

Trends and Variation in Assortative Mating: Causes and Consequences

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Abstract

Assortative mating fundamentally shapes the characteristics of families and the reproduction of populations. It organizes people into families and determines the characteristics of parents. In this article, I review the literature on the causes and consequences of trends and variation in assortative mating. Explanations for why assortative mating varies have been dominated by modernization theory, but perspectives emphasizing economic inequality and gender inequality have gained momentum in recent years. Underexplored is how changes in the structure of search have affected mate selection. The idea that assortative mating affects inequality and population composition is one of the primary motivations for its study but, until recently, has rarely been tested empirically. I review the literature on the consequences of assortative mating for (a) inequality within generations, (b) inequality between generations, (c) long-run population change, and (d) relationship quality and dissolution. I conclude with suggestions for future research.

INTRODUCTION

This article reviews recent studies of trends and variation in assortative mating, the nonrandom matching of individuals into relationships. People match assortatively in many ways, such as into jobs or friendships; this review focuses on matching in romantic relationships. I follow convention and use the term assortative mating, borrowed from biological studies of mating in animal populations, but my focus is on romantic relationships broadly construed rather than on the characteristics of couples engaged in sex and reproduction.

Studies of assortative mating span many disciplines. Sociologists interested in assortative mating typically focus on matching across salient social boundaries, most often socioeconomic status, race/ethnicity, and religion. There is also a vibrant literature in psychology, distinguished by a focus on matching on personality characteristics, although these studies also often include demographic traits. Interest in assortative mating in economics, which tends to focus on spouses' economic resemblance, has grown considerably over the past 20 years. This review focuses on the three types of assortative mating most common in the sociology and economics literature: (a) socioeconomic status (including education, occupation, income, and class background); (b) race/ethnicity; and (c) religion.

One of the major reasons why assortative mating has received so much attention in the biological and social sciences is that it fundamentally shapes the characteristics of populations. It organizes people into families and determines the characteristics of parents. Because spouses (and to a lesser extent cohabiting couples) share resources, assortative mating affects individuals' access to resources and the distribution of resources across families. Moreover, to the extent that parents influence their children's characteristics, assortative mating shapes the characteristics of future populations. Boundaries between social groups are maintained through assortative mating and weakened through intermarriage. Thus, the

degree to which populations intermarry tells us about the openness of social boundaries. Studies of assortative mating are also of interest for personal reasons. People care deeply about who their romantic partners are. Matching patterns are far from random, and the characteristics of partners affect relationship quality, satisfaction, and stability.

This article builds on previous reviews by Kalmijn (1998) and Blossfeld (2009). Kalmijn's comprehensive review covered socioeconomic, racial/ethnic, and religious matching studies written primarily in the 1980s and 1990s. Blossfeld's review was more targeted, focusing on trends and variation in educational assortative mating. Like Kalmijn, I review socioeconomic, racial/ethnic, and religious matching, but I update his review with studies published since the late 1990s. Each of these topics could fill its own article. I include all three because even though the theories, concepts, and issues overlap, connections and insights from one area are rarely applied to the others. Unlike Kalmijn's review, this article is primarily limited to studies that inform our understanding of trends and variation in assortative mating. This focus necessarily omits some active areas in the literature, such as point-in-time studies of individuals' preferences for mates and patterns of matching within a single context. Unlike both Kalmijn and Blossfeld, I devote considerable attention to the consequences of assortative mating. Research on this topic has grown substantially, but findings from these studies have not yet been the subject of a comprehensive review.

HOW ARE PATTERNS OF ASSORTATIVE MATING GENERATED?

The conceptual framework guiding most studies of assortative mating is the notion of the marriage market. Individuals search for partners in a market in which people have preferences for mates but face constrained opportunities (Becker 1974, Goode 1970 [1963], Mortensen 1988, Oppenheimer 1988). Search is costly (in terms of both time and money), and

people compete with one another for preferred mates. The search for a romantic partner has often been compared with the search for a job. Just as people have a reservation wage below which they will not take a job, they may also have a set of minimum qualifications they seek in a partner below which they will not form a match. People may update their preferences on the basis of their experience in the marriage market, and the complex interaction between people's potentially shifting preferences and their constraints generates observed matching patterns. These ideas underlie many behavioral models of mate selection, although various simplifying assumptions are made (e.g., Burdett & Coles 1997, Logan et al. 2008, Wong 2003). They have primarily been applied to marriage but also apply to the search for other types of romantic partners (e.g., Choo & Siow 2006, Sahib & Gu 2002).

Becker's (1974, 1981) economic model of marriage is often evoked in studies of assortative mating because of its clear predictions about matching patterns. He predicted that like will marry like when traits are complements: characteristics such as lifestyle, attractiveness, and religion. Becker referred to this phenomenon as positive assortative mating. The terms endogamy and exogamy are also often used, respectively, for in- or out-group marriage (e.g., by religion, race/ethnicity, or nativity), and homogamy and heterogamy for marriages between people with similar or dissimilar traits (e.g., by years of schooling, income, or attractiveness).

Other scholars have noted that homogamy can be generated by two combinations of preferences for mates: (a) Both sides of the market prefer partners with characteristics similar to their own (the matching hypothesis), or (b) both sides of the market prefer partners with more of a characteristic (the competition hypothesis). The matching hypothesis leads to homogamy because everyone is searching for someone similar to themselves. The competition hypothesis leads to homogamy because, if both sides of the market prefer more of a characteristic in their mates, then neither side

wants to partner "down," and everyone ends up with someone roughly similar to themselves. A small literature attempts to adjudicate between these two hypotheses (Dimaggio & Mohr 1985, Kalmijn 1994), with recent studies in economics using novel data from internet dating websites, speed dating experiments, and marriages among movie stars (Bruze 2011, Fisman et al. 2006, Hitsch et al. 2010). Overall, the evidence favors the matching hypothesis, but whether matching or competition prevails may vary by the trait in question, e.g., competition for income and matching on education, race/ethnicity, and religion (Hitsch et al. 2010). All these studies were conducted using data from the United States, however, and whether matching or competition characterizes the sorting process may vary by context.

Becker predicted that negative assortative mating would occur for traits that are substitutes. Traits are substitutes when there are gains to specialization. Becker reasoned that, just as factory output can increase when individuals specialize rather than complete all parts of a process, the gains to marriage can be greater when members of a couple specialize, and individuals would thus sort into marriage to maximize these gains. Although specialization could occur on numerous household tasks (e.g., I'm better at tidying up, and my partner is better at washing dishes), Becker primarily focused on specialization in the broad categories of market work versus household work. As others have pointed out, Becker's ideas are reminiscent of Parsons's (1949) classic discussion of the conjugal family, in which the division of labor between husbands and wives serves to reduce competition between the sexes and promote marital stability. The gains to specialization led Becker to predict negative assortative mating on wages such that high-wage men (or women) marry low-wage women (or men).

Exchange theory (Davis 1941, Merton 1941) also predicts negative assortative mating, but for different reasons. In the absence of homogamy, it predicts that people will balance unequal traits through exchange. For example, highly educated men from disadvantaged class

backgrounds can exchange their educational advantage to marry women from advantaged class backgrounds with lower educational attainments. The outcome of these matches is negative assortative mating on both education and class, but it arises because people exchange one advantage for another. Whether patterns of exchange are evident in interracial marriages in the United States has been the subject of lively debate (Gullickson & Fu 2010; Kalmijn 2010b; Rosenfeld 2005, 2010).

TRENDS AND VARIATION: CAUSES

The ideas discussed above form the theoretical basis for many studies of assortative mating, but taken alone they are static. Theories of trends and variation in assortative mating require an engine of change, be it variation in preferences, in opportunities, or in some combination of both. Although there is a small literature devoted to estimating the independent effects of preferences versus opportunities (e.g., Abramitzky et al. 2011, Choo & Siow 2006, Logan et al. 2008), many of the ideas discussed below involve changes in both. In addition, feedback loops between preferences and opportunities may render their independent effects difficult to disentangle. Thus, while I use the concepts of preferences and opportunities below, I do not dwell on these distinctions but organize the discussion around the major substantive explanations for variation in assortative mating.

Modernization and the Decline of Third Party Control

A constellation of interrelated ideas about modernization, economic development, urbanization, geographic mobility, secularization, and the rise of individualism motivate a large portion of theory about change and variation in assortative mating. Although these ideas are formulated in various ways, the basic argument is that as societies develop, the basis of success shifts from ascribed characteristics (e.g., social

origin, race/ethnicity, religion) to achieved characteristics (e.g., education, experience). In the process, parents lose control over the economic success of their children, and the influence of third parties (e.g., families, community members, the church, the state) over mate selection wanes. Increasing geographic mobility also reduces the ability of parents and third parties to monitor and regulate mate selection, but educational institutions and residential segregation remain important indirect methods of parental control (Blau & Duncan 1967, Goode 1970 [1963]).

Assortative mating scholars have drawn on these ideas—which can be loosely classified under the modernization theory umbrella—to predict an increase in sorting on achieved characteristics and a decrease in sorting on ascribed characteristics (e.g., Kalmijn 1991a,b; Rosenfeld 2006, 2008; Rosenfeld & Thomas 2012). A variant of this hypothesis posits that sorting on achieved characteristics follows an inverted U shape, first rising with the increased importance of education but then falling as romantic love becomes the basis of mate selection (Smits et al. 1998).

Trends in assortative mating by religion and race/ethnicity are generally consistent with predictions from modernization theory. With few exceptions, interracial and interreligious marriages are vastly more common today than in the past (e.g., Kalmijn 1991a, Rosenfeld 2008). Trends in educational homogamy, by contrast, are less consistent and more contested. Several scholars have remarked that cross-national trends in educational homogamy appear to have no discernible pattern (Blossfeld 2009, Kalmijn 1998, Smits & Park 2009). In the United States, most studies show a rise in educational homogamy, but the results vary across the education distribution and are sensitive to how spousal resemblance is measured (Hou & Myles 2008, table 1; Rosenfeld 2008; Schwartz & Mare 2005). Thus, at present, it is clear that cross-national trends in educational homogamy do not neatly follow those predicted by modernization theory and that different or more complex theories are needed, as advocated by

others (Smits & Park 2009). A subset of the ideas associated with modernization theory has fared better in recent work on the decline of third party control over mate selection and the rise of same-sex and interracial unions (Rosenfeld & Kim 2005, Rosenfeld & Thomas 2012).

Assimilation

Although some studies of trends in racial/ethnic intermarriage draw on modernization theory, more common is the use of assimilation theory. Like modernization theory, classical assimilation theory predicts an increase in racial/ethnic intermarriage as the social boundaries between groups blur through the process of assimilation into a common culture (Gordon 1964, Park & Burgess 1921). Although long-run patterns of racial/ethnic intermarriage fit squarely within predictions from both modernization and assimilation theory, an unprecedented decline in Hispanic intermarriage between the mid-1990s and 2000s has sparked renewed interest among scholars of interracial/interethnic marriage in the link between preferences and opportunity (e.g., Lichter et al. 2011; Qian & Lichter 2007, 2011). The leading explanation for Hispanics' recent "retreat from intermarriage" is that the large growth in the Hispanic immigrant population has increased opportunities for endogamy and may have also reinforced a shared cultural identity (Qian & Lichter 2007, 2011). The complement to these findings is that, while Hispanics in the United States have become increasingly endogamous, immigration out of Mexico appears to have created a marriage market squeeze in which women living in areas of Mexico with high levels of migration are more likely to "marry down" in education than are those living in areas with low migration (Choi & Mare 2012). Broadly speaking, the variability of changes in intermarriage by race/ethnic group supports more nuanced theories of assimilation that are less unidirectional than classical assimilation theory and follow multiple paths (e.g., Alba & Nee 2003, Portes & Zhou 1993, Qian & Lichter 2007).

Economic Inequality

The economic inequality hypothesis represents an alternative to straight-line theories of modernization and assimilation. It posits that the economic and social distance between groups is greater in times of high inequality, thereby reducing intermarriage. This hypothesis is quite general and can be applied to inequality across many social groups, but it is most often applied to economic inequality by education (known as the returns to schooling) and to general levels of income inequality across individuals or families (e.g., as measured by the Gini coefficient, Theil index, or coefficient of variation). The mechanism linking inequality to assortative mating is straightforward: When economic inequality across groups increases, people have more to lose if they "marry down" (Fernández et al. 2005).

The inequality hypothesis is not new (Blau 1977, Rytina et al. 1988, Smits et al. 1998), but has received increased attention as a result of several promising cross-national studies that have found higher odds of educational homogamy in countries with greater income inequality and returns to schooling (Dahan & Gaviria 2001, Fernández et al. 2005, Torche 2010). Studies of trends within countries support these findings: Educational homogamy tends to move in tandem with the returns to schooling (Han 2010, Heaton & Mitchell 2012). Related studies find that higher levels of male income inequality are associated with delayed marriage among women (Gould & Paserman 2003, Loughran 2002), potentially because whom one marries matters more in high inequality regimes than in low ones.

Whereas the inequality hypothesis is often framed as a shift in preferences stemming from change in the cost of "marrying down," increases in income inequality are also associated with increased residential segregation (Reardon & Bischoff 2011) and thus may reduce the opportunities for intermarriage. One way to make progress toward identifying why inequality and assortative mating are related would be to investigate the links between inequality,

segregation, and homogamy. Previous research has examined whether income segregation is associated with health and education outcomes, but findings from these studies are mixed (Lobmayer & Wilkinson 2002, Mayer 2001, Mayer & Sarin 2005). Linking segregation to assortative mating seems quite promising given that relationship formation is strongly rooted in space (McPherson et al. 2001).

Despite some straightforward differences between the modernization and inequality hypotheses, few studies have empirically adjudicated between them. For instance, the two theories diverge with respect to predicted trends in sorting on social origins. With increased development, modernization theory predicts a decline in sorting on social origins, but growing US wealth inequality since the 1970s (Wolff 1998) suggests that the importance of sorting on social origins may have increased. Kalmijn (1991b) found weak evidence of a decline in social origin homogamy among couples married between 1927 and 1961, but no study has examined these trends since inequality began its steep rise. Additional studies of sorting on social origins would also be useful in addressing whether increases in educational homogamy in the United States reflect increased sorting on class background, or whether men and women sort on class background just as they always have even as educational homogamy has increased.

Finally, interest in the inequality hypothesis has centered on variation in educational homogamy, but it could easily be extended to racial/ethnic and religious endogamy. A fruitful avenue of future research would be to investigate the extent to which increases in intermarriage by race/ethnicity and religion can be explained by changing economic differences between these groups.

Gender Inequality

The economic inequality hypothesis is not explicitly gendered, but changes in inequality between men and women likely play an important role in assortative mating. A central argument in the sociological and demographic

literature on marriage is that, although Becker's (1974, 1981) and Parsons's (1949) theories about gender specialization may once have aptly characterized marital arrangements, marriage is an increasingly egalitarian and flexible institution (e.g., Cherlin 2004; Gerson 2010; Oppenheimer 1994, 1997). This argument underlies two main hypotheses about how changes in gender inequality affect matching: one framed from the perspective of women choosing men, and the other from the perspective of men choosing women.

When women choose men, increases in women's socioeconomic status relative to men's should give women more freedom to choose their mates on nonpecuniary grounds (Oppenheimer & Lew 1995, Sweeney 2002). In other words, when choosing between "love or money," women can afford to choose love (Fernández et al. 2005). This hypothesis is generally interpreted to imply less matching on socioeconomic resources, although it is not clear why this should necessarily be the case. For instance, because lifestyles, attitudes, and beliefs are associated with class position (Weeden & Grusky 2012), it may be that increases in women's earnings facilitate a longer search, allowing women to find better matches on numerous characteristics.

From the perspective of men choosing women, as women's economic prospects grow and egalitarian marriage becomes more normative, men may begin competing for highly educated, high-earning women just as women have traditionally competed for high-earning men (e.g., England & Farkas 1986, Sweeney & Cancian 2004). The increasing similarity of men's and women's preferences drives up competition for high-status partners and results in increased homogamy. Thus, unlike the usual interpretation from the perspective of women, this hypothesis implies that declining gender inequality increases homogamy.

From the perspective of women choosing men, the evidence on whether love trumps money as gender inequality decreases is mixed. Trend studies show that the importance of men's earnings for marriage has not declined

(Buss et al. 2001, Sweeney 2002). But Fernández et al. (2005) found that educational homogamy tends to be lower in countries where women are relatively economically advantaged, consistent with the notion that love trumps money with decreasing gender inequality. A key difference between Fernández et al.'s (2005) study and others is that it controls for general levels of inequality across countries. It is possible that the effects of economic inequality trump those of gender inequality but that once economic inequality is controlled for, the effects of gender inequality can be observed. Future studies should be mindful of these potentially offsetting effects.

From the perspective of men choosing women, strong and growing evidence suggests that women's money has become more important. There is a growing expectation that women will contribute to their families' economic well-being (Gerson 2010, South 1991), and these expectations are reflected in men's attitudes and behaviors. Men with high earnings potential are more likely than in the past to marry women with high wages (Sweeney & Cancian 2004). They also attach increasing importance to women's financial prospects, education, and intelligence in their search for mates (Buss et al. 2001). These changes may be due to the rise of egalitarian marriage, but they could also be spurred by the increased need for women's contributions arising from increased childrearing costs, declining male wages, rising standards of living, and increased uncertainty in men's and women's economic trajectories (Oppenheimer 1988, Sweeney 2002).

Because relationships involve two people, it is of course possible for both hypotheses to be correct—women could care less about men's money, and men could care more about women's. How this plays out into observed matching patterns is the result of a complex interplay between the preferences of men and women and the availability of potential mates. Indeed, the discussion above focuses on shifts in men's and women's preferences, but reductions in gender inequality also affect matching through changes in opportunities. When men

have much higher educational attainment than women do, unless a substantial fraction of the population remains unmarried, men will tend to marry women with less education than themselves (a pattern called hypergamy). Men's educational advantage has declined substantially around the world, and in many countries, including the United States, wives now have on average more education than their husbands (a pattern called hypogamy) (Esteve et al. 2012). An exception to this pattern is Japan, where highly educated women appear to be avoiding marriage in the face of a decline in the relative supply of highly educated men (Raymo & Iwasawa 2005).

Changes in the Structure of Search

Other scholars focus on changes in the structure of searching for a mate in explaining variation in assortative mating. A prominent hypothesis is Mare's (1991) time gap hypothesis, which argues that educational homogamy varies as a function of the timing of marriage and of school completion. Because schools are educationally homogeneous institutions, couples who meet in school and marry shortly thereafter should be more likely to be educationally homogamous than those who meet in other places, such as work, bars and nightclubs, or neighborhoods. Indeed, Mare (1991) finds that part of the increase in educational homogamy in the United States between 1940 and 1987 can be explained by the narrowing time gap between school completion and marriage.

More recent trends in the time gap are inconsistent with trends in educational homogamy in the United States. The time gap has increased since the early 1980s as increases in schooling have fallen behind increases in age at first marriage, but homogamy has not declined as would be expected. The inconsistency between recent trends in the time gap and educational homogamy in the United States may explain why this hypothesis has received surprisingly little empirical attention. An exception is cross-national research showing that, in many countries, homogamy rises with time out

of school (inconsistent with the time gap hypothesis) but then falls (as predicted by the hypothesis) (Blossfeld & Timm 2003). Another exception is an interesting study by Shafer & Qian (2010), which shows that the association between the time gap and homogamy differs by sex. As men spend more time out of school, they are less likely to form educationally homogamous unions, but women become more likely to avoid marriage altogether rather than “marry down.” This is consistent with internet dating studies showing that women have a greater aversion to “marrying down” in education than men do (Hitsch et al. 2010). Black women, in particular, are more likely to remain unmarried than marry a man with less education (Lichter et al. 1995). Thus, the effect of the time gap may be more complex than originally outlined, varying by sex, race, and age. Future research is needed to determine how these complexities map onto variation in educational homogamy over time and place.

It is possible that the time gap hypothesis fits the meeting and marriage patterns of the 1940s through the 1980s but that this link has become weaker with the changing structure of search. With increased residential and occupational segregation by socioeconomic status (Hellerstein et al. 2008, Reardon & Bischoff 2011) and reduced sex segregation at work (Padavic & Reskin 2002), young people may be nearly as likely to find a homogamous mate at a local bar or at work as they once were at school. These processes may also work differently by class. Recent evidence suggests that the expansion of education has created a marriage market mismatch for college students from less advantaged backgrounds. Because college students in general are still relatively advantaged, disadvantaged students who attend college may face restricted partner markets and may also be hesitant to marry someone with less education upon returning home (Musick et al. 2012).

Changes in dating technology may also affect the structure of search. One possibility is that new technologies increase homogamy. The ability of individuals to keep in touch with their school friends using cell phones and social

networking websites may have lengthened the reach of schools as marriage markets further into adulthood (Ellison et al. 2007). Social networking websites may also facilitate the expansion of social contacts along homophilous lines so that even partners who do not meet in school may match with someone who attended a school with characteristics similar to those of their own (Arum et al. 2008). In addition, internet dating websites and social media reduce the costs of search, making it possible to find a better and possibly more homogamous match.

By contrast, the dominant view in studies of new technologies is that the internet promotes diversity rather than sameness because of increased contact with people from different backgrounds and the reduced influence of third parties (e.g., Hampton et al. 2011, Rosenfeld & Thomas 2012). Despite these arguments, what is perhaps most striking about the internet dating literature is how closely people’s stated preferences for mates match what would be expected on the basis of observed matches in the general population (Feliciano et al. 2009, Hitsch et al. 2010). This suggests that matches formed through the internet may not differ substantially from those formed in other ways, but research on how technology changes the nature of marriage markets and romantic relationships is in its infancy.

Other Demographic Changes

Demographic changes such as increasing cohabitation, rising divorce and remarriage, and declining marriage rates may affect comparisons of spousal resemblance across time and place (Schwartz & Mare 2012). A common question is whether the rise of cohabitation can explain observed trends in assortative mating. This could occur if, for example, cohabitation weeds out heterogamous couples who would have married in its absence (Blackwell & Lichter 2000, 2004). With respect to education, scholars have found little evidence of a weeding mechanism—cohabitators who split up and those who marry are very similar with respect to their educational resemblance (Goldstein

& Harknett 2006, Sassler & McNally 2003, Schwartz 2010b). Given the lack of evidence for a weeding mechanism out of cohabitation, it is not surprising that estimates of trends in educational homogamy using pooled samples of cohabitators and married couples are similar to those using married couples alone (Qian & Preston 1993). There is more evidence for the weeding hypothesis with respect to interracial/interethnic and interreligious relationships (Blackwell & Lichter 2004, Joyner & Kao 2005, Wang et al. 2006), but again, estimates of trends using pooled samples are similar to those using married couples alone (Qian & Lichter 2007). These findings suggest that increases in cohabitation have not substantially altered trends in assortative mating, at least in the United States. Patterns of matching in cohabitation and marriage differ substantially across contexts (Hamplova 2009), and the effects of cohabitation on assortative mating into marriage may differ in turn. Similar to cohabitation, divorce and remarriage have small effects on the resemblance between spouses in the United States, where these events are relatively common, and therefore are unlikely to be primary explanations for large shifts over time or between countries (Fu 2010, Schwartz & Mare 2012).

Most of the evidence about the effects of declining marriage rates on changes in assortative mating comes from evidence on cohabitation. This is reasonable given that the rise of cohabitation makes up for a large portion of the decline in marriage (Bumpass et al. 1991). But clearly, changes in selection into marriage cannot be completely captured by the rise of cohabitation. For example, as mentioned above, rising levels of inequality affect how long women search for their marriage partners and potentially whether they marry at all. Whether this induces women to substitute cohabitation for marriage is an open question. Some studies have used selection models to examine differences in assortative mating while controlling for differential selection into unions (e.g., Qian et al. 2005), but whether this is necessary depends on the question of interest. If one's interest is to examine assortative mating trends to measure changes in the

strength of boundaries between social groups, then addressing changes in selection into marriage is less relevant, but if one's interest is to understand the mechanisms through which these patterns are generated, then differential selection into unions should be addressed.

TRENDS AND VARIATION: CONSEQUENCES

One of the main justifications for studying assortative mating patterns is that they may have profound consequences for inequality and population change. Until recently, this hypothesis has received little empirical attention. Below, I review the literature on the consequences of assortative mating for (a) inequality within generations, (b) inequality between generations, (c) long-run population change, and (d) relationship quality and dissolution.

Inequality Within Generations

Studies of the effects of assortative mating on inequality within generations have focused on spouses' socioeconomic resemblance. Because spouses share resources, societies in which high earners marry other high earners and low earners marry other low earners will be more unequal than those in which high earners marry low earners. To the extent that race/ethnicity and religion are also associated with economic and cultural resources, assortative mating on these characteristics has implications for the distribution of resources across families and households as well, but these implications have yet to be explored.

Studies of the impact of assortative mating on inequality within generations can be viewed as one piece of a larger literature on the effects of changes in family life on inequality. Related literature has found that steep increases in nonmarital childbearing, delayed marriage, and declining marriage rates have decreased the share of married-couple households in the population. Because single people tend to have lower household

incomes than married couples do, declines in married-couple families exacerbate inequality (McCall & Percheski 2010, McLanahan & Percheski 2008). The rising association between husbands' and wives' earnings means that high-earning married-couple families are additionally advantaged relative to singles. Estimates of the effects of the growing association between spouses' earnings on increases in inequality across married-couple families range from 17 to 51%, depending on the measures used and time period studied (Schwartz 2010a).

The growing association between spouses' earnings could be due to increases in assortative mating on socioeconomic characteristics, to changes in the division of labor within marriage, or to some combination of both. As mentioned above, evidence suggests an increase in educational homogamy in the United States, but whether this has translated into increased inequality within generations is questionable. Two recent studies have found that increased educational homogamy has not contributed to increased inequality in the United States (Breen & Salazar 2011, Western et al. 2008).

Although it is intuitive that increased educational homogamy should increase economic inequality across families because of the link between education and earnings, there are several potential explanations for the "no effects" finding. First, increases in educational homogamy may not have been large enough to produce sizable shifts in inequality (Breen & Salazar 2011, Kremer 1997). A second, related possibility is that increases in educational homogamy among some types of couples have been offset by declines among other types such that there is little overall effect on inequality. Several scholars have pointed out that the correlation between spouses' educational attainments has barely budged or, by some estimates, has even declined in the United States (Breen & Salazar 2011, Kremer 1997, Rosenfeld 2008). However, models that describe trends in educational homogamy using association measures (such as the correlation coefficient) do not fit observed trends as well as more complex models do (Mare 2000, Schwartz & Mare 2005). This is

not surprising given that homogamy increased more for the most and least educated than for those in the middle (Kalmijn 1991a, Rosenfeld 2008, Schwartz & Mare 2005). These findings suggest that educational homogamy may have larger effects on inequality between high- and low-earning couples than on inequality between high- and middle-earning couples or low- and middle-earning couples. To date, studies of the effects of trends in educational homogamy have used summary measures of inequality, which could obscure variation across the earnings distribution.

A third explanation for the "no effects" finding is that wives' education may not be highly correlated with their earnings. As an extreme example, if all women exit the labor force upon marriage, then the correlation between wives' education and earnings would be zero, and increases in educational homogamy could not affect earnings inequality. This extreme example has not been far from the truth for much of US history. In 1950, only 21% of married white women were in the labor force. By 1980, the rate had risen to 49%—a substantial increase, but more than half of women still had potential earnings that went unrealized (Goldin 1990, table 2.1). Over this period, wives' labor supply became more responsive to their own potential wages and less responsive to their husbands' wages (Goldin 2006). Because wives' potential wages are shaped by their education, these findings suggest that a relatively weak association between wives' education and earnings may be responsible for the null findings. This explanation is also supported by the finding that changes in educational homogamy have had a larger effect on inequality in Denmark, where a substantially higher percentage of wives work, than in the United States (Breen & Andersen 2012, Breen & Salazar 2011). It would be interesting to extend this line of research by testing how the effects of assortative mating on inequality vary depending on wives' labor force participation and the strength of the association between wives' education and earnings. It is possible that increases in the association between wives' education and earnings will

produce future increases in inequality should educational homogamy in the United States continue to rise.

To summarize, the literature to date suggests that the increased association between spouses' earnings has contributed to growing inequality, but this phenomenon may be due to changes in the division of labor within marriage rather than to increased matching on education. A fruitful avenue of future research would be to disaggregate these two possibilities by examining the evolution of couples' resemblance across their married lives. Another area of research that has received little attention in recent years is sorting on occupation (Hout 1982). The expansion of opportunities for men and women to meet similarly earning mates at work may have also contributed to the rising economic resemblance of spouses.

Inequality Between Generations

Although the transmission of social status from parents to children is the topic of a large literature in stratification, there is very little understanding of how or even whether assortative mating affects children's success. The traditional practice in stratification research has been to use father's class as a measure of the family's class standing (e.g., Erikson & Goldthorpe 1992, Goldthorpe 1983). In a notable recent study, Beller (2009) challenges this view, demonstrating that mother's class plays an increasingly important role in the status transmission process. (Also see Sørensen 1994 for a review of the debate about mother's class in the status attainment literature.)

Beller (2009) finds that an additive model of mother's and father's class does just as well at describing patterns of intergenerational transmission as a fully multiplicative model, but other studies have found evidence of interaction effects. Beck & González-Sancho (2009) hypothesize that educational homogamy is associated with consistency and agreement in parenting practices and thus should enhance children's success in school. Indeed, they find that the children of educationally homogamous

parents are better prepared for school at age five and receive this benefit regardless of their parents' education level. This finding suggests that an increase in educational homogamy will have positive effects on child development in the population but will not result in increased inequality given that the effects are uniform across the education distribution.

The association between parents' characteristics need not be multiplicative for assortative mating to affect inequality, however. For example, Martin et al. (2007) find that the effects of father's and mother's parenting styles are additive, but that children with two supportive parents have the highest cognitive outcomes at age five and those with two unsupportive parents have the lowest. Thus, increased matching on parental supportiveness would tend to increase inequality among children even without a multiplicative effect. The same is true for parental occupation and education. Increased matching on socioeconomic attainment could lead to greater inequality in child outcomes as long as both parents' characteristics matter for the transmission process and are positively related to child outcomes.

There is also a small literature on the intergenerational effects of racial/ethnic intermarriage. The conceptual issues facing these studies parallel those faced by studies of the intergenerational transmission of class, but thus far these connections have not been exploited. In their study of the effects of interracial marriage on the educational resources available to children, Cheng & Powell (2007) provide a comprehensive theoretical treatment of why assortative mating may matter for the education-related resources children receive from their parents. Their ideas could easily be applied to the status attainment literature. For instance, although the prevailing view is that homogamous couples are more effective at transmitting their characteristics to their children (Bisin et al. 2004, Dohmen et al. 2012), Cheng & Powell hypothesize that parents may actively attempt to counteract any negative effects of heterogamy by increasing their parenting efforts. Their evidence supports the notion that interracial parents

invest more in the educational environments of their children than do endogamous parents, but the extent to which this is true varies by the race and sex composition of families.

Other studies examine the effects of interracial/interethnic marriage on children's social networks. A primary motivation for studying racial/ethnic intermarriage is that it weakens social boundaries between groups both within and across generations, but this association has largely been assumed rather than tested. A small number of recent studies, however, empirically support this claim, finding that children of intermarriages have more social contact with individuals from multiple racial/ethnic backgrounds and are less ethnocentric than those with endogamous parents (Kalmijn 2010a, Stephan & Stephan 1989, Stephan & Stephan 1991). These results support the argument that increased interracial marriage is not merely a reflection of reduced social distance between groups but is also an engine of change toward reduced social distance between groups across generations (Kalmijn 2010a).

Finally, a handful of studies address the intergenerational effects of religious assortative mating. Whereas the status attainment literature is primarily interested in outcomes related to children's success in school and the workplace, and the racial/ethnic intermarriage literature in measures of children's contact with and appreciation of different racial/ethnic groups, the outcome of interest in studies of religious matching is mainly the religious orientation of children. Religious intermarriage could have implications for other outcomes, such as children's educational and occupational success, but these topics have not to my knowledge been explored. Most religious assortative mating studies have found that mother's religion has a more powerful effect on children's religion than father's (Hayes & Pittelkow 1993), but religious affiliation also appears to play an important role. For example, in Catholic-Protestant marriages, Catholic parents are more likely to pass on their religion to their children than are Protestant parents regardless of which parent is Catholic, but children are especially likely to be

Catholic if their mothers are Catholic (Croog & Teele 1967, Nelsen 1990). A more recent study suggests that children of interreligious marriages are more likely to state that they have no religion or identify with a different religion than that of either parent (Bisin et al. 2004), perhaps because those who intermarry are less religious than endogamous couples.

Across each of the three types of matching studies reviewed here, there is persuasive evidence that both mothers and fathers matter for the intergenerational transmission of traits. However, the way in which they matter varies across characteristics and may also be changing over time. The status attainment literature suggests that mother's status has become increasingly important in shaping children's outcomes, and future research should investigate whether the effects of racial/ethnic and religious intermarriage on intergenerational transmission have also shifted.

Long-Run Population Change

Populations change across generations as a result of variation in fertility, mortality, migration, assortative mating, and the intergenerational transmission of traits. Models of population change across generations must grapple with assortative mating because it determines the characteristics of parents. Since Kalmijn's (1998) review, great strides have been taken in this area. A growing body of research incorporates assortative mating into intergenerational models of various characteristics, such as education (Mare 2000, Mare & Maralani 2006), race/ethnicity (Loveman & Muniz 2007, Montgomery 2011), religion (Bisin et al. 2004), and income (Fernández 2002, Fernández & Rogerson 2001, Kremer 1997). What distinguishes these studies from the intergenerational studies reviewed above is that rather than focusing only on the transmission of traits from parents to children, they incorporate fertility, mortality, assortative mating, and (more rarely) migration into their models so that the effects of a change in one generation can be

estimated for the population composition of future generations.

Findings about the effects of assortative mating on inequality and population change vary markedly depending on the assumptions embedded in researchers' models. For example, Fernández & Rogerson (2001) find that assortative mating substantially increases income inequality across generations using a model calibrated with US data. By contrast, Kremer (1997) argues that even large changes in educational homogamy will have negligible effects on inequality in the United States. Both studies find that increased educational homogamy has very little impact on educational inequality (see Mare 2000 for a similar result). Their conclusions differ because they make different assumptions about fertility and the intergenerational transmission of education. Fernández & Rogerson find that increased educational sorting has a substantial effect on income inequality because increased sorting is associated with a reduction in the supply of educated workers in the population (via the lower fertility of educated couples and the nonlinear association between parents' and children's education), which drives up the returns to skill, thereby increasing inequality. By contrast, Kremer assumes that all parents have two children and that the relationship between parents' and children's education is linear, and thus his model does not incorporate a mechanism for translating the weak effects of educational sorting on educational inequality into potentially larger effects on income inequality (Fernández & Rogerson 2001).

Fernández & Rogerson make a compelling case for why their model produces substantial effects whereas Kremer's does not. However, the applicability of their model to the US case is limited in three ways. First, to determine the magnitude of the effects of increased educational homogamy on inequality, they use an improbably large increase in the correlation between spouses' educational attainments—an increase from 0.6 to 0.8. As mentioned above and as pointed out by Kremer, empirical increases in the correlation in the United States have been modest, increasing from 0.58 in

1960 to 0.62 in 2000 (my calculations based on Schwartz & Mare 2005, table 2). This modest increase tempers the authors' claims of a substantial effect of assortative mating. Second, the main reason that increased educational homogamy affects inequality in Fernández & Rogerson's model is that they find it reduces the supply of educated workers. However, the relative supply of educated workers has increased in the United States (although the returns to schooling have also increased) (Goldin & Katz 2008). Third, Fernández & Rogerson's model separates individuals into just two education groups. A richer array of education categories may produce different results. Thus, there is room for further research in this area using models that are more finely calibrated to empirical data.

Relationship Quality and Dissolution

At the individual level, partner choice has consequences for relationship quality, satisfaction, and dissolution. Scholars generally hypothesize that heterogamous unions are associated with poorer relationship outcomes because of differences in partners' lifestyles, attitudes, and beliefs, and/or because of disapproval from family and community members. Couples in interracial/interethnic relationships—especially those between African Americans and whites—are more likely to experience disapproval from family, friends, and community members than endogamous couples are, and this social context can put considerable strain on their relationships (Bratter & Eschbach 2006, Fu et al. 2001, Root 2001). There is also evidence that interracial dating and cohabiting couples are more likely to split up (Blackwell & Lichter 2004, Joyner & Kao 2005, Wang et al. 2006). Whether this extends to increased marital dissolution, however, is less certain. Most studies do find that interracial/interethnic couples are more likely to divorce than endogamous couples, but substantial evidence suggests that this also varies by the racial/ethnic composition of the couple (Bratter & King 2008, Heaton 2002, Weiss & Willis 1997, Zhang & Van Hook

2009). Two recent studies (Fu & Wolfinger 2011, Zhang & Van Hook 2009) also provide an important corrective to previous research, noting that the risk of divorce for intermarried couples is similar to the risk for endogamous couples in the more divorce-prone group. For example, Zhang & Van Hook (2009) found that black-white couples are more likely to divorce than endogamous white couples, but they are not more likely to divorce than endogamous black couples. These findings suggest that intermarriage per se may not be the cause of elevated divorce risks among intermarried couples but that the risk of divorce in interracial relationships is pulled toward the more divorce-prone group.

Evidence on the risk of divorce for couples that marry across religions is similar to that for interracial marriage: Most studies find that interreligious dating and cohabiting couples split up more often and that the risk of divorce tends to be similar to that for endogamous couples in the more divorce-prone group (Blackwell & Lichter 2004, Heaton 2002, Kalmijn et al. 2005). By contrast, the results for educational heterogamy are somewhat different: Although most research finds that educationally heterogamous couples are more likely to divorce than homogamous ones are, heterogamous couples do not appear to be more likely to split up as they progress from dating, to cohabitation, to marriage (Blackwell & Lichter 2004, Goldstein & Harknett 2006, Schwartz 2010b). It may be that marriage is still different enough from cohabitation that educational differences only become problematic in marriage (Goldstein & Harknett 2006, Schwartz 2010b).

FUTURE DIRECTIONS

1. As Kalmijn (1998) remarked, few studies have directly tested competing hypotheses about the mechanisms generating patterns of assortative mating. More studies have done so since Kalmijn's review, but they remain few and far between. One notable exception is Fernández et al.'s (2005) study, which demonstrated that both economic and gender inequality are associated with variation in matching, but in opposing directions. Future research could do more to adjudicate between various theories of change and variation.
2. The notion of the marriage market underlies most studies of assortative mating. However, the literature has not yet fully grappled with how to conceptualize and measure marriage markets. Some studies assume search occurs in labor market areas (Lewis & Oppenheimer 2000, Lichter et al. 1995), but whether this is accurate is not clear. Others explore where and how people meet (Kalmijn & Flap 2001, Rosenfeld & Thomas 2012) but do not directly measure the characteristics of eligibles in these markets. Understanding more about the social milieus in which people search for mates and the markets in which they find their matches is a priority for future research.
3. The growth of single-parent families, remarriage, cohabitation, and same-sex unions poses conceptual and methodological challenges for studies of assortative mating. This is especially true for studies of the effects of assortative mating on inequality. For instance, how does one measure the effects of assortative mating on child outcomes among unmarried mothers? Should one measure the characteristics of biological fathers or cohabiting partners, or attempt to incorporate complete partnership histories? With respect to same-sex relationships, how are our conceptions of partner markets altered when the market has no clear sides?
4. A common observation about trends in educational assortative mating is that the meaning of education has changed. Getting a college degree today means something different than it did 50 years ago. Few scholars have measured how the changing meaning of demographic markers (e.g., education, race/ethnicity,

religion) has affected matching. One way to do this would be to develop and test specific hypotheses about how the meaning of these characteristics has shifted. The economic inequality hypothesis can be seen as an attempt toward this end—that is, the meaning of education may have changed as a result of increased returns to schooling. Another possibility would be to measure the changing association between these demographic markers and other measures of compatibility such as lifestyles, attitudes, and beliefs.

5. Internet dating studies are an exciting new area of research that has already substantially increased our understanding of people's preferences for mates (e.g., Feliciano et al. 2009, Hitsch et al.

2010, Lin & Lundquist 2013). Future research should work toward connecting these preferences to observed cohabiting and marital matches. Relatedly, how do new forms of technology change who partners with whom?

6. Log-linear models are standard in the assortative mating literature. However, parameters from these models cannot be used to estimate people's preferences for mates controlling for the availability of partners (Logan 1996)—often precisely what scholars are most interested in doing. Alternative models have been developed but have not been widely employed (e.g., Choo & Siow 2006, Logan et al. 2008). Future research should test the merits of new models for answering pressing questions in the field.

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