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Bridal Pregnancy and Spouse Pairing Patterns in Japan

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Abstract

In this paper, we examined two aspects of recent increases in marriage preceded by pregnancy (bridal pregnancy) in Japan. Using information on 28,973 respondents to the Japanese National Fertility Surveys, we first demonstrated that increases in bridal pregnancy between 1970 and 2002 were concentrated among women without postsecondary education. We then estimated multinomial logistic regression models to evaluate change over time in the association between bridal pregnancy and patterns of educational pairing. Results indicated that bridal pregnancy is associated with a significantly higher likelihood of nonnormative educational pairing and that this relationship has become more pronounced over time. We concluded by evaluating these results in comparative context and speculating about the implications for subsequent family change in Japan.

Keywords

Marriage; Mate selection; Pregnancy; Union formation

The link between marriage and fertility has weakened significantly over the past several decades in most industrialized countries (Heuveline, Timberlake, & Furstenberg, 2003). In the U.S., for example, the proportion of children born to unmarried mothers increased from 5% in 1960 to 39% in 2006 (Hamilton, Martin, & Ventura, 2007). This trend reflects both the increasing likelihood of nonmarital conception and the decreasing likelihood of marriage in response to pregnancy (e.g., England, Wu, & Shafer, 2007). The proportion of nonmarital conceptions resulting in "shotgun marriages" declined from 60% in the early 1960s to 23% in the early 1990s (Bachu, 1999). Similar changes have occurred in most other late-marriage, low-fertility societies (e.g., Billari, 2008; Ermisch, 2001) but the decoupling of marriage and childbearing is not a universal feature of family change.

In Japan, childbearing and marriage remain closely linked despite significant increases in sexual activity at young ages, premarital cohabitation, age at marriage, and divorce (Raymo and Iwasawa, 2008). Indeed, only two percent of all births in 2005 were registered to unmarried women (National Institute of Population and Social Security Research, NIPSSR, 2007a). At the same time, however, marked increases in nonmarital conceptions and bridal pregnancy (i.e., shotgun marriages) suggest that the relationship between fertility and marriage is

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changing. According to recent Vital Statistics data, nearly one in three first births was conceived prior to marriage.

This distinctive pattern of family formation in Japan is a potentially valuable source of insight into the generality of findings from research based on the U.S. and other societies where concern about increases in nonmarital conception and the decreasing likelihood of subsequent marriage focuses largely on the unfavorable circumstances of single-parent families. An implicit, but important, assumption underlying high-profile discussions of nonmarital childbearing, well-being, and inequality in the U.S. is that the implications of nonmarital conceptions should be less pronounced in a country such as Japan where nearly all births resulting from premarital conceptions are “legitimated” by marriage.

It is important to recognize, however, that research on “shotgun weddings” in the U.S. also provides strong theoretical and empirical reason to question this assumption. Several studies have shown that couples who marry in response to pregnancy fare worse, on average, than those who do not. For example, shotgun marriages are characterized by lower levels of marital quality (Knab & Harknett, 2006) and higher rates of dissolution (Teachman, 2002). Selection is one important mechanism linking bridal pregnancy to subsequent well-being. In the U.S., both nonmarital childbearing and bridal pregnancy are increasingly concentrated among women with lower levels of educational attainment (England, Wu, & Shafer, 2007). Other explanations emphasize the relative fragility of marriages that are “event-driven” rather than “relationship driven” (Knab & Harknett, 2006).

To the extent that these findings from the U.S. are generalizable, the increasing prevalence of shotgun weddings in Japan is a potentially important, although largely unrecognized, source of growing variation in family well-being. Alternatively, it is possible that bridal pregnancy may be unrelated to subsequent well-being in societies where marriage and fertility remain closely linked. Pregnancy may be an increasingly important reason to formalize unions in societies like Japan where disincentives to nonmarital childbearing have remained strong while the perceived financial, instrumental, emotional, and normative incentives to marry have declined. To the extent that premarital conception followed by marriage has become an increasingly normative pathway to family formation among couples likely to have married at some point, both socioeconomic differentials in bridal pregnancy and the implications of marriage subsequent to pregnancy may be limited in Japan.

Our goal in this paper is to generate an empirical basis for speculating about the role and potential implications of recent increases in bridal pregnancy in Japan. To this end, we use data from multiple rounds of the Japanese National Fertility Surveys to (a) describe the extent of socioeconomic differentials in bridal pregnancy, (b) contrast patterns of educational pairing in marriages preceded by pregnancy to those in marriages not preceded by pregnancy, and (c) examine how differences in educational pairing by pregnancy status at marriage have changed over time. We focus on educational differentials in bridal pregnancy and patterns of educational pairing for several reasons. First, educational attainment is a widely available and widely studied indicator of social status (McLanahan, 2004). Second, it is a powerful correlate of subsequent economic well-being, health, and other dimensions of well-being across the life course in Japan, the U.S., and elsewhere (Elman & O'Rand, 2004; Ishida, Muller, & Ridge, 1995; Ross & Van Willegen, 1997). Third, it is an important spouse selection criterion in Japan (Raymo & Iwasawa, 2005; Yamada, 1996). Fourth, educational assortative mating has been linked to well-being at the individual and family level and to aggregate trends in inequality (e.g., Mare and Schwartz, 2006).

Background

The decline in “shotgun marriages”

The rise in nonmarital childbearing in the U.S. reflects concurrent increases in nonmarital conceptions and substantial reductions in the likelihood of marriage in response to pregnancy (Akerlof, Yellen, & Katz, 1996; Bachu, 1999; Knab & Harknett, 2006). Explanations for the declining propensity to marry in response to pregnancy have emphasized changes in attitudes, economic prospects, and birth control technology. Negative attitudes toward nonmarital childbearing have declined substantially while increases in economic independence for women and growing economic uncertainty for young men have likely reduced the economic necessity and benefits of marriage in response to pregnancy. Akerlof et al. (1996) and others have argued that the widespread adoption of the pill has rendered the tacit promise of marriage in response to unplanned pregnancy unnecessary and unenforceable. Changes in the relationship between marriage and fertility are also closely linked to the emergence of cohabitation, with a significant and increasing proportion of nonmarital births occurring within cohabiting unions (Raley, 2001).

Family formation in Japan

Patterns of change in family formation in Japan are, for the most part, similar to those in the U.S. and elsewhere. Marriage is taking place at later ages, variation in age at marriage has increased, the proportion projected to never marry is rising, the duration from marriage to childbirth has increased, divorce is common, and more couples are cohabiting prior to marriage (Raymo & Iwasawa, 2008). The most distinctive feature of family change in Japan is the fact that nonmarital childbearing remains at negligibly low levels.

The rarity of nonmarital childbearing likely reflects both discrimination against illegitimate children and the significant economic difficulties associated with single parenthood. In addition to the social stigma associated with nonmarital childbearing, illegitimate children have also been subject to important forms of legal discrimination in Japan, including limited inheritance rights and the ability to identify legitimacy status from family register documents (Hertog, 2008). The economic viability of single motherhood is impacted not only by gender discrimination in the labor market but also by a shortage of convenient childcare options and the fact that better paying jobs typically do not allow for flexible work scheduling. The large majority of single mothers are employed (Ministry of Health, Labor, and Welfare, 2005) but their employment is typically in relatively unstable low-paying jobs, often on a part-time basis (Japan Institute for Labor Policy and Training, 2001). Furthermore, relatively few single mothers receive any child support from the father (Ministry of Health, Labour, and Welfare, 2005).

These strong social, economic, and legal forces have combined to keep nonmarital childbearing at very low levels, but the growth in bridal pregnancy suggests that important changes in the relationship between marriage and fertility are underway. The proportion of first births due to premarital conceptions increased from 8% in 1975 to nearly 30% in 2005 and nearly one in four first marriages between 2000 and 2005 was preceded by pregnancy (authors' tabulations). One obvious explanation for this trend is increased exposure to the risk of nonmarital pregnancy due to concurrent trends toward later marriage and earlier initiation of sex. The proportion of 20 - 24 year-old women never married rose from .72 in 1970 to .89 in 2005 (NIPSSR, 2007a) while the proportion of never married 20 - 24 year-old women with sexual experience nearly doubled from .33 in 1987 to .60 in 2005 (NIPSSR, 2007b).

The potential relevance of this explanation is further suggested by the relatively low use of contraception at young ages and reliance upon less effective methods such as condoms and

withdrawal (Sato, 2007). The pill was not available in Japan until 1999 and is currently used by only 2% of sexually active never married women age 18-34 who are using contraception (NIPSSR, 2007b). Increases in bridal pregnancy might also reflect declining contraceptive efficacy or an increasing reluctance to abort unplanned pregnancies. This scenario is not consistent with trends in abortion rates, however. During the 1990s, the ratio of abortions to live births reported in the Japanese vital statistics declined or remained stable above age 25 while increasing among younger women (Ministry of Health, Labour, and Welfare, 2004) for whom the likelihood of bridal pregnancy is relatively high (Sasai, 2004; Yamada, 2005).

Educational differentials in bridal pregnancy

In the U.S., it is clear that educational differentials in the relationship between marriage and fertility have increased over time. Relatively large increases in nonmarital conceptions among women with lower levels of education, combined with limited educational differences in the likelihood of marriage in response to pregnancy, have resulted in the increasing concentration of both nonmarital fertility and bridal pregnancy at the lower end of the educational spectrum (England, Wu, & Shafer, 2007). Possible explanations for this trend include the earlier initiation of sex, less consistent and effective contraception, a lower likelihood of aborting unplanned pregnancies, and more limited career opportunities among women with lower levels of education (England, Wu, & Shafer, 2007). Although increasing socioeconomic differentials in nonmarital fertility receive far more attention, documented linkages between bridal pregnancy and subsequent marital stability (Knab & Harknett, 2006, 2007; Teachman, 2002) suggest that increasing educational differentials in bridal pregnancy may also be relevant for understanding linkages between family behavior and variation in life outcomes.

Is bridal pregnancy increasingly concentrated among women with lower levels of education in Japan as well? Limited socioeconomic differentials in earlier changes in fertility and marriage suggest that educational differences in bridal pregnancy may be small. Educational similarity in sexual experience, contraception, and abortion provides further reason to expect limited educational differentials in bridal pregnancy. Data from the 12th National Fertility Survey (conducted in 2002) indicate that age-specific proportions of unmarried women with sexual experience and the proportions of married women under age 30 who report having had an abortion are very similar across educational categories (authors' tabulations). Available data on educational differentials in contraceptive practices for sexually active unmarried women indicate that there is relatively little difference by education in either contraceptive use or contraceptive choice (Japan Association for Sex Education, 2000).

At the same time, however, there are reasons to believe that differentials in bridal pregnancy may be growing. Of particular importance is Japan's prolonged economic downturn during the 1990s and associated growth in economic inequality at young ages (Ohtake, 2005). Increasing educational differentials in unemployment and nonstandard employment at young ages (Kosugi, 2004) suggest that the perceived opportunity costs of engaging in risky behaviors may be declining among men and women at the lower end of the educational spectrum. Reduced concern about the implications of pregnancy and early marriage for subsequent educational and occupational opportunities may result in less selective choice of sexual partners, less vigilant contraception, or perhaps a lower likelihood of aborting an unplanned premarital conception. Conversely, relative improvements in the economic opportunities of highly educated women and relatively stable economic circumstances for highly educated men may contribute to greater contraceptive vigilance, more careful sex partner selection, or higher likelihood of abortion among women for whom the returns to early career investment and extended spouse search are highest.

Bridal pregnancy and spouse pairing

Theoretical explanations for observed relationships between bridal pregnancy and subsequent marital quality suggest that unplanned pregnancies, which often occur at young ages, result in marriages that are characterized by a less thorough spouse search process and lower levels of relationship commitment (Knab & Harknett, 2006, 2007). Stated simply, it is posited that many of these marriages might not have taken place in the absence of pregnancy. Because it is difficult to retrospectively evaluate whether a given marriage would have taken place in the absence of pregnancy, we take the indirect approach of comparing patterns of educational pairing among marriages that were and were not preceded by pregnancy. As in most societies, educational assortative mating is a defining feature of marriage in Japan, with husbands and wives most likely to have the same level of education and pairings across educational levels much more likely to involve a more highly educated husband than a more highly educated wife (e.g., Yamada, 1996). The strength and stability of these pairing patterns, combined with relative improvements in women's educational attainment, has been linked to the relatively rapid decline in marriage among highly educated women in Japan (Raymo & Iwasawa, 2005).

Is bridal pregnancy in Japan associated with nonnormative educational pairings? The answer to this question presumably depends upon the extent to which premarital pregnancies are planned and the motivations that underlie couples' decision to marry in response to pregnancy. If premarital pregnancies are increasingly the result of contraceptive failure or nonuse among couples without intentions to marry, the stigma and economic hardships associated with nonmarital childbearing may be a primary motivation for these marriages. Assuming that the criteria for selecting a sexual partner are less discriminating than those for selecting a spouse, this scenario suggests a higher likelihood of nonnormative pairings among couples for whom pregnancy preceded marriage.

Alternatively, weakening social and economic incentives to marry (NIPSSR, 2003) suggest that premarital pregnancy may increasingly function as an impetus to marriage among couples likely to have married at some point. It appears that large proportions of single men and women in Japan are postponing marriage to pursue individual goals (NIPSSR, 2004) and hold relatively negative perceptions of married life (Tsuya, Mason, & Bumpass, 2004). Assuming that marriage intentions are associated with less vigilant contraception and a lower likelihood of aborting unplanned pregnancies, this scenario suggests that increases in bridal pregnancy may simply reflect an increase in exposure to the risk of pregnancy. If so, differences in patterns of educational pairing with respect to pregnancy status at marriage should be minimal.

Evaluation of these alternative scenarios requires attention to other characteristics that may be associated with both selection into bridal pregnancy and the likelihood of nonnormative educational pairings. As noted above, it is clear that bridal pregnancy in Japan is much more common among couples who marry at younger ages and there is strong theoretical reason to expect that educational homogamy is inversely related to age at marriage (e.g., Mare, 1991). Premarital living arrangements may also be important if lower levels of parental monitoring and influence are associated with a higher likelihood of bridal pregnancy and nonnormative spouse pairing among those living away from home. It is also reasonable to expect that those who meet via arranged marriages are less likely to be pregnant at marriage or to enter nonnormative educational pairings and that those who meet by chance (e.g., at parties or on vacation) are more likely to do both. Couples who meet at school are presumably much more likely than others to have similar levels of education. Although research on remarriage in Japan is extremely limited, it is possible that remarriages are more likely to be nonnormative in other ways including both pregnancy status at marriage and educational pairing.

Method

To evaluate these alternative scenarios, we examined data from the Japanese National Fertility Surveys (JNFS) conducted in 1987, 1992, 1997, and 2002. Each of these surveys contains information on age, educational attainment, year and month of first marriage, year and month of first child's birth, husband's age and educational attainment, and several other characteristics for nationally representative samples of 18 - 49 year old married women. Response rates are very high, ranging from 88% in 2002 to 93% in 1987. Pooling data from the four surveys, limiting our focus to respondents who entered their first marriage between 1970 and 2002, and dropping 1,337 observations for which the timing and outcome of the first reported pregnancy could not be determined provides us with a sample of 28,973 married women. To limit loss of observations to missing data, we imputed values for missing data using the ICE routine for multiple imputation in Stata (Royston, 2005) and conducted all analyses using five imputed data sets.

Variables

Bridal pregnancy—We defined cases in which the first child was born within the first eight months of marriage as bridal pregnancies. This is an approximation in that we cannot identify premature births conceived subsequent to marriage and must assume no systematic misreporting of the months in which respondents married and gave birth to their first child. Using more conservative definitions (e.g., births occurring within the first seven months of marriage) did not alter our conclusions.

Spouse Pairing—We measured spouse pairing using a trichotomous categorization of spouses' relative education based on a standard ordinal measure of educational attainment (junior high school, high school, junior college or vocational school, and university). Because the JNFS is a survey of women, we defined all pairings from the standpoint of the wife. Female hypergamy refers to pairings in which the wife has less education than the husband, homogamy refers to marriages in which the husband and wife have the same education, and female hypogamy refers to pairings in which the wife has more education than the husband. As noted above, female educational hypogamy and homogamy are more normative pairings than hypogamy. Among junior high school and junior college graduates, educational homogamy may also be viewed as a nonnormative pairing. We estimated models of spouse pairing separately for women at each level of educational attainment given that hypogamy (hypergamy) is not possible for women in the lowest (highest) educational categories and the fact that the relative likelihood of different educational pairings is determined to a large extent by the relative size of the pool of eligible mates with higher or lower levels of education.

Marriage cohort—To examine the extent to which relationships between bridal pregnancy and spouse pairing have changed over time, we constructed a categorical measure of marriage cohort (1970 - 1979, 1980 - 1989, and 1990 - 2002).

Other variables—As discussed above, there are several other characteristics potentially related to both the likelihood of bridal pregnancy and patterns of educational pairing. We therefore included the following variables in the models presented below. Age at marriage classifies marriages into three categories – early (age 22 and younger), “on-time” (ages 23-26), and late (age 27 and older). This classification reflects evidence that bridal pregnancy is most common at young ages (Sasai, 2004) and expectations that nonnormative educational pairing may be more common among both relatively early and relatively late marriages (e.g., Lichter, Anderson, & Hayward, 1995). Coresidence with parents is a dichotomous variable distinguishing women who did and did not live with parents prior to marriage. Categories for where couples met are school, workplace or other activities, via friends or siblings, arranged

marriage (*miai*), and chance meeting. Husband's marital history distinguishes those in their first marriage from previously married men.

Models

To address our first question, we estimated a logistic regression model for bridal pregnancy as a function of educational attainment, marriage cohort, and their interaction. Results of this model allowed us to assess change over time in the likelihood of bridal pregnancy and the extent to which change differed by educational attainment. To address our second question, we estimated the following two multinomial logistic regression models for educational pairing:

Model 1: $\ln[p_{ij}/p_{i0}] = \alpha_j + BP_i\beta_{1j} + AGE_i\beta_{2j} + (BP_i \times AGE_i)\beta_{3j} + COHORT_i\beta_{4j} + Z_i\beta_{5j}$,

Model 2: $\ln[p_{ij}/p_{i0}] = \text{Model 1} + (BP_i \times COHORT_i)\beta_{6j}$.

Here p_{ij} represents the probability that woman i is in marriage type j (j=hypogamy, homogamy, hypergamy) and p_{0j} is the probability that woman i is in the modal marriage type. The modal (reference) educational pairing is homogamy for all women except junior college graduates who are most likely to marry hypergamously. BP is the dichotomous indicator of pregnancy status at marriage, AGE is the three-category measure of age at marriage, COHORT is the three-category measure of marriage cohort, and Z is a vector comprised of the other variables described above.

Model 1 allowed us to assess the average association between bridal pregnancy and the relative odds of different pairings and the way in which that relationship varies by age at marriage, net of other characteristics. In Model 2, we examined the extent to which marriages preceded by pregnancy have become more (or less) like other marriages by allowing the relationship between bridal pregnancy and the relative likelihood of different educational pairings to vary by marriage cohort. Evidence of change over time was evaluated in two steps. We first conducted likelihood ratio tests comparing the fit of Model 2 with that of Model 1. If comparisons of model fit indicated that the relationship between bridal pregnancy and spouse pairing changed across marriage cohorts, we proceeded to examine the direction, magnitude, and statistical significance of individual interaction coefficients (i.e., β_6).

Results

Table 1 describes characteristics of the analytic sample by marriage cohort. The first two rows depict the increase in bridal pregnancy from 14% in the 1970s to 17 - 18% in the 1980s and beyond, a level similar to the proportion of “shotgun weddings” in the U.S. in the 1950s (Furstenberg, 1988). The next three rows indicate that the proportions of women marrying men with more and less education than themselves both increased significantly across marriage cohorts. Cohort trends in other variables reflect rapid social and demographic change in Japan over the past several decades. The proportion of marriages involving women age 22 or less decreased by half while the proportion involving women age 27 and over increased more than three-fold. Educational attainment increased dramatically – three - fourths of women in the 1970s marriage cohort had a high school education or less whereas over half of those marrying in the 1990s had completed a postsecondary degree. Women without a high school degree have become a very small and presumably more select group. Premarital living arrangements remained very stable, with roughly two - thirds of women in all cohorts coresiding with parents prior to marriage. Spouses in more recent cohorts were far less likely than their predecessors to meet their husband via arranged marriage and were more likely to meet at school, workplace, or via friends and siblings. Finally, the increase in divorce is apparent from increases in the proportions of women paired with previously married men.

Table 2 presents the results of a logistic regression model in which the outcome was the log-odds of bridal pregnancy and the covariates were educational attainment, marriage cohort, and their interaction. We present results in two ways. In the upper panel, we present education-specific odds ratios comparing the odds of bridal pregnancy in later cohorts to the 1970-1979 cohort. For the omitted educational category (high school), these odds ratios are the exponentiated values of the marriage cohort coefficients. Figures for the other educational categories are calculated by exponentiating the sum of coefficients for marriage cohort and the interaction between education and marriage cohort. In the lower panel, we present the predicted probability of bridal pregnancy by educational attainment and marriage cohort and provide indicators of statistically significant differences across educational categories. These figures are transformed values of the sum of the constant term and coefficients for education, marriage cohort, and the interaction between education and marriage cohort.

Figures in the upper panel indicate that the relative odds of bridal pregnancy increased significantly among women with a high school education or less while changing very little among those with a college degree. Relative to high school graduates marrying in the 1970s, the odds of bridal pregnancy among similarly educated women were 62% higher in the 1980s and 83% higher in the 1990s. The corresponding increases for women in the lowest educational category were 38% and 149%. Change was far less pronounced among junior college and vocational school graduates for whom the odds of bridal pregnancy were 17% higher in the most recent marriage cohort (statistically significant at $p < .10$). There was no evidence of change in the likelihood of bridal pregnancy among university graduates. The dagger symbols indicate significant differences in the extent of change, relative to the reference category of high school graduates. Here, we see that increase in the odds of bridal pregnancy was significantly greater for women in the lowest educational category marrying in the 1990s and significantly less for women in the two highest educational categories in both the 1980s and 1990s.

In the lower panel, we transform the estimated coefficients from this simple model to generate predicted probabilities of bridal pregnancy for each combination of educational attainment and marriage cohort. The predicted probability of being pregnant at the time of marriage increased almost two-fold across the three marriage cohorts among women with a high school education (from .13 to .22) or less (from .20 to .38). In contrast, the probability of bridal pregnancy increased only slightly among junior college graduates (from .12 to .14) and remained stable (at .08 - .09) for university graduates. In all marriage cohorts, the probability of bridal pregnancy was significantly higher for junior high school graduates and significantly lower for university graduates, relative to high school graduates. The relative probability of bridal pregnancy was also significantly lower for junior college/vocational school graduates in the 1980s and 1990s. These figures indicate very clearly that bridal pregnancy has become increasingly concentrated among women with lower levels of educational attainment.

Table 3 presents results of Models 1 and 2 in the form of odds ratios for women at each level of educational attainment. We discuss the results of Model 1 first. For junior high school graduates, pregnancy status at marriage was unrelated, on average, to the odds of marrying a man with more education rather than a man with the same level of education (OR = .96). There was also no evidence that the relationship between bridal pregnancy and educational pairing differed by age at marriage. Among high school graduates, however, those who married while pregnant were significantly more likely to marry men with less education and significantly less likely to marry men with more education than themselves relative to marrying homogamously (odds ratios of 1.30 and 0.72, respectively). Again, there was no evidence that these relationships differ by age at marriage (odds ratios for the interaction coefficients are all close to 1.0).

Results were similar for women with postsecondary education. Relative to their counterparts not pregnant at marriage, junior college graduates pregnant at marriage were 67% more likely to marry a man with a high school education or less and 40% more likely to marry homogamously rather than marrying a university graduate. The relative likelihood of educational hypogamy subsequent to pregnancy was 46% higher for women who marry before age 23 and the odds of homogamy were also significantly higher among marriages before age 27. Among university graduates, the odds of marrying hypogamously rather than marrying another university graduate were 114% higher if the marriage was preceded by pregnancy. Interactions with age at marriage were not statistically significant but it appears that the likelihood of educationally hypogamous bridal pregnancy was relatively low among both early (OR = .44) and late marriages (OR = .70).

Taken as a whole, the results of Model 1 indicate that bridal pregnancy was associated with a higher likelihood of nonnormative educational pairings for all women except those who did not complete high school. This pattern is consistent with a scenario in which many unplanned or unexpected premarital pregnancies result in marriages to couples who might not have married otherwise, with potential implications for subsequent marital stability.

Coefficients for marriage cohort indicated that educational hypogamy has become less prevalent among women with a high school education and more prevalent among women with a college degree. These cohort differences reflect (a) a decline in the proportion of men who did not finish high school, (b) large relative improvements in women's educational attainment that made it numerically more difficult for highly educated women to marry university educated men, and perhaps (c) changes in spouse pairing preferences. Estimated coefficients for the background variables indicated that the likelihood of nonnormative educational pairings was generally higher among women who did not coreside with their parents prior to marriage, those who met their spouse via friends or siblings, and those whose husband was previously married. As expected, marriages were much more likely to be educationally homogamous if the couple met at school.

Likelihood ratio tests comparing Model 2 to Model 1 indicated that the relationship between bridal pregnancy and educational pairing changed among high school graduates and junior college graduates, but not among junior high school graduates ($p = .62$) or university graduates ($p = .15$). Among women in the lowest educational category, neither of the interaction coefficients in Model 2 approached statistical significance. Bridal pregnancy was unrelated to educational pairing in all three marriage cohorts. Among high school graduates, however, the association between bridal pregnancy and educational hypogamy increased in more recent marriage cohorts while the likelihood of educational hypergamy declined. The odds of marrying a man with less education rather than a man with similar education were 75% higher for pregnant high school graduates marrying in the 1990s relative to their counterparts marrying in the 1970s. Similarly, the odds of marrying a man with more education (relative to a man with the same education) were about 30% lower in the 1980s and 1990s than in the 1970s.

A similar pattern was observed among junior college graduates. Relative to their counterparts marrying in the 1970s, women who married subsequent to pregnancy in the 1990s were 85% more likely to marry a man with lower education than themselves rather than a university graduate. For university graduates, the pattern was similar but the coefficients associated with the large odds ratios for hypogamous marriages preceded by pregnancy in the 1980s (OR = 2.07) and 1990s (OR = 2.56) were not statistically significant ($p = .20$ and $p = .12$, respectively). The imprecision of these estimates presumably reflects the relatively small number of bridal pregnancies among university graduates. Taken as a whole, our results indicate that bridal pregnancy was associated with a higher likelihood of nonnormative educational pairings for

women in all but the lowest educational category and it appears that this relationship became stronger over time.

Discussion and Conclusion

Japan is one of the only industrialized countries in which almost all childbearing takes place within marriage, making it a potentially rich source of insight into contextual influences on the pace, nature, and implications of family change in low-fertility societies. In this paper, we have focused on recent increases in bridal pregnancy in Japan to evaluate the generality of two related findings from research on the U.S. – the increasing concentration of nonmarital conceptions among women with less education and the potentially negative implications of bridal pregnancy for subsequent well-being.

The results of our analyses are very clear. Bridal pregnancy is increasingly concentrated among women with lower levels of educational attainment and is increasingly associated with a higher likelihood of nonnormative spouse pairing with respect to education. Available data did not allow us to explain these relationships between bridal pregnancy and educational pairing but we can offer some speculative interpretations. Differences in the criteria for selecting sex partners and marital partners may be of particular importance when normative pressures to legitimate premarital pregnancies are strong. Marriages preceded by unexpected pregnancy may be characterized by a higher degree of nonnormative pairing if the educational composition of more casual pairings differs from that of couples with intentions to marry (as with cohabiting unions in the U.S.). Another possibility is that educationally nonnormative pairings may be normative in other ways. For example, it may be that marriages involving bridal pregnancy are normative with respect to other key spouse selection criteria such as occupation, economic prospects, or parents' socioeconomic status. Educational attainment is a critical dimension of assortative mating but it is not the only one and this alternative merits further exploration. A third, rather different, possibility is that pregnancy may be an increasingly common means for nonnormatively paired couples to elicit parental approval for marriage.

The increasing tendency for bridal pregnancies to involve nonnormative educational pairings is important to the extent that such pairings have implications for subsequent family outcomes such as divorce. Currently, one - third of Japanese marriages are projected to end in divorce and there is some evidence that divorce, like bridal pregnancy, is increasingly concentrated at the lower end of the educational spectrum (Raymo, Iwasawa, & Bumpass, 2004). To the extent that bridal pregnancy is associated with an elevated risk of subsequent marital dissolution, our findings provide initial and provocative indications that the continued strength of the link between marriage and childbearing in Japan may not mitigate the differential implications of rapid family change for family well-being (e.g., McLanahan, 2004).

We conclude by emphasizing the need for further research designed to empirically establish relationships between bridal pregnancy and indicators of subsequent well-being in Japan. Understanding these relationships is important to the extent that such information influences people's perceptions of the desirability of marriage in response to pregnancy. Our results suggest that the proportion of marriages preceded by pregnancy is rising because sexual behavior is changing faster than attitudes regarding the importance of marriage for childbirth. If subsequent studies show bridal pregnancies to be associated with less stable marriages and other less favorable outcomes, and if knowledge of these relationships became widespread, we would expect a decline in the propensity to marry in response to unplanned pregnancy. The implications of such change for fertility, for women's life course trajectories, and perhaps for the well-being of children in Japan depend on the relative importance of emerging alternatives to “shotgun marriages.” We suggest two possible scenarios.

If decline in the propensity to marry in response to unplanned pregnancy is manifested primarily in an increased willingness on the part of women to raise children on their own (presumably with parental support), then we might expect an increase in the prevalence of nonmarital childbearing. Changing norms, increasing economic independence for women, and policy efforts designed to facilitate women's ability to balance employment and childrearing all suggest the possibility of this scenario. This pattern of change would be consistent with trends observed in the U.S. and many other low fertility countries but would represent a dramatic break from recent Japanese family patterns. If, however, decline in couples' willingness to marry in response to pregnancy is manifested primarily in an increased propensity to abort unplanned pregnancies or to practice more effective contraception, we might expect further decline in fertility in Japan. The fact that almost one in three first births is now conceived prior to marriage points to the importance of unplanned pregnancy in preventing further decline in Japan's very low period fertility rate.

Empirically establishing the relevance of these alternative scenarios is important for evaluating the generality of patterns of family change observed in the west and for speculating about subsequent patterns of family change in other low-fertility societies in Asia. Documenting and comparing subsequent changes in Japan and other geographically and culturally proximate settings such as Korea, Taiwan, and Singapore where fertility is low, marriage is late, nonmarital childbearing is uncommon, and social support for single mothers is perhaps even weaker than in Japan would provide valuable insights into the generality of patterns of family change documented in studies of low-fertility western industrialized countries.

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Table 1

Sample Characteristics, by Marriage Cohort

	Marriage Cohort			
Variable	**1970-1979**	**1980-1989**	**1990-2002**	**Total**
Pregnancy Status at Marriage				
Not pregnant	86.1	82.9*	82.4*	84.0
Pregnant	14.0	17.1*	17.6*	16.0
Educational Pairing				
Female hypogamous	16.7	18.2*	20.5*†	18.1
Homogamous	52.6	47.5*	47.1*	49.4
Female hypergamous	30.8	34.3*	32.4*†	32.5
Age at Marriage				
<=22	35.8	22.5*	16.3*†	24.5
24-26	53.2	53.1*	46.6*†	3.3
>= 27	11.0	24.5*	37.1*†	
Educational Attainnment				
Junior High School	15.4	5.2*	3.6*†	8.8
High School	59.1	50.5*	43.7*†	52.3
Junior College/Vocational School	19.7	33.0*	38.7*†	29.1
University	5.9	11.3*	14.0*†	9.8
Premarital Living Arrangements				
Coresiding with parents	68.7	69.3	67.2*†	68.6
Not coresiding with parents	31.3	30.7	32.8*†	31.1
Place of Meeting				
School	4.8	7.9*	9.3*†	7.0
Work	40.9	41.2	47.7*†	42.5
Via friends or siblings	19.3	23.0*	26.7*†	22.4
Arranged marriage (*miai*)	30.6	22.6*	10.9*†	23.0
Chance meeting	4.5	5.4*	5.4	5.0
Husband's marital history				
First marriage	97.4	96.3*	94.4*†	96.3
Not first marriage	2.6	3.7*	5.6*†	3.7
N	11,288	11,040	6,645	28,973

*different from 1970-1979 cohort at $p < .05$

†different from 1980-1989 cohort at $p < .05$

Table 2

Odds Ratios and Predicted Probabilities of Bridal Pregnancy, by Marriage Cohort and Educational Attainment

	Educational Attainment			
A: Odds ratios	**Junior high school**	**High school**	**Junior college & Vocational school**	**University**
Marriage Cohort				
1970-1979 (omitted)	1.00	1.00	1.00	1.00
1980-1989	1.38**	1.62**	1.11 ††	1.16 ††
1990-2002	2.49** +	1.83**	1.17# ††	0.84 ††
B: Predicted probabilities				
Marriage Cohort				
1970-1979	0.20**	0.13	0.12	0.09*
1980-1989	0.26**	0.20	0.13**	0.11**
1990-2002	0.38**	0.22	0.14**	0.08**

N = 28,973, *df* = 11, $\chi 2$ = 448.67

** p<.01,

* p<.05,

# p <.10

†† p<.01,

† p<.05,

+ p <.10

Notes: In panel A, asterisks indicate statistical significance of differences in coefficients for later cohorts and the first cohort (1970-79).

In panel A, daggers indicate statistical significance of coefficients for the interaction between educational attainment and marriage cohort.

In panel B, asterisks indicate statistical significance of differences in predicted probabilities for a given education-cohort combination and the corresponding figure for high school graduates.

Table 3

Odds Ratios from Multinomial Logistic Models of Educational Pairing

Educational Attainment	**Junior High School**		**High School**			
Educational Pairing	**Hypergamy[a]**		**Hypogamy[a]**		**Hypergamy[a]**	
Model	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Pregnancy Status at Marriage						
Not pregnant (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
Pregnant	0.96	0.96	1.30*	1.19	0.72**	0.89
Age at Marriage						
<=22	0.76*	0.75*	1.52**	1.51**	0.69**	0.69**
24-26 (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
>= 27	1.16	1.16	1.03	1.06	1.29**	1.27**
Pregnancy Status × Age at Marriage						
<=22 × Pregnant	1.12	1.14	1.00	0.99	0.94	0.94
24-26 × Pregnant (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
>=27 × Pregnant	0.93	0.92	1.00	0.91	1.02	1.09
Marriage Cohort						
1970-1979 (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
1980-1989	1.58**	1.55**	0.65**	0.65**	1.18**	1.23**
1990-2002	1.90**	2.06**	0.61**	0.52**	1.07	1.13*
Pregnancy Status × Marriage Cohort						
1970-1979 × Pregnant (omitted)		1.00		1.00		1.00
1980-1989 × Pregnant		1.09		1.00		0.74*
1990-2002 × Pregnant		0.80		1.75**		0.67**
Premarital Living Arrangements						
Coresiding with parents (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
Not coresiding with parents	0.78**	0.78**	1.25**	1.24**	0.89**	0.89**
Place of Meeting						
School	0.53*	0.53*	0.48**	0.48**	0.68**	0.68**
Work (omitted)	1.00	1.00	1.00	1.00	1.00	1.00

Educational Attainment	**Junior High School**				**High School**	
Educational Pairing	**Hypergamy[a]**		**Hypogamy[a]**		**Hypergamy[a]**	
Model	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Via friends or siblings	0.52**	0.52**	1.60**	1.60**	0.77**	0.77**
Arranged marriage (*miai*)	0.40**	0.40**	1.76**	1.76**	0.65**	0.65**
Chance meeting	0.76	0.76	1.76**	1.76**	0.86	0.86
Husband Previously Married						
No (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
Yes	0.78	0.78	2.49**	2.49**	0.68**	0.69**
N	2,549	2,549	15,148	15,148		
df	13	15	26	30		
$\chi 2$	141.62	142.59	751.93	777.14		
LR test (p)		0.62		0.00		
Educational Attainment	Junior College/Vocational School				University	
Educational Pairing (vs. Homogamy)	Hypogamy[b]		Homogamy[b]		Hypogamy[a]	
Model	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Pregnancy Status at Marriage						
Not pregnant (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
Pregnant	1.67**	1.39#	1.40*	1.35	2.14**	1.12
Age at Marriage						
<=22	1.73**	1.71**	1.80**	1.79**	2.15**	2.10**
24-26 (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
>= 27	0.81**	0.83**	0.97	0.97	1.03	1.05
Pregnancy Status × Age at Marriage						
<=22 × Pregnant	1.46#	1.51#	1.37	1.39	0.44	0.50
24-26 × Pregnant (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
>=27 × Pregnant	0.76	0.70*	0.59*	0.56*	0.70	0.64
Marriage Cohort						
1970-1979 (omitted)	1.00	1.00	1.00	1.00	1.00	1.00

Educational Attainment	**Junior High School**		**High School**			
Educational Pairing	**Hypergamy[a]**		**Hypogamy[a]**		**Hypergamy[a]**	
Model	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
1980-1989	1.00	1.00	1.11	1.13	1.22	1.12
1990-2002	1.12	1.03	1.54**	1.49**	1.63**	1.46*
Pregnancy Status × Marriage Cohort						
1970-1979 × Pregnant (omitted)		1.00		1.00		1.00
1980-1989 × Pregnant		1.04		0.91		2.07
1990-2002 × Pregnant		1.85**		1.40		2.56
Premarital Living Arrangements						
Coresiding with parents (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
Not coresiding with parents	1.34**	1.34**	1.41**	1.40**	1.03	1.03
Place of Meeting						
School	0.95	0.95	1.87**	1.87**	0.21**	0.21**
Work (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
Via friends or siblings	1.64**	1.64**	1.25**	1.25**	1.08	1.08
Arranged marriage (*miai*)	0.97	0.97	0.75**	0.75**	0.50**	0.50**
Chance meeting	1.62**	1.61**	0.87	0.87	1.16	1.14
Husband Previously Married						
No (omitted)	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.96**	1.94**	1.05	1.05	2.46**	2.50**
N	8,443	8,443			2,833	2,833
df	26	30			13	15
χ2	497.80	511.65			158.29	162.14
LR test (p)		0.01				0.15

** p<.01,

* p<.05,

# p <.10

Notes: a: reference pairing is educational homogamy

** p<.01,

* p<.05,

# p <.10

Notes: a: reference pairing is educational homogamy, b: reference pairing is educational hypergamy