DEMOGRAPHIC RESEARCH
A peer-reviewed, open-access journal of population sciences

DEMOGRAPHIC RESEARCH

VOLUME 28, ARTICLE 6, PAGES 177-206
PUBLISHED 18 JANUARY 2013
http://www.demographic-research.org/Volumes/Vol28/6/
DOI: 10.4054/DemRes.2013.28.6

Research Article

Educational Differences in Divorce in Japan

James M. Raymo

Setsuya Fukuda

Miho Iwasawa

Table of Contents

Demographic Research: Volume 28, Article 6
Research Article

Educational Differences in Divorce in Japan

James M. Raymo[1]
Setsuya Fukuda[2]
Miho Iwasawa[3]

Abstract

BACKGROUND
Evidence of a negative relationship between educational attainment and divorce in Japan is not consistent with predictions derived from standard theoretical emphases on the costs of divorce.

OBJECTIVE AND METHODS
Using marital history data from a cross-sectional survey, we estimated educational differences in divorce for two marriage cohorts: 1980-89 and 1990-2005. We also used 14 years of panel survey data to evaluate four possible explanations for the observed negative educational gradient.

FINDINGS
Our results confirmed that educational attainment is inversely related to divorce in Japan, and showed that, in contrast to some previous findings, the negative relationship between women's education and divorce has not become stronger in recent years. Analyses of the panel data provided some support for hypotheses that focused on the role of economic strain and on cultural values regarding reputation or "face," but they also showed that the negative relationship between education and divorce remained strong even after controlling for a range of posited correlates.

CONCLUSIONS
Our failure to solve the theoretical puzzle motivating these analyses suggests that other types of contextual modification to standard theories of family change are required to explain the strong negative relationship between educational attainment and divorce in Japan. We discussed possible examples of such modifications, focusing on the patterns of selection into marriage and the central importance of investment in children's

[1] University of Wisconsin-Madison, Department of Sociology. E-mail: jraymo@ssc.wisc.edu.
[2] Statistics and Information Department, Ministry of Health, Labour and Welfare.
[3] National Institute of Population and Social Security Research.

educational success in Japan's highly competitive educational system, while also offering more nuanced theorization regarding the role of reputation or "face".

1. Introduction

According to prominent theories of family change, educational differences in marital dissolution should become less pronounced as divorce becomes more prevalent. For example, classic theories of modernization posit that marital dissolution is more common among the highly educated when its legal, social, and economic costs are high, but becomes increasingly common among those with lower levels of education as divorce becomes more widespread and normatively accepted, and thus more "affordable" (Goode 1963, 1966, 1993). As the legal, social, and economic barriers to divorce wane and financial stress emerges as a primary reason for marital dissolution, the educational gradient may become negative (Goode 1963). More recent theorization about the second demographic transition suggests a similar pattern of change, with new family behaviors such as divorce emerging first among highly educated innovators, before diffusing throughout the population (Lesthaghe and Surkyn 1988).

The empirical evidence is largely consistent with these theorized patterns of change. For example, a recent comparative study by Härkönen and Dronkers (2006) found that educational differences in the risk of divorce declined over time in nine of the 17 countries they examined. Similarly, a meta-analysis conducted by Matysiak, Styrc, and Vignoli (2011) demonstrated that the positive educational gradient in divorce has become weaker over time. Importantly, both of these studies concluded that the relationship between educational attainment and divorce continues to be positive in countries where divorce is relatively rare and its social and economic costs are high (e.g., Italy, Spain) but not in countries where the prevalence of divorce is highest and its costs are presumably low (e.g., Sweden, United States). Recent research on the U.S. is also consistent with the posited emergence of a negative educational gradient in divorce in settings where divorce is common and its costs are relatively low. Declining rates of divorce among the college-educated, combined with little change in the high rates of marital dissolution among those with less education, have resulted in an increasing concentration of divorce at the lower end of the educational spectrum (Martin 2006; Raley and Bumpass 2003).

In light of these theoretical expectations and empirical findings, fragmentary evidence of a strong negative educational gradient in divorce in Japan presents an interesting theoretical puzzle. While it is true that legal barriers to marital dissolution in Japan are minimal (Fuess 2004) and that rates of marital dissolution have increased

markedly since the 1970s (Raymo, Iwasawa, and Bumpass 2004), it is also clear that the social and economic costs of divorce remain substantial. Divorce continues to be socially stigmatized (Ono 2006) and its economic costs are severe, especially for women (Ezawa and Fujiwara 2005). The rarity of joint custody arrangements and limited child support from non-custodial fathers (Zhou 2008) also highlight the potential costs of divorce for children's well-being.

In this context, the evidence of a negative educational gradient in divorce in Japan (Katō 2005; Ono 2009), which appears to have become more pronounced in recent years (Ono 2009; Raymo, Iwasawa, and Bumpass 2004), is theoretically unexpected. However, existing research suggests that this seemingly anomalous pattern may be explained by features of Japanese public policy, gender relations, and culture. Investigating divorce patterns in Japan could thus offer insights into the ways in which predictions derived from standard theories of family change may need to be modified to account for distinctive features of national context. Unfortunately, however, such insights are difficult to extract from the relatively limited body of existing research on divorce in Japan.

Most of what we know about educational differences in divorce in Japan (and the changes in these differences over time) is based on data from cross-sectional surveys that appear to seriously underrepresent divorce, or analyses of census data that require major, untestable assumptions to produce estimates of trends in educational differences (Raymo 2008). In this paper, we address these limitations by using two new sources of data on divorce in Japan. We first use data from a large nationally representative survey of women conducted in 2005 to document trends in educational differences in divorce. These trend analyses also allow for an initial, indirect evaluation of hypotheses about the mechanisms that may underlie observed relationships between women's educational attainment and divorce. We then use data from an ongoing panel survey to examine correlates of divorce in an effort to shed further light on posited explanations for observed educational differences.

2. Background

2.1 Divorce trends in Japan

Japanese marriages are increasingly likely to end in divorce, and it is clear that Japan should no longer been viewed as a low-divorce society. Using vital statistics data, Raymo, Iwasawa, and Bumpass (2004) showed that the proportion of marriages that dissolved within 10 years increased from 12% for marriages taking place in 1980 to 17% for marriages taking place in 1990. Even more striking is the fact that their

synthetic cohort estimates, which were based on duration-specific marital dissolution rates for 2002, indicate that the lifetime probability of divorce is approximately one-third. This level is similar to those observed in many European countries (Andersson and Philipov 2001) and among college-educated women in the U.S. (Raley and Bumpass 2003). It is also much higher than in the Southern European countries, with which Japan shares many other demographic similarities (Dalla Zuanna, Atoh, Castiglioni, and Kojima 1998; Raymo, Mencarini, Iwasawa, and Moriizumi 2010). The increasing prevalence of divorce in Japan is well documented (Beppu 2002, 2006; Ikenoue and Takahashi 1994; Ishikawa 2006; Kaneko and Shiraishi 1998; Katō 2005), but information about the correlates of divorce and how they may have changed over time is limited.

2.2 Educational differences in divorce

Table 1 summarizes the existing evidence on educational differences in divorce in Japan. With the exception of Ogawa and Ermisch (1994), these studies have all found that higher education is associated with a lower risk of divorce. Raymo and colleagues concluded that women in the lowest educational category (junior high school graduates) have a substantially higher risk of divorce than their counterparts who completed high school (Raymo 2008; Raymo, Iwasawa, and Bumpass 2004). Analyses of couples' characteristics have found that husbands' education (but not wives' education) is inversely related to the risk of divorce (Katō 2005; Ono 2009). Estimates of temporal change in the relationship between education and marital dissolution suggest that the concentration of divorce at lower levels of education is a relatively recent phenomenon. For example, Raymo, Iwasawa, and Bumpass (2004) described a noticeable increase in educational differences in the prevalence of divorce after 1990, and Ono (2009) found a negative association between husbands' education and the risk of divorce for marriages taking place after 1980.

The evidence of a negative educational gradient in divorce in a country like Japan, where the economic and social costs of divorce remain high, is not consistent with the predictions of prominent theories of family change. It thus appears that low-cost divorce is not a necessary condition for the emergence of a negative educational gradient in certain contexts. The extreme economic costs of divorce for Japanese women are evidenced by the fact that the proportion of single-mother families in poverty (54%) is higher in Japan than in any other OECD country (OECD 2011). The high rate of poverty among single mothers (the large majority of whom are divorced) reflects a combination of low wages, limited social expenditures on families in general, and limited public income support for single-mother families in particular (Abe and

Oishi 2005; Ezawa and Fujiwara 2005). Perhaps as a result of financial stress and the difficulties associated with balancing work and parenthood, single mothers also appear to have worse health than their married counterparts (Abe 2008). Furthermore, the social costs of divorce are relatively high. Social disapproval of divorce in Japan has declined over time (Atoh 2001), but remains higher than in most other industrialized countries (Yodanis 2005). In this context, standard theories of family change suggest that marital dissolution should be more common among couples who possess sufficient resources to offset the high social and economic costs of divorce, and that reductions over time in the positive educational gradient in divorce should be limited. The fragmentary empirical evidence summarized above stands in contradiction to these expectations.

Table 1: Evidence on educational differences in divorce in Japan

Author (Year)	Data source	Unit of analysis	Findings
Ogawa and Ermisch (1994)	1988 Mainichi Family Survey	Women	No educational differences
Raymo, Iwasawa, and Bumpass (2004)	1980, 1990, 2000 Japanese Censuses	Women	Negative educational gradient in recent years
Katō (2005)	National Family Research Japan 2001	Couples	Husband's education negatively associated with divorce
Raymo (2008)	National Family Research Japan 2001	Women	Negative educational gradient, no evidence of change across marriage cohorts
Raymo (2008)	2000-2003 Japan General Social Surveys	Women	Negative educational gradient, no evidence of change across marriage cohorts
Ono (2009)	2000-2002 Japan General Social Surveys	Couples	Husband's education negatively associated with divorce in recent marriage cohorts

2.3 Possible explanations

2.3.1 Economic stress

Existing research suggests several possible contextual modifications to standard theories of family change that might account for a negative relationship between education and divorce in Japan, despite the high costs of divorce. For example, one recent study found that the emergence of a negative relationship between education and divorce is less likely in countries where social expenditures are relatively high, and posited that "welfare state generosity helps in stabilizing marriages amongst those with less human capital and more economic-based marital strain" (Härkönen and Dronkers 2006:514). In Japan, public expenditures on families amounted to only 0.8% of GDP in 2007, one of the lowest values among OECD countries.[4] The combination of economic strain and limited public support may play a particularly important role in destabilizing marriages at the lower end of the Japanese educational spectrum, where the impact of the prolonged economic downturn of the 1990s and 2000s has been most pronounced (Kosugi 2004). This focus on the interactive effects of economic stress and limited public support for families suggests that the negative educational gradient in divorce in Japan should become stronger among marriages occurring subsequent to the economic downturn. It also suggests that the negative relationship between education and divorce at the individual (or couple) level should be explained primarily by indicators of economic stress that are more prevalent at lower levels of education (e.g., lower family income, husbands' marginal employment).

2.3.2 Women's economic independence

A second set of possible explanations focuses on the distinctive gender division of labor that characterizes Japanese marriages. The posited linkages between higher education and divorce in settings characterized by relatively high economic costs of divorce for women (Goode 1963) are based on the assumption that women's educational attainment is positively associated with their earnings potential, access to resources, and economic independence. This assumption is central to standard economic theories of marital dissolution (e.g., Becker 1991) and is presumably valid in many settings. However, there is good reason to question the validity of this assumption in Japan, where a large proportion of women (at all educational levels) exit the labor force at marriage or childbirth, and where opportunities for subsequent labor market re-entry are largely

[4] This figure comes from the OECD Social Expenditure (SOCX) database available at http://www.oecd.org/document/9/0,3746,en_2649_34637_38141385_1_1_1_1,00.html.

limited to low-skill, low-pay, non-standard employment (Yu 2002). Because the employment of married women in Japan has been primarily motivated by economic necessity (Ogawa and Ermisch 1994), highly educated women (who tend to be married to well-educated men with relatively high earnings) have actually had lower rates of labor force participation than their less educated counterparts (Choe, Bumpass, and Tsuya 2004; Waldfogel, Higuchi, and Abe 1999). To the extent that women without a college education have higher employment rates (especially in full-time jobs that provide a basis for economic independence) and earnings that are more similar to their husbands', economic independence may actually be inversely associated with educational attainment among married women in Japan. In this context, the relatively low risk of divorce among highly educated women may be explained by their lower levels of full-time employment and their more limited contributions to family income. This same logic suggests that the negative educational gradient in divorce may be less pronounced among more recent marriage cohorts, reflecting a weakening of the negative relationship between women's educational attainment and employment (Raymo and Lim 2011) as more highly educated women remain in the labor force and pursue jobs with opportunities for career advancement (Nagase 2003).

2.3.3 Work-family balance and the "second shift"

The distinctive gender division of labor among Japanese couples may also contribute to an inverse relationship between wives' education and divorce by increasing the stress associated with balancing work and family among women with lower levels of education. In contrast to the U.S., and many other countries where husbands' participation in domestic work has increased over time (Bianchi, Robinson, and Milkie 2006), the gender division of household labor in Japan remains highly asymmetric. Due to factors such as long work hours, lengthy commutes, and entrenched gender norms, husbands contribute less than 10% of the total amount of time couples spend on housework, and about one-third of married men do no housework at all (Tsuya et al. 2005). Evidence that husbands' housework is positively associated with wives' (and husbands') educational attainment (Tsuya et al. 2005), and the relatively high employment rates among women at the lower end of the educational spectrum, together suggest that stress associated with the "second shift" (measured as total hours spent in employment, commuting, housework, and childcare) may contribute to an inverse relationship between educational attainment and marital instability. In terms of trends, the weakening negative relationship between wives' education and employment suggests that the negative educational gradient in divorce should be less pronounced among more recent marriage cohorts.

2.3.4 Social stigma and the role of "face"

A fourth possible explanation for the negative educational gradient in divorce emphasizes the role of "face" and the cultural importance of family reputation. Japan has been described as a group-oriented society (Nakane 1970) with a "shame" culture (Lebra 1976), in which identification with the family is central, and family status and reputation are considered very important. In this context, divorce continues to be stigmatized (Ono 2006) and the social costs of a "failed" marriage are potentially greater for families at the higher end of the socioeconomic distribution. A similar hypothesis was put forth nearly 50 years ago by Goode (1966), who argued that the social control exerted by kin and social networks over individuals (and couples) in patriarchal societies is stronger among people at higher levels of socioeconomic status, as any damage to their reputation and social standing is more costly. Other scholars have made related arguments specific to Japan, where marriage has been described as a "rigid social institution involving the interests of and influences from the extended family and kinship" (Bumpass and Choe 2004:20).

The influences of kin and social networks may contribute to a negative gradient in divorce, either directly, by limiting the likelihood of divorce among the more highly educated; or indirectly, by reducing the likelihood that well educated women (and men) will engage in other non-normative, potentially stigmatizing family behaviors associated with marital instability (e.g., early marriage, marriage in response to pregnancy, marriage in which the wife is older than the husband). This focus on "face" is based on an assumption that women's educational attainment is a good proxy for family socioeconomic status, an assumption for which there is abundant empirical support in Japan (e.g., Hara and Seiyama 2005). This cultural explanation suggests that the negative relationship between women's educational attainment and divorce should decline over time (as intergenerational influences weaken), and that the lower risk of divorce among the highly educated can be explained (in part) by their lower relative likelihood of engaging in non-normative family behaviors associated with marital instability.

2.4 Limitations of existing research

These alternative explanations suggest that standard theorization regarding relationships between educational attainment and divorce (and changes in these relationships) may need to be modified to account for distinctive features of the Japanese context. Unfortunately, however, our confidence in the evidence summarized in Table 1 is limited by the data and methods upon which it is based. Of particular importance is the

fact that the two sources of survey data used in most of these studies substantially underrepresent divorce. Comparing the prevalence of divorce across marriage cohorts, Raymo (2008) showed that the cumulative divorce probabilities calculated from retrospective marital histories in the 2000-2003 Japan General Social Surveys (JGSS) and the 2001 National Family Research of Japan (NFRJS01) survey are much lower than those based on registration data in the vital statistics. Indeed, the proportions of marriages ending in divorce (at various durations) in the two sample surveys are less than half of the level estimated using vital statistics data (Raymo 2008). Retrospective marital histories are known to understate divorce, especially at longer durations (Bumpass and Raley 2007), but the degree of understatement in the Japanese surveys is extreme. It would not be surprising if response rates among divorced women were low because of the high labor force participation rates and work-family stress levels among single mothers (e.g., Abe 2008). The underreporting of previous marital dissolution among those who did participate in the surveys is also plausible given the lingering stigma associated with divorce.

The underrepresentation of divorce does not pose a problem when assessing educational differences in divorce (and the changes in these differences) if non-response or the underreporting of divorce is unrelated to educational attainment (and marriage cohort). Unfortunately, there is no solid empirical basis for evaluating the extent of differential underreporting by education, and the fact that the nature of the observed educational differences is not consistent across the JGSS and NFRJS01 (Raymo 2008) is a cause for concern.

Evidence of increasing educational differences based on these data (Ono 2009) is subject to the same concerns. A relatively high likelihood of non-response or underreporting among older, less educated divorced women (or younger, better educated divorcees) could produce spurious evidence of an increasing negative educational gradient in divorce. Recognizing that divorce is substantially underreported in both the NFRJS01 and JGSS, Raymo, Iwasawa, and Bumpass (2004) used education-specific marital status distributions of 35-39-year-old women from published tabulations of census data to indirectly evaluate trends in educational differentials. They found a large increase in the relative prevalence of divorce among women in the lowest educational categories (less than high school and high school graduates), but cautioned that their approach relied on potentially problematic, but untestable, assumptions about educational differences in remarriage. In contrast to these findings, a related analysis of data from both the JGSS and NFRJS01 showed no evidence of a statistically significant change in the educational differences in divorce between the early 1970s and the early 2000s (Raymo 2008).

Another limitation of the existing research is that no efforts have been made to identify the factors that account for educational differences in the risk of divorce. The

existing studies have focused on describing educational differences (Raymo 2008; Raymo, Iwasawa, and Bumpass 2004), often net of other key correlates of divorce (Ono 2009), or have presented the results of descriptive multivariate models in which educational attainment is one of many covariates (Katō 2005; Ogawa and Ermisch 1994). Given these limitations, it is safe to say that we know relatively little about the magnitude of educational differences in divorce, even less about the change over time in educational differences, and almost nothing about the factors that may contribute to educational differences in divorce. We have therefore used two new sources of data to address these limitations.

3. Data and methods

To examine trends in educational differences, we used retrospective marital history data from the 13th Japanese National Fertility Survey (JNFS) conducted in 2005. To evaluate the posited explanations for educational differences in divorce, we used data from the Japanese Panel Survey of Consumers (JPSC). Because the JNFS and JPSC are surveys of women, we were limited to analyses of divorce based on data provided by currently and formerly married women.

3.1 The Japanese National Fertility Survey

The JNFS is a nationally representative sample of 18-49-year-old women conducted every five years by the National Institute of Population and Social Security Research. The JNFS has regularly asked respondents if they were previously married, but the 2005 survey was the first to ascertain the timing of first marriage and first marital dissolution for those who reported a previous marriage. The 13th JNFS is comprised of separate samples of 4,241 unmarried women and 6,836 married women, with response rates of 70% and 86%, respectively. After excluding never-married women, we were left with a base analytic sample of 7,391.[5] Excluding those who married prior to 1980 (and thus married at relatively young ages) left a sample of 7,108 first marriages. Our results were not sensitive to the treatment of respondents who married prior to 1980, but we excluded them because they were clearly not representative of their marriage cohorts. For example, the mean age at marriage for the older NFS respondents who married in 1975 (19.5) was five years lower than the figure reported in the vital

[5] We also excluded 103 unmarried respondents who did not answer the question about previous marriage experience.

statistics for all first marriages in 1975 (24.7). The further elimination of 333 women with missing marital history information (e.g., date of marriage, date of divorce) and 58 women missing information on educational attainment reduced our sample to 6,717 (94% of the total sample of women for whom the year of first marriage was after 1979 or was not ascertained).

The deletion of cases with any missing data implies an assumption that data are missing randomly with respect to marriage cohort, educational attainment, and divorce experience. Simple tabulations suggest that this assumption is not warranted. The women who reported having divorced were much more likely than those in their first marriage to have been excluded as a result of missing data on the timing of their marriage and/or divorce, and this relationship was stronger for women with a high school education or less, relative to their more educated counterparts. To assess the sensitivity of our results to the violation of the assumption that data were missing at random, we imputed values of missing marriage and divorce dates using median values of age at marriage and duration to divorce and widowhood. More specifically, we first imputed missing data on the timing of the first marriage by adding observed birth cohort- and education-specific median ages at first marriage (in months) to the observed birth date. We then imputed missing data on the duration to divorce by using observed education-specific median durations to divorce. To provide a bound for our estimates, we also made the extreme assumption that all of the 106 currently married respondents with missing information on marital history experienced divorce. As described below, we also conducted simulations to ascertain the sensitivity of our results to assumptions about the characteristics of women who did not respond to the survey and their marital and divorce experiences. In light of the underrepresentation of divorce in the JNFS (described below) and other Japanese surveys, these efforts to assess the sensitivity of results to missing data and non-response represent an important step toward a fuller understanding of socioeconomic differences in divorce.

To examine the educational differences in divorce and the changes these differences have undergone, we estimated two sets of proportional hazard models. We first modeled the risk of divorce as a function only of educational attainment and marriage cohort, and then proceeded to allow educational differences to vary by marriage cohort. We estimated both models for the subset of respondents with no missing data and the full sample with the missing data on marital history imputed. We defined marriage cohort by splitting the sample into those who married between 1980-1989 (35% of the total) and those who married between 1990-2005 (65% of the total). Educational attainment was a four-category measure: junior high school, high school, junior college or vocational school, and university. Recognizing that exposure to the risk of divorce was, by construction, longer for the earlier cohort, we also estimated models in which intact marriages among the 1980s marriage cohort were censored at 10

or 15 years' duration to enhance comparability with the later cohort. As doing so did not alter results, we present estimates from models without any early censoring of intact marriages.

3.2 Japanese Panel Survey of Consumers

The JPSC is an ongoing annual survey of a nationally representative sample of women conducted by the Institute for Research on Household Economics. The original sample was stratified by marital status, with 1,002 married women and 498 unmarried women between the ages of 24 and 34 surveyed in the first wave in 1993. A second cohort consisting of 201 married and 299 unmarried women was added in wave 5 (1997), and a third cohort consisting of 351 married and 485 unmarried women was added in wave 11 (2003). The response rate at the first interview in 1993 was low (41%), but the characteristics of the resulting baseline sample closely resemble national data, and retention across subsequent waves has been about 95% (Higuchi, Iwata, and Nagai 1999).

Our analytic subsample was comprised of person-year records for women in their first marriages, and thus included those who were married at initial observation in 1993, 1997, or 2003, as well as those who married subsequently.[6] In this sample, 1,928 individual women contributed 14,304 person-years of exposure to the risk of divorce prior to the 14th survey in 2006. Most of these women (n=1,529 or 79%) were married at the first observation, which took place in wave 1 for the original cohort and waves 5 and 11 for the second and third cohorts, respectively. The marital histories for these women have thus been left truncated, but information on the year of marriage allowed us to calculate marital duration at the initial observation. The marriages of similarly aged women that dissolved prior to the initial survey were left censored because information on the timing of previous marital entry and dissolution was not collected from women who were not married at the initial observation. However, information on the marital status at the initial observation indicated that 55 women were divorced, and that these women had lower levels of education than their currently married

[6] We limited our analyses to women in their first marriages because of the small number of higher order marriages observed in our sample (n = 35, 2% of all marriages), and evidence that correlates of divorce may differ for first marriages and remarriages (Booth and Edwards 1992). Because the women who were married at first observation were not asked about their previous marriages, we assumed that the women who were living with a child whose age was greater than the current marital duration were remarried. This assumption was based on evidence that mothers receive sole custody of children in most divorce cases (Raymo, Iwasawa, and Bumpass 2004), and that premarital births are very uncommon in Japan (National Institute of Population and Social Security Research 2011). This approach obviously precluded the identification of remarriages involving women who either did not have children in their first marriage or did not live with children from their first marriage.

counterparts. Assuming that these marriages dissolved at relatively short durations, left censoring would presumably result in an underestimate of the negative educational gradient. Unfortunately, there was no way of ascertaining the extent to which our inability to observe these women during their marriages might have influenced our estimates of the coefficients for variables that may explain the educational differences in the risk of divorce. As in all studies based on similar data, we were forced to assume that the relationships between covariates of interest and divorce were similar for these observed women and for those women we did not observe. However, the fact that the marriages that dissolved prior to the first observation comprised less than 3% of all of the first marriages to JPSC respondents [55 ÷ (1,928 + 55) = 0.028] limited our concerns about the substantive impact of left censoring.

To evaluate the posited explanations for educational differences in the risk of divorce summarized above, we estimated a series of discrete-time hazard models for marital dissolution. Because a significant proportion of women were lost to follow-up during the study, and because non-random panel attrition may affect estimates for coefficients of interest, we examined the correlates of panel attrition. Finding no evidence that attrition was related to education or marital duration, we censored respondents when they attrited from the survey. In the baseline model, we included only educational attainment, a linear measure of marital duration, a categorical indicator of the presence of children (no children, one child, two or more children), and a categorical measure of fathers' education as a proxy for socioeconomic background (less than high school, high school or vocational school, and university). Women's own educational attainment was measured using the same four categories as in the JNFS, but in the analyses presented below we collapsed women in the two highest categories into a single group, due to the small sample size and the similarity of estimated coefficients for women with two-year and four-year college degrees.

We then proceeded to estimate models that included individual and family characteristics relevant to the four hypotheses elaborated above. Model 2 evaluated the economic stress hypothesis by including measures of family income and the husband's employment status. Continuous measures of husbands' and wives' income levels were collected at each wave of the survey, and we summed these values to construct a measure of total income, standardized to have a mean of zero and a standard deviation of one. The husband's employment status was a three-category measure that distinguished those in regular employment from those who were marginally employed (part-time employment, contract employment, not working), and those who were either self-employed or working in a family business.

Model 3 evaluated the economic (in)dependence hypothesis by including measures of women's income dependency and employment. Dependency was calculated as the husband's income minus the wife's income, divided by the sum of the husband's and

the wife's income (Sorensen and McLanahan 1987). This measure thus ranged from one (total dependency on the husband's earnings) to -1 (total dependency on the wife's earnings). Women's employment was measured by a dichotomous indicator of regular employment, with all other employment statuses (part-time, contract, self-employed, family worker, not working) coded as zero.

To evaluate the second shift hypothesis, we constructed measures of the amount of time women spent on commuting, employment, childcare, and housework on a typical weekday. This information came from a time use module that asked women to allocate their time use (and their husband's time use) across several activities at each wave of the survey. As with income, we standardized this measure of time use to have a mean of zero and standard deviation of one.

Finally, to evaluate the cultural hypothesis emphasizing face, we included several measures of non-normative, potentially stigmatizing family outcomes in Model 5. These include early marriage (defined as marriage prior to age 22), an approximation of marriage in response to pregnancy (childbirth and marriage occurred in the same year), and an indicator of female age hypogamy (the wife was older than the husband).[7] As all of these family behaviors are associated with both lower education and the risk of divorce, we expected them to explain some part of the negative educational gradient in divorce.

A total of 1,598 person-year records (11% of the total sample) had missing information on one or more of the covariates. The prevalence of missing values was highest for the respondent's income and the husband's income, at 8% and 7%, respectively. To avoid the loss of observations, we used the routine for multivariate imputation via chained equations in Stata to impute missing values. The descriptive statistics and coefficient estimates presented below were based on five imputed data sets. Other approaches to dealing with the missing data (e.g., listwise deletion) produced substantively similar results.

[7] Because respondents were not asked to provide the month of marriage and first childbirth, it was not possible to construct a standard measure of bridal pregnancy or "shotgun marriage" (i.e., first birth within seven months of marriage).

4. Results

4.1 Trends in educational differences

Table 2 summarizes the JNFS data, presenting the proportions of respondents who divorced within 10 years of marriage, by educational attainment and marriage cohort. Due to the large differences across cohorts in the duration of exposure to the risk of divorce, we chose to present figures for divorce only within the first 10 years of marriage. Because the second cohort included many recent marriages, the mean marital duration was about 30% shorter than in the first cohort, for whom we limited the period of observation to 10 years; and, by definition, this difference grew as the observed exposure duration increased. Figures for the sample with the missing dates imputed are presented in the lower panel. The overall proportion who divorced within 10 years increased from .06 for the 1980s marriage cohort to .08 for the 1990-2000s cohort, despite the shorter average duration of exposure for the second cohort.

The figure of .06 for the 1980-89 cohort was substantially lower than the value of .13 for the 1985 cohort based on vital statistics data (Raymo, Iwasawa, and Bumpass 2004), which reflects a level of underreporting similar to that seen in the NFRJS01 and JGSS data. Our efforts to assess the impact of this underrepresentation of divorce via imputation of missing data and simulations of profiles for non-respondents (described below) thus represent an important extension of previous studies that were based on similarly limited data. In both cohorts, the small group of women who did not complete high school were found to be the most likely to divorce. The tabulations that included the imputed data (bottom panel) were similar to those in the upper panel, but the levels of divorce were higher (reflecting our assumptions about missing marital histories). This was particularly true in the 1980-89 cohort among women in the lower two educational categories, which reflects the fact that many of the imputed divorces involved less educated women in the 1980s marriage cohort.

Table 3 presents the results of proportional hazards models for divorce using the JNFS data. The estimates based on the sample with no missing data are on the left, and those based on imputed values for missing data are on the right. These estimates allowed for statistical inference regarding the tabulations presented in Table 2, net of cohort differences in exposure to the risk of divorce. As in Table 2, the results of these models show that the risk of divorce was inversely related to educational attainment, and increased sharply in the more recent marriage cohort. Relative to high school graduates, the risk of divorce was more than twice as high for junior high school graduates, 33% lower for women with a two-year degree, and 46% lower for those with a four-year college degree. The risk of divorce was 77% higher in the 1990-2005 marriage cohort than in the 1980s cohort.

Table 2: Tabulations of proportion divorced within 10 years of marriage, by marriage cohort and educational attainment (Japanese National Fertility Survey)

	Marriage cohort = 1980-1989			Marriage cohort = 1990-2005		
Education	**Did not divorce**	**Divorced**	**Total**	**Did not divorce**	**Divorced**	**Total**
Junior High School						
n	88	18	106	116	37	153
proportion	0.83	0.17	1.00	0.76	0.24	1.00
High School						
n	1,079	81	1,160	1,582	161	1,743
proportion	0.93	0.07	1.00	0.91	0.09	1.00
Junior College/Vocational School						
n	767	32	799	1,633	115	1,748
proportion	0.96	0.04	1.00	0.93	0.07	1.00
University						
N	275	13	288	690	30	720
proportion	0.95	0.05	1.00	0.96	0.04	1.00
Total						
N	2,209	144	2,353	4,021	343	4,364
proportion	0.94	0.06	1.00	0.92	0.08	1.00
	Marriage cohort = 1980-1989*			**Marriage cohort = 1990-2005***		
Education	**Did not divorce**	**Divorced**	**Total**	**Did not divorce**	**Divorced**	**Total**
Junior High School						
N	89	35	124	121	49	170
proportion	0.72	0.28	1.00	0.71	0.29	1.00
High School						
N	1,089	149	1,238	1,601	227	1,828
proportion	0.88	0.12	1.00	0.88	0.12	1.00
Junior College/Vocational School						
N	793	45	838	1,642	149	1,791
proportion	0.95	0.05	1.00	0.92	0.08	1.00
University						
N	279	18	297	694	44	738
proportion	0.94	0.06	1.00	0.94	0.06	1.00
Total						
N	2,250	247	2,497	4,058	469	4,527
proportion	0.90	0.10	1.00	0.90	0.10	1.00

Note: * indicates sample that includes observations with missing data imputed.

In assessing the extent to which the relationship between educational attainment and divorce changed over time, the estimates of primary interest were the hazard ratios associated with the interaction between education and marriage cohort (Model 2). The attenuation of the hazard ratio for university graduates and the negative interaction between university education and the second cohort were the only evidence of an increasingly negative educational gradient, but none of the interaction coefficients approached statistical significance, and their inclusion did not improve the model fit. In line with Raymo (2008), but in contrast to other studies (Ono 2009; Raymo, Iwasawa, and Bumpass 2004), we thus found no evidence that the negative educational gradient in divorce increased, at least when we focused on women's education and compared marriages that took place in the 1980s and 1990s-2000s. The conclusions were unchanged when we used the imputed data. The hazard ratios for the different levels of educational attainment (relative to high school graduates) were similar in the two sets of models, but the cohort increase was smaller when we used the imputed data (reflecting the relatively high prevalence of imputed divorces in the first cohort).

Table 3: Hazard ratios from Cox regression models for divorce within 10 years of marriage (Japanese National Fertility Survey)

	Deletion of cases with missing data		Imputation of missing data	
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Education				
JHS	2.65 **	2.38 **	2.56 **	2.50 **
HS (omitted)	1.00	1.00	1.00	1.00
JC/VOC	0.67 **	0.62 *	0.65 **	0.61 **
UNIV	0.54 **	0.63 #	0.53 **	0.52 *
Marriage cohort				
1980-1989 (omitted)	1.00	1.00	1.00	1.00
1990-2005	1.77 **	1.71 *	1.49 **	1.44 *
Interaction				
JHS x 1990-2005		1.20		1.05
JC/VOC x 1990-2005		1.12		1.10
UNIV x 1990-2005		0.78		1.00
N	6,717	6,717	7,024	7,024
df	4	7	4	7
log-likelihood	-5,051	-5,050	-7,133	-7,133

Notes: ** p< .01, * p<.05, # p<.10

However, our efforts to simulate data for women who did not respond to the survey suggest that the patterns of non-response may have obscured evidence of an

increase in the relative risk of divorce among women in the lowest educational category. We allocated the non-respondents so that the combined sample of respondents and non-respondents best approximated the distribution of the 18-49-year-old female population in the 2005 census by age, educational attainment, and marital status, as well as by the levels of divorce across cohorts observed in the vital statistics (Raymo, Iwasawa, and Bumpass 2004). The models based on the combined sample of observed and imputed data for respondents and imputed data for non-respondents showed a statistically significant increase across cohorts in the risk of divorce among junior high school graduates (relative to high school graduates), but, as in the models presented in Table 3, there was no evidence of cohort change in educational differences among women with at least a high school education. The increase in the relative risk of divorce among women in the lowest educational category reflected the high prevalence of imputed non-respondents (relative to respondents) among married junior high school graduates in the second cohort and divorced women in the two highest educational groups in the earlier cohort. The former increased the relative risk of divorce among junior high school graduates in the second cohort (given the relatively high prevalence of previous divorce experience among married women in the lowest educational category), and the latter reduced the relative risk of divorce among junior high school graduates in the first cohort. Because this simulation exercise was based on many untestable assumptions, we do not present the results here, but can make them available upon request.

4.2 Correlates of divorce

Table 4 presents descriptive statistics summarizing the characteristics of JPSC respondents in the wave in which they were last observed (averaged across the five imputed data sets). We present figures for the full sample (column 1) and for each of the three educational categories (columns 2-4). Looking first at the outcome variable (marital status at wave t+1 conditional on being in one's first marriage at wave t), we see that 7% of respondents experienced divorce, and that 33% were lost to follow-up prior to either divorce or the 2006 survey. The proportion who divorced was much higher for women in the lowest educational group (.20) than in the other two groups (.08 for high school graduates and .04 for women with at least a two-year college degree). Women who do not finish high school are an increasingly small and selective group in Japan, but they did comprise 6% of the respondents in our analytical sample. Clear educational differences can be seen in most of the variables, with education inversely related to the number of children and positively related to the father's educational attainment, the couple's income, the husband's regular employment, and

the mother's time spent commuting, working, and engaged in childcare and housework. Contrary to our speculation that highly educated women may be more economically dependent, education was inversely related to income dependence and positively related to regular employment in this sample, which may reflect recent changes in the nature of married women's employment in Japan (Raymo and Lim 2011). As expected, early marriage and bridal pregnancy were much more common among women at the lower end of the educational spectrum, but age hypogamy was not strongly related to women's education.

Table 4: Descriptive statistics for individual women in the JPSC sample, by educational attainment

Variable	Total	Junior high school	High school	Jr. college/ Vocational/ University
Last observed transition				
No change - married	0.60	0.47	0.58	0.65
Divorced	0.07	0.20	0.08	0.04
Lost to follow-up	0.33	0.33	0.34	0.31
Education				
Junior high school	0.06	1.00	0.00	0.00
High school	0.60	0.00	1.00	0.00
Jr. college/Vocational/ University	0.34	0.00	0.00	1.00
Marital duration	10.69	11.81	11.36	9.28
(s.d)	(6.25)	(6.32)	(6.15)	(6.18)
Number of children				
Zero	0.15	0.11	0.12	0.21
One	0.21	0.21	0.18	0.26
Two or more	0.64	0.69	0.69	0.53
Father's education				
Junior high school	0.40	0.65	0.48	0.21
High school/Vocational	0.45	0.32	0.46	0.47
University	0.15	0.03	0.06	0.32
Couple income (standardized)	0.05	-0.43	-0.04	0.32
(s.d)	(1.29)	(0.74)	(1.21)	(1.46)
Husband's employment status				
Regular employee	0.89	0.78	0.88	0.95
Part-time/contract/not working	0.07	0.13	0.07	0.04
Self-employed/family worker	0.04	0.09	0.05	0.01
Income dependency	0.67	0.72	0.67	0.64
(s.d)	(0.40)	(0.46)	(0.39)	(0.42)

Table 4: (Continued)

Variable	Total	Junior high school	High school	Jr. college/ Vocational/ University
Regular employment[a]	0.25	0.16	0.24	0.27
Total work, commuting, and domestic hours (standardized)	0.02	-0.12	0.02	0.04
(s.d)	(1.00)	(1.06)	(1.01)	(0.98)
Early marriage[a]	0.10	0.44	0.10	0.02
Bridal pregnancy[a]	0.07	0.20	0.07	0.03
Age hypogamy[a]	0.16	0.14	0.15	0.17
N	1,928	124	1,158	646

Notes: a) Yes=1, No=0; b) Summary statistics are based on the last observation for each individual respondent.

Table 5 presents results for the five models described above. As in our analyses of the JNFS data, the baseline model showed a strong negative educational gradient in divorce. In fact, the odds ratios for the different educational categories in Table 5 were quite similar to the hazard ratios presented in Table 3, with the odds of divorce relative to high school graduates three times higher among junior high school graduates and roughly half as great among women with tertiary education. We also found that women with two or more children were significantly less likely to divorce than their counterparts with no children, and that women with more highly educated fathers appeared to have a somewhat higher risk of divorce.

Table 5: Odds ratios from discrete-time hazard models of divorce

	1: Baseline	2: Economic Stress	3: Economic Independence	4: The Second Shift	5: "Face"
Education					
Junior high school	3.26 **	2.78 **	2.98 **	2.98 **	2.05 **
High school (omitted)	1.00	1.00	1.00	1.00	1.00
Jr. college/Vocational /University	0.47 **	0.54 *	0.54 *	0.54 *	0.56 *
Marital duration	1.01	1.02	1.02	1.02	1.02
Number of children					
Zero (omitted)	1.00	1.00	1.00	1.00	1.00
One	0.84	0.79	1.07	1.01	0.89
Two or more	0.51 *	0.48 **	0.65	0.60 #	0.47 *

Table 5: (Continued)

	1: Baseline	2: Economic Stress	3: Economic Independence	4: The Second Shift	5: "Face"
Father's education					
Junior high school (omitted)	1.00	1.00	1.00	1.00	1.00
High school/Vocational	1.40 #	1.45 #	1.52 *	1.51 *	1.44 #
University	1.57	1.61	1.73 #	1.72 #	1.67 #
Couple income (standardized)		0.68 **	0.63 **	0.62 **	0.66 *
Husband's employment status					
Regular employee (omitted)		1.00	1.00	1.00	1.00
Part-time/contract/not working		2.71 **	1.67	1.67 #	1.56
Self-employed/family worker		1.28	1.24	1.23	1.31
Income dependency			0.45 **	0.46 **	0.48 **
Regular employment[a]			1.51	1.46	1.43
Total work, commuting, and domestic hours (standardized)				1.08	1.08
Early marriage[a]					1.87 **
Bridal pregnancy[a]					1.76 **
Age hypogamy[a]					1.76 **
N	14,304	14,304	14,304	14,304	14,304
df	5	8	10	11	15
log-likelihood	-769.12	-755.53	-740.51	-740.20	-729.37
p value for LR test		0.00	0.00	0.43	0.00

Notes: ** p< .01, * p<.05, # p<.10
a: omitted category is "no"

The results for Model 2 showed that, consistent with the economic stress hypothesis, a lower income and the husband's marginal employment were both strongly associated with an elevated risk of divorce. Relative to couples with the mean level of income, the odds of divorce were 47% higher for those whose income fell one standard deviation below the mean (i.e., 1.00/0.68 = 1.47). Similarly, the odds of divorce for women whose husbands were employed part-time, in contract work, or not working were more than twice as large as those for women whose husbands were regular employees. Controlling for these measures of economic stress attenuated the estimated

educational differences in divorce somewhat, but the negative educational gradient remained pronounced and statistically significant.

The results of Model 3 were consistent with the economic independence hypothesis. The odds of divorce for a woman whose income was equal to that of her husband's was twice as high as those of a woman who was completely dependent on husband's income (i.e., 1.00/0.45 = 2.22). Similarly, women who were in regular employment appeared to have had a higher risk of divorce than those who were not, but this difference was not statistically different from zero ($p = 0.11$). However, as noted above, higher education was associated with greater economic independence in this sample, and the inclusion of these indicators of women's economic (in)dependence did little to alter the estimated educational differences in divorce.

Model 4 provided no evidence to support the second shift hypothesis, as women's total work hours were unrelated to the risk of divorce. The results of Model 5 were interesting, as they were partially consistent with the hypothesized cultural emphasis on face. Consistent with expectations, non-normative family behaviors were strongly associated with a higher risk of divorce. The odds of divorce were nearly twice as high for women who married a man younger than themselves, married in response to pregnancy, or married before age 22. Controlling for these marriage-destabilizing behaviors concentrated among women with lower education results in some attenuation of the high relative risk of divorce among women who did not complete high school, but the lower relative risk of divorce among the highly educated was largely unchanged. In sum, the relatively high levels of divorce among women in the lowest educational category were partially explained by economic stress and by the prevalence of non-normative, marriage-destabilizing pathways to family formation among these women, whereas the relatively low levels of divorce among the highly educated partially reflected lower economic stress. However, the negative educational gradient remained pronounced and statistically significant, net of a range of posited explanations.

5. Discussion

Our goal in this paper was to provide the first comprehensive analysis of educational differences in divorce in Japan. To this end, we used data from a large survey with retrospective marital history information to estimate educational differences in divorce and the changes in these differences across two marriage cohorts. We also used data from an ongoing panel survey to examine individual and family factors that may account for the observed educational differences in divorce.

In the first set of analyses, we found a strong negative educational gradient in the risk of divorce: the women who had completed a two-year or four-year college degree

were 30%-50% less likely than high school graduates to divorce. The small group of women who did not complete high school also had a much higher likelihood of divorce than any other group. In these analyses, we found no evidence that the negative educational gradient in divorce had grown over time.[8] Our results are thus not consistent with the scenario in which we expected to find a stronger negative gradient in the second cohort (economic stress), or for the three scenarios in which we expected to see the negative educational gradient weaken over time (women's economic independence, work-family stress associated with the second shift, and cultural emphasis on face). The fact that these findings contrast with the results of earlier studies by Ono (2009) and Raymo, Iwasawa, and Bumpass (2004) may reflect differences in the time period considered, in analytical methods and assumptions, or in the data used. The studies by Ono (2009) and by Raymo, Iwasawa, and Bumpass (2004) both considered a longer period of time, Ono (2009) included both the husbands' and the wives' education, and Raymo, Iwasawa, and Bumpass (2004) used marital status distributions from census publications to indirectly estimate trends in educational differences in divorce.

Our second set of analyses confirmed the strong negative educational gradient in divorce, with estimated educational differences similar to those found in our analyses of the JNFS data. We also found that, with one exception, the posited correlates were related to the risk of divorce in expected ways. The exception was the total amount of time women spent on work, commuting, childcare, and housework, which was unrelated to the risk of divorce. Contrary to our expectations, however, the inclusion of a range of individual and family characteristics did not explain the large estimated educational differences in the risk of divorce. Evidence consistent with our hypotheses showed that the negative educational gradient was partially explained by the less favorable economic circumstances of husbands and the concentration non-normative, marriage-destabilizing pathways to family formation among women with lower levels of education. However, the negative educational gradient in divorce remained pronounced and statistically significant net of these characteristics.

The theoretical puzzle motivating our analyses thus remains unsolved. The relative insensitivity of the educational gradient to control for posited correlates suggests three possibilities. The first is that we did not adequately measure the key concepts of economic hardship, wives' economic (in)dependence, work-family stress, and the role of face. However, most of the measures used in our analyses are standard and straightforward, which suggests that the incorporation of additional measures of the

[8] As noted above, sensitivity analyses did suggest the possibility that patterns of survey non-response may obscure evidence of an increasing concentration of divorce among women in the lowest educational group. These results should be considered suggestive given the strong assumptions that underlie this data augmentation exercise. Importantly, educational differences among women with at least a high school education (94% of all women in the sample) were stable across cohorts in all of the analyses.

same concepts would be unlikely to alter our results. Exceptions include the non-normative family behaviors, which may reflect economic and behavioral factors in addition to, or instead of, the social and reputational costs of following unconventional pathways to family formation. It is also possible that there are other dimensions of face or reputation that we have not measured. Examples might include the role of family, friends, and coworkers in bringing couples together or the importance of family stability for the husband's reputation at work. If, for example, couples who were introduced by family, friends, or work colleagues are less likely to divorce, and if such pairings are more common among the highly educated (or more stable among the highly educated), we would expect to see a negative relationship between education and divorce. Similarly, if being in a stable marriage is relevant for men's promotion prospects (or for successful social interactions more generally), the higher opportunity costs of divorce may contribute to the observed negative educational gradient. Unfortunately, the data needed to evaluate these hypotheses do not exist.

A second possibility is that our data are problematic due to an underrepresentation of divorces among highly educated women. Although both surveys produced predicted levels of divorce that were lower than those based on vital statistics data, the estimated educational differences in the two surveys were very similar. This reduces our concerns about data quality somewhat.

The third and most interesting possibility is that the four explanations we have offered are insufficient, and that some other form of contextual modification to standard theorization is required to explain the strong negative relationship between educational attainment and divorce in Japan. Possible examples might include patterns of selection into marriage or the central importance of investment in children's educational success in Japan's highly competitive educational system. Evidence that highly educated women are less likely to ever marry (e.g., Raymo 2003) suggests the possibility that those who do marry may be more selective than their less educated counterparts with respect to the effort invested in the spouse search process, marital commitment, or other unobservable factors associated with marital stability. Alternatively, the observed negative educational gradient may reflect stronger commitment to, and familial investment in, children's educational success among more highly educated women (and their husbands) in a context in which private expenditures on education are large, competition for entrance into more prestigious schools is fierce, and educational success is a powerful predictor of life outcomes.

Subsequent efforts to understand the theoretically unexpected relationship between educational attainment and divorce in Japan should seek to employ richer data (that cover a longer period of historical time and do not suffer from the same degree of underrepresentation of divorce that characterizes the JNFS and JPSC). Another potentially useful strategy is the evaluation of similar questions in other societies where,

as in Japan, divorce rates have increased rapidly even though the social and economic costs of divorce have remained substantial. Interestingly, Park and Raymo (2013) found evidence of a strong negative educational gradient in divorce in Korea, another setting where such a relationship is inconsistent with predictions derived from standard theoretical frameworks. Gaining a better understanding of the conditions that contribute to a concentration of divorce at the lower end of the socioeconomic spectrum, despite the limited reduction in its social and economic costs, could have important implications for the evaluation of linkages between family change and processes of stratification in other countries in Asia (and elsewhere) where divorce is currently uncommon, but family change is occurring rapidly.

6. Acknowledgements

Research was conducted at the Center for Demography and Ecology at the University of Wisconsin-Madison, which is supported by a Center Grant from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R24 HD047873). Analysis of the JNFS data was also supported by a Health and Labour Sciences Research Grant (Ishii 2012). Please direct all correspondence to James Raymo at: Department of Sociology, University of Wisconsin, 1180 Observatory Dr., Madison, WI 53706. email: jraymo@ssc.wisc.edu, tel: 608-262-2783, fax: 608-262-8400. We would like to thank the Institute for Research on Household Economics for providing Raymo with access to data from the Japan Panel Survey of Consumers. We would also like to thank Joonmo Son at the National University of Singapore and participants at the International Divorce Conference hosted by the Dondena Centre for Research on Social Dynamics at Bocconi University for their helpful comments on earlier versions of this paper.

References

Abe, A. (2008). *Children's poverty: A study of inequality in Japan*. Tokyo: Iwanami Shoten. (in Japanese)

Abe, A. and Ōishi, A. (2005). Social security and the economic circumstances of single-mother families. In: National Institute of Population and Social Security Research (ed.). *Social security for households with children*. Tokyo: Tokyo Daigaku Shuppankai: 143-161. (in Japanese)

Andersson, G. and Philipov, D. (2001). Life-table representations of family dynamics in 16 FFS countries. Rostock: Max Planck Institute for Demographic Research (MPIDR working paper; WP 2001-024).

Atoh, M. (2001). Very low fertility in Japan and value change hypotheses. *Review of Population and Social Security Policy* 10: 1-21.

Becker, G.S. (1991). *A treatise on the family*. Cambridge, MA: Harvard University Press.

Beppu, M. (2002). An analysis of the marriage life cycle in Japan using multistate life tables: 1930, 1955, 1975, and 1995. *Journal of Population Studies* 30: 23-40. (in Japanese)

Beppu, M. (2006). Multistate life table analysis of marriage and divorce: 1955-2000. In: National Institute of Population and Social Security Research (ed.) *Demographic research on divorce and remarriage in the context of low fertility, vol. 1*. Tokyo: National Institute of Population and Social Security Research: 43-65. (in Japanese)

Bianchi, S.M., Robinson, J.P., and Milkie, M.A. (2006). *Changing rhythms of American family life*. New York: Russell Sage Foundation.

Booth, A. and Edwards, J.N. (1992). Starting over: Why remarriages are more unstable. *Journal of Family Issues* 13(2): 179-194. doi:10.1177/019251392013002004.

Bumpass, L.L. and Choe, M.K. (2004). Attitudes relating to marriage and family life. In: Tsuya, N.O. and Bumpass, L.L. (eds.). *Marriage, work, and family life in comparative perspective: Japan, South Korea, and the United States*. Honolulu, HI: East-West Center: 19-38.

Bumpass, L., and Raley, K. (2007). Measuring separation and divorce. In: Hofferth, S.L. and Casper, L.M. (eds.). *Handbook of measurement issues in family research*. Mahwah, NJ: Lawrence Erlbaum Associates: 125-143.

Choe, M.K., Bumpass, L.L., and Tsuya, N.O. (2004). Employment. In: Tsuya, N.O. and Bumpass, L.L. (eds.). *Marriage, work, and family life in comparative perspective: Japan, South Korea, and the United States*. Honolulu, HI: East-West Center: 95-113.

Dalla Zuanna, G., Atoh, M., Castiglioni, M., and Kojima, K. (1998). Late marriage among young people: The case of Italy and Japan. *Genus* 54(3-4): 187-232.

Ezawa, A. and Fujiwara, C. (2005). Lone mothers and welfare-to-work policies in Japan and the United States: Towards an alternative perspective. *Journal of Sociology and Social Welfare* 32: 41-63.

Fuess, H. (2004). *Divorce in Japan: Family, gender, and the state 1600-2000*. Stanford, CA: Stanford University Press.

Goode, W.J. (1963). *World revolution and family patterns*. New York: Free Press.

Goode, W.J. (1966). Marital satisfaction and instability: A cross-cultural class analysis of divorce rates. In: Bendix, R. and Lipset, S.M. (eds.). *Class, status, and power: Social stratification in comparative perspective*. New York: Free Press: 377-387.

Goode, W.J. (1993). *World changes in divorce patterns*. New Haven, CT: Yale University Press.

Hara, J. and Seiyama, K. (2005). *Inequality amid affluence: Social stratification in Japan*. Melbourne, Australia: Trans Pacific Press.

Härkönen, J. and Dronkers, J. (2006). Stability and change in the educational gradient of divorce. A comparison of seventeen countries. *European Sociological Review* 22(5): 501-517. doi:10.1093/esr/jcl011.

Higuchi, Y., Iwata, M., and Nagai, A. (1999). Objectives and summary. In: Higuchi,Y. and Iwata, M. (eds.). *Contemporary women seen through panel data*. Tokyo: Tōyō Keizai Shimpōsha: 1-23. (in Japanese)

Ikenoue, M. and Takahashi, S. (1994). Multistate marriage lifetables. *Journal of Population Problems* 50: 73-96. (in Japanese)

Ishii, F. (ed.) (2012). Report for Health and Labour Sciences Research Grants 2011: Incorporation of the foreign-born population and its impact on future population dynamics and social security in Japan. Tokyo: Ministry of Health, Labour, and Welfare. http://mhlw-grants.niph.go.jp/niph/search/NIFI00.do#0001.

Ishikawa, A. (2006). Trends in marriage and divorce: Analysis of divorce by marriage cohort. In: National Institute of Population and Social Security Research (ed.) *Demographic research on divorce and remarriage in the context of low fertility, vol. 1*. Tokyo: National Institute of Population and Social Security Research: 15-42. (in Japanese)

Kaneko, T. and Shiraishi, N. (1998). Marriage lifetables: 1990, 1995. *Journal of Population Problems* 54: 36-45. (in Japanese)

Katō, A. (2005). Determinants of divorce: Family structure, social class, and economic growth. In: Japan Society for Family Sociology (ed.). *Cohort comparison analysis of family change in postwar Japan*. Tokyo: Japan Society for Family Sociology: 77-90. (in Japanese)

Kosugi, R. (2004). The transition from school to work in Japan: Understanding the increase in freeter and jobless youth. *Japan Labor Review* 1: 52-67.

Lebra, T.S. (1976). *Japanese patterns of behavior*. Honolulu, HI: University of Hawaii Press.

Lesthaeghe, R. and Surkyn, J. (1988). Cultural dynamics and economic theories of fertility change. *Population and Development Review* 14(1): 1-45. doi:10.2307/1972499.

Martin, S.P. (2006). Trends in marital dissolution by women's education in the United States. *Demographic Research* 15(20): 537-560. doi:10.4054/DemRes.2006.15.20.

Matysiak, A., Styrc, M., and Vignoli, D. (2011). The educational gradient in marital disruption: A meta-analysis of European longitudinal research. Florence, Italy: University of Florence, Department of Statistics (Working paper no. 2011/13).

Nagase, N. (2003). Standard and nonstandard work arrangements, pay differences, and choice of work by Japanese mothers. In: Houseman, S.N. and Osawa, M. (eds.). *Nonstandard work in developed economies: Causes and consequences*. Kalamazoo, MI: Upjohn Institute for Employment Research: 267-300.

Nakane, C. (1970). *Japanese society*. Berkeley, CA: University of California Press.

National Institute of Population and Social Security Research (2011). Latest demographic statistics. Tokyo: National Institute of Population and Social Security Research. (in Japanese)

OECD (2011). *Doing better for families*. Paris: OECD. doi:10.1787/9789264098732-en.

Ogawa, N. and Ermisch, J.F. (1994). Women's career development and divorce risk in Japan. *Labour* 8(2): 193-219. doi:10.1111/j.1467-9914.1994.tb00223.x.

Ono, H. (2006). Divorce in Japan: Why it happens, why it doesn't. In: Blomstrom, M. and LaCroix, S. (eds.). *Institutional change in Japan*. New York: Routledge: 221-236.

Ono, H. (2009). Husbands' and wives' education and divorce in the United States and Japan, 1946-2000. *Journal of Family History* 34(3): 292-322. doi:10.1177/0363199009337996.

Park, H. and Raymo, J.M. (in press). Divorce in Korea: Trends and educational differentials, 1991-2005. *Journal of Marriage and Family*.

Raley, R.K. and Bumpass, L.L. (2003). The topography of the divorce plateau: Levels and trends in union stability in the United States after 1980. *Demographic Research* 8(8): 245-260. doi:10.4054/DemRes.2003.8.8.

Raymo, J.M. (2003). Educational attainment and the transition to first marriage among Japanese women. *Demography* 40(1): 83-103. doi:10.1353/dem.2003.0008.

Raymo, J.M. (2008). Educational differentials in divorce in Japan: Evidence from multiple data sources. In: National Institute of Population and Social Security Research (ed.) *Demographic research on divorce and remarriage in the context of low fertility, vol. 2*. Tokyo: National Institute of Population and Social Security Research: 97-133.

Raymo, J.M., Iwasawa, M., and Bumpass, L. (2004). Marital dissolution in Japan: Recent trends and patterns. *Demographic Research* 11(14): 395-419. doi:10.4054/DemRes.2004.11.14.

Raymo, J.M., and Lim, S.-j. (2011). A new look at married women's labor force transitions in Japan. *Social Science Research* 40(2): 460-472. doi:10.1016/j.ssresearch.2010.10.005.

Raymo, J.M., Mencarini, L., Iwasawa, M., and Moriizumi, R. (2010). Intergenerational proximity and the fertility intentions of married women. *Asian Population Studies* 6(2): 193-214. doi:10.1080/17441730.2010.494445.

Sorensen, A. and McLanahan, S. (1987). Married women's economic dependency, 1940-1980. *American Journal of Sociology* 93(3): 659-687. doi:10.1086/228792.

Tsuya, N.O., Bumpass, L.L., Choe, M.K., and Rindfuss, R.R. (2005). Is the gender division of labour changing in Japan? *Asian Population Studies* 1(1): 47-67. doi:10.1080/17441730500125805.

Waldfogel, J., Higuchi, Y., and Abe, M. (1999). Family leave policies and women's retention after childbirth: Evidence from the United States, Britain, and Japan. *Journal of Population Economics* 12(4): 523-545. doi:10.1007/s001480050112.

Yodanis, C. (2005). Divorce culture and marital gender equality: A cross-national study. *Gender & Society* 19(5): 644-659. doi:10.1177/0891243205278166.

Yu, W. (2002). Jobs for mothers: Married women's labor force reentry and part-time, Temporary employment in Japan. *Sociological Forum* 17(3): 493-523.

Zhou, Y. (2008). Single mothers today: Increasing numbers, employment rates, and income. Tokyo: Japan Institute Labour Policy and Training (JILPT research report no. 101: 26-38). (in Japanese)