California Center for Population Research
University of California - Los Angeles

Educational Assortative Mating in Two Generations: Trends and Patterns Across Two Gilded Ages

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PWP-CCPR-2014-015

Latest Revised: January 13, 2013

California Center for Population Research
On-Line Working Paper Series

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January 2013

Forthcoming in Alair MacLean and David B. Grusky (Editors), *Living in a High-Inequality Regime*.

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EDUCATIONAL ASSORTATIVE MATING IN TWO GENERATIONS: TRENDS AND PATTERNS ACROSS TWO GILDED AGES

Abstract

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Patterns of intermarriage between men and women who have varying levels of educational attainment are indicators of socioeconomic closure and affect the family backgrounds of the next generation of children. This paper builds upon my prior studies with Schwartz on educational assortative mating in the United States, which document a long run increase in the educational resemblance of husbands and wives; the effects of the timing of school leaving and marriage on assortative mating; the greater educational resemblance of parents than of married couples as a result of differential fertility; and the effects of economic inequality among education groups on educational homogamy. It reports two extensions of this research. First it documents trends in the educational assortative mating of the *parents* of adults observed in the 1972-2010 General Social Surveys and 1973 Occupational Changes in a Generation II Survey. These trends, which describe the educational homogamy of couples whose children were born between 1900 and 1975, are compared to trends for prevailing marriages reported by Schwartz and Mare. This work shows whether the trend toward increasing marital homogamy that one sees in a time series of prevailing marriages appears as the time series of parents' educational attainments as well and extends observations of the trend in educational assortative mating back to the end of the 19th Century. These analyses document a dramatic "U-turn" in educational homogamy over the 20th Century. Spousal resemblance on educational attainment is very high in the early 20th Century, trends down to an all time low for young couples in the early 1950s, and increases steadily since then. These trends broadly parallel the secular compression and expansion of socioeconomic inequality in the U.S. over the 20th Century and support the few that widening economic inequality has implications for not only the wellbeing of individuals, but also for patterns of social organization.

Second, the paper examines a hypothesis about educational assortative mating, that marital homogamy is transmitted across generations. That is, are individuals who are raised by educationally homogamous parents more likely to marry homogamously themselves? Such an association may arise because parents socialize their offspring to prefer mates similar to themselves. Additionally, individuals raised by homogamous parents may be exposed to socioeconomically more homogenous potential marriage partners. The analyses reported in this paper suggest that this is indeed the case. Couples in which a partner's parents were educationally homogamous are 5 to 10 percent more likely to be homogamous than couples in which the partner's parents were educationally heterogamous. If homogamy in the parent generation leads to homogamy in the offspring generation, this may reinforce the trend toward increased homogamy over time. Thus intergenerational transmission may be a cause of the well documented increase in educational resemblance of spouses. Intergenerational transmission of marital homogamy may be both an instance of socioeconomic reproduction at the family level and also a mechanism for explaining aggregate trends in educational assortative mating.

EDUCATIONAL ASSORTATIVE MATING IN TWO GENERATIONS: TRENDS AND PATTERNS ACROSS TWO GILDED AGES

A core concern of this volume is the relationship between the massive growth in economic inequality and the social relationships among economic groups. That is, does the rise in inequality necessarily engender increasing segregation of social and economic classes or strata or does it remain possible for these groups to mix in a variety of social settings in much the same way as when inequality was less severe? The social settings that one may consider in this regard are many; including places of residence, work, worship, and recreation and all need not be affected by inequality trends in the same way. But one of the most fundamental settings is the intimate relationship of marriage, that is, the degree to which individuals marry within their own socioeconomic group or marry across socioeconomic barriers. The marriage relationship may be particularly sensitive to broad economic changes and changes in marriage patterns may have important consequences for both family inequality and future social mobility. Marriage is typically associated with household formation, establishing new economic units for working, spending, saving, and sharing. Intermarriage patterns for men and women who have varying social traits may affect the types of families they form, the boundaries between groups, and the variability of families and individuals on social and genetic traits (e.g., Cavalli-Sforza and Feldman 1981; Epstein and Guttman 1984; Fernández and Rogerson 2001; Johnson 1980; Kalmijn 1991a, 1991b; Mare 1991, 2000; Schwartz and Mare 2005).

Educational assortative marriage is particularly important for social stratification because of the role that education plays in economic inequality and its persistence from

generation to generation (e.g., Blossfeld and Timm 2003; Kalmijn 1991a, 1991b; Mare 1991; Qian 1998; Qian and Preston 1993; Raymo and Xie 2000; Smits, Ultee, and Lammers 1998, 2000; Ultee and Luijkx 1990). Past research has provided evidence of increases in the educational resemblance of spouses (Kalmijn 1991a, 199b; Mare 1991; Pencavel 1998; Qian and Preston 1993; Smits, Ultee, and Lammers 2000; Schwartz and Mare 2005; Schwartz 2013), giving rise to a concern that marriage patterns may contribute to growing economic and educational inequality (e.g., Fernández and Rogerson 2001; Kremer 1997; Mare 2000). When the educational attainment of one parent is typically reinforced through marriage to a person at the same education level, the inequality of family environments is greater than when more marriages are heterogamous. Regardless of whether increases in the educational resemblance of spouses increase inequality in future generations, however, changes in assortative marriage patterns are indicators of changes in the rigidity of social boundaries and are important components of changes in the makeup of families and households.

Considerable research supports the observation that levels of educational homogamy, that is, the tendency for individuals to marry a partner who has a similar level of educational attainment as oneself, and for the number of homogamous couples to grow in relation to the number of heterogamous couples, have grown during the latter half of the twentieth century. These patterns suggest that rising economic inequality, and more specifically, the increasing economic gaps among persons with varying levels of educational attainment, may be an important source of change in patterns of educational assortative mating. A possible reason for this association is that widening economic inequality may widen the social distance between educational groups, thereby changing

both opportunities to marry outside of one's educational stratum and also one's preferences for marrying someone less educated than oneself. Yet whether these common trends are merely a coincidence or reflect a common joint process through with inequality and social segregation move together remains an open question. Obviously, this is a just a simple correlation of two trends and many other factors trend up or down over this period. More important, other mechanisms may account for increasing levels of educational homogamy. One that is commonly emphasized in the literature is simply "modernization," which, in this context, accentuates the growing autonomy of individuals to make their own decisions, free from traditional bonds, such as those of family, religion, and ethnic identification (e.g., Kalmijn 1991b). By this argument, individuals (and their potential spouses) become increasingly governed by the resources, tastes, and preferences that are linked to their own social and economic positions and less governed by the bonds handed down by parents and other kin. Indeed, rates of homogamy on the basis of parents' socioeconomic position, of ethnicity, and of religion have indeed declined as educational homogamy has increased. But these too are simple bivariate correlations that may be governed by other common processes. Indeed, other mechanisms have been proposed, including the effect of the changing role of educational attainment in the lives of young adults, that is, the ways the education may "structure" marriage markets. In some parts of the mid to late 20th century, when typical ages at marriage and ages at leaving school came into close alignment, this may have meant that schools, colleges, and universities became the prime location for meeting a potential spouse. Once bonded, couples would leave school with similar educational credentials and marry soon after (Mare 1991). As age at marriage and the time gap between leaving school and

marriage have increased and the early career patterns of men and women have become more similar, the role of education may have become more indirect, affecting marriage patterns by making it possible for men and women with similar educational credentials to meet in the workplace rather than, as before, in educational institutions. Again, however, these patterns are bivariate and monotonic, making the adjudication among alternative interpretations impossible.

Some headway on these questions can be achieved if it is possible to consider other times or places when patterns of intermarriage among socioeconomic groups and their potential causes have not moved in a single direction. Associations between time series that are not monotonic are more powerful evidence of a causal link between social trends, especially when all series under consideration do not move together. Fortunately for analytic purposes, the trend in economic inequality in the United States is not monotonic over the course of the 20th century. Indeed, many indicators of economic and wealth inequality display a "great U-turn," with very high levels of inequality in the Guilded Age of the early 20th century, reduced and much lower inequality during the middle two quarters of the century, and a massive resurgence of inequality in the last quarter (e.g., Pikatty and Saez 2003; Atkinson, Piketty, and Saez 2011). Indeed, high as today's inequality levels are, they have only just returned to levels that characterized the social landscape of the early 20th century.

What of the trends in intermarriage among socioeconomic groups over this century long span? Up until now, the investigation of educational assortative mating patterns has been limited to the last half of the century, when rich census and other survey data (beginning with the 1940 Census of Population) have recorded the

educational attainments of husbands and wives. In this chapter, however, I push the time series of educational assortative mating further back in time, taking advantage of mid-century social surveys that include retrospective information about the educational attainments of the *mothers and fathers* of survey respondents. This enables one to chart, albeit with some imperfections, the trend in educational assortative mating a full generation earlier than any prior study. Most important for the purposes of this volume, it enables one to see whether the trend in educational homogamy in the early years of the 20th century bears an interpretable relationship to well documented trends in economic inequality.

This paper extends my research with Schwartz on educational assortative mating in the United States, which documents a long run increase in the educational resemblance of husbands and wives (Mare 1991; Schwartz and Mare 2005); the effects of the timing of school leaving and marriage on assortative mating (Mare 1991); the greater educational resemblance of parents than of married couples as a result of differential fertility (Mare and Schwartz 2006a); and the effects of economic inequality among education groups on educational homogamy (Mare and Schwartz 2006b). It reports two extensions of this research. The first part of the paper documents trends in the educational assortative mating of the *parents* of adults observed in cross section surveys in the United States from 1972 to 2010. These trends, which describe the educational homogamy of couples whose children were born between 1900 and 1980, are compared to trends for prevailing marriages reported by Schwartz and Mare (2005). This work shows whether the trend toward increasing marital homogamy that one sees in a time series of prevailing marriages appears in the time series of parents' educational

attainments as well. It also extends observations of the trend in educational assortative mating, which Schwartz and Mare observe only since 1940, back to the end of the 19th Century.

The second part of the paper reports an analysis of a previously unexamined hypothesis about educational assortative mating: to wit, that marital homogamy is transmitted across generations. That is, are individuals who are raised by educationally homogamous parents more likely to marry homogamously themselves? Such an association may arise because parents socialize their offspring to prefer mates similar to themselves. Additionally, individuals raised by homogamous parents may be exposed to socioeconomically more homogenous potential marriage partners. This hypothesis is of implies a self-reinforcing trend toward increased homogamy over generations. Thus intergenerational transmission may be a cause of the well documented increase in educational resemblance of spouses. Intergenerational transmission of marital homogamy, therefore, may be both an instance of socioeconomic reproduction at the family level and also a mechanism for explaining aggregate trends in educational assortative mating.

THE TREND IN EDUCATIONAL ASSORTATIVE MATING

As shown in Figures 1 and 2, which summarize the results of Schwartz and Mare's (2005) analysis, the resemblance of husbands and wives on educational attainment increases substantially over the latter half of the 20th Century. For both prevailing marriages for a cross section of young adults and also persons who are newly married, the percentage of couples who occupy the same broad educational attainment

category increases by approximately 10 percentage points between 1960 and 2000 (Figure 1). If we adjust for trends and discrepancies in the education distributions of men and women over this period, the relative odds of marital homogamy display a similarly strong increase from just more than 3:1 in 1960 to approximately 4:1 in 2000. These trends are broadly consistent with long run trends in socioeconomic inequality over the period from the 1960s to the 1990s and with the increasing importance of women's economic contributions to marriage (e.g., Sweeney and Cancian 2004; Fernández, R., N. Guner, and J. Knowles 2005). That this trend is monotonic from 1960 onward, however, makes it difficult to discriminate among interpretations based on a wide variety of social and economic trends that were also monotonic over this period.

A puzzling feature of these results is the relatively high level of educational homogamy in 1940, both for newlyweds and for couples in prevailing marriages. Because this is a single observation for a single source (1940 Census) at the end of a time series, it is tempting to dismiss this observation as a possibly unreliable outlier from an otherwise clear trend. Yet there is little theoretical guidance about what the trend in educational assortative mating prior to World War II might be. As discussed further below, trends in socioeconomic inequality prior to 1950 were generally downward, suggesting a diminishing role for socioeconomic indicators such as educational attainment in the marriage market. The immediate post World War II period, moreover, may have been atypically conducive to socioeconomically heterogamous marriages as a result of the GI Bill, which gave opportunities for upward mobility to persons who might otherwise have not enjoyed them and the high rates of divorce after the War, which disrupted pre-War marriage patterns. On the other hand, average ages at marriage

generally declined and ages at leaving school generally increased during the first half of the century, increasing the potential for schools to structure marriage choices (Mare 1991). It is instructive, therefore, to examine available trend data on the educational resemblance of couples prior to 1950 in an effort to ascertain the outcomes of these competing influences. Data on the socioeconomic resemblance of the parents of respondents to surveys conducted in the latter part of the 20th Century provide a unique basis for this type of investigation.

ASSORTATIVE MATING OF PARENTS AND OFFSPRING: DOES SIMILARITY BEGET SIMILARITY?

The tendencies of couples to marry homogamously arise from the dual influences of preferences for partners who share social traits and the differential opportunities that individuals face for meeting and mating with other individuals. It is reasonable to assume that individuals typically prefer socially similar partners on a number of traits, including religious beliefs and practices, race-ethnicity, and leisure activities. For other traits, such as economic success or physical attractiveness, individuals may prefer partners who are more successful or attractive relative to their sex than the individuals themselves. Given the constraints of competition, however, these individuals may be typically forced to settle for partners who are approximately as successful or attractive as they are. For both kinds of traits, differential exposure to potential marriage partners that arises from socioeconomic segregation of schools, neighborhoods, places of worship and leisure, and the workplace tend to foster marriages that are far more homogamous than would be expected on the basis of chance. The empirical identification of the separate

mechanisms that give rise to spousal resemblance is a challenging analytic problem (e.g., Logan, Hoff, and Newton 2008). Without resolving this issue, however, it is still possible to describe marital sorting and explore some of its potential consequences.

Assortative mating may be viewed as a special case of a more general tendency of persons to segregate into socially similar groups, whether in neighborhoods, workplaces, informal social settings, or families themselves. Processes that segregate individuals into groups may be mutually reinforcing. For example, couples who are similar on one or more social traits tend to live in neighborhoods that are more homogeneous on those traits than heterogamous couples. Conversely, homogeneous neighborhoods tend to yield more homophilous friendships and homogamous marriages than heterogeneous neighborhoods (e.g., Bruch and Mare 2009). These relationships may arise both through the ways in which marriages and neighborhoods affect individuals' preferences for whom they associate with and also through the degree to which they restrict individuals' opportunities for social contact. The mutually reinforcing aspect of multiple dimensions of segregation may occur in intergenerational relationships as well. Parents provide the most immediate and influential "neighborhood" for their children. Offspring raised by homogamous parents are more likely to be exposed to a narrower set of social contacts than children raised by parents who substantially differ on social traits. Differential exposure may alter offspring's opportunities for making friends with persons from varying social strata. It may also alter children's and young adults' preferences for the kinds of persons who would be a suitable romantic match. These mechanisms suggest that assortative mating along such dimensions as educational attainment may have an intergenerational association. That is, educationally homogamous parents may raise

children who themselves are more likely to marry homogamously than children raised by heterogamous parents.

The significance of this effect lies in the capacity for socioeconomic clustering and inequality in one generation to reinforce the same tendency in a subsequent generation. We are accustomed to thinking about intergenerational relationships between parents and the individual-level characteristics of offspring – for example the effects of parents educational attainments on the educational attainments of their offspring. Absent special institutional circumstances, however, these effects tend to dampen after one or two generations given the mainly Markovian nature of intergenerational influence (e.g., Warren and Hauser 1997, though see Mare 2011). In contrast, if parental homogamy has an intergenerational effect, it may have a reinforcing and cumulative impact across generations. Absent offsetting forces, the intergenerational effect may lead to higher and higher levels of spousal resemblance in successive generations. Despite the conceptual importance of these possibilities, however, first order business is to investigate the existence and strength of the intergenerational effect.

DATA AND METHODS

This study uses data from the 1972-2010 General Social Surveys (GSS) and the 1973 Occupational Changes in a Generation II Survey (OCG II). The GSS comprises 31 annual or biennial cross section surveys of a total of approximately 54,000 persons aged 18 and over in the U.S., including about 27,000 who are married and living with their spouse. OCG II is a cross section survey of approximately 34,000 U.S. men aged 20-65 including about 24,000 who are married and living with their spouse (Featherman and

Hauser 1975). Both surveys include information on the educational attainments of individuals and their spouses, mothers, and fathers. Taken together, they provide a rich time series of observations on the families and family backgrounds of persons raised in the United States during the 20th Century.

General Social Survey

The GSS provides information on the educational attainments of each adult respondent, the respondent's spouse (if any), and the respondent's mother and father. Except for selected years of data, it does not provide information on the educational attainments of respondent's spouse's parents' educational attainments. Thus, the GSS data allow for the separate but not simultaneous analyses of wife's parents assortative mating or husband's parents assortative mating. Respondents, however, are both male and female and thus it is possible to contrast the influences of husband's and wife's parents' assortative mating, albeit not within the same respondent couple. The several analyses reported in this paper are based on the following array of data:

(1) respondent's educational attainment (6 categories: <10, 10-11, 12, 13-15, 16, ≥ 16 years of school completed)
(2) respondent's spouse's educational attainment (6 categories: same as for respondent)
(3) respondent's father's educational attainment (6 categories: <5, 5-8, 9-11, 12, 13-15, ≥ 16 years of school completed)
(4) respondent's mother's educational attainment (6 categories: same as for respondent's father)
(5) respondent's sex (male vs. female)
(6) respondent's year of birth (14 categories: -1910, 1911-15, …., 1971-75, 1976-80)

The analysis of trends in respondent's (and respondent's spouse's) educational assortative mating is based on a table with dimensions (1), (2), and (6) of this array. The

analysis of trends in respondent's parents' assortative mating is based on a table with dimensions (3), (4), and (6). The analysis of the intergenerational association of assortative mating, that is, the association between educational homogamy in the parents' and educational homogamy in the respondents' generations, is based on a table with dimensions (1), (2), (3), and (4). Ancillary analyses that take account of sex differences in intergenerational transmission and controls for cohort trends in parents' and offsprings' assortative mating augment the latter table with dimensions (5) and (6) respectively.

Occupational Changes in a Generation II Survey

The OCG II survey provides information on the educational attainments of each (male) respondent, his wife (if any), his mother and father, and his wife's mother and father. The several analyses reported in this paper are based on the following array of data:

(1) respondent's (husband's) educational attainment (6 categories: <5, 5-8, 9-11, 12,13-15, ≥ 16 years of school completed)
(2) respondent's wife's educational attainment (6 categories: same as for respondent)
(3) respondent's (husband's) father's educational attainment (6 categories: same as for respondent)
(4) respondent's mother's educational attainment (6 categories: same as for respondent)
(5) respondent's wife's father's educational attainment (6 categories: same as for respondent)
(6) respondent's wife's mother's educational attainment (6 categories: same as for respondent)
(7) respondent's year of birth (10 categories: -1910, 1911-15, …, 1946-50, 1950-)
(8) respondent's wife's year of birth (10 categories: same as for respondent)

Analyses of trends in educational assortative mating in the respondent generation are based on a table with dimensions (1), (2), and (5). Analyses of trends in educational assortative mating in the parents' generation are based on tables with dimensions (3), (4), and (7) (for respondent's parents) and (5), (6), and (8) (for respondent's wife's parents). Analyses of the joint effects of respondent's and respondent's wife's parents are based on a table with dimensions (1), (2), (3), (4), (5), and (6). Ancillary analyses of intergenerational effects that control for trends in parents' and offspring's educational assortative mating are based on tables with dimensions (1), (2), (3), (4), and (7) and with dimensions (1), (2), (5), (6), and (8).

Log-Linear Models

The descriptions of educational assortative mating reported in this paper are based on log-linear models for contingency tables (e.g., Agresti 2002). Log-linear models are appropriate because they provide estimates of the changing association between couples' educational characteristics while controlling for shifts in their marginal distributions. The goal is to represent variations changes in the association between husband's and wife's education in a parsimonious yet accurate way. More complex representations of changes in the association tend to fit the data better (e.g., Mare 1991; Kalmijn 1991a, 1991b; Qian 1998), but they provide a less straightforward measure of variations in the educational resemblance of spouses. In this paper, I use *homogamy* models to provide summary estimates of trends. These models represent the association between husband's and wife's education in terms of a single parameter that represents the odds that husbands and wives share the same rather than different education levels.

Because the primary concerns of this paper are with describing trends in the educational resemblance of spouses and the intergenerational associations of parent and offspring homogamy, for most models I saturate the cross-sectional interaction between husband's and wife's education and focus on more parsimonious representations of changes in the association. Thus, the model for trends in educational assortative mating in the respondent generation is:

$$\log(\mu_{ijkl}) = \lambda + \lambda_i^H + \lambda_j^W + \lambda_l^Y + \lambda_{ij}^{HW} + \lambda_{il}^{HY} + \lambda_{jl}^{WY} + \lambda_{ol}^{OY} \qquad (1)$$

where μ_{ijl} is the expected number of marriages between husbands in education category i and wives in education category j in year l, H is husband's education (i = 1,…,6), W is wife's education (j = 1,…,6), Y denotes year of birth of respondent or respondent's spouse, and o = 1 if husband's education category equals wife's education category and 0 otherwise, and λ_{ol}^{OY} estimates the change in the odds of homogamy in year l relative to the baseline year. Depending on the model and data source, H may denote male respondent or female respondent's husband. Similarly W may denote female respondent or male respondent's wife.

For the analysis of trends in educational homogamy in the parental generation, I use a similar model, substituting father's educational attainment (F) for husband's education and mother's educational attainment (M) for wife's educational attainment. Depending on the model and data source, F may denote husband's or wife's father and M may denote husband's or wife's mother. For the analysis of intergenerational effects of educational homogamy, I estimate models of the following form:

$$\log(\mu_{ijkl}) = \lambda + \lambda_i^H + \lambda_j^W + \lambda_p^F + \lambda_q^M + \lambda_{ij}^{HW} + \lambda_{pq}^{FM} + \lambda_{ip}^{HF} + \lambda_{iq}^{HM} + \lambda_{jp}^{WF} + \lambda_{jq}^{WM} + \lambda_x^I , \quad (2)$$

where *x* equals 1 if husband and wife are both in the same education category *and* father and mother are both in the same education category, and λ_x^I denotes the interaction between parents' and offsprings' educational homogamy. The latter parameter, therefore, is a form of four-way interaction among husband's, wife's, father's, and mother's educational attainments. In its exponential form, say $\beta = \exp(\lambda_x^I)$, this parameter denotes the amount by which the odds of educational homogamy in couples in the respondent generation are inflated or deflated if respondents' parents are themselves in an educational homogamous marriage.

In the analyses reported below, I report the results from using a number of variations on model (2). First, some specifications include restricted forms of the two-way associations among the educational statuses of husbands, wives, mothers, and fathers. These are less desirable than unrestricted (saturated) two-way associations but are required in some cases because of the sparseness of data in some of the cross classifications. Second, some specifications of models based on the OCG data include separate terms for the parents of each spouse in the respondent generation and thus provide estimates of intergenerational associations with both husband's and wife's parents educational homogamy. Third, some specifications allow for intercohort variations in the educational homogamy of respondents and of their parents. These include model terms for interactions between cohort and the one and two-way marginal distributions of respondent's, wife's, father's, and mother's schooling.

EMPIRICAL RESULTS

Trends in the Educational Assortative Mating for Parents and Offspring

Figure 3 reports trends in the odds of educational homogamy based on model (1) for respondents to the 1973 OCG II Survey and their parents. For respondents these estimates are specific to their five-year OCG birth cohorts but arrayed by the year at which the cohort is aged 25, an approximate age for newlyweds. For the parents of respondents these estimates are specific to the respondent's year of birth. Under the assumption that the modal ages of parents when OCG II respondents were born were in their 20's, Figure 3 combines the respondent and parent educational homogamy trends on approximately the same time scale. The estimated trend for respondents illustrates the steady increase in the odds of educational homogamy across cohorts who were young adults in the early 1950s up until the late 1970s and thus corroborate the trends reported by Schwartz and Mare (2005) and shown in Figure 2. The samples used to generate the GSS estimates differ from the Census and Current Population Surveys used by Schwartz and Mare in several technical respects. The OCG is a sample of married men whereas the Schwartz-Mare estimates are based on women aged 18-40. The Census and CPS estimates are based on cross section samples of prevailing or new marriages at each survey date, whereas the OCG estimates are based on *surviving* marriages from the specific cohort up to 1973. The latter estimates, therefore, are more likely to be affected by differential marriage disruption and mortality, especially for the earliest cohorts in the data. The trends from these two analyses, however, are remarkably similar. For cohorts that became young adults prior to 1950, the OCG trends show no pattern of increase or decrease and should perhaps be given less credence given the retrospective nature of the

data. The patterns for these cohorts, however, appear consistent with Schwartz and Mare's estimates for newlyweds in 1940 (see Figure 2), a group more likely to overlap with 25 year olds than the couples with 18-40 year old wives in prevailing marriages.

Figure 3 also graphs estimates of educational homogamy for the parents of OCG respondents and respondents' wives, specific to the five-year interval in which the OCG respondent or his wife was born. These estimates show a dramatic downward trends in the odds of educational homogamy between parents at the turn of the 20th Century and those who gave birth in the early 1950s. They are also strikingly consistent with Schwartz and Mare's estimates for prevailing marriages and newlyweds in 1940. The much higher homogamy estimate for prevailing marriages than for newlyweds in 1940 shown in Figure 2 suggests that educational homogamy among young married couples was declining rapidly in the 1930s and 1940s, a pattern that is strongly born out by the OCG estimates. These estimates are not exactly comparable to those for respondents in Figure 3 or to the Schwartz-Mare estimates for several reasons. Most important, they are for parents rather than married couples generally. Thus, they fail to include childless couples and give more to couples who have many children relative to those who have fewer (Preston 1976; Mare and Schwartz 2006a). Additionally, they depict couples over the full span of their childbearing years, an interval that varies over periods and cohorts, rather than a fixed age interval. These conceptual differences may account for the higher levels of educational homogamy for parents than for respondents in the cohorts where both generations are included in the OCG data. Mare and Schwartz (2006a) document somewhat higher educational homogamy for parents than for couples generally. These

differences may also result in "smoother" trends in the OCG estimates because of the multiple parental cohorts who contribute to each year of offspring data.

Figure 4 shows the trends in educational homogamy for respondents and parents represented in the General Social Surveys. Despite differences in sample design and population coverage between these surveys and the other sources used to document assortative mating trends in this paper and by Schwartz and Mare (2005), the GSS estimates show the same general trends. Educational homogamy increases substantially across cohorts who became young adults in the 1950s up to the present day. Conversely, in the first half of the 20th Century, educational homogamy declined dramatically. Among couples who bore their children at the turn of the 20th Century the odds of an educationally homogamous marriage were almost 6:1, in contrast to those who gave birth at mid-century when the odds were approximately 3.5:1.

Does Homogamy Beget Homogamy?

The first part of this paper combines estimates of the trends in educational assortative mating of parents and offspring for the purpose of creating a long time series and thus simply treats parents as an additional sample of independent observations on couples. In contrast, the second part of the paper examines the within-family connection between the assortative mating of parents and the assortative mating of offspring. It discusses whether the offspring of educationally homogamous parents go on to marry homogamously themselves. As noted above, one might expect this type of association if having homogamous parents narrows the range of social contacts experienced by their children or narrows that range of potential marriage partners that their children deem

acceptable. Table 1 summarizes the results of a number of models for the four-way association among parents' and couples' educational attainments. The column labeled "Odds Ratio β" denotes the odds that a survey respondent and spouse are educationally homogamous given that one or both of their sets of parents were educationally homogamous relative to the odds that the couple is homogamous given that one or both of their sets of parents were educationally heterogamous. For the first model ("OCG-1"), for example, the estimated odds ratio implies that, for men whose father and mother were in the same education category, the odds that their marriage is educationally homogamous are 6.7 percent greater than for men whose father and mother were educationally heterogamous. The column labeled "Z(λ)" contains the normal test statistic for the corresponding log odds ratio parameter in model (2) ($\lambda_x^I = \log(\beta)$. The remaining columns provide details about the data, model fit, and model specification. All model specifications for both the OCG and GSS data provide estimates that are consistent with the hypothesis that educational homogamy is positively associated between the parent and offspring generations. The estimated boost in offsprings' odds of homogamy that is attributable to parental homogamy ranges from four to nine percent depending on model specification and data source. Estimates from the GSS and OCG are of similar size and differ mainly in statistical significance, possibly because of differences in sample size. The estimates are similar whether or not they include controls for cohort trends in the educational homogamy of parents and offspring. Indeed, for OCG, there is some evidence that cohort controls yield higher estimates (compare OCG-8 vs. OCG-3, OCG-9 vs. OCG 4; OCG-10 vs. OCG-1; OCG-11 vs. OCG-2). Within OCG, when the associations with the homogamy of husband's and wife's parents are considered

separately, it appears that the intergenerational effect is greater for husband's than for wife's parents (compare OCG-1 vs. OCG-3; OCG-2 vs. OCG-4; OCG-10 vs. OCG-8; OCG-11 vs. OCG-9). When the intergenerational effects for both sides of the family are considered together however, the differences between the effects of husband's and wife's parents are very small and not statistically significant (compare OCG-6 vs. OCG-5). This result is consistent with estimates based on the GSS (compare GSS-6 vs. GSS-5). Taken as a whole, the data are consistent with a small but robust intergenerational association between the educational homogamy of the parental generation and the educational homogamy of the offspring generation.

DISCUSSION

Parents' Assortative Mating and Trends in Educational Assortative Mating

Extending the time series of observations on educational homogamy reported by Schwartz and Mare (2005) and others back to the early 20th Century, reveals a "great U-turn" in spousal resemblance on educational attainment in the United States. For young married couples educational homogamy declined dramatically from the turn of the 20th Century until mid-century and then steadily increased thereafter. The estimates of homogamy presented in this paper for the first half of the 20th Century, based primarily on the association between the educational attainments of parents as reported by their adult children, are not strictly comparable to those derived from typical data sources in the latter half of the century, based primarily on couples' reports of their own attainments. Nonetheless, the general alignment of trends when marriage cohorts are observed in both types of data and the relatively small differences in educational

homogamy between parents and couples in other data sources (Mare and Schwartz 2006a), suggest that these trends that would be observed even if exactly comparable data were available for marriages throughout the 20th Century.

These changes in patterns of educational assortative mating take place during a time of major social transformations and major historical events in the United States, including the depopulation of rural areas and growth of cities, the industrialization of the workforce, the Great Depression and two major wars, massive immigration at the start of the century followed by relatively low rates in subsequent decades, a long run secular decline in fertility punctuated by unusually high fertility in the Post World War II period, and major changes in the roles and statuses of women both at home and in the workforce. The pervasiveness and complexity of these changes defy any simple explanation of changes in assortative mating patterns over the entire century. Certainly no unilinear or monotonic trends in attitudes toward marriage, the ability of parents to monitor and control their offspring's marriage partners, or decline in the importance of ascriptive traits can account for the long term swing in spousal resemblance on educational attainment.

Two broad sociodemographic trends that provide a context for assortative mating patterns are nonetheless worth noting. First, the comparatively low level of educational homogamy for young couples in the early 1950s coincides with the century's lowest median age at first marriage. The median age at first marriage was approximately 26 for men and 22 for women in 1900, declined steadily to approximately 23 for men and 20 for women in 1950 and increased thereafter to approximately 27 for men and 25 for women in 2000 (U.S. Bureau of the Census 2007). When couples marry early, one or both

partners may have not yet completed their schooling or have only just left school. Although schools may structure marriage markets (Mare 1991), couples who marry early may not, at the time of marriage, be able to take full account of the characteristics of their partners that are associated with their educational attainment. Conversely, when couples marry later, their preferences and opportunities for marriage may be more strongly based on the "realized" characteristics of their potential partners, which may, to a significant degree, be a result of their partners' educational attainments. The timing of marriage affects the distribution of available partners, individual preferences, and thus the kinds of marriages that result. Yet the long run correlation of marriage timing and educational homogamy, by itself, lacks a straightforward interpretation. At the beginning the 20th Century, individuals typically left school in their early teens and thus experienced a considerable time gap between school departure and marriage. In the last three decades of the 20th Century, in contrast, they typically left school in their early twenties, resulting in a shorter time gap between school departure and marriage despite a similar age at marriage to that of young adults early in the 20th Century. To the extent that the time between leaving school and marrying affects incentives and opportunities for educational homogamy it is clear that late age at marriage early and late in the 20th Century have different implications.

A second important trend is in the differential life chances associated with educational attainment, perhaps the most important of which are the economic returns to schooling. When individuals expect that earnings and income gaps between educational groups will be large during their adult years, they not only have a greater incentive to stay in school themselves, but also may place more weight on the educational attainments of

prospective marriage partners (Mare and Schwartz 2006b). Conversely, if the economic gaps between educational attainment levels are small, factors other than schooling are more likely to govern educational choice. During the latter half of the 20th Century and especially since the 1960s, the differences in earnings across individuals with varying amounts of education grew markedly (e.g., Katz and Murphy 1992; Mare 1995; Goldin and Katz 2008), a trend that has a strong positive association with various indicators of educational assortative mating for couples who married during this era (Mare and Schwartz 2006b). Data on the association between educational attainment and earnings for the first half of the 20th Century are sparse – the only high quality national data are for 1939 in the 1940 Census. Relying on the Iowa state census of 1915 as well as other less direct measures and the 1940 and 1950 Censuses, however, Goldin and Katz (2000a, 2000b, 2008) document a substantial compression in earnings differentials by educational attainment during the first half of the 20th Century. Remarkably, therefore, the broad trends in the returns to schooling and in educational homogamy display the same mid-century U-turn. Such a correlation is not clinching evidence for a causal argument, but it should be the basis for further study of how the changing economic meaning of educational attainment may alter preferences and opportunities in the marriage market (Mare and Schwartz 2006b). Trends in the timing of marriage, moreover, may amplify or diminish this possible effect of economic gaps between education categories on educational homogamy, moreover, may combine with trends in the timing of marriage. When people marry later, the economic gaps between education categories may be more visible to persons on the marriage market than when they marry earlier. Thus, the trends in marriage timing may reinforce the impact of trends in the economic rewards to

schooling. These are, of course, speculations based on inspection of aggregate trends. They are nonetheless a fruitful avenue for further research on assortative mating.

The Intergenerational "Inheritance" of Educational Homogamy

The estimates presented in Table 1 strongly suggest a link between the educational homogamy of parents and the educational homogamy of offspring. They also suggest a possible intergenerational "multiplier" effect on the trend in educational homogamy. Whatever behavioral and demographic forces have contributed to the secular increase in spousal resemblance during the last half of the 20th Century, these may be reinforced by the intergenerational effect. If more and more children are raised in educationally homogamous families and these children are more prone to marry homogamously, educationally homogamy may increase as a result of shifts in population composition. Similarly, during periods of secular decline in educational homogamy, the intergenerational effect of homogamy may retard the downward trend. For several reasons, however, it is premature to regard these speculations as solid results. First, it is necessary to examine the intergenerational association in more detail. The odd ratio for homogamy is a useful but highly simplified measure of assortative mating. Measures such crossings models (Schwartz and Mare 2005), for example, provide a fuller picture of the intergenerational relationship. Indeed, whether or not parents cross particular educational thresholds is strongly associated with whether or not their children cross those same thresholds (Mare 1995; Mare and Chang 2006). Whether parents marry across particular educational barriers may also be strongly associated with whether their children do as well. Second, it is necessary to examine the intergenerational association

of assortative mating in with controls for other, potentially confounding factors. During the 20th Century patterns of spousal resemblance shifted from close matches on parental and ascriptive characteristics (such as parents' social class, religion, ethnicity, etc.) to matches on the basis of the characteristics of the marriage partners themselves (such as educational attainment) (Kalmijn 1991a; 1991b). The analyses of intergenerational association of parents' and offsprings' spousal resemblance characteristics should take account of not only the association between parents characteristics on both sides of the family (which are controlled in the analyses presented here), but also *trends* in these associations. Third, it is necessary to consider the possibility that the intergenerational association between parents' and offsprings' educational assortative mating may itself be changing. Preliminary analyses not shown here suggest that this four-way association is stronger for cohorts where levels of homogamy are higher than in cohorts with lower homogamy. In principle, this type of trend suggests that intergenerational inheritance may accelerate secular increases in homogamy but do little to slow down secular decreases. Even the large data files used in the present analyses, however, fail to provide enough statistical power to establish this pattern of change. Finally, it is necessary to incorporate the intergenerational effect into an explicit behavioral model that takes into account the effects of parents' characteristics on individuals' preferences for as well as opportunities to meet potential marriage partners (e.g., Logan, Hoff, and Newton 2008). Only with this type of model will it be possible to specify clearly whether parental educational homogamy has a reinforcing impact on the homogamy of the next generation. These extensions are topics for future research. These limitations notwithstanding, the results reported in this paper illustrate one way that social

segregation on one dimension can reinforce segregation on another (Bruch and Mare 2009). Parents may structure the environments of not only their children but also, through the transmission of marital homogamy, the environments of their children's children.

Marital Homogamy and Inequality in the New Guilded Age

This paper has focused on describing the long run trend in marital homogamy along the lines of the educational attainments of husbands and wives. This trend, broadly speaking, shows a long run decline in homogamy that ends in the middle of the 20th Century, followed by a long run increase from that point on. This pattern broadly mirrors the 20th Century long trend in income inequality and, more specifically, the trend in the income returns to educational attainment. The middle of the 20th Century, from World War II to the 1960s was a low point in income inequality and in the disparities among educational strata in levels of earnings and incomes. Since then, income inequality in the United States has risen to levels last seen in the first two decades of the 20th Century. The link between trends in economic inequality and patterns of intermarriage between members of different socioeconomic strata strongly suggests that the effects of inequality are not confined to the differences in well-being experienced by individuals in these strata. Rather, inequality has potentially profound effects on social organization, lowering the chances that persons from different socioeconomic strata come in contact with one another, raising the stakes for choosing to associate with some kinds of people relative to others, and altering the kinds of social arrangements that result.

For marriages, it is relatively straightforward to speculate on the ways that inequality among potential partners may govern the extent of socioeconomic homogamy. Marriage is an economic partnership, and the potential resources that each partner brings to the relationship are an important basis for partner choice and competition. (Schwartz 2010). Widening economic gaps among persons with different amounts of formal schooling make marriage within educational strata relatively more likely. Marriage is also a social partnership, in which partners seek compatibility in attitudes, values, beliefs, consumption aspirations, and other elements of lifestyle. To the extent that these social dimensions are affected by the economic standing of individuals, widening inequality may increase the relative attractiveness of persons within one's own educational stratum. In this way, preferences for marrying within one's own educational stratum may reinforce the relatively impersonal homogamous effects of competition for mates with good economic prospects. These combined effects are a potentially strong pathway from economic inequality to marital homogamy.

Despite the salience of marriage as a social institution, it is only one of many institutions that may respond to trends in economic inequality. Others include residential neighborhoods, religious congregations, school classes, clubs and interest groups, and workplaces. In each of these venues, segregation and integration arise from the variations in the preferences of individuals and the differential distribution of opportunities for association, which are governed in turn by economic costs, physical distance, and enduring legal institutions and social norms. Although the specific mechanisms governing patterns of associations vary among these cases, it is reasonable to conjecture that these are substantially affected by economic inequality and that higher

levels of inequality tend to have a segregative rather than integrative effect. Such conjectures, however, remain difficult topics for further research, especially if one takes the century long perspective adopted in this paper. Despite the limitations of the marriage data used in this paper, they provide a rare lense through which one can rigorously compare patterns of association across long spans of time and garner evidence of the link between patterns of family formation and trends in economic inequality. A challenge for researchers is to create longer time series of observations on other institutions that may have been affected by inequality as we have moved from one guilded age to the next.

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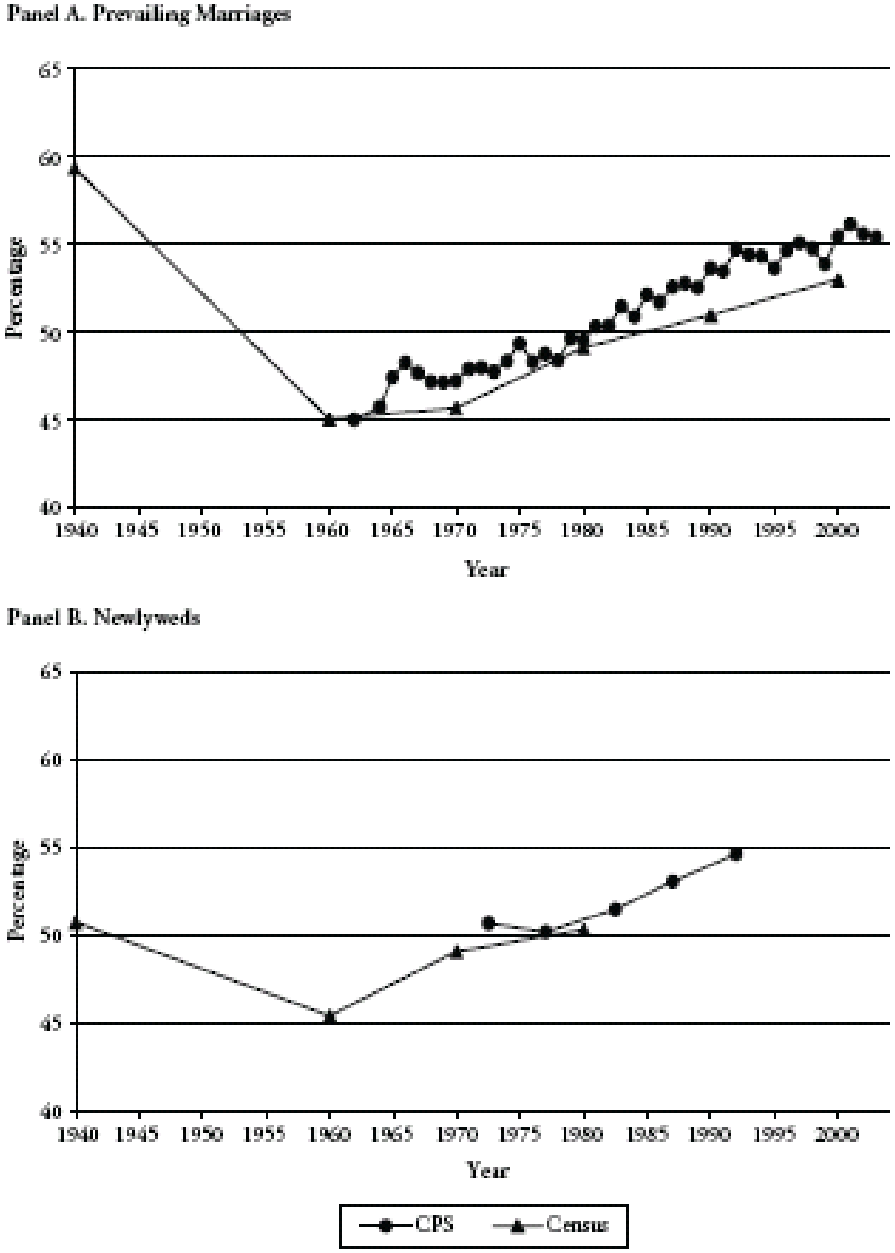
Table 1. Associations Between Homogamy of Parents and Homogamy of Offspring

Data - Model	Parents	Cohort Control	Other Model Features	**Odds Ratio β**	Z(λ)	# Cells	d.f.	Log £	# Couples
OCG-1	Husband	No	Unrestricted 2-Way	**1.067**	2.27	1296	1124	-1909	21020
OCG-2	Husband	No	Homogamy for 2-Way EAM	**1.083**	2.83	1296	1172	-4725	21020
OCG-3	Wife	No	Unrestricted 2-Way	**1.036**	1.24	1296	1124	-1945	21507
OCG-4	Wife	No	Homogamy for 2-Way EAM	**1.036**	1.24	1296	1172	-4513	21507
OCG-5	Both (Husband)	No	Homogamy for 2-Way EAM	**1.057**	1.92	46656	46608	-17754	19571
	Both (Wife)		Linear X Linear for Intergenerational	**1.053**	1.78				
			Linear X Linear for Inlaws						
OCG-6	Both (Equal)	No	Homogamy for 2-Way EAM	**1.055**	2.64	46656	46609	-17754	19571
			Linear X Linear for Intergenerational						
			Linear X Linear for Inlaws						
OCG-7	Both (Equal)	No	Homogamy for 2-Way EAM	**1.058**	2.88	46656	46609	-17103	19571
			Linear X Linear for Intergenerational						
			Homogamy for 2-Way Inlaws						
OCG-8	Wife	Yes	Unrestricted for EAM	**1.066**	2.27	12960	12677	-9239	21020
			Linear X Linear for Intergenerational						
			Homogamy for EAM Trend						
OCG-9	Wife	Yes	Homogamy for 2-Way EAM	**1.065**	2.24	12960	12725	-11828	21020
			Linear X Linear for Intergenerational						
			Homogamy for EAM Trend						
OCG-10	Husband	Yes	Unrestricted for EAM	**1.091**	3.14	12960	12677	-9197	21507
			Linear X Linear for Intergenerational						
			Homogamy for EAM Trend						
OCG-11	Husband	Yes	Homogamy for 2-Way EAM	**1.094**	3.21	12960	12725	-12040	21507
			Linear X Linear for Intergenerational						
			Homogamy for EAM Trend						
GSS-1	Respondent	No	Unrestricted 2-Way	**1.051**	1.68	1296	1124	-2417	19768
GSS-2	Respondent	No	Homogamy for EAM	**1.050**	1.65	1296	1172	-5089	19768
GSS-3	Respondent	Yes	Unrestricted 2-Way	**1.050**	1.66	19440	18946	-13148	19768
			Homogamy for EAM Trend						
GSS-4	Respondent	Yes	Homogamy for 2-Way EAM	**1.048**	1.57	19440	18994	-14713	19768
			Homogamy for EAM Trend						
GSS-5	Resp. (Male)	No	Unrestricted 2-Way	**1.042**	1.17	2592	2418	-4196	19768
	Resp. (Female)			**1.059**	1.69				
GSS-6	Resp. (Equal)	No	Unrestricted 2-Way	**1.051**	1.68	2592	2419	-4196	19768

Figure 1. Percentage of Marriages That Are Educationally Homogamous, Wives Aged 18-40: United States, 1940-2003.

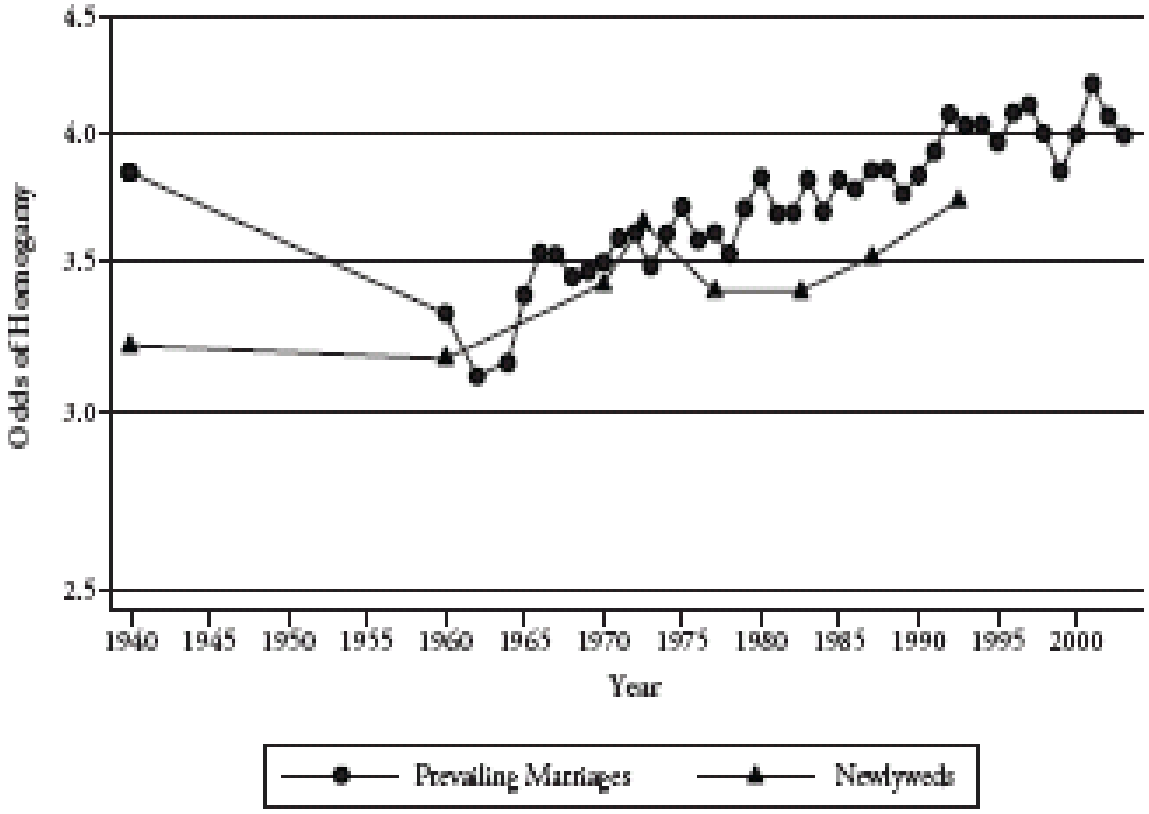


Notes: Data are weighted. Education categories are < 10, 10–11, 12, 13–15, and ≥ 16 years of schooling. For newlyweds, available CPS years are grouped as follows: 1971–1974, 1975–1979, 1980–1984, 1985–1989, and 1990–1998. They are graphed at their midpoints.

Sources: Current Population Survey and U.S. census data (IPUMS).

Source: Schwartz and Mare (2005)

Figure 2. Odds of Homogamy, Wives Aged 18-40: United States, 1940-2003



Notes: Education categories are < 10, 10–11, 12, 13–15, and ≥ 16 years of schooling. For newlyweds, available CPS years are grouped as follows: 1971–1974, 1975–1979, 1980–1984, 1985–1989, and 1990–1995. They are graphed at their midpoints.

Sources: Current Population Survey and U.S. census data (IPUMS).

Source: Schwartz and Mare (2005)

Figure 3. Educational Homogamy of OCG Parents and Respondents

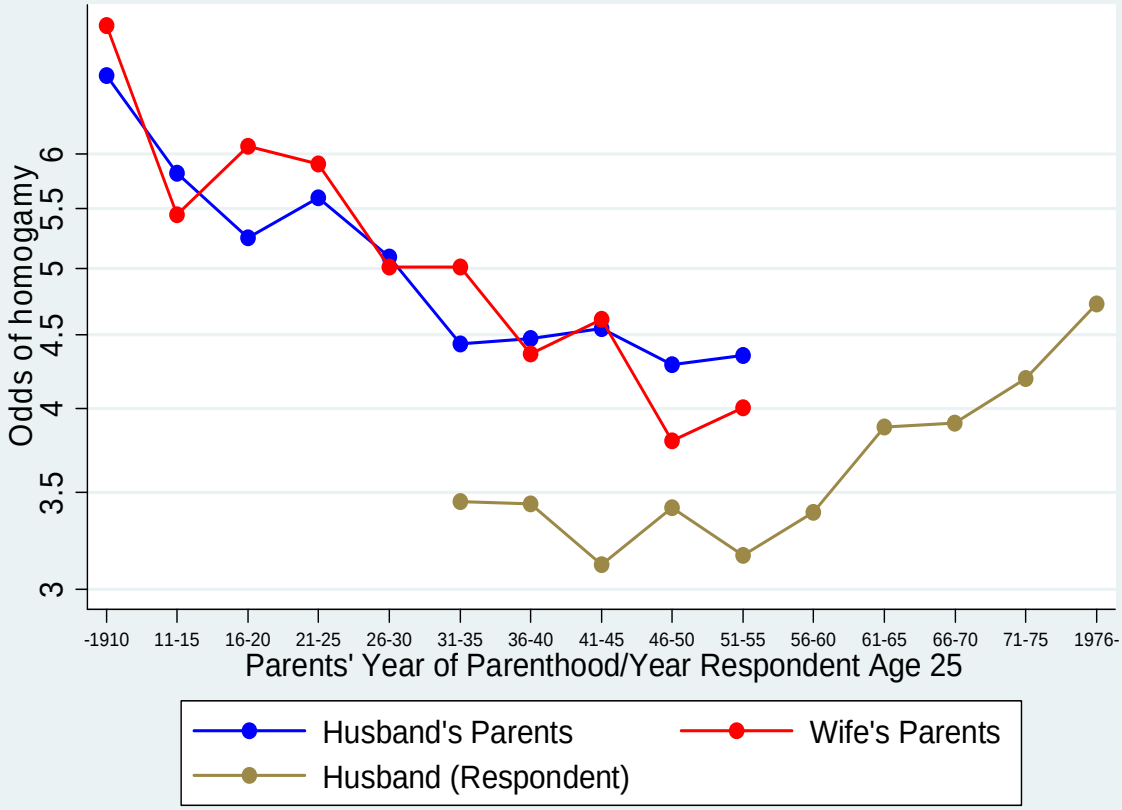


Figure 4. Educational Homogamy of GSS Parents and Respondents