Japan Review, 1994, 5: 187-209

Determinants of First Marital Formation in Japan: Does the Sibling Configuration Matter?

KOJIMA, Hiroshi

Institute of Population Problems, Tokyo, Japan

(Received 16 July 1993, accepted 8 October 1993)

This study attempts to clarify the effects of sib size, birth order and the possession of older brothers, older sisters, younger brothers, or younger sisters on first marriage formation in Japan. Twelve sociological, demographic and psychological hypotheses are presented and examined with regard to their effects on three outcomes in each age segment: getting married through arranged marriage, getting married through love marriage and staying never-married.

P. Allison's discrete-time event-history analysis (using multinomial logit model) is applied to the merged data of never-married and first-married persons aged 18-34 from the 1982 national fertility survey conducted by the Institute of Population Problems in order to simultaneously examine the effects of sibling configuration on both the timing and the two mate selection methods of first marriage (first marriage probability by mate selection method) as well as the effects of interaction of a set of sibling configuration variables with another set, age, and prenuptial living arrangements. The results seem to support the Parental Control Hypothesis and the Acquaintance Opportunity Hypothesis for both sexes and the Normative Order Hypothesis for females. Other hypotheses including the Household Crowding Hypotheses and the Demand for Children Hypothesis also seem to have limited support.

Keywords: MARRIAGE TIMING, MATE SELECTION, SIBLING CONFIGURATION, SIB SIZE, BIRTH ORDER, FERTILITY SURVEY, EVENT-HISTORY ANALYSIS, LOGIT MODEL, PARENTAL CONTROL, ACQUAINTANCE OPPORTUNITY.

1. Introduction

There seems to be increasing interest among sociologists and demographers about the effects of sibling configuration on the social and demographic behaviors of younger generations, given the rapid changes in family size. However, as Eggebeen (1989: 6-7) has argued, more attention is paid to the effects of sib size and birth order and there has been little theoretical and empirical research on the effects of sibling sex composition. Exceptions may be for psychologically oriented research related to such issues as gender roles and parent-adolescent relationships. Recent studies dealing with the effects of sibling sex composition have considered educational attainment (*e.g.*, Hermalin *et al.*, 1982, Blake, 1989: 176-182, Powell and Steelman, 1990) and adolescent sexual behavior (*e.g.*, Hogan and Kitagawa, 1985, Rowe *et al.*, 1989, Rosenbaum and Kandel, 1990, Haurin and Mott, 1990).

Although both educational attainment and adolescent sexual behavior are closely related to marriage behavior including courtship among young adults, there are few multivariate analyses examining the effect of sibling configuration on marriage probabilities and mate selection processes. Some studies have included sib size as a determinant of age at marriage and have found a significant effect (*e.g.*, Marini, 1985, Michael and Tuma, 1985, Sorensen and Sorensen, 1985, Carmichael, 1988, Schellenkens, 1988, Axinn and Thornton, 1989, Cooney and Hogan, 1991), including studies on Japan by Hirosima (1983) and Hodge and Ogawa (1986), while other earlier studies did not (*e.g.*, Hogan, 1978, Moore and Hofferth, 1980, Waite and Spitze, 1981). The study by Anderton *et al.* (1987) has analyzed the effect of the number of younger siblings as well as sib size and has found their significant effects, suggesting the indirect effect of birth order.

Fewer studies have directly analyzed the effect of birth order on marriage timing (*e.g.*, Limanonda, 1987, Landale, 1989, Lin, 1989) and some of them have found their significant effects. Otani (1989) has analyzed the effect of eldest-child status (oldest brother, oldest daughter without any brothers, or only child) on the probability of marriage in Japan, but he could not find any significant effects.

The study of the age at marriage in Spain by Stycos (1983: 230) seems to have analyzed the effect of birth order by sex and sibling sex composition as well as sib size and birth order, but he could not find any significant effects. Similarly, Suzuki (1988) has analyzed the effects of siblings sex composition on the age at marriage in three Japanese cities, after failing to find any significant effects of sib size and birth order, and has found their weak effects. The recent studies by Lin (1989) and Luis *et al.* (1990) have analyzed the effect of sibling sex composition on age at marriage and have found their significant effects.

In spite of the recent increase in multivariate analyses of mate selection methods (*e.g.*, Cherlin and Chamratrithirong, 1988, Montgomery *et al.*, 1988, Malhotra Taj, 1989), including the study by Otani (1990) on Japan, there do not seem to be any studies incorporating the effects of sib size except Thornton *et al.* (1984).

The present author has been analyzing the determinants of living arrangements of young adults before and after marriage using Japanese national fertility survey data (Kojima, 1987, 1990a, 1990c) and has found strong significant effects of both sib size and eldest-child status on prenuptial and postnuptial coresidence with parents as well as the significant effects of age at marriage and mate selection methods on coresidence of newly married couples with parents. The research reported below is an extension of these multivariate analyses, together with his former bivariate analyses of marriage which found positive effects of husband's sib size on the age at marriage and the prevalence of *miai* ("arranged") marriage among the married couples (Kojima, 1983).

In this study, the discrete-time event-history analysis (Allison, 1982) is used to examine the effects of sibling configuration on both the timing and mate selection method of first marriage at the same time (the probability of first marriage by mate selection method) and to assess the interaction effects of age and sibling configuration (sib size, birth order and the possession of older brothers, younger brothers, older

sisters or younger sisters), following the suggestions by Marcotte (1990). The analysis of these interaction effects is desirable in the light of age dependencies of marriage probabilities (Wu, 1988) and its possible contribution to the study of marriage from the life course transition perspectives. This study also includes analyses of the interaction among the three sets of sibling configuration variables as well as the interaction with age and prenuptial living arrangements.

2. Hypotheses

The framework used for analyzing the determinants of first marriage formation is similar to the one for studying the timing and frequency of marriage developed in the authors' recent work (Kojima, 1990b), which in turn builds on the framework for studying the determinants of perinuptial coresidence devised in his earlier work (Kojima, 1988) as well as those of Dixon (1970) and the UN (1988) for studying the determinants of nuptiality and that of Bulatao and Lee (1983) for studying the determinants of fertility.

In this study, the dependent variable is not only the timing or probability of first marriage but also the method of first marriage which is either *miai* ("arranged") or *ren'ai* ("love") marriage. It is possible to consider the method of mate selection as an intermediate variable of age at marriage as Mason (1987: 722-723) did. But it may be better to consider that the marriage timing and the mate selection method are simultaneously determined in the marriage market because of the close interrelationship between them.

In Japan these days, those who find their future spouse through *ren'ai* tend to marry earlier, while those who have failed to find their future spouse through *ren'ai* and have become somewhat older tend to rely on *miai*. The large majority of *miai* marriages are not really arranged and usually refer to marriages which began with a formally arranged meeting by members of the older generation including relatives, bosses, and teachers as well as by matrimonial agencies. And *ren'ai* marriages include not only those which started with the meeting by themselves but also those which started with the informal introduction by the persons of the same or younger generation including siblings, colleagues and friends. But they will be referred to arranged and love marriages below for simplicity.

Although there is some competition between the two methods of mate selection as a cause of transition from the never-married state to the first-married state, especially among women whose period of stay in the marriage market tends to be shorter, there are some qualitative differences between the two, especially in interrelationship with age. Therefore, it would be better to distinguish between the three kinds of first marriage formation status in each age segment: getting first-married through arranged marriage during the age segment, getting first-married through love marriage during the age segment, and staying never-married through the age segment.

In this framework, the timing and the mate selection method of first marriage are influenced by the condition of the marriage market, which is, in turn, determined by three intervening variables: the supply of potential mates, the supply of economic

resources for marriage, and the demand for marriage. The first two constitute the "supply of marriage" in an abstract sense and the supply and the demand interact each other in the marriage market. These three intervening variables are, in turn, determined by macro-level attributes including demographic, political and economic conditions, social institutions, values and norms, the housing stock and the natural environment as well as the micro-level attributes including demographic, socio-economic, psychocultural, biological and housing characteristics which are affected by the macro-level attributes.

Each of these intervening variables is determined by a set of independent variables. Because the focus in this study is on sibling configuration, other demographic variables as well as socioeconomic and regional ones are treated as control variables. Each of the three sets of sibling configuration variables are hypothesized to affect first marital formation through each of the intervening variables. The following twelve hypotheses are considered for empirical examination in this study:

H1: the Parental Control Hypothesis
H2: the Acquaintance Opportunity Hypothesis
H3: the Heir Discrimination Hypothesis
H4: the Parental Resource Dilution Hypothesis
H5: the Heir Advantage Hypothesis
H6: the Normative Order Hypothesis
H7: the Heir Designation Avoidance Hypothesis
H8: the Parental Pressure Hypothesis
H9: the Household Crowding Hypotheses
H10: the Demand for Children Hypothesis
H11: the Birth Order Personality Hypotheses
H12: the Gender Role Socialization Hypothesis

Although some of these hypotheses can be grouped together as one hypothesis because the same set of variables have the same effects, they are separated because they pertain to the effects of each variable on first marriage formation through different intervening variables. Among them, H1 through H3 pertain to the effects of sibling configuration through the supply of potential mates, H4 and H5 pertain to their effects through the supply of economic resources for marriage, while H6 through H12 are associated with their effects through the demand for marriage.

H1 (the Parental Control Hypothesis) assumes that parents try to narrow their children's market for love marriages, especially early ones, by restricting their contact with the persons of the opposite sex in various ways (*e.g.*, Waite and Spitze, 1981: 683) ; and that they try to enlarge their market for arranged marriages, especially at the prime marriage age, by asking for matchmaking efforts from relatives and friends. Larger sib size is expected to have a negative effect on arranged marriage but a positive effect on love marriage because the effectiveness of control is negatively related to the number of children to be controlled.

H1 also assumes that oldest and youngest children are more susceptible to parental control because they tend to attract more parental attention, so that they are more likely to have an arranged marriage but less likely to have a love marriage. It

is hypothesized that those with older brothers are less likely to have an arranged marriage and more likely to have a love marriage because the eldest brother tends to attract more parental attention.

H2 (the Acquaintance Opportunity Hypothesis) assumes that siblings of the opposite sex enlarge the market for love marriages both by training a sibling for interacting with a person of the opposite sex and by informally introducing him/her to a person of the opposite sex from among their friends. Therefore, it is assumed that those from a larger family are more likely to have a love marriage due to their higher probability of having siblings of the opposite sex. Having siblings of the opposite sex (older or younger brothers for females and older or younger sisters for males) is hypothesized to have a positive effect on love marriage. H2 also assumes that older married siblings and their spouse are sources of matchmaking information, and so will have a positive effect on arranged marriage (*e.g.*, Lin, 1988: 22). For the same reason, the middle-born and youngest siblings are more likely to have an arranged match than the oldest.

H3 (the Heir Discrimination Hypothesis) assumes that potential heirs (only children, eldest sons and eldest daughters without brothers) are subject to discrimination in the marriage market because their spouse may have to live with and take care of their parents (*e.g.*, Blood, 1967: 50, Edwards, 1989: 65–66, Hirosima, 1983: 35). Therefore, those who are from smaller families or a male oldest sibling are expected to be less likely to marry while men with older brothers or women with older or younger brothers are more likely to marry.

H4 (the Parental Resource Dilution Hypothesis) may be an obvious one (*e.g.*, Schellenkens, 1988: 9, Pasternak, 1989: 114). It assumes that parental resources which could be used for the marriage of each child are negatively related to the number of children, so that marriage is economically more feasible for those from a smaller family than those from a larger family. It also assumes that parents can spend least for the marriage of middle-born children because parents may be in the worst financial situation, having already spent money for the marriage of older children and having also to save money for the marriage of younger children.

H5 (the Heir Advantage Hypothesis) is often discussed in relation to the primogeniture system of inheritance (*e.g.*, Commins, 1932: 488, Dore, 1953: 66, Walsh, 1973: 193, Landale, 1987: 372). Marriage is assumed to be most feasible for potential heirs because they often have economic security if they are self-employed and they do not have to set up a new household after marriage if they and their spouse do not mind living with their parents.

H6 (the Normative Order Hypothesis) assumes that it is normative for sisters to marry in their birth order because, if a younger sister marries before her older sister marries, the latter is suspected of having some defect (*e.g.*, Smith, 1973: 425, Bourdieu, 1976: 130n, Lin, 1988: 21). Suzuki (1988: 28) also suggests this hypothesis based on his finding of weak interaction effects between having older brothers and having younger sisters among males and those between having older brothers and older sisters among females. Therefore, women with younger sisters are expected to marry more often through arranged marriage (which is less time-consuming) so that they

will not block the marriage of younger sisters, while those with older sisters are not.

H7 (the Heir Designation Avoidance Hypothesis) is also relevant to women only. It assumes that those women without brothers try to leave home by love marriage before other sisters marry (because arranged marriage usually follows the normative order) since those who are left home the last are often designated as a potential heiress.

H8 (the Parental Pressure Hypothesis) assumes the same effect of each variable as H1, but the effects are mediated through the demand for marriage rather than the supply of potential mates. Parental pressure toward children to marry is expected to be stronger in small families, among oldest and youngest children and among oldest sons. It may be the strongest among oldest sons because parents may want to have grandchildren earlier so that family continuity is assured (Pasternak, 1979: 113).

H9 (the Household Crowding Hypotheses) consist of the Material Crowding Hypothesis (H9a) and the Gender Role Crowding Hypothesis (H9b). The former focuses on the crowding in terms of competition for material well-being including housing space as well as resources and services at the parental home while the latter focuses on the disharmony in terms of the gender division of labor. H9a assumes that those in larger families and oldest and middle-born children suffer from the competition for parental resources and have an incentive to leave home for marriage (*e.g.*, Michael and Tuma, 1985: 516, Axinn and Thornton, 1989: 14). H9b assumes that those who have only the same-sex siblings suffer from the disharmony in terms of their gender role at home and have more incentive to marry out while those with the mixed gender may not (*e.g.*, Burch, 1985).

H10 (the Demand for Children Hypothesis) is a demographic one. It assumes that those from a larger family have a taste for high fertility and are expected to marry early in order to have a larger family (*e.g.*, Anderton *et al.*, 1987).

H11 (the Birth Order Personality Hypotheses) are psychological ones consisting of the Anxiety-Affiliation Hypothesis (H11a) and the Norm Conformity Socialization Hypothesis (H11b). The former assumes that the oldest children tend to have more anxiety and marry early, by trying to affiliate themselves with something for reducing it (*e.g.*, Murdoch, 1966: 25). The latter assumes that the oldest child tends more to conform to norms and ideals and tries to marry at the prime age of marriage (*e.g.*, MacDonald, 1967: 657).

H12 (the Gender Role Socialization Hypothesis) assumes that those with the opposite-sex siblings are more likely to marry because of the more traditional gender-specific socialization and investment, especially when the same-sex siblings are the majority (*e.g.*, Rosenzweig, 1975: 279-280, Sandberg *et al.* 1987: 659). Therefore, men with sisters and women with brothers are expected to marry earlier.

These hypotheses are summarized in Figure 1. The signs in this figure show the expected direction of effects on either arranged marriage (A), love marriage (L) or any marriage (E) for males (M), females (F) or both sexes through each of the three intervening variables.

Figure 1. Hypotheses on the Effects of Sibling Configuration Variables through the Three Intervening Variables on First Marriage Formation Status of Young Adults in Japan

Independent Variables	*Intervening Variables*						
	Supply of Potential Mates			Supply of Economic Resources		Demand for Marriage	
	A	L	E	E	A	L	E
Sib Size							
Larger	−	+		−			−/+
	(H1)	(H1,2)		(H4)			(H8/9,10)
Smaller	+	−	−	+			+/−
	(H1)	(H1,2)	(H3)	(H4,5)			(H8/9,10)
Birth Order							
Oldest	+/−	−	−	+			+
	(H1/2)	(H1)	(H3)	(H4,5)			(H8,9,11)
Middle	−/+	+		−			−/+
	(H1/2)	(H1)		(H4)			(H8,11/9)
Youngest	+	−		+			+/−
	(H1,2)	(H1)		(H4)			(H8/9,11)
Possession							
Older Bro.	−/+	F+	+	−		F−	−/M+/F+
	(H1/2)	(H2)	(H3)	(H5)		(H7)	(H8/9/12)
Younger Bro.		F+				F−	M+/F+
		(H2)				(H7)	(H9/12)
Older Sis.	+	M+			F−		F+/M+
	(H2)	(H2)			(H6)		(H9/12)
Younger Sis.		M+			F+		F+/M+
		(H2)			(H6)		(H9/12)

Note: The signs show the expected direction of effects on arranged marriage (A), love marriage (L) or any first marriage (E) for male (M), female (F) or both sexes.

3. Data and Method

a. Data

This study uses a merged data set derived from the Eighth National Fertility Survey, Married Couple-Survey (NFS8M) and Single-Youth Survey (NFS8S) conducted by the Institute of Population Problems in Tokyo in 1982, in cooperation with the Department of Statistics and Information, Japan Ministry of Health and Welfare. The survey used a subsample of subjects (households) from the Department's Basic Survey of Health and Welfare Administration. Two-stage systematic sampling was applied to all the ordinary census enumeration districts in Japan. Both NFS8M and NFS8S used self-enumerated questionnaires.

NFS8M was conducted on couples with wives aged less than 50. Out of a sample of 8,853 couples, there were 8,433 (95.3 %) usable questionnaires. The married-couple data are converted into husband data and wife data in order to merge them with the single-youth data on an individual basis. The conversion is restricted to husbands and wives aged 34 or below from couples in which both spouses are married for the first time, leaving 2,489 first-married males and 3,496 first-married

females. The survey mainly asked questions on fertility and marriage as well as other demographic and socioeconomic characteristics of the spouses as well as their fathers.

NFS8S was conducted on single persons aged between 18 and 34. Out of a sample of 5,807 single persons, there were 4,987 (86 %) usable questionnaires. The non-response rate was higher than among married couples and seems to have been particularly high among those living alone. The analysis is limited to never-married persons, leaving 4,842 subjects (2,732 males and 2,110 females). The survey mainly asked questions on their attitudes toward marriage and childbearing, and on demographic and socioeconomic characteristics of respondents and their father.

Table 1 shows the proportion in each marital status by age and sex in the merged data set, consisting of 5,221 male and 5,606 female cases. The sex ratio (93.1) suggests under-enumeration among never-married males, probably those living alone. However, it dose not seem to be too skewed and its effect is somewhat mitigated because the analysis is conducted separately for each sex.

Most of the measures of demographic and socioeconomic characteristics are comparable in both surveys. However, those questions on the premarital characteristics of married persons are on usual status, while those for single persons are on actual (current) status. They include questions on living arrangements, urban-rural residence, and region of residence. There are other questions on current status for both single and married persons, which may also have other kinds of problems. But

Table 1. Marital Status of Young Adults by Age and Sex
(Percent)

Age	*Male*			*Female*		
	First-Married		Never-Married	First-Married		Never-Married
	Arranged	Love		Arranged	Love	
18	0.0	0.5	99.5	0.0	1.9	98.1
19	0.0	0.4	99.6	0.0	0.4	99.6
20	0.0	2.8	97.2	0.4	5.6	94.0
21	0.0	3.6	96.4	1.1	9.0	90.0
22	0.0	7.7	92.3	3.4	19.8	76.8
23	0.0	14.2	85.8	4.5	25.2	70.2
24	0.8	18.6	80.6	9.3	38.1	52.6
25	2.2	27.6	70.1	15.1	47.5	37.3
26	3.3	34.4	62.3	20.8	50.7	28.6
27	7.3	39.2	53.5	18.6	57.7	23.8
28	10.9	45.7	43.4	21.7	62.1	16.2
29	11.4	61.3	27.3	24.1	62.5	13.4
30	16.9	54.3	28.9	28.4	61.7	9.9
31	18.0	59.0	23.1	31.0	63.2	5.8
32	22.2	60.3	17.5	30.8	60.0	9.2
33	27.6	57.4	15.0	30.2	61.1	8.8
34	25.5	64.4	10.2	35.9	58.3	5.8
Total	10.7	37.0	52.3	18.4	44.0	37.6
N	559	1,930	2,732	1,032	2,464	2,110

there do not seem to be good ways to cope with these possible problems without losing information.

b. Method

To test the hypotheses proposed above, the discrete-time method was employed, using multinomial logit analysis. This is one way of conducting event-history analysis with multiple outcomes. It also allows the analysis of interaction effects of time (age). This method is discussed in detail in Allison (1982). Cheung (1984)

Figure 2. Definition of Variables Used in Analyses

Variables	Categories and Description*
Dependent	
First Marriage Formation Status	1. Getting first-married through arranged marriage during the age segment 2. Getting first-married through love marriage during the age segment 3. Staying never-married through the age segment
Independent	
Sib Size	1. One 2. Two 3. Three 4. Four or more
Birth Order	1. Oldest including only child 2. Youngest 3. Middle-born
Having Older Brothers	1. Having one or more older brothers 2. No older brothers
Having Younger Brothers	1. Having one or more younger brothers 2. No younger brothers
Having Older Sisters	1. Having one or more older sisters 2. No older sisters
Having Younger Sisters	1. Having one or more younger sisters 2. No younger sisters
Age	1. 18-19 2. 20-24 3. 30-34 4. 25-29
Prenuptial Living Arrangement	1. Premaritally (married) or currently (never-married) living with parents 2. Premaritally or currently living separately from parents
Education	1. Low (completed compulsory education only) 2. High (completed 2- or 4-year college) 3. Medium (completed senior high school)

Figure 2. (Continued)

Variables	Categories and Description*
Occupation (Male only)	1. Self-employed 2. Non-employed including students 3. Others
Father's Education	1. Low (completed compulsory education only) 2. High (completed college) 3. Medium (others)
Father's Occupation	1. Farmer 2. Other self-employed 3. Others
Urban-Rural Residence	1. Premaritally (married, subjective) or currently (never-married) in urban areas 2. Premaritally or currently in rural areas
Region	1. Premaritally (married) or currently (never-married) living in Tohoku or Hokuriku regions with higher prevalence of extended family households 2. Premaritally or currently living in Shikoku or Kyushu regions with lower prevalence 3. Others

Note: * The last category of each variable is omitted.

and Cooney and Hogan (1991) are the examples of discrete-time event-history analysis of marriage, but they use it for a single outcome of marriage.

In order to employ the discrete-time method for this study, the original observations were increased for the number of years at risk of first marriage (being never-married) for ages between 18 and the age immediately before the age at marriage for married persons and the age immediately before the current age for single persons. Each age from 18 to those upper limits is assigned to those increased observations for both single and married persons and the marital status of "never-married" is also assigned to those increased observations for each age for married persons. Then the current age of married persons in the original observations is changed to the age at marriage. Therefore, the unit of analysis is not the persons but the person-year (age segment). Other variables are not changed with age due to the lack of detailed information.

Multinomial logit analysis (the CATMOD procedure in the SAS package) is applied to this inflated and modified data set. It is most suitable for trichotomous dependent variables. The dependent variable is the first marriage formation status in an age segment consisting of the following three categories: getting first-married through arranged marriage during the age segment, getting first-married through love marriage during the age segment, and staying never-married through the age segment. For ease of computation, only categorical independent variables are used. The definition of variables is shown in Figure 2. In the CATMOD procedure, full-rank parameterization (effect coding) is used and the last category of each variable is

omitted because coefficients of all the categories of one variable sum up to zero.

Two models are analyzed for each sex to examine the effects of sibling configuration variables. Model 1 includes all the independent variables in Figure 2 while Model 2 includes only demographic variables (sibling configuration, age, and prenuptial living arrangements). Interaction effects of sibling configuration variables are examined using Model 2 for computational ease.

4. Results

a. Basic Model

Table 2 shows the results of discrete-time method, using multinomial logit analysis, for Model 1 (basic model) for determinants of first marriage formation status. The first three columns show the results for males and the last three show those for females. The dependent variable used in this procedure is the log-odds

Table 2. Results of Discrete-Time Method (Multinomial Logit Analysis) for Determinants of First Marriage Formation Status of Young Adults Aged 18–34: Model 1

Independent Variables	*Male*			*Female*		
	Arr. vs Nev.	Love vs Nev.	Arr. vs Love	Arr. vs Nev.	Love vs Nev.	Arr. vs Love
Constant						
	-4.745***	-3.402***	-1.343***	-3.611***	-2.841***	-.770***
	(.314)	(.112)	(.330)	(.132)	(.089)	(.154)
Sib Size						
1	.282	.047	.235	-.361*	-.309*	-.052
	(.255)	(.139)	(.281)	(.192)	(.129)	(.224)
2	-.119	-.175**	.056	-.008	.098*	-.107
	(.108)	(.059)	(.120)	(.079)	(.053)	(.092)
3	-.164	-.028	-.136	.152*	.150**	-.002
	(.112)	(.061)	(.124)	(.085)	(.057)	(.099)
Birth Order						
Oldest	.014	.054	-.040	-.011	.173*	-.184
	(.150)	(.083)	(.167)	(.112)	(.075)	(.129)
Youngest	-.001	.014	-.015	.083	-.131*	.214
	(.155)	(.087)	(.172)	(.112)	(.076)	(.131)
Possession						
Older	-.004	-.046	.042	-.051	.077*	-.128*
Brothers	(.085)	(.046)	(.094)	(.062)	(.041)	(.071)
Younger	.082	-.054	.136	.091	-.036	.126*
Brothers	(.092)	(.050)	(.102)	(.065)	(.045)	(.076)
Older	-.045	-.055	.010	-.109*	.051	-.159*
Sisters	(.085)	(.046)	(.094)	(.061)	(.040)	(.070)
Younger	-.130	-.033	-.097	.022	.013	.009
Sisters	(.088)	(.051)	(.099)	(.062)	(.044)	(.073)

Table 2. (Continued)

Independent Variables	*Male* Arr. vs Nev.	*Male* Love vs Nev.	*Male* Arr. vs Love	*Female* Arr. vs Nev.	*Female* Love vs Nev.	*Female* Arr. vs Love
Age						
18-19	-4.066***	-2.591***	-1.475*	-2.835***	-1.606***	-1.229***
	(.751)	(.160)	(.767)	(.209)	(.087)	(.225)
20-24	-.619*	.181**	-.801**	.458***	.517***	-.060
	(.270)	(.066)	(.277)	(.095)	(.060)	(.110)
30-34	2.630***	1.115***	1.515***	.741***	-.024	.765***
	(.268)	(.098)	(.283)	(.183)	(.152)	(.232)
Cores. with Parents Education						
Low	-.089	-.139***	.051	.165***	-.122***	.287***
	(.056)	(.029)	(.061)	(.049)	(.028)	(.055)
High	-.198*	-.152**	-.046	.273***	.233***	.050
	(.097)	(.056)	(.109)	(.072)	(.051)	(.085)
Occupation						
Self-Emp.	.277***	.082*	.196*	-.301***	-.383***	.082
	(.084)	(.047)	(.094)	(.063)	(.043)	(.074)
Non-Emp.	.631***	.191*	.441*	-	-	-
	(.158)	(.077)	(.173)			
Fa's Edu.						
Low	-.755**	-.358**	-.396	-	-	-
	(.281)	(.122)	(.303)			
High	-.089	-.060	-.029	-.066	-.015	-.050
	(.077)	(.041)	(.084)	(.054)	(.036)	(.062)
Fa's Occ.						
Farmer	.210*	.003	.208*	.217**	.034	.183*
	(.101)	(.057)	(.112)	(.073)	(.050)	(.085)
Self-Emp.	.267**	-.046	.314***	.332***	.069	.262***
	(.082)	(.048)	(.092)	(.059)	(.042)	(.069)
Urban	-.177*	.048	-.225*	-.169**	.000	-.170*
	(.087)	(.046)	(.096)	(.059)	(.039)	(.068)
Region						
Tohoku/ Hokuriku	.029	.237***	-.209**	-.079*	.218***	-.297***
	(.064)	(.038)	(.072)	(.041)	(.032)	(.050)
Shikoku/ Kyushu	.430***	.024	.406***	.301***	.058	.242**
	(.090)	(.058)	(.103)	(.063)	(.050)	(.077)
	-.172*	.022	-.194*	-.098	-.068	-.030
	(.098)	(.056)	(.110)	(.065)	(.047)	(.077)
-2Log Likelihood		5,812.85			6,173.72	
d.f.		11,212			9,392	
N (Person-years)		27,925			28,067	

Notes: * $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.
Standard error in parentheses.

(logit) of one first marriage formation status relative to another, independent of the third. The antilog of each coefficient represents the multiplicative effect of each variable or category on the relative odds. For example, the coefficient for the sib size of two in the second column is -.175, which means that a young male who are from the two-child family has .839 ($=e^{-.175}$) times as high odds as the average to get married through love marriage relative to staying never-married. The coefficients for omitted categories can be easily calculable because coefficients of all the categories of one variable sum up to zero.

The first column shows the effect of each variable or category on the contrast between getting married through arranged marriage and staying never-married (the A/N contrast or the probability of arranged marriage) among males, but none of the sibling configuration variables are significant. The second column shows their effects on the contrast between getting married through love marriage and staying never-married (the L/N contrast or the probability of love marriage), and only the sib size of two has a significant and negative effect. The third column shows their effects on the contrast between getting married through arranged marriage and getting married through love marriage (the A/L contrast), but none of sibling configuration variables are significant. The negative effect of the sib size of two on the L/N contrast is consistent with both H1 (the Parental Control Hypothesis) and H2 (the Acquaintance Opportunity Hypothesis).

On the other hand, much more significant categories are found for the results for females in the fourth through sixth columns. In the fourth column showing the effects on the A/N contrast, the sib size of one and three are weakly significant, suggesting the positive effect of sib size as a whole. Having older sisters also has a weakly significant and negative effect. In the fifth column showing the effects on the L/N contrast, sib size also has a significant and positive effect as a whole; being the oldest child has a weakly significant and positive effect while being the youngest child has a weakly significant and negative effect; and having older brothers has a weakly significant and negative effect. In the sixth column showing the effects on the A/L contrast, having older brothers and having older sisters have significant and negative effects while having younger brothers has a weakly significant and positive effect.

The positive effect of sib size on being married as a whole seems to support H9 (the Household Crowding Hypotheses) and H10 (the Demand for Children Hypothesis). The positive effect of being the oldest child and the negative effect of being the youngest child on love marriage do not specifically support any hypotheses, but they can be consistent with H6 (the Normative Order Hypothesis) and H7 (the Heir Designation Avoidance Hypothesis) with regard to sister-only families. The positive effect of having older brothers on love marriage and its negative effect on arranged marriage is consistent with H2 (the Acquaintance Opportunity Hypothesis), but the positive effect of having younger brothers on arranged marriage is not. The negative effect of having older sisters on arranged marriage seems to support H6 (the Normative Order Hypothesis). Among significant variables or categories, the sib size of one seems to have the largest effects: only daughters are about 30 % less likely

to be married than the average.

b. Models with Interaction

Table 3. Effects of Sibling Configuration Variables on First Marriage Formation Status of Young Adults Aged 18-34: Model 2

Independent Variables	*Male*			*Female*		
	Arr. vs Nev.	Love vs Nev.	Arr. vs Love	Arr. vs Nev.	Love vs Nev.	Arr. vs Love
Constant						
	-5.007***	-3.328***	-1.679***	-3.921***	-2.762***	-1.159***
	(.270)	(.077)	(.279)	(.115)	(.074)	(.133)
Sib Size						
1	.011	-.107	.118	-.377*	-.320**	-.057
	(.223)	(.124)	(.248)	(.180)	(.120)	(.210)
2	-.063	-.124*	.061	-.123*	.035	-.158*
	(.095)	(.053)	(.107)	(.075)	(.049)	(.087)
3	-.090	.036	-.126	.138*	.137**	.001
	(.100)	(.055)	(.111)	(.079)	(.052)	(.092)
Birth Order						
Oldest	.032	.115	-.083	-.042	.138*	-.180
	(.137)	(.076)	(.153)	(.104)	(.069)	(.120)
Youngest	.052	-.019	.070	.117	-.101	.218*
	(.140)	(.079)	(.156)	(.105)	(.070)	(.121)
Possession						
Older	.039	.053	-.014	-.022	.093*	-.115*
Brothers	(.077)	(.417)	(.085)	(.057)	(.038)	(.066)
Younger	.109	-.043	.152*	.119*	-.000	.119*
Brothers	(.082)	(.045)	(.091)	(.060)	(.041)	(.070)
Older	-.045	.006	-.051	-.093*	.067*	-.160*
Sisters	(.076)	(.042)	(.085)	(.055)	(.037)	(.064)
Younger	-.040	-.011	-.029	.041	.010	.031
Sisters	(.078)	(.046)	(.088)	(.058)	(.041)	(.068)
Age						
18-19	-4.176***	-2.524***	-1.652*	-2.836***	-1.521***	-1.315***
	(.748)	(.142)	(.762)	(.201)	(.079)	(.215)
20-24	-.533*	.220***	-.753**	.485***	.518***	-.032
	(.267)	(.060)	(.273)	(.088)	(.056)	(.103)
30-34	2.568***	1.020***	1.548***	.796***	-.035	.830***
	(.264)	(.089)	(.277)	(.163)	(.141)	(.210)
Cores. with Parents	-.065	-.194***	.129*	.152***	-.167***	.319***
	(.046)	(.025)	(.051)	(.041)	(.024)	(.046)
-2Log Likelihood		441.03			439.58	
d.f.		450			432	
N (Person-years)		38,605			33,213	

Notes: * $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.
Standard error in parentheses.

Table 3 presents the results of discrete-time method for Model 2 including only sibling configuration variables as independent variables and age and prenuptial living arrangement as control variables to be interacted with the former. Although the results are largely similar to those in Table 2, the effect of some variables changes partly because some effects of sibling configuration are captured by education and occupation (for males only) and partly because there are less cases with missing information.

Among males, the negative effect of sib size of two on the L/N contrast is still significant, but its significance level as well as magnitude is reduced. Having younger brothers comes to have a weakly significant and positive effect on the A/L contrast. This does not support any hypotheses, but it can be consistent with H2 (the Acquaintance Opportunity Hypothesis) with regard to brother-only families.

Among females, there are also changes. The positive effect of sib size of two on the L/N contrast becomes insignificant while its almost non-existent negative effects on the A/N and A/L contrasts become weakly significant. The negative effect of being the youngest child on the L/N contrast becomes insignificant, but its positive effect on the A/L contrast comes to be significant. The positive effect of having younger brothers on the A/N contrast comes to be significant. The consistently positive effect of having younger brothers on arranged marriage is difficult to interpret, but those never-married females with younger brothers may be more susceptible to parental pressure for lack of support from the same-sex siblings. The positive effect of having older sisters on the L/N contrast also becomes weakly significant, confirming the support for H6 (the Normative Order Hypothesis).

Three kinds of interaction effects are analyzed here for each sex based on Model 2. Firstly, the interaction effects of sibling configuration with age are examined because both the first marriage probability and the mate selection method depend largely on age. Secondly, the interaction effects of sibling configuration with prenuptial living arrangements with parents are examined because much of the effects of sibling as well as parents on marriage depends on the proximity with them. Thirdly, the interaction effects between each type of sibling configuration variables themselves are analyzed.

Interaction effects are examined by creating interaction variables from all the categories of one sibling configuration variable as a group and from age, coresidence or another sibling configuration variable. They are examined by adding each group of interaction variables to Model 2. However, a part of interaction variables created from categories of one variable are sometimes omitted from the inclusion in the model because of statistical reasons. For example, interaction variables for ages 18 -19 among males are sometimes omitted because there are only a limited number of teenagers married through arranged marriage. Some interaction variables created from categories of two sibling configuration variables which remove the main effect of one variable or category are also excluded. After adding each set of interaction variables, the difference with Model 2 in terms of -2 times log likelihood and degrees of freedom are calculated and the former is compared with a critical value from the table of chi-square distribution with the calculated degrees of freedom and

significance level of .05.

Table 4 presents the partial results with these interaction effects which are significantly different from Model 2 at .05 level. The coefficients for main effects are not presented here due to the space limitation. Model 3 shows the weakly significant and positive effect of the interaction between ages 30-34 and the sib size of two on the A/N contrast as well as the significant and negative effects of the interaction between ages 20-24 and the sib size of two and three on the L/N contrast. The latter negative effects are in contrast with the very significant and positive main effect of the ages 20-24. These interaction effects can be explained in terms of H1 (the Parental Control Hypothesis).

Model 4 shows the significant and positive effect of the interaction between coresidence with parents and having older brothers on the L/N contrast and its

Table 4. Interaction Effects of Sibling Configuration Variables on First Marriage Formation Status of Young Males Aged 18-34

Independent Variables	Arr. vs Nev.	Love vs Nev.	Arr. vs Love	-2L.L.	d.f.
Model 3				413.23	438
Ages 20-24	.139	-.167	.306	{27.80}	{12}
×1 Sib	(.278)	(.119)	(.299)		
Ages 20-24	-.221	-.202**	-.019		
×2 Sibs	(.174)	(.064)	(.183)		
Ages 20-24	.008	-.230***	.237		
×3 Sibs	(.155)	(.060)	(.165)		
Ages 30-34	.263	-.283	.546		
×1 Sib	(.285)	(.319)	(.412)		
Ages 30-34	.261*	.084	.178		
×2 Sibs	(.153)	(.137)	(.196)		
Ages 30-34	.226	.008	.218		
×3 Sibs	(.146)	(.124)	(.183)		
Model 4				433.42	448
Coresidence	-.041	.132**	-.173*	{7.61}	{2}
×Older Bro.	(.093)	(.049)	(.102)		
Model 5				431.24	446
2 Sibs	.160	.032	.128	{9.79}	{4}
×Y. Sis.	(.141)	(.078)	(.157)		
3 Sibs	.166	.160**	.005		
×Y. Sis.	(.113)	(.061)	(.126)		
Model 6				433.15	448
Youngest	.267*	.123*	.144	{7.88}	{2}
×Older Sis.	(.122)	(.066)	(.122)		

Notes: * $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.
Standard error in parentheses.
{ } : Difference with Model 2.

weakly significant and negative effect on the A/L contrast. These effects are in the opposite direction to the main effects of coresidence, but they seem to support H9 (the Household Crowding Hypotheses). Model 5 presents the significant and positive effect of interaction between the sib size of three and having younger sisters on the L/N contrast while the main effects are not significant. This seems to support H2 (the Acquaintance Opportunity Hypothesis). Model 6 shows the significant and positive effects of the interaction between being the youngest child and having older sisters on the A/N and L/N contrasts, which also seem to support H2.

Table 5 presents the partial results of models for females with interaction effects which are significantly different from Model 2 at .05 level. Model 3 shows the significant and positive effects of the interaction between ages 18-19 and having older sisters on the A/N, L/N and A/L contrasts. These positive effects are in contrast with the significant and negative main effects of ages 18-19. They are also in contrast with the negative main effects of having older sisters on the A/N and A/L contrasts. These results seem to support H2 (the Acquaintance Opportunity Hypothesis).

Model 4 presents the significant and positive effects of the interaction between the sib size of three and being the oldest child on the A/N and A/L contrasts. This is in harmony with the positive main effects of sib size of three on the A/N contrast. These results may be consistent with H6 (the Normative Order Hypothesis) with regard to sister-only families. Model 5 shows the significant and negative effects of the interaction between the sib size of three and being the youngest child on the A/N and A/L contrasts, which seem to be parallel with the results of Model 4. Theses effects are in contrast with the positive main effect of the sib size of three on the A/N contrast and the positive main effect of being the oldest child on the A/L contrast. These results may be also consistent with H6 with regard to sister-only families.

The results of Models 6 and 7 also seem to be parallel with each other. Model 6 presents the significant and negative effects of the interaction between the sib size of three and having older sisters on the A/N and A/L contrasts. The negative interaction effect on the A/N contrast is in contrast with the positive main effect of the sib size of three. Model 7 shows the significant and positive effect of the interaction between the sib size of three and having younger sisters on the A/N and A/L contrasts. The positive interaction effect on the A/N contrast is in harmony with the positive main effect of the sib size of three. The results of these two models seem to also support H6 (the Normative Order Hypothesis).

5. Discussion

The results discussed above seem to generally support H1 (the Parental Control Hypothesis) and H2 (the Acquaintance Opportunity Hypothesis) for both sexes and H6 (the Normative Order Hypothesis) for females. Other hypotheses including H9 (the Household Crowding Hypotheses) and H10 (the Demand for Children Hypothesis) also seem to have limited support. However, the results are not too specific. Those results may be somewhat different when different types of sibling configuration

Table 5. Interaction Effects of Sibling Configuration Variables on First Marriage Formation Status of Young Females Aged 18-34

Independent Variables	Arr. vs Nev.	Love vs Nev.	Arr. vs Love	-2L.L.	d.f.
Model 3				423.14	426
Ages 18-19	.836*	.187*	.649*	{16.44}	{4}
×Older Sis.	(.328)	(.096)	(.340)		
Ages 20-24	-.105	.033	-.138		
×Older Sis.	(.071)	(.054)	(.085)		
Ages 30-34	.028	.016	.011		
×Older Sis.	(.241)	(.194)	(.275)		
Model 4				425.39	428
2 Sibs	-.107	-.020	-.087	{14.19}	{4}
×Oldest	(.120)	(.083)	(.141)		
3 Sibs	.201*	-.099	.299**		
×Oldest	(.098)	(.069)	(.115)		
Model 5				423.71	428
2 Sibs	.122	-.013	.136	{15.87}	{4}
×Youngest	(.109)	(.074)	(.128)		
3 Sibs	-.231**	.062	-.293**		
×Youngest	(.089)	(.056)	(.102)		
Model 6				426.41	428
2 Sibs	-.029	-.059	.031	{13.17}	{4}
×Older Sis.	(.114)	(.078)	(.133)		
3 Sibs.	-.262**	.036	-.298**		
×Older Sis.	(.087)	(.057)	(.100)		
Model 7				421.62	428
2 Sibs	.137	-.017	.155	{17.96}	{4}
×Y. Sis.	(.108)	(.068)	(.124)		
3 Sibs	.327***	-.041	.367***		
×Y. Sis.	(.081)	(.054)	(.094)		

Notes: * $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.
Standard error in parentheses.
{ } : Difference with Model 2.

variables and interaction variables are used. They may be also different if individual interaction variables are added to Model 2. This is the first area of research to be done in the future, especially because of the relative lack of study dealing with the effects of sibling configuration on demographic and social behaviors, using a large data set.

Nevertheless, there are some comparable multivariate studies while they did not always have the similar results as those in this study. The study of married couples by Hirosima (1983) shows an unclear effect of sib size on the age at marriage but that

of Hodge and Ogawa (1986b) shows a positive effect of sib size on the age at marriage, which may not be consistent with the results of this study. Otani (1989) found that being the eldest son or the eldest daughter without brothers do not seem to be a significant determinant of the timing of first marriage, but the interaction between prenuptial coresidence with parents and having older brothers is found to have significant effects in this study. This suggests that the interaction between prenuptial coresidence and eldest-son status has significant effects, which is confirmed by the present author's preliminary proportional hazards (Cox regression) analysis of the probability of first marriage using the same data set (not presented here).

Limanonda (1987) found a higher probability for first-born women to marry in Thailand, which is consistent with the result of this study for women. Lin (1988) found for Taiwan that oldest sisters marry more rapidly than younger sisters and that the more older sisters a woman has, the slower is she likely to get married, which are not inconsistent with the results of this study. Luis *et al.* (1990) found that having younger sisters lowers the probability for women to marry in Hong Kong, but this study did not find any significant results for this variable. Thornton *et al.* (1984) show the positive effect of sib size on the parent-decided marriage among women in Taiwan, which may be consistent with the results for women in this study.

Secondly, the effect of parental fertility on the fertility of children through sibling configuration should be examined. Fertility transition might have been accelerated through marriage difficulties due to the increased proportion of eldest children and children from single-sex families among younger generations.

Finally, this study seems to support hypotheses with family demographic links. Moreover, the results of this study are to some extent similar to the results of studies of prenuptial and postuptial living arrangements (Kojima, 1987, 1990a, 1990c). Therefore, the relation of sibling configuration with living arrangements should be examined more in detail. From the household point of view, marriage strategies may be a way to correct the failures of fertility strategy, as Bourdieu (1970: 140) says.

Acknowledgements

This is a slightly modified version of the paper presented at the 1991 Annual Meeting of the American Sociological Association, August 23-27, Cincinnati (available through *Sociological Abstracts*). I would like to thank Dr. John Marcotte, the Urban Institute and Prof. Frances Goldscheider, Population Studies and Training Center, Brown University, as well as anonymous referees for *Japan Review*, for their helpful suggestions and comments.

References

Allison, Paul D. (1982): Discrete-Time Methods for the Analysis of Event Histories. In, Leinhardt, S. (ed.), *Sociological Methodology 1982*, Jossey-Bass, San Francisco, pp. 61-98.

Anderton, D., N.O. Tsuya, and L.L. Bean (1987): Intergenerational Transmission of

Relative Fertility and Life Course Patterns. *Demography*, **24**-4: 467-480.
Axinn, William G., and Arland Thornton (1989): The Influence of Parental Resources on the Timing of the Transition to Marriage. Paper presented at the 1989 PAA Annual Meeting, March 29-April 1, 1989, Baltimore.
Blake, Judith (1989): *Family Size and Achievement*, University of California Press, Berkeley.
Blood, Robert O., Jr. (1967): *Love Match and Arranged Marriage: A Tokyo-Detroit Comparison*, The Free Press, New York.
Bourdieu, Pierre (1976): Marriage Strategies as Strategies of Social Reproduction. In, Forster, R. and O. Ranum (eds.), *Family and Society: Selection from the Annales. Economies, Sociétés, Civilisations*, The Johns Hopkins University Press, Baltimore, pp. 117-144.
Bulatao, Rudolfo, and Ronald D. Lee (1983): A Framework for the Study of Fertility Determinants. In, Bulatao, R.A., and R.D. Lee (eds.), *Determinants of Fertility in Developing Countries*, Volume 1, Academic Press, New York, pp. 1-26.
Burch, Thomas K. (1985): Changing Age-Sex Roles and Household Crowding: A Theoretical Note. In, IUSSP, *International Population Conference, Florence, 1985*, Volume 3, IUSSP, Liege, pp. 253-261.
Carmichael, Gordon A. (1988): *With This Ring: First Marriage Patterns, Trends and Prospects in Australia*, Department of Demography, Australian National University, Canberra.
Cherlin, Andrew, and Apichat Chamratrithirong (1988): Variations in Marriage Patterns in Central Thailand. *Demography*, **25**-3: 337-353.
Cheung, Paul P.L. (1984): Early Life Events and the Transition to Marriage in Thailand: An Event-History Analysis of Marriage Process. In, Chamratrithirong, A. (ed.), *Perspectives on Thai Marriage*, Institute for Population and Social Research, Mahidol University, Bangkok, pp. 133-178.
Commins, W.D. (1932): The Marriage-Age of Oldest Sons. *Journal of Social Psychology*, **3**-4: 487-490.
Cooney, Teresa M., and Dennis P. Hogan (1991): Marriage in an Institutionalized Life Course: First Marriage among American Men in the Twentieth Century. *Journal of Marriage and the Family*, **53**-1: 178-190.
Dixon, Ruth B. (1970): The Social and Demographic Determinants of Marital Postponement and Celibacy: A Comparative Study. Unpublished Ph. D. dissertation, University of California, Berkeley.
Dore, R.P. (1953): Japanese Rural Fertility: Some Social and Economic Factors. *Population Studies*, **7**-1: 62-88.
Edwards, Walter (1989): *Modern Japan Through Its Weddings: Gender, Person and Society in Ritual Portrayal*, Stanford University Press, Stanford.
Eggebeen, David J. (1989): Changes in Sibling Configuration for American Preschool Children: 1940-1980. Paper presented at the 1989 PAA Annual Meeting, March 29-April 1, Baltimore.
Haurin, R. Jean, and Frank L. Mott (1989): Adolescent Sexual Activity in the Family Context: The Impact of Older Siblings. *Demography*, **27**-4: 537-557.

Hermalin, Albert I., Judith A. Seltzer, and Ching-Hsiang Lin (1982): Transitions in the Effect of Family Size on Female Educational Attainment: The Case of Taiwan. *Comparative Education Review*, **26**-2: 254-270.

Hirosima, Kiyosi (1983): Effects of Sib Size on Family Formation Processes. *Jinkogaku Kenkyu* [*Journal of Population Studies*], **6**: 31-40 (in Japanese).

Hodge, Robert W., and Naohiro Ogawa (1986a): Arranged Marriages, Assortative Mating and Achievement in Japan. *NUPRI Research Paper Series*, No.27.

Hodge, Robert W., and Naohiro Ogawa (1986b): Siblings and Family Size from Generation to Generation. *NUPRI Research Paper Series*, No. 29.

Hogan, Dennis P. (1978): The Effects of Demographic Factors, Family Background, and Early Job Achievement on Age at Marriage. *Demography*, **15**-2: 161-175.

Hogan, Dennis P., and Evelyn Kitagawa (1985): The Impact of Social Status, Family Structure, and Neighborhood on the Fertility of Black Adolescents. *American Journal of Sociology*, **90**-4: 825-855.

Kojima, Hiroshi (1983): Marriage. In, Institute of Population Problems (ed.), *Marriage and Childbearing of Japanese Couples: The First Report of the Eighth National Fertility Survey in 1982*, Institute of Population Problems, Tokyo, pp. 15-41 (in Japanese).

Kojima, Hiroshi (1987): Correlates of Postnuptial Coresidence in Japan. Paper presented at the IUSSP/INED Seminar on New Forms of Familial Life in MDC's, October 6-9, Vaucresson, France (*Institute of Population Problems Working Paper Series*, No. 4).

Kojima, Hiroshi (1988): Determinants of Perinuptial Parent-Child Coresidence in Japan: An Analytical Framework. Paper presented at the IUSSP/NIRA Seminar on Theories of Family Change, November 29-December 2, Tokyo (*Institute of Population Problems Working Paper Series*, No. 3) .

Kojima, Hiroshi (1990a): Coresidence of Young Adults with Their Parents in Japan: Do Sib Size and Birth Order Matter? *Jinkogaku Kenkyu* [*Journal of Population Studies*], **13**: 15-26.

Kojima, Hiroshi (1990b): Determinants of Marriage Postponement in Developed Societies: A Literature Review. *Kazoku Shakaigaku Kenkyu* [*Jounal of Family Sociology*], **2**: 10-23 (in Japanese).

Kojima, Hiroshi (1990c): Variables associées à la cohabitation des parents et leurs enfants mariés au Japon. In, Prioux, F. (éd.), *La famille dans les pays developpés: Permanences et changements*, INED/PUF, Paris, pp. 231-242.

Landale, Nancy S. (1989): Opportunity, Movement, and Marriage: U.S. Farm Sons at the Turn of the Century. *Journal of Family History*, **14**-4: 365-386.

Limanonda, Bhassorn (1987): Analysis of Thai Marriage: Attitudes and Behavior. *PSTC Working Paper Series*, 87-11.

Lin, Hui-Sheng (1988): The Determinants of the Timing of First Marriage for Women in Taiwan. Unpublished Ph.D.dissertation, University of Michigan.

Luis, Ping-Keung, Kwok-Leung Chan and Yee-Hung Choy (1990): The Transition to Marriage: The Case of Young Hong Kong Women. Paper presented at the Conference on Adolescent Sexuality in Asia, East-West Population Institute,

Honolulu, Hawaii, September 24-28.
MacDonald, A.P. (1967): Birth Order Effects in Marriage and Parenthood: Affiliation and Socialization. *Journal of Marriage and the Family*, **29**-4: 656-662.
Malhotra Taj, Anju (1989): Gender, Intergenerational Relations and Marriage Patterns in Indonesia. *Population Studies Center Research Reports*, No. 89-147.
Marcotte, John (1990): Personal communication, September.
Marini, Margaret Mooney (1985): Determinants of the Timing of Adult Role Entry. *Social Science Research*, **14**-4: 309-351.
Mason, Karen Oppenheim (1987): The Impact of Women's Social Position on Fertility in Developing Countries. *Sociological Forum* **2**-4: 718-745.
Michael, Robert T., and Nancy Brandon Tuma (1985): Entry into Marriage and Parenthood by Young Men and Women: The Influence of Family Background. *Demography*, **22**-4: 515-544.
Montgomery, Mark R., Paul P.L. Cheung and Donna B. Sulak (1988): Rates of Courtship and First Marriage in Thailand. *Population Studies*, **42**-3: 375-388.
Moore, Kristin A., and Sandra L. Hofferth (1980): Factors Affecting Early Family Formation: A Path Model. *Population and Environment*, **3**-1: 73-98.
Murdoch, Peter H.J. (1966): Birth Order and Age at Marriage. *British Journal of Social and Clinical Psychology*, **5**-1: 24-29.
Otani, Kenji (1989): Proportional Hazards Model Analysis of Marriage and First Birth Probabilities. *Jinko Mondai Kenkyu* [*Journal of Population Problems*], **45**-2: 46-50 (in Japanese).
Otani, Kenji (1990): Selected Time Distributions in the Process to Marriage and Pregnancy in Japan. *Jinko Mondai Kenkyu* [*Journal of Population Problems*], **45**-4: 1-16 (in Japanese).
Pasternak, Burton (1989): Age at Marriage in a Taiwanese Locality 1916-1945. *Journal of Family History*, **14**-2: 91-117.
Powell, Brian, and Lala Carr Steelman (1980): Beyond Sibship Size: Sibling Density, Sex Composition, and Educational Outcomes. *Social Forces*, **69**-1: 181-206.
Rosenbaum, Emily, and Denise Kandel (1990): Early Onset of Adolescent Sexual Behavior and Drug Involvement. *Journal of Marriage and the Family*, **52**-3: 783-798.
Rosenzweig, Mark R. (1975): Child Investment and Women. In, Lloyd,C.B. (ed.), *Sex, Discrimination, and the Division of Labor*, Columbia University Press, New York, pp. 267-291.
Rowe, David C., *et al.* (1989): Sexual Behavior and Nonsexual Deviance: A Sibling Study of Their Relationship. *Development Psychology*, **25**-1: 61-69.
Sandberg, David E., *et al.* (1987): The Influence of Individual and Family Characteristics upon Career Aspirations of Girls During Childhood and Adolescence. *Sex Roles*, **16**-11/12: 649-668.
Schellenkens, Jona (1988): Determinants of Marriage Patterns among Farmers and Agricultural Laborers in Two Eighteenth-Century Dutch Villages. *Population Studies Center Research Reports*, No. 88-136.
Smith, Daniel Scott (1973): Parental Power and Marriage Patterns: An Analysis of

Historical Trends in Hingham, Massachusetts. *Journal of Marriage and the Family*, **35**-3: 419-428.
Sorensen, Annemette, and Aage B. Sorensen (1986): An Event History Analysis of the Process of Entry into First Marriage. In, Kertzer, D.I. (ed.), *Current Perspectives on Aging and the Life Cycle*, Volume 2, JAI Press, Greenwich, pp. 53-71.
Stycos, J. Mayone (1983): The Timing of Spanish Marriages: A Socio-Statistical Study. *Population Studies*, **37**-2: 227-238.
Suzuki, Tohru (1988): Causal Analysis of Age at Marriage and the Unmarried in Sapporo, Sendai, and Fukuoka. *Kazoku Kenkyu Nempo* [*Annals of Family Studies*], **13**: 23-34 (in Japanese).
Thornton, Arland, Ming-Cheng Chang and Te-Hsiung Sun (1984): Social and Economic Change, Intergenerational Relationships, and Family Formation in Taiwan. *Demography*, **21**-4: 475-499.
United Nations (1988): *First Marriage: Patterns and Determinants*. United Nations, New York.
Waite, Linda J., and Glenna D. Spitze (1981): Young Women's Transition to Marriage. *Demography*, **18**-4: 681-695.
Walsh, Brendan M. (1973): Marital Status and Birth Order in a Sample of Dublin Males. *Journal of Biosocial Science*, **5**-2: 187-193.
Wu, Lawrence L. (1988): Age Dependencies in Rates of First Marriage. *CDE Working Paper*, 88-35.

初婚過程の規定要因　兄弟姉妹構成の影響を中心に

小島　宏

要旨：本研究は日本における兄弟姉妹数、出生順位、兄弟姉妹それぞれの有無の初婚過程に対する影響を明らかにすることを目的とする。年齢各歳における3種類の行動（見合結婚、恋愛結婚、未婚継続）に対するそれらの影響について12の社会学的、人口学的、心理学的な仮説を提示し、検討した。

P. Allisonの（多項ロジット・モデルを用いた）継続時間事象史分析を、人口問題研究所による1982年の全国（第8次）出産力調査に基づく18～34歳の未婚者と初婚者の統合データに適用し、初婚のタイミングと配偶者選択法の両者（配偶者選択法別初婚確率）に対する兄弟姉妹構成の影響を同時的に検討した。また、兄弟姉妹構成変数の間、それらと年齢の間、それらと未婚時居住形態の間の交絡効果も同様に検討された。分析の結果によれば、男女両方について「親コントロール仮説」と「知り合い機会仮説」が支持され、女子について「規範的順序仮説」が支持されるようである。また、「世帯混雑仮説」や「子供需要仮説」も部分的に支持されるようである。