Intermarriage and Social Distance in Multiracial America: Results from the 2000 Census

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Will America become a multiracial melting pot in which racial distinctions disappear, or will some groups remain separate while others mix? In this paper, we use intermarriage patterns to explore the social position of single and multiracial groups. We look at the marriage patterns of couples in the 2000 census, using log-multiplicative models to assign distance scores to multiracial and single race groups based on their choice of marriage partners. We find that every mixed race group receives a score in-between those of their single race constituents. All biracial groups with some Black identity, however, have marriage patterns that are closer to those of single-race Blacks than to those of their respective second constituent group. These results suggest that while intermarriages and multiracial identity will tend to blur racial distinctions in American society, the divide between Blacks and non-Blacks may continue to be larger than that separating other groups.

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1.0 Introduction

Will racial divisions take care of themselves? Immigration, intermarriage, and upward economic mobility offer the tantalizing prospect of a new melting pot in which Americans will no longer be divided between Black and White, but will instead increasingly identify with diverse backgrounds - "a multi-hued sea of beiges, tans, and browns."

The realization of this less-divided America will in part depend on purely demographic forces such as the degree of intermarriage and characteristics of new immigrants. But in large part it will depend on more subjective social forces: how those of mixed backgrounds will self-identify and be treated by others. The important question is whether someone of, say, Black and White ancestry will be effectively Black, or effectively White – or will have a status somewhere in-between.

This paper takes a new look at the intermarriage patterns observed in the United States. While many have studied intermarriage in the context of single race identities, this paper is the first we know of to look at intermarriage in the context of mixed race identities. We aim to get a sense of where multiracial populations fit into the American racial hierarchy. An innovation of the paper is to treat racial categories as potentially continuous rather than nominal variables.

While there are many measures of social distance between groups – differences in characteristics, residential segregation, and subjective opinions of social distance – we consider here a particular pattern of social interaction – marriage, which is the most intimate choice-based tie in American social life. Furthermore, intermarriage – because it reflects the preferences of two parties -- picks up both on self-identity and social identity. Recent research has documented decreases over time in social distance between racial groups, as reflected in interracial marriage rates in the U.S. Yet racial barriers to intermarriage remain very high (Qian 1997; Kalmijn 1993).

In this paper, we examine the marriage behavior of the diverse group of multiracial Americans with PUMS data from the 2000 Census. We hope to gain insight into the changing meaning of race in the U.S. through the lens of marriage behavior among this small, but growing group – who are simultaneously the reflection of past interracial relations and the engine for future change. Our first major goal is to measure, through marriage behavior, the relative social distance between biracial individuals and their "component" single race counterparts. Our second major goal is to estimate, again through marriage behavior, the position of biracial groups in the global relations among all single and biracial groups. In our conclusions, we speculate about the implications of our findings for future changes in the social distance between racial groups and interracial marriage patterns.

1.1 Background

Immigration and intermarriage patterns in the U.S. and other Western countries are challenging concepts of ethnicity and race and leading to complex views of group boundaries (Harris and Sim 2002; Hirschman 2003; Rockquemore and Brunsma 2002). During the 20th Century, non-Hispanic White ethnicity became increasingly 'symbolic' in nature, whereby it now has little association with or influence on educational attainment, economic well-being, or marital partner. Rather, White ethnicity is generally characterized as being based on the remnants of a few ethnic symbols or traditions that impose little cost on everyday life - a sort of optional ethnic "spice" (Waters 1990; Alba 1990; Gans 1979). The large and growing proportions of European Whites who have mixed ancestries have contributed to the dominance of symbolic ethnicity, for example with regards to marriage behavior. Based on data from the late 1970s, Alba and Golden (1986) showed that Whites of mixed ethnic ancestry tend to marry spouses of closely related ancestry less often than do Whites of single ancestry. This finding is consistent with the hypothesis that mixed ancestry is associated with the reduced significance of ethnicity. One implication is that as the proportion of Whites who are of mixed ancestry increases, the overall importance of ethnicity declines. A decline in the salience of ethnicity leads, in turn, to greater ethnic intermarriage, thereby creating a feedback system in which ethnic intermarriage leads to more ethnic intermarriage via the marriage behavior of persons of mixed ancestry.

Can an analogy be drawn between U.S. experiences of changing racial boundaries and the emergence of a European-White ethnicity? A simple extension of the line of thought discussed above would run as follows. For multiracial individuals, race is increasingly symbolic in nature, and increasing proportions of persons with multiracial backgrounds contribute to a melting pot in which racial distinctions will become socially insignificant, thereby leading to more interracial marriage. In partial support of this argument, claims about emerging symbolic race and ethnicity have been made with regard to American Indians who do not live in reservation communities (Eschbach 1995), White/Asian biracial individuals (Harris and Sim 2002; Xie and Goyette 1997), and English-speaking monolingual Hispanics (Eschbach and Gómez 1998).

However, there are several reasons to question the global validity of a comparison between the changing meaning of race and European-White ethnicity in the US. First, the emergence of European-White ethnicity has been accompanied by the rapid elimination of essential differences in educational and occupational status among nearly all the various ethnic component groups - a process which was completed by the coming of age of the third-generation descendants of immigrants (Alba 1990). In contrast, an uncertain future about the continued stratification of some racial groups leaves doubt about whether a similar process may unfold. Second, the racial context of Americans is quite diverse, with recent immigrants and longer-established groups experiencing different histories of discrimination, socioeconomic disadvantage, and cultural change. Third, some researchers claim that while race is increasingly

understood among social scientists as a fluid social construct, the popular understanding in America is still based on the widely-accepted premise that race is biologically determined (Rockquemore and Brunsma 2002). Finally, whereas European-Whites could always define themselves in relation to others – non-Europeans, non-Whites or Blacks – it is not clear what the contrast would be for an emerging 'blended' race of Americans. One possibility is that color lines will be redrawn as "Whiteness" is expanded to include most Hispanics, American Indians, and Asians, leaving Blacks as the group against which all others are defined (Warren and Twine 1997).

2.0 Data Section: Multiple Race Reporting and Coding

Our analysis of intermarriage uses the 1 percent Public Use Microsamples from the 2000 census (available at www.ipums.org). In order to allow the married population to reflect the marriage pool in the United States, we limit consideration to native born couples living in the continental United States in which the wife is 50 years of age and under. Exclusion of non-native born couples eliminates the upward bias inherent in racial endogamy measures based on samples that contain couples who were married prior to immigration.[1] Exclusion of Hawaii eliminates many multiracial individuals and mixed couples, but we felt that Hawaii's distinct demography and marriage market merited separate interpretation (Fu and Heaton 2000). Our sample includes some 288,504 married couples. Below we outline several issues of importance in interpreting the data.

Stock of existing marriages Census data focuses our analysis on the stock of current marriages, rather than on the flow of new marriages. Since multiracial reporting on marriage certificates is not yet wide spread, it is not possible at this time to analyze the pattern of entry into marriage. Mixed marriages may be more susceptible to divorce (Becker), so that our sample should be taken as representative of the characteristics of intact marriages.

Limited number of combinations The census allowed respondents to mark one or more of fifteen possible racial boxes as well as to mark a separate question on Hispanic origin. The total number of possible combinations for an individual is thus 2^16 - 1 = 65,535, which if considering intermarriage would create some 65,535^2 = 4.3 billion possible marriage combinations. In order to make our analysis tractable and have reasonable numbers of individuals in each category, we focus on just a few of the possible combinations, namely those involving the single race/ethnicity responses White, Black, Hispanic, American Indian, and Asian, and the biracial responses White *and* Black, White *and* Hispanic, White *and* Indian, White *and* Asian, *Black and* Hispanic, Black *and* Indian, and Hispanic *and* Indian. These 12 categories make up over 99% of our sample of married couples. We put all other combinations in a mixed category labeled "else," which includes other biracial responses, Pacific Islanders, those

[1] An alternative strategy would be to eliminate only those who immigrated after age 20, since those are the most likely to have married outside the U.S.

who marked more than 2 races, and non-Hispanics who chose "some other race" as their only race. The "some other race" response was ignored for everyone who marked multiple races.

Coding of Hispanicity We combine responses on the separate Hispanic origin question and the race item, treating Hispanic as another "race" that one can mark alone or in combination with other responses. Hispanics who marked "Some other race" were considered "Hispanic"-only, whereas Hispanics who marked White, Black or Indian, were considered Hispanic and that other race.

While this treatment is unorthodox, we felt that this recoding of the data offers advantages over the alternatives. First, many Hispanics who mark only "some other race" have ancestors from countries with populations that are considered a mixture of European, African, and Indigenous peoples. Hispanics who mark "some other race" therefore may well be more "mixed" than those who mark "White" or "Black". So, what we are picking up by our coding is a multiplicity of identities - e.g., Hispanic *and* White or Hispanic *and* Black - rather than some measure of racial mixture.[2] The disadvantage of this treatment follows from the fact that Hispanicity was ascertained in a question separate from that of race. As a result, the interpretation of recodes such as White *and* Hispanic or Black *and* Hispanic is in some sense qualitatively different than the interpretation of other biracial groups, such as those identified as White *and* Asian or White *and* Indian. This difference should be kept in mind while interpreting the results and comparing marriage patterns across biracial groups.

Despite this disadvantage, we felt that the alternatives for recoding were worse. One option was to eliminate all Hispanics from consideration. This would have simplified the table, but at the cost of ignoring a critically important group. A second option was to treat all Hispanics as belonging to one distinct race, regardless of their responses to the 'race' question. This also would have simplified the table, but at the cost of losing relevant information - as seen below, Black-Hispanics have very different marriage patterns than White-Hispanics, for example, and White-Hispanics intermarry with Whites more often than do Hispanics who marked "some other race". Third, we could have analyzed four separate tables of race – as is frequently done in Census publications - including a table where both spouses are Hispanic, where neither is Hispanic, where the husband but not the wife is Hispanic, and where the wife but not the husband is Hispanic. This option would have greatly complicated our analyses and reduced sample sizes considerably in different cells.

In general, none of the single or multiple race responses from the Census are objective measures of genealogy. Rather they are measures of identity. Many non-Hispanic people with mixed backgrounds, dating back any number of generations, may choose to mark only one race. In this light, our Hispanic

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[2] Identification with U.S. racial categories is considered by some to be a measure of assimilation, whereas assertion of "some other race" is often accompanied by a write-in of national origin (Rodriguez; Portes).

coding, as unorthodox as it might seem, may actually be somewhat consistent with the treatment of multiple race identification of non-Hispanics.

Race-Reporting Issues In light of the subjective nature of race reporting, we see at least two potential difficulties with using Census information on race to examine intermarriage. One difficulty lies in the tendency for a single householder to report the races of every member of the household. As will be seen, there is an extraordinary association between multiple race reporting for husband and wife. One interpretation of this finding is that there is strong endogamy within multiple race combinations – that is, biracial individuals prefer to marry other biracial individuals. However, we think it is likely that the correlation is at least partly an artifact of the way in which the census forms were filled out. Since the racial identities of both spouses were often marked by the same individual, the marking of multiple identities is likely to be correlated within a household. This second interpretation seems to us particularly plausible given that many census respondents may not have even noticed that the census now allows multiple race responses.

In future work we hope to explore this issue further by comparing multiple ancestry and multiple race responses for both members of couples (Goldstein and Morning 2000). Our current approach is to rely on measures and models which control for or are largely unaffected by the endogamy of biracial individuals.

The second difficulty in interpreting the race data lies in the potential for 'reverse-causality', whereby the joint characteristics of spouses influence individual identity reported on the Census forms. For example, it may be that a person who has mixed Black and American Indian ancestry might identify only with Black ancestry if their spouse were Black, but might identify with Black and American Indian ancestry if their spouse were American Indian or White. Therefore, what we are seeing in the intermarriage data is probably not the result of a sorting process whereby people begin with fixed racial identities and then find partners, but rather one in which the choice of partners, to some unknown extent, also influences racial identification. In fact, previous research has discussed the optionality of multiple race identification, as well as the variability of identification of a single person over time and in different circumstances (e.g., Harris and Sim 2002), so that the model of fixed racial identities determining the choice of marital partner is not one that is realistic in any case.

To summarize, these two issues in race reporting suggest differences between observed marriage tables and hypothetical tables that would have been derived from panel-type data in which each individual was asked separately to race self-identify at a time prior to meeting his/her spouse. One difference is a higher frequency of marriages in which both spouses are multiracial – particularly those in which spouses have the same or overlapping identities. The latter follows since it seems plausible that one aspect of 'reverse causality' would

include greater emphasis placed on the common racial background between spouses.[3]

Therefore, it is clear that our analyses need to speak to the apparent tendency for biracials to be married to each other. A second difference revolves around the possibility, for example, that individuals whose spouses identify as White are more likely to identify as biracial in the Census than are individuals whose spouses identify as Black, Asian, or American Indian. If this is the case, our measures of 'one-sided' behavior would be biased in the direction of an apparent affinity of biracials for Whites over their other single race component group. Despite this difficulty, we feel that the measures we compute from the observed data provide insight. For example, an asymmetry in the tendency to identify biracially as a function of spousal race speaks to the question of what race means to spouses in interracial couples.

3.0 The Analysis of Intermarriage Patterns

In this section, we begin with a simple descriptive analysis of the intermarriage patterns observed in the 2000 census and then look at successively more complex models to give us more refined measures of the structure of social distance between the various racial groups.

The first sub-section describes the frequencies of different intermarriage combinations. Although these frequencies are largely the product of group size, they are important because they give a sense of the prevalence of different kinds of marriages and some indication of the parental composition of future generations.

The second sub-section takes a second look at the tendency of biracials to marry one rather than the other of their mono-racial component groups, this time controlling, crudely, for group size. The analysis is carried out on "triads" consisting of two single race groups and the biracial combination of these two groups.

The third sub-section applies more complex models that control for group size in a better way and additionally take account of endogamy, the general tendency for people to marry those of their own racial group. These models are applied to the triads analyzed in the previous section and provide intrinsic measures of racial distance that are net of group size and endogamy.

Finally, we apply our modeling approach to all 12 of the single and biracial groups together, providing a map of racial distances among all of the groups at once. This final approach is less reliable for determining distances between any

[3] The second difference would be a correspondingly lower frequency of marriages in which spouses have different single race identities (these are exactly the type of marriages which have the most potential for being recoded as two biracial spouses with some overlapping racial identity). This pattern is less critical, however, for our analyses here of the marriage patterns of biracial individuals.

two or three groups but does give a snapshot of the global relations between all groups in the United States.

3.1. Analysis of Frequencies

Table 1 presents the number of marriages by race of wife and race of husband in our sample. Clearly, the numbers are the joint result of group size as well as intermarriage patterns. Even after collapsing and combining categories, we find many empty or tiny cells on the off-diagonal. These tiny cells result in part from the enormous amount of endogamy evidenced along the diagonal – among biracials as well as single race individuals.

The Table indicates that, as is well-known, most racial intermarriages involve a White spouse – this follows in part from the large proportion of Whites in this native-born sample. This finding holds also among interracial marriages that involve at least one biracial spouse. For example, the single most frequent type of intermarriage involving biracials are those involving men or women who are White *and* Hispanic married to spouses who are White. Another relatively common combination involves White *and* American Indian men and women who are married to White spouses. Significantly less frequent are marriages between White *and* Asian spouses with Whites, followed by marriages between White *and* Hispanics and Hispanics. Less frequent still are cases involving Black *and* Hispanic men and women with Black spouses, White *and* Black men and women with White spouses, American Indian *and* Hispanic men and women with White spouses, White *and* Hispanic men and women with Black spouses, and White *and* Black men and women with Black spouses. Other combinations are quite infrequent. Thus, a large fraction of the racial intermarriages involving at least one biracial spouse involve couples with a White spouse, and often a spouse with some Hispanic identity.

Some sex asymmetry is apparent in the table. For example, marriages involving biracial wives who identify as Black (in combination with another race) are more likely to involve a Black spouse than are marriages with biracial husbands who identify as Black (in combination with another race). This finding is consistent with that of greater racial intermarriage among single-race Black men than among single-race Black women, as seen in the table and as reported in previous research (Qian 1997, Kalmijn 1993, Merton 1941, Davis 1941). In contrast, marriages involving wives who identify as White *and* Asian are more likely to involve a White spouse than are marriages involving husbands who identify as White *and* Asian. The same direction of sex asymmetry exists among couples involving White *and* Hispanic spouses and White spouses. Again, this is consistent with findings from previous research regarding single-race intermarriage (Qian 1997). Sex asymmetry in couples involving a White *and* American Indian spouse with a White spouse is less striking.

Table 2 presents the racial distribution of wives, by race of husband (row percents). This table simplifies the comparisons of wife's race across different race groups of husbands. Several interesting comparison emerge. For example, while 25.1% of Hispanic men are married to White (non-Hispanic) women, 38.7%

of White *and* Hispanic men are married to White (non-Hispanic) women. Similarly, while 50.2% of American Indian men are married to White women, 69.2% of White *and* American Indian men are married to White women. Along the same lines, while 41.8% of Asian men are married to White women, 71.8% of White *and* Asian men are married to White men. Even more dramatic, while only 6.5% of Black men are married to White women, 54.2% of White *and* Black men are married to White women. Thus it appears from these simple frequency distributions that men of mixed racial identity who identify as White (in combination with another race) are much more likely to have a White spouse than are their non-White single race counterparts. These patterns are suggestive of the idea that mixed-race White individuals are socially much less distant from Whites than are single-race non-Whites.

At the same time, these same men of mixed-White racial identity are also much more likely to have a spouse of their non-White component racial group than are their White single-race counterparts. For example, while only 0.2% of White men are married to Asian women, 5.2% of White *and* Asian men are married to Asian women. The proportions are quite small overall because of the tiny proportion of Asians in the sample. Nevertheless, these findings suggest that men of mixed-White racial identity are socially less distant from their single-race non-White counterparts than are single-race Whites.

The overall patterns together are consistent with the idea that mixed-race individuals (who identify as White in combination with another race) occupy in some sense an "in-between" position between the single-race groups. The same can be said about mixed-race Black men (who identify as Black in combination with another race). They are much more likely to marry with Blacks than are their single-race non-Black counterparts, and much more likely to marry with their non-Black single-race counterparts than are Blacks.

Table 3 shows the analogous racial distribution of husbands, by race of wife (column percents). The patterns that emerge are similar to those from Table 2, again suggesting that persons of mixed racial identity occupy an 'in-between' position which could potentially contribute to more racial 'blending' in future generations.

3.2 A Simple Odds-Ratio Measure of Affinity within Triads

We begin by looking at the tendency of biracial groups to marry one of their component single race groups rather than the other. If there were no preference for one single-race group over the other, then we might expect the proportions marrying each group to reflect the size of that group. For example, there are about 10.6 times as many married White men as married Black men, and so we might expect mixed White *and* Black women to marry White men about 10.6 times as often as they marry Black men. In fact, we observe that biracial White-Black women are only about 1.6 times as likely to marry Black men as White men. The odds-ratio we compute below compares the observed marriage odds with the expected marriage odds based on the assumption that

there is no association between the races of spouses beyond that which is related to group sizes (i.e. independence).

We first consider the marriage patterns of biracial individuals with marked White (W) race as well as another race X. We compute logs of the odds ratios that White *and* X individuals (WX) marry White spouses rather than X spouses. X can take on the values: Asian, Hispanic, Indian or Black. The computations are done separately by gender for each biracial group. As an example, we show here the computation made for White *and* Asian women as the log of the odds:

$$\frac{\text{(\# of couples of W men, WA women)/(\# of couples of A men, WA women)}}{\text{(\# of W men)/ (\# of A men)}}$$

Large negative values of these log odds ratios would indicate little marriage between White men and White *and* Asian women, relative to marriage between Asian men and White *and* Asian women. A value of 0 would indicate that White *and* Asian women marry W men to the same extent as A men (after taking into consideration group size). Positive values of the log odds ratios would indicate that White *and* Asian women tend more towards White men than towards Asian men (after considering group size).

These odds ratios are computed in two ways - using the marginal distributions within the triad or in the overall sample. Use of the triad marginals assumes that each triad comprises a reasonably good approximation to the marriage market for each group within the triad. Use of the overall marginals takes into consideration intermarriage with groups outside the triad, but does not control for differential marriage outside the triad for the two single-race groups under consideration.

Figure 1 gives the results for men and women from the perspective of Whites, Blacks, Hispanics and American Indians. We can see from the negative log odds ratios in the upper left hand panel that all of the biracial groups appear to have a much stronger tendency to marry their non-White rather than White component group. Both the triad and full table measures tell approximately the same story. Furthermore we can see some interesting patterns by sex. For example, we see that the tendency of White *and* Black women to marry Black rather than White men is stronger than the tendency of White *and* Black men to marry Black rather than White women. This is in line with the general pattern of intermarriage among single race groups, in which marriages between Black men and White women are much more common than marriages between Black women and White men (Table 1; Qian 1997). In contrast, we see the opposite sex-specific pattern among White *and* Asian men and women, with White *and* Asian men being more likely to marry Asians than are White and Asian women, a finding that parallels the single-race intermarriage literature (Table 1; Qian 1997).

The remaining three panels show the log-odds ratios from the perspective of other single race groups. The signs of the log-odds ratios involving White groups are reversed but identical in magnitude, since the perspective is now from the non-White group rather than the White component group. The remaining

three panels also show several combinations that do not involve Whites. We see that Black *and* Hispanic women have a tendency to marry Black men but this does not appear to be the case for Black *and* Hispanic men. Black *and* Indian men and women do not show consistent results using the triad and full tables. The only other consistent result is that Indian *and* Hispanic women have a tendency to marry Indian rather than Hispanic men.

While these simple odds ratios tell an interesting story, there are some potential problems with the measure. First, as we can see, our choice of marginal distributions appears to influence the sign of our results in many cases, particularly with the smaller groups. A second, more serious problem is that the log odds ratios actually compare the extent of one-sided behavior in the observed triad to a baseline model (log-odds equal 0) that assumes an absence of endogamy among racial groups (independence). However, we know that strong endogamy among racial groups exists. Therefore, our computed log-odds ratios that differ from 0 do not generally reflect one-sided behavior relative to a more reasonable baseline model that controls for this endogamy. Rather, the log-odds ratios resemble the mobility ratios originally used in the study of occupational mobility. However, these ratios are known to depend strongly on the marginal distribution of the population and on the degree of association in the table -- in our case the tendency to in-marry (Hout; Hauser).

The simple odds ratios calculated in this section are a useful descriptive and exploratory statistic but do not give a net measure of affinity. In the following sections we apply more complicated models that take into account these other factors and provide estimates of the affinity of biracial groups net of group size, endogamy, and other factors.

3.3 Racial Distance in Models of Triads

We now turn to models of the distance between racial categories within each triad that are net of the effects of group size and endogamy. The factors we would like the model to take into account are (i) the size differentials among groups by sex; (ii) the endogamy preferences of the single race groups; (iii) the surplus endogamy of the biracial group that may be due to the tendency of the same person filling out the census form for all members of the household; and (iv) the tendency of biracials to marry each component monoracial group, and the tendency of the component monoracial groups to marry each other. The factors in (iv) represent the social distance between the racial groups within the triad - our primary interest.

The log-multiplicative RC model introduced by Goodman (1979) assigns numeric scores to each category in the triad, with greater distance between the scores reflecting increasing odds against intermarriage. Clogg provides an introduction to applying this model to social research. The model has been used extensively in the intergenerational occupational mobility literature (Hout). As far as we know, we are the first to apply it to racial and ethnic categories, which are usually considered nominal rather than ordered categories. The formal details of the model are given in the appendix.

The RC model has several notable qualities. First, the order of the categories does not need to be specified in advance; rather, the order is estimated from the data. We will see that in every case the score for the biracial group lies in between the scores of the single race component groups. Second, the scoring allows us to look at the difference not only between the biracial group and each single race group, but also to look at the total distance between the two single race groups. Finally, the RC model is parsimonious enough to fit the data and still provide degrees of freedom.

Our estimates of interracial distances for each triad are shown in Figure 2. For ease of interpretation we have grouped the triads by whether they include White, Black, Hispanic, or American Indian. This involves some duplication of scores, with signs reversed, but allows easy comparison.

One can see that all of the biracial groups, even those with a Black component, are positioned in-between their respective single race component groups. Again, this is not an artifact of having chosen this ordering, a priori, but rather because the scores that fit the data produced this ordering.

Biracials with White as a component vary considerably in terms of their intermarriage distances. Black *and* White biracials have stronger affinity for Blacks than for Whites, but White *and* Indian biracials have stronger affinity for Whites than for Indians. White *and* Hispanic biracials, which as discussed above are not "mixed" in the same way as the other groups, have stronger affinity for non-Hispanic Whites than for Hispanics who mark some other race. Asian *and* White biracials appear to be closer to single-race Asians, although this tendency is statistically insignificant, because of small sample sizes.

There is some evidence of one-sidedness among biracials in triads involving a Black component. Biracials with a Black component all appear to have stronger affinity for Black marriage partners than for non-Black marriage partners. This one-sidedness can be interpreted as a considerably diluted version of the one-drop rule (Williams), which historically has classified anyone with even partial Black ancestry as Black. The "marked" nature of Black identity is unique. Single race American Indians, Hispanics and Whites do not attract the same consistent affinity among their respective biracial groups as do Blacks.

American Indian identity appears to be the least "marked". Both Whites and Blacks with American Indian identity tend to marry with their non-Indian single race component group. The intermediate score of the Hispanic-Indian combination is in part a function of the small numbers in this group that did not allow a more precise estimate of these scores. We thus used mid-point scoring as a default.

Finally, the scores involving Hispanic identity suggest that Hispanicity is also a relatively unmarked category, along the same lines as American Indian identity. However, the use of "some other race" and the separate question format makes the interpretation of our results for Hispanics less clear-cut. Limiting our analysis to the native-born does help with the interpretation however.

It is important to emphasize that the scores estimated for the RC model are net of group size, general endogamy, and surplus biracial endogamy. This means that groups that have close affinity may not necessarily intermarry in large numbers in observed marriage tables, particularly if they are both small in size. What the scores do tell us is the role of affinity beyond the effects of group size -- or equivalently, if all the groups were of equal sizes. We interpret the distances in Figure 2 as a measure of preferences, a kind of intrinsic social distance implied by individual preferences over and above the intermarriage pattern implied by group size.

It is important to keep in mind that group size is a very important factor in determining intermarriage rates (Blau; Blau and Schwarz). The equidistant estimate provided in the figure for the White *and* Asian group means that this population marries in the proportions we would expect if they were indifferent to the choice of a White or Asian marriage partner. There would thus be many more White *and* Asian marriages with Whites than with Asians because of the greater number of potential White partners, not because of an intrinsic preference of White *and* Asians for Whites over Asians.

The marginal effects estimated in the model try to capture the composition of the marriage markets. Of course, marriage markets tend to be local, and not national -- and the composition of the population may not reflect the choice set of an individual, particularly when races are highly segregated. We have restricted all of our analysis to the continental United States. Furthermore, we have re-estimated all of the models for four regions (Northeast, South, Midwest, and West), and estimated distances similar to the national pattern. This provides some reassurance that our results are robust across different levels of geography. An even finer level of geographic detail would be interesting to pursue but the small size of the national multiracial makes smaller area analyses impractical.

The results are consistent with the history of the one-drop rule in the United States, whereby Black heritage dominated all other heritages in terms of the rules of racial classification. On the other hand, it is notable that even the groups mixed with Black are still much closer to their non-Black component groups than are single-race Blacks. Here it is important to keep in mind, however, that the group of mixed-race individuals with Black as a component who are identified in the census are selected for having strong enough identification with a non-Black group to mark it as one of their races. There may be a large population of people with some degree of mixed heritage that mark only Black on the census.

3.4 Log-multiplicative measures of distance among all 12 single race and biracial groups together

In this final analysis section, we use similar methods to try to describe the global relations of all of the single and mixed groups. Analyzing all of the groups together has the advantage of giving us an overall picture of the structure of racial distance in American society as measured by the spousal choice of people

in all groups. It also allows us to control for the sizes of all groups at once, and to take into account affinities between groups beyond a simple triad. For example, it may be that those marking White-and-Indian tend to marry with those who mark Black-and-Indian but since both of these biracial groups were not in the same triad, we did not see this in our analysis. A final advantage is that we can see the clustering of several categories.

To analyze all of the groups together we use essentially the same scoring method for categorical variables that was used in the triads. An important difference, however, is that we estimate the position of each group in two dimensions rather than one.

One way to understand the scoring method is to view the intermarriage table as a table of distances between 12*12 combinations of groups. The distance between two groups can be expressed in a single dimension by a single number, the three dyadic distances between three groups can be expressed in no more than two dimensions as a triangle, the six dyadic distances between 4 groups can be expressed in no more than three dimensions as a tetrahedron. Likewise, the mutual distances between n categories can be perfectly preserved in n-1 dimensions. The scoring method then projects this full information about mutual distances onto some lower-dimensional space in such a way that retains the maximum amount of information. Details of the model are given in the appendix.

We note that the RCZH(2) model does not perfectly preserve any of the distances in the table, and thus that caution should be taken in looking at the distances between any two or three categories. The relative distance between groups in any one of the triads is probably better captured by the direct analysis of that triad rather than visualizing it here. Note, for example, the position of the White *and* Hispanic group, which in the triad analysis was closer to Whites than to Hispanics. Here, it is placed much closer to Hispanics than to Whites, because all three groups are placed relative to all other groups in the table, and not just each other. In these types of cases, we would rely on the triad analyses, not on the global analysis.)

Figure 3 gives the scores estimated by the RCZH(2) model. The X-axis is the first component, which explains slightly more of the association than the second component. Following Goodman (1991), we scale the scores according to the amount of association explained. Thus, the Euclidian distances in the figure represent the estimated distances between categories.

We see that the groups are spread out in a rough continuum between White and Black, with all of the groups that have a Black component being clustered in one corner of the plot and all of the groups with a White component (except White *and* Blacks) being clustered in the other corner. The non-White, non-Black groups lie in-between.

3.5 Summary of Results

1. All biracial groups, even those involving Blacks, occupy an in-between position in the American racial structure. In other words, biracial individuals are more likely to marry with members of each of their two single-race component groups than are members of the other single-race group. This finding is clearer in the triad analysis than in the modeling of all categories together.

2. The sex-specific patterns of marriage between biracials appear to follow those observed with intermarriage between single race groups.

3. Biracials with Black as a component group have a stronger affinity for Black marriage partners than for non-Black marriage partners. This "marked" nature of Black identity is unique. Single race American Indians, Hispanics and Whites do not attract the same consistent affinity among their respective biracial groups as do Blacks.

4. American Indian identity appears to be the least "marked". Both Whites and Blacks with American Indian identity tend to marry their non-Indian single race component.

5. Our analysis of Hispanic identity suggests that Hispanicity is also a relatively unmarked category, along the same lines as American Indian identity. However, the use of "some other race" and separate question format makes the interpretation of our results for Hispanics less clear-cut. Limiting our analysis to the native-born does help with the interpretation, however.

6. Looking globally at the relative position of the single and biracial groups together we see broadly speaking the formation of three clusters, albeit scattered across a continuum. These three clusters are those identities involving Black at one end, those involving White at the other end, and those involving neither White nor Black in the middle, but closer to the White cluster.

4.0 Discussion

In summary, descriptive analyses of simple frequencies as well as more sophisticated log-multiplicative models suggest an ‘in-between’ status for biracial Americans, roughly half-way between their respective single race component groups. Despite evidence of some ‘one-sided’ behavior, the marriage behavior of biracials seems fairly evenly split between their respective single-race groups, and is much closer to each single-race group than the single race groups are to each other.

One possible implication of this idea is that through marriage with members of all single-race groups, biracial individuals will in future contribute to declines in social distance between racial groups in America. Our negative findings concerning prominent one-sided behavior among biracials leaves open the possibility that marriage behavior among biracials is indicative of the optionality of race for them. This possibility is consistent with results reported in some of the literature on racial identity (Eschbach 1995; Harris and Sim 2002; Xie and Goyette 1997; Eschbach and Gómez 1998). Optional or symbolic race

may in turn feed into greater racial intermarriage in future and further reductions in social distance between racial groups, leading to a 'blending' of race in America, much in the way that White ethnicity has replaced more specific forms of ethnicity such as Polish-American and German-American (Alba 1990; Lieberson and Waters 1988).

However, caution in over-interpreting the results of the triad analyses should be exercised at this juncture. First, our global analysis of all twelve racial groups together indicates that clusters of racial groups are forming, with the single-race Black group falling farthest from the single and biracial White cluster, and biracial Blacks further away from White groups than are other non-White groups. This, together with the apparent 'marked' nature of Black racial identity as evidenced by one-sided behavior, hints at the possibility that future racial 'blending' among Americans may include Blacks less often than other groups. One implication of this would be the redrawing of color-lines to accommodate expanding "Whiteness", but still leaving Black groups outside (Warren and Twine 1997).

With regards to this possibility, an important point that we have perhaps not stressed enough is that the multiple race individuals that we count are a select subset of those who could potentially have identified with more than one race. For example, many in the Black civil rights movement have argued that only the "whitest" among those with mixed Black-and-White backgrounds chose to mark both boxes. This suggestion complicates the interpretation of our finding that Black *and* White biracials are nearly centered between White and Black, even if closer to Black. On the one hand, we could say that what should be emphasized is how different the marriage partners of biracial Black *and* Whites are from single race Blacks and from single race Whites. This perspective suggests that intermarriage has the potential to dramatically reduce the social divides between racial groups. On the other hand, we could emphasize that even among what is a potentially quite select group of biracials – i.e., those with Black ancestry who chose to also identify as White on the census form – there is still one-sidedness in the marriage pattern, and that this one-sidedness represents a serious underestimate of the one-sidedness of the "true" population of those with Black and White ancestry.

It may well be, for example that those individuals who feel mostly Black or mostly White don't mark both boxes, and that the in-betweenness of Black *and* Whites applies only to the select subset of people with Black-and-White ancestry who chose to mark both boxes. The vast majority of those who could, in theory, mark Black-and-White may choose only to mark one of these races, and this is in fact the strongest measure of one-sidedness.

There is a second reason for caution concerning the idea that, through marriage with members of all single-race groups, biracial individuals will in future contribute to declines in social distance between racial groups. It arises from the fact that our analyses have focused only on the frequency of intermarriage between biracials and others. The *nature* of these interracial marriages is yet to be explored. While intuition suggests that intermarriage between groups leads to

a decline in social distance, racial intermarriage does not necessarily lead to a decline in the salience of race in the U.S. This counter-intuitive possibility is highlighted in a well-established literature which shows that there is selective outmarriage of the more educated members of disadvantaged ethnic and racial groups (e.g. Qian 1997; Fu 2001). These findings are consistent with assimilation theories which suggest that education tends to weaken group attachments and to increase exposure to people of different origins, thereby leading to a loss of ethnic and racial identity among upwardly-mobile members of disadvantaged groups (Alba 1990; Qian, Blair and Ruf 2001). If we extend assimilation theory to the case of biracial individuals, we would expect that the more upwardly-mobile among them would have a less well-defined racial or ethnic consciousness and would be more likely to marry with the dominant groups – presumably Whites. This pattern would then help perpetuate the inequality in socioeconomic status between racial groups, which would lead to increasing, rather than decreasing social distance (Goldscheider 1996; Okun 2004).

Thus, we suggest that racial intermarriage in and of itself should not necessarily be viewed as a vehicle for reducing group differences and social distance over time, or for reducing the salience of race among disadvantaged groups. Much depends on the nature of the interracial marriage, in particular the socioeconomic and residential characteristics of spouses in marriages involving persons with biracial identity.

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Appendix: Modeling Details

A. The RCD model for triads

The model applied to the triads has the form

$$F_{ij} = A_i B_j \exp(\phi \mu_i \mu_j) D \qquad \text{if } i = j = 2$$
$$F_{ij} = A_i B_j \exp(\phi \mu_i \mu_j) \qquad \text{otherwise,}$$

where F_{ij} is the count of marriages that occur between husbands of race i and wives of race j. The estimates of A_i and B_j control for differentials in group size, D accounts for surplus endogamy among biracials, and the μ scores account for the association in the table. The difference $\mu_i - \mu_j$ gives the distance between any two categories i and j.

This class of models was introduced by Goodman (1979) and is a homogenous example of his RC model, with row-scores constrained to equal column scores. . We call this model the RCD because of an additional parameter D to account for the surplus of biracial-biracial marriages,

The predicted frequencies of the 3x3 table from the RCD have the form

$$\begin{array}{lll} A_1 B_1 \exp(\phi \mu_1 \mu_1) & A_1 B_2 \exp(\phi \mu_1 \mu_2) & A_1 B_3 \exp(\phi \mu_1 \mu_3) \\ A_2 B_1 \exp(\phi \mu_2 \mu_1) & A_2 B_2 \exp(\phi \mu_2 \mu_2) & A_2 B_3 \exp(\phi \mu_2 \mu_3) \\ A_3 B_1 \exp(\phi \mu 3 \mu_1) & A_3 B_2 \exp(\phi \mu_3 \mu_2) & A_3 B_3 \exp(\phi \mu_3 \mu_3) \end{array}$$

The distance between categories $\mu_i - \mu_j$ has a direct interpretation in terms of the odds ratio of two-by-two table made up of adjacent categories. Define θ_{ij} as the odds ratio calculated from cells (i,j),(i+1,j)(i,j+1) and (i+1,j+1):

$$\theta_{ij} = \frac{F_{ij}F_{i+1,j+1}}{F_{i+1,j}F_{i,j+1}},$$

with $\theta_{ij} > 1.0$ indicating positive association. For simplicity let $D = 1$. In this case, $\log\theta_{ij} = \phi(\mu_i - \mu_{i+1})(\mu_j - \mu_{j+1})$. When scores are farther apart the odds against intermarriage will increase.

The model is made identifiable by constraining $\sum \mu_i = 0$ and $\sum \mu_i^2 = 1$. In this case the φ parameter gives an overall level of association in the table (Goodman 1991). For aid in interpretation, we center the scores and incorporate the overall level of association, letting $\mu_i^* = \sqrt{\phi}\mu_i + c$, where c = . This produces scores such that max(μ_i*) = -min(μ_i*), with the middle score taking the value zero if it lies exactly half-way between the minimum and maximum scores. The estimated frequencies are identical using the normed and unnormed scores.

A special case of the RCD model is the uniform model, with equal spacing between ordered categories. In two of the triads, (W,WA,A) and (H,HI,I), we found that the full RCD model did not fit significantly better than the uniform model with the categories ordered as listed. We were thus able to retain this simpler model, with the biracial model equidistant from its monoracial components in these two cases. In all other cases, the full RCD model was preferred. We found that D was significantly greater than 1.0 in every triad, whether or not the uniform or RCD model was preferred.

The following table gives goodness of fit measures for ... for the triads.

Table A1 Goodness of Fit Measures of Log-Linear Models for Triads

Model WB WA WH WI BH BI IH Independence I + d I + a Uniform U + d U + a U + d + a

B. The RCZH(2) model

The RCZH(M) model has the form

$$F_{ij} = A_i B_j \exp(\sum_{m=1}^{M} \mu_{mi}\mu_{mj})Z_{i=j}$$

and is similar to the RCD model we used above except that it has *M* orthogonal estimates of scores. The resulting scores can be plotted in *M* dimensions in such a way that the distances between the categories are the Euclidean distances in the plot. It is possible to choose the number of dimensions to represent using the BIC measure of goodness of fit (Raftery). Here we present the two-dimensional scoring (*M* = 2) because it appears to summarize the complete set of distances better than the 1-dimensional view while still allowing easy visualization.

Table A2 Goodness of Fit Measures for Log-Multiplicative Models for 12 racial/ethnic categories and combinations

Independence	L2	df	BIC	IZ	RC	RCZ	RCH	RCHZ	RCZ(2)	RCHZ(2)

Table 1 Number of Marriages with Husband of Given Race (Row) and Wife of Given Race (Column)

Hus/Wife	A	B	BH	BI	H	I	IH	W	WA	WB	WH	WI	ELSE	TOTAL	Row %
A	380	13	0	1	29	9	0	353	8	0	24	4	25	843	0.3
B	37	21090	110	59	152	46	10	1510	2	54	99	18	100	23288	8.1
BH	1	62	60	0	11	1	0	26	1	0	16	1	2	180	0.1
BI	2	51	2	44	3	2	0	32	0	4	6	4	9	159	0.1
H	14	49	8	0	2984	35	15	1129	5	5	161	13	73	4491	1.6
I	0	24	3	3	25	907	12	1057	0	1	25	31	20	2108	0.7
IH	1	2	2	0	29	11	49	79	0	0	18	2	13	208	0.1
W	612	563	17	12	1202	1037	86	239470	285	87	3046	927	461	247806	85.9
WA	14	0	0	0	11	0	1	192	18	1	11	9	11	268	0.1
WB	0	35	1	0	4	0	1	80	0	12	6	0	9	148	0.1
WH	13	31	9	0	133	27	10	2562	4	0	3767	33	37	6627	2.3
WI	6	2	0	0	8	24	6	860	8	0	32	275	23	1243	0.4
ELSE	21	43	0	5	74	17	13	394	7	5	56	26	477	1135	0.4
TOTAL	1100	21964	211	124	4666	2117	203	247745	337	167	7268	1342	1259	288504	
Column%	0.4	7.6	0.1	0.0	1.6	0.7	0.1	85.9	0.1	0.1	2.5	0.5	0.4		100

Note: A=Asian; B=Black; H=Hispanic and "some other race"; W=White; Else=Residual category; All others are biracial combinations as indicated. See text for details. Source: Continental, native-born couples with wife aged 15-50, PUMS 2000

Table 2 Racial Distribution of Wives, by Race of Husband

	Percent of Husbands Married to Wives of a Given Race (Row %'s)													
Race of Husband	A	B	BH	BI	H	I	IH	W	WA	WB	WH	WI	ELSE	Total
A	45.0	1.5	0.0	0.1	3.4	1.0	0.0	41.8	0.9	0.0	2.8	0.5	2.9	100.0
B	0.2	90.6	0.5	0.3	0.7	0.2	0.0	6.5	0.0	0.2	0.4	0.1	0.4	100.0
BH	0.5	34.3	33.5	0.0	6.1	0.4	0.0	14.5	0.6	0.0	8.9	0.3	0.9	100.0
BI	1.1	31.8	1.4	27.6	2.0	1.3	0.0	20.1	0.0	2.4	4.0	2.5	5.9	100.0
H	0.3	1.1	0.2	0.0	66.4	0.8	0.3	25.1	0.1	0.1	3.6	0.3	1.6	100.0
I	0.0	1.1	0.1	0.2	1.2	43.0	0.6	50.2	0.0	0.0	1.2	1.5	1.0	100.0
IH	0.5	0.9	0.8	0.0	14.2	5.4	23.8	38.2	0.0	0.0	8.6	1.1	6.5	100.0
W	0.2	0.2	0.0	0.0	0.5	0.4	0.0	96.6	0.1	0.0	1.2	0.4	0.2	100.0
WA	5.2	0.0	0.0	0.0	4.2	0.2	0.3	71.8	6.6	0.4	4.3	3.2	3.9	100.0
WB	0.0	23.9	0.6	0.0	2.7	0.0	0.5	54.2	0.0	8.1	3.8	0.0	6.2	100.0
WH	0.2	0.5	0.1	0.0	2.0	0.4	0.1	38.7	0.1	0.0	56.9	0.5	0.6	100.0
WI	0.4	0.2	0.0	0.0	0.6	1.9	0.5	69.2	0.6	0.0	2.6	22.1	1.8	100.0
ELSE	1.8	3.7	0.0	0.4	6.5	1.5	1.1	34.7	0.6	0.4	4.9	2.2	42.0	100.0

See notes to Table 1.

Table 3 Racial Distribution of Husbands, by Race of Wife

Percent of Wives Married to Husbands of a Given Race (Column %'s)

Race of Husband	A	B	BH	BI	H	I	IH	W	WA	WB	WH	WI	ELSE
A	34.5	0.1	0.0	0.5	0.6	0.4	0.0	0.1	2.3	0.0	0.3	0.3	2.0
B	3.4	96.0	51.9	47.6	3.3	2.2	5.1	0.6	0.7	32.0	1.4	1.4	7.9
BH	0.1	0.3	28.5	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.2	0.0	0.1
BI	0.2	0.2	1.0	35.4	0.1	0.1	0.0	0.0	0.0	2.3	0.1	0.3	0.7
H	1.3	0.2	3.6	0.0	64.0	1.7	7.6	0.5	1.4	2.7	2.2	0.9	5.8
I	0.0	0.1	1.2	2.7	0.5	42.9	5.8	0.4	0.0	0.4	0.3	2.3	1.6
IH	0.1	0.0	0.8	0.0	0.6	0.5	24.4	0.0	0.0	0.0	0.2	0.2	1.1
W	55.6	2.6	8.2	10.0	25.8	49.0	42.3	96.7	84.7	51.8	41.9	69.1	36.6
WA	1.3	0.0	0.0	0.0	0.2	0.0	0.3	0.1	5.2	0.6	0.2	0.6	0.8
WB	0.0	0.2	0.4	0.0	0.1	0.0	0.3	0.0	0.0	7.2	0.1	0.0	0.7
WH	1.2	0.1	4.4	0.0	2.9	1.3	4.7	1.0	1.2	0.0	51.8	2.5	3.0
WI	0.5	0.0	0.0	0.0	0.2	1.1	3.2	0.3	2.2	0.2	0.4	20.5	1.8
ELSE	1.9	0.2	0.0	3.8	1.6	0.8	6.4	0.2	2.0	2.8	0.8	1.9	37.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

See notes to Table 1.

Figure 1. Tendencies of biracials to marry one or another single race component group, as measured by log odds ratios, by selected single race components.

Note: Details of odds ratio calculation given in text. A positive score indicates a tendency to marry the single race component group in the panel. A negative score indicates a tendency to marry the single race component group listed second in the two letter abbreviation. For example, the "WB" score of –1.6 indicates a tendency for White *and* Black biracial men to marry Black women, and the same score with a positive sign for "BW" biracial men indicates the same tendency, from a reverse perspective. The "full" and "triad" measures use different population proportions to calculate the composition of the single race groups, as explained in the text.

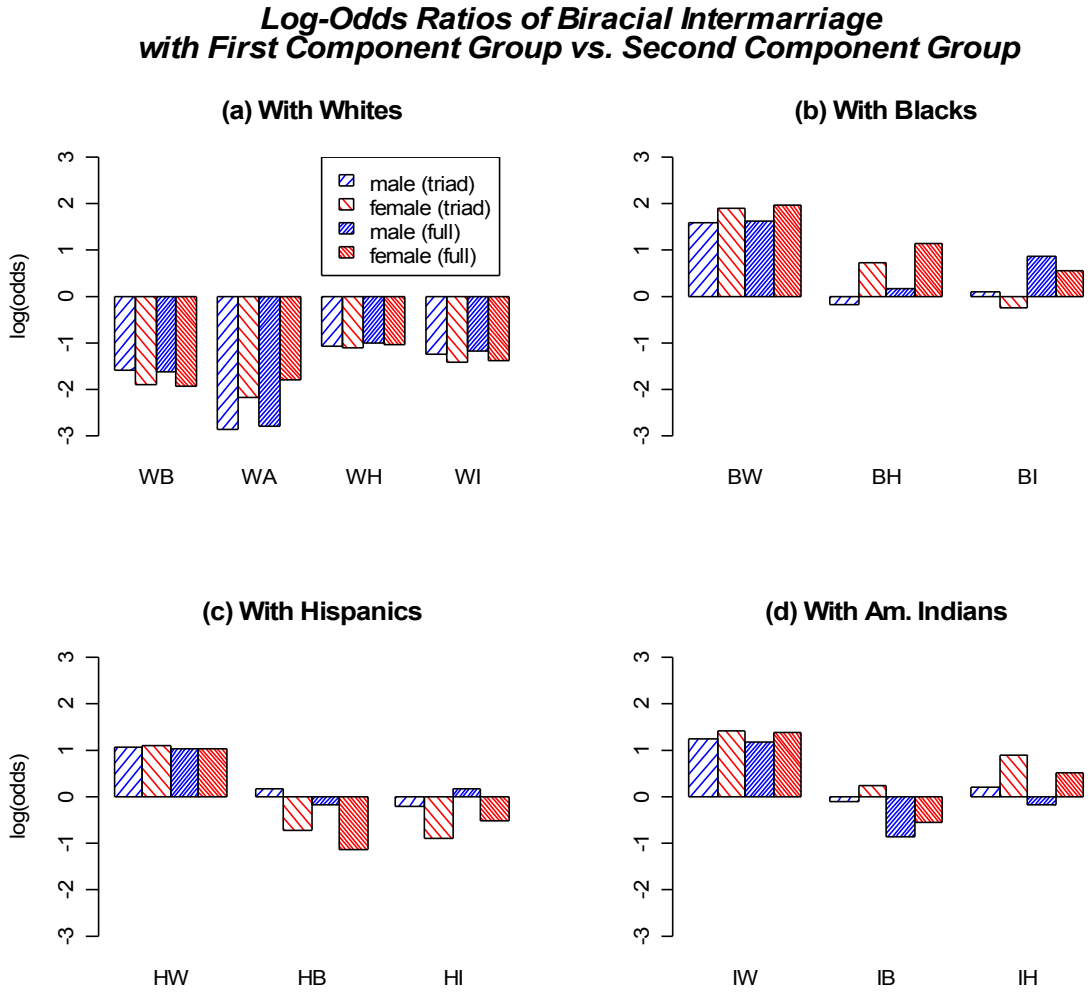

Figure 2. Intermarriage distances between selected single race groups and the position of the corresponding biracial group, as estimated from RCHD model.

Notes: The total length of the bar indicates the distance between the single race groups. The position of the biracial group shows a tendency to marry with one or the other single race group. The scores are centered so that a score of zero indicates equidistance from both single race groups.

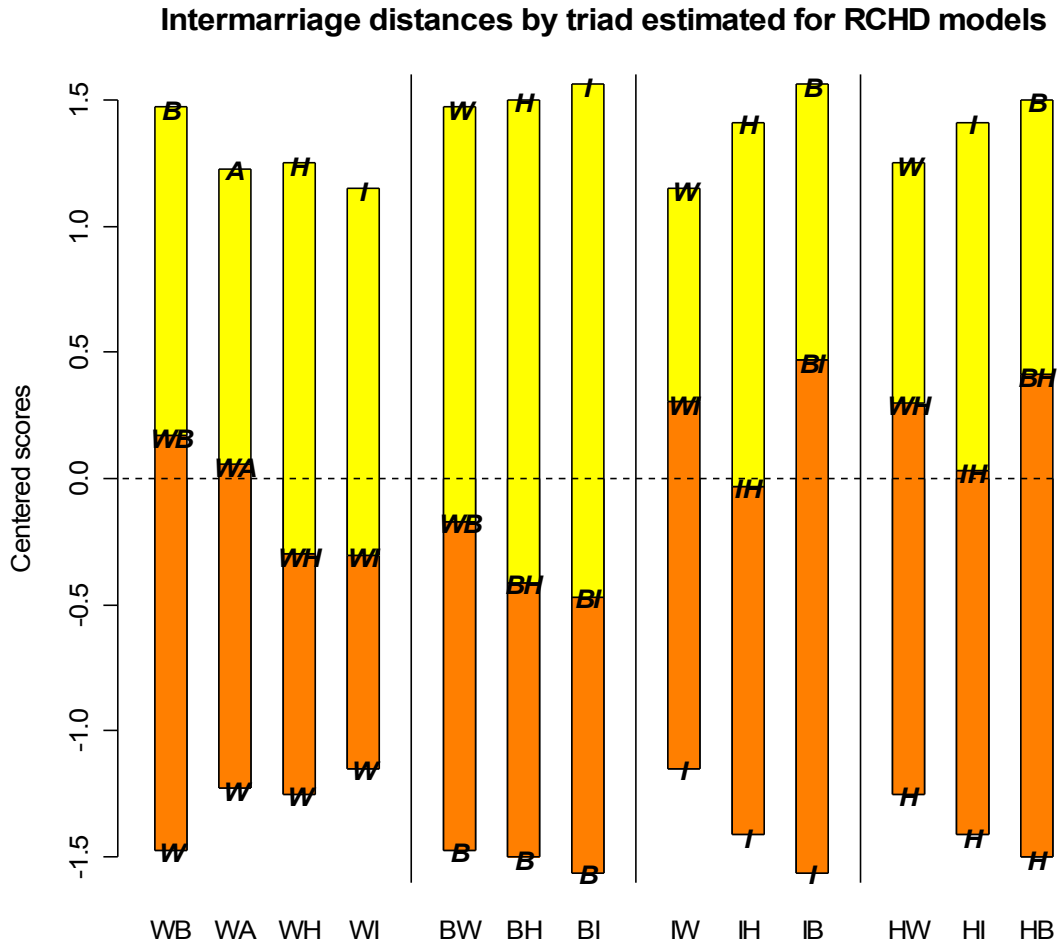

Figure 3. Simultaneous intermarriage distances among many single and biracial groups, as estimated by the RCHZ(2) model.

Notes: Coloring is for illustrative purposes, dividing the categories into those that include white, those that include Black, and those that include neither white nor Black. Dimension labels can be ignored. Warning: Since each group's position is estimated relative to all other groups, particular dyadic or triadic distances can be misleading, and those given in Figure 2 are more reliable.