Predicting Interracial Childbirth by Mothers' Characteristics: A Step toward Parsimony and Theorization

(Formerly Titled: "Predicting Interethnic Childbirth by the Characteristics of Mothers: A Peek into the Melting Pot")

Abstract

While there is an abundant literature on interracial mating, much of our understanding is clouded in complex findings that are limited in theorization – particularly for minority-minority partnerships. Additionally, the majority of the literature on interracial mating focuses on interracial relationships rather than a logical outcome of mating: childbirth. This research explores models that predict racial reproduction patterns for women by using a series of fixed-effects logistic regression models with one eye toward re-visiting previously-identified relationships and another eye toward offering potential future theoretical avenues. It is found that interracial mating is generally more common for younger cohorts and native-born persons and is generally becoming more common with time. In terms of testing previous theory, no evidence is found for "spousal trades," and "marital market" effects are generally shown to hold. Education's effects on racial mating patterns suggest that an amalgamation of the triracial hierarchy, white/non-white, and black/non-black theoretical perspectives are useful for explaining the race of one's spouse. Specifically, the effects of having a college education most strongly predict pairing with a white or Asian father (corresponding to the "white" and "honorary white" categories, respectively), and are comparatively negative in predicting pairing with a Hispanic or black father (corresponding to the "collective black" category). This research introduces the triracial theoretical perspective to the assortative mating literature and opens the door for future theorization.

Keywords

Interracial childbirth, assortative mating, triracial hierarchy, race

Introduction

Populations identifying as multiracial in the United States are on the rise, numbering 6,826,228 in the 2000 Census and rising to 9,009,073 in the 2010 Census (U.S. Census Bureau 2012). With such increasing numbers, the multiracial population is sure to change the ethnic landscape of the U.S. Embedding this phenomenon within theory on racial relations is, and will continue to be, a challenge for disciplines such as Sociology. Theory on assimilation has served very well in setting the foundation on the incorporation of minorities into society and intermarriage with whites, although the diverse array of immigrants and alternate assimilation paths within the context of a multicultural country leaves room for further developments in theory. This begs the question, are there dynamics beyond traditional assimilation that

explain interracial childbirth? What can recent developments in racial theory contribute to explaining interracial childbirth?

This research diverges from the majority of previous literature on assortative mating in three respects. First, mother characteristics that are associated with interracial childbirth will be identified. Such an approach more closely explains the rise of the interracial population, as most literature explains interracial relationships as opposed to interracial childbirth specifically. Second, logistic regression models will be used, as most studies rely on log-linear models. Logistic regression will better lend itself toward hypothesis testing in a multivariate context where many control variables are able to be included. Third, and perhaps most importantly, a greater emphasis will be placed on parsimony and theory in attempt to find patterns in the data. From the literature review to the conclusion, general findings will be emphasized in an attempt to be as parsimonious as possible. This research will test theories on the "marital market" and "spousal trades" as explanations of the race of one's partner. Additionally, this research aims to introduce the applicability of the tri-racial hierarchy perspective in predicting the race of one's partner. Taking an exploratory approach, patterns in the strength and direction of coefficients between models will be compared as suggestive evidence of stratification along the triracial hierarchy.

Explanations for Interracial Childbirth: Assimilation and Assortative Mating

Explanations of the growth of the interracial population can be grounded in traditional literature on assimilation. Originally used to explain the integration of European immigrants into the U.S., Gordon (1964) theorized that the initial steps toward assimilation include understanding the norms of the dominant culture, establishing warm relationships with members of the dominant group, and coming into regular contact with the dominant group in institutional and organizational settings. A key subsequent step toward assimilation involves intermarriage with the dominant group. Evidence of assimilation dynamics is found in marriage rates by nativity status, where foreign-born minorities are less likely to interracially marry (Qian and Lichter 2011) due to their relative lack of integration into the dominant society. Other theories have since been developed to explain different incorporation outcomes of minorities in the U.S., notably including segmented assimilation theory which posits that minorities can follow one of multiple paths toward assimilation into society. These other paths of assimilation include assimilation into an underclass and selectively assimilating with the dominant society while maintaining solidarity with an immigrant community (Portes and Rumbaut 2001; Portes and Zhou 1993). Despite such advances in assimilation theory, minority intermarriage with whites

remains a useful indicator of social distance and assimilation into the dominant society (Kalmijn 1998; Lichter et al. 2007; Merton 1941).

Surely, interracial marriages are far from the norm. Furthermore, mating is generally homogamous in terms of education (Blossfeld 2009), culture (Kalmijn 1998; Kalmijn and Tubergen 2010), as well as race (Blackwell and Lichter 2000). However, mating between persons of different status, cultural, and racial categories is commonplace as is most notably evidenced in the growing numbers of interracial children and marriages (Lee and Edmonston 2005; Qian and Lichter 2007; Rosenfeld 2008). Barriers between mating groups still clearly exist, which include pressures from family and social groups that hold negative stigmatizations for interracial mating (Hohmann-Marriott and Amato 2008; Kalmijn 1998). Interracial marriage has even been formally banned by the government in 16 states prior to 1967. In light of the social pressures and the legal history of interracial mating, it is not surprising that interracial mating is more commonplace in cohabiting relationships as opposed to marriage, as cohabitation may serve as an alternative to marriage for mixed-race couples (Blackwell and Lichter 2000; Lichter and Qian 2004). Joyner and Kao (2005) go so far as to argue that, over the life-course of a person, individuals are more likely to "experiment" with interracial relationships early on in one's life, although they eventually tend to settle down with persons of the same race for marriage.

One mechanism for stimulating interracial marriages is through increased education. From an assimilation theoretical perspective, educational institutions regularize interaction and forge personal relationships between members of different races (Qian, Glick and Batson 2012). By breaking down group boundaries, increasing interracial contact, and geographically displacing minorities, enrollment in institutions of higher education promote out-marriage for ethnic minorities (Fu 2001; Qian 1997; Qian and Lichter 2011). Indeed, there is no shortage of research that links educational attainment to interracial marriage (Batson, Qian and Lichter 2006; Blackwell and Lichter 2000; Fu 2001; Lee and Edmonston 2005; Qian and Lichter 2007), although education's effect on specific ethnic combinations are debatable (e.g. Black-White intermarriage, (Qian and Lichter 2007; Rosenfeld 2005).

The assimilation interpretation of interracial marriages as being a function of contact with a diverse range of possible mating partners is also at the crux of the marital market explanation of assortative mating. Marital market theory posits that one's selection of mates is simply due to the mating partners that are available within one's proximity. Marriage market effects have been demonstrated to play a role in interethnic marriage through residence in diverse areas (Lichter et al. 2007). Conversely, the larger the representation of one's ethnicity within a state, the more likely it will be that a person will marry within his/her group (Kalmijn and Tubergen 2010).

Another explanation of interracial pairing has been termed "spousal trades" (also known as "spousal/caste exchange") theory. The spousal trade phenomenon posits that one mating partner can "trade" a higher color status with another mating partner who may have a lower color status, but will offer a high status in another area such as education (Blackwell and Lichter 2000; Kalmijn 1993; Merton 1941; Qian 1997). White women marrying Asian and Black men, for example, are more likely to "marry up" educationally (Blackwell and Lichter 2000). Among other desirable characteristics in the marital market is physical attractiveness (Buss 1999; Oppenheimer 1988) which is tied to marital outcomes (Elder 1969; Taylor and Glenn 1976). Despite recent literature espousing the "trades" theories, other convincing studies cast doubt on the robustness of the evidence for the said trades theories in light of the volatility of the significant findings (see (Rosenfeld 2005)).

While valuable in explaining variation in marital outcomes, the literature on assortative marriage is somewhat limited from a theoretical standpoint, often being presented in a descriptive and schematic form that brings to light the differences between groups without illuminating more general processes that may lie at the foundation of interracial mating. Valuable theoretical insights gleaned from the assortative mating literature that also relate to this study include the aforementioned discourses on assimilation, the marital market, and spousal trades.[1] However, much uncertainty remains regarding minority-minority relationships, which remains under-theorized. Specifically, are there patterns in minority-minority populations that can be parsimoniously outlined? Are we limited to white-non-white schemas or are there other patterns that exist? Recent theorizations of race relations in the U.S. can help to inform research on deeper dynamics that may be at work in interracial partnering.

The Racial Context of the United States

A full theoretical understanding of interracial marriage must be embedded within the context of the racial structure of the United States. The entire notion of assimilation, for example, necessitates a "dominant" group that largely defines the given culture's values of what is desirable and beautiful. The dominant group generally holds a disproportionate amount of "status" (broadly defined), and minorities

[1] One other general theory that have been put forward include marital search theory (Qian, Lichter and Mellott 2005), which explains marital choice as a function of maximizing a mate's capital within the limits of what one can expect based on his or her own capital. The data at our disposal are unable to test hypotheses that directly arise from comparing the resources of both mating partners (aside from a proxy of attractiveness – which will be discussed), although this broad theory that organizes mate selection preferences is implicit in this research. Another valuable theoretical approach outlines cultural and structural factors that play into mate selection (Kalmijn 1998; Kalmijn and Tubergen 2010), although the prior conceptually lies on the same lineage as assimilation theory, and the latter can be subsumed under "marital markets" or legal constraints.

are faced with an uphill battle to attain their claims on the sources of social status. For the U.S. (as well as many other countries – if not the world), the distinctions between the dominant and the minority groups often falls on racial lines.

The legacies of slavery and colonialism left whites socially, economically, culturally, and politically dominant. Native Americans were largely cast from the mainstream society entirely, while blacks were subject to a wide range of discriminatory policies and endured general socioeconomic disadvantage. With the rise of immigration and the changing of the ethnic landscape of the U.S., the racial divisions became more complex. However, despite the differences in the experiences between minority groups, the color line was still captured along a white/non-white dichotomy (Bonilla-Silva 2004; Lee and Bean 2007), where minorities of all varieties faced similar experiences of oppression and racialization (Amott and Matteai 1991) whether through internment (Japanese), segregation (blacks), extraction (Native Americans), or general discrimination. With the socioeconomic advancement of groups such as Asians and some Latino groups, however, the color line has arguably shifted to something that resembles a black/non-black divide (Gans 2005; Zhou 2004). Despite the arguable shifting in the color line, history has maintained the socioeconomic superiority of whites over minorities.

Bonilla-Silva (2004) argues that race relations in the U.S. are moving away from a simple binary (i.e. "black/white") and moving toward a tri-racial structure. Those at the bottom are classified under the "collective black" category and include groups such as blacks, dark-skinned Hispanics, and Hmongs. The top of the hierarchy is occupied by "whites" such as persons of European descent and assimilated Latinos. In the middle are "honorary whites" including light-skinned Latinos, some East Asians, and some multiracials. The "honorary whites" are higher socioeconomically than the "collective black" and buffer ethnic tensions between the two poles (Bonilla-Silva 2004; Bonilla-Silva and Glover 2006). The hierarchy is stratified by characteristics such as socioeconomic status, residential segregation, and intermarriage with whites.

Analytic Objective

Taking a step further down the logical chain from interracial mating, this research explores patterns in an often neglected component of mating: childbirth. In doing so, this research will validate the applicability of the findings of some of the research on assortative mating as explanations for explaining childbirth specifically. Data will be based on the characteristics from the mothers, resulting in analyses that predict the marital outcomes for mothers. Utilizing data on births will capture a larger representation of the population, since studies relying on data released by the Census Bureau are not

always capable of capturing the ethnicities of both parents for children who live in cohabiting, single-mother, and/or multi-family households. Furthermore, this research will attempt to outline broader patterns in interracial mating, highlighting patterns found across ethnicities and seeking to be as parsimonious as possible. Additionally, this research aims to use racial theory to inform the processes that underlie interracial childbirth as a function of education. Specifically, this research explores whether assortative mating patterns can be explained by white/non-white, black/non-black, and/or (particularly) triracial-hierarchical perspectives.

Based on past research, interracial births will be hypothesized to be negatively related to age (Joyner and Kao 2005; Lee and Edmonston 2005)), foreign-born status (Qian and Lichter 2011), and marriage (Blackwell and Lichter 2000; Lichter and Qian 2004): H1 – H3, respectively. For purposes of operationalization, the effect of reproduction at a "young age" (H1) will be operationalized as reproduction for persons under age 22 in comparison with those over 30 (the omitted category, see below). Additionally, it will be hypothesized that interracial childbirth is becoming more common by year (Lee and Edmonston 2005; Qian and Lichter 2007; Rosenfeld 2008): H4.

Based on the marital market theory, it will be hypothesized that the representations of the potential mating partners by ethnicity within a state will be related to the breeding with the respective ethnicity: H5.

Based on the spousal trades theory, it will be hypothesized that mating with a father that is 10 or more years older than the mother, a proxy for physical attractiveness relative to the father, is related to the pairing with whites. The hypothesis based on spousal trades will come in two parts: white mothers pairing with minorities are less likely to have an older father; and minority mothers pairing with whites will be more likely to have an older father: H6a. Two other variations of H6 will hypothesize that older fathers are similarly stratified by black/non-black categories (i.e. higher odds for black mothers pairing with non-black fathers, and lower odds for non-black mothers pairing with black fathers, H6b), and that the odds of partnering with an older father ascends up the racial hierarchy and descends down the racial hierarchy (H6c)

Education will be hypothesized to have high positive effects in predicting partnering with fathers of higher racial status. Using a white/non-white perspective, it will be hypothesized that the effects of education (operationalized as the completion of college relative to completion of high school) has the strongest positive effect on mating with whites, and have weaker-or-negative effects for pairing with minorities – regardless of the race of the mother (H7a). The black/non-black variant will hypothesize that education will have the strongest negative effect for pairing with blacks (H7b). The racial hierarchy

perspective will hypothesize that education will have the strongest positive effect for pairing with whites, and that the size of the effect will descend for Asians, Hispanics, and blacks (in order, H7c). The latter hypothesis will be the main hypothesis of this study.

As will be explained below, each hypothesis will be tested within unique models (with the same variables) that restrict samples to specific mothers' ethnicities. The dependent variables also change for each model, where each model will predict the pairing with a father with a specific ethnicity. This will produce a set of sixteen models. Given that the hypotheses attempt to map out trends rather than firm rules that apply to all cases, it will be expected that the hypotheses will have successes as well as failures. Due to this expectation, hypotheses that are accurate for at least two-thirds of models will be considered "moderately supported," while hypotheses that are accurate for at least three-fourths of models will be considered "strongly supported."

Data and Method

This research will utilize the National Center for Health Statistics' Natality Birth Data provided by the National Bureau of Economic Research. Years 1990 – 2004 will be sampled due to the availability of data on the Hispanic ethnicity and geographic detail. The birth data is at the individual-level and is considered to contain complete data that records all births occurring in the U.S. (McDevitt, O'Connell and Joyce 2001). Married mothers who have already given a live birth will be excluded from the dataset to minimize double-counting. Those reporting residence outside of the U.S. will also be excluded. All values imputed by NCHS will be re-coded to missing. The final dataset includes 31,966,705 observations for white mothers, 919,683 Asian mothers, 9,368,253 Hispanic mothers, and 5,337,391 black mothers. Although our data are much closer to a population than a sample in that only cases with missing data and married mothers with more than one child are not present in the data, the data will be referred to as a "sample."

Mothers will be grouped by race/ethnicity. Like the decennial Census, the birth data includes separate items for race and (Hispanic) ethnicity. Those reporting a Hispanic origin (ethnicity) will be assigned one category. The other racial categories are based on reporting on the race item and exclude those identifying with a Hispanic origin, resulting in the groups white, black, and Asian. The racial categories in 1990 only specify the Asian categories Japanese, Chinese, and Phillipino/a, and for the sake of consistency the Asian category for subsequent years will only include these three Asian groups. Father race/ethnicity will also be divided among these four categories. The pairing with a father of a specified race/ethnicity will serve as the dependent variable in a number of models restricting to the

race/ethnicity of the mother (below). For brevity, the terminology used in this paper to describe the "race/ethnicity" of a person will simply be referred to as "race."

Age will be re-coded into a series of dummy variables broken out into the following ranges: 18 and under, 18-19, 20-21, 22-24, 25-29, and (omitted) 30 and above. These age ranges are chosen due to the conceptual distinction between them, namely non-adult, other teen, terminal college-years, early post-college, and two more "senior" categories. Other variables include dummies for being foreign-born, married, and a continuous variable for year. Although each of these variables has an attendant hypothesized relationship, each is secondary to the analysis and will thus be considered a "control" variable. Fixed effect dummies will be included for each state.

The theoretically-relevant variables include a set of education dummies, which include the categories no high school, high school (omitted), some college (operationalized as 1 – 3 years post high school), bachelor's (4 years post high school), and above bachelor's. The "marital market" is operationalized as the logged percentages of males in a state between ages 15 and 44 of a particular ethnicity. To construct this variable, decennial Census microdata (Ruggles et al. 2010) was used to create counts of males aged 14-44 by race and state for 1990 and 2000, and these totals were linearly interpolated to the other years. Percentages of racial representation by state were then constructed and logged to deal with skew. As Hawaii features disproportionately high numbers of Asians, the values for Hawaii were re-coded to two standard deviations from the mean, which produced a figure that was more concordant with the distribution while still surpassing the other values. Pairing with an old father was operationalized as pairing with a father who was 10 or more years older than the mother.

While much of the research on assortative mating uses log-linear models as the analytic method, this research will opt for utilizing a fixed-effects logistic regression model. Although log-linear models are indispensable for describing patterns in distributions, said models can produce volatile relationships and are sensitive to the identification of the model {Rosenfeld, 2005 #158}. Logistic regression is more suited for this research in that it is more conducive for hypothesis testing and allows for the inclusion of a much larger number of variables which includes two continuous variables. An additional benefit to using logistic regression is that it allows for the testing of the robustness of theoretically-informed relationships in a multivariate context featuring competing hypotheses and a number of control variables (which include 50 state fixed effects).

The form of the model is as follows:

$$\log\left(\frac{p_{imf}}{1-\ p_{imf}}\right) = \ \beta\mathbf{X}_{im} + \beta\mathbf{X}_{fst} + \beta\mathbf{X}_{s} + \beta_{0mf}$$

In the model, p_{imf} represents the probability that an individual mother *i* of ethnicity *m* will pair with a father of ethnicity *f*. That is, individual models will be run for mothers of specific ethnicities that pair with fathers of specific ethnicities. The associated logit that predicts a given pairing will be a function of a vector of mother-specific variables $\mathbf{X}_{im}$ including dummies for age, foreign-born, married, education, and pairing with an older man. Year as a continuous variable can also be considered a part of $\mathbf{X}_{im}$. The model also contains father-specific market variables $\mathbf{X}_{fst}$ (i.e. the logged percentage representation of males of a given ethnicity) that take unique values by father ethnicity *f*, state *s*, and year *t*. Coefficients not reported in the tables will be state fixed effect dummies $\beta\mathbf{X}_s$ and constant β_{0mf}. Relationships will be displayed as odds ratios.

As the data that we are using is closer to a population rather than a sample (only cases that include missing values and married mothers with many children are excluded), notions of statistical significance are less useful and are rarely non-significant due to the large numbers of observations. Because of this, significance levels will not be reported. Instead, the sizes of the coefficients within and between models will be compared as indicators of relative "strength" that the variables have on predicting partnering with a father of a specified ethnicity. With the exception of the continuous variables (due to their limited ability to be associated with variation of the dependent variable per unit change), odds ratios between .90 and 1.10 – or within .10 of a comparative effect within or between models – will be considered negligible. Additionally, due to the large numbers of coefficients that will be displayed, attention will be limited to the most confirmatory examples of previous research, notable exceptions to patterns, and overall general patterns that can be parsimoniously summarized.

Results

[TABLE 1]

Table 1 displays simple descriptive characteristics of mothers by their own races and the races of the fathers they paired with. The first row displays row percentages of the rates of racial pairing by the races of mothers. Blacks and whites are very unlikely to outbreed (95.2% and 93.8% endogamous, respectively), while Hispanics and (especially) Asians are more likely to outbreed (86.6% and 69.6% endogamous, respectively). White fathers tend to be the most common alternate pairing for minorities (and Hispanics for whites), while Asian fathers are the minority – although the small absolute numbers of Asian fathers pairing with non-Asian mothers belies the fact that around 20% of Asian men have interethnic children in our sample.

For each mother ethnicity category, reproducing with Hispanics or blacks is more common among teenagers than reproducing with Whites or Asians. For white mothers, for example, around 5% of those pairing with Hispanics or blacks are under 18, where the corresponding figure for whites pairing with other whites or Asians is around 1.5%. Conversely, women pairing with whites and Asians are more likely to be older, as exemplified through the 60+% of Asian women that are 30 years of age or older when pairing with whites or Asians. A similar finding is reflected in educational attainment, where women pairing with whites or Asians are much more likely to have bachelor's or higher. Hispanic mothers pairing with whites or Asians, for example, are over twice as likely to have a college degree then when pairing with Hispanics or blacks.

Incidentally, rates of marriage do consistently fall along the theorized lines of the tri-racial hierarchy. Specifically, for each mother ethnicity, pairing with whites is much more likely for married women, and the percentage married progressively decreases for those pairing with Asians, Hispanics, and blacks. The last row on Table 1 does not consistently show smaller shares of interracial breeding for foreign-born women, as the patterns are mixed for both white and black mothers. For races that have higher proportions of immigrants (namely Asians and Hispanics), however, interethnic partnerships are much less likely for the foreign born. For example, 68% of intraracially reproducing Hispanic mothers are foreign-born, while interracially reproducing Hispanic mothers are less than half as likely to be foreign born.

[TABLE 2]

Table 2 displays the odds ratio coefficients of the control variables that predict interracial birth under the full model. The table is broken down into four sections in which the samples are restricted to a particular mother's ethnicity. Each column within these sections predicts a specified ethnicity for the father of the child, and each of these columns is an individual model.

With the exception of black mothers, women pairing with white men tend to be older than 29. Additionally with the exception of black mothers, pairing with Hispanic or black fathers tends to be more common for younger mothers. Pairing with Asian fathers yields no consistent patterns by age. In general, the odds of intraethnic pairing (the converse of interethnic pairing) decreases for mothers under age 22, changing by a factor of .63-.67 for whites, .68-.94 for Asians, and .71-.81 for blacks. However, intraethnic pairing for Hispanic mothers increases for young mothers, changing by a factor of 1.66-1.91. Viewing the relationships broken down by the ethnicity of the father, exceptions to this trend include models in which Asian mothers are predicted to have white fathers, as well as models in which Hispanic mothers are predicted to have white or Asian fathers. H1, which hypothesizes that interethnic

childbirth is more common for younger women, is considered to be "strongly supported" in light of the nine (out of twelve) interethnic arrangements that conform to H1.[2]

In general, intraethnic pairing is more likely for foreign-born women, although the effect negligible (1.02) for white. As suggested on Table 1, Asian and Hispanic foreign born women are much more likely to intraethnically breed, multiplying the odds of doing so by 4 and 5.06 times, respectively. These results are also reflected when one views the coefficients for each interethnic combination; foreign born Asian and Hispanic women are much less likely to pair interethnically, although the effects are largely negligible for whites (and in the opposite direction for whites pairing with blacks) and mixed for blacks (blacks pairing with Asians is also in the opposite direction). As these results confirm H2 for eight out of twelve relationships (with two coefficients being negligible), H2 will be considered moderately supported in that foreign-born persons are generally less likely to reproduce interracially (with some notable exceptions). More fairly, one can interpret the results as confirming H2 for Asian and Hispanic mothers, while being mixed for white and black mothers.

H3 posits that interethnic children are more often born out of wedlock. While this is generally the case for whites, a glance at the patterns in the effects reveal a different pattern altogether. For all mother ethnicities, parenting a child with a white or Asian father tends to be within wedlock.[3] Additionally, for all ethnicities of mothers, moving down on the racial hierarchy for fathers is associated with progressively lower odds ratios of bearing a child within wedlock. For example, for Hispanic mothers, being married changes the odds of pairing with a white father by a factor of 2.05, an Asian father by 1.24, a fellow Hispanic by .75, and a black by .36. Conversely, moving up on the racial hierarchy for fathers is associated with progressively higher odds ratios for black and Hispanic mothers, as exemplified by the previous example. Thus, H3 is not supported, although interesting patterns can be found along the racial hierarchy.

H4 hypothesizes that interethnic pairing will become more common with time. The results demonstrate that this is largely the case with two exceptions: Hispanic mothers who pair with either whites (.98) or with Asians (.96). These effects may be due to high immigration for Hispanics (see also

[2] Two models had to be re-run due to their mixed effects: white mothers predicting pairing with Asian fathers, and black mothers pairing with white fathers. Under both scenarios, the grouping of the "young" age categories produces a positive odds ratio that exceeds the 1.1 cutoff point when the models are re-run (not shown).

[3] Although the married coefficient for white mothers pairing with Asians is less than 0, this is largely due to the exorbitantly high odds ratio (3.37) of marital status for intraethnic white pairing, which served as the vast majority of the comparison group. The odds ratio for marital status for pairing with an Asian father is twice as high as the respective coefficient for pairing with Hispanics, and six times as high as the coefficient for pairing with a black father.

Qian 2011), which may help to reinforce the cultures of the countries of origin, slowing down the process of assimilation into the dominant U.S. culture. Although the effects are very small and the standard errors remain large, H4 is supported.

[TABLE 3]

Table 3 displays the results of the coefficients of the full model that are informed by theory. Marital market theorization would lead one to expect that higher concentrations of potential mates of a particular ethnicity will increase the probabilities of pairing with a mate of the respective ethnicity. The coefficients of interest, therefore, are found in the diagonals (top left to bottom right) of the market variables within each section. The results for Hispanic mothers, for example, lend credence to this theory in that the effect for the market is 1.01 for predicting bearing children with white fathers, 1.35 for Asian fathers, and 1.07 for black fathers. These findings are generally robust, although the exceptions are found for white mothers pairing with Hispanic fathers, Asian and black mothers pairing with white fathers, and Asian mothers pairing with black fathers.[4] In sum, these findings yield moderate support for H5.

As found in previous research (Rosenfeld 2005), support for the spousal trades theory is limited. Minority women are indeed more likely to pair with an older white father. However, white women are also more likely to pair with minority men, breaking the expected pattern that would arise when using a white/non-white dichotomy for spousal trades. Additionally, patterns cannot be drawn across black/non-black nor triracial theoretical perspectives, finding no support for any version of H6. Instead, the results demonstrate that pairing interethnically in general is related to having an old father, which is a result that is found for nine of the twelve interethnic models.

The hypothesis informed by the racial hierarchy perspective is that higher education (operationalized as college completion relative to high school completion) will have the strongest positive effects for predicting the pairing with whites, and that the effect would descend sequentially for predicting Asian, Hispanic, and black fathers. The hypothesis strictly defined only works for Asians, as is displayed on Table 3. For Asians, having ”some college” increases the odds of pairing with a white father by a factor of 1.25, an Asian father by 1.01, a black father by .68, and a black father by .62. However, the rest of the ethnicities show interesting similarities in that education has a positive effect for pairing with

[4] In bivariate relationships, the “exceptions” to the general finding that the representation of minority men increases a woman’s probability of mating with a respective minority were found to be positive. This highlights the importance of including control variables in multivariate models, as some effects change direction in a multivariate context. This may suggest that, at least for some ethnicities, the marital market affects rates of pairing through different avenues (e.g. education or regularized contact in other institutions) than by simply being a product of concentration.

white and Asian fathers. The relative sizes of the effects of education on predicting white vis-à-vis Asian fathers is inconsistent, as a college education is more strongly related to pairing with a white father for Asian and Hispanic mothers, while said effects are larger for predicting Asian fathers for white and black mothers. Similarly, the relative sizes of effects are not consistent for models predicting Hispanic vis-à-vis black fathers. For white and Hispanic mothers, the effects of a college education are lower for predicting the pairing with a Hispanic father, whereas for Asian and black mothers the effects are more negative for predicting black fathers. In fact, for Hispanic mothers, the effect of a college education on pairing with a black father is actually positive. These mixed findings cast doubt on the strict applicability of all three theories regarding racial relations when predicting the ethnicity of the father, namely the white/non-white (H7a), black/non-black (H7b), and triracial hierarchy (H7c). However, all three are parsimonious and tend to organize many of the results with some accuracy. Furthermore, these findings may set some foundations for further theorization regarding assortative mating as a function of racial relations, as some amalgamation of all three theories may be useful.

Conclusion

This research re-visits the literature on assortative mating by using data on births to predict racial mating patterns of mothers through a series of logistic regression models. It is generally found that the odds of interracial reproduction increase for mothers who are younger or native-born – with a minority of exceptions. Additionally, interethnic reproduction is becoming more common with time (also with exceptions). In contrast to previous research on interracial relationships, the odds of interracial reproduction do not increase for cohabiters for many racial combinations. Instead, the patterns suggest that being married has the strongest positive effects for mothers that pair with a white father, and the effect progressively diminishes for mothers who pair with an Asian, Hispanic, and black father (in line with the triracial hierarchy).

Revisiting previous theory, the spousal trades-based hypothesis did not bear evidence. That is, this research finds no consistent evidence that interracial partnering can be described through “trades” where one partner offers a higher color status while the other offers a higher value of a desirable quality in compensation. In this case, it was hypothesized that a woman could offer her beauty via youth (operationalized as being 10+ years younger than the man) in exchange for a man with a higher color status. Again, this research essentially found no evidence of this theory.

Theory on the marital market finds general support, as higher representations of a particular ethnicity within a state is positively associated with the odds of pairing with a person of the respective

ethnicity. Although all bivariate relationships hold the predicting relationships with father selection (results not shown), exceptions to this finding are found under the full model. This would lead one to assume that either this theory selectively applies to most racial combinations (but not others), the concerned independent variables in this study are too invariant (i.e. aggregated at the state-level), or that there are other dynamics that stimulate interracial partnering that operate beside interracial exposure. If the latter is the case (which I assume that it is), perhaps cultural institutions that operate independently from race such as college, the workplace, or even a music scene can be the vehicle through which interracial exposure stimulates interracial mating. Future research can further theorize (springboarding off of assimilation theories), operationalize, and test these assumptions.

The main objective of this study was to attempt to theorize some of the patterns that can help to explain interracial reproduction. What remain undertheorized are explanations of minority-minority partnerships. In exploring effects of education on interracial mating, this research found evidence against predictions based on strictly-interpreted white/non-white and black/non-black dichotomies that would link education with mating interracial mating patterns. However, this research found promising avenues for theorization in the triracial hierarchy perspective. That is, racial status categories can be broken into three general classifications: "white," largely consisting of persons of European descent and select assimilated (mostly light-skinned) minorities; "collective black," largely consisting of persons of lower socioeconomic status and groups such as blacks and dark-skinned Hispanics; and "honorary whites," who lie somewhere in the middle in terms of socioeconomic status and skin color.

This research did not identify patterns of education's effect on father's ethnicity that strictly follow what would be expected from using a triracial hierarchical perspective (aside for Asian mothers). However, for all mother ethnicities, it was found that a college education increased the odds of pairing with white and Asian fathers relative to pairing with Hispanic and black fathers. The specific rankings of education's effect within these groupings – i.e. on white vis-à-vis Asian partnerships, and Hispanic vis-à-vis black partnerships – are inconsistent. Nevertheless, the effects of education on pairing with fathers associated with the "collective black" category tend to hang together (assuming that Hispanics can generally be classified under the "collective black" category), in comparison with those from the "honorary white" and "white" categories. These findings suggest that neither white/non-white, black/non-black, nor triracial hierarchical perspectives are sufficient in explaining education's effect on interracial mating. However, one can potentially find theoretical links between these perspectives; the effects of education on predicting pairing with fathers from the "collective black" share similarities (much like a black/non-black perspective will predict) in comparison with predicting fathers from the

"white" and "honorary white" categories (much like a white/non-white perspective will predict). At least in terms of education's effect on interracial partnering, these findings could be interpreted to mean that the "white" and/or "black" categories are conceptually more inclusive (or becoming more inclusive) than previously theorized from the white/non-white and black/non-black perspectives, respectively. It is also possible that, in terms of the tri-racial hierarchical perspective, the majority of Hispanics remain in a "collective black" category, and that the "honorary whites" are closer to "whites" in terms of marital outcomes. Future research can seek to theorize, operationalize, and (re)test some resultant hypotheses that can help to illuminate racial dynamics in the U.S. (without limiting the analysis to education and interracial reproduction).

Whether or not due to coincidence, one may recall that the effects of marital status on the ethnicity of the father follow the triracial hierarchy. That is, for all mother ethnicities, being married most strongly predicts pairing with white fathers, and the effect declines for Asians, Hispanics, and blacks sequentially. Theoretically, one may speculate that partnering with children up the racial hierarchy is associated with more commitment and stability, as relationships and childrearing becomes more valued with persons of higher color status.

Many of these findings may simply be due to homogamy. That is, because relationships tend to be homogamous in terms of education, perhaps pairing with whites or Asians may be associated with having a college degree simply because more whites and Asians tend to have college degrees themselves. Homogamy is not incompatible with the triracial hierarchy; the triracial hierarchy is partially stratified on socioeconomic status (e.g. education), and meeting others through socioeconomic status channels could be a means of advancing up the hierarchy. However, such an explanation leaves a little to be desired, since it would be difficult to simply cast aside the role of race in explaining nearly any outcome. Future research can further tease out the dynamics of homogamy and "color status" for predicting mating patterns.

In sum, this research presents a robust link between education's role in predicting the race of the father of a mother's children. Such results demonstrate the utility of theory on the triracial hierarchy, and to a lesser extent theory on white/non-white, and black/non-black racial dichotomies. At the very least, this research gets us closer to having a theoretical understanding of interracial mating patterns, particularly for minority-minority mating. However, this research poses many questions that are open for future theorization.

References

Amott, Teresa, and Leslie Matteai. 1991. *Race, Gender, and Work: A Multicultural History of Women in the United States*. Boston, MA: South End Press.

Batson, Christine D., Zhenchao Qian, and Daniel T. Lichter. 2006. "Interracial and Intraracial Patterns of Mate Selection Among America's Diverse Black Populations." *Journal of Marriage and Family* 68:658–72.

Blackwell, Debra L., and Daniel T. Lichter. 2000. "Mate Selection Among Married and Cohabiting Couples." *Journal of Family Issues* 21(3):275-302.

Blossfeld, Hans-Peter. 2009. "Educational Assortative Marriage in Comparative Perspective." *Annual Review of Sociology* 35:513–30.

Bonilla-Silva, Eduardo. 2004. "From bi-racial to tri-racial: Towards a new system of racial stratification in the USA." *Ethnic and Racial Studies* 27(6):931-50.

Bonilla-Silva, Eduardo, and Karen Glover. 2006. "'We Are All Americans': The Latin Americanization of Race Relations in the United States." Pp. 149-86 in *The Changing Terrain of Race and Ethnicity*, edited by Maria Krysan and Amanda Lewis. New York, NY.

Buss, David. 1999. *Evolutionary psychology. The new science of the mind*. Boston: Allyn and Bacon.

Elder, Glen. 1969. "Appearance and Education in Marriage Mobility." *American Sociological Review* 34:519-33.

Fu, Vincent Kang. 2001. "Racial Intermarriage Pairings." *Demography* 38(2):147-59.

Gans, Herbert J. 2005. "Race as Class." *Contexts* 4(4):17-21.

Gordon, Milton M. 1964. *Assimilation in American life*. New York: Oxford University Press.

Hohmann-Marriott, Bryndl E., and Paul Amato. 2008. "Relationship Quality in Interethnic Marriages and Cohabitations." *Social Forces* 87(2):825-55.

Joyner, Kara, and Grace Kao. 2005. "Marriage and Family in a Multiracial Society." *American Sociological Review* 70(4):563-81.

Kalmijn, Matthijs. 1993. "Trends in Black/White Intermarriage." *Social Forces* 72:119-46.

Kalmijn, Matthijs. 1998. "Intermarriage and Homogamy: Causes, Patterns, Trends." *Annual Review of Sociology* 24:395-421.

Kalmijn, Matthijs, and Frank Van Tubergen. 2010. "A Comparative Perspective on Intermarriage: Explaining Differences Among National-Origin Groups in the United States." *Demography* 47(2):459-79.

Lee, Jennifer, and Frank D. Bean. 2007. "Reinventing the Color Line Immigration and America's New Racial/Ethnic Divide." *Social Forces* 86(2):561-86.

Lee, Sharon M., and Barry Edmonston. 2005. "New Marriages, New Families: U.S. Racial and Hispanic Intermarriage." *Population Bulletin: A Publication of the Population Reference Bureau* 60(2).

Lichter, Daniel T, and Zhenchao Qian. 2004. "Marriage and Family in a Multiracial Society." New York and Washington, DC: Russell Sage Foundation and Population Reference Bureau.

Lichter, Daniel T., J. Brian Brown, Zhenchao Qian, and Julie H. Carmalt. 2007. "Marital Assimilation Among Hispanics: Evidence of Declining Cultural and Economic Incorporation?" *Social Science Quarterly* 88(3):745-66.

McDevitt, Tom, Martin O'Connell, and Colleen Joyce. 2001. "Evaluating the Components of Births and Deaths used in Demographic Analysis." Washington, D.C.: U.S. Census Bureau.

Merton, Robert K. 1941. "Intermarriage and the Social Structure: Fact and Theory." *Psychiatry* 4(361-374).

Oppenheimer, Valerie Kincade. 1988. "A Theory of Marriage Timing." *American Journal of Sociology* 94(3):563-91.

Portes, Alejandro, and Ruben Rumbaut. 2001. *Legacies: The Story of the Immigrant Second Generation*. Berkeley, CA: University of California Press and Russell Sage Foundation.
Portes, Alejandro, and Min Zhou. 1993. "The New Second Generation: Segmented Assimilation and its Variants." *The Annals of the American Academy of Political and Social Science* 530:74-96.
Qian, Zhenchao. 1997. "Breaking the Racial Barriers: Variations in Interracial Marriage Between 1980 and 1990." *Demography* 34(2):263-76.
Qian, Zhenchao, Jennifer E. Glick, and Christie D. Batson. 2012. "Crossing Boundaries: Nativity, Ethnicity, and Mate Selection." *Demography*.
Qian, Zhenchao, and Daniel T. Lichter. 2007. "Social Boundaries and Marital Assimilation: Interpreting Trends in Racial and Ethnic Intermarriage." *American Sociological Review* 72(68):68–94.
Qian, Zhenchao, and Daniel T. Lichter. 2011. "Changing Patterns of Interracial Marriage in a Multiracial Society." *Journal of Marriage and Family*:1065–84.
Qian, Zhenchao, Daniel T. Lichter, and Leanna M. Mellott. 2005. "Out-of-Wedlock Childbearing, Marital Prospects, and Mate Selection." *Social Forces* 84(1):473-91.
Rosenfeld, Michael J. 2005. "A Critique of Exchange Theory in Mate Selection." *American Journal of Sociology* 110(5):1284-325.
Rosenfeld, Michael J. 2008. "Racial, educational, and religious endogamy in the United States: A comparative historical perspective." *Social Forces* 87(1-31).
Ruggles, Steven, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. 2010. "Integrated Public Use Microdata Series: Version 5.0." Minneapolis.: University of Minnesota.
Taylor, Patricia Ann, and Norval Glenn. 1976. "The Utility of Education and Attractiveness for Females' Status Attainment through Marriage." *American Sociological Review* 41:484-98.
U.S. Census Bureau. 2012. "American Factfinder 2." Washington, D.C.: U.S. Census Bureau.
Zhou, Min. 2004. "Are Asian Americans Becoming 'White'?" *Contexts* 3(1):29-37.

Table 1. Rates (Column Percentages) of Ethnic Pairing by Mothers' Characteristics: 1990-2004.

Mother Ethnicity	White				Asian				Hispanic				Black			
Father Ethnicity	White	Asian	Hispanic	Black	White	Asian	Hispanic	Black	White	Asian	Hispanic	Black	White	Asian	Hispanic	Black
Pairing Rates (row %)	93.8	0.3	3.5	1.9	21.2	69.6	4.2	2.7	10.3	0.3	86.6	2.4	2.8	0.1	1.8	95.2
Age																
Under 18	1.7	1.5	5	4.7	0.4	0.5	3.2	1.8	2.5	3.8	5.7	6.8	3.7	4.5	7.6	5.3
18, 19	4.7	3.9	9.7	11.5	1.2	1.2	6.2	4.8	5.5	7.3	9.3	12.3	8	9.1	11.9	9.2
20, 21	7.1	5.8	11.9	14.9	2.6	2.4	8.3	7.9	8	9.7	12	15.1	10.9	11.4	13.8	11.7
22-25	13.6	10.9	17.5	20.6	7	6.8	14.2	14.2	14.2	16.2	18.9	20.3	16.6	16.9	18.4	17.5
25-29	30.4	26	26.6	24.7	24	27.1	27.5	27.8	28.9	28.3	27.9	24.8	26	25.1	24.3	26.4
30+	42.5	51.8	29.3	23.6	64.7	62	40.6	43.4	41	34.6	26.2	20.7	34.7	33	24	29.9
Education																
No High School	10	6.1	20.4	20.9	4.2	9.1	9.5	8.6	13.3	15.4	54	25.4	12.9	11.2	21.3	18.5
High School	32.4	25.4	37.8	40.9	18.6	20.2	29.9	33.6	34.2	38.2	29	40.4	34.5	33.2	38.8	40
Some College	25	26	23.6	24.4	25.3	22	31.5	32.3	28.1	28.1	11.5	24.9	30.1	32.8	27.9	26.5
Bachelors	20.9	23.4	10.9	8.7	30.5	28.2	18.9	17.7	14.5	10.7	3.2	6	13.4	13.9	7.8	9.9
>Bachelors	11.7	19.1	7.3	5.1	21.4	20.5	10.3	7.8	9.9	7.6	2.2	3.3	9.1	8.9	4.3	5.1
Old Father																
Father 10+ in Age	5.6	8.7	7.4	12	13	7	6.4	14.1	7.6	9.1	7.3	8.9	9.5	7.1	7.6	8.5
Marital Status																
Married	87.7	85.4	69.1	46.7	92.4	92.1	72.3	71.4	80.9	70	65.7	44	64.5	61.8	45.6	50.1
Nativity																
Foreign Born	5.2	7.9	5.2	5.2	74	89.5	60	77	31.5	31.4	68.4	25.6	14.3	14.8	10.3	12.1

Table 2. Control Variable Predicting Racial/Ethnic Parental Arrangements by Mothers' Characteristics: 1990-2004. Logistic Regression (Odds Ratios Displayed)

Mother Ethnicity	White				Asian			
Father Ethnicity	White	Asian	Hispanic	Black	White	Asian	Hispanic	Black
Age								
Under 18	0.63	1.26	1.9	1.19	1.1	2	1.88	0.71
18, 19	0.66	1.04	1.66	1.33	1.15	1.67	1.7	0.74
20, 21	0.67	0.93	1.53	1.45	1.05	1.42	1.53	0.81
22-25	0.72	0.84	1.39	1.44	0.95	1.15	1.34	0.92
25-29	0.87	0.83	1.18	1.18	0.86	0.9	1.14	1.04
30+ (omitted)	-	-	-	-	-	-	-	-
Other Control Variables								
Foreign Born	1.02	1.02	0.92	1.18	0.86	1.23	0.59	1.37
Married	3.37	0.91	0.45	0.14	2.32	1.97	1.15	0.55
Year (continuous)	0.94	1.01	1.1	1.03	1.06	1.02	1.06	0.94

Mother Ethnicity	Hispanic				Black			
Father Ethnicity	White	Asian	Hispanic	Black	White	Asian	Hispanic	Black
Age								
Under 18	0.49	1.06	1.66	1.27	0.62	0.68	2.83	1.5
18, 19	0.43	0.78	1.84	1.23	0.54	0.9	2.25	1.54
20, 21	0.41	0.72	1.91	1.23	0.63	0.94	2.03	1.58
22-25	0.45	0.75	1.83	1.18	0.67	1.05	1.84	1.46
25-29	0.6	0.84	1.51	1.07	0.64	1.32	1.3	1.1
30+ (omitted)	-	-	-	-	-	-	-	-
Other Control Variables								
Foreign Born	0.24	0.37	5.06	0.2	0.32	4	0.38	0.67
Married	2.05	1.24	0.75	0.36	1.25	1.61	0.43	0.27
Year (continuous)	0.98	0.96	1.01	1	1	0.99	1.03	1.01

Table 2. Theoretically-Informed Relationships Between Mother Characteristics and Partners' Race/Ethnicity: 1990-2004. Logistic Regression (Odds Ratios Displayed)

Mother Ethnicity	White				Asian			
Father Ethnicity	White	Asian	Hispanic	Black	White	Asian	Hispanic	Black
Triracial Hierarchy (Education)								
No High School	0.89	0.75	1.26	0.96	0.55	1.77	0.81	0.64
High School (Omitted)	-	-	-	-	-	-	-	-
Some College	1.03	1.29	0.91	1.09	1.31	0.85	0.99	0.99
Bachelor's	1.44	1.52	0.63	0.79	1.25	1.01	0.68	0.62
>Bachelor's	1.35	1.83	0.65	0.79	1.12	1.18	0.52	0.39
Marital Market (Logged % Racial/Ethnic Market)								
White	-	-	-	-	0.88	1.15	1.09	0.73
Asian	0.75	1.34	1.37	1.07	-	-	-	-
Hispanic	1.05	0.99	0.91	0.99	0.86	1.16	1.09	0.71
Black	1.02	1.2	0.76	1.1	0.91	1.11	1.07	0.75
Spousal Trades (Father 10+ Years Older)								
Old Father	0.74	1.39	1.06	1.7	2.45	0.46	0.8	1.67

Mother Ethnicity	Hispanic				Black			
Father Ethnicity	White	Asian	Hispanic	Black	White	Asian	Hispanic	Black
Triracial Hierarchy (Education)								
No High School	0.38	0.38	2.48	0.51	0.93	0.7	1.08	1
High School (Omitted)	-	-	-	-	-	-	-	-
Some College	1.61	1.51	0.61	1.37	1.19	1.39	1.1	0.86
Bachelor's	2.56	2.03	0.39	1.32	1.28	1.62	0.95	0.85
>Bachelor's	2.64	2.04	0.38	1.19	1.56	1.66	0.93	0.74
Marital Market (Logged % Racial/Ethnic Market)								
White	1.01	0.98	0.98	1.02	0.98	0.93	1.15	0.99
Asian	1.03	1.35	0.85	1.29	0.74	1.24	1.06	1.29
Hispanic	-	-	-	-	1	0.94	1.15	0.97
Black	0.99	1.43	0.97	1.07	-	-	-	-
Spousal Trades (Father 10+ Years Older)								
Old Father	1.45	1.66	0.66	1.42	1.15	0.79	0.86	0.97