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WOMEN'S EDUCATION AND FAMILY BEHAVIOR: TRENDS IN MARRIAGE, DIVORCE AND FERTILITY*

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Abstract

The production efficiencies of household specialization have declined with the development of technologies simplifying household production. Additionally, the opportunity cost of having a household specialist has risen as barriers to women in the workplace have been eroded. These developments, which have made way for an increase in the relative importance of the consumption benefits from marriage, have not impacted all families similarly. This paper examines how marital and fertility patterns have changed along racial and educational lines for men and women. Marriage and remarriage rates have risen for women with a college degree relative to women with fewer years of education, eroding a long-standing gap caused by greater marriage propensities among less educated women. In contrast, there has been little change in marital patterns by education for men. Divorce has been falling for all groups, but fell earlier and more sharply among college graduates. Fertility has historically declined with women's educational attainment and that pattern continues, with the total number of births having changed little by women's educational attainment, despite the large increases in educational attainment for women. However, there has been a rise in the age of educated mothers, with little change in fertility timing for those with less education.

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I. Introduction

The family is a constantly changing institution. In the last half century, marriage and fertility rates have fallen, divorce rates have risen, and the character of marriage has changed. These developments have occurred in the wake of widespread social, legal, and technological changes that have impacted the incentives for individuals to form and invest in marriages and children. These changes have not impacted all families similarly, and in this article, we investigate how family behavior has changed for women of different educational backgrounds.

Gary Becker's 1981 *Treatise on the Family* proposed an economic theory of families based on "production complementarities", in which husband and wife specialize in the market and domestic spheres, respectively, and hence are more productive together than apart. Becker emphasized that families are production units that produce both goods in the house (like clean laundry, well-cared for children) and in the marketplace. By having one person specialize in domestic responsibilities (most often a wife as homemaker), while the other supports the spouse and children financially (typically a husband as breadwinner), couples are more efficient than singles.

However, the view of the family as a source of production efficiencies has become less relevant over time. The twentieth century brought the development of labor and skill saving technological progress in the home. This technological change simplified clothes washing and drying, cooking (through the development of pre-processed foods and microwaves), dishwashing, and housecleaning. Technological progress also encouraged the shift from home production to purchasing items in the market through the development of cheaper mass-produced items like ready-made clothes. Technological change has impacted home production through three channels. The first is by making home production more efficient. The second is by reducing the returns to specialized domestic skills as these technologies substitute capital for skilled labor. And the third is by making market-produced goods a closer substitute for home-produced goods, which in turn makes market work a closer substitute for domestic work. While some of the effect of these changes was likely an increase in the amount and quality of home production, overall time spent in home production fell. Moreover, there was a shift in home production away from specialists toward non-specialists. Between 1965 and 2003 home production by women fell between 11 and 12 hours a week on average, while home production

by men rose by 4.5 hours (Ramey 2007) (Aguiar and Hurst 2007). In the wake of these changes, the production efficiencies realized by families have been eroded.

Additionally, the costs of having such a specialist have also risen. Women's increased control over fertility (allowing them to better time and plan pregnancies), their improved access to education, and a decline in labor market discrimination have all led to higher market wages for women (Blau and Kahn 1997, 2000). These higher wages represent a greater opportunity cost for a couple contemplating a stay-at-home spouse. Further, changes in divorce law have made specialization in the home riskier (Stevenson 2007). The declining relative value of production efficiencies from marriage decreases the value of marriage and, if this is the only relevant margin along which the value of family life is changing, it should lead to a decline in marriage rates overall. Indeed, Greenwood and Guner (2008) develop a model in which technological change in household production is used to explain the fall in marriage rates since World War II. However, these technological changes should not impact all women equally. The Beckerian production efficiencies model of the family is consistent with an empirical fact of the time: college-educated women were the least likely group of women to marry in this period. This fact is consistent with a model of the family in which many of the benefits of marriage arise from the greater efficiency achieved through household members specializing in either market or non-market work. Therefore women who are uninterested in, or not well-suited for, specializing in home production will have fewer gains from marriage. Thus, these women will be less likely to find it in their interest to marry.

As the gains from household specialization fall, so too does the relative advantage of marriage for women with less education (or more generally, women with fewer market skills). While we have witnessed a decline in marriage rates, it has been small relative to the large declines in specialized homemakers. In 1970, among women with children under the age of 5, the majority, 70%, were out of the labor force, presumably full-time homemakers. In the ensuing decades, labor market participation became the norm for mothers with young children and only 36% were out of the labor force in 2006. In contrast, the decline in marriage was less dramatic: in 1970 94% of women had married by age 40, declining to 84% by 2006.²

² Sharper decreases in marriage rates are seen when one looks at younger women due to the rising age of first marriage. In 1970, 84% of 25 year olds had married compared to 43% of 25 year olds in 2006.

One explanation for why marriage rates have not fallen further is that other dimensions of family life have become relatively more important and have also changed in absolute terms. Families have experienced an increase in leisure and consumption (Aguiar and Hurst 2007) that has likely increased the benefits of shared public goods. Housing and health insurance costs, both important family public goods, have increased (Newhouse 1992) and (Glaeser, Gyourko and Saks 2005). Moreover, there may be consumption complementarities that become more valuable as the time and money available to pursue consumption has risen (Lam 1988). These changes in family life offer increased benefits from marriage, partly offsetting some of the loss of benefits stemming from the decrease in the returns to specialization. Such changes in the returns to married life should impact not only the probability that matches form, but the type of matches that form.

This hypothesis has a number of testable implications. This first implication is that marriage should become more common among those with more disposable income and/or more leisure time, relative to those with less. The second is that in a consumption-based model of marriage, people will be more likely to marry someone with similar preferences, which will likely manifest itself in an increase in positive assortative mating along the dimensions of age, education background, and occupation. The third is that, among couples without kids, their hours of work should become increasingly similar as the value of an hour of leisure is greater when it is coordinated with one's spouse. Childcare makes this coordination more complicated for those with children. And finally, similar (albeit oppositely signed) patterns should be seen for divorce, with divorce being less common among those who work similar hours and have more shared interests and more in common than among those who have little in common and little disposable income (with which to enjoy consumption complementarities).

This paper focuses on establishing the facts behind the changes over recent decades in family formation, dissolution, and expansion by women's education. College-educated women used to be the least likely to marry, and today they are about as likely as those without a college degree to marry. There are large racial differences in this trend with college-educated white women still less likely to marry than those with less education, while college-educated non-white women are the most likely to marry among non-whites. Women of all educational backgrounds have delayed marriage, although the delay has been significantly larger for the more highly educated. The divorce rate initially rose for all groups but in recent decades has dropped off

more sharply for college graduates. Lastly, while trends in the average number of children ever born have been similar across groups, the delay in fertility is concentrated almost exclusively among women who have attended college.

The rest of the paper is organized as follows: Section II will examine trends from the 1950s through to 2006 in the timing and propensity to enter marriage among women with a high school degree or less, those with some college, and those with a college degree. The patterns of marriage and the differences by education differ significantly by race and thus we will examine white women separately from black women and will compare the patterns for both groups of women to the experiences of men. Section III turns to marital stability, examining divorce and remarriage rates for women and men, separately by race and education, while Section IV focuses on changes in fertility. Section V explores subjective well-being data and finds that there are important differences in marital and family happiness by education. Section VI discusses the interpretation of the results, noting that many of the changes over time in family behavior by women's educational attainment may simply reflect the shift of many women into high educational categories. .

II. Marriage Patterns

A shift from production-based marriage to consumption-based marriage should make marriage more appealing to those with more disposable income relative to those with less. Since personal and household income within a marriage is a bargained outcome reflecting the skills of each spouse and the preferences for home production and leisure, one would prefer to measure potential earnings. A reasonable proxy for potential earnings is education and, as such, one would similarly predict that marriage should become more appealing to women with more education relative to those with less education.³

In addition, there is an important gender shift occurring. Several decades ago, a woman earning a graduate degree was unlikely to find the old specialization model of marriage to be useful, and many therefore chose to remain single. But a modern marriage based on

³ Goldstein and Kenney 2001 forecast a demographic shift in marriage with college-educated women becoming more likely to marry today than at any other time in the. However, the gap has not closed as fast as predicted and the higher rates of marriage for college-educated women born in 1950-1965 that they had forecasted had yet to be seen by the time these women were at least 40 years old.

consumption complementarities is likely more enticing for educated women.⁴ On the flipside, less educated women have their own market opportunities available to them and have less to gain through household specialization in marriage today than in the past, and the new model of marriage based on consumption complementarities thrives when households have the time and resources to enjoy their lives.

In addition to differences in the probability of ever marrying, there are differences by education in the timing of first marriage. As Becker (1981) argued, those who plan to be specialist homemakers have an incentive to enter marriage early to begin to invest in their skills as a homemaker and reap the returns to specialization. Among women who do not plan to be household specialists, this incentive is not present. Indeed, it is likely that these women face an opposite incentive, to invest in their career before finding a spouse and children.

In Figure 1 we start by examining the proportion of women who have ever-married, by age, among those with and without a college degree. Examining the most recent large-scale data—the 2006 American Community Survey—we see in the first panel of Figure 1 that among white women, those with a college-degree are less likely to have ever-married and that this holds at every age. A very different pattern is seen for black women in the second panel, for whom marriage rates are highest for those with the most education after the early 20s, but are significantly lower than those of whites, even among college-graduates.

The data in Figure 1 point to the fact that for no generation of women have we witnessed a cross-over in which college-educated white women are marrying at higher rates compared to white women with less education. For white women over the age of 40 there is a fairly stable gap in which college-educated women are around 4 percentage points less likely to have ever-married compared with women with less education. The gap is larger for women in their 20s and smaller for women in their 30s reflecting the fact that college-educated women tend to marry later.

Yet, the “marriage gap” between college-educated women and their less-educated counter-parts has been closing. Figure 2 uses the decennial censuses of population from 1950 through to 2000 to show the evolution over time in both the marriage gap and the timing of first

⁴ Marriage is, of course, a two-sided market. In production-based marriages, a person with strong market skills prefers to match with a person with strong home-making skills. In consumption-based marriages, everyone has a preference for market skills.

marriage for those with a high school degree or less, those with some college, and those with a college degree or more. For each decade, the percent of women who have ever-married is shown for each age and educational attainment. In the earlier decades women who are college graduates are clearly less likely to ever marry compared to women with less education. The graphs show that marital behavior has changed both in terms of the timing of marriage in the life cycle and in the probability of ever marrying. Examining the panels in Figure 2 we see that women with a college degree increasingly delayed marriage to older ages both earlier and to a greater extent than women with less education. In 1970, 74% of 25 year old college graduates had ever-married; this compares to 53%, 43%, and 36% in 1980, 1990, and 2006 respectively. In contrast, the percent of 25 year old high school graduates who had ever-married was 90%, 83%, 73%, and 54% in 1970, 1980, 1990, and 2006 respectively. Indeed, in the last 16 years there has been a larger decrease in marriage during the early 20s among women with less than a college degree than was seen in previous decades while there has been relatively little change among college-educated women. The increased delay is consistent with the changing incentives affecting individuals. Technological change has lowered relative cost of maintaining a household as a single (Greenwood and Guner 2008). The greater returns to education and experience increases the incentives to postpone potential career disruptions. And a shift toward spousal matching on consumption and leisure preferences may lead to greater heterogeneity in matching and thus an increased benefit of time spent searching.

The large gaps in marriage rates by education seen among women in their 20s dissipate through the 30s. To get a sense of marital outcomes it is worth looking at women at older ages, as such we turn to the end data points in Figure 2, when the women are age 50. For women born in 1900, 76% of those who were college-educated women had ever-married by age 50 in 1950. In contrast, 90% of high school graduates in this era had married by age 50. Marriage rates for college-educated women grew rapidly from the 1950s and by 1980, 91% of the college-educated women had married by age 50. During this period, marriage rates were also growing for women with less education—with 97% of high school graduates in 1980 married by age 50—however the gains were much smaller. Thus, between 1950 and 1980, the closing of the educational marriage gap for white women was driven by large increases in the marriage rates of college-educated women, much of which occurred at older ages.

Subsequent to 1980, there has been little change in the likelihood that college graduates will ultimately marry. While this group continued to have further increases in the age of first marriage, much of this was made up for by higher marriage rates at older ages. Indeed, between 1980 and 2006 the percent ever-married among 50 year old college graduates fell by only 2 percentage points; a similar change is seen among 40 year olds for whom the percent ever-married fell by 4 percentage points. In contrast, among 50 and 40 year old high school graduates, over this period the percent ever-married fell by 3 and 8 percentage points respectively. Among high school dropouts, the fall in marriage over the past quarter century was even greater, with a 7 percentage point decline in ever-married rates at age 50. As can be seen in the bottom three panels of Figure 2, those with less education had larger relative declines in marriage between 1980 and 2000, and this trend continued through to 2006. It is this relatively larger decline in marriage rates among those with less education that led to further decreases in the educational marriage gap since 1980.

Two facts seen in Figure 2 are worth noting: among white women, while marriage rates have fallen overall in recent decades, they are still similar to that seen in the 1950s. Indeed, among those with a high school degree, by age 40, a greater percentage had entered into marriage in 2006 than had done so in 1950. A similar increase was seen among women with some college, while a small decrease occurred among high school dropouts. Marriage rates immediately following World War II were at a historic high, leading to historically high ever-married rates for women who were of marrying age during this period and thus, high ever-married rates in the 1960 and 1970 Censuses (Stevenson and Wolfers 2007). The second fact is that between 1950 and 1980 the percent ever-married plateaued and did so at a relatively early age. In contrast, between 1990 and 2006 ever-married rates continue to increase long past 40. While some of this upward slope may simply reflect the decline in marriage among more recent cohorts, marriage rates among older adults have risen in recent decades and this likely explains at least some of the continued rise with age in the percent of those ever-married.

As previously discussed, the age of first marriage has risen for all white women, but markedly more for those with a college degree. In 2000, by age 22, 50% of white women with less than a high school degree had married, in comparison, the 50% threshold was crossed at age 23, 24, and 27 for those with a high school degree, some college, and a college-degree, respectively. Of course, some education may occur later and thus the younger women's

education is biased downwards, a factor that may exacerbate the differences in the age at first marriage by educational attainment. An alternative approach is to use marital history data among older women to look retrospectively at the age they married and their ultimate educational attainment. Since all but a few people who will complete college have done so by their late 20s, we examine 28-30 year old women in the 2004 SIPP.⁵ This age group in the 2004 SIPP also allows the most comparability with the cohort represented by the 2000 Census. For these women, the age at which 50% had entered a first marriage was 23, 23, 24, and 26 for women with less than high school, high school, some college, and college, respectively. The data show remarkably similar patterns, suggesting that very little of the gap in age at first marriage by educational attainment is due to educational attainment being completed after marriage.

Thus, while white women with more education are increasingly postponing marriage, they have also increased their likelihood of ever marrying. In contrast, women with less education are postponing marriage, albeit to a lesser extent, yet they have become somewhat less likely to ever marry. What is less known is how much of this shift reflects the changes in the composition of women in each of the educational categories, a change in how educational attainment may impact the desire or value of marriage for these women, or a change in how educational attainment affects the attractiveness of women to men in the marriage market. We will return to these issues in section VI.

A different picture emerges when we examine marital trends among African-American women by education. Figure 3 shows the percent of black women ever-married by age and education across the decades. In the 1960s through to the 1980s the timing of marriage was similar for college-educated African-American and white women. However, black female college graduates were more likely to marry compared with white college graduates and, starting in the 1970s, by the time they reached their early 30s, they were as likely to marry as other African-American women. However, by 1990, black women with any college education were slightly more likely to ever marry compared with those with only a high school degree and this

⁵ A similar pattern is seen examining women at older ages as well, although this represents an earlier cohort. The age at which 50% of women aged 40-45 in the 2004 SIPP had married was 21, 21, 22, and 25 with less than high school, high school, some college, and college, respectively. In comparison, the age at which 50% of women in the 1990 census had married (when these women were 26-31) was 21, 22, 24, and 26 for those with less than high school, high school, some college, and college, respectively.

trend continued through to 2006. As with white women, this increase in marriage rates for college graduates relative to those with less education occurred because women with less education became increasingly unlikely to marry at a faster rate compared to those with more education. Since black women with a college education had not been previously less likely to marry these shifts have led to a positive gap in which college-educated black women are more likely to marry than are black women with less education.

There has been a larger decrease in marriage rates among black women of all educational backgrounds, and that decrease has been large relative to the decline in marriage among whites. While the ever-married rates of 40 year old white female college graduates fell only 4 percentage points between 1980 and 2006, the fall among black female college graduates was 17 percentage points. Among high school graduates the ever-married rates fell by 24 percentage points, compared to a fall of 8 percentage points among whites. Lastly, the graphs show that the differential timing of entry into marriage by education that has eroded among African-American women in recent decades. Those of all educational backgrounds are delaying marriage, and by 2006, the gap in the percent of 25 year old black college and high school graduates who had ever-married was only 10 percentage points—almost half of that in 1980.

Turning to men, we see smaller differences in marital behavior by educational backgrounds than is seen for women. As with women, more education is associated with a later age of marriage among men. Figures 4 and 5 show ever-married rates by age and education for white and black men, respectively, using the decennial censuses of population from 1960 through to 2006. Among white males, aside from a slightly later start to marriage, ever-married rates show little difference by educational attainment. In recent decades, white men have become decreasingly likely to marry in their 20s. Between 1990 and 2006, male college graduates became slightly more likely than those with less education to ever marry and, as with women, overall men have become less likely to marry since 1980. This gap emerged because while all groups of men became less likely to marry, the decrease in marriage among those with a college degree has been less than that of those with less education.

A similar pattern is seen among black men, although the timing differs by several decades. Starting in 1980, black male college graduates became more likely than black high school graduates to marry. This gap widened in the ensuing decades, a pattern that, as with whites, largely reflects declines in marriage among those with less education that exceeded the

declines seen for those with more education. In 2006, college-educated black men in their forties were 5 percentage points less likely to have ever-married compared with college-educated white men, yet they were more likely to have married compared with black men with less education or compared to black women of any educational background. Thus, as with whites, black college-educated men remain the most likely to marry among blacks. Men's role in market production has meant that the most highly educated men are desirable matches under both the specialization and consumption models of marriage and they have the most gain from marriage either by forming a partnership with a home production specialist who will allow them to specialize in market production or by forming a consumption-based marriage with a person who shares their preferences for consumption and leisure.

In summary, for both men and women, marriage rates have declined since the 1980s among people of all educational backgrounds. However, these declines have been steeper among those with less education. Because college-educated white women had historically been less likely to marry, the shifts in marital behavior have led to a closing of the education gap in marriage for white women. In contrast, among black women and men, these marital shifts have created a education gap in which those with more education have become more likely to marry. Among both men and women, the movement away from marriage has happened most sharply among blacks and while the shift has been somewhat smaller for those with more education, these differences are small compared to the overall shift.

III. Marital Stability

Divorce rates rose for much of the 20th century, reaching a peak in 1979 (Stevenson and Wolfers 2007) and falling thereafter. One explanation for the high divorce rates of the 1970s may be that this period reflected a transition, with many marrying the right partner for the old specialization model of marriage, only to find that pairing hopelessly inadequate in the modern consumption-based marriage (Stevenson and Wolfers 2008b). As such, it is perhaps not surprising that current divorce rates are similar to those witnessed at the end of the 1960s. This fall in divorce rates is seen whether divorces are measured relative to the population or the stock of married people. Moreover, examining individual marriages, those who have married in recent years have been more likely to stay together than their parents' generation (Stevenson and Wolfers 2008a).

However, these patterns have not occurred equally among those with more and less education. In general, divorce rates are lowest among those with a college-degree, yet are the highest for those with some college, while those with a high school degree or below have divorce rates that fall in-between the two groups. These patterns have been largely stable over time, with divorce rates rising for all groups since the 1950s, and peaking, for most groups, in the 1970s. Figure 6 shows the proportion of women's marriages ending in divorce by cohort and educational attainment. The top row shows the divorce hazard for black women in first marriages, while the bottom row shows white women in first marriages.⁶ Figure 7 repeats this exercise for men. Among those marrying in the 1950s, only 17% of the marriages of college-educated women had ended after 25 years and this proportion was only slightly higher, 22%, for those with a high school degree or less. Similar dissolution rates were seen among men, with 20% of the first marriages of male college graduates ending within 25 years and 23% among those with a high school degree or less. However, the marriages of high school graduates that did end tended to dissolve earlier in the marriage compared with the marriages of college graduates. Thus, differences in marital survival were more extreme when looking after only a decade of marriage (see Table 1).

Unfortunately, the last cohort for whom we can examine 25 years after their marriage are those marrying in the 1970s—the cohort for whom divorce was most likely. For this cohort, there was also little difference between high school and college graduates in divorce rates 25 years after the marriage. Among men and women with a high school degree or less, 44% percent of marriages had ended, while for those with a college degree 42% of women and 37% of men had divorced.

Yet Figures 6 and 7 illustrate that there have been differential trends in divorce for those marrying in the 1980s and 1990s by education. The high divorce rates of the 1970s continued into the 1980s for those with a high school degree or less and those with some college, while the divorce rate for those with a college degree was lower for those marrying in the 1980s. This decrease in divorce is seen at 20 years, and to a lesser extent at 10 years, post-marriage. The percentages for each are shown in Table 1. It should be noted that for all groups the divorce rate in the first 5 years has not decreased, suggesting that divorces that do happen are increasingly

⁶ We concentrate on first marriages so that the divorce hazards reflect the average person's experience rather than the average marital experience. The patterns are similar for second marriages, however second marriages are more likely to end in divorce.

happening earlier in the marriage. Given the observed differences in the timing to divorce witnessed in earlier cohorts, it is difficult to forecast whether the educational differences will grow or shrink over time for those married in the 1980s and 1990s.

Most of the discussion has compared the divorce rates of those with the least education with those with the most education. However, the group with the highest divorce rate is men and women with “some college”. This is equally true among blacks and whites and in some cohorts the differences are substantial. Table 1 shows that among white women married in the 1970s, those with some college were 9 and 7 percentage points more likely to have divorced after 20 years compared with those with a college degree and those with high school or less, respectively. For white men, the comparable differences were 9 and 6 percentage points. Even larger differences are seen among blacks, with those with some college 11 and 15 percentage points more likely to have divorced after 20 years compared with male and female college graduates and 16 and 6 percentage points more likely to do so when compared to men and women with a high school degree or less. These differences are just as stark examining those marrying in the 1980s and 1990s. The fact that it is those with “some college” that are the most at risk of divorce illustrates the potential role of selection in explaining why marital and divorce outcomes differ by educational attainment. Those with “some college” have either attended a 2 year program or have failed to complete a 4-year program.⁷ As such, among those with some college there is clearly negative selection among those with some college as they disproportionately represent those without the stamina or resources to complete their education. It is perhaps not surprising that this group would have similar difficulties maintaining their marriage.

In sum, both men and women with a college degree have been consistently less likely to divorce and have also experienced a larger decline in divorce probabilities in the last couple decades. A different picture emerges, however, when we consider remarriage. College-educated white women have historically been less likely than other women to remarry once divorced. Figure 8 shows remarriage hazards among divorced white women by educational attainment calculated from marital histories collected in 1971, 1980, 1995, and 2004. In each sample, college-educated women who divorce are both less likely and slower to remarry compared with less educated women. Remarriage rates are falling over time for all groups of women, although the declines in remarriage rates have been greatest for those with less education.

⁷ Among adults in the 2000 census, around 78% of those with some college had received no degree.

Table 2 explores the probability of remarriage using probit regressions. Across all years, college graduates are less likely to remarry. However, adding controls for years since divorce and length of marriage reduces the coefficient on college. Adding a further control for the age at marriage reduces the coefficient further. Thus, much of the difference in remarriage rates for the most recent cohort can be explained by the differential patterns of first marriage. The final columns in Table 2 show that remarriage has become relatively more likely for college graduates with the negative coefficient on college attenuating over time.

Turning to black women and men of both races, we see that remarriage rates for these groups have fallen over time as well; however the patterns by education differ from that seen for white women. Figure 9 shows the remarriage hazards among divorced black women by educational attainment in 1971, 1980, 1995, and 2004. Among black women there was little difference in remarriage rates by education in 1971. By 1980, a gap had emerged in which black women with a high school degree or less had become less likely to remarry. A similar drop in remarriage had occurred among those with any college and in the 1995 CPS data we can see little difference in remarriage rates by education for black women. However, the remarriage rates for all groups have fallen. The remarriage hazards for men by race and education are shown for 1971 and 2004 in Figure 11. As with women, for both white and black men, remarriage rates have fallen between 1971 and 2004. However, there is little difference by education for men in the probability of remarriage.

Across gender and racial lines, we find that remarriage rates have actually gone down while the pool of divorced individuals has increased. To provide further support for this finding, we investigate the likelihood of remarriage with the 1970 and 1980 Census samples, and the 1991-3 and 2004 SIPP (questions used to infer remarriage from the Census were discontinued after 1980). Table 3 shows that for every group, with and without controlling for age and age at first marriage, remarriages rates have gone down. The surprising finding of a drop in remarriage rates at a time when the number of divorced individuals has increased is likely partially a result of rising cohabitation.

Having examined the trends in the marital formation, dissolution, and reformation, we now briefly turn to the probability of being married at specific ages. The growing difference in the patterns of marriage entry for women of different educational backgrounds combined with different patterns in divorce and remarriage rates has led to stark differences in the probability of

being married at specific ages. In Figure 11, we show the percent of white women who are currently married by education. In earlier decades, college graduates of all ages were less likely to be married. By 1990, college graduates became about equally likely to be married at older ages, and since then, they have become more likely to be currently married at certain ages, a difference which has been increasing in magnitude and expanding to younger ages. Looking more closely at the 2006 panel, we see that college graduates are less likely to be married in their 20s, but by the time they are in their 30s they are more likely to be currently married and that gap holds for people throughout the 30s and early 40s and erodes thereafter.

IV. Fertility

An even starker pattern of differences by education emerges when we examine patterns in fertility. In the US there is a stark pattern of fertility declining with the education of mothers, with those with the most education having the fewest children. Examining the number of children in the household for white women from 1950-2006 by age and level of education, Figure 12 shows the increase in children in the 1960s, 1970s, and the subsequent decline in fertility for women of all education categories. A rise in mean age of mothers has been noted for some time, however, this figure clearly illustrates that most of that rise comes from a shift in the fertility patterns of more educated women. In 1950, college graduates had the fewest number of children in the household at every point in the life cycle. However, in subsequent decades, by the time women were older—in their early 40s or older—the number of young children in the homes of college graduates was similar to that of women with less education. The change that has occurred over the past several decades is a steady decrease in the probability that college-educated women have children in the home in their 20s and 30s. Indeed, the age distribution of women with young children in the home among those with a high school degree or less has changed little. Much of the delay in fertility has been occurring among women with more education.

Examining the last panel of Figure 12 more closely shows that in 2006, college-educated women are having fewer children overall. These women are significantly delaying childbirth and have more young children in the household in their 40s, compared with women with less education. Examining when mothers have an infant in the household, the median age for college

graduates is 32 years while 28 years for those with some college and 26 years for those who have never attended college.

Because it is difficult to differentiate between a delay versus a permanent drop in fertility over time, we explore the differences in the amount of delay by looking at changes in the median age at which mothers have an infant in the household since 1950. The median age did not rise at all for women with no college, versus 1 year for women with some college and 4 years for college graduates. A similar pattern holds for black women. The stark difference by education is consistent with the story that the returns to delaying fertility have increased for those at the top of the educational ladder.

Turning now to changes in total fertility, we can only view the graphs on children in the household as suggestive, due to changes in divorce and remarriage, out-of-birth wedlock, and when children move out of the household. To address trends in total fertility by education,

Table 3: Remarriage Over time

Probit Regression	Everyone		White Women	Black Women	White Men	Black Men
	(1)	(2)	(3)	(4)	(5)	(6)
Regression Coefficients:						
1980 Dummy	-.074*** (.001)	-.062*** (.002)	-.054*** (.002)	-.139*** (.005)	-.050*** (.002)	-.104*** (.005)
1991-93 Dummy	-.086*** (.004)	-.094*** (.004)	-.068*** (.005)	-.220*** (.015)	-.105*** (.006)	-.159*** (.021)
2004 Dummy	-.105*** (.004)	-.135*** (.004)	-.087*** (.006)	-.256*** (.016)	-.167*** (.007)	-.261*** (.021)
Age at marriage		-.012*** (.001)	-.017*** (.000)	-.010*** (.001)	-.016*** (.001)	-.009*** (.001)
Age		.007*** (.001)	.006*** (.001)	.011*** (.001)	.009*** (.001)	.009*** (.001)
Sample size	1503866	1503866	698836	96519	590483	71772

Notes: ***, ** and * denote statistically significant at 1%, 5% and 10%, respectively. (Robust standard errors in parentheses). Census of Population 1970 and 1980. Survey of Income Participation Program 1991-93 and 2004. Marginal effects reported.

Table 4 examines terminal fertility (the number of children ever born to 45-50 year old women) across the decades (the Census stopped asking this question in 1990 and so we supplement it with the 2004 SIPP).⁸ For white women, the differential in the number of children ever born is consistent across time. College graduates have the fewest children, followed by those with some college, high school graduates, and finally high school dropouts. Fertility rose for all groups of 45-50 year olds from 1950-1980, and has decreased thereafter such that fertility rates in 2004 are similar, albeit slightly higher, to those seen in 1950 and 1960 for each education group. However, total fertility has dropped throughout the period, as women's educational attainment has risen with no subsequent erosion of the negative relationship between fertility and education.

Among black women, the same pattern holds by education, although there is some evidence that fertility has dropped slightly for college graduates. The rise in out-of-wedlock births among black women is clearly being driven by changes in marriage, not fertility: the number of children ever born by education is similar for 45-50 year old black women today as in 1950 while the same groups has experienced an almost 30 percentage point drop in ever marrying.

The direct effects of greater control over fertility decisions and greater access to education and higher potential wages women can command from the workforce have altered the incentives women face. They have increased both the opportunity cost of having children overall and the costs of career disruption at earlier stages in the life cycle, and as a result, women are having children at later stages in their life. Although only suggestive evidence has been provided that the costs to fertility have risen over time (Loughran and Zissimopoulos 2007), Miller (2007) shows in a cross section of women that delaying fertility increases lifetime earnings, and the gains are highest for college graduates.

V. Marital Happiness

Subjective well-being data can help us better understand the differences in the family experience between these groups. Data from the General Social Survey (GSS) asks individuals

⁸ While it is possible for some women to have children after age 45, it is quite uncommon, indeed, early data did not capture fertility after age 45.

how satisfied they are with their family life and how happy they are with their marriage as well as other attitudinal questions. Moreover, for a few years people are asked more generally about whether married people are happier than unmarried people.

The GSS is a nationally representative sample of about 1,500 respondents each year from 1972-1993 (except 1992), and continues with around 3,000 respondents every second year from 1994 through to 2004, rising to 4,500 respondents in 2006. Analyzing these data, we quickly see that the perceived benefits of marriage differ by education. Four times as many non-college graduates as college graduates agree that “financial security is the main benefit of marriage”, and are slightly more likely to agree that “children are the main purpose of marriage”. Not surprisingly, those with a college degree are less likely to see “production complementarities” as the main benefit of marriage.

Turning to marital happiness, we see in Table 4 that when people are asked generally whether married people are happier than unmarried people (1988, 1994, and 2002), there is a clear trend. Consistent with the changing marital behavior patterns, we find some evidence that expectations over the value of marriage are changing by education; college-educated women are becoming relatively more likely to believe that married people are happier. The marital happiness data further reveal that men are typically happier in their marriages than are women. Similarly, Table 4 shows that men are more likely to believe that married people are happier than unmarried people.

Turning to actual happiness in their marriage, Tables 5 and 6 show that people with more education are happier in their marriages and with their family life, just as they are more likely to think that married people are happier than unmarried people. The college non-college differential is particularly stark for women.

In Table 5 we run ordered probits by gender on how happy respondents are with their marriage. College-educated white women have been consistently happier in their marriages with no apparent time trend in these differences. However, the coefficient is reduced by forty percent when we add controls, a reduction which is being driven by differences in the number of children, income, and parents’ education. College-educated white men are also more likely to be happier in their marriage compared with non-college educated white men, and this difference increases over time. On the other hand, college-educated black men and women appear to be no more happy in their marriages than those without college degrees.

Table 6 explores how much satisfaction respondents get from their family life by education again using ordered probits. We find that, as with marital satisfaction, college-educated white women consistently get more satisfaction from their family life, although the relationship is being driven solely by college-educated white women who were married at the time of their interview. Black college educated women do not appear to get any more satisfaction than those with no college, and we can reject that the black-white college estimates are the same when controls are added. However, college educated black and white men get more satisfaction at a marginally significant level without covariates although no difference is found for men of either group when controls are added.

VI. Discussion

As this paper has documented, the difference in family experience for women at the bottom and top of the educational distribution has changed significantly. However, while we have provided a narrative for why the changing incentives faced by women of different educational levels (and the men who are matching with them) might have produced the trends in the data, it is unclear how much the shift reflects the changing causal effect of, or selection into, higher education. Due to the substantial increase in educational attainment since 1950 (Table 8 shows an over fourfold increase in college), a less dramatic subset of the selection effect might explain the trends in the percent that marry and the number of children ever born. That is, it might be that the family behavior of the average women in each educational group in 1950 has not changed differentially, but only that the college graduate group in 2006 has expanded to include a certain segment of the population that were previously average non-college graduates. We investigate whether this “compositional effect” can be ruled out in explaining the changes by education in both the percent ever-married and the number of children ever born.

The intuition behind this is similar to an Oaxaca decomposition, typically applied to wage differentials, where the explained component is changes in the composition of the group (Oaxaca 1973). To undertake this exercise, we assume that 1) college graduates in 2006 are comprised of all college graduates in 1950 with the remaining proportion average non-college graduates from 1950 and 2) everyone is equally likely to marry in 2006 as the average women in the 1950 group to which they belong except for any across the board changes. Formally, this amounts to

$$\bar{Y}_{College,2006} = \left(\frac{\% College_{1950}}{\% College_{2006}} \right) [\bar{Y}_{College,1950} - (\bar{Y}_{All,1950} - \bar{Y}_{All,2006})] \\ + \left[1 - \left(\frac{\% College_{1950}}{\% College_{2006}} \right) \right] * [\bar{Y}_{Non-College,1950} - (\bar{Y}_{All,1950} - \bar{Y}_{All,2006})]$$

$$\bar{Y}_{Non-College,2006} = [\bar{Y}_{Non-College,1950} - (\bar{Y}_{All,1950} - \bar{Y}_{All,2006})]$$

This exercise replicates almost perfectly the actually percent that ever marry in 2006 (within .3 and .1 percentage points for college graduates and non-college graduates, respectively), and therefore, we cannot rule out that a pure compositional effect drives the trends in the percent that ever marry. On the other hand, we can rule out that a pure composition effect explains the trends in the average number of children ever born. Compositional shifts can only explain about 69% of the change (the exercise overstates the actual change by 31%). Instead, women must have changed their fertility behavior in a non-random manner vis-à-vis selection into college, whether it be causal or not.

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Table 1: Proportion of Marriages Ending in Divorce Within 10 & 20 Years of Marriage

		Divorced by 10 years following marriage				Divorced by 20 years following marriage			
Year:	Education:	White		Black		White		Black	
		Women (1)	Men (2)	Women (3)	Men (4)	Women (5)	Men (6)	Women (7)	Men (8)
1950	College	4 (1.2)	5 (1.1)	12 (4.7)	8 (7.6)	13 (1.9)	17 (1.9)	29 (7.6)	22 (11)
	Some College	11 (1.1)	9 (1.2)	13 (4.0)	9 (5.4)	24 (1.6)	21 (1.8)	33 (5.7)	28 (7.8)
	High School or less	9 (.7)	9 (.9)	4 (1.2)	6 (2.5)	19 (1.1)	20 (1.3)	23 (3.2)	25 (4.3)
1960	College	15 (1.4)	14 (1.2)	13 (4.4)	16 (6.5)	30 (1.8)	26 (1.6)	34 (6.6)	34 (9.5)
	Some College	25 (1.3)	20 (1.3)	28 (4.3)	32 (5.5)	42 (1.5)	37 (1.6)	51 (4.7)	47 (5.7)
	High School or less	18 (1.0)	20 (1.2)	12 (2.1)	15 (2.9)	31 (1.2)	34 (1.5)	29 (3.3)	38 (4.1)
1970	College	23 (1.4)	18 (1.2)	25 (5.2)	19 (5.4)	38 (1.6)	34 (1.5)	46 (6.1)	36 (6.9)
	Some College	30 (1.2)	29 (1.3)	39 (3.4)	29 (4.1)	47 (1.3)	45 (1.4)	57 (3.5)	51 (4.5)
	High School or less	27 (1.2)	25 (1.2)	23 (3.0)	26 (3.5)	40 (1.3)	39 (1.4)	41 (3.7)	45 (4.0)
1980	College	20 (1.2)	16 (1.1)	29 (5.7)	17 (4.9)	32 (2.0)	26 (1.9)	40 (8.7)	33 (8.5)
	Some College	31 (1.1)	27 (1.2)	35 (3.3)	30 (3.7)	47 (1.8)	44 (2.0)	48 (5.0)	67 (5.3)
	High School or less	25 (1.1)	28 (1.2)	31 (3.7)	23 (3.1)	39 (1.8)	44 (1.9)	53 (5.9)	45 (5.4)
1990	College	16 (1.5)	13 (1.4)	19 (5.0)	14 (5.6)				
	Some College	31 (1.7)	25 (1.7)	28 (3.9)	17 (4.0)				
	High School or less	19 (1.5)	23 (1.6)	25 (4.6)	21 (5.2)				

Notes: 2004 Survey of Income Participation. (standard errors in parentheses)

Table 2: Remarriage among White Women

Probit Regression	2004 SIPP			1995 CPS	1980 CPS	1971 CPS
Regression Coefficients:	(1)	(2)	(3)	(4)	(5)	(6)
College dummy	-.078*** (0.015)	-.032** (.015)	0.025 (0.015)	0.005 (.016)	-0.039* (.023)	-.095*** (.030)
Yrs since divorce		.016*** (.001)	.014*** (0.001)	.023*** (.001)	0.016*** (.001)	.013*** (.001)
Length of marriage		-.015*** (.001)	-.016*** (.001)	-.014*** (.001)	-.008*** (.002)	-.009*** (.001)
Age at marriage			-.028*** (.002)	-.028*** (0.002)	-.028*** (.002)	-0.012*** (.003)
Sample size	8319	8319	8319	8851	7303	5252

Notes: ***, ** and * denote statistically significant at 1%, 5% and 10%, respectively. (Robust standard errors in parentheses). Marginal effects reported. The 1971 CPS survey only asked about the first and most recent marriage. If individuals were married three or more times, we assumed their second marriage began halfway between the end of their first marriage and the beginning of their latest marriage.

Table 3: Remarriage Over time

Probit Regression	Everyone	White Women	Black Women	White Men	Black Men	
Regression Coefficients:	(1)	(2)	(3)	(4)	(5)	(6)
1980 Dummy	-.074*** (.001)	-.062*** (.002)	-.054*** (.002)	-.139*** (.005)	-.050*** (.002)	-.104*** (.005)
1991-93 Dummy	-.086*** (.004)	-.094*** (.004)	-.068*** (.005)	-.220*** (.015)	-.105*** (.006)	-.159*** (.021)
2004 Dummy	-.105*** (.004)	-.135*** (.004)	-.087*** (.006)	-.256*** (.016)	-.167*** (.007)	-.261*** (.021)
Age at marriage		-.012*** (.001)	-.017*** (.000)	-.010*** (.001)	-.016*** (.001)	-.009*** (.001)
Age		.007*** (.001)	.006*** (.001)	.011*** (.001)	.009*** (.001)	.009*** (.001)
Sample size	1503866	1503866	698836	96519	590483	71772

Notes: ***, ** and * denote statistically significant at 1%, 5% and 10%, respectively. (Robust standard errors in parentheses). Census of Population 1970 and 1980. Survey of Income Participation Program 1991-93 and 2004. Marginal effects reported.

Table 4: Children Ever Born (Ages 45-50)

	College Graduates	Some College	HS Graduates	HS Dropouts	All
White Women					
1950	1.22	1.75	1.74	2.69	2.33
1960	1.50	1.81	1.84	2.50	2.18
1970	2.22	2.49	2.46	2.92	2.63
1980	2.40	2.90	2.92	3.39	2.99
1990	1.85	2.33	2.49	2.99	2.40
2004	1.56	1.90	1.97	2.86	1.91
Black Women					
1950	1.73	1.99	2.13	2.76	2.67
1960	1.37	1.69	1.96	2.84	2.62
1970	1.80	2.32	2.64	3.49	3.19
1980	2.10	3.23	3.45	4.37	3.80
1990	1.89	2.54	2.85	3.63	2.92
2004	1.50	2.22	2.22	2.78	2.13

Notes: Census of Population (1950-1990) and Survey of Income and Program Participation (2004)

The “Children Ever Born” question was asked in 1950 and 1960 of only women who had ever married. To provide numbers that are representative of all women, the above statistics are constructed from the ever married women of 1950 and 1960, and the never married women aged 65-70 and 55-60, respectively, from the 1970 Census. The number of never married 45-50 yr olds in 1950 and 1960 that had married by 1970 is negligible.

Table 5: Whether Married People are Happier than Unmarried People

	Women			Men		
	Agree	Disagree	Neither	Agree	Disagree	Neither
1988:						
College Graduate	47.4	11.1	41.6	62.2	5.6	32.2
Non-College Graduate	53.7	14.7	31.6	57.8	12.5	29.7
1994:						
College Graduate	46.6	17.8	35.6	57.8	8.0	34.2
Non-College Graduate	45.2	19.0	35.8	48.5	22.2	29.3
2002:						
College Graduate	50.7	19.5	29.9	47.9	18.8	33.3
Non-College Graduate	37.4	24.9	37.8	49.2	17.5	33.3

Notes: GSS data . Question: “Do you agree or disagree: Married People are Generally Happier than Unmarried People?” The Agree category includes those that “strongly agree” and “agree” while the Disagree category includes those that “strongly disagree” and “disagree.” The Neither category includes those who “can’t choose” and those who “neither agree nor disagree.”

Table 6: Marital Subjective Wellbeing

Ordered Probit Regression	Dependent Variable: “Taking things all together how would you describe your marriage?”			
	[3] Very Happy [2] Pretty Happy [1] Not Too Happy			
Regression Coefficients:	(1)	(2)	(3)	(4)
College*white	.222 *** (.032)	.132*** (.037)	.106*** (.032)	.094*** (.035)
College*black	.004 (.114)	-.105 (.117)	-.015 (.121)	-.034 (.121)
College*Time Trend	-0.004 (.005)	-.001 (.005)	.014*** (.004)	.014*** (.004)
Time Trend	-.005** (.002)	-.009*** (.003)	-.009*** (.002)	-.010*** (.003)
Black	-.379*** (.046)	-.329*** (.048)	-.364*** (.049)	-.388*** (.051)
Sample	Women		Men	
Controls:		✓		✓
	White Women	Black Women	White Men	Black Men
Percent Very Happy:				
College				
1970’s	74	59	70	49
2000’s	67	55	74	51
Non-College				
1970’s	66	46	70	55
2000’s	59	55	63	54

Notes: ***, ** and * denote statistically significant at 1%, 5% and 10%, respectively. Sample size for women is 11228 and for men is 10111. GSS data from 1973-2006. (Robust standard errors in parentheses)

(a) Employment status includes indicators for full-time, part-time, temporary illness/vacation/strike, unemployed, retired, in school, keeping house, and other; Income is based on imputations of real family income, collapsed this variable into indicator variables, one for each decile; Children includes indicator variables for the number of children ever born, up to eight; Education variables are code the highest degree earned by the respondent, respondent’s father, and respondent’s mother, including separate variables for <high school, high school, associates/junior college, bachelor’s, or graduate degrees; Religion includes separate indicators for Protestant, Catholic, Jewish, None and Other; Region includes indicator variables for each of 9 regions. Separate dummy variables are also included for missing values of each control variable.

Table 7: Family Subjective Wellbeing

Ordered Probit Regression	Dependent Variable: “How much satisfaction do you get from your family life?” [7] A very great deal [6] A great deal [5] quite a bit [4] A fair amount [3] Some [2] A little [1] None			
Regression Coefficients:	(1)	(2)	(3)	(4)
College*white	.155*** (.034)	-.064 (.058)	.052* (.031)	-.082 (.061)
College*black	.150 (.099)	.129 (.131)	.221* (.126)	.227 (.166)
College*Time Trend	-.005 (.007)	-.003 (.007)	.003 (.006)	-.003 (.006)
Black	-.336*** (.036)	-.207*** (.040)	-.258*** (.046)	-.106** (.051)
Time Trend	.002 (.003)	-.003 (.004)	-.003 (.006)	.000 (.004)
College*Married*white		.258*** (.070)		.073 (.070)
College*Married*black		-.250 (.193)		-.277 (.229)
Married		.403*** (.030)		.933*** (.038)
Sample	Women		Men	
Controls:		✓		✓
	White Women	Black Women	White Men	Black Men
Percent Very Great Deal:				
College				
1970's	53	33	44	44
1990's	53	24	47	39
Non-College				
1970's	45	32	41	32
1990's	46	28	40	31

Notes: ***, ** and * denote statistically significant at 1%, 5% and 10%, respectively. Sample size for women is 11321 and for men is 8699. GSS data from 1973-1994. (Robust standard errors in parentheses)

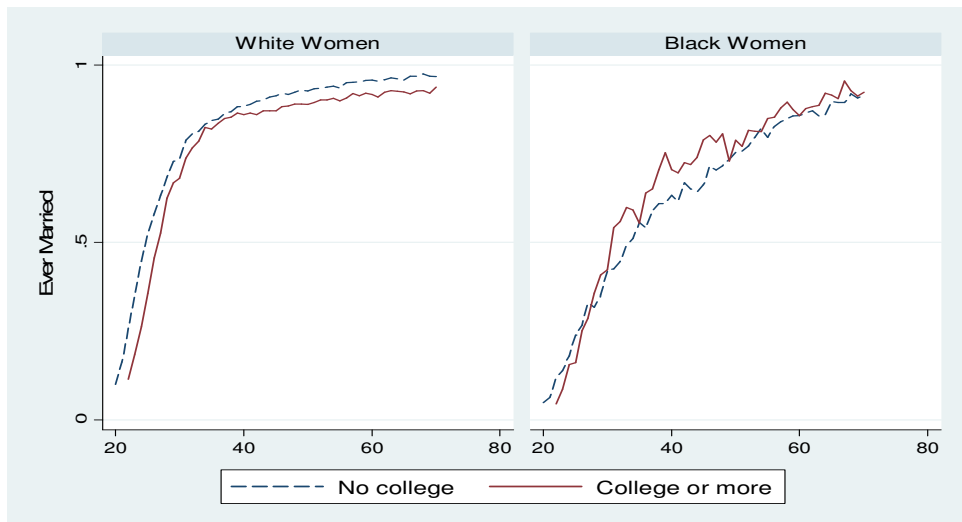
(a) Employment status includes indicators for full-time, part-time, temporary illness/vacation/strike, unemployed, retired, in school, keeping house, and other; Income is based on imputations of real family income, collapsed this variable into indicator variables, one for each decile; Children includes indicator variables for the number of children ever born, up to eight; Education variables are code the highest degree earned by the respondent, respondent's father, and respondent's mother, including separate variables for <high school, high school, associates/junior college, bachelor's, or graduate degrees; Religion includes separate indicators for Protestant, Catholic, Jewish, None and Other; Region includes indicator variables for each of 9 regions. Separate dummy variables are also included for missing values of each control variable.

Table 8: Educational Attainment (Ages 45-50)

	College Graduates	Some College	HS Graduates	HS Dropouts
White Women				
1950	6	10	20	65
1960	7	11	27	56
1970	7	13	41	39
1980	11	16	44	29
1990	20	27	36	17
2000	30	33	28	9
2006	29	32	30	9
Black Women				
1950	2	2	4	92
1960	3	4	9	84
1970	4	6	19	71
1980	8	13	29	51
1990	13	23	31	33
2000	18	33	30	20
2006	19	33	34	15

Notes: 1950-2000 numbers are from the Censuses of Population. 2006 numbers are from the American Community Survey. Each cell represents the percent of white or black 45-50 year old women with that educational attainment.

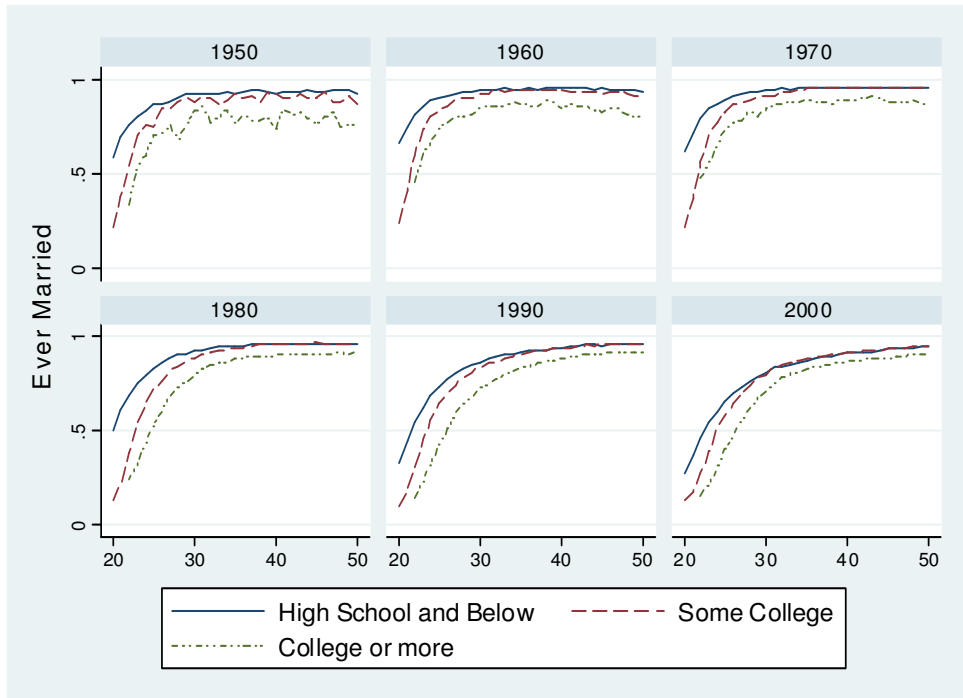
Figure 1: Ever-married Rates by White and Black Women



Source: 2006 American Community Survey

Notes: The percent who have ever married at each age are shown for those with and without a college degree for white and blacks, respectively.

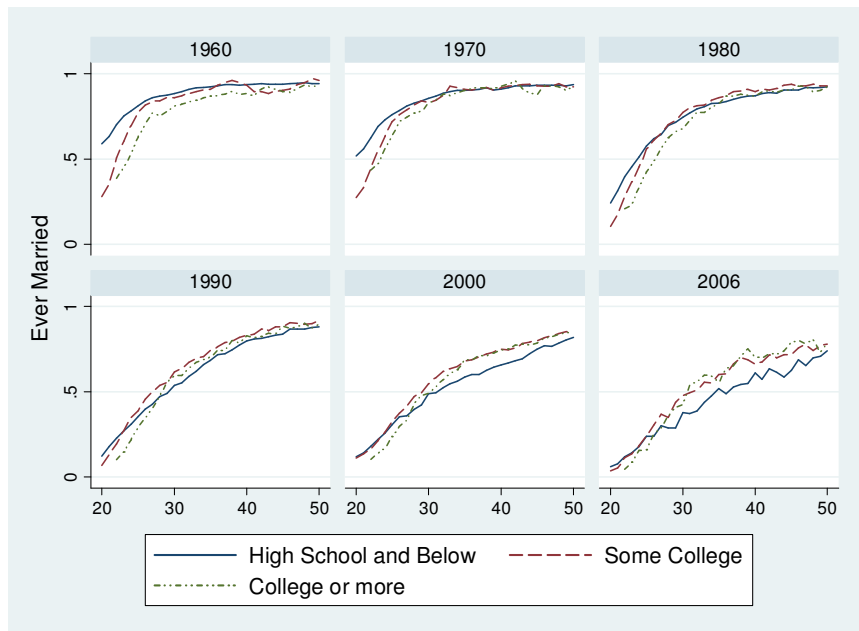
Figure 2: Ever-married for White Women



Source: Census of Population

Notes: The percent who have ever married at each age are shown for those with high school or below, some college, or a college degree for white women.

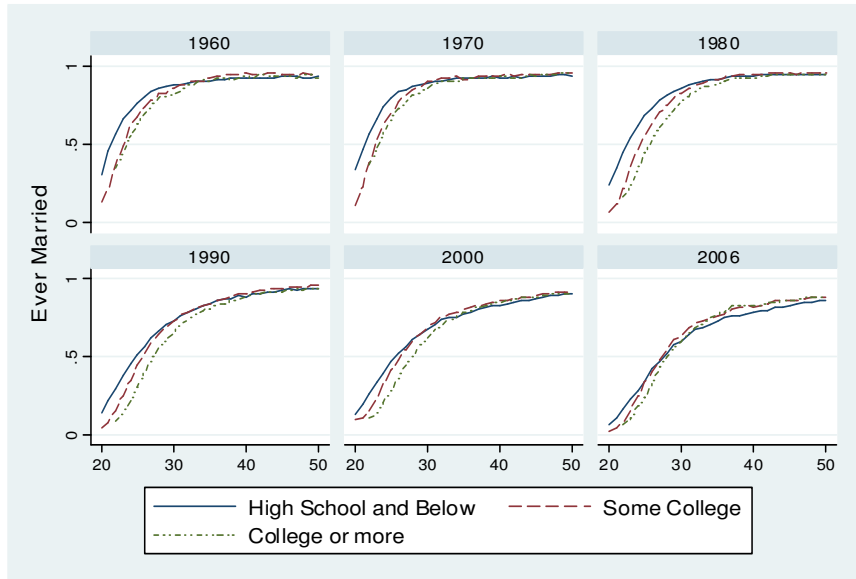
Figure 3: Ever-married for Black Women



Source: 1960-2000 Censuses of Population and the 2006 American Community Survey

Notes: The percent who have ever married at each age are shown for those with high school or below, some college, or a college degree for black women. Because of small sample sizes we use a three-year moving average centered at each age in 1960 and 1970.

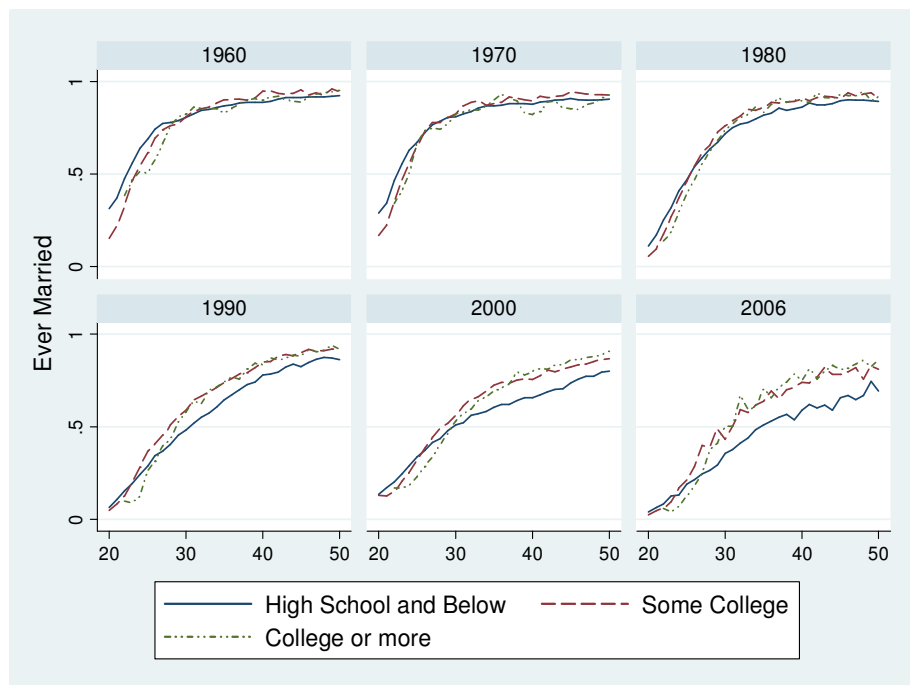
Figure 4: Ever-married for White Men



Source: 1960-2000 Censuses of Population and the 2006 American Community Survey

Notes: The percent who have ever married at each age are shown for those with high school or below, some college, or a college degree for White Men

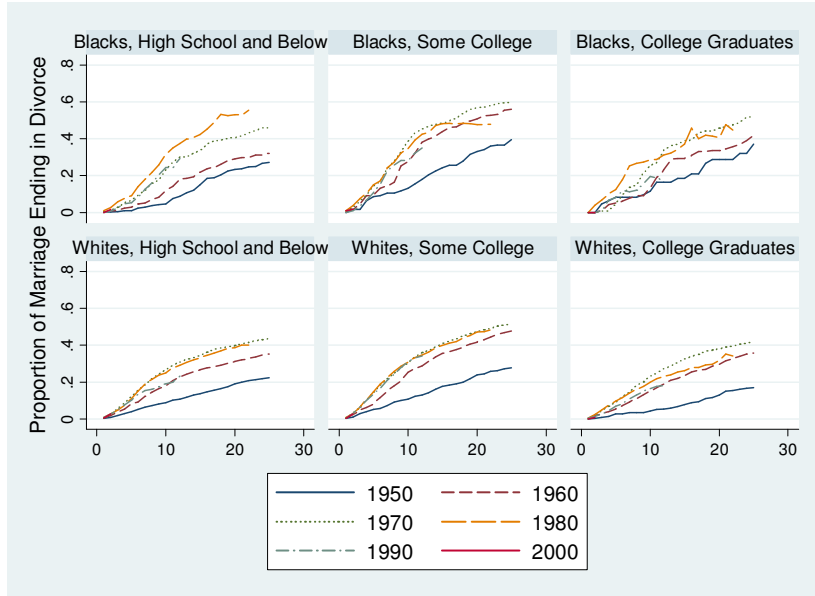
Figure 5: Ever-married for Black Men



Source: 1960-2000 Censuses of Population and the 2006 American Community Survey

Notes: The percent who have ever married at each age are shown for those with high school or below, some college, or a college degree for black men. Because of small sample sizes we use a three-year moving average centered at each age in 1960 and 1970.

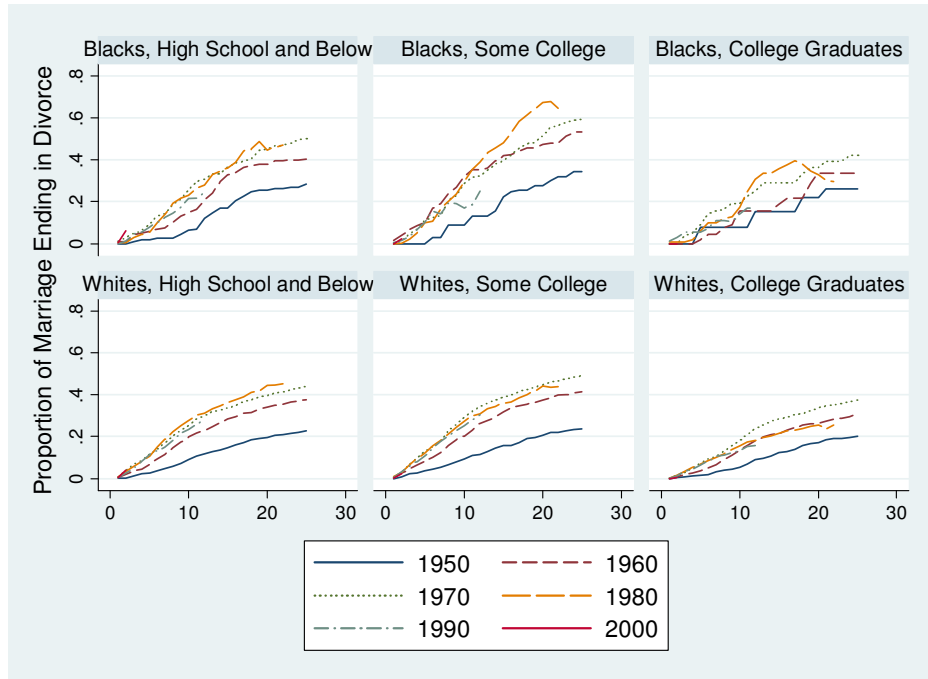
Figure 6: Percent Divorced for Women by Year of Anniversary



Source: 2004 Survey of Income and Program Participation

Notes: Cohorts are in decade in which they married

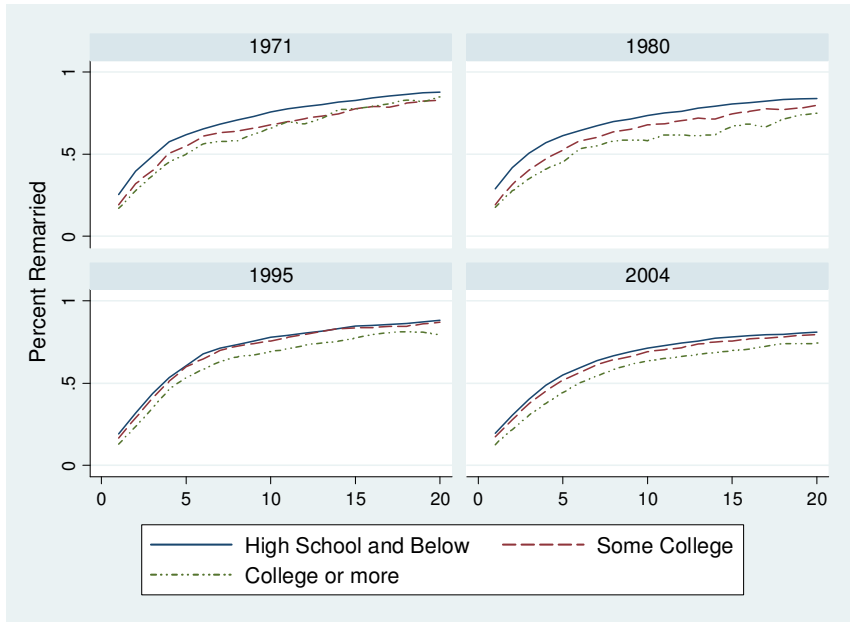
Figure 7: Percent Divorced for Men by Year of Anniversary



Source: 2004 Survey of Income and Program Participation

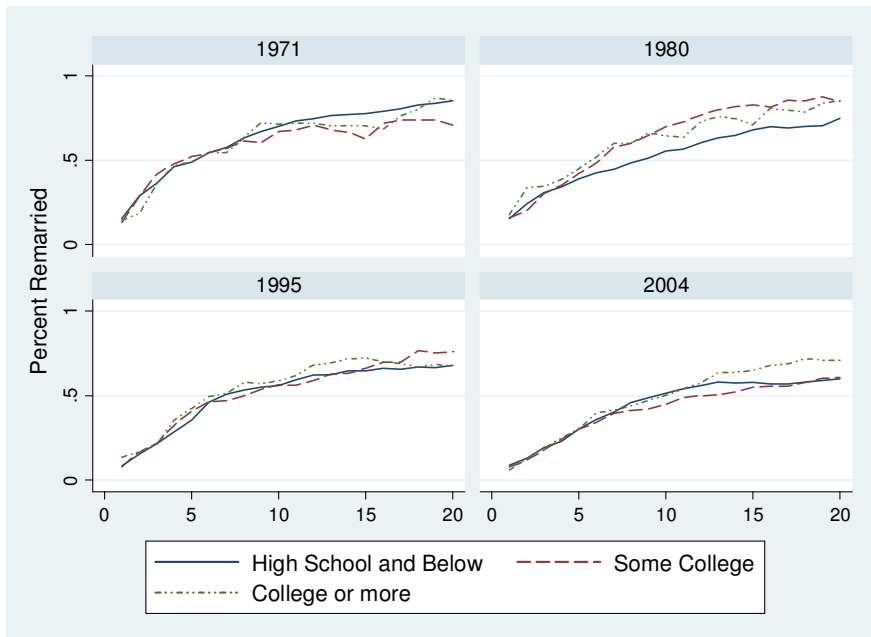
Notes: Cohorts are in decade in which they married.

Figure 8: Percent Remarried by Years since Divorce for White Women



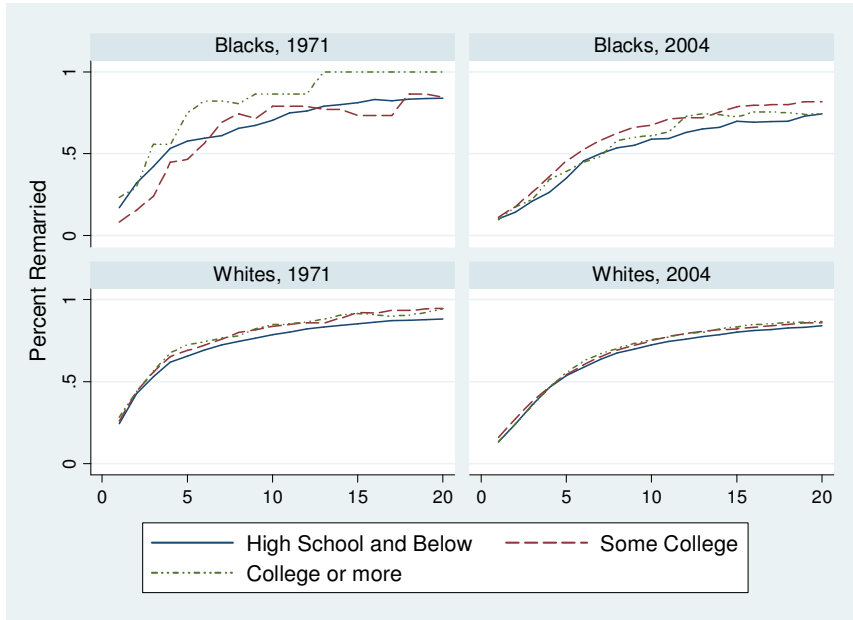
Source: Current Population Survey (June 1971, 1980, and 1995) and Survey of Income and Program Participation (2004)

Figure 9: Percent Remarried by Years since Divorce for Black Women



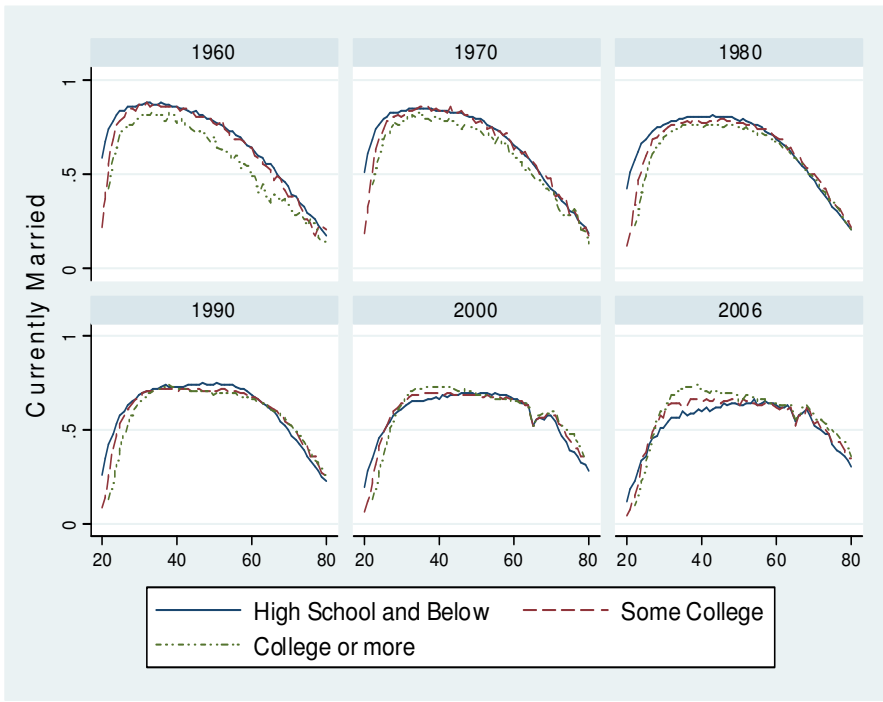
Source: Current Population Survey (June 1971, 1980, and 1995) and Survey of Income and Program Participation (2004)

Figure 10: Percent Remarried by Years since Divorce for Men



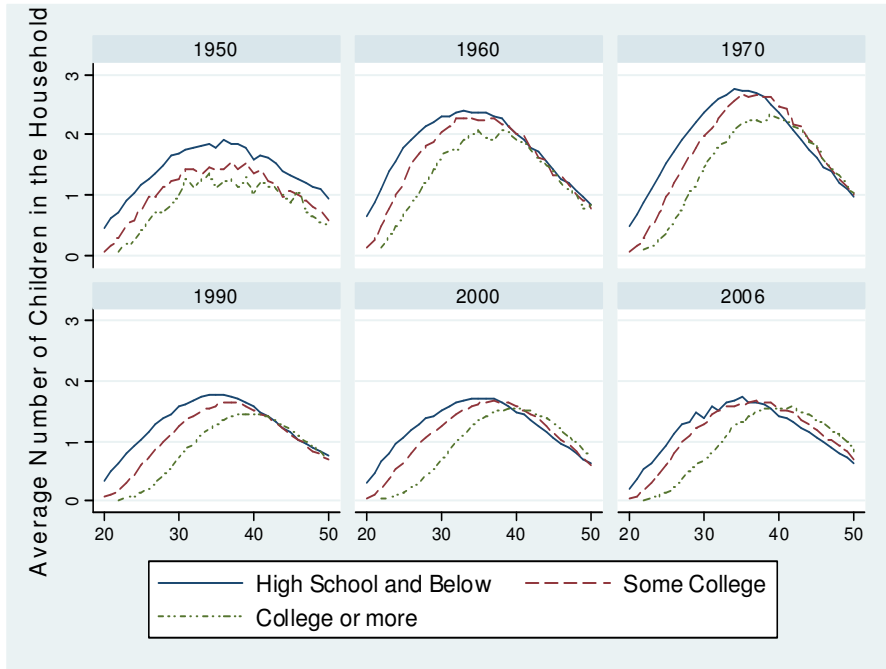
Source: Current Population Survey (June 1971) and Survey of Income and Program Participation (2004)

Figure 11: Currently Married for White Women



Source: Census of Population and American Community Survey

Figure 12: Average Number of Children in the Household for White Women



Source: Census of Population and 2006 American Community Survey