A CRITIQUE OF THE STATUS EXCHANGE THEORY OF MERTON AND

DAVIS IN MATE ASSORTING

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ABSTRACT

In this paper I reexamine the status exchange hypothesis (Davis 1941; Merton 1941), which argued that minorities exchange their high socioeconomic status for the "high" social status of whites. Specifically, I reanalyze the cross-classification table presented in Fu (2001) on recent marriages among whites, blacks, Mexicans, and Japanese (from the 1990 PUMS data), which claims to corroborate the status exchange hypothesis for intermarriage between whites and blacks as well as between whites and Mexican Americans. Using a simple quasi-symmetry model, I show that the same-race and mixed-race marriage share a broadly similar pattern of educational homogamy, which is quasi-symmetric in character. Thus, I argue that this suggests little, if any, evidence for the status exchange hypothesis. Furthermore, the evidence strongly indicates that there is a remarkable consistency and symmetry in husband/wife educational attainment regardless of race (with the possible exception of white/white marriages); intermarried couples share a similar level of education, and educational homogamy dominates the educational marriages, no matter how strong the racial endogamy is.

BIOGRAPHICAL SKETCH

Yujun Wang was born and grew up in Jiangsu Province, P.R. China. She received her Bachelor of Arts degree from Renmin University of China, majoring in Sociology. Her major academic interests include economic sociology, income inequality in contemporary China, social stratification, and sociological methodology.

To

My Parents.

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1

INTRODUCTION

"...the reciprocal racial attraction and repulsion, might be measured by finding whether sexual relations are preferred or rare between two groups, and whether they are carried on permanently or temporarily and irregularly. In all groups with developed "ethnic" consciousness the existence or absence of intermarriage (connubium) would then be a normal consequence of racial attraction or segregation."

-Max Weber, Economy and Society (V,i).

Since Weber's famous insight in Economy and Society that looking at the causes and consequences of interracial marriage can shed insight into race relations generally; a stream of scholars from many different traditions of sociology have argued for the theoretical importance in understanding interracial marriage. Robert Merton and Kingsley Davis claimed that examining interracial marriage can uncover insights on the relationship between the social structure and intergroup relations (Merton 1941; Davis 1941). Later scholars have suggested it to be both a major cause and an important indicator of social and cultural integration, having an important bearing on the structural elements of society such as social distance and societal processes such as assimilation (Alba and Golden 1986; Alba and Nee 2003; Alba and Nee 1997; Fu 2001; Gordon 1964; Kalmijn 1998; Lieberson, Waters et al. 1988; Park 1950).

Since the anti-miscegenation laws were overturned by the U.S. Supreme Court in mid-1960s, interracial marriage rates in the United States have increased rapidly. For example, the rate of interracial marriage has increased from 1.31% in 1980 to 1.81% in 1990 and 2.89% in 2002 (U.S. Bureau of the Census, 2003). Although

mixed-race marriage rates are still relatively low (compared to same-race marriage rates), they continue to grow rapidly, having more than doubled in the last 20 years.

With a continued theoretical interest in intermarriage by numerous scholars and the actual growth of the phenomenon in scope, a set of perspectives and corresponding debates in accounting for it proliferated. The recent advances in statistical methodology added more vigor to those debates.

In this paper, I will try to accomplish three goals. Fist, I will introduce the theoretical perspectives that have been advanced to account for intermarriage: assimilationist, structuralist, and exchange perspectives. Second, I will focus on a particular perspective, the exchange perspective and the *empirical controversy*[1] that it has aroused. While I will introduce the long debate between critics and supporters, I will once again focus on a particular recent disagreement, between Fu (2001) and Rosenfeld (2005). Third, I will critique the claims that each side makes in interpreting the data to support or oppose the exchange hypothesis respectively. While I will side with Rosenfeld in the conclusion that the exchange hypothesis is under-supported by the evidence, I will propose a new model that better fits the data.

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[1] I make a distinction between a *theoretical controversy* which involves disagreement over the logical structure of the theory and an *empirical controversy* which involves disagreement over the extent to which data does or does not support a given theory.

CHAPTER 2

THEORY CONTEXT

Traditionally there are three perspectives that explain intermarriage: assimilationist, structuralist, and status exchange. While I will briefly discuss the first two perspectives to provide some context, the focus of this paper will be on the third.

The Assimilationist Perspective

The main proponent of the assimilationist perspective is Milton Gordon (1964). Its basic argument is that intermarriage is the "keystone of the arch of assimilation" and the indicator of social distance between groups. According to Gordon's (1964) seven-stage model, assimilation starts with (1) acculturation (cultural or behavioral assimilation), proceeds to (2) structural assimilation, which is "large scale entrance into cliques, clubs, and institutions of the host society in a primary group", and follows with (3) marital assimilation. When large-scale intermarriage takes place, the minority group melts into the host society which results in (4) "identificational assimilation". The others states (5) "absence of prejudice", (6) "discrimination", and (7) "value and power conflict" follow naturally. Gordon claims that compared to those who do not intermarry, those who do, generally possess greater social, political, and economic characteristics that resemble those of the host society. This assimilationist view of inter-relationships has been shared by many students of racial and ethnic relations (Massey 1981; Massey and Mullan 1984; Lieberson, Waters et al. 1988; Alba and Nee 1997; Rosenfeld 2002; Alba and Nee 2003).

The Structuralist Perspective

The main proponent of the structuralist perspective is Peter Blau (1977; Blau, Blum et al. 1982; Blau, Beeker et al. 1984; Rytina, Blau et al. 1988). Its basic argument is that a person's decision in selecting a mate is severely constrained by the social structure, *despite* his/her cultural attitudes. A structuralist account would, for example, examine how the availability of potential marriage partners in the population affects a person's marital choice. Blau (1977, 1982) claims that the opportunities of intergroup contact are higher in a heterogeneous and residentially integrated community than in a homogeneous and highly segregated one. He further argues that intermarriage is not only affected by group-specific attributes such as group size or sex ratio, but also by the amount of spatial and social proximity between groups (e.g. socioeconomic inequality). For Blau the assorting of partners depends not only on preferences but also the opportunities available to partners to marry one other (i.e., while people make marital decisions according to their cultural preferences, their decisions are, nevertheless, constrained by structural reality) (Blau, 1977). The usefulness of a structuralist view in intermarriage has been widely recognized, especially for conducting empirical research (Gurak and Fitzpatrick 1982; Fitzpatrick and Hwang 1992; Anderson and Saenz 1994; Hwang, Saenz et al. 1994; Hwang, Saenz et al. 1997).

The Status Exchange Perspective

The main proponents of the status exchange perspective are Kingsley Davis (1941) and Robert Merton (1941). Its basic argument is that even under the circumstances of rigid intergroup boundaries and despite strong preferences to marry within their own group, blacks with high socioeconomic status might sometimes marry whites with low socioeconomic status. According to Merton, marriages between

high status blacks and lower status whites represent an *informal exchange*, i.e., blacks exchange their higher achieved socioeconomic status for whites' higher ascribed social status and this exchange pattern is stronger for black husband & white wife pairs than for other interracial pairs.

While there has been relatively little controversy around the first two perspectives, status exchange has aroused much lively debate among researchers of intermarriage and continues to stimulate research (Kalmijn 1998). While many findings reaffirmed the status exchange hypothesis (Fu 2001; Kalmijn 1993; Qian 1997; Schoen and Wooldredge 1989;), many others have questioned its usefulness (Rosenfeld 2005; Heer 1974; Hwang et al. 1995; Liang and Ito, 1999; Heaton and Albrecht, 1996; Jacobs and Labov, 2002, Rosenfeld, 2005). The remainder of the paper is devoted to this debate over the merits of status exchange theory in accounting for intermarriage.

CHAPTER 3

THE STATUS EXCHANGE PERSPECTIVE: THE EMPIRICAL CONTROVERSY

Advocacy for Status Exchange

Many findings corroborated the status exchange hypothesis. The harmonic mean analyses by Schoen & Wooldredge (1989) showed that with respect to education, white women marry up more often when marrying a black man than when marrying a white man; similarly, black men marry down more often when marrying a white woman than when marrying a black woman. Parallel conclusions were reached in the examination of the marriage choices of white men and black women; when marrying exogenously, white men marry down less often and black women marry up less often. These asymmetries in spouses' educational characteristics were assessed after adjusting for the marginal distributions of education of race-sex groups and thereby support the hypothesis that majority men and women marry a minority spouse in part under the condition of socioeconomic status gains.

Furthermore, Kalmijn (1993) proposed a hypergamy ratio[2] approach to test for status exchange in black-white intermarriage. He compared the observed hypergamy ratios within interracial marriages to the expected hypergamy ratios from log-linear models under quasi-symmetry in which the expected hypergamy ratios only arise from differences in marginal distributions and not from asymmetric selection. Analyzing the annual marriage license data for 33 states from 1968 to 1986, he found that the observed hypergamy ratio in black husband and white wife marriage was much larger

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[2] The hypergamy ratio is calculated as the number of women marrying up in terms of education to the number marrying down.

than the expected ratio (1.252 compared to the expected .928) under the quasi-symmetry model, indicating white women are more likely to marry up than would be expected under the model which assumes no difference, and that the observed ratio in white husband and black wife marriage was 0.910, compared to the expected value of 1.289, indicating black women are more likely to marry down than would be expected.

Similar results were found in Qian (1997). Examining interracial marriage in the 1980 and 1990 Census data, he found that the exchange hypothesis is consistent with the data on intermarriage among African Americans, Hispanic, and Asian Americans. Acknowledging the educational homogamy pattern in interracial marriage, he claimed that the odds of interracial marriage increase with the couple's educational attainment, and that for interracial married couples with different educational attainments, minorities with high education levels tend to marry whites with low education levels.

Additionally, Fu (2001) identified endogamous intermarriage, status exchange, and in-group preference perfective as the three underlying patterns for intermarriage. Moreover, he claimed to provide a better test of the status exchange hypothesis, arguing that his results support it especially well for intermarriage between whites and blacks as well as whites and Mexican Americans. But while his results are largely consistent with Kaimijn's (1993) and Qian's (1997) findings (based on the hypergamy ratio approach), he nevertheless, found that marriages between Japanese Americans and whites follow an endogamous intermarriage pattern.

Criticism of Status Exchange

Others have questioned the empirical support for exchange theory, particularly in regards to the generalization of status exchange theory to intermarriage of white and

Asian Americans as well as white and Hispanics. Hwang et al (1995) showed that this exchange pattern does not hold for Asian American women. They applied multinomial logit models to a representative U.S. sample of married Asians and find that Asian women with lower educational attainment have a higher probability of outmarriage, while Asian men provide weak evidence of negative selectivity of SES and tend to marry persons with lower educational attainment than themselves.

Liang and Ito (1999) investigated the intermarriage patterns of five Asian American groups (Chinese, Koreans, Indians, Japanese, and Filipinos) in the New York City area. Focusing in particular on gender, nativity, and education, they found little evidence for Merton's (1941) hypothesis. Instead, their research revealed that: (1) US-born Asians are much more likely to intermarry than foreign-born Asians; (2) Asian women are much more likely to intermarry than Asian men; and that (3) intermarried individuals share educational homogeneity.

In a later paper, Qian and colleagues (1999) applied log-linear models to examine assortative mating patterns by race/ethnicity, educational attainment, and nativity status. They found no evidence that Asian Americans marry less-educated whites for an exchange of "higher" racial status.

Furthermore, Jacobs and Labov (2002) analyzed the data from the 1990 US Census to examine the intermarriage among 16 ethnic groups. They argued that an exchange pattern does not hold for the majority of Asian white marriages nor for the four Hispanic groups, and concluded that the applicability of status exchange theory should perhaps be limited to intermarriage between blacks and whites.

Yet, other scholars questioned the applicability of status exchange theory even to intermarriage between blacks and whites, finding that interracial marriage is predominantly homogamous with respect to education. Using simple tabular analyses Bernard (1964) found that interracial marriage as of 1960 tended to be educationally

homogamous. Similarly, Heer (1974) claimed that most black-white marriages are educationally homogamous and that the racial-caste hypogamy has no empirical support until the availability of marriage partners by educational attainment has been controlled for. Gadberry and Dodder (1993) replicated Bernard's work and found that educational similarity in black-white marriages continued from 1960 through 1980.

Rosenfeld (2005) examined the contradictory literature on exchange hypothesis with regard to black-white intermarriages and claimed that status homogamy in interracial marriages has been mistaken for status change due to the black-white inequality[3]. Additionally, he claimed that gender differences among young couples have been mistaken for racially specific patterns of exchange. In addition, he found that the empirical support for status exchange is not robust, and that the simple tabulation that questions status exchange contradicts the more sophisticated methods that support status exchange. Favoring simple tabular analyses, Rosenfeld has questioned the validity of exchange theory and the justification of its continued use.

Addressing the Controversy

The empirical controversy mainly comes from how researchers test the status exchange hypothesis. The new article by Rosenfeld (2005) has claimed that there is a contradiction in simple and complex analyses of intermarriage. He explained it via a robust standard errors argument and tries to reconcile it by using negative binomial analysis. I will argue that this apparent contradiction is not real. The contradictory results are really due to the insistence on interpreting models that are not consistent with the data. For example, Fu (2001) claimed that he has provided an improved test of the status exchange hypothesis. He found that the "endogamous intermarriage model + constrained exchange parameters" (his Model 2a and 2b) fits better for

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[3] See Figure 2 in Appendix B for an explanation of the intermarriage pattern.

marriages between whites and blacks as well as between whites and Mexican Americans than the "endogamous intermarriage model" and the "endogamous intermarriage model + unconstrained exchange parameters". Upon closer examination, one can see that the model which he claimed endorses the status exchange hypothesis, clearly shows a lack of fit (L^2=215.7116 with df=9 for whites and blacks and L^2=95.9568 with df=9). In addition, the previous model (Model 2c) fits the data much better than Fu's preferred "endogamous intermarriage model" (Model 1c) for marriages between Japanese Americans and whites. Although he has acknowledged the significant improvement in fit of Model 2c over Model 1c, he still claimed Model 1c as the more appropriate model solely based on the BIC statistics (Bayesian Information Criterion, Raftery 1986) when there is another model available that fits the data excellently. On the contrary, loglinear models that are consistent with the data clearly suggest that status exchange is a myth.

In addition, the BIC has some important drawbacks and is not a reliable method for model selection in this context (Weakliem 1999; Weakliem 2004). According to Weakliem, 1) the BIC assumes a unit information prior and approximates the log of the Bayes factor for the model of interest compared to the saturated model; however, the BIC uses the sample size as the sole measure of the informativeness of the data and overlooks the data design or structure, which can be misleading since the hypothesis of interest may depend on only a subset of the overall data. 2) The posterior likelihood depends on the data and the researcher's prior. If researchers have different priors, they will have different posteriors; thus different researchers analyzing the same data may reach different conclusions. The BIC assumes the unit prior, a prior equivalent to the amount of information in a single sample point; however, the amount of information represented in a unit prior will vary from application to application. He argues that the BIC is not the magical criterion for

choosing between models, contrary to sociologists' wishes (See Weakliem 1999; 2004 for more details). Some researchers may continue to find the BIC useful as a rule of thumb for model simplification, but there is no obvious reason to prefer it to other informal criteria such as the ratio of L2 to degrees of freedom, Akaike's information criterion, or the index of dissimilarity.

The status exchange hypothesis as stated by Merton (1941) and Davis (1941) requires couples to be different on two dimensions, i.e., races and status—without these differences the "exchange" cannot happen. Since intermarried couples are already different in races, then for "exchange" to happen, there must be a status gap between minorities and their white partners; in particular, in terms of education, minority husband has to have more education than his white wife and minority wife has to have more education than her white husband. If minorities and their white partners have the same status, then there will be no "exchange" in terms of status in interracial marriage.

In addition, to account for the educational differences between minorities and their white partners, we need to control for their educational distribution. Historically men tended to marry down along education (Schoen and Wooldredge 1989). Since white men tended to marry white women down along education, and since men tended to have more education than women, it is of no surprise that this pattern emerged in the black husband and white wife marriage combination. This could partly explain why Merton (1941) thought that this exchange pattern is stronger for black husband-white wife pairs than other interracial pairs. But this hypergamy pattern for women who marry up in education was partly due to the differential gender distribution of education and has become less prevalent as women's education increased.

Couples also tend to marry homogenously because persons with equivalent resource are the ones most likely to maximize their rewards (Campbell 1971; Schoen

1986). According to Mare (1991), people have a strong tendency to marry others of a similar educational background and this tendency has been increasing over the last half century. Status homogamy tends to emerge as the most important pattern of mate selection in general and it is of no surprise that homogamy is also strong in interracial marriages. Kalmijn (1998) and Rosenfeld (2005) have identified the theoretical bases for educational homogamy as individual utility maximization, affinity, and propinquity and exposure (See Kalmijn 1998, Rosenfeld 2005 for more details).

Recognizing that the educational homogamy is strong in mate assorting in general and that there will be no "exchange" when intermarried couples have the same educational level, the best way to test status exchange is to examine whether the pattern of non-homogamous educational partnering within interracial marriage is asymmetric; and if it is, whether this educational association pattern is different from that of intraracial marriage. Quasi-symmetry (QS) and its variants are the natural base models for the "no status exchange" hypothesis[4]. Firstly, the educational homogamy has already been accounted for under quasi-symmetry, in which the main diagonal cells that stand for educational homogamy are fitted exactly (perfectly). Secondly, the QS model accounts for the marginal distribution of husband's and wife's education. The symmetry model also fits the main diagonal cells perfectly, but it does not control for the different educational distributions of husband and wife.

Based on the above argument, I proceed to reanalyze Fu's (2001) data, which he claimed to corroborate status exchange by fitting the QS models to the cross-classification table. After conducting a descriptive analysis, I first examine whether the QS pattern truly holds in the black husband & white wife and white husband & black wife pairs. Then I extend the QS model to other interracial as well as intraracial

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[4] In order to test for status exchange, Kalmijn (1993) compared observed hypergamy ratios with the expected hypergamy ratios from loglinear model under quasi-symmetry. He has inexplicitly used QS model as a "no status exchange" for the comparison model.

marriage combinations to see whether the same educational association pattern holds in those cases. To assess the goodness-of-fit, I employ the likelihood-ratio test (LRT) and dissimilarity index.

CHAPTER 4

DATA AND METHODS

Data

I reanalyze Fu's (2001) data table which was derived from the 1990 US census, 5% Public Use Microdata Sample (U.S. Department of Commerce 1993). In it, Fu has linked couples by the state, household serial number, and subfamily number. Only native-born Americans are included to exclude the possible effects of nativity on intermarriage. The "straight line" (linear) assimilation theory (Alba and Nee, 1997) predicts that the foreign-born are less exogamous than the native-born, and that the younger the age at which an immigrant arrives, the more predisposed to intermarriage he or she will be. Although it might not be true from the point of view of non-linear assimilation theory, it tells us that the theories are different for native born and foreign-born Americans (Kalmijn 1991; Kalmijn and Flap 2001).

Fu analyzes the same-race marriage and only whites' marriages with other minorities[5] because relatively few interracial marriages between nonwhite groups are available. Couples under age 35 are selected to reduce marriage survival bias (Cf Fu, 2001 for details). Educational attainments are classified into "less than high school diploma, high school diploma or equivalent, some college but less than bachelor's degree, and bachelor's degree or more" (Fu, 2001, p151).

Advantages and disadvantages of Census data

Census data has been accepted as the most popular data sources for large-scale studies of races and ethnicity in the U.S. for its large nationally representative sample that makes comparison between many race groups possible. Its disadvantages for

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[5] Only non-Hispanic whites, non-Hispanic blacks, non-Hispanic Mexican Americans, and non-Hispanic Japanese Americans are included.

measuring intermarriage are well known as well (Harris and Ono, 2005; Mare 1991). First, census data measures the prevalence rather than the incidence of intermarriage, where demographic variables are measured cross-sectionally. For example, an individual's socioeconomic status is to be included as an explanatory variable for a person's selection of marriage partner. It would be ideal to obtain a measure prior to or at the time of marriage rather than using the current socioeconomic status at the time of survey because it is likely that a person's socioeconomic status changes after marriage. Recognizing this, researchers usually use only educational attainment as an indicator of a person's socioeconomic status since it not only is both highly correlated with occupational status and incomes but also remains unchanged over time. Besides, the use of occupation and income would restrict the sample to only employed persons and this could reduce the sample size and possibly exclude more women from the sample. Education thus is accepted as a reliable predictor of long-term economic well-being (Kalmijn 1993), as it serves as a salient proxy for past and future socioeconomic status of the married individuals under study.

Second, the age at first marriage is not available in most census data (1980 census is an exception) and the census does not ask about prior marriages for currently married couples. Intra-marriages and intermarriages have different assortative mating patterns for first marriage and remarriage (Agresti 2002), it would be ideal to study recent first marriage. Also the passage of time is associated with increasing tolerance for exogamy. To minimize the selection bias caused by remarriage, intermarriages researchers, in practice, limit marriages to those newly-wed young couples since they are more likely to have married relatively recently, and are less likely to have experienced a divorce and remarriage (Fu 2001; Qian 1997; Harris and Ono 2005). As Hwang and Saenz (1990) have noted, Census's prevalence data does not generally specify time and place of marriage which "makes it extremely difficult to view

variations in intermarriage over time or cross-sectional variations between different groups as indicators of differential assimilation or structural variability" (Hwang and Saenz, 1990, p. 564). The cross-sectional data does not allow us to locate whether the intermarried ethnic minorities originally lived in less segregated area or they tend to move out after marriage from ethnic concentrated area to suburban area where the majority of whites live. The longitudinal data that surmount these obstacles which would enable us to draw a causal inference are neither currently available nor likely to be available soon. As a result, the deficiency of the data should be kept in mind when drawing conclusions from this study.

Methods

Log-linear Models

First some notation. For the $I \times I$ square contingency table, let n_{ij} denote the observed frequency in the ith row and jth column of the table ($i=1,2,\ldots,I$; $j=1, 2, \ldots,$ I). Let π_{ij} denote the probability of an observation in cell (i,j) under a theoretical model and μ_{ij} the corresponding expected frequency. The n_{ij} are assumed to have arisen as the result of either multinomial sampling or independent Poisson sampling. Loglinear models are often summarized by local odds ratios which give the odds-ratio for every set of adjacent rows i and $i+1$ and adjacent column j and $j+1$. Each local odds ratio, θ_{ij} , is defined as:

$$\theta_{ij} = (\mu_{ij}\mu_{i+1,j+1})/(\mu_{i,j+1}\mu_{i+1,j}) \qquad (1.1)$$

Let HR, WR, HE and WE denote husband's race, wife's race, husband's education, and wife's education. In the context of educational association in interracial marriages, μ_{ijkl} is the expected number of marriages between husbands in education category i and race k and wives in education category j and race l.

In the next section, I consider various loglinear models for the data of the form:

$$
\begin{aligned}
\log \mu_{ijkl} = {} & \lambda + \lambda_i^{HE} + \lambda_j^{WE} + \lambda_k^{HR} + \lambda_l^{WR} \\
& + \lambda_{ij}^{HEWE} + \lambda_{kl}^{HRWR} + \lambda_{ik}^{HEHR} + \lambda_{jl}^{WEWR} + \lambda_{il}^{HEWR} + \lambda_{jk}^{WEHR} \\
& + \lambda_{ikl}^{HEHRWR} + \lambda_{jkl}^{WEHRWR} \\
& + \lambda_{ijkl}^{HEWEHRWR}
\end{aligned}
\tag{1.2}
$$

When the last term $\lambda_{ijkl}^{HEWEHRWR}$ is omitted, it implies HE and WE are independent for any given racial combination of husband and wife.

The quasi-symmetry model for square tables was first introduced by Caussinus (1966) as an extension of the symmetry model. In this seminar paper, Caussinus showed that the likelihood of a QS model can also be solved by using iterative methods. This paper is often referred to as the first to explain the links between quasi-independence (QI), symmetry (S), quasi-symmetry (QS) and marginal homogeneity (MH). Because of its explicit use of log-linear models and maximum likelihood methods, Causinus' paper had a major influence on the development of log-linear model methodology.

Quasi-Symmetry Model for "No Status Exchange" Hypothesis

Here in the context of educational association, the quasi-symmetry model means that after adjusting for marginal distributions, odds-ratios are symmetric. The main diagonal cells that stand for the educational homogamy are fitted perfectly under the QS model. In the educational classification, quasi-symmetry means that people marry up and marry down in schooling are equally likely, after adjusting for the differences in the prevalence of educational attainment. In this sense, quasi-symmetry is a natural "base" model for the "no status exchange" hypothesis.

Variations on Quasi-symmetry

- **Separate QS/Unrestricted QS**

Separate quasi-symmetry model for each racial combination. It can also be referred to as an unrestricted quasi-symmetry (UQS) model, where the "unrestricted" refers to the fact that the association parameters are allowed to depend on the HR/WR combination, that is, $\lambda_{ijkl}^{HEWEHRWR} = \lambda_{jikl}^{HEWEHRWR}$ for all combinations of i and j.

- **Uniform QS**

Uniform quasi-symmetry model (UniQS) for a collection of racial combinations; that is, all the educational association parameters are the same in each racial combination, $\lambda_{ijkl}^{HEWEHRWR} = \lambda_{ijk'l'}^{HEWEHRWR}$ for all ij pairs. For example, when the UniQS model is fitted to the mixed-race marriage, the educational association parameters has the property of

$\lambda_{ij12}^{HEWEHRWR} = \lambda_{ij21}^{HEWEHRWR} = \lambda_{ij13}^{HEWEHRWR} = \lambda_{ij31}^{HEWEHRWR} = \lambda_{ij14}^{HEWEHRWR} = \lambda_{ij41}^{HEWEHRWR}$ and the local

odds ratios follows the property of $\theta_{ij12} = \theta_{ij21} = \theta_{ij13} = \theta_{ij31} = \theta_{ij14} = \theta_{ij41}$.

CHAPTER 5

ANALYSIS AND RESULTS

In this section, I first present a graphical display of Fu's (2001) cross-classification table of husband' and wife's schooling by husband's and wife's race, which reveals that quasi-symmetry might be a suitable model for the data. Then, I fit various loglinear models[6] for marriage between black husband and white wife (BW[7]), assess the goodness-of-fit of different models, and show the quasi-symmetry (QS) fit the BW subtable reasonably well. I also apply quasi-symmetry to marriage between white husband and black wife (WB) and find that the QS model fits the WB table extremely well. Scrutinizing the educational associational parameters for BW and WB tables, I find they are similar. I then fit the QS model to other racial combinations and find that the QS model fits the data well except for the WW table, for which I will discuss the statistical lack of fit and the practical lack of fit by using dissimilarity index. Based on the similar educational association parameters of the QS model for each racial combination, I finally apply the QS model to the mixed-race and the same-race marriage excluding WW table.

Descriptive Analysis

First of all, I present the cross-classification table of Fu's (2001) in Table 1 and Figure 1. Table 1 is the cross-classification of races and educational attainment in percentage; within each racial combination sub-table, the cell represents n_{ij}/N, where n_{ij} is the observed cell count in Fu's and $N = \sum_i \sum_j n_{ij}$ is the total number of

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[6] See Appendix A for model details.
[7] First letter represents husband's race and second letter wife's race, with W for whites, B for blacks, M for Mexican Americans, and J for Japanese Americans. For example, WB represents the couples in which husband is white and wife is black. There are 10 possible racial combinations: WW, WB, WM, WJ, BW, MW, JW, BB, MM, and JJ (Intermarriages among minorities are excluded).

observations for that sub-table. Figure 1^8 is a graphical display of Table 1, with the size or area of each square proportional to n_{ij}/N. Zero counts in cells (of Fu's) are represented by small open circles.

Using simple tabular analyses, the Bernard study (1966) concludes that the majority of interracial marriages were educationally homogamous. This result is also found in Fu's data. In Figure 1, most of the observations lie on the main diagonal for all sub-tables. This clearly shows a strong educational homogamous pattern for both intra-racial and interracial marriages. From Table 1, the percentage table of this cross-classification, 49.3% of couples in black-white marriage were on the main diagonal, indicating a strong tendency for spouses to match on their educational attainment. Similarly, the percentages of educational homogamy for other interracial marriages are large and all above 50% except for Mexican husband and white wife (49.6%, slightly lower than 50%). In the same race marriages, not surprisingly, the same pattern is observed: 52.9% for white-white marriages, 51.2% for black-black marriages, 52.8% for Mexican-Mexican marriages, and 60.5% for Japanese-Japanese marriages are educationally equal. For marriages involved with Japanese, a large portion of marriages are on the right lower corner of the tables and for marriages involved with the Mexicans, most are on the left upper corners, which indicate that on average, Japanese have higher educational level than Mexicans, and that the educational distribution for Japanese is skewed to the higher-end and that for Mexicans is skewed to the lower-end. When the intermarriages were not similar in educational levels, for example, in the black husband and white wife marriages, 26.6% of the marriages are with black husbands marrying down, whereas 24.2% of the couples have white wife marrying down.

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[8] Halpin and Chan (2003) have used the figure to describe the educational association pattern in Ireland and Britain.

Table 1. CROSS-CLASSIFICATION OF HUSBAND'S AND WIFE'S SCHOOLING BY HUSBAND'S AND WIFE'S RACE (IN PERCENTAGE)

		White Wife				Black Wife				Mexican Wife				Japanese Wife			
		<HS	HS	SC	BA+	<HS	HS	SC	BA+	<HS	HS	SC	BA+	<HS	HS	SC	BA+
White Husband	<HS	4.9	5.1	2.1	0.3	4.0	2.1	2.9	0.2	5.2	4.5	2.2	0.4	0.7	0.9	2.7	0.0
	HS	4.3	20.3	9.8	2.0	3.4	14.5	13.4	1.0	5.5	17.7	9.2	1.1	2.0	8.2	8.0	3.8
	SC	1.5	8.8	14.9	4.5	1.9	7.1	21.6	6.6	2.6	9.3	19.6	3.1	0.7	5.3	17.3	8.0
	BA+	0.2	2.1	6.5	12.8	0.2	1.1	7.4	12.4	0.6	2.4	7.9	8.8	0.0	2.0	9.1	31.3
		N=445,752				N=619				N=3,137				N=450			
Black Husband	<HS	4.9	5.2	2.8	0.2	6.7	5.9	3.8	0.5								
	HS	5.9	17.4	9.0	1.2	5.0	20.7	11.9	2.3								
	SC	2.8	11.7	19.6	5.8	1.9	7.3	18.0	5.0								
	BA+	0.3	1.5	4.4	7.4	0.2	1.1	3.8	5.8								
		N=1,830				N=28,517											
Mexican Husband	<HS	6.8	7.0	2.8	0.3					18.9	10.1	3.7	0.2				
	HS	5.2	16.2	9.9	1.3					9.1	19.1	7.5	0.9				
	SC	2.7	10.3	19.3	5.0					2.7	7.5	12.5	1.9				
	BA+	0.2	1.2	4.4	7.3					0.3	1.0	2.5	2.3				
		N=2,669								N=5,078							
Japanese Husband	<HS	1.8	1.8	1.2	0.0									0.3	0.3	0.3	0.3
	HS	1.5	7.3	4.5	1.2									0.7	5.2	4.8	2.1
	SC	1.8	9.4	23.0	5.5									0.0	5.5	23.7	12.4
	BA+	0.0	3.6	13.3	23.9									0.0	0.7	12.4	31.3
		N=330												N=291			

Data taken from V. K. Fu, 2001 (original source: 1990 U.S. Census 5% PUMS: both spouses under age 35, native-born)
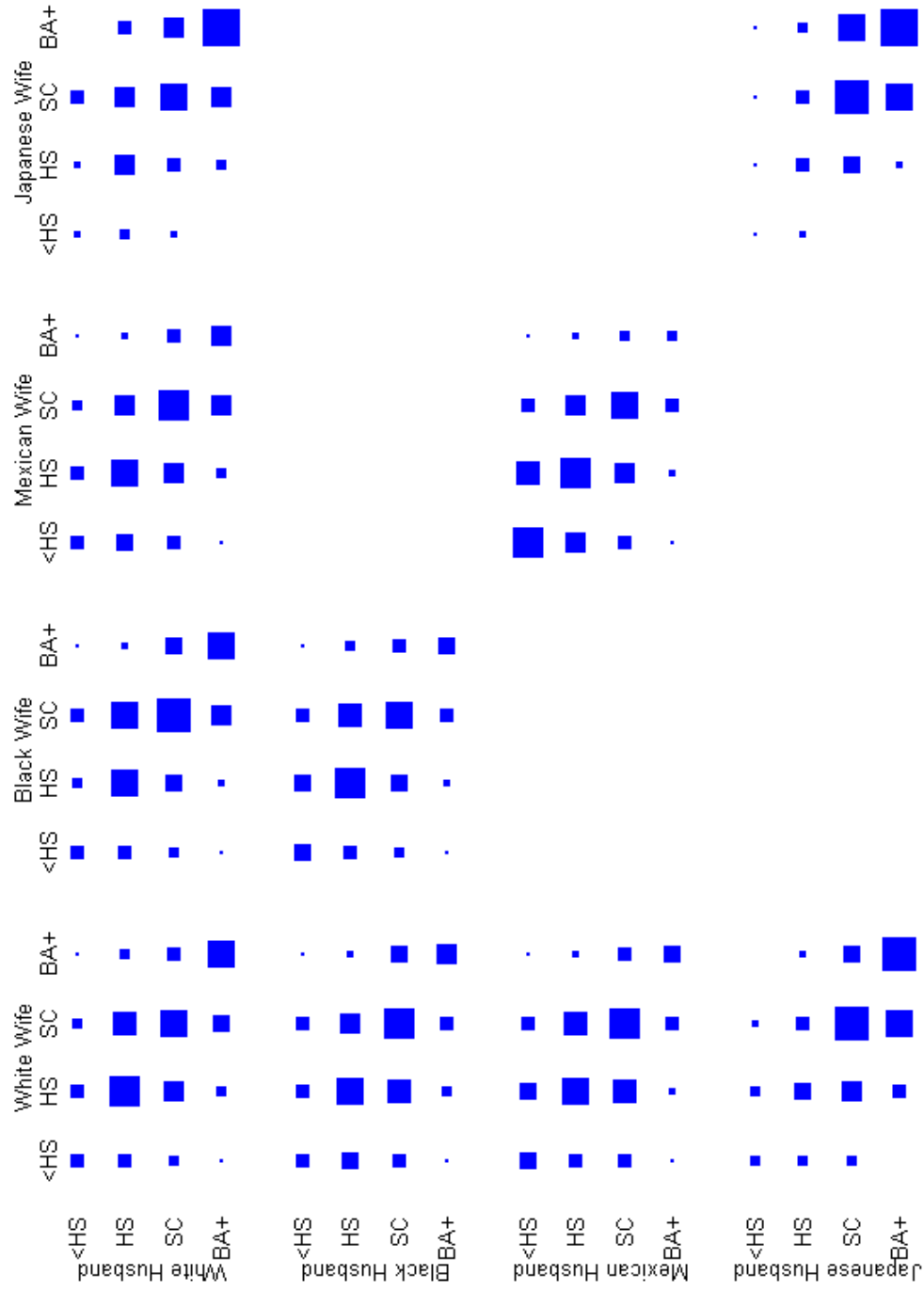
Data taken from V. K. Fu, 2001 (original source: 1990 U.S. Census 5% PUMS; both spouses under age 35, native-born)

Figure 1: CROSS-CLASSIFICATION VISUALIZED

For intermarriage of white and Japanese Americans, the percentages are larger for Japanese marrying down (29.6% for Japanese husband marrying down compared to 14.2% of them marrying up in JW marriage; and 23.4% for Japanese wife marrying down compared to 19.1% of them marrying down). It seems to imply that Japanese spouse is more likely to marry down than his/her white partner. Recognizing the right-skewness of educational distribution for Japanese Americans, the existence of larger proportion of Japanese marrying whites with less educational levels is not surprising in intermarriage between Japanese Americans and whites. However, if we control for the marginal distribution of educational attainment for both whites and Japanese Americans, the difference between hypergamy and hypogamy in term of education will disappear (the QS model that controls for marginal distributions of educational attainment fits the JW and WJ tables well). Off the diagonal, the tendency for matches between husband education HE_i and wife education WE_j is nearly equal to that for matches between HE_j and WE_i, but still shows some asymmetry. For example, for the BW subtable, $n_{12} = 1688$ (5.9%), $n_{21} = 1425$ (5.0%), $n_{23} = 3384$ (11.9%), $n_{32} = 2094$ (7.3%), $n_{34} = 1430$ (5.0%), and $n_{43} = 1072$ (3.8%). However, the marginal distributions of husband and wife's education have not been controlled for yet. When the disparity between the marginal distributions of educational distribution of husband and wife has been accounted for, we would expect a symmetry pattern in this table.

Figure 1 does not control for the marginal distributions of husband's and wife's schooling either. The squares of off-diagonal cells seem to be symmetric along the main diagonal although there may still exist some differences between the area of those cells along the diagonal. Based on the fact that we have not controlled for the marginal distributions of spouses' educational attainment and that the association seen from Figure 1 seems to be symmetric, we expect a quasi-symmetry model that would fit the data well.

Loglinear Models

Selected Models for the BW Table

Table 2 Goodness-of-Fit of Selected Models to Black Husband and White Wife Table

Model	df	L2	p
Independence	9	593.285	0
Uniform	8	57.431	0
Symmetry	6	12.213	0.057
Quasi-independence	5	158.726	0
Ordinal Quasi-symmetry	5	10.198	0.070
Quasi-symmetry	3	3.456	0.326

Table 2 shows the fit of several loglinear models[9] for marriages between black husbands and white wives. The independence model assumes that there is no association between husband's education and wife's education. Clearly, the independence model fits the data poorly here. I contrast the model of quasi-symmetry with that of symmetry, which posits equal frequencies in corresponding cells above and below the main diagonal of each education classification, $\mu_{ij}^{HEWE} = \mu_{ji}^{HEWE}$. The symmetry model improves the fit significantly over that of the independence model, but still shows some lack of fit. The fit of the symmetry model, $L^2 = 12.213$ with df=6, shows that observed frequencies are asymmetric. It is then interesting to see whether this asymmetry can be accounted for by the quasi-symmetry model, where I allow for marginal distributions for husband's and wife's schooling to differ. From the excellent fit of quasi-symmetry ($L^2 = 3.456$ with df=3, with asymptotic p-value 0.326 which well exceeds 0.05.), it shows that the data on BW marriages is consistent with the

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[9] Please see Appendix A for models detail.

hypothesis of no status exchange. The ordinal quasi-symmetry model still shows lack of fit and uniform fits poorly for the BW subtable. So here the QS model fits the BW table pretty well and it suggests that there is no asymmetry of exchange between educational level of black husband and that of white wife.

   Table 3 reports the fitted log local odds ratios for BW table. Since the property $\theta_{ij} = \theta_{ji}$ holds under quasi-symmetry, I only list estimated log local odds ratios in the upper triangle of the table.

Table 3 Estimates, $\log \hat{\theta}_{ij}$, of Symmetric Local Associations Under Quasi-Symmetry for Black Husband and White Wife Subtable

i	j		
	1	2	3
1	1.012	0.174	0.522
2		1.176	0.660
3			1.734

   Now take a close look at the fitted log local odds ratios values. First, the relatively larger figures on the main diagonals (compared to the off diagonal) indicate a strong educational homogamy pattern and it is very difficult for persons to marry across the boundaries between adjacent educational categories. Since $\hat{\theta}_{ii} = (\mu_{i,i}/\mu_{i,i+1})/(\mu_{i+1,i}/\mu_{i+1,i+1}) = (\mu_{i,i} \cdot \mu_{i+1,i+1})/(\mu_{i+1,i} \cdot \mu_{i,i+1})$, it actually describes the ratio of educational homogamous over the educational non-homogamous for the adjacent rows and columns of educational levels. For example, the fitted local odds ratio for high school diploma and some college is $\hat{\theta}_{22} = (\mu_{22} \cdot \mu_{33})/(\mu_{23} \cdot \mu_{32})$ =exp(1.176) =3.241, which states that the odds of a person marries someone with a high school education relative to someone with some college is 3.241 times higher if

the person has a high school education than if they have some college. The bigger the ratio is, the more likely people marry within their own educational category and the more difficult for people to marry across the educational levels. Clearly, $\hat{\theta}_{33} = \exp(1.734) = 5.66$ is the biggest, indicating that the boundary between some college and college degree (and above) is the most difficult for people to cross in terms of one categorical distance. $\hat{\theta}_{33} > \hat{\theta}_{22}$ indicates that the boundary between some college and college degree (and above) is more difficult for a person with some college to cross than the boundary between some college and high school diploma. This is consistent with the finding that groups at the top of the educational hierarchy are more closed than groups in the middle (Uunk et al 1996; Hendrickx 1994 cited in Kalmijn 1998). The biggest of $\hat{\theta}_{33}$ indicates that the strongest boundary is that between college graduates and lesser educated persons. One explanation for this strongest boundary is that colleges function as local marriage markets that are physically separated from settings in which lesser-educated persons are involved. Also people marry later and spend more time in school. The time between leaving school and marriage has narrowed. More likely unmarried people, especially the college educated, meet their spouse in school.

The positive parameters indicate that the further apart the couples' educational attainments, the less likely the marriage. For example, the odds ratio of less than high school diploma and college (and above) is simply the exponential of the sum of the local odds ratios in Table 3 including the lower triangle, which is $\exp(\sum_{i=1, j=1}^{3,3} \theta_{ij}) = \exp(6.634) = 760.51$. It indicates that the odds of a black male marries a white partner with less than high school diploma relative to a white partner with college degree is nearly 761 higher if the black male has a less than high school education than if he has college degree.

Extension to Other Racial Combinations

I then fit the QS model to the white husband and black wife marriage (WB). The excellent fit of QS (L^2 =1.495 with df=3) for WB table also strongly suggests that there is no exchange in the marriage of white husband and black wife. The excellent fit of the QS model for both BW and WB tables indicates that BW and WB follow the same educational association pattern, which is quasi-symmetry in character. This clearly suggests that there is no status exchange among white and black intermarriage.

Actually, I also fit the QS model to other racial combinations (the same-race marriage and the mixed-race marriage between whites and Mexican Americans as well as between whites and Japanese Americans) and find that the QS model fits the data pretty well except for WW table. For WW table, QS model has a residual deviance of 141 with 3 degrees of freedom. It shows a statistically significant lack of fit. However, the lack of fit here might be due to the large sample size since it is difficult to find models that fit the data according to conventional probability levels.

Table 4 presents the observed vs. the fitted counts under QS model for the white-white marriages.

Table 4 Observed V.S. Fitted Frequencies for WW Marriage

Observed					Fitted			
21,802	22,939	9,175	1,171		21,802	22,966	9,261	1,058
19,008	90,470	43,631	9,076		18,981	90,470	44,199	8,535
6,742	39,008	66,462	20,214		6,656	38,440	66,462	20,868
913	9464	28,780	56,897		1,026	10,005	28,126	56,897

Under the quasi-symmetry, the main diagonals of the WW subtable are fitted perfectly, which can be easily seen in Table 4. Off the diagonals, the fitted values deviate slightly from the observed frequencies.

Assess Lack-of-Fit in WW marriages: Statistical but not Practical

To assess whether it is actually practically lack of fit, I will use dissimilarity index (Agresti 2003, p329-330). Dissimilarity index, also called index of dissimilarity or referred to as "Delta" ($\hat{\Delta}$), evaluates the lack of fit by estimating the smallest fraction of the population under study that would need to move to different cells in order for the model to fit perfectly. The statistic is calculated from model residuals and can be taken as a direct interpretation of the magnitude of departures from the model with smaller values representing a better fit ($0 <= \hat{\Delta} <= 1$). It has been widely used in social science as a supplement to the model selection criteria such as those based on the log likelihood. I calculate the Delta under quasi-symmetry model for white-white marriages, which is 0.0045 here. Agresti (2002, p329) argues that when delta<0.02 or 0.03, the sample data follow the model pattern quite closely, even though the model is not perfect. Though the relatively large L^2 value for white-white marriages indicated that the QS model does not truly hold, the small Delta value suggests that, in a practical sense, it fits decently. The reasonably fit of the QS model to each racial combination implies no status exchange.

Variations on Quasi-symmetry

Simply adding the quasi-symmetry fitting for each racial combination, I get the unrestricted quasi-symmetry (UQS) model. By looking at the estimated log local odds ratios[10] for each racial combination under quasi-symmetry, I find values of these parameters are quite close for all these sub-tables. Then I try to fit uniform quasi-

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[10] Upon request, the author will provide the log local odds ratios for each sub-table.

symmetry (UniQS) model to all the tables by the additional restriction that all the educational association parameters are the same in each racial combination, which results a fit of $L^2 = 374.37$ with 84 degrees of freedom. This suggests the UniQS model for all the subtables shows some lack of fit. Thinking that the statistical lack-of-fit might be skewed barely by the large sample size of white-white marriages, I fit separate UniQS models for the mixed-race marriages and the same-race marriages excluding whites. The excellent fit (for the-same race marriages excluding whites, the fit is $L^2 = 29.18$ with df=21; for the mixed-race marriages, $L^2 = 50.327$ with df=48) strongly suggests that the same-race and mixed-race marriages share a broadly similar pattern of educational homogamy, which is quasi-symmetric in character. In addition, the closeness of the fitted log local odds ratios of UniQS models for different racial combinations (see Table 5) strongly indicates that there is a remarkable consistency and symmetry in husband/wife educational attainment regardless of race (with the possible exception of white/white marriages); intermarried couples share a similar level of education, and educational homogamy dominates the educational marriages, no matter how strong the racial endogamy is.

Table 5 Estimates, $\log \widehat{\theta}_{ij}$, of Symmetric Local Associations Under Quasi-Symmetry

Racial combinations	i	J		
		1	2	3
	1	1.510	0.192	0.524
White-White	2		1.264	0.486
	3			1.863
	1	1.504	-0.054	0.379
Same-Race(no WW)	2		1.452	0.350
	3			1.722
	1	1.206	0.153	0.321
Mixed-Race	2		1.247	0.540
	3			1.866

Table 5 presents the log local odds ratios for the uniform quasi-symmetry models for different racial combinations.

CHAPTER 6

DISCUSSION

Based on the above analysis, we claim that the same-race and mixed-race marriage share a broadly similar pattern of educational homogamy, which is quasi-symmetric in character; and that there is little, if any, evidence for the status exchange hypothesis. Furthermore, the evidence strongly indicates that there is a remarkable consistency and symmetry in husband/wife educational attainment regardless of race (white/white marriages may be slightly exceptional).

Here I am not denying race as a salient social distinction that people make in their marriage choices since spouses disproportionately often belong to the same race, but that educational homogamy is strong enough for couples to cross the racial line and that intermarried couples share a similar level of education, and educational homogamy dominates the educational marriages, no matter how strong the racial endogamy is. In fact, most exchange theorists also do not deny the importance of status homogamy (Elder 1969; Goode 1951).

Is Education a Valid Indicator?

Educational attainment affects marital choice in terms of both opportunity and preference. Educational institutions provide settings for intergroup interaction, and educational attainment is believed to have an effect on values, attitudes, knowledge, and life-styles of an individual (Kalmijn and Flap 2001). The prominence of educational homogamy increases in terms of preference and opportunities over time. First, due to the rapid increases in educational attainment in all populations, people's values, norms, and life-styles are more likely at later dates to be formed by common

experiences in educational institutions (Kalmijn 1991; Kalmijn 1991; Kalmijn and Flap 2001). Second, the opportunities for matching on education have increased due to the prolonged numbers of years spent in educational institutions (Mare 1991).

Conclusions and Possible Future Research

In this paper, I have reexamined Fu's data which supposedly support status exchange according to his preferred models. Using the simple QS model and its variations, I show that they actually support no status exchange.

In addition, I have disputed Rosenfeld's claim that simple tabular analysis has been marginalized because of their simplicity by identifying a complex model, the QS model, which indeed supports no status exchange hypothesis rather than status exchange. The apparent contradiction is not real and the contradictory results are really due to the insistence on interpreting models that are not consistent with the data. Loglinear models (the QS models and its variations) that are consistent with the data clearly suggest status exchange is a myth.

Furthermore, I have proposed a new model that better explains the educational pattern in intermarriage. The QS model and its variations bear the natural base for "no status exchange" hypothesis and they are consistent with the data.

The present research suggests several possible future studies. One study could investigate whether the status exchange hypothesis holds true in early 1940s when the racial boundary is exceptionally strong and also investigate whether it holds true in 2000 census data. Perhaps in the era of Merton (1941) and Davis (1941), minority people did compensate their social status for the racial status in interracial marriage. If the status exchange hypothesis did hold true when the group boundary was strong and it is not the case for the more recent data set, it might indicate the weakening of group boundaries in race lines. If the status exchange hypothesis receives no empirical support from the early data set, the justification of its continued use will be

questioned. It might also be interesting to explore how the educational association pattern changes over time and how the educational combination in local marriage market influences people's marital choice.

APPENDICES

APPENDIX A

An $I \times I$ table satisfies symmetry when $\pi_{ij} = \pi_{ji}, i \neq j$. This gives a loglinear model

$$\log \mu_{ij} = \lambda + \lambda_i + \lambda_j + \lambda_{ij,} \tag{A.1}$$

where $\lambda_{ij} = \lambda_{ji}$ for all i and j. In this model, the main-effect terms are the same for the two expected frequencies $\mu_{ij} = \mu_{ji}$, and marginal homogeneity occurs. As commonly believed, the symmetry model rarely fits well, especially when the marginal distributions differ substantially.

The quasi-symmetry model is less restrictive than the symmetry model. It allows the main-effect terms in the symmetry model to differ. I define quasi-symmetry model by $\qquad \log \mu_{ij} = \lambda + \lambda_i^R + \lambda_j^C + \lambda_{ij}, \tag{A.2}$

where $\lambda_{ij} = \lambda_{ji}$ for all $i<j$ with the residual df $=(I-1)(I-2)/2$ (Caussinus 1966).

Agresti (2002, p. 425) also defines the following properties or conditions for the quasi-symmetry model to hold $\qquad \dfrac{\mu_{ij}\mu_{II}}{\mu_{iI}\mu_{Ib}} = \dfrac{\mu_{ji}\mu_{II}}{\mu_{jI}\mu_{Ia}}$ for all $i < j$ $\tag{A.3}$

or $\qquad\qquad\qquad\qquad \theta_{ij} = \theta_{ji}, \tag{A.4}$

that is, the odds ratios on one side of the main diagonal are identical to corresponding odds ratios on the other side

When $\lambda_i^R = \lambda_i^C$ for $i = 1,...,I$, it becomes the usual model of symmetry, and when all λ_{ij}=0, it's the independence model. Under such conditions, Caussinus's (1966) showed that the symmetry model is equivalent to the quasi-symmetry model and marginal homogeneity holds simultaneously, thus

$$\text{symmetry} \equiv \text{quasi-symmetry+marginal homogeneity.} \tag{A.5}$$

Special cases of quasi-symmetry:

Quasi-independence

Quasi-independence is the special case of quasi-symmetry when $\{\lambda_{ij} \ for \ i \neq j\}$ are identical, and when I=3, they are equivalent (Caussinus, 1966). It has a perfect fit on the main diagonal, but independence holds for the off-diagonals. Usually this model would be used for tables that should be independent on the off-diagonal cells, but have large counts on the main diagonal.

$$\log \mu_{ij} = \lambda + \lambda_i^R + \lambda_j^C + \delta_i I(i = j), \tag{A.6}$$

$$\text{where } I(i = j) = \begin{cases} 1, & i = j \\ 0, & i \neq j. \end{cases}$$

Ordinal Quasi-symmetry Model

When categories are ordered, I can fit a more parsimonious model. Let $u_1 \leq \ldots \leq u_I$ denote ordered scores for both the rows and columns. An ordinal quasi-symmetry model is

$$\log \mu_{ij} = \lambda + \lambda_i + \lambda_j + \beta u_j + \lambda_{ij}, \tag{A.7}$$

where $\lambda_{ij} = \lambda_{ji} \ for \ all \ i < j$. It is the special case of the quasi-symmetry model in which $\lambda_j^C - \lambda_j^R = \beta u_j$ has a linear trend. When $\beta = 0$, it becomes the symmetry model.

Quasi-uniform Association (Goodman 1979)

$$\log \mu_{ij} = \lambda + \lambda_i^R + \lambda_j^C + \beta u_i u_j + \delta_i I(i = j) \tag{A.8}$$

permits linear-by-linear association off the main diagonal. When scores are equally intervaled, it has uniform local association, given that the responses differ.

Appendix B
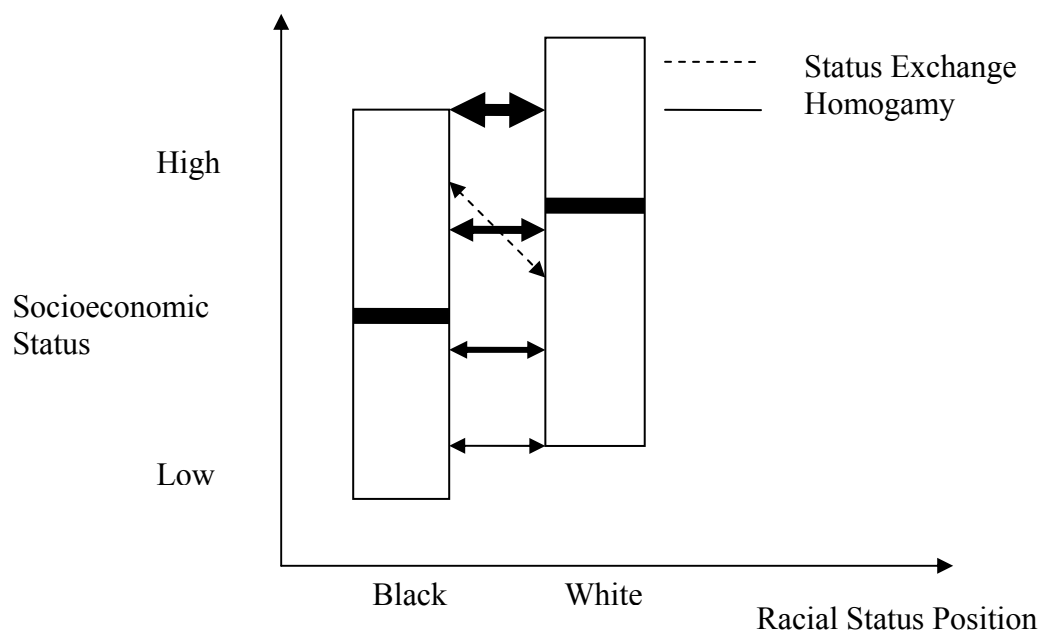

Figure 2 Educational Patterns in Black-White Intermarriage

Rosenfeld (2005) has visualized the black-white intermarriage pattern; however, he did not include in his figure the strength of intermarriage in term of educational level. So here Figure App. B shows educational patterns in black-white marriages, which has also taken advantage of Gullickson's (2004) visualizations. The thick solid lines inside the box represent the median educational level. The dark arrows between the two groups represent educational homogamy with upper arrows thicker than the lower ones, which indicates the greater propensity for blacks and whites at higher educational levels to form interracial marriages; while downward sloping dashed arrow indicates status exchange.

As Rosenfeld (2005) has argued, in the climate of inequality between whites and blacks, homogamy can be mistaken for exchange because of the incomplete

information about the interracial couples due to the taboo of intermarriage and social distances between blacks and whites (see also Rosenfeld 2005). For example, in Figure 2, the second solid line between the black and white groups represents an educationally homogamous marriage. So in this intermarriage, both spouses have the same socioeconomic level. However, from the view of "lower status" blacks, people with relative higher SES marry out (it's above the median educational level); while from whites' perspective, people with relative lower SES (below the median of white educational level) marry out.

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