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# Interethnic Marriage Decisions: A Choice between Ethnic and Educational Similarities

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## Non-Technical Abstract

This paper examines the effect of education on intermarriage and specifically, whether the mechanisms through which education affects intermarriage differ by immigrant generation and race. We consider three main paths through which education affects marriage choice. First, educated people may be better able to adapt to different customs and cultures making them more likely to marry outside of their ethnicity. Second, because the educated are less likely to reside in ethnic enclaves, meeting potential spouses of the same ethnicity may involve higher search costs. Lastly, if spouse-searchers value similarities in education as well as ethnicity, then they may be willing to substitute similarities in education for ethnicity when evaluating spouses. Thus, the effect of education will depend on the availability of same-ethnicity potential spouses with a similar level of education. Using U.S. Census data, we find evidence for all three effects for the population in general. However, assortative matching on education seems to be relatively more important for the native born, for the foreign born that arrived at a fairly young age, and for Asians. We conclude by providing additional pieces of evidence suggestive of our hypotheses.

Keywords: Ethnic intermarriage, Education, Immigration
JEL Classification: J12, I21, J61

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# 1 Introduction

There is a large literature on whether immigrants in the U.S. today are assimilating at the same speed and through the same processes as immigrants in the past. Much of this literature either directly or implicitly points to the importance of social integration in their economic assimilation. Because the racial and educational composition of the newest wave of immigration differs so much from the native population, an important question is whether this social integration is becoming more difficult.

Traditionally, social scientists have measured social integration using residential segregation [for example, Duncan and Lieberson (1959) and Lazear (1999)]. However, a growing number of papers consider a different measure: *interethnic marriage*. This paper examines the effect of education on intermarriage and specifically, whether the mechanisms through which education affects intermarriage depend on how assimilated a person is and his or her race.

In a series of papers, Borjas (1992, 1995, 1998, 2006) shows theoretically and empirically how ethnic capital, or the average skill level in an ethnic group, affects the productivity of workers in the next generation. He finds that although part of this human capital externality is simply a proxy for the average human capital in the neighborhoods in which the children of immigrants grow up, ethnic capital also has its own independent effect (Borjas, 1995). Children growing up in the same neighborhood may have different outcomes depending on their ethnic group simply because they are more exposed to people who share their ethnic background.

As suggested by Borjas' work, immigrants choose with whom to associate. Since these choices could potentially depend on their levels of human capital, it is important to examine how education affects ethnic attachment. If, for example, immigrants with high education levels do not associate with co-ethnics, then they will not be affected by the ethnic externality and their human capital will not contribute to the externality. We show in this paper that the relationship between education and ethnic attachment also depends on the average skill level of a person's ethnic group as well as his degree of assimilation and race.

This paper measures a person's ethnic attachment by looking at whom he decides to marry. Certainly, inhabitants of ethnic enclaves have many fellow ethnics in their social circles and so are more likely to marry someone with the same ancestry even just by chance. At the same time, the ethnic preferences of people living far from an enclave yet remaining closely attached to their ethnic groups, can still be captured by their marriage to someone of the same ethnicity. In fact, because communication and transportation costs have decreased so much in the past century, the ethnic composition of one's neighborhood may have become relatively less important in predicting the ethnic composition of one's social circle. Surely, marriage to someone from the same country of origin remains an important measure of ethnic attachment since it is not only a result of

having many fellow ethnics in one's social circle, but also a cause. In fact, intermarriage has been referred to as the "final step" in the immigrant assimilation process (Gordon 1964).

Ethnic intermarriage has long been studied by sociologists,[1] but a growing number of economists have also started considering its causes and consequences. Bisin and Verdier (2000) present a theoretical analysis of the role of an ethnic group's share of the population on intermarriage decisions while Furtado (2006) examines the mechanisms through which education affects intermarriage. Meng and Gregory's (2001) paper on the causal effects of intermarriage on earnings of immigrants in Australia led to similar analyses for the U.S. (Kantaravic, 2004) and France (Meng and Meurs, 2006). Using various identification strategies, Furtado (2007), van Ours and Veenman (2007) and Celikaksoy *et al*. (2006) as well as Skyt Nielsen *et al*. (2007) examine the effects of intermarriage on education levels of immigrants or their children in the U.S., the Netherlands, and Denmark, respectively. Another paper (Duncan and Trejo, 2006), uses the negative relationship between human capital and intermarriage rates for Mexican Americans along with the finding that children with intermarried parents are less likely to be identified as Mexican to suggest that observed measures of intergenerational progress for Mexican Americans may be biased. Card *et al*. (2000) use intermarriage rates as a measure of intergenerational assimilation rates of immigrants. Angrist (2002) uses changes in immigration policy in the U.S. as a source of exogenous variation to explain the endogamy rates of second-generation immigrants in the U.S.

Adapted from Wong's (2003) explanations for the scarcity of black-white interracial marriages, Furtado (2006) presents three mechanisms through which education could affect marriage choice: the *cultural adaptability effect*, the *enclave effect*, and the *assortative matching effect*. The cultural adaptability effect assumes that people prefer to match with someone who shares a similar culture. As did Lazear (1999), we think of culture as a "notion of shared values, beliefs, expectations, customs, jargon, and rituals." The cultural adaptability effect suggests that educated people are better able to adapt to different customs or to communicate their potentially different expectations and beliefs to their spouses. Because of this better "technology" for adapting to a different culture, they become more likely to marry outside of their ethnic group.

The enclave effect suggests that the educated are less likely to live in ethnic enclaves because, for example, they have larger geographic labor markets. If there are fewer co-ethnics within close geographic proximity, the probability of encountering an acceptable same-ethnicity spouse purely by random chance decreases and thus the costs of meeting someone with the same ethnic background increases. This could be a reason why the educated are less likely to marry endogamously.

[1] See among others, Fu (2001); Kalmijn (1991, 1993, 1998); Lee and Edmonston (2005); Lewis and Oppenheimer (2000); Lichter *et al*. (1992); Lichter *et al*. (2007), Liebrson and Waters (1988); Model and Fisher (2001); Pagnini and Morgan (1990); Qian (1997); Qian and Lichter (2001); Qian *et al*. (2001).

Lastly, consistent with both the Becker (1973) and Lam (1988) theories described above, the assortative matching effect posits that marriage surplus increases when education levels of husband and wife are similar. This implies that given a costly search process, educated immigrants may be willing to substitute similarities in ethnicity for similarities in education.

Incorporating these theories, Furtado (2006) develops a model of assortative matching which predicts that an increase in education for immigrants in highly educated ethnic groups should actually decrease the likelihood of intermarriage while the opposite is true for immigrants in low education ethnicities. By the cultural adaptability mechanism, however, education always increases the probability of intermarriage.

Using 1970 U.S. Census data, Furtado (2006) finds that, controlling for the enclave effect, assortative matching is more important than cultural adaptability in explaining marriage choices of second-generation immigrants. This conclusion may not be applicable today because the composition of immigrants has since changed so dramatically. First, immigrants and their children make up a larger proportion of the U.S. population. In 1970, 16.5 percent of the population was either foreign born or had at least one foreign born parent while in 2000, the figure increased to 20.4 percent. In 1980, the proportion foreign born was 6.2 percent, but grew to 10.4 percent by 2000, the highest proportion since 1930 (Schmidley, 2001). A continuously replenished supply of potential same-ethnicity spouses could certainly affect marriage decisions.

Moreover, newer cohorts of immigrants have very different levels of education than natives. Although they are just as likely as natives to have a bachelor's degree or above, immigrants are much less likely to have a high school diploma and are significantly less likely to have graduated the 9th grade (Larsen, 2004). Also, immigrants today have a very different racial composition. In 1970, the great majority of immigrants were from Europe. Today, while a little over half of the foreign born are from Latin America and a quarter are Asian (Larsen, 2004), only about 12.5 percent of the U.S. population is Hispanic and 3.6 percent is Asian (Grieco and Cassidy, 2001).

A direct comparison between second-generation immigrants in 1970 and 2000 is not possible because 1970 was the last year the Census asked for parents' country of birth. However, this paper first tests whether the conclusions drawn for second-generation immigrants in 1970 apply to all people that list at least one ancestry in the 2000 Census. Next, we examine how assimilation affects the relationship between education and intermarriage decisions by, first, running the analysis separately on the native-born and foreign born. Then, for the foreign born, we look at how age at migration affects marriage decisions. This paper also adds race to the study of intermarriage. Even though they are becoming more frequent, interracial marriages are still relatively rare. Preferences for marriage within one's race may change the relative importance of the cultural adaptability and assortative matching effects.

Using U.S. Census data, we find that even after controlling for the enclave effect, there is evidence for both the cultural adaptability and assortative matching effects. As one may expect, the cultural adaptability effect is relatively more important for the foreign born

than for the native-born. Assortative matching is relatively more important for immigrants that are less attached to the U.S., as measured by their age at arrival. There are also significant differences by race in the relative importance of education in endogamy. More specifically, assortative matching plays a greater role in the marriage decisions of Asians than of Hispanics. These results are consistent with the hypothesis that relative to low education racial groups, groups that place a high value on education tend to prefer similarities in education with their spouses over similarities in ethnicity.

The remainder of the paper is organized as follows. Section 2 explains the methods used in the paper. The data and descriptive statistics are presented in Section 3. Section 4 discusses the empirical results, while Section 5 presents results from a different approach for arriving at the same conclusions. Section 6 concludes.

# 2 Theoretical Background and Methods

As discussed in the introduction, there are three mechanisms through which education could affect marriage decisions. By cultural adaptability, education makes people more accepting of differences in others, and so regardless of their ethnic group, more education decreases the probability of marrying within ethnicity. By the enclave effect, an increase in education results in moving away from ethnic enclaves. When the proportion of same-ethnicity potential spouses living within close geographic proximity decreases, the costs associated with finding a same ethnicity spouse increases. We can capture this idea by controlling for the size of the person's ethnic group living in his city. By the assortative matching effect, an increase in education will lead to an increase in endogamy for people living in cities where the average education in their ethnic groups is above the average in the general population. For people in low education groups, an increase in education will lead to a decrease in endogamy. All of these ideas are incorporated into the following empirical specification:

$$y^*_{ijk} = \beta_0 + \beta_1 h_{ijk} + \beta_2 h_{ijk}(\bar{h}_{jk} - \bar{h}_{ak}) + \beta_3 p_{jk} + \beta_4 p^2_{jk} + \beta_5 X_{ijk} + \gamma_j + \varepsilon_{ijk}$$

where $y^*_{ijk}$ denotes net utility from marriage within ethnicity for person $i$ in ethnicity $j$ living in geographical area $k$. Years of schooling is denoted $h$. Average schooling in ethnic group $j$ in city $k$ is denoted $\bar{h}_{jk}$ while $\bar{h}_{ak}$ measures the average schooling of the general population in city $k$. Ethnic group size is denoted $p$ while $X$ is a vector of characteristics which capture tastes for marrying within ethnicity, such as age, language ability, and whether the person lives in the central part of the city. If education affects endogamy through the cultural adaptability mechanism, then we expect that $\beta_1$ is negative. If education affects endogamy through the assortative matching mechanism, then we expect that $\beta_2$ is positive. Although we do not have a direct measure for the enclave effect, we control for it by including $p$ and its square in the specification.

The vector of controls cannot capture all of the possible attributes correlated with both education and preferences for endogamy. For a variety of reasons, some ethnic groups may have fewer cultural differences with the average American and so it may be easier for them to share a household with an American. Also, some ethnic groups have a long history of immigration to the US (for example, Mexicans) while others had a big wave of immigration at a certain time and then immigration stopped rather suddenly (for example, Italians). This history of immigration from a certain country could affect its social institutions in the U.S. Social institutions such as festivals and social clubs may make finding an acceptable ethnic spouse easier. In order to capture all of these effects, ethnic group fixed effects, denoted γ, are included in the model.

We do not observe $y_{ijk}^{*}$ directly, but rather $y_{ijk}$, which takes on values of 0 and 1 according to

$$y_{ijk} = \begin{cases} 1, \text{ if endogamous marriage} \\ 0, \text{ otherwise} \end{cases}$$

We also assume $\varepsilon_{ijk} \sim N(0, \sigma^2)$. Thus, we use the probit model in estimating our coefficients of interest.

The relative importance of the different mechanisms linking education to endogamy rates could differ by immigrant generation. One would expect that with more attachment to the U.S., similarities in education with a potential spouse should become relatively more important than similarities in ethnic traits. Thus, the coefficient capturing the assortative matching effect, $\beta_2$, will be greater for the native-born than for the foreign born. Predictions for the coefficient measuring cultural adaptability, $\beta_1$, are more difficult to make. With more assimilation, ethnic preferences should decrease. Thus, it could be that education has less of an effect on marriage decisions and so $\beta_1$ will decrease in magnitude. In the extreme case, if people have no preference for marrying within ethnicity, education certainly cannot decrease this preference. On the other hand, if ethnic preferences are strong enough, they may not be sensitive to education and again, $\beta_1$ may be very close to zero.

Comparing the native-born to the foreign born is a rather crude method for evaluating the effect of assimilation on marriage patterns. A more precise measure of assimilation, at least for the foreign born, would be years since migration. However, it is impossible with our data set to establish years since migration at the time immigrants were making marriage decisions. Moreover, it is difficult to determine whether the foreign born arrived in the U.S. already married. Instead, we compare marriage patterns of immigrants that arrived at different ages, limiting our analysis to those that arrived under the age of 18, and thus most likely unmarried.

Using U.S. data, Friedberg (1993) and Borjas (1995) find that age at arrival has a negative effect on earnings even after controlling for several demographics.[2] There is a large psychology literature which finds that because of physiological changes in the brain, age at arrival in a new country is critical for the language acquisition of immigrants [see Bleakley and Chin (2007) for references]. There is also a large literature which links language acquisition to many other measures of assimilation and so we feel justified in using age at arrival as a proxy for assimilation. We compare marriage patterns of immigrants that came when they were younger than five to the immigrants that arrived between the ages of 14 and 16. Both sets of immigrants were very likely exposed to the U.S. marriage market, but those that came very young probably value shared ethnicity with their spouses less than those that arrived as teenagers. As described above, our main hypothesis is that the assortative matching coefficient, $\beta_2$, is larger in magnitude for the immigrants that arrived at a young age. Although our predictions for $\beta_1$ are not perfectly clear, we suspect that the ethnic preferences of childhood immigrants are not immutable and so $\beta_1$ will be smaller in magnitude for immigrants that arrived at a younger age.

Race may also affect the mechanisms through which education affects endogamy decisions. Since so many of the new immigrants are either Hispanic or Asian, we consider their marriages in particular. Although certain Asian and Hispanic ethnic groups have a long history of migration to the U.S., the level of migration has never been what it is today. This continued migration from Asia and Latin America replenishes marriage markets making it easier for native born racial minorities to find acceptable same-race foreign born spouses. In fact, intermarriage between natives and foreign born minorities increased in the 1990s while interracial marriages between Latinos and Whites and Asians and Whites decreased a bit (Bean and Stevens, 2003).

The model sociologists typically use to explain interracial marriages is Merton's (1940) social exchange theory. Put simply, the theory is that whites bare a cost for marrying a lower status racial group, and so will only intermarry if they are compensated with some other favourable characteristic in a spouse, such as income or education. One prediction of the theory is that black males with high socioeconomic status will marry whites with lower socioeconomic status. Although the model seems to work reasonably well for black-white marriages,[3] the model is not as successful in explaining who marries whom in Hispanic and Asian marriages. In fact, there is more endogamy for high education Asians than low education Asians (Qian, 1997). Also, the white men that marry Asian women have higher levels of education than the Asian men that marry Asian women (Qian, 1997).

[2] Schaafsma and Sweetman (2001) conclude the same thing using Canadian data. Reasons they present for this negative relationship between age at immigration and earnings include 1) schooling and work experience in the home country do not have as high returns in the host country 2) older immigrants face more difficulty in dealing with the linguistic and cultural changes and 3) education in the host country decreases with age at arrival and this leads to an indirect effect on earnings.

[3] Fryer (2007) interprets the finding that blacks who intermarry have less education than those who intramarry as evidence against the social exchange theory.

Becker's theory of optimal matches in the marriage market seems to be the most consistent with the data on interracial marriages (Fryer, 2007). Applying the marriage market model to interracial marriages, Fryer concludes that if interracial marriage is costly and education in a spouse is important, then interracial marriages may be infrequent, but those that intermarry will be the highly educated.

Using this basic framework, we can make predictions about the mechanisms through which education affects endogamy separately for Whites, Hispanics, and Asians. It is useful to keep in mind that because the majority of the U.S. population is non-Hispanic white, a decision not to marry within ethnicity for Hispanics and Asians, often implies an interracial marriage. Our main hypothesis is that racial groups that place a higher value on educational attainment may prefer similarities in education with their spouses over similarities in ancestry. The Asian ethnic economy highly rewards education gains in Asian children (Qian *et al*., 2001), while Hispanics lag behind other races in educational attainment (Lichter *et al*., 2007). This suggests that assortative matching on education is most important for Asians, followed by Whites and then Hispanics. Thus, we expect that $\beta_2$ is greatest for Asians, followed by Whites and then Hispanics.

Without insight into the differential social costs to interracial marriage or the relationship between education and these social costs, predictions concerning the cultural adaptability effect are more difficult.[4] In fact, the impact of education on interracial marriage decisions of Asians is weakest for the Japanese, most assimilated ethnic group, and the Southeast Asians, least assimilated Asian group (Qian, 1997). This is consistent with the Japanese having little preference for endogamous marriage and so education cannot have a substantial effect while Southeast Asians have such a strong preference for endogamy that education does not have a strong effect. We do not feel comfortable in making any predictions about the magnitude of $\beta_1$ for different racial groups.

# 3 The Data

The analysis uses the 5 percent public use sample of the 2000 U.S. Census as reported by the Integrated Public Use Microdata Series (IPUMS) (Ruggles *et al*., 2004).[5] This data set is particularly well suited for our purposes because it allows us to get reasonably accurate counts of the number of immigrants from a specific country of origin living within close geographic proximity.

The initial sample is restricted to married males with a spouse present living in a metropolitan area. We drop married men with spouses away from home. We examine individuals that are legally married only since Census data do not allow us to accurately

[4] There is some evidence that the social costs of marrying whites may be higher for Asians than Hispanics (Lichter, Brown, Qian, Carmalt 2007). In fact, interracial marriages between Asians and Whites were banned in many states, but marriages between Hispanics and whites have never been illegal (Fryer 2007).
[5] The dataset is publicly available at http://usa.ipums.org/usa/.

analyze cohabitating couples.[6] In order to limit the possibility of reverse causality between education and endogamy, only those over the age of 25 and not enrolled in school are used in the analysis. Even without putting this restriction on the data, only 15 percent of all married people acquire more education post-marriage (Oppenheimer, 2000). People over the age of 65 are also eliminated from the sample because marriage market conditions may have changed substantially from the time they were making marriage decisions. Only ancestry groups from non-English speaking countries and with more than 1,000 observations are considered in the analysis.

A marriage is considered endogamous if spouses share a common ancestry. Census respondents were allowed to write in as many as two ancestries. Our dependent variable takes the value of one if the first ancestry of the husband is the same as the first ancestry listed by the wife and zero otherwise. In the 2000 Census, education is measured in academic qualifications and not in years of schooling. We construct the continuous years of schooling by mapping educational qualifications into the average number of years it takes for people to complete them, following Chiswick and DebBurman (2004). The size of the ethnic group is obtained by dividing the number of people from that ethnic group residing in the metropolitan statistical area (MSA) by the MSA population. We count both populations using the appropriate person weights. To limit sampling error in the formation of these variables, observations are dropped if there are fewer than 50 people from a person's ethnic group living in the MSA.

The controls used in the analysis are language ability, age, age squared, residence in the center city, veteran status, region of residence, and race. A series of dummy variables is used to measure the individual's language ability.

Because around three quarters of the foreign born are either Hispanic or Asian, we include dummy variables for being Hispanic or Asian in the baseline regressions. The racial categories are based on self-responses in census questionnaires. Although Hispanic was not listed as a race in the Census form, we coded respondents as Hispanic if they answered yes to the Hispanic question, regardless of how they answered the race question. Because there are not enough immigrant Blacks we drop individuals with Black race from the sample. Also, people who report more than one race are dropped from the sample.

Table 1 presents descriptive statistics for males in endogamous and exogamous marriages separately. Intermarried males have more years of schooling, belong to high-skilled ethnic groups, and live in cities with a smaller proportion of people with the same ancestry. They are more likely to be native born, speak English well, and have fought in a war, but are less likely to live in the central part of the city. Table 2 shows endogamy rates, ethnic group sizes, and average education levels by ancestry. Endogamy rates are higher for groups that are racial minorities and for groups that are highly represented in the cities in which members of the group reside.

[6] Qian and Lichter (2007) suggest that there is little evidence that cohabitation has become a substitute for marriage for interracial couples.

# 4 Empirical Results

Table 3 presents probit estimates of the marginal effects of education on endogamy. Standard errors are adjusted for clustering within MSA-ancestry cells. All specifications include a set of controls to capture ethnic preferences. Coefficients on the controls have the expected signs: The inability to speak English well increases endogamy while being born in the U.S. decreases endogamy. Perhaps because the military exposes its members to people from many different backgrounds, veteran status decreases endogamy. Also, perhaps because preferences for marriage within ethnicity have decreased over the past century, older people are more likely to be in endogamous marriages, although this effect is not linear. These results are consistent with Fryer's (2007) findings that veterans and younger people are more likely to be in interracial marriages. Because ethnic enclaves tend to be located in center cities, residence in the central part of a city tends to increase endogamy. Residing in an ethnic enclave makes it easier to meet potential spouses of the same ethnicity. Moreover, people with greater preferences for ethnic endogamy are more likely to live in ethnic enclaves. Racial minorities are more endogamous than non-Hispanic Whites. Eight region dummies are also included in all specifications.

Table 3 shows that even with this set of controls, a one year increase in schooling is associated with a one percentage point decrease in the probability of marrying someone with the same ancestry. As discussed in the previous section, this coefficient on education is an average effect of the different mechanisms through which education could affect endogamy decisions. By adding the size of the ethnic group living in a person's city, we control for the possibility that people with more education are less likely to live in ethnic enclaves and so even by random matching, they may become less likely to marry endogamously. Column 2 shows that the marginal effect of education is almost cut in half when measures for the size of the ethnic group are added to the specification. This suggests that the enclave effect is an important mechanism through which education affects endogamy. As expected, an increase in the size of the ethnic group results in an increase in endogamy.

In Column 3, the assortative matching effect is accounted for by adding the interaction of education and the difference between average ethnic education and average education of Americans in the person's city. When this measure of the availability of co-ethnics with a similar education is included in the analysis, the marginal effect of education alone stays about the same while the marginal effect of the interaction has the expected positive sign. Taken together, these marginal effects suggest that although education in general has a negative effect on endogamy, more education tends to decrease endogamy more for people living in areas where average ethnic education is lower than the average American education. Conversely, for people living in areas where ethnics have higher education levels than others in the local population, an increase in education leads to a smaller decrease in endogamy. In fact, for people in ethnic groups with very high average levels of education relative to the general population, an increase in education can lead to an increase in endogamy. We interpret this result as evidence of assortative matching on education in the marriage market.

There are other measures of the availability of same-ethnicity spouses with a similar level of education, for the proportion of all people with the same level of education that share the same ancestry. Using this proxy instead of the education interaction to measure assortative matching, does not change the qualitative results of our analysis. Further, one may believe that much of the assortative matching result is driven by college completion. We ran a specification adding an interaction between college completion and our assortative matching interaction. As expected, the triple interaction had the significant and positive effect suggesting that college completers may have a strong preference for marrying other college graduates. However, they are not the only drivers of the assortative matching effect since the original interaction remains significant.

Ancestry fixed effects are added in Column 4. Instead of exploiting variation in average education levels across ethnic groups and across cities, we look within ethnic groups to see how the effect of education responds to differences in relative education levels between ethnics and natives across different cities (see Brien, 1997). Note that the marginal effects of education alone and the interaction remain approximately the same.

We conclude that there is support for all three mechanisms through which education affects endogamy. For the typical Mexican, either native-born or foreign-born, living in an MSA where Mexicans have two fewer years of education less than the population in general, an increase in education by one year, leads to a .009 percentage point decrease in the probability of marrying another Mexican. If that Mexican were to move to city where Mexicans had the same average education as natives, then the decrease in endogamy would only be by .005 percentage points.

A potential problem with this analysis is that people choose where to live. Conceivably, there could be a relationship between own education and the average ability of co-ethnics where a person chooses to live, and this relationship could be correlated with ethnic preferences in a manner which could bias the assortative matching coefficient. Presumably, average education in one's ethnic group in the entire country is more exogenous in that people cannot choose it. We ran a regression exploiting only differences in average education levels across ancestries and results did not change qualitatively. Of course, this method of identification is also problematic because we cannot control for ethnicity fixed effects. Thus, unobservable preferences for endogamy which vary by ancestry and are correlated with the ethnic group's average education may lead to biased results. In order to be problematic, ethnic groups with both very high and very low average levels of education would need to have the highest unobservable ethnic preferences. Since this is a possibility, caution must be used in interpreting coefficients in specifications without ethnicity fixed effects. Still, even though both methods of identification are imperfect, they are imperfect for different reasons, so the fact that results are robust is very comforting.

As discussed in Furtado (2006), another potential concern in this analysis lies with the interpretation of the size of the ethnic group in an MSA as a measure of the ease at which spouse-searchers meet potential spouses with the same ancestry. There are two problems with this: First, we measure the size of the ethnic group in the person's MSA of residence at the time of the survey as opposed to the time and place where the person was actually searching for a spouse. Since location decisions of couples may be affected by their marriage decisions, coefficients may be biased. Second, even if we could measure the size of the ethnic group at the right time and place, ethnics with higher preferences for endogamy are more likely to live in ethnic enclaves while searching for a spouse. Thus, the coefficient on the size of the ethnic group would be measuring both opportunity and preferences for intramarriage. Since the focus of this paper is on disentangling the cultural adaptability effect from the assortative matching effect while controlling for the enclave effect as well as preferences, the second issue is not so much of a problem for our purposes. Nevertheless, we deal with both of these concerns, at least for the native born population, by calculating the size of the ethnic group in people's state of birth as opposed to MSA of current residence. Since one's state of birth is chosen by one's parents, it is arguably less endogenous to marriage choice. Moreover, it certainly is not subject to reverse causality concerns. Qualitative results did not change when this different measure was used. When using state of birth as opposed to current residence, we are not controlling for the enclave effect and so this is not our preferred specification. However, knowledge that our coefficients of interest are not sensitive to our measure of opportunity makes us less concerned about endogeneity biases.

The results in Table 3 show how education affects marriage decisions for all people that list at least one ancestry in the Census. However, the relative importance of the different mechanisms through which education affects endogamy could differ depending on how assimilated a person is to the U.S. culture. Table 4 shows the final specification separately for the native born and for immigrants that arrive in the U.S. at different ages. Specifically, Column 1 limits the sample to the native born while Column 2 includes only the foreign born. Column 3 presents results for the foreign born that arrived in the U.S. below the age of five. Column 4 limits the sample to the foreign born that arrived between the ages of 14 and 16, inclusively. The last column includes immigrants that arrived as adults.

The interpretation of the coefficients is difficult for both of these samples. The native born sample includes second-generation immigrants, whose parents may have arrived in the U.S. only shortly before they were born, as well as people whose families have been in the country for several generations. On the other hand, the immigrant sample surely includes immigrants that arrived in the U.S. already married and so their marriage decisions would not be as influenced by the educational distribution of potential spouses in the U.S.

As expected, the relative importance of assortative matching is higher for populations with greater attachment to the U.S. Although the coefficient on education alone is the same for the native (Column 1) and foreign born (Column 2), the coefficient on the

interaction is quadruple the size for the native born as it is for the foreign born. Education decreases ethnic preferences for members of both groups, but relative to similarities in ethnic background, natives value similarities in education more than immigrants.

Interestingly, as seen in Column 3, there is no support for the cultural adaptability effect for immigrants that arrive very young while there is support for the assortative matching.

This is consistent with Furtado (2006) who found no evidence for the cultural adaptability effect for second-generation immigrants, the native-born children of immigrants, with two foreign born parents. Conversely, for immigrants that arrive as teenagers, there is no support for the importance of assortative matching, but education does seem to decrease preferences for marriage within ethnicity. Immigrants that came as adults are more likely to have come already married and so it is reasonable that coefficients on all education variables are closer to zero.

To limit concerns that the foreign born, specifically those that arrived as adults, came already married, we use two different techniques. First, we dropped couples where husband and wife arrived in the same year. We also drop couples whose eldest child living in the household is not native born. Results are robust to limiting the sample in these ways.

In the last great wave of immigration, immigrants were predominantly from European countries and so were of the same race as most natives. Today about half of the foreign born are Hispanic and about a quarter are Asian. The marriage patterns of people with different races may respond differently to changes in education. Table 5 presents results separately by racial group and nativity.

Relative to foreign born Asians, the coefficient on education alone is larger than the coefficient on the education interaction for foreign born Hispanics. This is consistent with the idea that people in racial groups that are highly education-oriented, such as Asians, may value the education of their spouses relatively more than the ethnicity of their spouses. Also, as we may expect, assortative matching is relatively more important than cultural adaptability for native born Whites than for native born Hispanics. Results for native born Asians, however, are more difficult to interpret. For them, an increase in education leads to an *increase* in endogamy in general, but this increase is *lower* for Asians in areas where Asians have much higher education levels relative to the general population. Robustness checks suggest that this result is driven by the Chinese and Japanese since coefficients have the usual pattern when these two groups are dropped from the sample. We suspect that this result is mainly driven by differences in Asian cohort quality, but a more detailed explanation is beyond the scope of this paper.

# 5 A Different Approach to Inferring Preferences for Ethnic Endogamy and Assortative Matching

The results of this analysis suggest that there is a role for both the cultural adaptability and the assortative matching effects in marriage markets. We provide evidence that assortative matching is relatively more important for the native born than the foreign born. It is also more important for the foreign born that arrived young and for racial groups that are very education-oriented. In this section, we present a different technique for testing the assortative matching hypothesis. After establishing the importance of similarities in education in evaluating potential spouses, we introduce a method for inferring relative preferences for endogamy of different groups. Results provide a context for interpreting the relationships between the coefficients found in the previous section.

The main idea behind the assortative matching effect is that people value similarities in education levels with their spouses. Because demands for many household public goods are affected by people's education and ethnicity[7], in order to take full advantage of household public goods (Lam, 1988) spouse-searchers may want to marry someone with the same ancestry and level of education. However, if search is costly (as in, Furtado 2006), marriage market participants may be willing to marry someone with a different level of education but the same ancestry or someone with the same education level but a different ancestry. This implies that at equilibrium, the absolute value of the difference in spousal education levels should be greater for intramarried couples than intermarried couples.[8] Moreover, the difference in spousal education differences between endogamous and exogamous couples should be greater for groups with higher ethnic preferences. In other words, the greater the importance of ethnic endogamy, the more of an education difference one is willing to tolerate in a spouse.

To test these hypotheses, we focus on a sample which is most likely to have high preferences for both ethnic endogamy and assortative matching on education: the foreign born that arrived before the age of 14. These immigrants were certainly exposed to the U.S. marriage market. Because they are foreign born, they most likely have high ethnic preferences. However, since they came at a young age, they do not face the language and cultural barriers in marrying outside of their ethnic group. Table 6 shows average (absolute values of) spousal differences in years of schooling by marriage type. As predicted, there are bigger educational differences between spouses in endogamous marriages than exogamous marriages.

Although we do not have data on ethnic preferences, we argue that certain categories of immigrants have higher ethnic preferences. Specifically, immigrants that arrived older, with poorer English skills, and living in ethnic enclaves presumably have the highest

[7] For example, demand for vacations to homeland will certainly be affected by ancestry. Also, demand for visits to museums or even 'intellectual conversations" could be affected by education.

[8] This assumes that the education distributions are very similar across ethnic groups. If they are different, then just by random matching, endogamous marriages should have smaller spousal differences in education. This makes our test for assortative matching even stronger.

preferences for ethnic endogamy. Thus, they should be willing to sacrifice the most in terms of educational similarities with their spouses. Table 6 presents average spousal educational differences separately by whether immigrants arrived before or after the age of seven. Consistent with the assortative matching hypothesis, intermarried couples have smaller differences in their years of schooling. Consistent with the hypothesis that older arriving immigrants have greater preferences for endogamy, the difference between endogamous and exogamous couples is greatest for immigrants that arrived older. Similarly, spousal differences in education are relatively greater in endogamous couples than exogamous couples for immigrants with poorer English skills.

The size of one's ethnic group living within close proximity has a theoretically ambiguous effect on the relationship between spousal educational differences and marriage type. On the one hand, a greater availability of same-ancestry spouses makes it easier to find a spouse with the same ethnicity and education level. On the other hand, immigrants with high ethnic preferences are more likely to live in ethnic enclaves. Thus, we may expect the difference in spousal education differences between endogamous and exogamous marriages to be greatest for immigrants living in MSAs with high concentrations of people sharing their ethnic background. Table 6 shows that, in fact, the greater availability of same-ethnicity spouses does not eliminate the need to sacrifice educational similarities for ethnic similarities. The difference between endogamous and exogamous couples is greatest for people living in cities where more than seven percent of residents share the spouse-searcher's ethnicity.[9]

Using this technique, we provide further evidence of our findings that racial groups that are more education oriented are more willing to sacrifice ethnic similarities for educational similarities in a spouse. As can be seen in Table 6, the difference in spousal educational differences between endogamous and exogamous couples is smallest for Hispanics and greatest for Asians. This is very consistent with the findings in the previous section that, controlling for the enclave effect, assortative matching on education is more important than the cultural adaptability effect for racial groups that are more education-oriented.

# 6 Conclusions

This paper provides evidence of three different mechanisms through which education affects interethnic marriage decisions. On average, education decreases endogamy for all people that list an ancestry in the Census. However, the negative relationship is not quite as strong after controlling for the probability of encountering someone with the same ethnic background. This is consistent with the idea that people with more education are less likely to live in or near ethnic enclaves. Lastly, we show that the availability of co-ethnics with a similar level of education is also a very important determinant of interethnic marriage decisions, suggesting the importance of assortative matching on education.

[9] Seven percent is the median value for the size of the ethnic group in the MSA for this sample.

The relative importance of these mechanisms differs for various populations. Assortative matching on education is relatively more important for people that are more culturally and economically attached to the U.S. Specifically, the native born seem to value similarities in education more than similarities in ethnicity relative to the foreign born. Also, assortative matching on education seems to be more important for immigrants that arrived in the U.S. at a young age. Lastly, Asians seem to value similarities in education more than ethnicity relative to Whites and Hispanics while Whites value education more than Hispanics. This is consistent with the idea that racial groups that are very education oriented, value a spouse's education relatively more than her ancestry.

We conclude that not only is education an important determinant of intermarriage decisions, but that there are several mechanisms linking education and spouse-choice and that relative importance of these mechanisms differs by nativity, race, and age at arrival for the foreign born. If we assume that marriage to someone with a different ancestry is a measure of a person's association with natives more generally, then there are several policy implications that might be drawn from this analysis.

Point systems of immigration like those in Canada, in Australia, and recently in the UK, tend to put more weight on years of schooling and language ability than countries without a point system. Part of the rationale for is that more educated immigrants tend to assimilate economically and socially faster than non-educated immigrants. This paper reinforces this idea by finding a generally negative relationship between education and ethnic endogamy. Moreover, taken together with the Borjas ethnic externalities story, this implies an even slower rate of assimilation. That is, if the more educated immigrants are less likely to associate with their ethnic group, then low education immigrants would not be benefiting from the high education of these ethnic peers but would be affected by their low education ethnic peers.

Another important finding of this paper is that the effect of education differs by immigrant group. In fact, for immigrants in high education groups living in areas with low-education Americans, more education may even lead to a decrease in social integration. This implies that for certain high education ethnic groups, assimilation to U.S. average education levels may be slower than what is implied by the Borjas results.

If the social integration of highly educated immigrants is a policy goal, our findings suggest that given two immigrants with the same education, more points should be given to the immigrant in the low education ethnic group. In a similar way, the findings that the relative importance of assortative matching depends on race, nativity, and age at arrival can also inform policy discussions.

The marriage patterns of immigrants and their progeny may also have direct effects on household fertility and employment decisions. These decisions, in turn, have affects on wages and schooling levels of both immigrants and the natives that compete with them. Further, assortative mating on education across interethnic marriages may even increase the inequality of investments in the human capital and values of the children of these

marriages (Becker and Murphy, 2000). Thus, sorting on education, ethnicity, race and other characteristics in marriage is probably more important in transmitting inequality than capital market restrictions on investments in human capital, school and neighborhood segregation. We aim to explore should explore these additional important issues in future work.

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## APPENDIX A

Table 1. Descriptive Statistics.

| | Exogamous Couples | | Endogamous Couples | | All | |
|---|---|---|---|---|---|---|
| | Mean | Standard Deviation | Mean | Standard Deviation | Mean | Standard Deviation |
| Years of Education | 14.25 | 3.190 | 12.77 | 4.417 | 13.66 | 3.793 |
| Age | 45.14 | 9.856 | 44.71 | 10.077 | 44.97 | 9.946 |
| Size of Ethnic Group in MSA | 0.09 | 0.083 | 0.13 | 0.127 | 0.10 | 0.105 |
| Mean Ethnic Education in MSA | 14.15 | 1.420 | 13.06 | 2.301 | 13.71 | 1.896 |
| Mean Education in MSA | 13.79 | 0.611 | 13.61 | 0.757 | 13.72 | 0.678 |
| Cannot Speak English | 0.00 | 0.058 | 0.04 | 0.189 | 0.02 | 0.128 |
| White | 0.95 | 0.208 | 0.76 | 0.430 | 0.89 | 0.312 |
| Asian | 0.02 | 0.134 | 0.16 | 0.366 | 0.07 | 0.262 |
| Hispanic | 0.10 | 0.295 | 0.32 | 0.467 | 0.19 | 0.389 |
| US born | 0.90 | 0.301 | 0.53 | 0.499 | 0.75 | 0.431 |
| Veteran | 0.29 | 0.454 | 0.18 | 0.384 | 0.25 | 0.431 |
| In Metro Area, Central City | 0.12 | 0.322 | 0.19 | 0.390 | 0.14 | 0.352 |
| In Metro Area, Outside Central City | 0.51 | 0.500 | 0.46 | 0.498 | 0.49 | 0.500 |

*Notes*: Numbers are weighted.

Table 2. Endogamy Rate, Size of Ethnic Group, and Average Education Level by Ancestry.

| Ancestry | Endogamy | | | Size of Ethnic Group in MSA | Mean Ethnic Education in MSA | Mean Education in MSA |
|---|---|---|---|---|---|---|
| | All | Native born | Foreign born | | | |
| Austrian | 0.039 | 0.031 | 0.106 | 0.003 | 15.85 | 13.89 |
| Belgian | 0.094 | 0.061 | 0.305 | 0.008 | 14.76 | 13.81 |
| Danish | 0.057 | 0.051 | 0.156 | 0.010 | 15.10 | 13.88 |
| Dutch | 0.157 | 0.152 | 0.246 | 0.033 | 14.32 | 13.78 |
| Finnish | 0.102 | 0.078 | 0.421 | 0.011 | 14.74 | 13.93 |
| French | 0.148 | 0.142 | 0.246 | 0.032 | 13.98 | 13.75 |
| German | 0.344 | 0.344 | 0.339 | 0.172 | 14.34 | 13.82 |
| Greek | 0.291 | 0.132 | 0.602 | 0.007 | 14.24 | 13.90 |
| Irish | 0.277 | 0.274 | 0.422 | 0.091 | 14.45 | 13.87 |
| Italian | 0.289 | 0.269 | 0.550 | 0.102 | 14.17 | 13.88 |
| Norwegian | 0.128 | 0.126 | 0.222 | 0.049 | 14.68 | 13.96 |
| Portuguese | 0.404 | 0.162 | 0.725 | 0.059 | 11.90 | 13.58 |
| Swedish | 0.086 | 0.081 | 0.244 | 0.022 | 14.94 | 13.89 |
| Swiss | 0.085 | 0.067 | 0.259 | 0.005 | 15.34 | 13.81 |
| Czechoslovakian | 0.088 | 0.066 | 0.411 | 0.007 | 15.02 | 13.84 |
| Hungarian | 0.095 | 0.050 | 0.374 | 0.010 | 14.64 | 13.82 |
| Lithuanian | 0.068 | 0.043 | 0.409 | 0.004 | 15.41 | 13.89 |
| Polish | 0.230 | 0.173 | 0.746 | 0.055 | 14.43 | 13.86 |
| Russian | 0.358 | 0.247 | 0.787 | 0.018 | 16.59 | 13.90 |
| Yugoslavian | 0.214 | 0.031 | 0.557 | 0.001 | 13.90 | 13.72 |
| Spaniard | 0.385 | 0.143 | 0.477 | 0.008 | 13.23 | 13.53 |
| Mexican | 0.747 | 0.562 | 0.837 | 0.201 | 9.79 | 13.10 |
| Central American | 0.621 | 0.172 | 0.629 | 0.012 | 9.83 | 13.46 |
| South American | 0.609 | 0.143 | 0.634 | 0.010 | 12.99 | 13.75 |
| Puerto Rican | 0.569 | 0.375 | 0.632 | 0.027 | 12.12 | 13.80 |
| Cuban | 0.600 | 0.320 | 0.684 | 0.163 | 13.07 | 13.42 |
| West Indies | 0.712 | 0.315 | 0.640 | 0.018 | 12.00 | 13.87 |
| Hispanic | 0.490 | 0.284 | 0.574 | 0.017 | 12.13 | 13.47 |
| Asian Indian | 0.874 | 0.470 | 0.887 | 0.018 | 16.47 | 13.90 |
| Chinese | 0.841 | 0.497 | 0.886 | 0.032 | 14.62 | 13.86 |
| Filipino | 0.818 | 0.332 | 0.877 | 0.037 | 14.52 | 13.68 |
| Japanese | 0.614 | 0.501 | 0.769 | 0.052 | 15.52 | 13.73 |
| Korean | 0.918 | 0.325 | 0.936 | 0.014 | 15.19 | 13.67 |
| Vietnamese | 0.894 | 0.600 | 0.896 | 0.014 | 12.53 | 13.72 |

*Notes*: Numbers are weighted.

Table 3. Probit Marginal Effects of Education on Endogamy.

| Endogamy | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Years of Education | -0.009 | -0.005 | -0.004 | -0.005 |
| | (0.001)** | (0.001)** | (0.000)** | (0.000)** |
| Age | -0.006 | -0.006 | -0.005 | -0.005 |
| | (0.001)** | (0.001)** | (0.001)** | (0.001)** |
| Age Squared/100 | 0.008 | 0.008 | 0.008 | 0.008 |
| | (0.001)** | (0.001)** | (0.001)** | (0.001)** |
| Cannot Speak English | 0.178 | 0.129 | 0.096 | 0.105 |
| | (0.021)** | (0.020)** | (0.018)** | (0.018)** |
| White | -0.230 | -0.182 | -0.154 | -0.072 |
| | (0.025)** | (0.014)** | (0.021)** | (0.024)** |
| Asian | 0.234 | 0.348 | 0.377 | 0.299 |
| | (0.027)** | (0.015)** | (0.023)** | (0.025)** |
| US born | -0.269 | -0.333 | -0.322 | -0.308 |
| | (0.014)** | (0.015)** | (0.016)** | (0.015)** |
| Veteran status | -0.038 | -0.040 | -0.038 | -0.037 |
| | (0.002)** | (0.002)** | (0.002)** | (0.002)** |
| Region dummies | Yes | Yes | Yes | Yes |
| In metro area, central city | 0.005 | 0.030 | 0.030 | 0.023 |
| | (0.012) | (0.009)** | (0.009)** | (0.008)** |
| In metro, area, outside central city | -0.009 | 0.004 | 0.007 | 0.006 |
| | (0.008) | (0.004) | (0.004)+ | (0.004)+ |
| Size of Ethnic Group | | 2.247 | 2.258 | 2.278 |
| | | (0.100)** | (0.105)** | (0.147)** |
| Square of Size | | -2.325 | -2.369 | -2.371 |
| | | (0.201)** | (0.207)** | (0.250)** |
| Mean Ethnic Education | | | -0.016 | -0.016 |
| | | | (0.005)** | (0.004)** |
| Mean Ethnic Education-Mean Education | | | -0.031 | -0.022 |
| | | | (0.008)** | (0.006)** |
| Education X (Mean Ethnic Education-Mean Education) | | | 0.003 | 0.002 |
| | | | (0.001)** | (0.000)** |
| Ancestry dummies | No | No | No | Yes |
| Observations | 681884 | 681884 | 681884 | 681884 |

*Notes*: Robust standard errors in parentheses. Standard errors clustered on MSA × ancestry cells.
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 4. Probit Marginal Effects of Education on Endogamy by Immigrant Generation.

| Endogamy | US Born | Foreign Born, All | Foreign Born, Ages 0-5 at Arrival | Foreign Born, Ages 14-16 at Arrival | Foreign Born, Age Greater than 18 at Arrival |
|---|---|---|---|---|---|
| Years of Education | -0.004 | -0.004 | -0.003 | -0.011 | -0.002 |
| | (0.000)** | (0.001)** | (0.002) | (0.002)** | (0.001)** |
| Age | -0.004 | -0.006 | -0.013 | -0.016 | -0.008 |
| | (0.001)** | (0.002)** | (0.006)* | (0.005)** | (0.001)** |
| Age Squared/100 | 0.006 | 0.010 | 0.016 | 0.017 | 0.009 |
| | (0.001)** | (0.002)** | (0.007)* | (0.006)** | (0.001)** |
| Cannot Speak English | 0.157 | 0.075 | 0.358 | 0.048 | 0.052 |
| | (0.062)* | (0.009)** | (0.135)** | (0.025)+ | (0.008)** |
| White | -0.166 | 0.062 | -0.178 | -0.014 | 0.094 |
| | (0.018)** | (0.024)** | (0.042)** | (0.043) | (0.018)** |
| Asian | 0.155 | 0.239 | 0.120 | 0.230 | 0.182 |
| | (0.033)** | (0.021)** | (0.071)+ | (0.055)** | (0.025)** |
| Veteran status | -0.019 | -0.126 | -0.052 | -0.019 | -0.074 |
| | (0.002)** | (0.008)** | (0.015)** | (0.018) | (0.008)** |
| Region dummies | Yes | Yes | Yes | Yes | Yes |
| In metro area, central city | 0.016 | 0.001 | 0.002 | -0.013 | -0.006 |
| | (0.008)+ | (0.007) | (0.022) | (0.020) | (0.006) |
| In metro, area, outside central city | 0.009 | -0.008 | 0.004 | -0.016 | -0.005 |
| | (0.003)** | (0.004)+ | (0.015) | (0.015) | (0.004) |
| Size of Ethnic Group | 2.211 | 1.239 | 1.969 | 1.535 | 0.907 |
| | (0.135)** | (0.092)** | (0.255)** | (0.166)** | (0.072)** |
| Square of Size | -2.336 | -1.267 | -1.895 | -1.440 | -0.924 |
| | (0.244)** | (0.168)** | (0.402)** | (0.288)** | (0.129)** |
| Mean Ethnic Education | -0.019 | -0.001 | -0.042 | -0.003 | 0.002 |
| | (0.004)** | (0.005) | (0.014)** | (0.013) | (0.004) |
| Mean Ethnic Education-Mean Education | -0.037 | -0.023 | -0.023 | -0.014 | -0.018 |
| | (0.007)** | (0.006)** | (0.020) | (0.013) | (0.005)** |
| Education X (Mean Ethnic Education-Mean Education) | 0.004 | 0.001 | 0.002 | -0.000 | 0.000 |
| | (0.000)** | (0.000)** | (0.001)* | (0.001) | (0.000)** |
| Ancestry dummies | Yes | Yes | Yes | Yes | Yes |
| Observations | 552081 | 126295 | 8851 | 8397 | 93496 |

*Notes*: Robust standard errors in parentheses. Standard errors clustered on MSA × ancestry cells.
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 5. Probit Marginal Effects of Education on Endogamy by Race and Nativity.

| Endogamy | White Natives | White Foreign Born | Hispanic Natives | Hispanic Foreign Born | Asian Natives | Asian Foreign Born |
|---|---|---|---|---|---|---|
| Years of Education | -0.004 | -0.017 | -0.018 | -0.005 | 0.009 | -0.001 |
| | (0.001)** | (0.002)** | (0.003)** | (0.001)** | (0.003)** | (0.000)+ |
| Age | -0.004 | -0.014 | -0.007 | -0.010 | -0.037 | 0.005 |
| | (0.001)** | (0.004)** | (0.004)+ | (0.002)** | (0.008)** | (0.002)** |
| Age Squared/100 | 0.006 | 0.020 | 0.010 | 0.013 | 0.047 | -0.003 |
| | (0.001)** | (0.004)** | (0.004)* | (0.003)** | (0.009)** | (0.002)+ |
| Cannot Speak English | 0.005 | 0.093 | | 0.082 | | 0.087 |
| | (0.081) | (0.051)+ | | (0.012)** | | (0.011)** |
| Veteran status | -0.018 | -0.183 | -0.040 | -0.112 | -0.026 | -0.169 |
| | (0.002)** | (0.015)** | (0.008)** | (0.013)** | (0.032) | (0.010)** |
| Region dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| In metro area, central city | 0.012 | 0.064 | 0.040 | -0.016 | 0.094 | 0.016 |
| | (0.009) | (0.014)** | (0.017)* | (0.010) | (0.030)** | (0.010) |
| In metro, area, outside central city | 0.009 | 0.009 | -0.003 | -0.029 | 0.021 | -0.006 |
| | (0.003)** | (0.010) | (0.018) | (0.008)** | (0.024) | (0.008) |
| Size of Ethnic Group | 2.482 | 2.642 | 1.824 | 1.223 | 4.930 | 0.555 |
| | (0.183)** | (0.393)** | (0.150)** | (0.104)** | (2.281)* | (0.125)** |
| Square of Size | -3.107 | -4.470 | -1.715 | -1.201 | -15.407 | -0.250 |
| | (0.396)** | (1.068)** | (0.219)** | (0.176)** | (10.269) | (0.170) |
| Mean Ethnic Education | -0.018 | 0.011 | -0.044 | -0.003 | -0.035 | -0.011 |
| | (0.004)** | (0.009) | (0.011)** | (0.009) | (0.021)+ | (0.011) |
| Mean Ethnic Education-Mean Education | -0.038 | -0.128 | 0.013 | -0.020 | 0.115 | -0.030 |
| | (0.009)** | (0.014)** | (0.013) | (0.009)* | (0.035)** | (0.013)* |
| Education X (Mean Ethnic Education-Mean Education) | 0.004 | 0.008 | 0.002 | 0.000 | -0.005 | 0.001 |
| | (0.000)** | (0.001)** | (0.001)+ | (0.000) | (0.002)** | (0.000)* |
| Ancestry dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 518309 | 30692 | 23353 | 46904 | 12239 | 129803 |

*Notes*: Robust standard errors in parentheses. Standard errors clustered on MSA × ancestry cells.
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 6. Spousal Differences in Schooling by Marriage Type.

| | Spousal Differences in Years of Education | | |
|---|---|---|---|
| | Endogamous Couples | Exogamous Couples | Difference |
| Total | 2.29 | 2.00 | 0.29 |
| Age at Arrival | | | |
| Younger than 7 | 2.09 | 1.92 | 0.17 |
| 7 and above | 2.40 | 2.11 | 0.29 |
| English Ability | | | |
| Speaks only English | 1.90 | 1.91 | -0.01 |
| Speaks some English | 2.34 | 2.10 | 0.24 |
| Does not speak English | 2.81 | 2.31 | 0.49 |
| Size of Ethnic Group in MSA | | | |
| Less than .07 | 2.08 | 2.00 | 0.08 |
| .07 and above | 2.46 | 1.99 | 0.47 |
| Race | | | |
| White | 2.03 | 1.95 | 0.09 |
| Hispanic | 2.46 | 2.08 | 0.38 |
| Asian | 1.99 | 1.96 | 0.03 |

*Notes*: Numbers are weighted.

## APPENDIX B

We keep male individuals in the age group 26 to 65, who are married and with a spouse present, who are not enrolled in school, and who: report one race, one ancestry (BE CAREFUL HERE, YOU KEEP ANCETR2 as well), live in an identifiable metro area, and in an identifiable metropolitan statistical area (MSA). We also restrict our sample to ancestry groups with more than 1,000 observations and to groups that mostly reflect the past and present waves of immigration to the U.S. We also drop individuals who come from countries with an English speaking background.

[N.B. The definition of school includes any nursery school, kindergarten, elementary school, any schooling leading toward a high school diploma or college degree].

### Years of education (variable: yredu)

Question: "*What is the highest degree or level of school this person has completed?*" Mark [X] One box. If currently enrolled, mark the previous grade of the highest degree achieved.

Mapping of educational qualifications to years of education *a la* Chiswick and DebBurman (2004).
No school completed – Zero years of education
1st-4th grade (nursery school to 4th grade) – 2.5 years
5th-8th grade – 6.5 years
9th grade – 9 years
10th grade – 10 years
11th grade – 11 years
12th grade (no diploma) – 12 years
High school graduate (high school diploma or the equivalent, for example GED) – 12 years
Some college credit (but less than 1 year) – 13 years
Associate degree (for example: AA, AS)– 14.5 years
Bachelor's degree (for example: BA, AB, BS)– 16 years
Master's degree (for example: MA, MS, MEng, Med, MSW, MBA) – 18 years
Professional degree (for example, MD, DDS, DVM, LLB, JD) – 22 years
Doctorate degree (for example: PhD, EdD) – 22 years

### English speaking dummy (variable: speakeng) BE CAREFUL HERE

It indicates whether the respondent speaks only English at home, and also reports how well the respondent, who speaks a language other than English at home, speaks well.
Equals to 1 if the individual does not speak English (=1, not at all) and 0 otherwise (speaks only English, very well, speaks well, not well).

### Ancestry dummies (variable: ancestr1)

Question: "*What is this person's ancestry or ethnic origin?*"
It provides the respondent's self-reported ancestry or ethnic origin (first response). We distinguish 34 ancestry dummies.
*European groups*: Austrian, Belgian, Danish, Dutch, Finnish, French, German, Greek, Irish, Italian, Norwegian, Portuguese, Swedish, Swiss, Czechoslovakian, Hungarian, Lithuanian, Polish, Russian, Yugoslavian, Spaniard.
*Mexican groups*: Mexican, Mexican American, Nuevo Mexicano.
*Hispanic groups*: Hispanic, Spanish.
*Central American groups*: Guatemalan, Honduran, Nicaraguan, Salvadorian.
*South American groups*: Colombian, Ecuadorian, Peruvian.
*West Indian groups*: Dominican, Jamaican, Haitian.
*Asian groups*: Indian, Chinese, Filipino, Japanese, Korean, Vietnamese.
*Other ancestries*: Puerto Rican, Cuban.

### Race dummies (variables: race and hispan)

We distinguish between 3 mutually exclusive race categories: Whites, Asians and Hispanics.

**Native born dummy** (variable: bpl)
Takes the value of 1 if the individual is U.S. born and 0 otherwise.

**Age of arrival**
Age of the individual minus years the individual has been in the U.S (years since migration in the U.S.).

**Age married**
Age of the individual minus the age of the eldest own child in the household.

**Veteran status dummy** (variable: vetstat)
Question: "*Has this person ever served on active duty in the U.S. Armed Forces, military Reserves, on National Guard?*" Active duty does not include training fore the Reserves or National Guard, but does include activation, for example, for the Persian Gulf War.
Equals to 1 if the individual if the individual served in the military forces of the U.S. (army, navy, air force, marine corps, or coast guard) in time of war or peace. Zero otherwise.

**Region dummies** (variable: region)
Nine region dummies: New England division, Middle Atlantic division, East North Central, West North Central, South Atlantic division, East South Central division, West South Central division, Mountain division, Pacific division.

**Metro dummies** (variable: metro)
It indicates whether the household was located within a metropolitan area. For households within metropolitan areas, it indicates whether the housing unit was within a metropolitan area's central city (or cities), or within the remainder of the metropolitan area.
Three metro area dummies: in metro area (central city), in metro area (outside central city), central city status unknown.

**Metropolitan Statistical Area** (variable: metarea)
Metropolitan areas are counties or combinations of counties centering on a substantial urban area. It identifies the metropolitan area where the household was enumerated, if that metropolitan areas was large enough to meet confidentiality requirements. There are 283 identifiable MSAs in our data.

**Size of ethnic group**
It is the ratio of the (numerator = number of individuals of each of the 34 ancestry groups in each MSA, denominator = number of the whole U.S. population in each MSA).

**Age group dummies**
Equals to 1 if in the age group 26 to 35, 0 otherwise.
Equals to 1 if in the age group 36 to 45, 0 otherwise.
Equals to 1 if in the age group 46 to 55, 0 otherwise.
Equals to 1 if in the age group 56 to 65, 0 otherwise.

**Cohort group dummies**
Equals to 1 if the individual arrived between 1940-1949, 0 otherwise.
Equals to 1 if the individual arrived between 1950-1959, 0 otherwise.
Equals to 1 if the individual arrived between 1960-1969, 0 otherwise.
Equals to 1 if the individual arrived between 1970-1979, 0 otherwise.
Equals to 1 if the individual arrived between 1980-1989, 0 otherwise.
Equals to 1 if the individual arrived between 1990-1999, 0 otherwise.

## Census year dummies

Equals to 1 if the observation is in the 2000 Census, 0 otherwise.
Equals to 1 if the observation is in the 1990 Census, 0 otherwise.
Equals to 1 if the observation is in the 1980 Census, 0 otherwise.