Trends in Assortative Mating by Sibship Position in Japan

September 23, 2004

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In studies of assortative mating, changing patterns of spouse selection are frequently interpreted as a reflection of societal change. For example, studies of racial and educational assortative mating have generated important insights about changes in the openness of society (e.g., Kalmijn 1991; Qian 1997 Smits, Ultee, Lammers 1998) as well as changes in women's economic roles in the family (Cancian and Sweeney 2004; Mare 1991). Other studies have focused on ways in which fertility trends impact patterns of spouse pairing via marriage squeezes (e.g., Guttentag and Secord 1983). However, few studies have considered ways in which long-term fertility decline may influence patterns of assortative mating by increasing the proportion of only-children or eldest sons and eldest daughters in the marriage market. The lack of attention to this issue perhaps reflects the limited substantive importance of sibship position in the U.S. and other Western societies. However, eldest child status remains strongly associated with social expectations and responsibilities in rapidly aging societies in East Asia. A careful examination of the role of changing marriage market composition with respect to sibship position may shed light on patterns of marriage formation in these societies and, by extension, shed light on observed differences in the pace and nature of change in marriage formation across rapidly aging, industrialized societies.

In this paper, we examine change across marriage cohorts in assortative mating with respect to eldest child status in Japan. The two overarching motivations for this focus are (a) potential change in the social meaning attached to eldest child status in Japan (and other East Asian societies) and (b) the effects of rapid fertility decline on the composition of the marriage market with respect to sibship position. To a far greater degree than in the U.S. and other western societies, sibship position has an important social meaning in Japan. The oldest son, in particular, is typically expected to take primary responsibility for family obligations and duties (e.g., Blood 1967). One of the most important "obligations" associated with eldest son status is the expectation that he and his family will coreside with and provide care to his parents. As in the U.S. and elsewhere, provision of elder care in Japan is largely performed by women, meaning that there are also important social meanings and obligations associated with the status of wife of eldest sons (*chōnan no yome*). Because parents are living longer as a result of declining mortality at older ages, the prospect of extended periods of physical care provision has increased. However, there is also substantial evidence (both anecdotal and empirical) that the desirability of marrying eldest sons and the associated potential caregiving obligations has declined over the past 20-30 years. At the same time, the marriage market is increasingly comprised of only children, eldest sons, and eldest daughters as a result of very low levels of fertility. Locating a spouse without potential competing obligations to parents has thus become numerically more difficult over time.

These changes in attitudes toward intergenerational coresidence and family obligations, along with changes in marriage market composition, may impact marriage behavior in a variety of ways. The increasing difficulty of locating a partner without competing family obligations (or the increasing difficulty of negotiating these competing obligations) may contribute to later marriage. Evidence that the relative risk of marriage for eldest sons coresiding with parents has decreased over time (Raymo 2000) is consistent with this scenario. These same difficulties may lead to an increase in the proportion of men and women who never marry and perhaps to an increasing reliance on arranged marriages. The importance of negotiating potentially competing family obligations may also be manifested in other dimensions of assortative mating. That is, less favorable pairings with respect to sibship position may be balanced by more favorable pairings with respect to other salient spouse selection criteria if one spouse forgoes obligations to own parents in exchange for a more desirable pairing on other dimensions. For example, marriages involving eldest daughters with no brothers and eldest sons may be increasingly characterized by educational heterogamy. Unfortunately, however, there is very little existing research to help us understand how shifts in marriage market composition associated with population aging impact marriage in societies where sibship position carries important social meanings and obligations. The analyses in this paper represent a first step towards filling this gap in the literature.

Research objectives

Our objectives are threefold. First, we seek to confirm that observed patterns of spouse pairing conform to the theoretically hypothesized ranking of desirability. That is, are the theoretically least desirable pairings actually the least common, net of population composition? Second, we examine change across marriage cohorts in the relative strength of different types of pairings by sibship position. Is the hypothesized decline in the likelihood of theoretically less desirable pairings confirmed by the data? Third, we evaluate hypotheses regarding the ways in which the likelihood of different sibship pairings may differ depending upon spouses' relative socioeconomic status. Do spouses appear to bargain by trading relatively more attractive characteristics for relatively more desirable sibship position pairings?

Data

Our analyses are based on pooled data from the Japanese National Fertility Surveys (JNFS) conducted in 1982, 1987, 1992, and 1997. These surveys provide information on age and age at marriage for nationally representative samples of married women age 18-35 in 1982 and 1987 and age 18-49 in 1992 and 1997. Importantly, these surveys also provide information on the sibship size and composition of respondents and their spouses. Pooling data from the four surveys results in a total sample of

33,523 women who married between 1947 and 1997. We classify respondents by the decade in which they married, their sibship position, and that of their spouses. We use a three-category measure of sibship position: only child, eldest child, and other. For women, only eldest daughters with no brothers are included in the "eldest child" category. Among women, the vast majority (86%) of the sample falls into the "other" category. Only 4% of the sample is an only child and 9% is an eldest daughter with no brothers. Among husbands, 4% are only children, 49% are eldest sons, and 47% have older brothers.

Brief summary of preliminary analyses

The distribution of marriages with respect to spouses' sibship position is summarized in table 1.

Table 1: Distribution of Marriages by Wife's and Husband's Sibship Position				
Wife's Sibship Position	**Husband's Sibship Position**			
	Only child	Eldest son	Other	Total
Only child	0.21	1.61	2.34	4.16
Eldest daughter (no brothers)	0.45	4.01	4.92	9.38
Other	3.78	43.05	39.62	86.46
Total	4.44	48.67	46.89	100

To examine the prevalence of different sibship pairings net of the marginal distributions of sibship position, we estimate the following log-linear model.

$$F_{ijk} = \tau_0 \tau_i^{W} \tau_j^{H} \tau_k^{C} \tau_{ik}^{WC} \tau_{jk}^{HC} \tau_{ij}^{WH}, \tag{1}$$

where F_{ijk} is the predicted number of marriages between women of sibship position i to men of sibship position j ($i, j = 1, 2, 3$) in cohort k (k = 1, 2, 3, 4). The association between wives' and husbands' sibship position, τ_{ij}^{WH}, is estimated using the following design matrix:

1	3	0
3	2	0
0	0	0

This pattern of association allows for a straightforward evaluation of our hypothesized ranking of the "attractiveness" of different combinations of sibship position. Net of marginal distributions we expect that pairings in the cells labeled 0 will be most common, pairings in the cell labeled 1, the least common, and pairings in the cells labeled 2 and 3 somewhere in between. Estimated coefficients for this pattern of association are as follows:

-0.11	-0.43*	0.00
-0.43*	-0.42*	0.00
0.00	0.00	0.00

All coefficients are negative, as expected. However, the magnitude of the coefficients suggests that only-child homogamy is no less common than marriages involving at least one spouse who is neither an only child nor an eldest child. Also, we see that there is very little difference between eldest child homogamy and pairings involving eldest children and only children. Both types of pairing are significantly less common than other types of marriage, net of marginal distributions.

We now turn our attention to change over time in spouse pairing by sibship position. The proportion of marriages in which husband and wife may have competing obligations to parents (i.e., marriages in which both are only children or eldest children) increased from 3% in the 1950s/1960s marriage cohort to 13% in the 1990s marriage cohort. This is expected given the large increase in the proportion of only children and eldest children in more recent marriage cohorts. The mean number of siblings was 2.2 for the 1950s/1960s marriage cohort but only 1.3 for men and women marrying in the 1990s. To evaluate the hypothesized change in spouse pairing over time, we extend model 1 by allowing the association between spouses' sibship position to vary across marriage cohort,

$$F_{ijk} = \tau_0 \tau_i^W \tau_j^H \tau_k^C \tau_{ik}^{WC} \tau_{jk}^{HC} \tau_{ij}^{WH} \tau_{ijk}^{WHC}. \tag{2}$$

This cohort interactive model fits significantly better than model 1 (a 25 point reduction in L^2 for 9 degrees of freedom).

Table 2: Estimated coefficients for association between spouse's sibship position, by marriage cohort

	Marriage Cohort			
Pairing Type*	1950s/1960s	1970s	1980s	1990s
0	0.00	0.00	0.00	0.00
1	-0.18	-0.28	-0.07	0.46
2	-0.64	-0.42	-0.38	-0.30
3	-0.82	-0.45	-0.39	0.05
*Pairing type numbers correspond to numbers in design matrix above.				

Net of the increasing proportions of only children and eldest children, marriages involving men and women with potentially competing family obligations have increased over time. In fact, only-child homogamy now appears to be more common, net of marginals, than the reference pairing of sons and daughters with older siblings/brothers.

These preliminary analyses thus provide some support for the notion that

marriages in which one partner is neither an only child nor an eldest child are more "desirable" than pairings in which both spouses have potentially competing family obligations. There is no evidence, however, that marriages in which both spouses are either only children or eldest children have become less common over time. In fact, these marriages have become increasingly common across marriage cohorts. In subsequent analyses, we will: (a) seek to confirm these preliminary findings using alternative representations of the association between spouses' sibship position, (b) conduct more careful examination of gender differences in pairing patterns, (c) examine whether patterns of pairing with respect to sibship position are increasingly related to tradeoffs on other dimensions of pairing (e.g., educational pairing), and, if possible, (d) examine similar data from societies with similar social meaning attached to sibship position (e.g., Korea, Taiwan) and societies where sibship position has less substantive meaning (e.g., the U.S.).

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