.01* (0.01)	−0.01 (0.01)
White	−0.21 (0.15)	−0.35** (0.17)	−0.17 (0.16)	−0.17 (0.18)
Asian	0.48*** (0.17)	−0.37 (0.24)	0.70*** (0.17)	−0.13 (0.21)
Hispanic	−0.94*** (0.15)	−0.63*** (0.18)	−0.73*** (0.15)	−0.25 (0.18)
Parents Schooling (max)		0.31*** (0.02)		0.28*** (0.02)
Family income 1994		0.54*** (0.05)		0.59*** (0.05)
Foreign mother		0.42*** (0.14)		0.46*** (0.14)
Foreign father		0.36** (0.14)		0.32** (0.14)
Intercept	−8.77 (7.40)	−4.82 (8.59)	2.20 (7.14)	2.84 (7.99)
Observations	5,556	3,737	4,987	3,457
Log Likelihood	−12,175.06	−7,838.25	−10,719.74	−7,112.43
Akaike Inf. Crit.	24,372.12	15,706.50	21,461.49	14,258.85
Bayesian Inf. Crit.	24,444.97	15,799.89	21,533.15	14,363.37
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 5: Linear mixed model of years of schooling regressed on skin color by race

	Years of Schooling			
	Women		Men	
Skin color	0.16*** (0.06)	−0.05 (0.07)	0.13* (0.07)	0.03 (0.07)
White	0.35 (0.65)	−1.28* (0.75)	−0.99 (0.76)	−1.17 (0.84)
Asian	−0.13 (0.74)	−0.96 (0.95)	0.30 (0.58)	−0.43 (0.70)
Hispanic	−1.80*** (0.53)	−1.51** (0.62)	−1.56*** (0.44)	−0.51 (0.51)
Age	1.60*** (0.52)	0.87 (0.60)	0.74 (0.49)	0.31 (0.56)
Age2	−0.03*** (0.01)	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)
Parents Schooling (max)		0.31*** (0.02)		0.28*** (0.02)
Family income 1994		0.54*** (0.05)		0.59*** (0.05)
Foreign mother		0.41*** (0.14)		0.47*** (0.14)
Foreign father		0.37*** (0.14)		0.32** (0.14)
White*Skin color	−0.09 (0.14)	0.23 (0.16)	0.22 (0.16)	0.23 (0.18)
Asian*Skin color	0.16 (0.18)	0.18 (0.23)	0.14 (0.15)	0.10 (0.18)
Hispanic*Skin color	0.21* (0.13)	0.24 (0.15)	0.24** (0.11)	0.09 (0.13)
Intercept	−9.04 (7.40)	−4.43 (8.60)	3.24 (7.15)	3.31 (8.01)
Observations	5,556	3,737	4,987	3,457
Log Likelihood	−12,175.87	−7,838.73	−10,720.24	−7,114.26
Akaike Inf. Crit.	24,379.74	15,713.46	21,468.48	14,264.52
Bayesian Inf. Crit.	24,472.46	15,825.53	21,559.68	14,375.19
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 6: Sibling fixed-effect model of years of schooling on skin color

	Years of Schooling	
	Women	Men
Skin color	0.16* (0.08)	−0.000 (0.23)
Age	−0.19 (1.55)	−0.48 (1.96)
Age2	0.01 (0.03)	0.01 (0.03)
Intercept	14.16 (22.31)	16.02 (28.21)
Observations	610	532
Log Likelihood	−1,295.20	−517.05
Akaike Inf. Crit.	2,606.39	1,612.10
Bayesian Inf. Crit.	2,641.70	2,848.05
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 7: Sibling fixed-effect model of years of schooling on skin color by race

	Years of Schooling	
	Women	Men
Age	0.34 (1.87)	−0.29 (1.98)
Age2	−0.003 (0.03)	0.01 (0.03)
White*Skin color	−0.32 (0.56)	0.60 (0.56)
Black*Skin color	−0.11 (0.19)	0.02 (0.32)
Asian*Skin color	−0.01 (0.78)	−0.13 (0.69)
Hispanic*Skin color	0.22 (0.50)	−0.41 (0.46)
Intercept	5.95 (27.17)	15.53 (28.42)
Observations	610	532
Log Likelihood	−621.60	−514.68
Akaike Inf. Crit.	1,891.19	1,613.35
Bayesian Inf. Crit.	3,321.15	2,862.13
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 8: Linear mixed model of log-earnings on skin color

	log Earnings			
	Women		Men	
Skin color	0.09** (0.04)	0.15*** (0.05)	0.03 (0.03)	−0.01 (0.04)
Age	−0.22 (0.44)	−0.52 (0.55)	0.68* (0.37)	0.17 (0.44)
Age2	0.004 (0.01)	0.01 (0.01)	−0.01* (0.01)	−0.002 (0.01)
White	−0.46*** (0.12)	−0.72*** (0.15)	0.02 (0.11)	0.08 (0.14)
Asian	0.04 (0.14)	−0.34 (0.21)	0.22* (0.12)	0.12 (0.17)
Hispanic	−0.27** (0.12)	−0.49*** (0.16)	−0.12 (0.11)	−0.09 (0.15)
Parents Schooling (max)		0.02 (0.01)		0.003 (0.01)
Family income 1994		0.13*** (0.04)		0.10** (0.04)
Foreign mother		0.13 (0.13)		0.10 (0.11)
Foreign father		0.26** (0.13)		0.04 (0.11)
Intercept	13.10** (6.34)	16.68** (7.88)	−0.05 (5.31)	6.99 (6.39)
Observations	5,002	3,373	4,854	3,376
Log Likelihood	−9,844.27	−6,570.84	−8,913.31	−6,168.47
Akaike Inf. Crit.	19,710.55	13,171.68	17,848.61	12,370.93
Bayesian Inf. Crit.	19,782.24	13,263.54	17,919.98	12,475.05
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 9: Linear mixed model of log-earnings on skin color by race

	log Earnings			
	Women		Men	
Skin color	0.10** (0.05)	0.15** (0.06)	0.002 (0.05)	−0.06 (0.06)
White	−0.58 (0.53)	−0.54 (0.65)	−0.35 (0.55)	−0.79 (0.67)
Asian	0.67 (0.61)	0.17 (0.85)	0.18 (0.43)	−0.38 (0.56)
Hispanic	−0.25 (0.44)	−0.81 (0.54)	−0.31 (0.32)	−0.14 (0.41)
Age	−0.22 (0.44)	−0.51 (0.55)	0.67* (0.37)	0.17 (0.45)
Age2	0.004 (0.01)	0.01 (0.01)	−0.01* (0.01)	−0.002 (0.01)
Parents Schooling (max)		0.02 (0.01)		0.003 (0.01)
Family income 1994		0.13*** (0.04)		0.10** (0.04)
Foreign mother		0.13 (0.13)		0.11 (0.11)
Foreign father		0.27** (0.13)		0.05 (0.11)
White*Skin color	0.02 (0.11)	−0.04 (0.14)	0.09 (0.12)	0.20 (0.14)
Asian*Skin color	−0.16 (0.15)	−0.12 (0.21)	0.02 (0.11)	0.14 (0.15)
Hispanic*Skin color	−0.01 (0.11)	0.07 (0.13)	0.06 (0.08)	0.04 (0.10)
Intercept	13.16** (6.34)	16.57** (7.89)	0.24 (5.33)	7.17 (6.42)
Observations	5,002	3,373	4,854	3,376
Log Likelihood	−9,847.27	−6,573.24	−8,917.03	−6,170.62
Akaike Inf. Crit.	19,722.54	13,182.49	17,862.07	12,377.23
Bayesian Inf. Crit.	19,813.79	13,292.71	17,952.89	12,487.47
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 10: Sibling fixed-effect model of log-earnings on skin color

	log Earnings	
	Women	Men
Skin color	−0.04 (0.07)	0.20 (0.24)
Age	−1.63 (1.65)	0.82 (2.07)
Age2	0.03 (0.03)	−0.01 (0.04)
Intercept	33.49 (23.72)	−2.16 (29.69)
Observations	524	521
Log Likelihood	−1,090.07	−513.91
Akaike Inf. Crit.	2,196.14	1,597.82
Bayesian Inf. Crit.	2,230.23	2,810.71
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 11: Sibling fixed-effect model of log-earnings on skin color by race

	log Earnings	
	Women	Men
Age	−1.39 (2.71)	0.33 (2.06)
Age2	0.03 (0.05)	−0.01 (0.04)
White*Skin color	0.35 (0.78)	0.11 (0.58)
Black*Skin color	0.45* (0.27)	0.71** (0.33)
Asian*Skin color	−2.05 (1.56)	−1.59** (0.72)
Hispanic*Skin color	−0.87 (0.75)	−0.003 (0.48)
Intercept	32.67 (39.53)	6.20 (29.51)
Observations	524	521
Log Likelihood	−518.39	−508.04
Akaike Inf. Crit.	1,658.77	1,592.09
Bayesian Inf. Crit.	2,984.10	2,817.74
Note:	*p<0.1; **p<0.05; ***p<0.01	

Figures

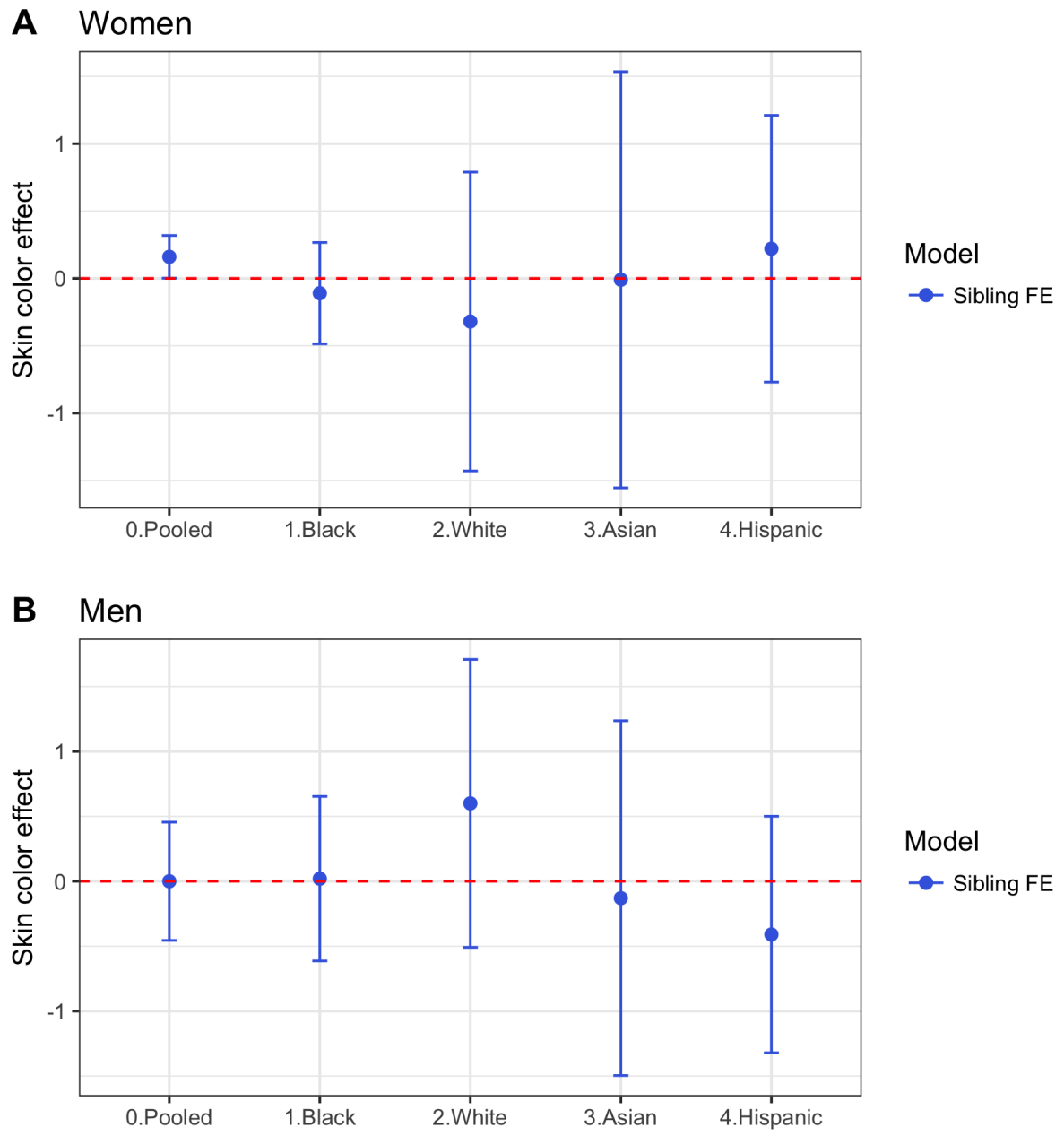

Figure 3: Sibling fixed-effect model estimates of skin color effect on completed years of schooling. Panel **A** displays results for women and panel **B** displays results for men. Pooled effects come from models that do not interact race and skin tone. Effects for specific racial groups come from models that allow for such interaction.Bars represent 95% confidence interval.

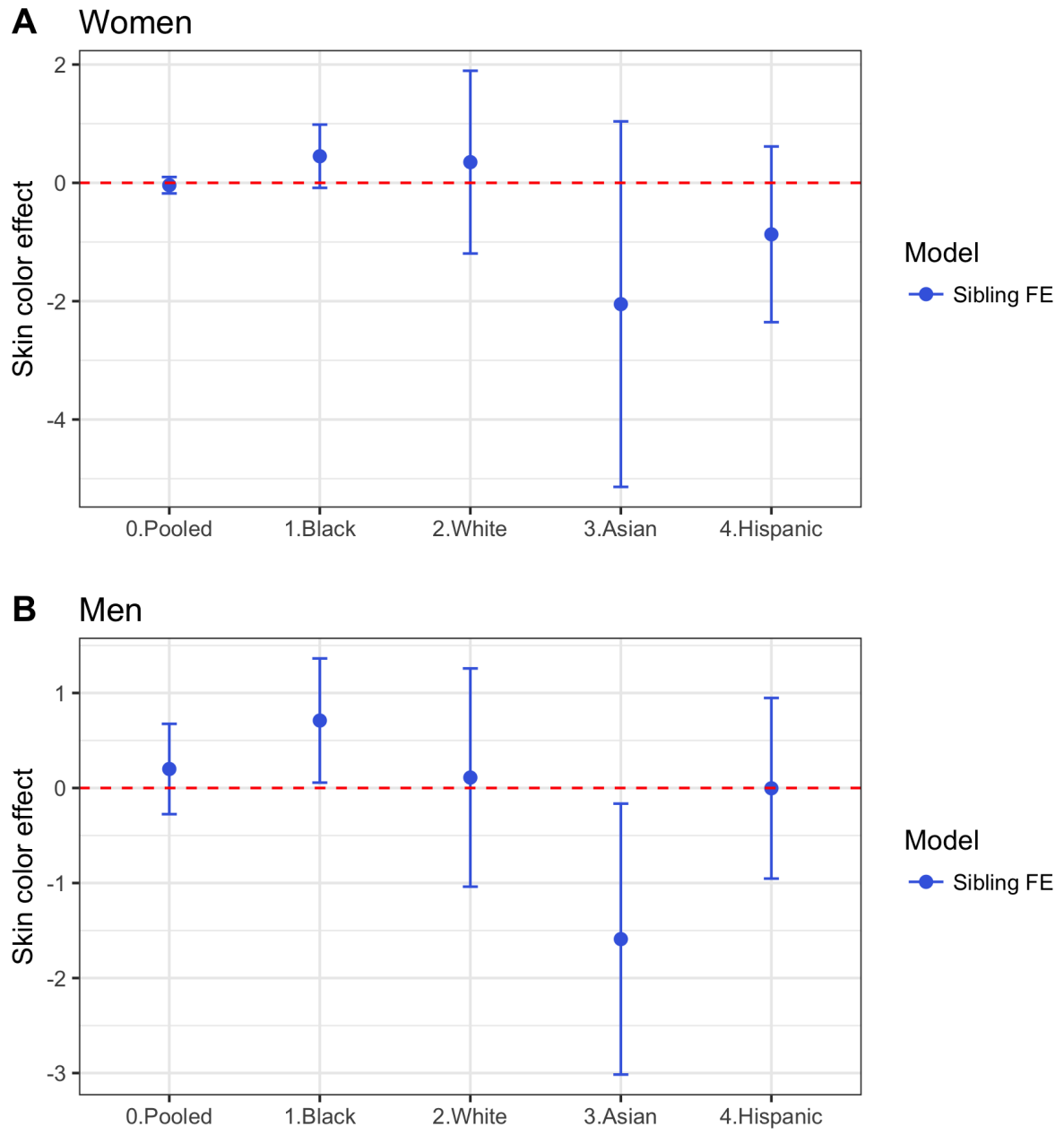

Figure 5: Sibling fixed-effect model estimates of skin color effect on earnings. Panel **A** displays results for women and panel **B** displays results for men. Pooled effects come from models that do not interact race and skin tone. Effects for specific racial groups come from models that allow for such interaction. Bars represent 95% confidence interval.

Appendices

Table 12: Crosswalk from highest level of education achieved to years of schooling

Highest level of education achieved	Year of Schooling
8th grade or less	8
Some high school	10
High school graduate	12
Some vocational/technical training (after high school)	13
Completed vocational/technical training (after high school)	14
Some college	14
Sompleted college (bachelor's degree)	16
Some post baccalaureate professional education (e.g., law school, med school, nurse)	17
Some graduate school	17
Sompleted post baccalaureate professional education (e.g., law school, med school, nurse)	18
Sompleted a master's degree	18
Some graduate training beyond a master's degree	19
Completed a doctoral degree	21

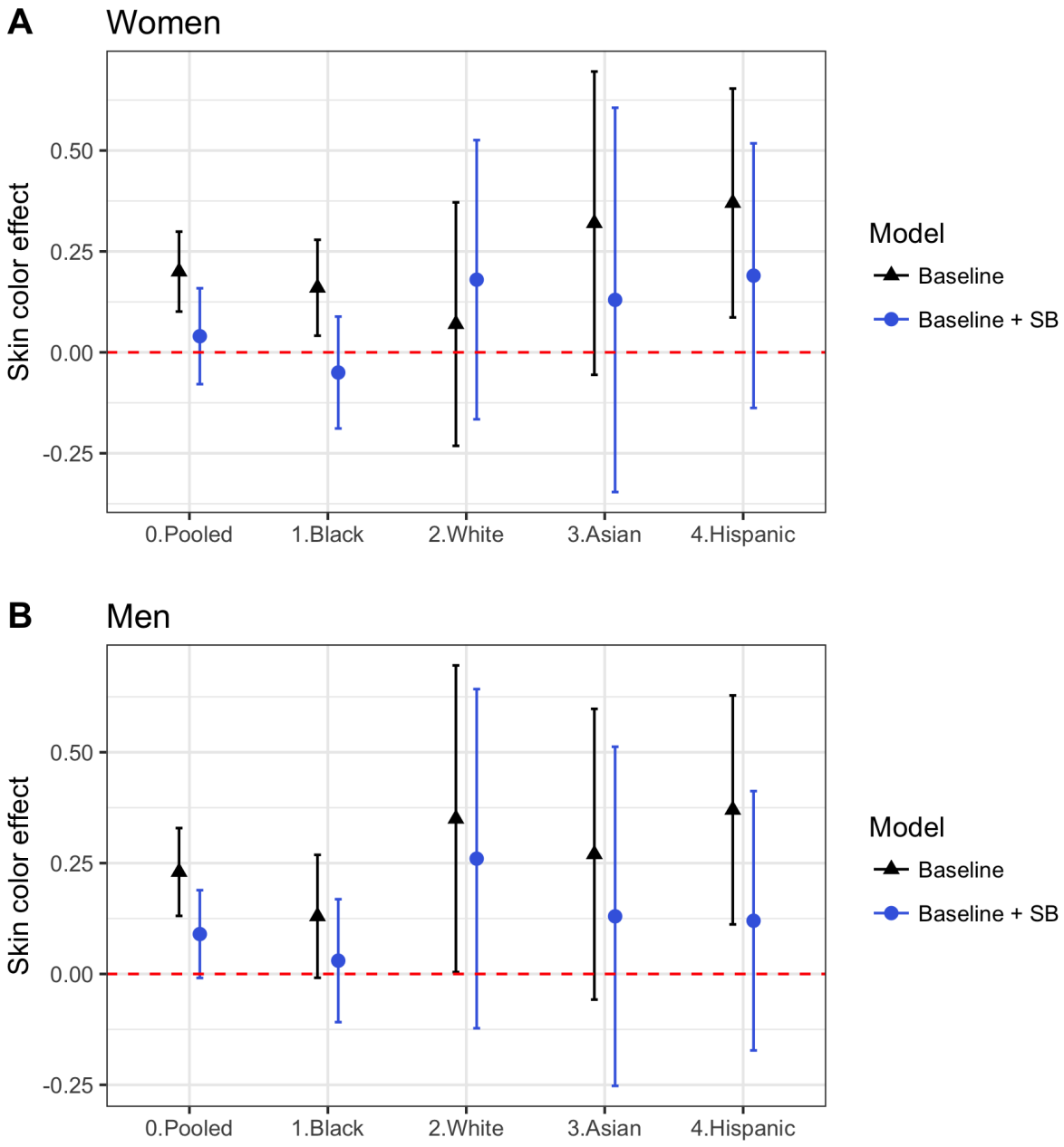

Figure 2: Linear mixed model estimates of skin color effect on completed years of schooling. Panel **A** displays results for women and panel **B** displays results for men. Pooled effects come from models that do not interact race and skin tone. Effects for specific racial groups come from models that allow for such interaction. The "Baseline" model incorporates controls for age and race. The "Baseline + SB" adds socioeconomic covariates. Bars represent 95% confidence interval.

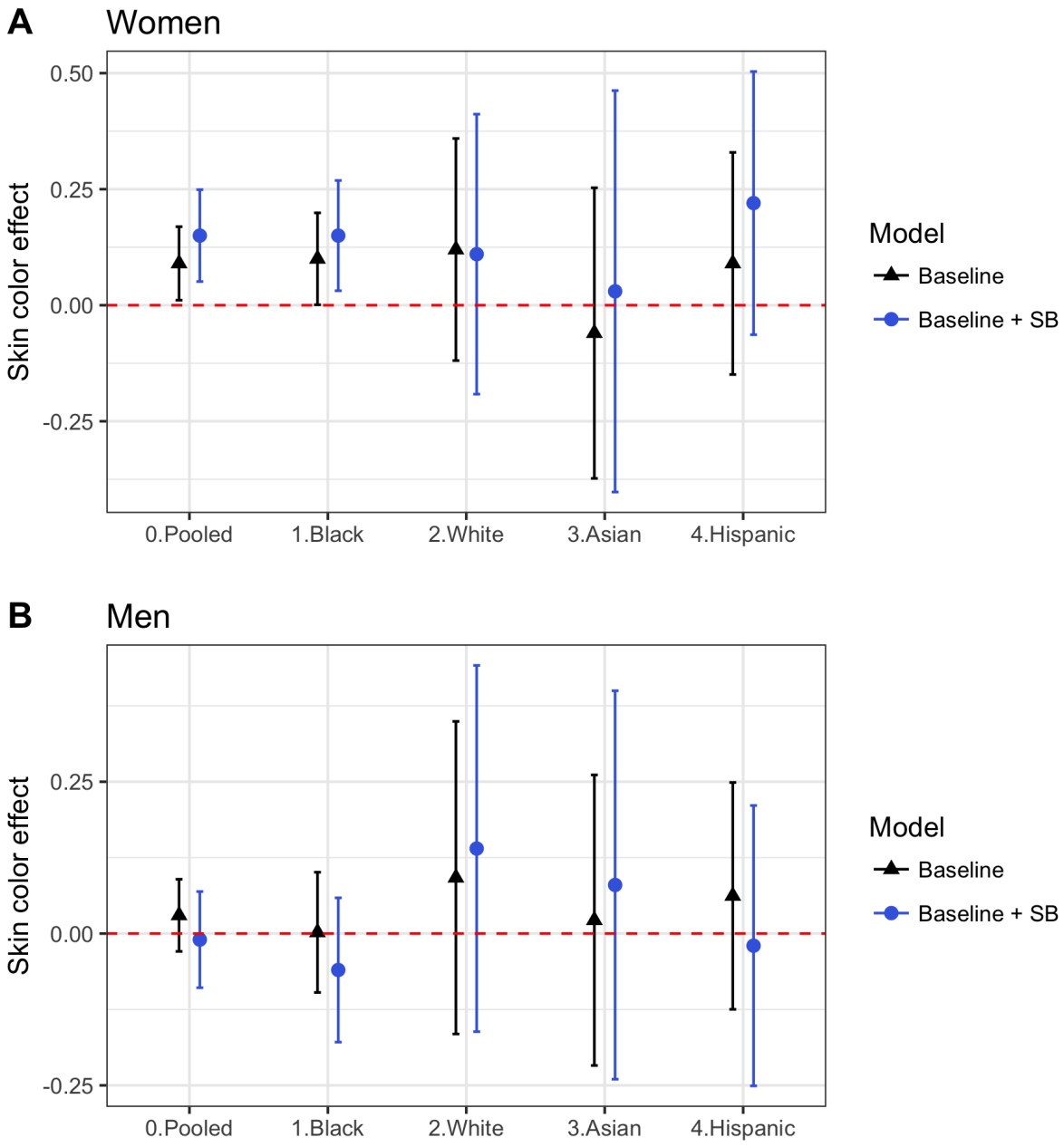

Figure 4: Linear mixed model estimates of skin color effect on earnings. Panel **A** displays results for women and panel **B** displays results for men. Pooled effects come from models that do not interact race and skin tone. Effects for specific racial groups come from models that allow for such interaction. The "Baseline" model incorporates controls for age and race. The "Baseline + SB" adds socioeconomic covariates. Bars represent 95% confidence interval.