Educational homogamy of Mexicans in Mexico and in the USA:

What difference does gender, generation, ethnicity, and educational attainment make in marriage patterns?

Albert ESTEVE Palós,
Centre de Estudis Demogràfics, Universidad Autónoma de Barcelona
aesteve@ced.uab.es

Robert McCAA,
Minnesota Population Center, University of Minnesota
rmccaa@umn.edu

ABSTRACT. This paper examines the patterns of educational homogamy of the Mexican population in the United States with the objective of contrasting them with those observed in Mexico and with those of Non-Hispanic Whites (*NHW*) in the United States. By taking as a point of reference these two populations we seek to observe how the migration experience, the change of context, the transformation from an ethnic majority to a minority, even though the largest in the United States, alters the role played by education in the formation and composition of unions. Do the Mexican born resident in the USA reproduce the same patterns of educational homogamy as Mexicans in Mexico? Do they adapt? Assimilate? What differences can we observe among those of Mexican ancestry between those born in Mexico and in the United States? Are there significant differences by gender? How do marriage patterns change over time?

INTRODUCTION. Educational homogamy is our focus, although for obvious reasons, we must take into account ethnic endogamy and intermarriage. In a context where the Mexican population is not the majority and where differences in ethnicity are apparent in multiple dimensions, it should be expected that education will play a somewhat different role than in those contexts where the population is a majority and where educational attainment is once of the most significant social distinctions. We are pursuing then, a rather singular objective, one that is absent from most research on this subject. A large part of the literature on educational homogamy is centered exclusively on analyzing the patterns in a single national context, usually taking as a reference the majority population. Little research compares educational homogamy of populations across borders. Much more abundant, then, are studies of intermarriage between racial groups or ethnicities, especially in the United States. Studies in which Latino populations, among them Mexicans, may be subjects of analysis, and in which education is incorporated as an explanatory variable typically associated with the level of intermarriage. These associations have given rise to various theories as to how educational attainment alters endogamic propensities toward unions within individual ethnic groups.

The paper is divided into five parts. In the first, we develop the theoretical elements that provide the basis for our research questions, taken on the one hand from the principal theories regarding educational homogamy, and on the other, from theories of ethnic/racial intermarriage concerning interactions between education and ethnicity. In the second part, we present empirical evidence, paying special attention to studies of educational assortative mating in Mexico as a point of departure for comparing our own findings. Third, we describe our data and methods. The fourth section discusses the results drawn from the more suggestive models, including specific interaction parameters. Finally, we offer some conclusions and points for further discussion.

BACKGROUND AND HYPOTHESES. Educational Assortative Mating. Nuptial coupling, the formation of a marital union, is subject to the basic principles that articulate the whole of social relations, the principle of homophily, that like marries like, that persons with similar characteristics are more disposed to marry than persons with dissimilar characteristics (McPherson et al. 2001). The workings of homophily in the process of mate selection gives rise to unions that are endogamous and at the same time homogamous, that is to say that the similarities of the spouses are due to both ascribed and acquired characteristics. When two people of different ethnic origins are joined the resulting union tends to erode over subsequent generations the sense of group belonging and to diminish negative attitudes toward other groups. Along the same line, given the evident correlation between educational attainment and socioeconomic status, especially in developing societies, interaction between educational groupings may be read as code of the degree and rigidity of social stratification.

A consensus exists that the fact that individuals of similar characteristics tend to mate, which as a matter of the logic of probability, is equivalent to saying that more endogamous and/or homogamous unions will occur than what would be expected as a matter of chance. This homogeneity, which validates the principle of homophily, has been examined in a wide variety of contexts and characteristics, ascribed and acquired, including religion (Johnson 1980), ethnicity (Pagnini and Morgan 1990, McCaa 1993), socioeconomic status (Kalmijn 1991), education (Mare 1991, Blackwell 1998, Smits 2003) and occupation (Hout 1982).

The greater or lesser influence of these characteristics in the formation of conjugal unions has given rise to diverse theoretical formulations. The tension between ascribed and acquired characteristics has been the object of debate among social scientists. The expansion of educational opportunities together with economic development confer upon schooling, an acquired characteristic par excellence, a preponderant role in the configuration of conjugal preferences, which, in turn, is associated with the declining importance of ascribed features.

In turn, in contemporary societies, where dating and mating choices are imminently individualistic, these accentuate the declining influence of family, religion, and the state in their roles in sanctioning unions.

From the internal logic of marriage choice, in economic terms, scientists have examined, on the one hand, the opportunity costs of forming a union (or not) and, on the other, the opportunity costs of forming a union with another candidate. In terms of education, there exist two major lines of interpretation regarding the role of education in influencing conjugal choice. Their difference resides in the consideration of asymmetrical conjugal preferences by males and females, which in turn, leads to two distinct configurations of marriage.

In the first place, according to the theory formulated by the economist Gary Becker (1974), marriage is one institution in which individuals complement one another, each providing distinct characteristics and capacities, which, in general are classified on whether they belong to the productive or reproductive sphere of the family, divided between men and women, respectively. Under this assumption, the attributes which the man or the woman should possess to be a candidate for marriage should be different, as, also, should the age at which these attributes are attained. For the man, for example, women will value his capacity of success in the productive sphere, in function of his level of education and professional situation before marriage, both characteristics being essentially acquired. For the woman, on the other hand, ascribed characteristics such as religion, social origins, and ethnic background, will be the ones most valued by men. Such asymmetry in conjugal preferences would support the class pattern of female hypergamy, in which the woman has a level of educational attainment below that of her spouse, and the traditional age difference between spouses favors the man as the older. This formulation of marriage encounters serious challenges once women become incorporated into the labor market, educational achievement is universalized, and the gender differences in educational attainment are reduced or even reversed.

In the second place, and without explicitly questioning the benefits associated with marriage, Oppenheimer (1988) argues that the increase in economic independence of women will have an effect on conjugal choice, since this will increase the level of expectations, delaying, if necessary, the act of marriage until an appropriate candidate is found. This change will erode the traditional asymmetry between men and women in relation to their preferences in the selection of a mate. Both sexes enter the marriage market enveloped with similar anxieties, associated with the transition to adulthood and with the perspective of uncertain prospects in the labor market. Faced with this uncertainty, education acts as an excellent reference point to judge the prospects of likely candidates—leaving aside emotion, love, affection and other unreasonable considerations! In summary, if the preferences of the most highly educated is observed in both sexes to the same degree, educational assortative mating will increase: the most educated will marry predominantly among themselves because they enjoy a privileged position in the marriage market. Those will less education to adapt a similar metric.

From a third perspective, not based on the social or economic logic of marriage, prolonged schooling, associated with the expansion of educational opportunities, will also result in greater homogamy according to educational attainment. School, in the broadest sense of the word, is an excellent marriage market, because it brings together persons of both sexes, the same ages and similar worries. Upon increasing years spent in the educational system, the probability of finding a mate among one's school companions increases, especially for university students. The longer the time frame between leaving the educational system and entering into a union, the lower the probability of forming a homogamous union (Mare 1991). If the delay in the age at marriage is the result of a longer stay in the educational system, homogamy will increase for those who spend the longest time in the system, and therefore, attain the highest levels. In summary, desire and opportunity become allies for the most educated, favoring unions among them.

In conclusion, if, on the one hand, gender symmetry is observed in the constellation of preferences and, on the other, the time between the completion of school and the formation of unions is reduced, an increase in homogamy should be expected among the most educated as well as among the least. Meanwhile, among the intermediate groups, where the dispersion of educational attainment is greatest, grades and diplomas are not so important, leading to reduced homogamy.

Education and Ethnicity. The validity of the theoretical arguments sketched to this point are conditioned by the ethno-demographic context of the marriage pool. In heterogeneous contexts, due to ethnicity or religion, education conforms with other individual characteristics in the configuration of conjugal preferences, which in turn are highly influenced both by individual decisions as well as by the affinity between groups, and the direct influence of families (Kalmijn 1998). Thus, in the context of the present study, with its focus on Mexicans born in Mexico and Mexican origin population born and resident in the United States, we must not forget the fact that Mexicans constitute an ethnic minority, the largest in the United States, but a minority all the same.

With respect to the propensity of minorities in the United States to marry within or outside their ethnic group, there exists an abundant literature in the social sciences (Alba and Golden 1986, Pagnini and Morgan 1990, McCaa 1993, Qian 1991, Rosenfeld 2002, Jacobs and Labov 2002. A large fraction of these studies turn to the theory of assimilation to find working hypotheses. When assimilation is of a structural type, according to Gordon's typology (1964), this produces primary group affiliation between members of the minority groups and for the majority (e.g., mixed marriages). This celebration of mixed marriages is understood, then, as key to the structural assimilation between groups. Experience indicates that the propensity to form mixed marriages by members of the minority group is conditioned by various factors, among them birthplace, generation of migration, educational attainment, socio-economic status, and facility in speaking the majority language. But these factors do not exercise the same influence among all minorities, nor do all minorities, when out-marriage occurs, take a partner from the majority group. Some authors have interpreted this evidence to formulate a theory of "segmented assimilation theory" (Portes 1993). In effect, minorities exist in which the second generation (that is, children of immigrants) do not show a markedly higher propensity of intermarriage compared with the first generation. Or it has also been observed that among the more highly educated intermarriage is not greater, as the conventional theory of assimilation predicts. In any case, the experience of Mexicans in the United States does not seem to confirm the segmented assimilation theory, but rather assimilation in its classic form (Rosenfeld 2002).

For example, taking into account spatial assimilation—the geographical proximity of the minority group with the majority—the influence of the differences between the first and subsequent generations and between the different levels of educational attainment follow in consistent form the classic model of assimilation in the case of the Mexican population (South et al. 2005). With respect to intermarriage, rates of mixed marriage by the second generation and among those with the highest levels of schooling are in agreement with the classic model of assimilation (Lee 2005, McCaa et al. 2006). Second and subsequent generations display reduced propensities to unions within their own group and a similar tendency is observed among the more highly educated, especially among university graduates. Indeed, the theory predicts that with greater schooling, individuals tend to value acquired characteristics over ascribed ones. An example of this is the proportion of the most highly educated from ethnic minority groups, for whom greater schooling brings with greater exposure to other groups and reduced ties to the group of origin (Qian et al 2001, Okun, 2001). If greater exogamy (greater propensity to mixed marriages) which is observed among the most highly educated is the result of greater opportunities to find a mate outside one's group of origin, is this due to the characteristics of the university as a marriage market, or is it the result of the workings of social exchange hypothesis. This is a question that invites attention.

If a greater or lesser propensity to intermarriage of minority group members by generation or socio-economic status, as predicted by the classic model of assimilation, does not alter the preferences of individuals for a spouse with one or another educational profile, the patterns of educational homogamy will not be altered by this fact. That is to say, if the Mexican born with university studies resident in the United States have a higher propensity towards intermarriage but continue to prefer that their spouses also have the same level of training, as would be expected in a homogeneous ethnic and religious context, the observed patterns of educational assortative mating will be independent of the ethnicity of the members of the union. Nevertheless, if the Merton thesis (1941) regarding "social exchange" is true, then individuals who belong to a minority ethnicity expects to use socio-economic status as an element of exchange or counterweight to the social disadvantages derived from ethnic or racial condition. With respect to differences of gender, Merton's theory predicts that men will be more inclined to intermarry in all minorities in which they have more resources than their sisters. If the hypothesis of social exchange is supported, we should expect that educational homogamy among Mexicans with a greater level of studies should be lower than those with reduced educational achievement or with females of the same level, given that it is known that among all ethnic minorities men earn more than women.

In summary, to the extent that structural assimilation through marriage is attained following the logic of social exchange, this will alter the patterns of homogamy observed by the minority group, here the Mexican population in the United States, compared with the patterns observed for the same populations resident in Mexico.

EMPIRICAL EVIDENCE. Theoretical arguments regarding educational assortative mating have been examined, and in the majority of the cases validated, in countries such as the

United States (Mare 1991), Spain (Esteve and Cortina 2005), France (Forsé and Chauvel 1995), United Kingdom (Halpin and Chan 2003), Norway (Birkelund y Heldald 2003), Czech Republic, Slovakia and Hungary (Kartnák 2005), and including some developing countries such as Mexico and Brazil (Solís 2003, Esteve y McCaa 2005). On an international scale and in comparative perspective, the literature is scant. The most remarkable is the work of Smits el al. (2003), in which the authors compare levels of educational assortative mating from the data for more than four dozen countries with differing levels of development. From the results of this international comparison the authors formulate a theory that relates educational homogamy with the level of economic development of a country. In a developing country, educational homogamy increases as a result of the importance that education acquires in a context of economic growth. But, when the levels of well-being spread widely to the population as a whole, the majority of subsequent cohorts attain ever higher levels of schooling and thus the correlation weakens between education and socio-economic position. Education will no longer act as a referent in the process of mate selection. Nonetheless in countries with the highest levels of development, such as the United States, educational homogamy continues to be high and with a tendency to reinforce itself (Schwartz y Mare 2005). As a matter of fact in the majority of countries where data are available, on the one hand we find a tendency of diminishing homogamy on a global scale in recent decades. This is due in part to the expansion of educational opportunities but there is also a greater tendency toward homogamy specifically at the extremes of the educational hierarchy similar to what Schwartz and Mare identified for the United States during the last three decades. The authors related the increase in homogamy among the highest educated with i) the continual increase in the number of men and women with university studies, ii) the decrease in the time between the completion of studies and the formation of nuptial unions, and iii) a greater symmetry between men and women in terms of their conjugal preferences. At the lower end of the educational hierarchy, we also find some similarities between countries. The evidence shows that the frontiers, least permeable to unions between educational groups, are situated at the extremes of the educational distribution.

Among heterogamous unions, the ubiquity of feminine hypergamy—those unions in which the wife has a lower level of studies than her husband—has diminished to an important degree in recent times. This diminution is observed in practically all the research in which authors specifically consider this phenomenon. In the United States, differences by gender in educational homogamy between Non Hispanic Whites has disappeared (Qian 1998). Extinction of female hypergamy is observed in Spain as well (Esteve and Cortina 2005). Once again, the reduction and even the inversion of the traditional educational difference between men and women in marriage is due to the reduction of gendered differences in educational attainment and also in the emerging gender symmetry in conjugal preferences.

Educational Assortative Mating in Mexico. The authors of this paper have reported in previous work the topic of educational assortative mating in Mexico for the period 1970-2000 using data and methods analogous to those employed here. These decades are characterized by a strong expansion of schooling in Meixco, an increase in the advances in education and a progressive reduction in differences by gender in educational attainment. The most significant achievements are observed in primary education, but also the population with secondary and university education is expanding rapidly, although at the higher levels gendered differences persist and in spite of substantial progress social inequalities continue to be reproduced due to unequal access to education (Mier, Rocha y Rabell 2003). The proportion of individuals never attending school diminished significantly between 1970 and 2000, from 60% to 20% for both sexes. For both sexes, the greatest proportional increases are observed at the highest levels (post-secondary to post-graduate education). In three decades, the proportion of men with university studies increased eight percentage points from 5.1% in

1970 to 13.2% in 2000 compared with a seven point increase for women over the same period to 8.3%. Proportionally differences by gender contracted sharply, although absolute differences increased slight.

The returns from education are increasing markedly over time. In terms of opportunity costs, from the perspective of the parents, investing in the education of sons and daughters provides a greater and greater return. The striking increase in female labor force participation rates confirms this assessment. Increased schooling has contributed to the growth in female economic activity (Garcia and Oliveira 1994), above all among the most educated and this in turn improves the return on resources dedicated to the education of daughters, favors the further reduction of differences by gender (Parker and Perderzini 1999).

As a result of the expansion of education, the proportion of homogamous unions has diminished in recent years, falling below 50% in the recent census. The proportion of hypergamic couples is greater than hypogamic pairings. Despite the decrease in homogamic unions, a result of the diversification of educational opportunities, the analysis of specific levels of homogamy, free from the disturbing effects of unequal distribution of educational attainments by sex, shows that, first, that homogamy remains the basic rule at all levels, and is accentuated among the most educated. Secondly, over the same period, the rule of female hypergamy is nearing its end. The results for Mexico confirm to a great extent our initial hypothesis regarding educational homogamy: it increases among the most educated and remains strong among the least educated while the traditional propensity toward female hypergamy is eroded.

DATA AND METHODS. The sample. Our data come from the 5 % *Integrated Public Use of Microdata Samples (IPUMS)* of the United States for 1980, 1990 and 2000. The structure of the data is simply a cross-classification of all nuptial unions, regardless of status, for each census by ethnicity or ethnic origin of husband and wife (*Mexican born, Mexican Origin,* y

Non Hispanic White) and by years of schooling completed (<9, 9-11, 12, 13-15, 16+). Only couples that are enumerated as living in the same household are considered because the census microdata do not provide a means for linking husbands and wives that are leaving apart. We have chosen exclusively unions in which both spouses are characterized by one of the following characteristics: Mexican by birth, Mexican by origin or ancestry (born in the United States) and Non Hispanic White. These three categories are constructed from a combination of three census variables: birth place, Hispanic origin, and race. Mexican born are those born in Mexico and whose Hispanic origin is also "Mexican". "Mexican Origin" are those whose Hispanis origin is "Mexican", but are born in the United States. Finally, Non Hispanic White, as the label indicates, are those who declared race as white and whose origin is anything other than "Hispanic".

The census is a source that relates to a moment in time and not to the life course. Thus, years of schooling refers to educational attainment at the moment of the census, therefore could have varied since the date of marriage. Nevertheless, we think that this fact, determined by the availability of the data, does not bias significantly our results since educational attainment typically does not vary a great deal once married. To restrict the possible sources of bias, we have adopted a practice common to this sort of study of limiting our analysis to couples where one of the spouses is aged 30-39 years at the time of the census. Limiting our research to a ten year age grouping has the added advantage of avoiding the overlapping of cohorts in successive censuses. It is certain, nevertheless, that with this strategy we underestimate the number of ethnically mixed couples because they tend to marry at somewhat more advanced ages than the norm. The fact that marital status is not known at the time of migration is also a limitation of the source. We cannot distinguish unions that occurred before immigration from those occurring afterward, because none of the censuses ask for the age at marriage. To minimize this bias, we exclude those unions in which the age of immigration to the United

States for both spouses is 20 years or older. In other words, of those born in Mexico we only consider couples where both resided in the United States before the age of 20. Another possible bias stems from the fact that couples from mixed backgrounds are more likely to separate at younger ages than others, and thus the incidence of homogamous unions is slightly exaggerated. This is another argument for our limiting the analysis to couples that are relatively young.

Table 1 displays the basic characteristics of husbands and wives of the cases selected for this study. Each couple has the common denominator that at least one of the spouses was aged 30-39 years old, that at least one resided in the United States before the age of 20, and that both spouses belonged to one of three groups: Mexican born, Mexican origin, or Non Hispanic White. Table 1 shows the distribution and evolution between 1980 and 2000 for each ethnicity distinguished by sex and the relative distribution by level of educational attainment for each of the groups. The number of Mexican born increases notably between 1980 and 2000, so much so that for men their numbers exceed, for the first time, the number of Mexican origin. The table indicates that the number of unions in which one or another has the spouses was born in Mexico jumped by five and seven times, for men and women, respectively. Unions in which at least one spouse was of Mexican Origin also increased between 1980 and 2000, but the growth was not constant nor as rapid as for the Mexican Born. Indeed, between 1990 and 2000, the number of unions in which the man was of Mexican origin actually decreased while that of women remained stable. From the point of view of the numerical variations between men and women, the figures show that the effective difference between Mexican born men and Mexican born women narrows in relative terms between 1980 and 2000. The difference is always in favor of the men, with a shortage of females of 10-20 percentage points. In contrast, among the Mexican Origin the effective difference is favorable for women in all the years. As expected, among the Non Hispanic White these differences are not so important.

With respect to educational attainment, the differences by ethnicity are striking. Mexican Born shows the worst levels of schooling and Non Hispanic Whites the best, by a large distance. As recent as 2000, the high school completion rate (12 or more years of schooling) for Mexican Born was scarcely 40% compared with almost 85% for Mexican Origin and 95% for Non Hispanic Whites. In spite of these difference, improvements were shown by all the groups over the three censuses. Among Mexican Born those completing less than 9 years of schooling from from 55 to 40% for the men and from 47 to 39% for the women. For those of Mexican Origin the improvement was considerably better from 22% to less than 5% for both men and women, a level similar to Non Hispanic Whites in 1980. In 2000, 99% of Non Hispanic Whites completed 9 or more years of schooling, indeed 95% graduated from high school. The most important notion to retain from this is that there are great differences between the three groups and that these must condition patterns of educational homogamy. On the other hand, it is also important to consider that if the two Mexican groups are considered as one, sex ratios at the various levels of educational attainment are more or less in balance. In other words, the marriage market of Mexicans for the United States as a whole would seem to be in equilibrium by sex and the educational profiles are such that the demand for spouses could be satisfied by Mexican candidates.

Descriptive Indicators of Educational Assortative Mating. Table 2 reports the relative distribution of unions, for each one of the ethnic combinations and each census, by type: homogamous (within the same level of educational attainment), hypergamous (wife has less education than the husband) and hypogamous (husband has less than the wife). Two points stand out. First, homogamy is the rule, accounting for 40-60% of all pairings regardless of ethnicity with a couple of borderline exceptions. Over the decades the rule weakens for endogamous unions of the Mexican Born (from 58 to 48%), but it grows stronger for those of Mexican Origin (43 to 47%) and Non Hispanic Whites (48 to 53%).

Second, among the Mexican Born we note an increase in the proportion of heterogamous unions, with hypergamous and hypogamous unions equally divided. For Mexican Origin and Non Hispanic Whites, the share of hypergamous unions is greater than hypogamous unions in 1980 and 1990, but constitute a smaller fraction in 2000.

Third, ethnically mixed, or exogamous, pairings tend to be more heterogamous than endogamous unions, although this is not true for all combinations in all years. In general terms, hypergamy is greater than hypogamy for all the exogamous combinations below the diagonal, that is where the husband is Mexican Origin or Non Hispanic White and the wife is Mexican Born or Origin. In contrast, hypogamy is the rule above the diagonal. The largest proportions of hypergamy (where the wife has fewer years of schooling than the husband) is observed in pairings of Non Hispanic White men with Mexican Born women (46% in 1980, declining to 40% in 2000). These results are consistent with those reported in Table 1, which showed differences by educational attainment for the three ethnic groupings. It is logical to find that, given that the Non Hispanic White population has educational attainment levels much greater than those of Mexican Born that unions between these groups would be mainly hypergamous when the woman is Mexican Born and hypogamous when it is the man. Next, we turn to log linear models to analyze patterns of educational homogramy free from the effects of the marginal distributions by level of education and ethnicity.

Models of Educational Assortative Mating. Log linear models offer the possibility of examining relations between two or more variables controlling for their marginal distributions. If couples formed without consideration of educational attainment, the total number of unions would be conditioned solely by the frequencies of men and women by their years of schooling completed. If the data confirm this scenario, we conclude that educational attainment is not an important consideration in the marriage market. Of course, both common sense and the empirical evidence tell us the contrary. Years of schooling is a determining factor in the process of mate selection. For this reason, it is necessary to specify models, that beginning with statistical independence, generate frequencies that approach the observed, but without so many specifications that we arrive at a fully saturated model, with as many parameters as combinations in the table and therefore no explanatory power at all. Between the independence and saturated models, there exist a number of formulations that can be used to test various hypotheses regarding educational homogamy, controlling for the ethnicity of the spouses as well as the census year. To assess the goodness of fit of models we use the *Likelihood Ratio* (G^2) statistic and the *Bayesian Indicator Criteria* (*BIC*).

FINDINGS. Table 3 shows the structure and the results of the principal best-fitting models, as ascertained by means of G^2 y el *BIC* (Raftery 1986). In both cases, the smaller the value of the indicator, the better the fit, and therefore the better the explanatory power of the model.

Model 1, independence, assumes that the frequency of each combination of unions is determined solely by the total number of men and women with given characteristics, that is, by the year of the census, ethnicity, and the level of schooling attained. This model controls for the frequencies of each of the variables considered, and therefore assumes that the distribution of unions is wholly a matter of chance. As the table shows, of all the models examined, independence offers the worst fit (BIC_1 = 1983121.0). Model 2 adds the presence of association between the ethnicity of the spouses, on the one hand, and, on the other, between the level of educational attainment, with no variation over time. The sharp improvement in fit as measured by both G^2 and BIC, confirms the strong association of both these factors in influencing conjugal choices (BIC_2 = 3478.7). Model 3 builds on this to take into account both ethnic endogamy (D_{et}) and educational homogamy (D_{ed}) as they vary in time[1]. The inclusion of these parameters improves the fit considerable, confirming the strong effects of endogamy and homogamy (BIC_3= 527.2). Model 4 tests whether endogamy varies in time, if the effects of the level of study of males differs from that for females, and if homogamy by level of study varies in function of the ethnicity of the man and the women, separately. These factors yield a tight fitting model (BIC_4= -3850.8), indeed, the first that we have examined where the BIC becomes negative, signaling an acceptable fit. This model confirms the hypothesis that homogamy by level of study is conditioned by the ethnicity of the spouses and that endogamy is conditioned by the educational attainment of both spouses. Along the same line, model 5 builds on 4 to examine each of the variations in endogamy for each of the possible combinations between the level of study of the man and woman, and also examines homogamy by grades of schooling for each one of the combinations of ethnicity for both husband and wife. This model offers the possibility not only of learning if men and women have the same odds of forming a homogamous union in function of their ethnicity but also of ascertaining how this propensity varies where the pair has the same level of schooling, or the wife has more schooling than her husband, or vice-versa. With this slight variation from model 4, a significantly better fit is obtained (BIC_5= -5076.3). This is the most efficient model of all those considered. Model 6 represents a unsuccessful attempt to go beyond model 5, to take into account, jointly, variations in specific parameters of endogamy and educational homogamy in function of the type of union and the year. Despite the fact that G^2 yields values even lower than those of model 5, BIC indicates that this complication lessens the efficiency

[1] Topological structure of the Homogamy and Endogamy parameters

Educational Homogamy parameters (D_{ed})

		Wives				
		<9	10-11	12	13-15	=> 16
Husbands	<9	1	7	0	0	0
	10-11	6	2	0	0	0
	12	0	0	3	0	0
	13-15	0	0	0	4	9
	=> 16	0	0	0	8	5

Endogamy parameters (D_{et})

		Wives		
		Mexican Born	Mexican Origin	Non Hispanic White
Husbands	Mexican Born	1	0	0
	Mexican Origin	0	2	0
	Non Hispanic White	0	0	3

of the model and so is not to be preferred to model 5. It also indicates that temporal variation in specific parameters of endogamy and homogamy should be incorporated into the model as separate elements and not mixed with the type of union.

Models 7 through 9 uses an alternative strategy to approximate the observed distribution of unions in function of the analyzed variables using defined hypotheses: the hypothesis of symmetry (S_{et}, S_{ed}). Until models 3-6, this second set of models is not centered on unions along the diagonal of the tables, but instead focuses on the off-diagonal cells, where the man and women do not have the same level of study nor ethnic origins[2]. In this case, we observe if symmetry exists on both sides of the diagonal, if the occurrence of unions for a specific combination of heterogamous unions is the same independent of whether it is the man or the women who has the higher level of studies. Model 7 tests whether symmetry varies in time. Model 8 assumes that symmetry varies for each combination of schooling and that symmetry in the heterogamy of schooling varies for each combination of ethnicity of the spouses. Upon introducing this test, model 8 drastically reduces the BIC, compared with model 7. We can therefore conclude that symmetry is significant both in terms of exogamy and heterogamy, and that this varies in function of the type of union (BIC_7= 570.4 vs BIC_8= -4639.0). Finally model 9 ads a parameter of asymmetry[3] (A_{ed}) in the heterogamy by level of studies, with the

[2] Topological structure of the Symmetry parameters

Symmetry parameters in heterogamous unions (S_{ed})

		Wives				
		<9	10-11	12	13-15	=> 16
Husbands	<9	-	1	2	3	4
	10-11	1	-	5	6	7
	12	2	5	-	8	9
	13-15	3	6	8	-	10
	=> 16	4	7	9	10	-

Symmetry parameters in exogamous unions (S_{et})

		Wives		
		Mexican Born	Mexican Origin	Non Hispanic White
Husbands	Mexican Born	-	1	2
	Mexican Origin	1	-	3
	Non Hispanic White	2	3	-

[3] Topological structure of the Assymetry parameter

hypothesis that hypergamy is more frequent than hypogamy. The inclusion of this parameter variable in time and for each combination of ethnicity of the spouses slightly improves the fit, reflecting the existence of a certain gender asymmetry in the case of educational heterogamy (BIC_9= -4971.7)

Of all those examined, model 5 offers the best fit. From this we pick some parameters to examine in detail. First are the specific parameters for educational homogamy for each combination of the ethnicity of spouses and year. Second, are the specific endogamy parameters for each year and combination of schooling. Questions relative to gender differences are also reported (therefore there is no need to present parameters from model 9).

Table 4 reports these parameters in the form of log odds, with zero as the reference value. Positive values indicate a greater propensity for unions of the specified type and negative ones the opposite. Two principal points stand out. First, we note a general increase in homogamy over time at all levels of the educational hierarchy and all combinations of ethnicity. In 2000, practically all the homogamy parameters are greater than those for 1980. Second, the pattern of homogamy by educational level varies according to the ethnicity of the spouses. The greatest differences are observed in groups with the lowest educational attainment and the smallest for the most highly educated. If we look only endogamous pairings (same ethnicity/origin for both spouses), we find that when both spouses are Non-Hispanic Whites, homogamy by educational level follows the classic, expected form of a "U": greater educational homogamy at the extremes and lower at the intermediate levels between the lowest educational groups (e.g., ${}_{1,1}\alpha_{W,W}^{2000} = 2{,}15$, ${}_{2,2}\alpha_{W,W}^{2000} = 0{,}92$, ${}_{3,3}\alpha_{W,W}^{2000} = 1{,}24$, ${}_{4,4}\alpha_{W,W}^{2000} = 0{,}43$,

Asymetry parameters in heterogamous unions (S_{ed})

		Wives				
		<9	10-11	12	13-15	=> 16
Husbands	<9	-	-	-	-	-
	10-11	1	-	-	-	-
	12	1	1	-	-	-
	13-15	1	1	1	-	-
	=> 16	1	1	1	1	-

${}_{5,5}\alpha_{W,W}^{2000} = 2{,}36$)[4]. In contrast, when both spouses are born in Mexico, homogramy increases with the level of studies. The least schooled (<9/<9) even show negative log odds (${}_{1,1}\alpha_{M,M}^{2000} = -2{,}04$). As the other extreme (=>16 / =>16) the values are not only positive but greater than for the same combination of Non-Hispanic Whites in the USA (${}_{5,5}\alpha_{M,M}^{2000} = 4{,}05$*)*. Among the Mexican Origin the pattern is similar to that for NHW. It is the intermediate groups which display values approaching zero.

In summary, specific levels of homogamy for the least educated display greater variation in function of the ethnic pairings of the spouses than the most educated. In other words, ethnicity conditions educational homogamy, above all among those with the least schooling.

Table 5 reports endogamy parameters for each combination of educational attainment of the spouses. In other words, we shift the focus to examine how endogamous propensities vary in function of the similitude or difference in educational attainment between the spouses. The results show, first, that endogamy increases over time among both the Mexican Born and the Non-Hispanic Whites, but not among those of Mexican Origin. The fact that the endogamous propensities for this group are substantially lower for all levels of educational attainment validates the hypothesis of assimilation.

Second, if we focus on the pairings in which both spouses are Mexican Born we observe that endogamy is greatest among the least educated, even when one of the pair has completed some university studies. In contrast, endogamy is lowest when both have completed the highest levels of schooling. Among the Mexican Born endogamy declines as educational attainment for both husband and wife rises (e.g., ${}_{M,M}\alpha_{1,1}^{2000} = 3.86$ vs. Among Non Hispanic Whites the opposite occurs: those with the highest degree of education also show the highest

[4] Schooling: 1, < 9; 2, 9-11; 3, 12; 4, 13-15; 5 => 16. Ethnicity/Origin: M, *Mexican Born*; O, *Mexican Origin*; W, *Non Hispanic White*. Census year: 1980; 1990; 2000.

rates of endogamy (e.g., ${}_{W,W}\alpha_{1,1}^{2000} = 3.42$ vs. ${}_{W,W}\alpha_{5,5}^{2000} = 4.43$). For those of Mexican Origin, there are no significant differences in endogamy rates by level of educational attainment.

Third, we observe how endogamy varies in function of the type of heterogamy of the pair, that is, if the male have more or less education than the female. Among the Mexican Born, when there is female educational hypergamy (wife has less education than the husband), endogamy is greater. Among Non Hispanic Whites, the opposite is observed: endogamic propensities are greater when the couple is hypogamous (wife has more education). What does this mean? When Mexican born women marry up, with someone of more schooling, they are more likely to marry endogamously than a Mexican born male. In contrast, when Non Hispanic White women marry up, they are like to marry more exagamously than a Non Hispanic White Male. The same pattern is observed for those of Mexican Origin.

Finally, to conclude the analysis of endogamy, we think it opportune to present Table 6 as a means of summarizing the findings from Table 5. Table 6 shows, independent of the educational level of the spouses, the log odds ratio for each combination of ethnicity of spouses, including out-marriage, which is not described in Table 5. The endogamy/exogamy parameters of Table 6 have been drawn from an *ad hoc* model, as follows: Independence (model 1) + YEAR*ETH*ETW + EDH*EDW + YEAR*D_{ed} + ETH*ETW*D_{ed}). For purposes of clarity, we did not include this model in Table 3, as part of the model selection process. While this model is not parsimonious, the parameters derived from it are useful heuristic devices for summarizing propensities of ethnic in- and out-marriage from census to census. This model not only provides a reasonably good fit (G^2 = 3413.9; df = 484; BIC = -3877.7), more importantly it offers a set of parameters—log odds ratios—for all the combinations of ethnicity of spouses. It is readily apparent that there is a strong tendency to mate within groups, as shown by the larger values on the diagonal. The most endogamic are the Non Hispanic White followed by the Mexican Born and in last place those of Mexican origin. In terms of evolution over time, the endogamy of Non Hispanic Whites decreases slightly while endogamy among the Mexican Born increases slightly.

In terms of the exogamic combinations, two aspects stand out. First, within the Mexican community—Mexican Born and Mexican Origin—affinities are greatest within these two groups. Non Hispanic Whites, in terms of propensities, are a less attractive option. In 1980, postive values are observed for the following combinations: Mexican Born/Mexican Origin (0.23) and Mexican Origin/Mexitcan Born (0.15), which diminish to the point of almost zero between 1990 and 2000. Between 1980 and 2000 distances are fore-shortened between Non Hispanic White and those of Mexican Origin. If we compare the values to both sides of the diagonal, we confirm that there are no marked differences, that is to say, that there is no gender asymmetry. Thus, for example, for the Mexican Origin, the fact of being male or female has no affect on the likelihood of marrying a Non Hispanic White nor does it diminish the affinity between these groups.

SUMMARY AND CONCLUSION. Our analysis of educational homogamy in the United States of Mexicans by birth and Mexicans by ancestry, we have observed that the patterns differ not only from Non Hispanic Whites but also from Mexicans residing in Mexico. This shows that the change of context, combined with the fact that the Mexican community is a minority in the United States, alters considerably how education affects the formation of couples and the selection of mates.

Compared with the situation in their country of origin, to which we have aluded in the introduction to this paper, Mexicans in the United States demonstrate a level of educational attainment superior not only to those of Mexican Origin but also to Mexicans in Mexico. Not surprisingly, gender differences in the United States are not as marked as those in Mexico. The proportions of homogamous and hetergamous unions observed in Mexico and the United States are not directly comparable because these are based on slightly differing classifications of educational attainment. What can be compared is the fact that in Mexico hypergamous unions in which wives have less schooling than their husbands remain a majority, while in the United States there are practically no differences in the proportion of hypergamous and hypogamous unions regardless of whether they are Mexican Born or of Mexican ancestry. With regard to specific levels of homogamy in the United States, from a close reading of the log-linear models, important differences remain between the Mexican born and Mexican ancestry. Then too, the pattern of homogamy observed in Mexico is more similar to that of Non Hispanic Whites in the United States than to the Mexican Born. In effect, in Mexico as in the United States for the Non Hispanic Whites, a strong pattern of homogamy is observed at both extremes of the educational hierarchy, with a growing tendency among the university population. Homogamy is significantly lower at middle levels of educational attainment. This pattern alters when we focus on unions of the Mexican Born in the United States. In this case, homogamy shows an ascending pattern by level of education. In so far as unions among the Mexican Origin are concerned, the variation in homogamy by educational level is about halfway between the model for the Mexican Born and Non Hispanic White, with a striking gravitation toward the latter, a strong signal of assimilation.

The comparison of the homogamy patterns of the Mexican Communities and Non Hispanic Whites in the United States offers interest elements for discussion, due in part to the obligatory inclusion of ethnicity. In effect, the results from model 5 have permitted us compare the variations of homogamy and endogamy conditioned respectively on the type of union according to the ethnicity and the level of educational attainment of the spouses. Given the notable differences in the latter between Mexican Born, Mexican Ancestry, and Non Hispanic Whites, which, without doubt are expressing inequalities beyond merely matters of education, the results lead to three principal conclusions:

First, education has an unequal role in the ethnic pairings of spouses and it is precisely among the lower grades of schooling where the most important differences are observed in terms of nuptial propensities within one's own educational level. At the other end of the educational spectrum, the propensity to mate with someone of the same educational profile is quite high for all ethnic combinations. In other words, ethnicity, in particular being born in Mexico, conditions the propensity of educational homogamy, above all, for those with the least amount of schooling. From our sample of the 2000 census, almost sixty percent of Mexican born husbands and wives resident in the United States had not completed high school, compared with barely five percent of Non Hispanic Whites and fifteen percent of those of Mexican ancestry.

Second, our findings for the population of Mexican ancestry support the hypothesis of assimilation. Thanks to educational successes similar to those of Non Hispanic Whites, also the levels of homogamy, hypergamy and hypogamy differ systematically from the Mexican Born population and approach those of Non Hispanic Whites. The major difference between those of Mexican ancestry and the other groups is the observed propensities of endogamy, which are clearly negative for all combinations of levels of study and further evidence of a greater inclination to form unions outside their group.

Third, endogamy varies in function of the combination of educational attainment of the spouses. At higher levels of study, endogamy diminishes among the Mexican Born but increases among Non Hispanic Whites. These results are congruent with Merton's social exchange hypothesis, but also with the fact that among the university educated the Mexican born find greater opportunities to marry outside the group. With respect to gender, when Mexican women marry within their group it is with a higher propensity than for men of their group. Exactly the opposite occures for Non Hispanic White women. These results suggest clear gender assymmetry, not only within the same group but between groups as well.

Our results leave a number of aspects open for future research. Probably one of the most interesting is the following: why is educational homogamy among Mexican born negative at the lower levels? Does it mean that at the lowest levels of educational attainment, it is ethnicity and not education that governs the process of mate selection? Does it mean that the Mexican Born in the United States, with a low level of schooling, has a manifest propensity to pair with a person of higher educational attainment though within the same ethnicity, given the high propensity toward endogamy found in the data. Does it mean that Mexicans by birth are bound by strong ethnic propensities and because their levels of educational attainment are extremely low the best option is to marry someone with more schooling but from the same ethnicity?

REFERENCES

ALBA, R. D.; GOLDEN, R. M., 1986. "Patterns of Ethnic Marriage in the United States". *Social Forces.* 65(1): pp. 202-223.

BECKER, G., 1974. "A theory of marriage" in SCHULTZ, T.W. (ed.) *Economics of the family.* Chicago-Londres: University of Chicago Press, pp.299-344.

BIRKELUND, G. E.; HELDAL, J., 2003. "Who Marries whom? Educational Homogamy in Norway". *Demographic Research (Max Planck Institute).* 8(1).

BLACKWELL, D. L., 1998. "Marital homogamy in the United States: The influence of individual and parental education". *Social Science Research.* (127): pp. 159-188.

ESTEVE, A.; CORTINA, C., 2005. "Homogamia educativa en la España contemporánea: pautas y tendencias". *Papers de Demografia.* 257.

ESTEVE, A.; McCAA, R., 2005. "Homogamia Educacional en México y Brasil, 1970-2000: Pautas y Tendencias". *XXV International Population Conference.* IUSSP. Tours.

ESTEVE, A., 2005. "Tendencias en homogamia educacional en México: 1970-2000". *Estudios Demográficos y Urbanos*. 59/20(2).

FORSÉ, M.; CHAUVEL, L., 1995. "L'évolution de l'homogamie en France". *Revue française de sociologie.* XXXVI: pp. 123-142.

GARCÍA, B.; OLIVEIRA, O., 1994. *Trabajo femenino y vida familiar en México,* Ciudad de México, El Colegio de México.

GORDON, M., 1964. *Assimilation in American Life*. Oxford University Press.

HALPIN, B.; CHAN, T. W., 2003. "Educational homogamy in Ireland and Britain: trends and patterns". *British Journal of Sociology.* 54(4): pp. 473-495.

HOUT, M., 1982. "The association between husbands' and wives' occupation in two-earner families", *American Journal of Sociology*. 87: pp. 397-409.

JACOBS, J.A.; LABOV, T. 2002, "Gender Differentials in Intermarriage Among Sixteen Race and Ethnic Groups", *Sociological Forum*, 17:(4): pp 621-646.

JONHNSON, R.A., 1980. *Religious assortive mating in the United States,* Academic Press, New York.

KALMIJN, M., 1991. "Status Homogamy in the United States". *American Journal of Sociology.* 97: pp. 496-523.

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

KATRNÁK, T., 2005. "Educational Assortative Mating in the Czech Republic, Slovakia and Hungary between 1976 and 2003". *Working paper.*

KNOKE, D.; BURKE, P., 1980. *Log Linear Models*, Beverly Hills, Sage Publications.

LEE, S.; EDMONSTON, B., 2005. "New marriages, new families: U.S. Racial and Hispanic Intermarriage', *Population Bulletin*, 60:(2).

MARE, R. D., 1991. "Five decades of assortative mating". *American Sociological Review*. 56(1): pp. 15-32.
McCAA, R., 1993. "Ethnic intermarriage and gender in New York City". *Journal of Interdisciplinary History.* 24(2): pp. 207-231.
McCAA, R.; ESTEVE, A.; CORTINA, C., 2006. "Marriage Patterns in Historical Perspective: Gender and Ethnicity" in UEDA, R. (ed.) *A companion to American Immigration.* London, New York: Blackwell, pp.359-370.
McPHERSON, M.; SMITH-LOVIN, L.; COOK, J. M., 2001. "Birds of a feather: Homophily in social networks". *Annual Review of Sociology.* 27: pp. 415-444.
MERTON, R.K., 1941 “Intermarriage and the social structure: Fact and theory”. *Psyquiatry.* 4: pp. 361-374.
MIER, M.; ROCHA, T.; RABELL, C., 2003. “Inequalities in Mexican children’s schooling”, *Journal of Comparative Family Studies.* 34(3): pp. 435-460.
OKUN, B. S., 2001. "The Effects of Ethnicity and Educational Attainment on Jewish Marriage Patterns: Changes in Israel, 1957-1995". *Population Studies.* 55(1): pp. 49-64.
OPPENHEIMER, V. K., 1988. "A Theory of Marriage Timing". *The American Journal of Sociology.* 94(3): pp. 563-591.
PAGNINI, D. L.; MORGAN, S. P., 1990. "Intermarriage and social distance among U.S. immigrants at the turn of the century". *American Sociological Review.* 96: pp. 405-432.
PARKER, S.W.; PEDERZINI,C., 1999. “Gender differences in education in México”, in KATZ, E.G., CORREIA, M.C., *The Economics of Gender in Mexico*, Washington, The World Bank, pp. 9-42.
PORTES, A.; ZHOU, M., 1993. "The New Second Generation: Segmented Assimilation and Its Variants among Post-1965 Immigrant Youth". *Annals of the American Academy of Political Sciences.* 53: pp. 75-98.
QIAN, Z., 1998. "Changes in Assortative Mating. The Impact of Age and Education, 1970,1990.". *Demography.* 35(3): pp. 279-292.
QIAN, Z.; LICHTER, D. T., 2001. "Measuring Marital Assimilation: Intermarriage among Natives and Immigrants". *Social Science Research.* 30: pp. 289-312.
RAFTERY, A.E. 1986 “Choosing models for cross-classifications”. *American Sociological Review,* 51: pp.145-146.
ROSENFELD, M. J., 2002. "Measures of assimilation in the marriage market: Mexican Americans 1970-1990". *Journal of Marriage and the Family.* 64: pp. 152-162.
SCHWARTZ, C.; MARE, R. D., 2005. "Trends in Educational Assortative Marriage from 1940 to 2003". *Demography.* 42(4): pp. 621-646.
SMITS, J., 2003. "Social closure among the higher educated: trends in educational homogamy in 55 countries". *Social Science Research.* 32(3): pp. 251-277.
SOLÍS, P., 2003. “Homogamia en Monterrey: cambios y continuidades después de 35 años”, *VII Reunión de Investigación Demográfica en México*, Guadalajara, XII-2003.

Table 1. Characteristics of the population in marital unions in which at least one of the spouses resided in the United States before the age of 20 and was aged 30-39 years at the time of the census. Data are reported by sex, census year, and ethnicity/origin by years of schooling completed in percentages.

	Husbands			Wives		
	1980	1990	2000	1980	1990	2000
Mexican Born						
< 9	54.5	49.9	40.2	46.4	42.6	38.5
9-11	13.0	12.9	18.1	15.6	16.2	19.3
12	16.5	19.0	25.4	25.1	23.6	26.3
13-15	10.4	13.3	12.0	9.8	14.2	12.6
>= 16	5.7	4.8	4.2	3.1	3.4	3.3
Total	100	100	100	100	100	100
N	4515	10957	24814	2900	7491	20918
Mexican Origin						
< 9	22.1	6.7	4.3	21.8	7.6	4.8
9-11	18.0	13.4	11.6	21.5	15.0	11.8
12	30.1	35.7	36.3	39.0	39.5	34.8
13-15	19.3	32.2	33.4	12.9	29.1	34.4
>= 16	10.5	12.1	14.5	4.9	8.9	14.2
Total	100	100	100	100	100	100
N	15591	20053	18675	17001	22694	22563
Non Hispanic White						
< 9	5.9	1.9	1.2	3.5	1.2	0.8
9-11	9.8	6.0	5.2	11.2	5.7	4.1
12	35.6	31.0	31.4	46.8	35.2	28.9
13-15	20.3	31.2	30.9	20.3	33.4	34.8
>= 16	28.4	29.8	31.3	18.3	24.5	31.4
Total	100	100	100	100	100	100
N	613294	688987	586231	613500	689812	586238

Source: IPUMS-USA

Table 2. Marital unions by year, ethnicity/origin of the spouses and by type of endogamy (homogamy, hypergamy, hypogamy) in percentages.

	1980			1990			2000		
	Mexican Born	Mexican Origin	Non Hispanic White	Mexican Born	Mexican Origin	Non Hispanic White	Mexican Born	Mexican Origin	Non Hispanic White
Homogamy									
Mexican Born	57.8	44.0	35.5	52.9	34.8	35.1	48.1	35.2	38.8
Mexican Origin	41.6	42.7	43.2	41.8	46.9	47.3	41.4	47.4	50.0
Non Hispanic White	40.9	39.7	48.5	43.4	46.8	51.0	43.1	50.8	53.2
Female Hypogamy									
Mexican Born	20.0	37.2	40.6	25.5	47.9	44.4	26.5	46.6	45.5
Mexican Origin	17.1	23.4	22.8	19.3	24.1	24.9	21.1	27.6	29.0
Non Hispanic White	13.0	15.7	19.3	13.1	18.9	21.5	17.0	20.5	25.6
Female Hypergamy									
Mexican Born	22.2	18.9	23.9	21.7	17.3	20.5	25.3	18.2	15.7
Mexican Origin	41.4	33.9	34.0	38.9	29.0	27.8	37.5	25.0	21.0
Non Hispanic White	46.1	44.6	32.2	43.5	34.3	27.5	39.9	28.7	21.3

Table 3. Likelihood-Ratio Chi-Square Statistics for selected models of educational homogamy and ethnicity/origin

	G^2	df	BIC
1. YEAR*ETH*EDH + YEAR*ETW*EDW + YEAR*ETH*EDW + YEAR*ETW*EDH	2963087.2	540	1983121.0
2. 1 + ETH*ETW + EDH*EDW	11496.4	520	3478.7
Diagonal Models			
3. 2 + YEAR*D_{et} + YEAR*D_{ed}	8229.8	504	527.2
4. 2 + YEAR*D_{et} + EDH*D_{et} + EDW*D_{et} + YEAR*D_{ed} + ETH*D_{ed} + ETW*Ded	2877.2	468	-3850.8
5. 2 + YEAR*D_{et} + EDH*EDW*D_{et} + YEAR*D_{ed} + ETH*ETW*D_{ed}	1621.1	460.0	-5076.3
6. 2 + YEAR*EDH*EDW*D_{et} + YEAR*ETH*ETW*D_{ed}	1004.8	408	-4921.4
Symmetry Models			
7. 2 + YEAR*S_{et} + YEAR*S_{ed}	8292.4	503	570.4
8. 2 + YEAR*S_{et} + EDH*EDW*S_{et} + YEAR*S_{ed} + ETH*ETW*S_{ed}	2049.8	458	-4639.0
9. 8 + YEAR*A_{ed} + ETH*ETW*A_{ed}	1530.8	446	-4971.7

Note: YEAR = census year, ETH = ethnic group husband, ETW = ethnic group wife, EDH = education husband, EDW = education wife, D_{et} = diagonal specification ethnicity, D_{ed} = diagonal specification education, S_{et} = symmetry specification ethnicity, S_{ed} = symmetry specification education, A_{ed} = asymmetry specification education.

Table 4. Log-odd ratios for educational homogamy by year and ethnicity, Model 5.

	1980			1990			2000		
	Mexican Born	Mexican Origin	Non Hispanic White	Mexican Born	Mexican Origin	Non Hispanic White	Mexican Born	Mexican Origin	Non Hispanic White
<9 / <9									
Mexican Born	-2.31	-1.40	-1.68	-2.14	-1.23	-1.50	-2.04	-1.13	-1.41
Mexican Origin	-1.23	-0.03	-0.91	-1.06	0.14	-0.74	-0.96	0.24	-0.64
Non Hispanic White	-1.83	-0.94	1.88	-1.66	-0.76	2.05	-1.56	-0.66	2.15
10-11 / 10-11									
Mexican Born	-1.85	-1.28	-1.45	-1.77	-1.20	-1.37	-1.73	-1.15	-1.33
Mexican Origin	-1.17	-0.41	-0.97	-1.09	-0.33	-0.89	-1.05	-0.29	-0.84
Non Hispanic White	-1.55	-0.98	0.80	-1.47	-0.90	0.88	-1.43	-0.86	0.92
12 / 12									
Mexican Born	0.15	0.37	0.30	0.22	0.43	0.37	0.26	0.47	0.41
Mexican Origin	0.41	0.69	0.48	0.47	0.75	0.55	0.51	0.79	0.59
Non Hispanic White	0.27	0.48	1.13	0.33	0.54	1.20	0.37	0.58	1.24
13-15 / 13-15									
Mexican Born	2.40	2.00	2.12	2.30	1.90	2.02	2.24	1.85	1.97
Mexican Origin	1.93	1.41	1.79	1.83	1.31	1.69	1.77	1.25	1.64
Non Hispanic White	2.19	1.80	0.58	2.09	1.70	0.48	2.04	1.65	0.43
=> 16 / =>16									
Mexican Born	3.97	3.61	3.72	4.02	3.66	3.77	4.05	3.68	3.80
Mexican Origin	3.54	3.05	3.41	3.59	3.10	3.46	3.61	3.13	3.48
Non Hispanic White	3.78	3.42	2.28	3.83	3.47	2.33	3.86	3.49	2.36

Table 5. Log odds ratios for endogamous unions by year and years of schooling completed, model 5.

	1980					1990					2000				
	<9	10-11	12	13-15	=> 16	<9	10-11	12	13-15	=> 16	<9	10-11	12	13-15	=> 16
Mexican Born / Mexican Born															
<9	2.96	2.56	2.09	2.53	2.71	3.53	3.14	2.67	3.11	3.28	3.86	3.47	3.00	3.43	3.61
10-11	3.30	3.35	2.42	2.76	2.92	3.87	3.93	2.99	3.33	3.50	4.20	4.25	3.32	3.66	3.83
12	2.37	2.59	3.01	2.84	2.80	2.95	3.17	3.58	3.41	3.37	3.27	3.50	3.91	3.74	3.70
13-15	2.78	2.97	2.89	2.39	2.59	3.36	3.55	3.46	2.97	3.16	3.68	3.87	3.79	3.29	3.49
=> 16	2.98	3.33	2.99	2.37	2.36	3.55	3.91	3.57	2.94	2.94	3.88	4.24	3.90	3.27	3.26
Mexican Origin / Mexican Origin															
<9	-0.75	-0.55	-0.31	-0.53	-0.62	-1.24	-1.04	-0.80	-1.02	-1.11	-1.52	-1.32	-1.08	-1.30	-1.39
10-11	-0.92	-0.94	-0.48	-0.64	-0.73	-1.41	-1.44	-0.97	-1.14	-1.22	-1.69	-1.72	-1.25	-1.42	-1.50
12	-0.45	-0.56	-0.77	-0.69	-0.67	-0.94	-1.06	-1.26	-1.18	-1.16	-1.22	-1.34	-1.54	-1.46	-1.44
13-15	-0.66	-0.75	-0.71	-0.46	-0.56	-1.15	-1.24	-1.20	-0.95	-1.05	-1.43	-1.52	-1.48	-1.23	-1.33
=> 16	-0.76	-0.94	-0.76	-0.45	-0.45	-1.25	-1.43	-1.26	-0.94	-0.94	-1.53	-1.71	-1.54	-1.22	-1.22
Non Hispanic White / Non Hispanic White															
<9	3.31	3.97	4.77	4.03	3.73	3.38	4.04	4.84	4.10	3.80	3.42	4.08	4.88	4.14	3.85
10-11	2.72	2.64	4.22	3.65	3.36	2.80	2.71	4.29	3.72	3.43	2.84	2.75	4.33	3.76	3.48
12	4.30	3.92	3.22	3.51	3.58	4.37	3.99	3.30	3.58	3.65	4.41	4.03	3.34	3.62	3.69
13-15	3.61	3.28	3.42	4.26	3.93	3.68	3.35	3.49	4.34	4.01	3.72	3.39	3.53	4.38	4.05
=> 16	3.27	2.67	3.24	4.30	4.32	3.35	2.74	3.31	4.38	4.39	3.39	2.78	3.36	4.42	4.43

Table 6. Log odds ratio for endogamous unions by year

	1980			1990			2000		
Husbands/Wives	Mexican Born	Mexican Origin	Non Hispanic White	Mexican Born	Mexican Origin	Non Hispanic White	Mexican Born	Mexican Origin	Non Hispanic White
Mexican Born	1.55	0.23	-1.79	1.69	0.07	-1.77	1.80	-0.03	-1.77
Mexican Origin	0.15	0.88	-1.04	0.06	0.82	-0.88	-0.05	0.81	-0.76
Non Hispanic White	-1.71	-1.12	2.83	-1.76	-0.89	2.65	-1.76	-0.78	2.53