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## EDUCATION AND BLACK-WHITE INTERRACIAL MARRIAGE\*

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*This article examines competing theoretical claims regarding how an individual's education will affect his or her likelihood of interracial marriage. I demonstrate that prior models of interracial marriage have failed to adequately distinguish the joint and marginal effects of education on interracial marriage and present a model capable of distinguishing these effects. I test this model on black-white interracial marriages using 1980, 1990, and 2000 U.S. census data. The results reveal partial support for status exchange theory within black male–white female unions and strong isolation of lower-class blacks from the interracial marriage market. Structural assimilation theory is not supported because the educational attainment of whites is not related in any consistent fashion to the likelihood of interracial marriage. The strong isolation of lower-class blacks from the interracial marriage market has gone unnoticed in prior research because of the failure of prior methods to distinguish joint and marginal effects.*

**T**he characteristics of individuals who cross racial lines in matrimony have long been a subject of both popular speculation and scholarly inquiry. W.E.B. Du Bois stated in *The Philadelphia Negro* that “It is often said that only the worst Negroes and lowest whites intermarry” (Du Bois 1899:366). Based on his own sample of 33 intermarried couples from the Seventh Ward of Philadelphia, however, Du Bois found this claim to be dubious at best (pp. 360–67).

Demographers and sociologists have long been interested in this topic because it falls at the intersection of race and class. Although we know that both race and status characteristics, such as education, are important factors in determining who marries whom, the question of whether and how these two characteristics might interact in the “marriage market” is considerably more complex. The major theories make somewhat contrary predictions. Status exchange theory argues that black-white unions are frequently formed through an exchange relationship in which both white and black partners benefit by trading status characteristics (Davis 1941; Merton 1941). On the other hand, the assimilationist school of thought sees education as a major force in the structural assimilation (including marital assimilation) of groups (Gordon 1964). More recently, social scientists have begun to consider how the prevalence of racial segregation might affect this relationship, particularly in regard to the isolation of lower-class blacks.

Although all of these perspectives have been noted in prior research and status exchange theory in particular has been tested numerous times, researchers have failed to appreciate the often contradictory predictions generated by these different theories. More important, empirical exploration has been inadequate because it has failed to develop models that effectively distinguish these expectations.

In this article, I make two contributions to the literature. First, I present a comparison of current theories regarding the educational characteristics of interracial black-white couples that clarifies the empirical expectations of each theory. Second, I develop a modeling framework that can be used to test these different theoretical expectations within the same model, and I use this model to perform such a test on three decades of census data. This framework is not simply another method; it is a comprehensive model that addresses

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all of the ways in which education might affect the likelihood of interracial marriage. My exposition of this model addresses a major shortcoming in the field, namely, the failure to distinguish the joint and marginal effects of spouses' education on the likelihood of interracial marriage. The results from this model are partially novel and reveal that an exclusive focus on status exchange theory has hidden other aspects of the relationship between education and interracial marriage.

My focus in this article is exclusively on non-Hispanic black–white interracial marriages. The primary reason for this focus is that the majority of theories discussed here were developed to explain this highly racialized division within the U.S. population (assimilation being the obvious exception). I discuss in my conclusions the applicability of the theories and models presented here to other ethnic/racial divides.

## THEORIES OF EDUCATION AND INTERRACIAL MARRIAGE

### Status Exchange

In two highly influential articles, Merton (1941) and Davis (1941) argued that interracial marriages would frequently involve an exchange of status characteristics. Highly educated blacks would trade their educational status in order to reap the benefits associated with the racial status of a potential white spouse.<sup>1</sup> Similarly, whites with low levels of education would trade their racial status for the educational status of a potential black spouse. Consequently, a black–white marriage was likely to involve a black spouse with greater education than the white spouse because these types of individuals would each have something to gain from the union. Interracial marriages involving white spouses with greater education than their black spouses would be much less likely because blacks would have nothing to offer their potential white spouse in return for the white spouse “marrying down” in terms of race. Both Merton and Davis believed that this process of status exchange was applicable only to black male–white female unions because a black man’s educational background would be more closely tied to future potential earnings and prestige than would a black woman’s education.

Lacking empirical data to confirm this hypothesis, Merton provided the framework for a future test of the theory. According to Merton, the correct procedure would be to compare the relative frequency of three types of interracial marriage: educationally homogamous unions (Group A), unions in which the white member marries “upward” (white hypergamy) in terms of education (Group B), and unions in which the white member marries “downward” (white hypogamy) in terms of education (Group C).<sup>2</sup> Group B should be the most common type because it involves the expected exchange of status characteristics, and Group C should be the least common type.

Numerous scholars have since shown that this test fails because most interracial marriages, like intraracial marriages, are educationally homogamous (Bernard 1966; Heer 1974; Monahan 1976; Porterfield 1978; Rosenfeld 2005). Individuals have a strong tendency to marry partners of a similar educational background, and this tendency has been increasing over the last half-century (Mare 1991; Schwartz and Mare 2005).

However, Merton’s test is actually not a very satisfactory test of status exchange theory. It should not be surprising that homogamy is strong in interracial unions, given that it seems to be such a strong determinant of marriage formation in general. The important question,

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1. Merton and Davis actually referred more abstractly to “upper-class” blacks rather than to highly educated blacks. Research has typically used education as a proxy for class on the marriage market because of its value in predicting future earnings and prestige. Thus, I refer specifically to education throughout this article.

2. Hypergamy and hypogamy mean “upward marriage” and “downward marriage,” respectively. Unfortunately, these terms have traditionally been applied exclusively to the marriage patterns of women, limiting the ability to discuss hypergamy and hypogamy among other groups. Throughout this article, I will refer to hypergamy and hypogamy in a gender-neutral sense.

however, is whether the pattern of nonhomogamous educational assortative mating within interracial marriages is different from the pattern within intraracial marriages. The expectation of status exchange theory is that white women, and possibly white men, will be more educationally hypergamous and less educationally hypogamous in an interracial marriage than their respective sexes would be in an intraracial marriage.

To better address this question, Kalmijn (1993) introduced the hypergamy ratio test. A hypergamy ratio is calculated as the number of people in a certain group marrying up in education divided by the number of people in that group marrying down. Kalmijn (1993) compared the observed hypergamy ratios within interracial marriages to the expected hypergamy ratios under a model in which educational assortative mating is the same across interracial and intraracial unions. Using vital statistics data from 1970 to 1986, he found that both white men and white women are more likely to marry up in education within interracial unions than would be expected if educational assortative mating were independent of racial combination. Qian (1997) found similar results in his analysis of interracial marriage in the 1980 and 1990 censuses.

Fu (2001) argued that the fundamental core of status exchange theory is that whiteness is a valued resource on the marriage market, and thus blacks suffer from a racial penalty in terms of acquiring desirable spouses. As a result, whites are able to acquire black spouses of higher education than the black spouses of fellow blacks, thus positively selecting black members of interracial unions; blacks will acquire white spouses who are less educated than the white spouses of fellow whites, thus negatively selecting white members of interracial unions. Fu developed a log-linear model to test this expectation by using 1990 census data and found support for the theory.

Fu's approach was a departure from prior formulations of status exchange theory because it was not directly concerned with whether an exchange occurred between spouses themselves. In more formal terms, Fu was interested in each spouse's marginal distribution of education across racial combinations rather than the joint distribution of education among couples across racial combinations.

Part of the appeal of Fu's approach is that status exchange theory does expect a relationship between interracial marriage and the marginal distribution of each spouse's education. However, this relationship is merely a by-product of the exchange process itself. Blacks with more education will have a greater ability to marry across racial lines, and whites with less education will have more reason to marry across racial lines, thus leading to a positively selected group of blacks and a negatively selected group of whites in interracial marriages. Fu's model treats this by-product as a fundamental aspect of exchange. I will demonstrate that the failure to explicitly consider the joint distribution of education among interracial couples makes Fu's approach problematic.

### **Structural Assimilation**

The distinction between how the joint educational characteristics of spouses condition the likelihood of interracial marriage and how each spouse's education independently conditions this likelihood distinguishes status exchange theory from structural assimilation theory. According to structural assimilation theory, education and the educational system play key roles in the structural assimilation of groups because they promote universalistic and democratic norms, which tend to break down group barriers (Condran 1979; Gordon 1964; Greeley and Sheatsley 1971; Hyman and Sheatsley 1964; Hyman and Wright 1979:61; Kalmijn 1998:413; Lieberman and Waters 1988; Quinley and Glock 1979:188; Selznick and Steinberg 1969; Taylor, Sheatsley, and Greeley 1978). Therefore, the propensity to marry across racial lines will increase with education. Research indicates a positive relationship between education and support for abstract principles of racial equality, including support for interracial marriage and opposition to antimiscegenation laws (Schuman et al. 1997). Similarly, Demo and Hughes (1990) found that a black person's socioeconomic status has

a negative effect on that individual's feelings of closeness to other blacks, suggesting that education reduces the strength of in-group attachments.

This theory has not been without its detractors, who have noted that the positive effect of education on racial attitudes is hardly universal. In general, questions about specific policy interventions generate inconclusive and inconsistent results with regard to the effect of education, suggesting that high levels of education simply allow whites to conform better to standards of racial etiquette, without having an effect on the structure of racial inequality (see in particular Jackman and Muha 1984). Nonetheless, researchers have found evidence of a positive relationship between education and the likelihood of interracial marriage for certain groups. Lieberman and Waters (1988) found evidence that education is positively related to interethnic marriage among white ethnics. Three studies of intermarriage among Asian Americans found mixed results. Two of these studies on Chinese Americans found that education is associated with higher rates of outmarriage for both men and women (Sung 1990; Wong 1989), but a third study on a variety of Asian American groups found a negative relationship for women and no relationship for men (Hwang, Saenz, and Aguirre 1995).

Aside from its "liberating" influence, the college campus might also have an effect on interracial unions simply by providing a local marriage market where blacks and whites are unusually integrated. This propinquity argument differs somewhat from the propensity argument described above, but I group them together here for simplicity.

### Isolation

Both status exchange and structural assimilation theory largely predate the massive transformation of America's racial landscape that occurred during the Civil Rights period. Kalmijn (1993) linked the issue of interracial marriage to broader research on race relations in the post-Civil Rights era by suggesting that the isolation of lower-class blacks from the interracial marriage market may be related to broader processes of exclusion. According to Wilson (1978, 1987), the decline of a strict caste system of racial oppression has led to a bifurcation in the life chances of blacks. The American mainstream is now partially accessible to middle- and upper-class blacks, while lower-class blacks have been further isolated, creating a hyperstigmatized urban underclass. In particular, middle-class blacks have been geographically separated from lower-class blacks due to higher levels of spatial mobility. This spatial differentiation has led to the economic decline and social marginalization of inner-city neighborhoods.

The isolation of lower-class blacks may seriously affect their marriage opportunities with whites through both their lack of propinquity and their marriageability as perceived by whites. I refer to this as *isolation theory*. Kalmijn argued that status exchange itself is indicative of such isolation. However, status exchange only mechanically isolates lower-class blacks because they have fewer opportunities to marry down in terms of education than do upper-class blacks. Isolation should reflect the relationship between a black spouse's education and his or her likelihood of interracial marriage, independent of the education of a potential white spouse. Thus, isolation theory would predict that blacks will have differential access to the interracial marriage market depending on their level of education, and that this access will increase with education.

Although there is little doubt that middle-class blacks are less segregated from whites than are lower-class blacks, the magnitude of that difference is a matter of some debate. According to the index of dissimilarity, the most-affluent blacks are still more segregated from whites than the least-affluent Asians and Hispanics (Massey and Denton 1993:87; Massey and Fischer 1999). However, a far more fitting measure with regard to interracial marriage is  $P_{xy}^*$ , which measures the percentage of  $y$  residents in the typical  $x$  person's neighborhood, because this can be thought of as a measure of exposure to members of other racial groups. Alba, Logan, and Stults (2000) used the  $P_{xy}^*$  measure to show that, on average, increases in

**Table 1. Different Theoretical Expectations Regarding the Relationship Between Education and Interracial Marriage**

Theory	Education–Interracial Marriage Association		
	Black Spouse	White Spouse	White Hypergamy
Status Exchange	+	–	Yes
Structural Assimilation	+	+	No
Isolation	+	0	No

education and income among blacks lead to significant increases in the number of whites they are exposed to in their neighborhood. Thus, differences in education among blacks should lead to differential levels of exposure to potential white spouses.

### Theoretical Expectations

The empirical expectations of these theories about the relationship between education and the likelihood of interracial marriage are summarized in Table 1. For different reasons, all three theories expect blacks to be positively selected into interracial unions. The distinction between the theories is driven by different expectations regarding the selectivity of white spouses and the degree to which white hypergamy occurs.

Status exchange theory holds that highly educated whites will have fewer opportunities of an educationally upward marriage with blacks and will thus be less likely to enter such unions. Structural assimilation theory, on the other hand, predicts that highly educated whites will be the most open to the idea of crossing racial boundaries in marriage and will thus be the most likely group to enter such unions. Isolation theory assumes no particular relationship, either positive or negative, between a white spouse's education and the likelihood of interracial marriage.

This distinction between the latter two theories has perhaps not been appreciated because of a tendency to focus on the one-way assimilation of minority groups. If education plays a role in increasing tolerance and acceptance of intergroup relations, then it should play such a role for both minority groups and whites. On the other hand, if education is associated only with an increase in intergroup relations for a particular minority group, we must focus on structural issues specific to this population, such as the issues of segregation outlined above.

Although scholars have been aware of the different expectations of these theories, the degree to which these theories make competing claims has not been fully appreciated. In order to sort out the evidence for each theory, it is necessary to develop a single model that can distinguish these theoretical expectations.

### MODELS

In this section, I outline a log-linear model that can separate the effect of each spouse's education individually on the odds of interracial marriage from the effect of joint spousal education. The log-linear model used here is constructed from four-way contingency tables of husband's race ( $i$ ), wife's race ( $j$ ), husband's education ( $k$ ), and wife's education ( $l$ ). Race is coded as white (1) or black (2), and education is coded as four nonoverlapping categories: less than high school (1), high school diploma (2), some college (3), and college degree or more (4).

The key parameters in the model can be interpreted as giving the change in the log-odds of interracial marriage for spouses in different educational categories. First, I develop parameters to test how the odds of interracial marriage change as each spouse's education

increases individually, regardless of his or her partner's education level. Then I develop parameters that indicate how the odds of interracial marriage change when I consider different combinations of spousal education. The former parameters will help adjudicate between structural assimilation and isolation theory, while the latter parameters will test for the existence and strength of status exchange and an educational propinquity effect among college-educated couples.

For ease of presentation, I treat the key parameters as if they fit identically to black male–white female (BM-WF) unions and white male–black female (WM-BF) unions, implying gender symmetry in the parameters between these two types of unions. In the actual analysis, I fit the parameters to these groups separately.

I begin with a baseline model in which the educational characteristics of spouses do not differ between interracial and intraracial unions, apart from compositional issues. Formally, the model is:

$$\log(F_{ijkl}) = \lambda + \lambda_i + \lambda_j + \lambda_k + \lambda_l + \lambda_{ij} + \lambda_{kl} + \lambda_{ik} + \lambda_{jl}.$$

This model assumes that there is nothing in particular to explain about interracial unions that is not explained by the general pattern of racial endogamy ( $\lambda_{ij}$ ), the general pattern of educational assortative mating ( $\lambda_{kl}$ ), and the different racial distributions of education ( $\lambda_{ik}$  and  $\lambda_{jl}$ ). I refer to this model as the *conditional independence model*. All of the subsequent models are nested within this model.<sup>3</sup>

I begin by examining how the odds of interracial marriage change by the educational level of each spouse individually. Specifically, I measure how the log-odds of interracial marriage change across adjacent educational categories. Formally, the model is,

$$\log(F_{ijkl}) = \lambda + \lambda_i + \lambda_j + \lambda_k + \lambda_l + \lambda_{ij} + \lambda_{kl} + \lambda_{ik} + \lambda_{jl} + \sum_{p=1}^3 \eta_p x_{pij} + \sum_{q=1}^3 \delta_q y_{qij}.$$

When  $i = j$  (racial endogamy), both  $x_{pij}$  and  $y_{qij}$  equal zero. When  $i = 2$  and  $j = 1$  (BM-WF),

$$x_{pij} = \begin{cases} 1 & \text{if } k > p \\ 0 & \text{otherwise} \end{cases} \quad y_{qij} = \begin{cases} 1 & \text{if } l > q \\ 0 & \text{otherwise} \end{cases}.$$

When  $i = 1$  and  $j = 2$  (WM-BF),

$$x_{pij} = \begin{cases} 1 & \text{if } l > p \\ 0 & \text{otherwise} \end{cases} \quad y_{qij} = \begin{cases} 1 & \text{if } k > q \\ 0 & \text{otherwise} \end{cases}.$$

When each gender combination is fit separately, this model fits the saturated three-way tables of husband's race by wife's race by husband's education and husband's race by wife's race by wife's education.

The parameters for these models are the log-odds ratios of interracial marriage between adjacent educational categories for black men, black women, white men, and white women. Positive values of  $\eta$  indicate that the odds of interracial marriage increase for blacks across the educational-relevant boundary, while negative values indicate that the odds of interracial marriage decrease for blacks across the educational boundary.  $\delta$  provides the same information for whites. I refer to these parameters as the *educational boundary terms*.

3. This model fits somewhat poorly by traditional tests because the pattern of educational assortative mating is somewhat different between black and white endogamous unions. It is possible to allow for these differences, but the models here become considerably more complex because one has to set a baseline expectation for what educational assortative mating should be within interracial couples. The parameters from such models are very similar to the ones presented here, which simply look at the deviation of interracial couples from "average" educational assortative mating. The formal justification and results are available from the author upon request.

By comparing the odds ratios presented here with those resulting from Fu’s general model, it can be shown that both parameterizations lead to the same expected cell counts. Fu’s model attempted to test status exchange theory by examining spouses’ marginal educational distributions across racial combinations. As I will show, status exchange theory is better tested by examining the joint educational distribution of spouses across racial combinations.

The fundamental test of status exchange theory is a test for different patterns of educational assortative mating (EAM) between interracial and intraracial unions. The model I use follows Merton’s in spirit. Interracial unions can be divided into three types based on the educational matching of spouses: (1) unions in which the black member has more education than the white member (white hypergamy), (2) unions in which the black and white member have the same level of education (homogamy), and (3) unions in which the black member has less education than the white member (white hypogamy). My interest is in whether hypergamy will be more common among white spouses within interracial marriages than among white spouses of the same sex within intraracial marriages, and whether hypogamy will be less common among white spouses within interracial marriages than among white spouses of the same sex within intraracial marriages.

The incentive to hypergamy and the disincentive to hypogamy are both measured relative to homogamy. This ordering can be expressed with the following model:

$$\log(F_{ijkl}) = \lambda + \lambda_i + \lambda_j + \lambda_k + \lambda_l + \lambda_{ij} + \lambda_{kl} + \lambda_{ik} + \lambda_{jl} + \tau x_{ijkl} + \gamma y_{ijkl}.$$

When  $i = j$  (racial endogamy),  $x_{ijkl}$  and  $y_{ijkl}$  both equal zero. When  $i = 2$  and  $j = 1$  (BM-WF),

$$x_{ijkl} = \begin{cases} 1 & \text{if } k > l \\ 0 & \text{otherwise} \end{cases} \quad y_{ijkl} = \begin{cases} 1 & \text{if } l > k \\ 0 & \text{otherwise} \end{cases}.$$

When  $i = 1$  and  $j = 2$  (WM-BF), these assignments are reversed. The expectation is that  $\tau$  will be positive and  $\gamma$  will be negative because the former parameter symbolizes the incentive to white hypergamy and the latter parameter symbolizes the disincentive to white hypogamy.

In concept, this model is very similar to the hypergamy ratio test used by Kalmijn, but it has two advantages over that method. First, because they are fitted parameters, the hypergamy/hypogamy terms can be inserted directly into log-linear models. Second, the hypergamy ratio test compares hypergamous unions directly with hypogamous unions and ignores homogamous unions. Therefore, it cannot distinguish an incentive to white educational hypergamy from a disincentive to white educational hypogamy.

A different parameterization of joint spousal education can be used to test an educational propinquity argument. The propinquity argument assumes that colleges serve as local marriage markets that give individuals unusual access to partners of other races. Thus, interracial unions will be more likely in cases in which both spouses have at least some college education.

This expectation can be modeled by simply “blocking off” the college-educated corner of the table, thus allowing for a different rate of interracial marriage among college-educated couples:

$$\log(F_{ijkl}) = \lambda + \lambda_i + \lambda_j + \lambda_k + \lambda_l + \lambda_{ij} + \lambda_{kl} + \lambda_{ik} + \lambda_{jl} + \beta x_{ijkl}.$$

When the marriage is interracial,  $x_{ijkl}$  equals 1 if  $k$  equals 3 or 4 and  $l$  equals 3 or 4, and zero otherwise. The resulting parameter can be considered the change in the log-odds of interracial marriage when I consider couples in which both members are college-educated. The expectation is that  $\beta$  will be positive.

**Table 2. Log-Odds Ratios of Interracial Marriage Between White Hypergamous and Homogamous Unions According to Different Models**

Group	Odds Ratio	Model		
		Status Exchange	Educational Boundary	Both
Black Men	$\frac{F_{21(m+n)m} / F_{22(m+n)m}}{F_{21mm} / F_{22mm}}$	$\tau$	$\sum_{i=m+1}^{m+n} \eta_i$	$\tau + \sum_{i=m+1}^{m+n} \eta_i$
Black Women	$\frac{F_{12m(m+n)} / F_{22m(m+n)}}{F_{12mm} / F_{22mm}}$	$\tau$	$\sum_{i=m+1}^{m+n} \eta_i$	$\tau + \sum_{i=m+1}^{m+n} \eta_i$
White Men	$\frac{F_{12(m-n)m} / F_{11(m-n)m}}{F_{12mm} / F_{11mm}}$	$\tau$	$-\sum_{i=1}^{m-n} \delta_i$	$\tau - \sum_{i=1}^{m-n} \delta_i$
White Women	$\frac{F_{21m(m-n)} / F_{11m(m-n)}}{F_{21mm} / F_{11mm}}$	$\tau$	$-\sum_{i=1}^{m-n} \delta_i$	$\tau - \sum_{i=1}^{m-n} \delta_i$

The lack of distinction between the marginal and joint effects of education on the likelihood of interracial marriage has caused considerable confusion in the field. To illustrate this point, I examine how the odds of interracial marriage change as one partner moves from homogamy to white hypergamy. Similar odds ratios showing the disincentive to white hypogamy could also be constructed. These odds ratios are shown for each race-sex group in the second column of Table 2.

Although these odds ratios intuitively seem to provide some measure of status exchange, they are not an adequate test of status exchange theory because it is possible to build a model with the same patterns of EAM but differences in these odds ratios. It is illuminating to show how these odds ratios will fit under the status exchange model, the educational boundary model, and both parameterizations together, as shown in Table 2. The status exchange parameterization alone leads to odds ratios equal to  $\tau$ . However, the educational boundary parameterization alone also leads to these odds ratios being fit by the educational boundary terms for the marginal educational distributions. If both status exchange parameters and educational boundary parameters are fit in the same model, then the resulting odds ratios will be a combination of these terms.

These results demonstrate that only by fitting both the educational boundary and status exchange parameters in the same model can the evidence for different theories be clearly sorted out. This is the major shortfall of prior tests of status exchange.

## DATA

To test these models, I use the 5% samples of the 1980, 1990, and 2000 U.S. censuses, made available through the Integrated Public Use Microdata Sample (Ruggles and Sobek 1997). I pool the data across different years, so that the actual tables are five-way tables that include a three-category dimension indicating year of census. I interact all of the parameters from the baseline conditional independence model with this year variable, thus allowing each parameter in the baseline model to vary across the three census years. Because interracial marriage is such a rare event, pooling across multiple censuses improves the robustness of the analysis.

I restrict the sample to married unions of native-born, non-Hispanic black and white individuals in which the husband is 25–35 years old. The foreign-born population is excluded because foreign-born individuals may have faced very different marriage markets when they were younger and may not be affected by the U.S. racial hierarchy in the same manner as the native-born population. The age restriction is intended to reduce biases associated with using prevalence measures of unions rather than incidence measures (i.e., marriage licenses). Because the census data provide information only on the current stock of marriages, the data may be affected by both union attrition and by patterns that prevailed in the past. I can reduce the effect of attrition and temporal change by identifying unions that are more likely to have been recently formed.

The 2000 census allowed respondents to check multiple boxes on the race questions. Among native-born, non-Hispanic married couples in which the husband was 25–35 years old, 0.95% of those spouses who checked black or white also checked another race. In order to perform the analysis here, I must decide how to reclassify these multiracial individuals as black, white, or neither. To be consistent with lay understandings of race in the United States, I use a “one-drop” coding scheme that identifies as black anyone who identified at least one of their races in the 2000 census as black. Individuals are coded as white only if they claimed no other race. Alternative coding schemes produced extremely similar results.

The total sample size is 1,256,812 couples. Although racially exogamous couples are roughly only about two-thirds of a percent of the total sample, I still have a sufficiently large sample of 8,444 unions due to the overall size of the sample. Because BM-WF unions are far more common than WM-BF unions, I have a much larger sample of the former (6,427) than the latter (2,017).

In 1990 and 2000, the Census Bureau used a stratified sampling technique of the long-form responses to construct the 5% sample, so weights must be used to generalize accurately to the United States population (IPUMS 2003). I use the weighting technique described by Clogg and Eliason (1987).

The analysis that follows is largely a comparison between competing models. Because I have a large sample and I am comparing nonnested models, the standard likelihood ratio test is not an appropriate method of comparison. I instead use the Bayesian Information Criterion (BIC) suggested by Raftery (1995). The BIC is a more parsimonious measure than the likelihood ratio test (LRT), particularly when the sample is large, and it can be compared directly across nonnested models. Lower values of BIC indicate a better-fitting model.<sup>4</sup>

## ANALYSIS

Tables 3, 4, and 5 present estimated parameters from the models discussed above. In Table 3, all of the parameters are fit in a single model. I then attempt to find more parsimonious models, shown in Tables 4 and 5, by removing terms. I fit black male–white female (BM-WF) unions and white male–black female (WM-BF) unions separately because of the potential differences between these race-gender pairings. Each of these models is nested within the baseline conditional independence model ( $df = 117$ ,  $G^2 = 1,059.7$ ,  $BIC = -584$ ).

I begin by fitting in Model 1 only the educational boundary terms to see how these terms change with the inclusion of the status exchange terms. For BM-WF unions, the results suggest indirect support for status exchange theory. The odds of interracial marriage

4. The high deviances observed in these models may be an indication of overdispersion in the underlying data. Negative binomial models have been proposed to account for such overdispersion, but the deviance of the saturated model is undefined for the negative binomial model, making model comparison difficult. Raftery (1996) proposed a method of accounting for overdispersion within the framework of BIC, but I do not employ that method here because it leads to even more parsimonious model selection than BIC normally would. Results using this technique, however, only strengthen the findings presented here.

**Table 3. Estimated Log-Odds Ratios From Full Models of the Relationship Between Education and Interracial Marriage**

Parameter	Model 1		Model 2	
BM-WF Couples				
Status exchange				
White upward mobility			0.322**	(0.07)
White downward mobility			-0.009	(0.07)
College propinquity			-0.060	(0.08)
Black educational boundaries				
High school vs. less than high school	0.100	(0.05)	-0.017	(0.07)
Some college vs. high school	0.430*	(0.03)	0.321**	(0.07)
College vs. some college	0.126*	(0.04)	0.016	(0.06)
White educational boundaries				
High school vs. less than high school	-0.212*	(0.05)	-0.076	(0.07)
Some college vs. high school	0.065	(0.03)	0.230***	(0.07)
College vs. some college	-0.278*	(0.04)	-0.153***	(0.06)
WM-BF Couples				
Status exchange				
White upward mobility			0.137	(0.12)
White downward mobility			-0.282*	(0.12)
College propinquity			-0.103	(0.15)
Black educational boundaries				
High school vs. less than high school	-0.001	(0.10)	-0.163*	(0.13)
Some college vs. high school	0.281*	(0.06)	0.181	(0.13)
College vs. some college	-0.083	(0.07)	-0.249**	(0.11)
White educational boundaries				
High school vs. less than high school	-0.010	(0.10)	0.112	(0.12)
Some college vs. high school	0.015	(0.06)	0.233	(0.13)
College vs. some college	-0.124	(0.07)	0.048	(0.10)
$G^2$	738.0		680.2	
$df$	105		99	
BIC	-737		-710	

Notes: Standard errors are shown in parentheses. All models contain the parameters for the baseline model in addition to the listed parameters. The baseline model has 117 degrees of freedom, a deviance of 1,059.7, and a BIC of -584.

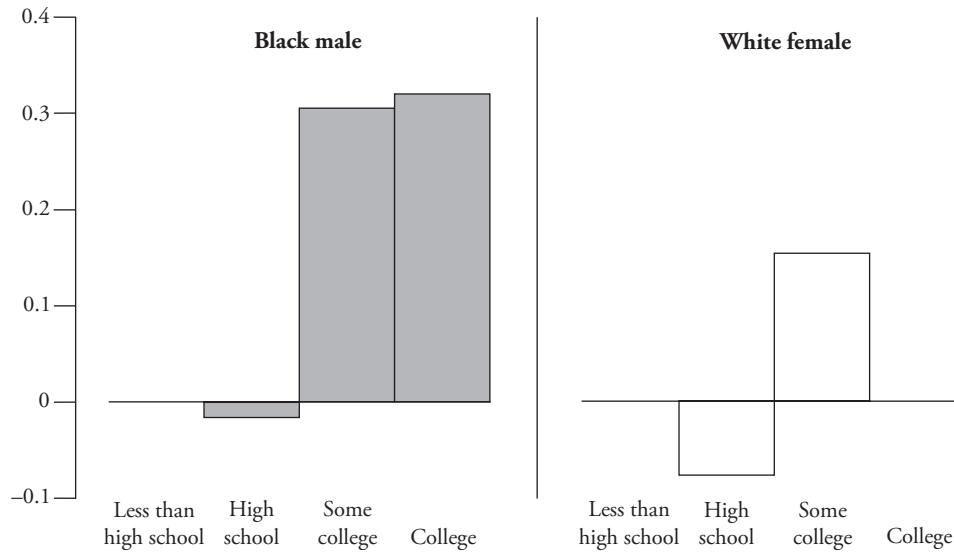
Sources: Integrated Public Use Microdata Samples of the 1980, 1990, and 2000 U.S. censuses.

\* $p < .05$ ; \*\* $p < .01$

increase with education for black men and decrease with education for white women. The change in the odds, however, varies considerably by which educational boundary is examined. For black men, the only strong boundary appears to be between high school and some college, while this is the only nonsignificant boundary for white women.

For WM-BF unions, the results suggest positive selectivity of black women and no relationship for white men. Like black men, the only important boundary for black women appears to be between high school and some college.

**Figure 1.** Change in the Log-Odds of Interracial Marriage by Education, Relative to the Less Than High School Category



These results are only tentative, however, because without controlling for the status exchange parameter, these terms potentially conflate more than one process. Model 2 controls for all the terms discussed in the previous section, including the educational boundary terms, status exchange terms, and an educational propinquity term. The educational propinquity coefficients are small and statistically indistinguishable from zero for both types of couples. Furthermore, their point estimates are in the wrong direction. Thus, there is little evidence of a college propinquity effect.<sup>5</sup>

Controlling for the status exchange terms has a significant effect on the educational boundary terms. For BM-WF unions, the high school–some college boundary remains important for black men, but the educational boundary parameters for white women change dramatically. Although two of the educational boundary terms for white women are statistically distinguishable from zero, these results are misleading because there is little overall change across the span of educational groups. Figure 1 shows the overall difference in the log-odds of interracial marriage for black men and white women by each education level relative to the less than high school group. The boundary between high school and some college is very clear for black men. For white women, on the other hand, there is no consistent pattern across education, even though the differences between adjacent pairs may be large.

For BM-WF unions, there is also strong but asymmetric evidence of status exchange. White women in interracial marriages are more likely than white women in intraracial marriages to be upwardly mobile in terms of education, but they are not less likely to be downwardly mobile. Thus, the evidence suggests a strong asymmetry in the pattern of status exchange within BM-WF unions.

5. This model cannot be improved by including only a parameter for couples who have both graduated college rather than simply attended. In fact, the results from such a model are even weaker.

The results are much more difficult to characterize clearly for WM-BF couples. The smaller size of this group and a potentially more complex pattern make all of the estimates highly unstable across models. The increase in standard errors from Model 1 to Model 2 also suggests significant collinearity in the estimated parameters that may account for some of this instability.

Model 2 provides some support for status exchange in WM-BF unions, although only the results for white hypogamy are statistically distinguishable from zero. The educational boundary terms change considerably from Model 1 to Model 2. The educational boundaries suggest that a black woman's education is negatively related to her likelihood of interracial marriage, except for a possibly positive or negligible association at the high school–some college boundary. The educational boundary terms for white men are in the direction of positive selectivity, but none of them is statistically distinguishable from zero.

In Table 4, I pursue a more parsimonious model than Model 2 for both BM-WF and WM-BF unions. For BM-WF unions, Model 3 includes only the white hypergamy term, the high school–some college boundary for black men, and the educational boundaries for white women, while Model 4 excludes the educational boundaries for white women due to their ambiguous directionality. By BIC standards, the models are a tie in terms of goodness of fit. Thus, the educational patterns of BM-WF unions are fairly easy to characterize. There is evidence of strong white hypergamy, and the odds of interracial marriage increase significantly for black men across the boundary from high school completion to college attendance. On the other hand, there is no clear directionality to the relationship between a white woman's education and her odds of interracial marriage, apart from the negative selectivity generated by white hypergamy.

For WM-BF unions, Model 5 includes the status exchange terms and each educational boundary term, resulting in a model that is not preferred to the conditional independence model. Clearly, a more parsimonious fit is necessary. Because the estimates are highly sensitive to model specification, I must proceed in an exploratory fashion.

Models 6 and 7 examine how the estimates change when the educational boundary terms are included only for black wives or white husbands, respectively. As shown, the results vary considerably. When the educational boundary terms are considered only for black wives, the status exchange results almost completely disappear, and the initial result from Model 1 showing a strong positive effect only at the high school–some college boundary for black wives reappears. In Model 6, when only the educational boundary terms for white husbands are included, there is also a reduction in the status exchange parameters, although not as large. Furthermore, the only boundary that seems important for white husbands is likewise the high school–some college boundary. Neither of these models is preferred to the conditional independence model.

In Model 8, I fit only the high school–some college boundary for both spouses, since the results from Models 6 and 7 suggest that these boundaries are the relevant ones. Although this model fits better than any of the previous models by BIC, the only statistically significant parameter is the educational boundary term for black wives. Therefore, in Model 9, I fit only this parameter, which is strong and statistically distinguishable from zero. This model is also the only model preferred to the conditional independence model by BIC. It is also preferred to all of the previous models by the less-parsimonious LRT test. The superior fit of this model suggests that the previous parameters combined in a way that was very similar to fitting the more straightforward educational boundary between high school and some college for black women. Because of the instability of these estimated parameters, however, the results for WM-BF couples should be considered more tentative than the results for BM-WF couples.

These results for both groups can now be summarized in the models shown in Table 5. Because both BM-WF and WM-BF couples had a similar educational boundary for black spouses, I model the high school–some college boundary for black spouses as

**Table 4. Estimated Log-Odds Ratios From Reduced Models of the Relationship Between Education and Interracial Marriage**

	BM-WF Couples		WM-BF Couples				
	3	4	5	6	7	8	9
Status Exchange							
White upward mobility	0.345** (0.04)	0.291** (0.03)	0.173 (0.11)	0.026 (0.06)	0.143* (0.06)	0.048 (0.07)	
White downward mobility			-0.262* (0.12)	-0.127* (0.06)	-0.181 (0.06)	-0.102 (0.07)	
Black Educational Boundaries							
High school vs. less than high school			-0.156 (0.13)	-0.042 (0.10)			
Some college vs. high school	0.286** (0.04)	0.336** (0.03)	0.136 (0.10)	0.262** (0.06)		0.187* (0.07)	0.235** (0.05)
College vs. some college			-0.246* (0.11)	-0.149* (0.06)			
White Educational Boundaries							
High school vs. less than high school	-0.068 (0.05)		0.130 (0.12)		0.094 (0.09)		
Some college vs. high school	0.204** (0.04)		0.181 (0.10)		0.165** (0.06)	0.026 (0.08)	
College vs. some college	-0.151** (0.04)		0.048 (0.11)		-0.052 (0.06)		
<i>G</i> <sup>2</sup>	714.0	753.1	1,024.5	1,028.3	1,038.5	1,033.9	1,037.2
<i>df</i>	112	115	109	112	112	113	116
BIC	-859	-862	-506	-545	-534	-553	-592

Notes: Standard errors are shown in parentheses. All models contain the parameters for the baseline model in addition to the listed parameters. The baseline model has 117 degrees of freedom, a deviance of 1,059.7, and a BIC of -584.

Sources: Integrated Public Use Microdata Samples of the 1980, 1990, and 2000 U.S. censuses.

\**p* < .05; \*\**p* < .01

a gender-symmetric term. I also model the white hypergamy term for BM-WF couples. In Model 10, I include the educational boundary terms for white women, while I exclude these terms from Model 11.

The terms for the black spouse’s educational boundary and white hypergamy are consistent across the models. The additional terms for white wives’ educational boundaries improve the fit somewhat by the LRT, but the parameters hardly move in any consistent fashion.

Overall, the results do not support structural assimilation theory, through either propinquity or individual propensity. In general, the relationship between white spouses’ education and their likelihood of interracial marriage cannot be described in any uniform fashion. There is no relationship between white husbands’ education and their likelihood of interracial marriage at all, and the relationship between white wives’ education and their likelihood of interracial marriage is inconsistent and ultimately little different than “noise.”

The association between a black spouse’s education and the likelihood of interracial marriage, however, is consistent. For both black husbands and black wives, the critical

**Table 5. Estimated Log-Odds Ratios From Final Models of the Relationship Between Education and Interracial Marriage**

Parameter	Model 10	Model 11
Gender-Symmetric Terms		
Black educational boundaries		
Some college vs. high school	0.259** (0.03)	0.302** (0.03)
BM-WF Couples		
Status exchange		
White upward mobility	0.361** (0.04)	0.302** (0.03)
White downward mobility		
White educational boundaries		
High school vs. less than high school	-0.058 (0.05)	
Some college vs. high school	0.213** (0.04)	
College vs. some college	-0.145** (0.04)	
$G^2$	696.0	737.9
$df$	112	115
BIC	-877	-877

*Notes:* Standard errors are shown in parentheses. All models contain the parameters for the baseline model in addition to the listed parameters. The baseline model has 117 degrees of freedom, a deviance of 1,059.7, and a BIC of -584.

*Sources:* Integrated Public Use Microdata Samples of the 1980, 1990, and 2000 U.S. censuses.

\* $p < .05$ ; \*\* $p < .01$

dividing line is between those with a high school education or less and those who have at least attended college. According to Model 11, black spouses in the latter category are 35% more likely to be in an interracial marriage than those in the former group. Given this finding and the finding of no consistent relationship between white spouses' education and their likelihood of interracial marriage, these results are more consistent with isolation theory than with structural assimilation theory.

Finally, these results provide evidence of status exchange for BM-WF couples but not for WM-BF couples. However, this finding must be qualified because there is little evidence of a disincentive toward white hypogamy. Although most scholars have focused only on the issue of hypergamy, a disincentive to white hypogamy is equally important to status exchange theory.

## CONCLUSIONS

The foregoing analysis was an attempt to sort out the empirical evidence for various theoretical claims about the relationship between education and the likelihood of interracial marriage. I have presented a model, which, unlike models used in prior research, is capable of distinguishing these claims.

Two distinct patterns are apparent with regard to the educational characteristics of interracial spouses. First, both black men and black women with lower levels of education (high school or less) are less likely to be in an interracial marriage than blacks with higher levels of education, suggesting that lower-class blacks are largely excluded from the interracial marriage market. It is likely that residential segregation plays a role here, due to its importance in shaping local marriage markets.

Second, white women married to black men are more likely to be in an educationally hypergamous union than white women married to white men. This finding lends some

support to status exchange theory. On the other hand, educational hypogamy among white women married to black men is not lower than hypogamy among white women married to white men. This latter finding is contrary to the expectations of status exchange theory.

The evidence found for status exchange theory could potentially be interpreted within the framework of isolation theory. I have modeled isolation theory as if there existed a clear dividing line in the educational distribution of blacks in terms of their exposure to whites, but in fact this pattern of race-class exposure may be considerably more complex. Researchers have found that blacks living in predominantly white neighborhoods tend to live with whites of a lower class background than themselves (Alba et al. 2000). The status mismatch of the neighborhoods blacks live in could potentially create the kind of pattern we observe for BM-WF couples for whom both the educational boundary and white hypergamy are important. Nonetheless, if this were the case, I can see no reason why the same pattern would not hold for WM-BF unions.

There is little evidence to support the claims of structural assimilation theory that education generally increases the likelihood of interracial marriage. White spouses' education level has neither a consistent positive nor negative effect on the likelihood of interracial marriage. In prior research, support for structural assimilation theory has been claimed on the basis of the minority group's education alone. However, unless this same relationship holds for whites, the generality of the education effect does not hold. The relationship observed here between black spouses' levels of education and their likelihood of interracial marriage is more consistent with a story of isolation and exclusion than with a story of assimilation.

There is also little evidence of a propinquity effect of college campuses. The educational propinquity argument has often been conflated with the educational propensity argument. As I have shown, the two arguments do generate different expectations of the data. Nonetheless, neither of these expectations is confirmed. It should be noted, however, that the propinquity measure used here was quite crude.

I have intentionally limited my focus here to black-white interracial couples, even though much of the intermarriage literature covers a broader set of interracial/interethnic marriages. I have done so because two of the theories (status exchange and isolation) were derived specifically to address the black-white divide. Furthermore, the model used here is easier to demonstrate for groups that don't involve the added complexity of immigration and nativity. Nonetheless, the extent to which the models presented here fit other interracial unions is potentially very interesting. As I noted earlier, there is some support for structural assimilation theory among white ethnics and Asian Americans, but this evidence was derived without controlling for the competing models presented here. The key question, of course, is whether the intermarriage market has been structured differently for both historical and contemporary migrant groups than it has been for black-white interracial marriages.

I have also intentionally limited my focus to interracial marriages, even though most black-white sexual relationships in U.S. history have not been marital. This limitation is commonly used in the literature because of the belief that crossing the racial divide in legitimated union formation is the best measure of social distance. This limitation comes at a cost, however. If we desire to study interracial union formation to understand the growth and dynamics of a multiracial population, then our focus on marriage may miss the larger picture. Given the growth of a contemporary multiracial population and the increase in nonmarital cohabitation and childbearing, it is paramount to look beyond marriage in future research.

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