Racial, Educational, and Religious Endogamy

In Comparative Historical Perspective

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Abstract:

This paper attempts to draw broad comparisons between marriage patterns by race, by education, and by religion in the U.S. for the entire 20th century. I use census data for race and education, and a variety of data sources for religious intermarriage. The comparative approach allows several general conclusions. First, racial endogamy has declined sharply over the 20th century, but race is still the most powerful division in the marriage market. Second, higher education has little effect on racial endogamy for blacks and whites. Third, the division between Jews and Christians is still strong, but the division between Catholics and Protestants in the marriage market has been relatively weak throughout the 20th century. To find evidence of a powerful division between Protestants and Catholics in US marriage markets, one must go back in time to the 19th century. Fourth, educational endogamy has been relatively stable over time.

RACIAL, EDUCATIONAL, AND RELIGIOUS ENDOGAMY IN COMPARATIVE HISTORICAL PERSPECTIVE

Introduction:

Sociologists have long recognized that endogamy, or marriage within the group, is a fundamental indicator of group cohesion and solidarity, and also of social isolation from other groups (Gordon 1964). Racial and religious groups perpetuate themselves through endogamy, and the converse is also true: a social category which is not endogamous cannot be a meaningful social category. Endogamous marriages maximize the chance that the children raised within the marriages will recognize their parents' shared identity, and carry that identity forward into the next generation. The special importance of marriage is why the taboo against marriage to outsiders has historically been so strong, and why changes in the patterns of racial, educational, and religious endogamy[1] over time have so much to teach us about changes in the underlying structure and relative importance of race, education and religion in American life.

[1] Educational in-marriage is usually described as *homogamy* (marriage to a similar type), whereas racial and religious in-marriage are usually described as *endogamy* (marriage to the same type). In the first

Endogamy is a strong form of homophily, the tendency for people to associate with others like themselves (McPherson, Smith-Lovin and Cook 2001). The special characteristics of marriage make endogamy an especially important kind of homophily to study. In a non-polygamous society, marriage is unitary. Each individual can have at most one spouse at a time, while individuals can have many friends, associates, and coworkers whose larger number necessarily implies lower average intensity of the relationships. Second, marriage is a symmetrical and reciprocal (if not necessarily egalitarian) relationship, whereas friendship for instance is not always reciprocated (Gouldner 1960; Hallinan and Williams 1987). Third, even in the age of divorce and cohabitation, marriage is still a life stage that most Americans eventually pass into or pass through; in the past marriage was a nearly universal outcome (Cherlin 1992). Fourth, marriage is a social tie which is highly formalized, implying not only a wide range of legal benefits and obligations (and an implicit contract with a long history in common law, see Weitzman 1981), but also implying that marriage holds a uniquely important place among social relationships. The recent political upheavals in the U.S. over same-sex marriage have only reinforced (to both opponents and supporters of same-sex marriage) how important marriage is socially and legally (Eskridge 2002; Koppelman 2002). Fifth, marriage data from the census are of unusually high quality, the sample sizes are enormous, and the data extend over more historical time than other kinds of social network data, which make marriage patterns an especially important window into the changing nature of social structure over time.

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sections of this paper I refer to educational endogamy because I will be simplifying the educational distribution into dichotomies, i.e. college degree and more versus less than a college degree. Later in the paper when I examine educational marriage patterns across the full ordinal spectrum of educational attainments, I will refer to educational homogamy.

Kalmijn (1998) cites three broad potential causes of endogamy. The first potential cause is an individual's preferences to find a mate similar to him or herself. The second potential cause of endogamy is what Kalmijn refers to as the interference of third parties, which would include parental social pressure to block marriages perceived as inappropriate, and laws which made racial intermarriage illegal in 17 US states prior to 1967 (Moran 2001; Wallenstein 2002). The third potential cause of endogamy are constraints on the exposure to socially different individuals. One example constraint is residential racial segregation which increases the racial uniformity of social networks based on neighborhoods, and therefore increases racial endogamy (Rosenfeld 2007).

All of the above factors may be implicated in the well-described decline of racial endogamy in the post-1960 US. Explicit white hostility towards racial minorities has softened considerably in the post civil rights era (Schuman et al. 1997), though some uncertainty remains about how much racial antipathy and bias remain below the surface (Jackman 1978; Sears 1988). There is evidence that the geographic independence of young adults and the delayed age at first marriage has robbed parents of some of the veto power they used to have over their children's mates, while at the same time expanding the set of potential mates their children are exposed to (Rosenfeld and Kim 2005).

Unlike the case of racial endogamy, the changes in educational endogamy have been subtle. The relative stability and comparative weakness of educational endogamy (when compared to racial endogamy) raise a different set of questions. For example, if the educational system of the US has undergone such a fundamental change since 1940, and if education's role in American life has been transformed, how is it possible that the odds ratios of intermarriage between different educational groups have changed so little?

Endogamy in the literature:

1) Racial Endogamy and the Unique Importance of Race:

Nationally representative data on friendship networks in schools show racial differences are a fundamental barrier to friendships (Hallinan and Williams 1989; McPherson, Smith-Lovin and Cook 2001; Quillian and Campbell 2003). The literature on housing patterns in the U.S. has demonstrated the singular importance of race even more clearly (Massey and Denton 1993; White 1987).

The intermarriage literature has been more equivocal on the issue of the relative strength of racial endogamy compared to educational and religious endogamy, especially since the founding empirical articles of sociological study of marriage patterns in the U.S. by Kennedy (1944; 1952) emphasized the primary importance of religious divisions. Of Kennedy's original sample of more than nine thousand marriage records for New Haven for the 1870-1940 period, there were hundreds of marriages between Catholics and Protestants, but only 5 marriages between blacks and whites (Kennedy 1944 p.331). The evidence of the unique importance of race must have been apparent to Kennedy, but the near absence of racial intermarriage made that subject impossible to study, whereas the substantial number of religious intermarriages provided enough of a sample for Kennedy to write about. Burgess and Wallin's (1943) study of young middle and upper class Chicago couples found religion to be the strongest endogamous dimension, but Burgess and Wallin's data included only white couples, and therefore could not measure racial endogamy.

The early racial intermarriage literature not only tended to overlook or understate the unique power of racial divisions in U.S. marriage markets, but the intermarriage literature has also assumed that higher education and social class would moderate or nullify any remaining barriers of race. Both Kingsley Davis (1941) and Robert Merton (1941) argued for an exchange theory of intermarriage between blacks and whites, whereby the higher education or status of the black spouse would offset the apparent racial disparity of the intermarried couple (see also Rosenfeld 2005). Milton Gordon's (1964 p.224-232) treatise on assimilation, class, and intermarriage proposed the theoretically modernistic idea that intellectuals would be a separate class whose sophistication would make most racial barriers obsolete. Although Gordon had a realistic assessment of the level of black-white social isolation in the U.S., he made over-optimistic assumptions about the power of higher education to offset the historical barriers of race.

Scholars agree that racial endogamy has declined in the U.S. in recent decades (Kalmijn 1993; Qian 1997; Rosenfeld 2002). While the decline of racial endogamy since 1960 is fairly clear from the data, the implications of the decline are not so clear. The decline of racial endogamy implies that social distances between racial groups are shrinking, but this in itself only begs further questions. If race is less important in the U.S. marriage market than it used to be, does this imply that marriage markets are less stratified and structured than they once were, or have racial divisions simply been replaced by other more modern types of social distinctions?

2) Modernization Theory and Educational Endogamy

Modernization theory suggests that societies modernize by displacing ascriptive dimensions of stratification such as race, religion, and inherited social position with other forms of stratification based on formal education and skill (Blau and Duncan 1967; Kalmijn 1991a). For a modern rational economy to function at maximum efficiency, skill and talent must be rewarded without regard to an individual's ascriptive characteristics (Becker 1971). As education has become more important in determining an individual's place in an increasingly rationalized society, it stands to reason that individuals will spend more time with others whose educational attainments are similar to their own. In the post- World War II U.S., women's education has had much more impact on their (and therefore also their spouse's) life chances because the post industrial economy uniquely favors the highly educated, and because married women have entered the labor force in great numbers in the past 50 years. Since women's education now has a greater influence on the socioeconomic status of married couples, it follows that education should play a stronger role in mate selection. Modernization theory implies that as racial endogamy has declined, educational endogamy should have increased.[2]

The empirical research on educational endogamy in the U.S. has, however, not reached a consensus on the magnitude or even the direction of change in educational endogamy over time (Kalmijn 1991a; Kalmijn 1991b; Mare 1991; Raymo and Xie 2000; Schwartz and Mare 2005; Shafer and Qian 2006; Smits, Ultee and Lammers 1998; Smits, Ultee and Lammers 2000). According to Smits, Ultee, and Lammers (1998), modernization should increase educational homogamy and endogamy only up to a certain point. After a certain point (a turning point whose timing is left vague by Smits, Ultee

[2] On the other hand, Shafer and Qian (2006) point out that as the age at first marriage has risen dramatically since 1970, couples are marrying so much later that they no longer need education as a proxy for future earnings- most adults are already well embedded in their careers by the time they marry.

and Lammers) modernization would undermine all types of endogamy and homogamy including educational endogamy as young adults become more independent, and are less likely to marry someone from school as a result of marrying later (Mare 1991). In a recent comprehensive review of trends in educational endogamy in the U.S. with data from the census and the current population survey, Schwartz and Mare (2005 p.637) found that the odds of educational endogamy had increased from the 1960s to 2003, but the magnitude of the change was modest, roughly from 3 to 4.[3] Using longitudinal data, Shafer and Qian (2006) came to the opposite conclusion that educational intermarriage has increased slightly more than educational endogamy in recent decades.

By comparing educational endogamy trends to the more dramatic trends in racial endogamy over time, I suggest that the power of educational endogamy in the U.S. has always been fairly modest, and that the system of educational assortative mating has been comparatively stable in the 1940-2000 period. One reason the literature on educational assortative mating has produced some divergent results is that the changes over time are fairly subtle, and researchers using different data sources or applying different methods may easily reach different conclusions about the magnitude or even the direction of changes in educational assortative mating over time.

[3] Schwartz and Mare's exponentiated coefficient for the endogamy diagonal might have to be squared to compare it to the raw odds ratios I discuss below. If the endogamy diagonal term exponentiated is *a*, then the local table odds ratios of predicted values for local tables that contain the diagonal would be the cross product of $\begin{pmatrix} a & 1 \\ 1 & a \end{pmatrix}$, or a^2 (Clogg and Shihadeh 1994). Squaring the term for the endogamy diagonal which Schwartz and Mare report as approximately 4 yields approximately 16, which is between the values reported for some college endogamy (odds ratio 8.3) and college degree endogamy (odds ratio 17.1) for young couples in Figure 1.

3) Secularization Theory and Religious Endogamy

Secularization theory is a corollary to the modernization theories first advanced by the founders of sociology (Gorski 2000). Secularization theory advances the notion that modernity reduces the influence of organized religion over historical time (Wilson 1976). The broader forms of secularization theory also advance the notion that modernization and the rise of science and technology must necessarily diminish the role of the supernatural in every day life. Chaves (1994) argues for a narrower theory of secularization, which includes the idea that the authority of religious organizations may have declined since premodern times, but makes no assumptions about changes in religiosity or spirituality at the individual level.

Secularization in its narrow form (a decline in the influence of organized religion) should be accompanied by a decline in religious endogamy for several reasons. First, clerical leaders have been among the leading opponents of religious intermarriage in the past (Mayer 1985). If the clerical leaders lose influence over their flocks or are forced to temper their once absolute insistence on religious endogamy, then religious endogamy would decline. Second, if fewer citizens have their social life organized by houses of worship and by religious schools, we would expect greater social exposure across religious lines and less religious endogamy as a result (Blau and Schwartz 1984). Note that declining religious endogamy is not necessarily associated with a decline in individual devotion or spirituality, but rather declining religious endogamy might be associated with a decline in the social barriers that separate members of different faiths.

Opponents of secularization theory argue that the alienation which modernity imposes on individuals makes religious belief more, rather than less important than it was

in the past (Berger 1969; Greeley 1972). Both sides in the secularization debates have mustered new evidence and analyses in recent years (Hadaway, Marler and Chaves 1993; Hout and Fischer 2002; Hout and Greeley 1987; Presser and Stinson 1998), and neither side seems inclined to accept the validity of the evidence that the other side has offered (Hout and Greeley 1998; Marwell and Demerath 2003). Given the lack of federal data on religion in the U.S., and the resulting necessity to rely on smaller surveys which don't reach back nearly as far in time as the U.S. census, empirical disputes in the field of religious studies are especially difficult to resolve (Glock and Stark 1965; Goldstein 1969).

Ruby Jo Reeves Kennedy (1944; 1952) influentially argued that the U.S. was a triple melting pot with national origin groups assimilating not into a multiethnic and religiously diverse U.S. society, but rather into three religious groups: Protestants, Catholics, and Jews. Although Kennedy's data clearly implied that religious endogamy had declined in New Haven over time, Kennedy emphasized the stability of religious barriers in her discussion. Kalmijn (1991a) is part of a more recent re-evaluation of Kennedy's thesis of the triple melting pot. Kalmijn argued that religion was being replaced by education as a key social division in U.S. marriage markets, a classic argument of secularization and modernization.

Data and Methods

The race and education data I use come from the U.S. census microdata, via the University of Minnesota's Integrated Public Use Microdata Series, or IPUMS (Ruggles et

al. 2004). Educational attainment of both spouses is available from the 1940 and the 1960-2000 censuses. For educational endogamy prior to 1940, I rely on census data on literacy. Race of both spouses is available in censuses dating back to the 19th century. The U.S. census microdata have enormous sample size and long historical runs, but the census has never included questions about religion (Goldstein 1969).[4] For the 2000 census, I exclude the multiracials from the black, white, and Asian categories when calculating each group's odds ratio of endogamy. Excluding the multiracials in this way has no effect on Hispanic endogamy, an insignificant effect on white and black endogamy, but a real effect on Asian endogamy (Qian and Lichter 2007).[5]

Data on religion and religious intermarriage are only available in datasets that are much smaller than the U.S. census and the best of these, the General Social Survey (GSS) only goes back to 1972 (and for the religion both spouses were raised in, only back to 1978). Since religious conversion can obscure cases of marriage between persons raised in different religious traditions, rates and odds ratios of religious endogamy should be calculated based on the religion both spouses were raised in (Johnson 1980; Kalmijn 1991a). Along with the GSS, I use the 1955 Growth of American Families (GAF) survey because it too was a nationally representative survey which recorded the religion in

[4] The March, 1957 Current Population Survey (CPS) was the last, and perhaps the only large scale federal survey to ask about religion. The micro level data from the March 1957 CPS have never been released to the public (Goldstein 1969), so we must rely on the report the Census Bureau published about the March 1957 CPS (U.S. Bureau of the Census 1958).

[5] If Asians comprise 1% of the US born married population, and roughly 50% of US born Asians are married to other Asians, that implies both a high odds ratio of endogamy (since the inmarriage rate is so much higher than 1%), but also a high percentage of outmarriage (50%), since Asians are such a small group relative to the whole population (Blau and Schwartz 1984; Qian and Lichter 2007). The high percentage of intermarriage in recent cohorts means that the rate of multiraciality for young US born Asians is much higher (about 40%) than the rate of multiraciality for whites and blacks in the US (roughly 2%). Because the rate of intermarriage with whites is higher for multiracial Asians (who are mostly Asian and white) than for monoracial Asians (Lieberson and Waters 1988; Qian and Lichter 2007), excluding the multiracials from the Asian category when calculating the Asian odds ratio of endogamy from the 2000 census data inflates that odds ratio. If multiracial Asians were included in the Asian sample, the Asian odds ratio would be less than half as high, or an odds ratio of 75 instead of 173 (see Figure 1, below).

which respondents and their spouses were raised. In order to extend data on religious endogamy further back in time, I also re-analyze data on religious endogamy from published sources which used data from earlier periods, such as Kennedy (1944; 1952) and Burgess and Wallin (1943). Comparisons between datasets collected in different ways and at different times is fraught with difficulty; one cannot draw strong conclusions from such comparisons. And yet, in the absence of a single fully sufficient dataset for studying religious endogamy over the entire 20th century, the best one can do is study and compare the various sources that do exist, while being mindful of the difficulties inherent in comparing results across data sources.

The data from the census, the GSS, and the GAF provide prevalence measures of marriage and intermarriage, that is they record who was married to whom at the time of the survey. Kennedy's (Kennedy 1944; Kennedy 1952) data are incidence data, culled from marriage license records of New Haven. If intermarried couples have a higher rate of marital dissolution (Kreider 1999), intermarried couples would be underrepresented in prevalence surveys, and the rate of under representation would worsen with marital duration. In order to mitigate the force of marital dissolution bias, I rely on younger married couples (Qian 1997) or, where the data allow, on couples married recently before the various surveys (Rosenfeld 2005).

In order to purge the data of changing marginal distributions over time (which are especially problematic for educational intermarriage), I use the raw odds ratio for endogamy (Lieberson and Waters 1988; Rosenfeld 2002). The odds ratio for endogamy is the cross product of a 2×2 cross tabulation of husbands by wives, where the husbands and wives are each categorized along the same dichotomous inclusive categories, such as

'black' versus 'non-black.' The odds ratio for endogamy is gender symmetric, because 2×2 tables allow only one degree of freedom for interaction between the row and column variables (Agresti 2002). The gender symmetry of the odds ratio suppresses the gender differences in racial intermarriage (Jacobs and Labov 2002) which are interesting in their own right, but are beyond the scope of this paper. In datasets that have weights, I use the weighted data to calculate the odds ratio, and I use the unweighted counts to calculate the asymptotic standard error of the natural log of the odds ratio (Clogg and Eliason 1987), which in turn is used to calculate the confidence intervals of the odds ratio.

The raw odds ratio is a middle ground approach to the data, between the methodological naiveté of the pioneering early studies of intermarriage (Kennedy 1944; Kennedy 1952), and the complex multivariate models which typify recent scholarship on intermarriage (Kalmijn 1998). One advantage of the raw odds ratio approach is that different data sources and many different dimensions of endogamy can be analyzed collectively, in a way that facilitates comparisons across social dimensions (Lieberson and Waters 1988).

Reducing the ordinal educational scale to a dichotomy for raw odds ratios is useful for comparing educational endogamy to racial and religious endogamy, but collapsing the educational scale to two categories might obscure important details. In order to take all the subtleties of educational assortative mating into account, I also explore a saturated loglinear model later in the paper.

Racial, Educational and Religious Profile of the U.S. Over Time

Before turning to the odds ratios of endogamy which control away changes in the marginal distributions of the primary characteristics (race, education, and religion), it is worth while to examine how the primary characteristics have changed over time. Despite the changing national origin profile of immigration to the U.S. (Jasso and Rosenzweig 1990), the racial composition of the U.S. has remained remarkably stable for more than 100 years.[6] The reason that the racial composition of the U.S. has remained relatively stable over the past century is that early 20th century immigrant groups (Irish, Poles, Italians, Greeks) were comprehensively assimilated into white America even though these immigrants were initially viewed in the U.S. as racially distinct from the dominant white population of Northern European Protestant extraction (Ignatiev 1995; Lieberson 1980).

[Table 1 here]

Table 1 shows the racial profile of the U.S. adult population for 1880-2000. From 1880 to 1960, the racial profile of the U.S. remained fairly constant: roughly 88% of the population was white, roughly 10% of the population was black, while Asians and Native Americans made up the remaining two or three percent. The largest change since 1960 is the growth of the Hispanic population (Bean and Tienda 1987). Hispanics were 1.6% of

[6] North America did experience a dramatic racial upheaval with the displacement of the Native Americans by European settlers, but the cataclysmic decline of native populations was over by the late 19th century (Zuberi 2001).

the U.S. population in 1960, and have grown to 10.8% in 2000.[7] Hispanicity is, however, a separate category from race on the census, and most Hispanics chose 'white' as their race on the census.[8]

While the racial profile of the U.S. has remained fairly stable, the educational profile of the U.S. has undergone a revolution. In 1940, more than half the adult population of the U.S. had an 8th grade education or less (44.1% had 5-8 years of education, and an additional 12.8% had less than 5 years of formal education). In the early 20th century, higher education was so rare that the census didn't bother to ask about educational attainment, asking about literacy and current school enrollment instead. After World War II the higher educational system was expanded via the G.I. Bill, and by decades of government investment. By 2000, the vast majority of adults in the U.S. had either secondary or post secondary education. In 1940 only 10.5% of adults in the U.S. had been to college. In 2000, more than half of adults in the U.S. had at least some college education.

The rate of change of religious affiliation of adults in the U.S. over time is much less than the rate of change of education over time, but somewhat more than the rate of racial change over time. Mainline Protestants (Methodists, Lutherans, Episcopalians, and Presbyterians) have declined as a proportion of U.S. adults, from 26.7% in 1957 to 18%

[7] Individual Hispanic identity prior to 1970 is from the post enumeration surname identification done by the Census Bureau. Surname identification is a noisy and imperfect proxy for Hispanic self-identification (introduced in the 1970 census).

[8] Legally, Hispanics (unlike blacks and Asians) have nearly always been 'white' under U.S. law (López 1996). Whether the diverse population of Hispanics in the U.S. is destined to follow the social path of the Irish and Italians and 'become white' in the U.S. is hotly debated in the literature on ethnic studies (Acuña 1988; Portes and Zhou 1993; Rosenfeld 2002; Skerry 1993). Table 1 overstates the recent racial changes in the U.S. by treating Hispanics as a separate racial category. If Table 1 were to treat Hispanicity as a non-racial category by distributing the Hispanics into the racial groups they chose for themselves when filling out their census questionnaires, the racial profile of the U.S. in 2000 would look even more like the racial profile of the U.S. in 1880.

in 2000-2002. ‘Other Protestants’, including Baptists and the smaller sects which tend to be more fundamentalist and politically conservative have remained at the level of about 37% since mid century (Hout, Greeley and Wilde 2001; Smith 1987). Catholics remain at about 25% of all U.S. adults, and the percentage of U.S. adults who are Jewish remains a bit above 2%.

Over time the percentage of people reporting no religious affiliation has grown. If one examines only the GSS data from the 1970s to 2000-2002, religious nonaffiliation grew from 7% to 14%. While some have denied that the growth in religious nonaffiliation is a sign of secularization because the nonaffiliated may still be believers (Hout and Fischer 2002), the growth in nonaffiliation is a sign of the declining reach of formal religious organizations, which is a sign of secularization in the narrow sense (Chaves 1994; Marwell and Demerath 2003). The datasets of the 1950s showed an even lower rate of religious nonaffiliation (0.8% in the GAF, 3.6% in the CPS) compared to the GSS.

Although the rise of religious nonaffiliation is a sign of secularization in the narrow sense, it is important not to overstate the distinctiveness of the “none” and “other” religious categories. I show below the religious category “none” had relatively low levels of religious endogamy. The low level of endogamy indicates that those who described their religion as “none” mixed relatively freely in the marriage market with the majority of the population who are self-identified Christians.

Odds Ratios of Racial, Educational, and Religious Endogamy over Time:

Lieberson and Waters (1988) and Rosenfeld (2002) both found that racial and ethnic endogamy has been declining across all groups over time, and that endogamy has been highest for blacks, meaning that blacks continue to be more isolated in the marriage market than any other racial, ethnic, or ancestral group in the U.S.

Figure 1 extends these analyses by comparing racial endogamy to educational and religious endogamy over time. For educational endogamy I use two socially relevant educational signposts: some college (or more) versus no college, and college degree (or more) versus less than college degree. For the 1880-1930 period I use literacy, specifically the ability to read and write, contrasted with all others.

[Figure 1 here]

Figure 1 shows the endogamy odds ratios plotted on a log scale because the natural log of the odds ratio is asymptotically normal (Agresti 2002), and because the log scale allows small values to be compared with much larger values. The odds ratio for endogamy are simply the odds of endogamy divided by the odds of exogamy (or out-marriage), so higher odds ratios of endogamy imply greater isolation within the marriage market. An odds ratio of 1 would mean that the category in question had no significance in the marriage market, because the odds of marrying within the group would have to be the same as the odds of marrying someone from outside the group. The larger the odds ratio for endogamy, the greater the isolation of that social group in the marriage market. Because the odds ratios are not affected by relative population sizes, the odds ratios are

an ideal basis for first order comparison of endogamy between small groups and large groups, across a variety of social dimensions.

The endogamy odds ratios are all built upon the cross products of 2×2 tables where each variable is reduced to a simple dichotomy, black versus non-black, Protestant versus non-Protestant, the college educated versus the non college educated, and so on.

		Husband's race	
		Black	All Others
Wife's	Black	5,010	44
Race	All Others	86	58,477

In this example of unweighted data from the 1970 census (for U.S. born individuals age 20-29), the cross product or odds ratio would be 5,010(58,477)/(44(86))=77,442, which is the value plotted in Figure 1 for black endogamy in 1970.

Young blacks in Figure 1 have the highest odds ratios of endogamy across all censuses, reaching a peak of more than one million in 1920. The endogamy odds ratios for all major racial groups have declined fairly consistently over time. By the 2000 census, the endogamy odds ratios for blacks had fallen to 1,157 (meaning that the odds of marrying a black woman were still 1,157 times higher for black men than for non-black men). The endogamy odds ratio for young Hispanics had fallen to 73 (in 2000) from 464 (in 1970). The endogamy odds ratio for Asians fell from 94,000 (in 1950) to 174 (in 2000), and the endogamy of young whites followed a similar downward path.

The picture for educational intermarriage is different in two respects. First, educational endogamy has always been less powerful than racial endogamy in the U.S.,

meaning the odds ratios for educational endogamy have always been lower than the odds ratios for racial endogamy. Secondly, whereas racial endogamy follows a pattern of steep decline especially after 1960, educational endogamy has declined at a much more modest rate. In 1940, the odds ratio for college degree endogamy was 34, and this declined to 23 in 1960, to 19 in 1970, and 17 by 2000. The odds ratio for some college endogamy was 21 in 1940, and this declined to 7.2 in 1990, before rising to 8.3 by 2000.

One way to put the odds ratios of educational endogamy into perspective is to find ethnic and ancestral groups whose odds ratios for endogamy have similar values. The ancestral white ethnic groups "English," "Irish," "German," and "Italian" each had odds ratios for endogamy in the neighborhood of 10 in the 1980-2000 period (not shown in Figure 1), with the English being slightly higher and the Germans, Irish, and Italians having slightly lower rates of endogamy (Rosenfeld 2002, table 2). Since everyone in the sample is U.S. born, the identification with "English" or "Irish" identity is what Mary Waters refers to as an "optional identity," meaning it is an identity that individuals may choose to express at times and in ways that are convenient to them (Waters 1990).

Another way to put trends in educational endogamy into perspective is to compare the trends in college degree endogamy and some college endogamy from the 1940-2000 with the trends for literacy endogamy in 1880-1930. Although literacy endogamy for young US-born couples ended up at nearly the same level in 1930 (odds ratio of 47) as it had been in 1880 (odds ratio of 42), there was a fairly powerful dip in literacy endogamy to an odds ratio of 11 in 1910[9]. Compared to the fluctuations in the odds ratio of literacy

[9] In theory, literacy included the ability to read and write in any language, but the ability of the census enumerators to determine literacy in languages other than English may not have been very good.

endogamy, which ranged over a factor of 4 in 50 years, the raw odds ratios of college degree endogamy declined by a factor of 2 in 60 years, a comparatively modest change.

Religious endogamy for Protestants and Catholics, like educational endogamy, was at least an order of magnitude weaker (in odds ratio terms) than racial endogamy. In the 1955 GAF survey, religious endogamy was 19.2 for young adults raised in the Protestant traditions, and 19.4 for young adults raised as Catholics.

Jewish endogamy was substantially higher than Catholic or Protestant endogamy, with values between Asian and Hispanic endogamy, suggesting that the social barriers between Jews and Christians are still relatively high, though declining. In the 1955 GAF Jewish endogamy had an odds ratio of 1483, declining to 580 in the late 1970s, 349 in the 1980s, and 197 in the 1990s (using data from the GSS). Because there were too few young married Jews in the GSS and the GAF, I included respondents of all ages in the calculations of Jewish endogamy which tends to overstate endogamy somewhat by including couples married earlier (when social barriers against Jewish- Christian intermarriage were higher). If Jewish endogamy were calculated using only respondents from the middle Atlantic states (where most Jews in the US live), the odds ratios of Jewish endogamy would be cut by about 50%, but Asians and Hispanics are also geographically concentrated in the US (albeit in different areas), and the geographic concentration of US born persons from all these groups is not accidental; rather it is part of the considerable (but rapidly declining) social isolation of all three groups.

The odds ratios of endogamy for Catholics and Protestants were nearly identical in 1955 because the Catholics and Protestants combined were more than 95% of the population in the U.S. in 1955. The impact of the other (non-Catholic and non-Protestant)

groups was relatively small on the marriage choices of Catholics and Protestants and therefore from the Catholic and Protestant perspectives, there were only two groups (if we take the Protestants as an aggregate group). Since a 2×2 table yields only a single degree of freedom for association, the odds ratios of Protestant and Catholic endogamy were nearly the same. As the number of non-Christians and religiously nonaffiliated persons has increased over time, Protestant and Catholic endogamy have diverged slightly, so that in the early 1990s GSS sample, Protestant endogamy had an odds ratio of 4.2, and Catholic endogamy had an odds ratio of 5.5.

From the late 1970s to the early 1990s (the time frame over which the GSS provides the religion both spouses were raised in), Protestant and Catholic endogamy declined only slightly, and the differences were not statistically significant. In order to see a significant decline in Protestant or Catholic endogamy, one has to compare the 1955 GAF to the GSS surveys from two decades later. To the extent that religious endogamy is a sign of secularization at the level of the influence of traditional church organizations over personal life (Chaves 1994), the secularization of Christians seems to predate 1970, whereas the secularization of Jews is continuing. This is potentially significant because most of the recent debate over secularization in the U.S. refers only to Christian secularization and relies on data (such as the GSS) which were collected after 1970.

Although Kennedy described the US as a triple melting pot (with Jews, Protestants, and Catholics as the three groups), and despite the fact that the doctrinal and social divisions between Catholics and Protestants may have been bitterly contested in the distant past, none of the Christian subgroups have a strong enough odds ratio of endogamy to be considered substantially isolated from other Christians in the US any

longer. Religious endogamy of the constituent Protestant groups in the 1977-1994 GSS was roughly the same (in odds ratio terms) as Protestant endogamy overall. Mainline Protestant endogamy tended to be slightly lower, while Baptists and evangelical Protestants had slightly higher levels of religious endogamy, but all the Protestant groups had odds ratios of religious endogamy less than 10, indicating that intermarriage between Protestant sects, and between Protestants and other Christians was fairly common. Religious endogamy for the "none" religious category (not shown in Figure 1) had a very low odds ratio of 3.6, suggesting that those in the "none" category are either individuals with Christian ancestors or individuals with a secular familiarity with Christianity who mix easily with the majority Christian population.[10]

The Effect of Compositional Changes

One of the reasons scholars who study intermarriage have relied on multivariate methods (usually loglinear models, which are based on the odds ratio), rather than raw odds ratios (such as those in Figure one), is that while the raw odds ratio controls for compositional changes along two dimensions (or the same dimension for each spouse), multivariate models can control for compositional changes along many dimensions. For instance, the gap between the educational distributions of blacks and whites narrowed between 1940 and 2000. Even if educational endogamy was roughly constant between

[10] The "other" religious category in the 1978-1994 GSS is a grab bag of Orthodox Christians, interdenominational Christians, and a small smattering of Buddhists and Muslims, with a modest joint religious endogamy odds ratio of 15. The Buddhists and Muslims, whose religious endogamy might be expected to be substantially higher than the other groups could not be isolated in the GSS because the GSS question about the religion spouses were raised in (SPREL16) did not break the Buddhists or Muslims into separate categories.

1940 and 2000, some part of the decline in black and white racial endogamy observed in Figure One could be due to increasing educational similarity of the black and white populations.

Detailed loglinear modeling studies which examine the joint effects of race and education on marriage choice are numerous (Fu 2001; Gullickson 2006; Kalmijn 1993; Qian 1997; Rosenfeld 2001). The US census provides data with enormous sample sizes, and the loglinear models are an excellent set of tools for parsing out and identifying second and third order effects. One potential downside of the usual multivariate loglinear approach is that it is all too easy to focus on interesting but ultimately minor secondary effects (see for instance the treatment of marital panethnicity in Rosenfeld 2001), while controlling away the forces that have greater influence on the marriage market. In an appendix to this paper I show that various controls for education in fact have only a minor effect on racial endogamy, and on the change in racial endogamy over time. The raw odds ratios of racial endogamy, and the odds ratios of racial endogamy 'net' of all educational changes are nearly the same. Racial endogamy is so much more powerful than educational endogamy in the U.S. that changes in the relative educational distribution of racial groups have only a minor effect on racial intermarriage.

For a similar reason, the raw odds ratios of educational endogamy are not much affected by changes in the racial composition of the U.S., or by changes in racial endogamy. The relatively high power of racial endogamy, even at the end of the 20th century, means that well more than 90% of all marriages in the U.S. continue to be racially endogamous. Because the educational marriage patterns of interracially married couples tend to be the same as the educational marriage patterns of racially endogamous

couples (Rosenfeld 2005), the decline of racial endogamy has not had much of an effect on educational intermarriage patterns.

There is certainly some racial variation in educational intermarriage patterns, for instance blacks tend to be slightly less educationally endogamous than whites (Rosenfeld 2005). There are also some differences in racial endogamy by education (a subject I examine in more detail below), but the overall impact of compositional changes and interactions between race and education in the U.S. marriage market are relatively minor. The fact that the odds ratios of racial endogamy are not much affected by compositional changes in education (and vice-versa) helps justify the comparison of raw odds ratios in Figure One, as a first order estimate of each group's closure in the marriage market.

Catholic and Protestant Endogamy in Historical Perspective:

In order to put the changes in the raw odds ratios of religious endogamy into broader historical perspective, Table 2 includes odds ratios calculated from older published data as well as odds ratios calculated from the 1955 GAF and the 1977-1994 GSS. At the top of Table 2 are odds ratios for Catholic and Protestant endogamy derived from Kennedy's (1952) table 2. Since Kennedy's data was incident data of marriages (spouses of all ages) from New Haven marriage license records, I use recently married couples (of all ages) from the GAF and the GSS for comparison. The odds ratios for religious endogamy using recently married couples of all ages for 1955 and for the 1970s-1990s in Table 2 are very similar to the odds ratios for young couples reported in Figure 1 from the same sources.

[Table 2 here]

Kennedy's data have many limitations. First of all, Kennedy only reported row percentages and overall sample size. We know her sample included 920 marriage licenses from 1870, 1,770 licenses from 1900, 2,538 licenses from 1930 and 3,816 licenses from 1940 (Kennedy 1944 p.331), but we don't know how many of the marriage licenses were for Protestant brides. Second, Kennedy only had access to the religion reported on marriage licenses; premarital conversion would tend to make marriage license records appear more religiously endogamous. Third, the New Haven marriage licenses may have only recorded the religion of one spouse. Kennedy seems to have used one spouse's national origin as a proxy for religion, assuming for instance that all Germans in New Haven were Protestants, and that all Irish were Catholics. These three flaws make Kennedy's data suspect, but the uniquely long time span of Kennedy's religious endogamy data make the data potentially useful despite their limitations.

I calculated a single odds ratio for Catholic and Protestant endogamy from each year of Kennedy's (1952 p.57) Table 2 by excluding the Jews (whose number was unknown but certainly small) and using the endogamy percentages for Catholics and Protestants as the entries in a 2×2 table from which the odds ratio is the simple cross product. Since the odds ratio is immune to changes of scale, the odds ratio based on percentage entries is the same as the odds ratio one would obtain from the raw number of marriages in each cell of the table. For instance in 1870, 99.11% of Protestants married other Protestants, and 95.35% of Catholics married other Catholics, so

$$\frac{.9911(.9535)}{.0089(.0465)} = 2,283.5 .$$

Unfortunately, without the raw number of marriages in each cell, the confidence interval for the odds ratio is unknown.

The religious endogamy odds ratio of 30.8 derived from Kennedy's 1940 sample of New Haven marriages is within the confidence interval of Burgess and Wallin's 1937-39 sample of young white engaged couples in Chicago (odds ratio confidence interval 27.8-60.6 for Protestants, 26.0-68.4 for Catholics). The religious endogamy odds ratio of 6.45 derived from Kennedy's 1950 sample is significantly lower than the odds ratio of Catholic and Protestant endogamy from recently married couples in the 1955 GAF (confidence interval 16.1-29.0). It is not clear, in other words, how religious endogamy odds ratios derived from Kennedy's sample of New Haven marriage licenses could be expected to compare to nationally representative surveys, but the results at mid century appear to be not too far apart.

The odds ratio of religious endogamy derived from Kennedy's 1870 sample is especially interesting because at 2,283.5 it is 33 times larger than the odds ratio of 68.5 derived from her 1900 data. Is it possible that the 1870 figure is completely misleading? Kennedy's data had 920 marriage licenses from 1870. Protestants were certainly in the majority in New Haven in 1870, but there should have been enough Catholics in the marriage record sample from New Haven in 1870 to allow for a reasonable confidence interval around the endogamy odds ratio. Irish Catholics had been immigrating to the eastern U.S. since the early 1800s, with a peak during the Potato famines of the 1840s (Ignatiev 1995). If Kennedy's religious endogamy data series is to be believed, then the

implication is that social barriers between Protestants and Catholics in New Haven declined dramatically between 1870 and 1900.

Racial Endogamy by Educational Attainment:

Table 3 presents odds ratios for racial endogamy calculated with three separate educational samples of 1980 census data. The first sample contains only married couples whose spouses both had less than a high school degree. The second sample includes only couples whose spouses both had at least a high school degree, but less than a college degree. The third sample includes only couples whose spouses both had at least a college degree. Since the odds ratios control for the marginal distributions of both spouses by race, and since the samples are educationally specific, these odds ratios of racial endogamy control for the educational attainments of each racial group.

[Table 3 here]

Since age is associated with educational attainment, Table 3 relies on couples (of any age) married for the first time within 10 years of the 1980 census rather than young married couples (Rosenfeld 2005). Age at marriage is not available in the 1990 or 2000 U.S. census, so the 1980 is the most recent census data that can be used in this way. For U.S. born blacks with less than high school education married in the 1970s, the odds of having a black spouse were 17,101 times higher than the odds of having a nonblack spouse. For blacks with a college degree, the odds ratio of racial endogamy was 13,181.

The odds ratio of black endogamy was smaller for blacks with the highest level of education (a ratio of 0.77), but the ratio was not significantly different from 1 (the confidence interval, 0.53-1.12, straddled 1). For white endogamy the picture was similar: whites with college degrees had a slightly lower tendency to racial endogamy, 0.88 times as high as whites with less than high school education, but the ratio was not significantly different from 1.

For Asian Americans married in the 1970s, the odds ratio of racial endogamy was half as high among the college educated (odds ratio of 591) as among Asian Americans with less than a high school degree (odds ratio 1,160) and the ratio was significantly different from 1. U.S. born Hispanics are the only group whose pattern of ethnic or racial endogamy in the 1970s was dramatically altered by higher education. The odds ratio of Hispanic endogamy was 479 for U.S. born Hispanics with less than a high school degree, but only 71 for U.S. born Hispanics with a college degree or more, a ratio of roughly 7 to 1. Since these odds ratios control for the size of the racial groups in each educational category, the influence of education on Hispanic endogamy was not a simple matter of the different educational profile of Hispanics relative to other groups. The comparatively low level of endogamy for Hispanics with bachelors degrees indicates either that college education eliminated most of the social barriers between Hispanics and non Hispanics, or else that the U.S. born Hispanic population which has the opportunity to attend college was very different from and much less socially isolated than the U.S. born Hispanic population which did not attend college.

Table 3 helps put the unique power of race into perspective. Although education has a moderating effect on racial endogamy, among married people with college degrees

in 1980 the odds ratios of black, white and Asian endogamy were more than 10 times higher (and for blacks, more than 100 times higher) than the odds ratios of educational endogamy in the general U.S. population. Race (Hispanicity excepted), even for the highly educated, was a far stronger divide in the marriage market than education or than the division between Protestants and Catholics.

A Graphical Representation of the Saturated Model for Educational Assortative Mating:

The raw odds ratios of educational endogamy I presented in Figure One were simple to calculate and easy to interpret, but the raw odds ratios overlook much of the complex pattern of educational assortative mating. Years of formal education constitutes an ordinal scale, which implies that the pattern of off-diagonal interactions is worthy of careful attention. In order to understand the pattern of educational assortative mating, one needs to understand not only how often spouses have the same education, but how often spouses' educational attainments differ by one category, or two categories, and so on (Mare 1991; Schwartz and Mare 2005). My approach to the complex picture of educational assortative mating is different from the approach that has usually been taken in the published literature. Rather than fitting loglinear models to the data and then trying to make sense out of a subset of coefficients from a few of the models, I use the saturated model of husband's education by wife's education to fit the data exactly (Goodman 1970). I then plot the full set of interaction terms so that the entire pattern of interactions can be examined graphically and compared across census years.

My approach here has both advantages and disadvantages when compared to the usual loglinear modeling approach. One advantage of using saturated models is that the data presented are the actual data, not the fitted data which may come closer to the actual data in some places than in others. Since the usual fit statistics for loglinear models (the likelihood ratio test, the BIC, the AIC) are global fit statistics, the question of how the model fits in the theoretically most important cells is usually left unanswered (Rosenfeld 2005; Weakliem 1999). One could supplement the usual loglinear model fitting approach with a detailed study of the standardized residuals for all cells across models, but this is rarely done.

A three dimensional graph (with the coefficients plotted on the Z- axis) is one natural way to present a set of coefficients which interrelate. A man's odds ratio of marrying a woman with a college degree depends not only on the relative preferences of men and women for spouses with college degrees, but also on the competing attraction of potential spouses from all the other educational groups. In other words, the entire set of interacted men's and women's educational marriage decisions ought to be considered as a whole. Figure 2 facilitates the visualization of the entire set of educational interactions, purged of changes in marginal educational distributions.

When graphing data, Tufte (2001 p.95) cautions against graphing predicted values or smoothed data in lieu of the observed data. Graphing interaction coefficients from the saturated model satisfies Tufte's criteria for data presentation because while the interaction coefficients represent a transformation of the observed data, the saturated model fits the data exactly without simplifying or smoothing.

Since the saturated model has one term for every cell in the cross tabulated dataset, the saturated model is the least parsimonious of all possible models. The saturated model's lack of parsimony is certainly a liability if one seeks the simplest and most parsimonious description of the data (Agresti 2002; Bishop, Fienberg and Holland 1975). If a parsimonious model fits the data as well as or better than the saturated model by all of the measures of goodness of fit (including the hard-to-satisfy likelihood ratio test), then the parsimonious model would indeed have advantages over the saturated model as an analytical tool (Agresti 2002 p.316). As the number of interactions in a loglinear model grows, however, the interpretation of the interaction coefficients becomes much more difficult, and the analytical advantages of parsimony dissipate. A complex loglinear model can, because of the difficulty of interpreting the coefficients, obscure the data as easily as it can simplify or clarify the data (Rosenfeld 2005). Finally, the saturated model demands a nonzero (and preferably substantial) number of counts in every cell, a requirement which in the case of census data is not difficult to satisfy.

The dataset includes couples whose spouses were both age 20 to 39 and both U.S. born from the 1940, 1960, 1980 and 2000 censuses. I use 20 year spans between censuses, and I use age groups 20 years wide in order to minimize the problem of shifting age at marriage and increasing educational participation by young adults in their 20s (Rosenfeld 2005). The education categories were compressed to 5 in order to decrease sparseness from the data and in order to decrease clutter in the figures: less than 9th grade, 9th-11th grade, high school degree, some college, and bachelor's degree or more. The dataset of 5×5×4=100 cells has 1,704,309 cases (unweighted), and the smallest cell has 120 (unweighted) couples.

Within each census year's data, the loglinear model takes the saturated form

$$Log(U)=HusbEd\times WifeEd$$

where *U* are the predicted (and actual) counts. The coefficients for *HusbEd* and *WifeEd* sum to zero, and the educational interaction terms also sum to zero, and the lower order terms are implied. Having the coefficients sum to zero ensures that the coefficients will be the same regardless of which educational category is the comparison category. The coefficients are then exponentiated make them more comparable with the simple odds ratios discussed earlier in the paper, and plotted on a log scale.[11]

[Figure 2 here]

Figure 2 is composed of four figures: the educational interactions for 1940, 1960, 1980, and 2000. The figures describe the pattern of educational assortative mating purged of any effects of changing educational distributions over time. The figures include all 25

[11] The models account for census weights in the manner described by Clogg and Eliason (1987), which means that the interactions fit the weighted data exactly. The weights make no difference for 1940-1980 (since the household weights were nearly perfectly uniform in those censuses), but the weights have a slight effect on the coefficients from the 2000 census. For sum to zero parameter constraints, see Hout (1983 p.20) and Agresti (2002 p.317). The values plotted in Figure 2 are simply exponentiated coefficients from the saturated loglinear model described above. With all nonzero counts, as in this case, the saturated loglinear model coefficients can be produced by direct calculation from the tables of marriage counts by husbands' and wives' educations, without recourse to specialized software. First take the natural log of each cell count. Then subtract the global mean log count from each cell, and then subtract the mean of each row and of each column from their respective rows and columns. What remains in each cell are the interaction coefficients from a saturated loglinear model, or in other words the log counts purged of row and column effects, with global, row, and column means of zero. The "sums to zero" coding constraint becomes a "product of one" constraint after the values are exponentiated. SAS Proc Genmod uses sums to zero coding as its default, while Stata's xi command allows only indicator variable coding (with one comparison category set to zero), but Stata's desmat add-on command allows sums to zero coding, also known as deviation coding.

educational interactions even though only 16 of the interactions can be mutually independent. The figures include all interactions whether they were statistically significant or not. An alternative set of figures which includes the changes in educational endogamy over time is available as an appendix.

The pattern of educational assortative mating is quite stable from 1940 to 2000; each figure takes a 'saddle' shape.[12] The educational endogamy diagonal points toward the reader's right shoulder. The adjusted odds ratios are highest along the endogamy diagonal, with peaks in educational endogamy at the highest and lowest educational levels, meaning the highest and lowest educational groups were the most isolated in the marriage market.[13] The adjusted odds ratios fall with each step away from the endogamy diagonal, meaning that the likelihood of intermarriage declines as the difference between spouses' educational attainments increases. The saddle pattern is the typical pattern for educational assortative mating. The four census years covered in Figure 2 are all plotted on the same scale, which illustrates that not only the shape but also the magnitude of the intensity of educational assortative mating has remained roughly consistent from 1940 to 2000.

Because the loglinear models control away changes in marginal distributions of husbands' and wives' educations, we would not have expected the historical increase in educational attainments from 1940 to 2000 to be reflected in Figure 2. Figure 2 does, however, stand somewhat at odds with the empirical literature on educational

[12] The coefficient for college degree endogamy from 2000 in figure 2 is 15.5, which is not so different from the simple odds ratio of 17.1 reported for college degree endogamy in Figure 1.
[13] A single interaction term specifying a single cell would be an odds ratio coefficient, because the coefficient would correspond exactly to the cross product from a collapsed 2×2 table. Once every cell has it's own interaction coefficient, and the coefficients are measured jointly, the coefficients no longer correspond to simple odds ratios.

intermarriage. The literature on educational intermarriage, which also relies primarily on loglinear models, and which controls away the effects of marginals in the same way as Figure Two, has argued that fundamental changes have taken place in the past 60 years in the pattern of educational assortative mating, net of marginal changes in educational attainment (Mare 1991; Schwartz and Mare 2005). By putting educational intermarriage in the broadest perspective that loglinear models allow, Figure Two suggests that the structure of educational assortative mating has been rather more stable than the literature has suggested (see also Raymo and Xie 2000).

Figure Two visually emphasizes the consistency rather than differences in educational assortative mating across census years, though a few changes are noticeable. Educational endogamy for individuals with college degrees increased significantly across the four censuses, from an adjusted odds ratio of 7.7 in 1940 to an adjusted odds ratio of 15.5 in 2000. Appendix figures, which highlight the differences in educational assortative mating between the census years, reconfirm these findings. The finding of increasing educational endogamy for persons with college degrees (after accounting for all other changes in educational assortative mating) in Figure Two contrasts with the raw odds ratios in Figure One, which showed a decline of college degree endogamy from 34.3 in 1940 to 17.1 in 2000.

Discussion:

Although this paper has focused on broad descriptive comparisons rather than on detailed hypothesis testing, the data do suggest several conclusions which confirm prior

findings, and several other conclusions which suggest that some prior assumptions need to be re-examined.

The decline of racial endogamy has been widely reported. What has not always emerged so clearly from the literature on racial intermarriage is the extent to which racial barriers are still, even after decades of decline, dramatically more powerful than any other kind of social barriers in the marriage market. Some of the understatement of the importance of race is due to the way the early pioneers in intermarriage research either overlooked race (Kennedy 1944; Kennedy 1952) or assumed that racial divisions could be mitigated or overcome through social status or higher education (Davis 1941; Gordon 1964; Merton 1941).

The story of religious endogamy in the U.S. is an incomplete story for the simple reason that the data are inadequate. The trend in Catholic and Protestant endogamy for young couples from the late 1970s through the early 1990s (the period covered by the GSS) was relatively flat, but the level of Protestant and Catholic endogamy was substantially higher in the 1955 GAF, and dramatically higher in New Haven in 1870, the earliest period covered by Kennedy. The disjuncture between these different datasets suggests one reason why recent scholarship on secularization in the U.S. has failed to achieve a consensus. The best data most often used to study religious attitudes in the U.S. (the GSS) do not extend far enough back in time to capture secularization when it may have been a much more powerful force. Researchers should take a page from the data gathering strategy of Ruby Jo Reeves Kennedy and make use of local and state archives of marriage records to determine whether Protestant and Catholic endogamy really declined so sharply in the late 19th century as Kennedy's published tables suggest. In the

late 20th century US, the mainline Protestants, evangelical Protestants, Catholics, and even those who declined to state any religious affiliation all had low odds ratios of endogamy which suggest that these groups mixed relatively freely with each other. Kennedy's triple melting pot was an appropriate description of New Haven in 1870, but was no longer an apt description of New Haven by 1944 when she published her first article on the subject. Only the Jews continue to be highly isolated from other religious groups in the US marriage market, and the isolation of the Jews has declined sharply in recent years. The marriage market isolation of Buddhists, Muslims, and other non-Christian groups in the US cannot be determined from the currently available data.

The literature on educational assortative mating offers a surprisingly diverse set of claims (Kalmijn 1991a; Mare 1991; Raymo and Xie 2000; Schwartz and Mare 2005; Shafer and Qian 2006; Smits, Ultee and Lammers 1998; Smits, Ultee and Lammers 2000). In my view the diversity of claims about educational assortative mating results not only from the inherent difficulties in studying a complicated system, but also from the subtlety of the actual changes over time. Even subtle changes in educational assortative mating can have important societal impacts, so whether one views the actual changes as profound or as minor is a matter of perspective. If one compares the changes in educational assortative mating to the radical changes in racial endogamy over the same period (as I do in this paper), the educational assortative mating system appears to have been remarkably stable.

One of the reasons hypothesized for the decline of racial endogamy is that young adults are marrying later, and have a greater opportunity to travel and to meet potential mates beyond the watchful eyes of their parents and outside of the boundaries of the

highly racially segregated neighborhoods of their youth (Rosenfeld and Kim 2005). The post-1960 independence of young adults would not be expected to have much of an effect on educational endogamy, for several reasons. First, residential neighborhoods are not nearly as segregated by education (parental education or children's education) as they are segregated by race. Even in the past when young adults found most of their mates in the neighborhood (Bossard 1932; Kennedy 1943), the set of potential mates would not have been educationally homogeneous. Second, educational intermarriages have never been strongly socially stigmatized in the US. Whereas racial intermarriage used to be illegal in much of the US, and whereas many religious denominations have a tradition (only recently eroded) of refusing to recognize religious intermarriage, there have never been any ardent institutional opponents of educational intermarriage.

If the interference of third parties has never been a strong factor in maintaining educational endogamy, and if social exposure between groups with different educational levels may not have changed much, the relative stability of the educational assortative mating system also implies, albeit indirectly, that the social class system of the US is fairly stable. Bourdieu (1984) argued that class-based systems perpetuate themselves powerfully through systems of cultural taste.

Modernization theory usually predicts that educational endogamy (or homogamy) should have increased over time, displacing endogamy based on ascriptive characteristics such as race and religion. While racial endogamy has certainly declined, and religious endogamy appears to have declined, educational endogamy is not much different in 2000 than it was in 1940; the raw odds ratios suggest that educational endogamy was actually stronger in 1940, whereas the more narrowly defined adjusted odds ratios in Figure Two

suggest a slight increase in educational endogamy among college educated persons over time. Even though the educational profile of the U.S. has changed dramatically since 1940, there has been more stability in the system of educational assortative mating than modernization theory usually predicts.

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Table 1: Historical Profile of Race, Education, and Religion of Adults in the U.S. (Percentage by Year)

Race

	1880	1940	1960	1970	1980	1990	2000
White	87.7	89.9	88.3	85.8	82.3	78.6	72.3
Black	11.5	8.8	9.3	9.4	10.1	10.6	11.0
Hispanic	0.4	1.0	1.6	3.7	5.4	7.5	10.8
Asian	0.4	0.2	0.5	0.7	1.5	2.7	3.8
Native American	0.1	0.2	0.2	0.3	0.5	0.7	0.7
Other Race			0.1	0.1	0.1	0.1	0.1
Two or More							1.4
Total	100	100	100	100	100	100	100

Education

	1940	1960	1970	1980	1990	2000
0-4 yrs	12.8	7.8	5.1	3.2	2.6	2.1
5-8 yrs	44.1	29.5	20.7	13.1	7.3	5.4
9-11 yrs	16.2	19.5	18.7	15.0	10.7	8.7
12 yrs	16.4	26.1	32.3	35.7	33.9	33.5
1-3 yrs college	6.0	9.7	12.7	17.7	26.4	28.2
BA or more	4.5	7.5	10.5	15.2	19.1	22.0
Total	100	100	100	100	100	100

Religion	1955	1957	1970s	1980s	1990s	2000-2002
Mainline Protestant	31.6	26.7	28.4	24.5	21.8	18.0
Other Protestant	35.0	39.6	36.8	39.1	38.3	36.5
Catholic	29.2	25.7	24.2	24.9	23.5	23.5
Jew	2.8	3.2	2.5	2.2	2.1	2.2
Other	0.5	1.3	1.1	1.9	3.6	5.9
None	0.8	3.6	7.0	7.5	10.7	14.0
Total	100	100	100	100	100	100

Source: race and education from census microdata via IPUMS, weighted 1% files. Religion from the General Social Survey, except 1995 from Growth of American Families survey, and 1957 data from (U.S. Bureau of the Census 1958), based on the March 1957 Current Population Survey, respondents 14 years old and older.
Sample includes all individuals over the age of 19, regardless of national origin.
Hispanicity is by Spanish Surname post- enumeration identification for 1880-1960, and by self identification 1970-2000. Black and white exclude Hispanics.

Table 2: Odds Ratios of Catholic and Protestant Endogamy Over Time From Various Sources (with 95% confidence intervals where available)

	1870	1900	1930	1937-39	1940	1950	1955	1970s	1980s	1990s
Catholic and Protestant Endogamy (New Haven only)	2,283.5	68.5	17.0		30.8	6.45				
Catholic and Protestant Endogamy (U.S.)							21.6 (16.1-29.0)	7.0 (4.4-11.0)	4.7 (3.8-5.9)	4.9 (3.4-7.2)
Protestant Endogamy (Young Chicago Whites)				41.1 (27.8-60.6)						
Protestant Endogamy (U.S)							20.1 (15.3-26.3)	6.1 (4.0-9.2)	4.1 (3.3-5.0)	3.7 (2.7-5.1)
Catholic Endogamy (Young Chicago Whites)				42.2 (26.0-68.4)						
Catholic Endogamy (U.S)							19.4 (14.7-25.7)	6.5 (4.2-10.0)	4.3 (3.5-5.3)	4.5 (3.2-6.3)

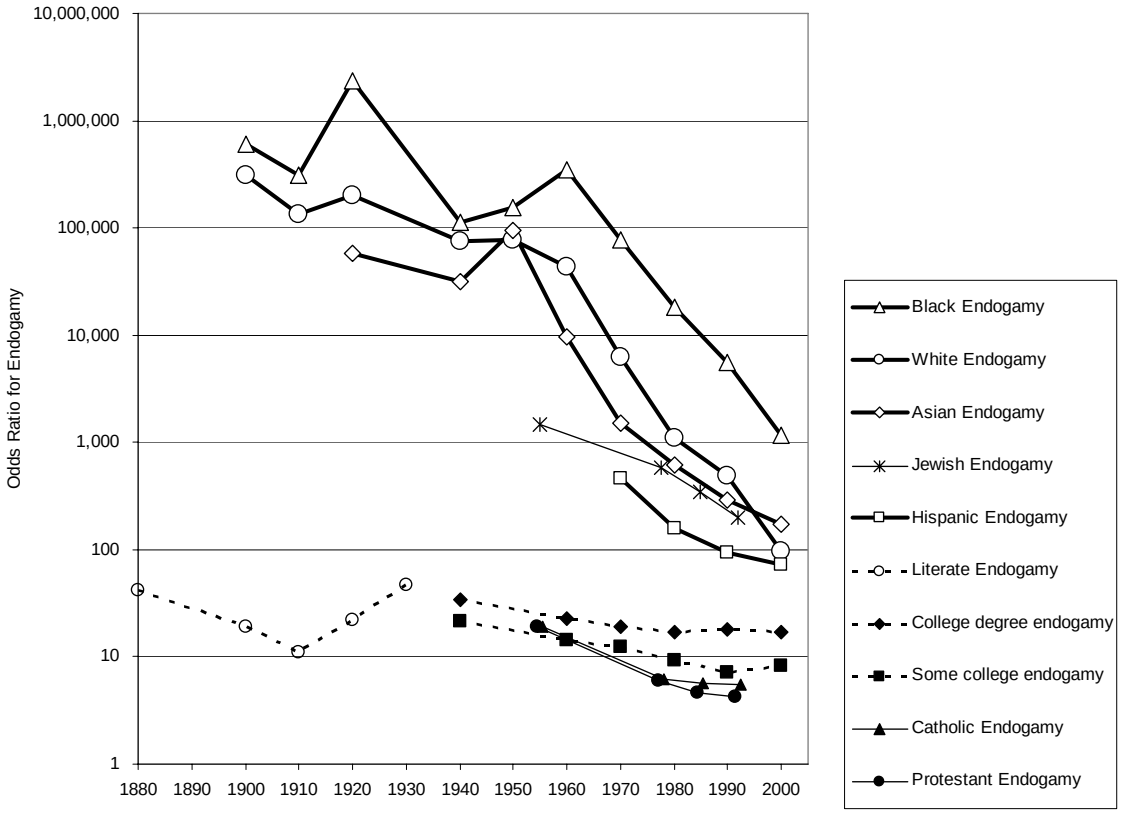
Sources: New Haven endogamy from Kennedy's (1952) study of marriage licenses, raw counts unpublished and therefore confidence interval is not available. 1955 data from the Growth of American Family Survey, respondents US born and married within after 1944. 1970s-1990s data is case weighted data from the General Social Survey, respondents U.S. born and married within 10 years of the survey.

Table 3: Odds Ratios of Racial Endogamy (with 95% confidence intervals) by Educational Attainment

	Educational Attainment of Both Spouses:			
	A: less than 12 years	B: 12-15 years	C: 16 years or more	Odds Ratio High education compared to low= C/A
Black Endogamy	17,101 (13,106- 22,314)	17,241 (15,245- 19,498)	13,181 (10,158- 17,103)	0.77 (0.53- 1.12)
White Endogamy	1,098 (970- 1,243)	1,190 (1,124- 1,260)	971 (854- 1,104)	0.88 (0.74- 1.06)
Asian Endogamy	1,160 (710- 1,895)	590 (513- 678)	591 (479- 729)	0.51 (0.30- 0.87)
Hispanic Endogamy	479 (425- 540)	116 (110- 122)	71 (61- 84)	0.15 (0.12- 0.18)

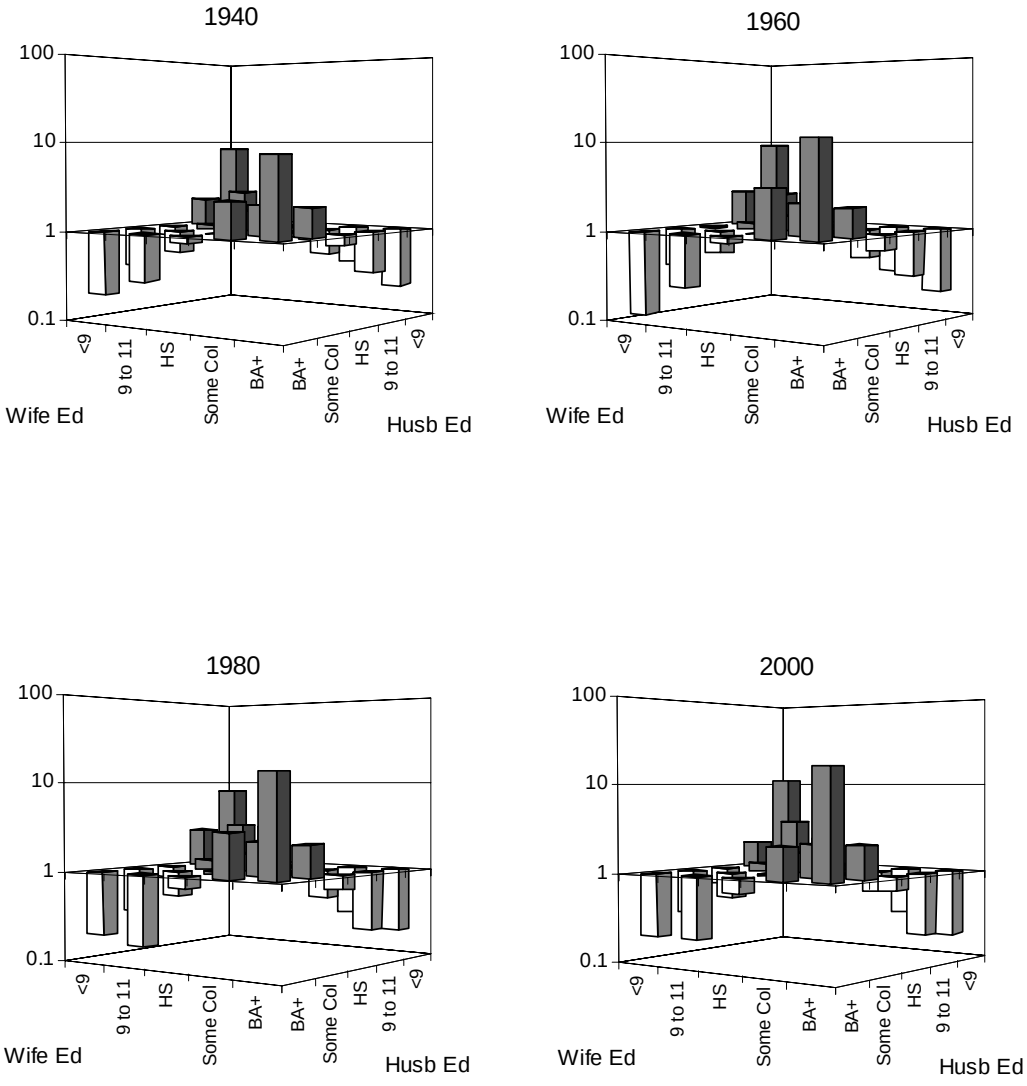
Source: weighted 1980 census 5% files via IPUMS.
All couples consist of US born spouses, married in the 1970s, at least one spouse married for the first time. Black and white includes Hispanics.

Figure 1: Odds Ratios of Endogamy by Race, Education, and Religion, 1880-2000



Larger endogamy odds ratios imply greater isolation in the marriage market.
Source for educational, racial and ancestral endogamy: Weighted 1% census microdata 1880-1970, and weighted 5% census microdata 1980-2000, both partners U.S. born and age 20-29.
Source for religious endogamy: weighted data from the General Social Survey, 1978-1994, 1955 religious endogamy data from Growth of American Family survey. For religious endogamy, respondents are US born and age 20-29 (Jewish endogamy calculated with an all ages sample) and spouses can be of any age and any national origin.
Black and White categories include Hispanics for consistency with pre-1970 data.

Figure 2: Consistency in the Pattern of Educational Assortative Mating for Young Couples Over Time

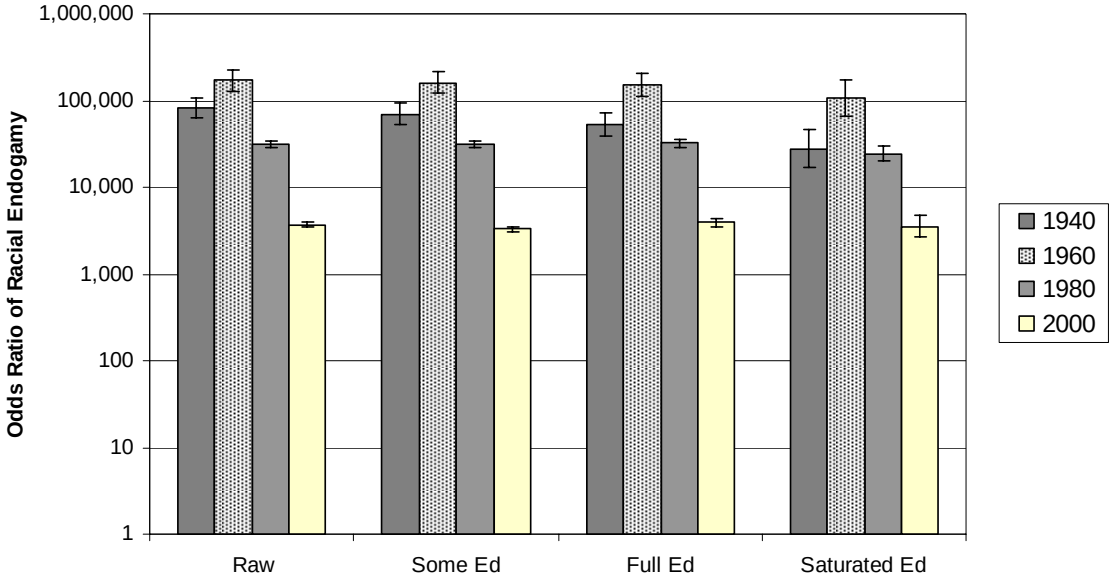


Source: Weighted census 1% files from 1940 and 1960, and 5% files from 1980, and 2000 censuses, via IPUMS. Individuals were all U.S. born and age 20-39 at the time of the census. The plotted values are exponentiated coefficients (or corrected odds ratios) from saturated loglinear models of husbands' by wives' education.

Appendix One: The Similarity Between 'Raw' and 'Adjusted' Racial Endogamy.

In this appendix I use a dataset of young married couples, age 20-39, U.S. born, from the 1940, 1960, 1980 and 2000 U.S. censuses (via IPUMS) to examine how educational compositional changes and educational intermarriage affects the calculation of the odds ratio for racial endogamy over time. The racial categories are two (black and white, all others excluded), the educational categories are five (<9th grade, 9th-11th, high school degree, some college, B.A. or more). The dataset has five variables: census year, husband's race, wife's race, husband's education, wife's education. There are 400 cells, and the unweighted sample size is 1,643,520.[14]

Appendix Figure A1:
Similarities in Racial Endogamy Regardless of Educational Controls, With 95% CI, for Young Black and White Couples 1940-2000



[14] This sample size is slightly smaller than the sample size used in the educational intermarriage example in the text, because couples with a spouse that is neither black nor white (Asian, for instance) are excluded from this sample.

Appendix Figure A1 shows that the strength and pattern of racial endogamy over time for blacks and whites is quite similar regardless of which educational controls are applied. The models can be described as follows:

Raw:

$Log(U)=HusbRace \times WifeRace \times Year$

Some Ed:

$Log(U)= HusbRace \times WifeRace \times Year, HusbEd \times WifeEd \times Year,$

$HusbRace \times HusbEd \times Year, WifeRace \times WifeEd \times Year$

Full Ed:

$Log\ (U)= HusbRace \times WifeRace \times Year, HusbRace \times WifeRace \times HusbEd,$

$HusbRace \times WifeRace \times WifeEd, HusbEd \times WifeEd \times HusbRace \times Year,$

$HusbEd \times WifeEd \times WifeRace \times Year$

Saturated:

$Log(U)= HusbRace \times WifeRace \times HusbEd \times WifeEd \times Year$

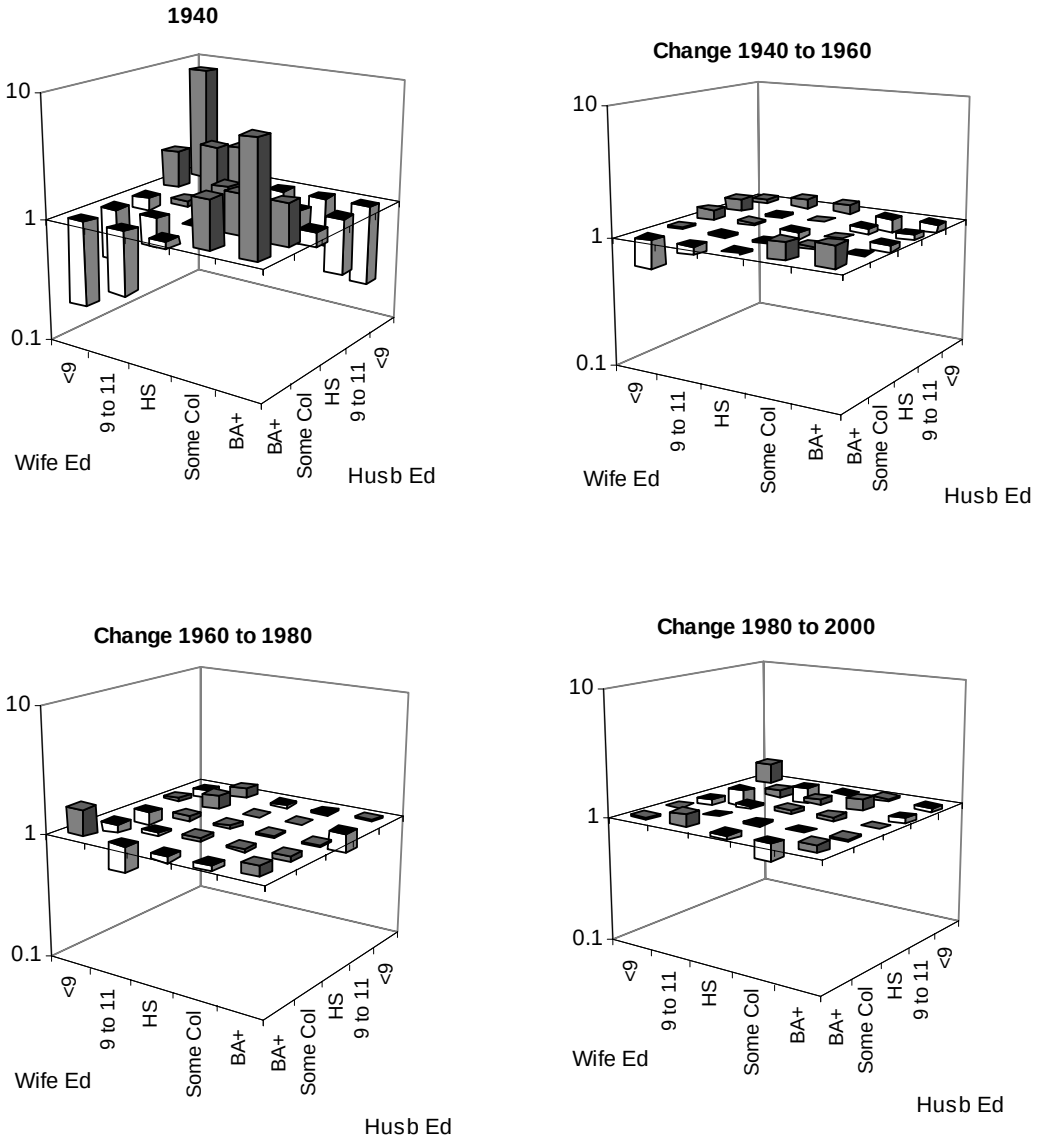
Where U are the predicted values of the model. The first model, “Raw,” applies no educational controls, and therefore corresponds to the raw odds ratios for racial endogamy in Figure one and used throughout this paper. The second model, “Some Ed,” controls for the educational homogamy and for the changing educational distribution of racial groups. The third model, “Full Ed” controls for racial differences in educational

homogamy, and educational differences in racial endogamy. The fourth model is the saturated model, which fits the data exactly by accounting for every interaction between the variables. Raw racial endogamy is quite similar to racial endogamy net of educational effects, regardless of how educational effects are accounted for. In order to achieve consistent measures of racial endogamy across models, the educational categories are modeled with deviation (sums to zero) coding, so that the residual category is the average educational value, and so that racial endogamy in the saturated model is racial endogamy for the average educational combination. Coefficients are estimated with household weighted data, while standard errors are calculated using unweighted data (Clogg and Eliason 1987).

Even though the difference in goodness of fit between these models is dramatic, the odds ratio for racial endogamy is nearly the same across all the models, which indicates how little the various educational controls affect racial endogamy. [15]

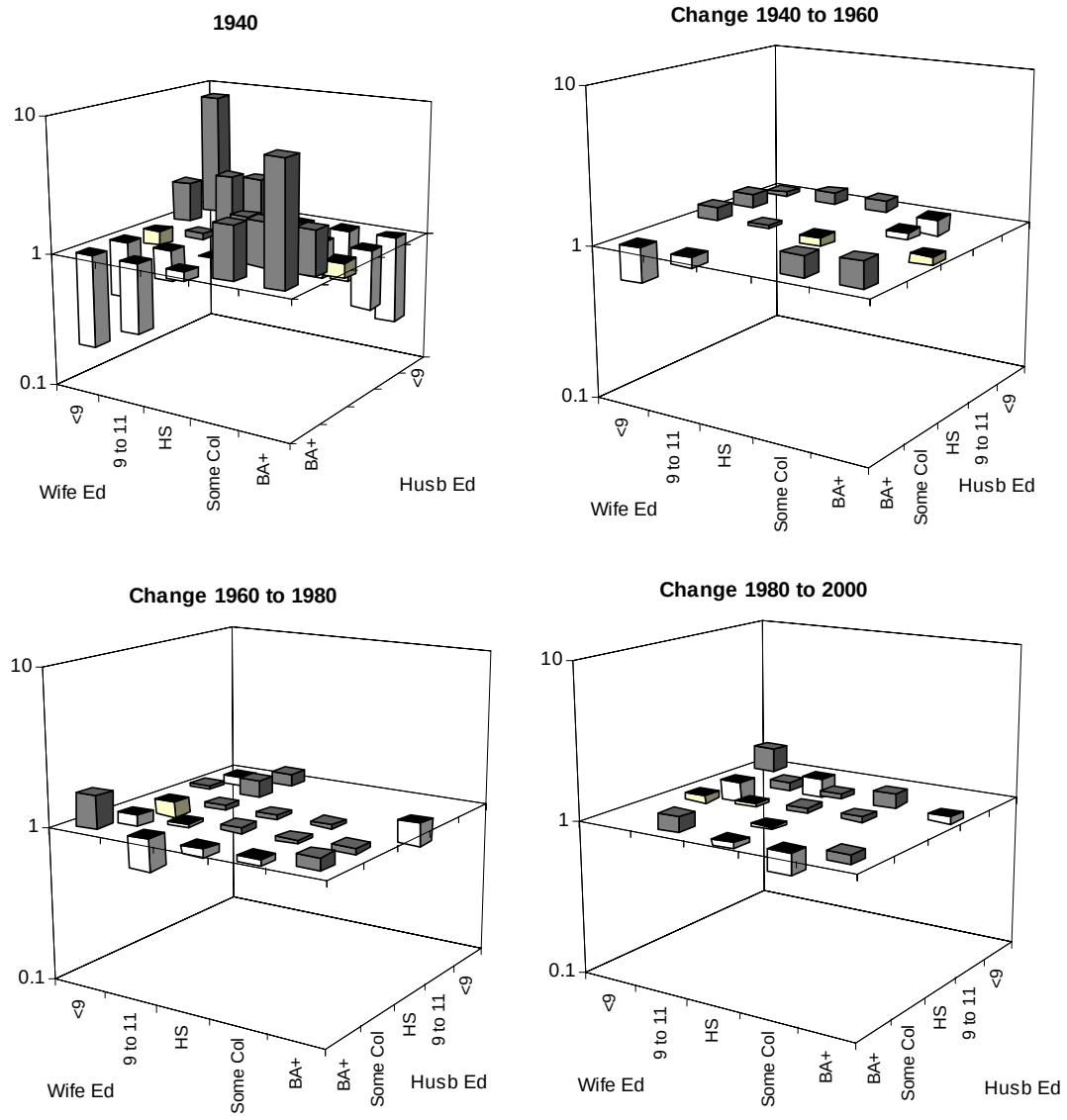
[15] Fit statistics for the models are as follows: "Raw," 384 residual df, L^2 of 2,502,458; "Some Ed," 256 df, L^2 of 1,625; "Full Ed," df 88, L^2 174.

Appendix Figure A2: Consistency in the Pattern of Educational Assortative Mating for Young Couples Over Time



Source: Weighted census 1% files from 1940 and 1960, and 5% files from 1980, and 2000 censuses, via IPUMS. Individuals were all U.S. born and age 20-39 at the time of the census. Changes from census to census are multiplicative.

Appendix Figure A3: Consistency in the Pattern of Educational Assortative Mating for Young Couples Over Time, Includes Only Statistically Significant Changes.



Source: Weighted census 1% files from 1940 and 1960, and 5% files from 1980, and 2000 censuses, via IPUMS. Individuals were all U.S. born and age 20-39 at the time of the census. Changes from census to census are multiplicative.