

Material

Status and Influencing Factors of High School Students' Family Formation Willingness

Junko KAWAHARA*¹ and Kinuko SUGIURA*²

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Abstract

This study aimed to determine the status and influencing factors of willingness to marry and have children among students attending a high school in Okayama Prefecture. An anonymous, self-administered, questionnaire-based cross-sectional survey was conducted from June to July 2017. The questionnaire included demographics; marital and childbearing intentions; a "self-positive evaluation measurement tool" consisting of five items on "intimacy," 10 items on "motivation for accomplishment," 10 items on "self-respect," and two items each on "attitude toward love" and "gender equality awareness." Analysis of 948 responses showed that 81.5% and 69.6% of participants wanted to marry and have children, respectively: with 435 (46.1%) and 203 (21.5%) having clear and unclear timing, respectively. Meanwhile, 100 (10.6%) wanted to marry (unclear timing) and were unsure whether they wanted children. Logistic regression analysis indicated that determinants of "willingness to marry" were "attitude toward love" (OR=6.16, 95% CI 4.16-9.13, $p<0.001$) and "cooperation" (OR=2.26, 95% CI 1.44-3.55, $p<0.001$). The determinants of "willingness to have children" were "attitude toward love" (OR=4.28, 95% CI 3.10-5.92, $p<0.001$) and "gender equality awareness" (OR=1.30, 95% CI 3.10-5.92, $p<0.001$). These results suggest the importance of promoting high school students' positive attitudes toward relationships, cooperation, and gender equality awareness to improve their willingness to form a family.

1. Introduction

Japan's population began to decline after peaking in 2005, posing a major social problem. Therefore, various government-led measures are currently being implemented to curb the declining birthrate. The declining birthrate is attributed to an increase in the number of working women amidst continuing gender inequality in the family, the shift to nuclear families, the economic burden of childrearing, and changes in values, which have led to non-marriage or later marriage and childbearing¹⁾. According to the 15th Japanese National Fertility Survey (2015)²⁾, the percentage of never-married persons aged 18-34 years who intend to eventually marry remains high, at 85.7% for men and 89.3% for women. However, the percentage of never-married persons who had a partner they wanted to marry decreased from the previous survey to 16.0% for men and 24.5% for women (18.4% and 27.0% in 2010, respectively). Conversely, the proportion

*¹ The 8th Alumna, Midwifery Course, Graduate School, Kawasaki University of Medical Welfare

*² Department of Nursing, Faculty of Health and Science

Nagoya Women's University, 3-40 Shioji cho, Mizuho, Nagoya City, 467-8610, Japan

E-Mail: ksugiura@nagoya-wu.ac.jp

of never-married people who answered that they had no dating partner increased to 69.8% for men and 59.1% for women (61.4% and 49.5%, respectively, in the 2010 survey). This suggests that today's youth are less interested in romantic relationships. In a survey conducted by the Japan Sex Education Association's "Sexuality on Youth" white paper³⁾, high school boys' interest in girls is declining. Yamada⁴⁾, a family sociologist and chief researcher of the Cabinet Office's Research and Study Group on the Problem of Declining Birthrates, contends that modern youth are reluctant to form families due to economic instability amidst increasing non-regular employment and are also more hesitant to fall in love.

It is necessary to view the declining birthrate as a problem in the family formation process and to support young people, who will soon be responsible for society, to have their own views of marriage, family, and the household. In recent years, to curb the declining birthrates, local governments throughout Japan have been implementing parental readiness education for junior high and high school students⁵⁾. However, few previous studies⁶⁻⁹⁾ on the status and influencing factors of family formation willingness have focused on Japanese high school students. Therefore, this study aimed to determine the status and influencing factors of family formation willingness among students enrolled in high school. The participating high school was associated with one of the authors and was in Okayama Prefecture, Western Japan. A Japanese study demonstrated a total national fertility rate of 1.30 in 2021, with Tokyo having the lowest total fertility rate (1.13) and Okinawa the highest (1.86 by prefecture); meanwhile, Okayama Prefecture ranked 22nd among 47 prefectures with a total fertility rate of 1.47¹⁰⁾, representing the national median. The results obtained in this study can be used as primary data when considering future approaches for young people to alleviate the declining birth rate in Japan. The results obtained in this study can be used as primary data when considering future approaches for young people to alleviate the declining birth rate in Japan.

2. Conceptual framework

Studies have been conducted on predictors of parental readiness among 18- to early 30-year-olds. The common factors that increased parental readiness^{5,11-14)} were trust in familiar people, such as their fathers and mothers, and interactions with peers and other generations.

Saito et al.^{6-8,15-17)} defined the superordinate concept of the ability to nurture the next generation as "generativity" and, taking Erikson's proposition of adulthood, examined the relationship between personality maturity and the ability to nurture the next generation as measured by Erikson's Psychological Stage Inventory (EPSI). The original version of the EPSI was developed by Australian researchers Rosenthal et al.¹⁸⁾ and redeveloped into a Japanese version by Nakanishi and Sakata¹⁹⁾. The studies^{6-8,15-17)} examining the relationship between personality maturity as measured by EPSI and the ability to nurture the next generation showed a positive correlation between EPSI scores and items indicative of generativities.

This included the intention to marry and have children, views on childrearing, and views on generational succession. In addition, the group with higher EPSI scores showed richer interactions with others inside and outside the home.

The World Economic Forum's "The Global Gender Gap Report 2022"²⁰⁾ notes that fertility rates in developed countries increase as the gender gap decreases.

Conceptually, we hypothesized that "self-positive evaluation" would influence "willingness to form a family" and "attitude toward love." Moreover, there would be an association between "willingness to form a family" and "attitude toward love" and between "willingness to form a family" and "gender equality awareness" (Figure 1).

1) "Willingness to form a family" was defined as consisting of "willingness to marry" and "willingness to have children."

(1) "Willingness to marry" was defined as the intention to marry in the future.

(2) "Willingness to have children" was defined as the willingness to have children in the future.

2) "Gender equality awareness" was defined as the idea that housework, childcare, and work are the family's responsibilities, regardless of gender.

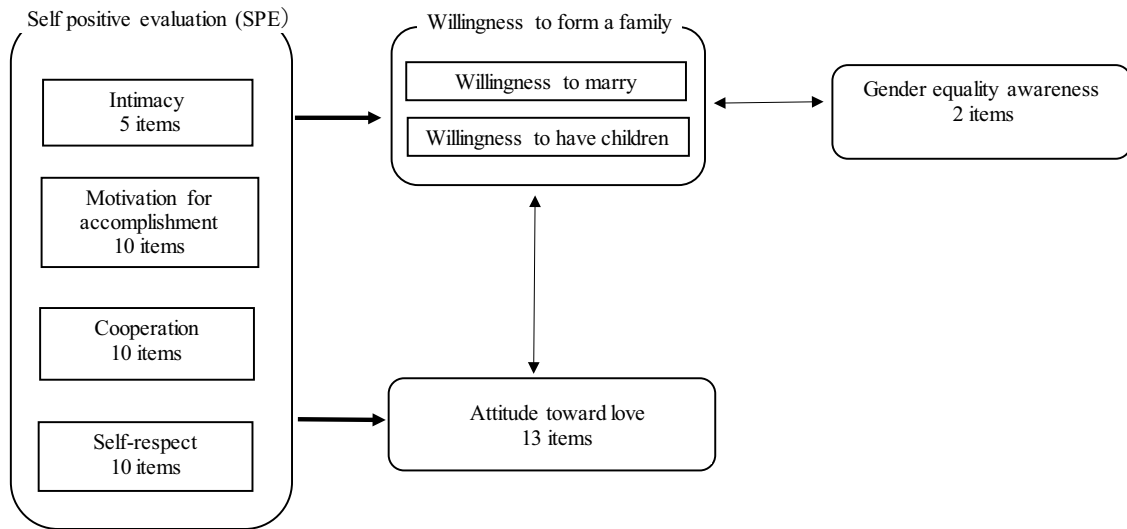


Figure 1 Conceptual framework

3. Methods

3.1 Participants and procedures

This was a cross-sectional survey using an anonymous, self-administered questionnaire. We obtained cooperation from a public high school in an urban suburb of Okayama Prefecture, where the second author was affiliated. The cooperating high school was a commercial high school where nearly 70% of the students were girls. Eighty percent of students find employment immediately after graduation. After obtaining consent from the high school principal, an anonymous self-report questionnaire was distributed to all the students by their homeroom or health teachers in June and July 2017. The purpose and methods of the study were explained to the participants in writing, including that anonymity was ensured, cooperation in the study was voluntary, the data obtained would be strictly controlled and statistically processed, the survey results would be published in a research paper, and the data would be stored for five years after study completion and then destroyed appropriately. After filling out the questionnaires in the classrooms, the participants submitted them to collection boxes placed in the classrooms.

3.2 Questionnaire

The design of this study followed that of the research conducted by Saito et al.⁸⁾. The questionnaire items collected data on (1) demographics (grade, age, and gender); (2) willingness to marry (whether participants were willing to marry and at what age); (3) willingness to have children (whether they were willing to have children and how many); (4) a rating questionnaire we termed the "self-positive evaluation measurement tool" (SPEMT); (5) 13 of the 16 items on "attitude toward love" used in the survey by Saito et al.⁹⁾; and (6) two items concerning "gender equality awareness" used in the survey by Saito et al.⁷⁾. The SPEMT comprises five items on "intimacy," 10 on "motivation for accomplishment," and 10 on "self-respect." Responses were recorded on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicated more positive results.

3.3 Data analysis

Descriptive statistics were used to determine the participants' demographics and the distribution of scores for each item. Pearson's chi-square test was used to compare the percentage of respondents. Histograms and Shapiro-Wilk tests were used to verify the normality of the mean scale scores. Since the normality of the response distribution was confirmed for all scale scores, a one-way analysis of variance (ANOVA) with Bonferroni-adjusted multiple post hoc comparisons was conducted to examine

the association between gender and SPEMT scores, the relation between SPE and "willingness to form a family," and the relation between "attitude toward love," "gender equality attitude," and "willingness to form a family." Bivariate logistic regression analyses (enter method) were conducted to examine the relationship between the predictors and outcome variables. We used R (version 4.2.1) and Microsoft Excel (2016) for bivariate logistic regression analysis and SPSS (version 23.0) for other statistical analyses. Each test was conducted at a significance level of $P < 0.05$.

4. Results

4.1 Response status, participants' demographics, "willingness to marry", and "willingness to have children"

Nine hundred and fifty-four questionnaires were distributed, and 951 (99.7% response rate) were collected. Of these, 948 were valid (99.4% valid response rate) and used for the final analysis. However, valid response numbers varied by analysis because some variables included nonresponses.

Female students accounted for 67.5% (640) of the sample, males for 28.7% (272), and 38% (36) of the respondents did not report their gender. Regarding age, there were almost equal numbers of 16- (318, 33.5%) and 17- (319, 33.6%) year-olds, followed by 15-year-olds (243, 25.6%). Meanwhile, 68 (7.2%) participants were aged 18 years (Table 1).

While 81.5% of the participants wanted to marry, and 69.6% wanted to have children, those who wanted to marry (clear timing) and have children were most prevalent (435, 46.1%). This was followed by those who wanted to marry (unclear timing) and have children (203, 21.5%) and those who wanted to marry (unclear timing) and did not know if they wanted children (100, 10.6%) (Table 2).

The relationships between participants' willingness to marry and their willingness to have children are given in Table 3. The percentage of respondents who answered "want to marry" or "do not know when but want to marry" was 81.3% for male students and 81.7% for female students. In contrast, 39 (6.1%) female students and 8 (3.0%) male students answered: "do not want to marry." Chi-square test results showed that gender was not correlated with willingness to marry; however, it was significantly linked with willingness to have children ($\chi^2=10.022$, $P=0.040$). Regarding the age at which the participants wanted to be married, ANOVA indicated a significant difference between male and female students ($F=3.453$, $P=0.032$), and multiple comparisons showed significantly higher mean values for males ($SE=0.211$, $P=0.027$).

Table 1 Demographics of participants

Variable	Frequency $n=948$	(%)
Gender		
Male	272	(28.7)
Female	640	(67.5)
No answer	36	(38.0)
Age (years)	16.23 ± 0.91 (mean ± SD) (range: 16-18)	
15	243	(25.6)
16	318	(33.5)
17	19	(33.6)
18	68	(7.2)
Grade		
1st	319	(33.6)
2nd	315	(33.2)
3rd	314	(33.1)

SD: standard deviation

Table 2 Cross table of "willingness to marry" and "willingness to have children" *n* (%)

Willingness to have children	Willingness to marry				Total
	Want (clear timing)	Want (unclear timing)	Do not want	Do not know	
Want	435 (46.1)	203 (21.5)	6 (0.6)	14 (1.5)	658 (69.7)
Do not want	5 (0.5)	8 (0.8)	30 (3.2)	9 (1.0)	52 (5.5)
Do not know	19 (2.0)	100 (10.6)	13 (1.4)	101 (10.7)	233 (24.7)
Total	459 (48.7)	311 (33.0)	49 (5.2)	124 (13.1)	

Table 3 Participants' "willingness to marry" and "willingness to have children"

Variable	Overall <i>n</i> (%) (<i>n</i> =948)	Male <i>n</i> (%) (<i>n</i> =272)	Female <i>n</i> (%) (<i>n</i> =640)	No answer <i>n</i> (%) (<i>n</i> =36)	<i>df</i>	χ^2 -value	<i>P</i> -value
Willingness to marry							
Want	773 (81.5)	221 (81.3)	523 (81.7)	29 (80.6)			
Want (clear timing)	460 (48.5)	126 (46.3)	316 (49.4)	18 (50.0)			
Want (unclear timing)	313 (33.0)	95 (34.9)	207 (32.3)	11 (30.6)			
Do not want	49 (5.17)	8 (2.9)	39 (6.1)	2 (5.6)	6	5.760	0.451
Do not know	124 (13.1)	41 (15.1)	78 (12.2)	5 (13.9)			
No response	2 (2.1)	2 (0.7)	0 (0.0)	0 (0.0)			
◆ Desired age for marriage	24.57 ± 1.99 [24.38-24.75] (range: 18-35)	24.96 ± 2.03 [24.60-25.32] (range: 18-30)	24.41 ± 1.96 [24.19-24.62] (range: 18-35)	24.67 ± 2.03 [24.38-24.75] (range: 20-29)	2 (between groups)	<i>F</i> -value	
					452 (within groups)	3.453	0.032 *
Willingness to have children							
Want	660 (69.6)	186 (68.4)	451 (70.5)	23 (63.9)			
Do not want	52 (5.5)	8 (2.9)	43 (6.7)	1 (2.8)	4	10.022	0.040 *
Do not know	233 (24.6)	78 (28.7)	143 (22.3)	12 (33.3)			
◆ Desired number of children	2.29 ± 0.68 [1.49-1.60] (range: 1-10)	2.39 ± 0.88 [1.50-1.71] (range: 1-10)	2.25 ± 0.59 [1.45-1.58] (range: 1-7)	2.25 ± 0.43 [1.37-2.02] (range: 2-3)		<i>F</i> -value	
1	19 (2.9)	3 (1.6)	16 (3.6)	0 (0.0)		1.502	0.223
1-2	1 (0.2)	1 (0.5)	0 (0.0)	0 (0.0)			
2	454 (69.4)	118 (64.8)	320 (71.1)	16 (72.7)			
2-3	10 (1.5)	7 (3.8)	2 (0.4)	1 (4.5)			
3	152 (23.2)	47 (25.8)	100 (22.2)	5 (22.7)			
4 and more	18 (2.8)	6 (3.3)	12 (2.7)	0 (0.0)			

**p*<0.05 ANOVA and *post-hoc* between group analyses with Bonferroni adjustment

◆ Values are mean ± standard deviation per item [95% confidence intervals].

4.2 Status of SPEMT and associations between SPEMT, gender, and "willingness to form a family"

Regardless of gender, the highest average score per item was "cooperation," followed by "intimacy." The third and fourth highest scores differed by gender, with males and non-respondents for gender ranking "self-respect" and "motivation for accomplishment," and vice versa for females. An ANOVA revealed a significant association between gender and "self-respect" only ($F=10.413$, $P<0.001$), and post hoc analysis showed that male students (2.55 ± 0.64) scored significantly higher than female students (2.34 ± 0.62 ; $P<0.001$) (Table 4).

Total scores on the SPEMT and all subscale scores were significantly associated with marital and childbearing intentions ($P<0.001$). Regarding willingness to marry, there were significant differences among all response groups on the "self-esteem" subscale, with higher scores for "want to marry (clear timing)," "want to marry (unclear timing)," "don't know," and "don't want to marry," in that order. The "want to marry (clear timing)" group scored significantly higher than the "do not know" and "do not want to marry" groups on the overall scale and all subscales. There were significant differences among all response groups in the overall score and all subscales for "willingness to have children," with significantly higher scores for "want to have children," "do not know," and "do not want to have children" (Table 5).

4.3 Association between "attitude toward love," "gender equality awareness," and "willingness to form a family"

There was a significant relationship between "willingness to form a family" and "attitude toward love" ($P<0.001$). There were significant differences among all response groups for "willingness to marry," with higher scores for "want to marry (clear timing)," "want to marry (unclear timing)," "do not know," and "do not want to marry," in that order. Regarding "willingness to have children," there were significant differences among all response groups except between "want to have children" and "do not want to have children." Significant associations were found between "willingness to form a family" and "gender equality awareness" ($P<0.001$). For the intention to marry, significant differences were found among all alternative groups except between "want to marry (unclear timing)" and "do not want to marry." Regarding "willingness to have children," there was a significant difference between all the groups except between "do not know" and "do not want to have children." The lowest scores were assigned to "do not know" for both "willingness to marry" and "willingness to have children," followed by "do not want." This differed from the lowest scores for "do not want" on the overall and subscales of the SPEMT and the "attitude toward love" scale (Table 6).

4.4 Determinants of "willingness to form a family"

Bivariate logistic regression analysis (enter method) revealed that the explanatory variables for willingness to marry were "attitude toward love" (OR=6.16, 95% CI 4.16-9.13, $p<0.001$) and "cooperation" (OR=2.26, 95% CI 1.44-3.55, $p<0.001$), and for willingness to have children, the explanatory variables were "attitude toward love" (OR=4.28, 95% CI 3.10-5.92, $p<0.001$) and "gender equality awareness" (OR=1.30, 95% CI 3.10-5.92, $p<0.001$). Variance inflation factor (VIF) was less than 2.0 for all explanatory variables, and no multicollinearity was observed. The area under the curves (AUC) were 0.846 for "willingness to marry" and 0.778 for "willingness to have children" (Table 7).

5. Discussion

5.1 Participants' attributes, "willingness to marry", and "willingness to have children"

At the high school that cooperated in this study, students studied business-related subjects, and 80% become employed immediately after graduation. Currently, 83.8% of high school students in Japan enroll in higher educational institutions (universities, junior colleges, and vocational schools¹⁰). Hence, high school students who attend higher education institutions may be older than 24-25 years. An increase in the number of young Japanese people in non-regular employment has been noted as one of the factors influencing the increase of unmarried persons and late marriages.^{4,21} When this study was conducted in 2017, before the COVID-19 pandemic, the employment situation for high school students was favorable.

Table 4 Gender comparison of mean scores per-item on SPENTscore and sub-scale score

	Overall	Male	Female	No answer	df	F-value	P-value
Total	3.84 ± 0.49	3.87 ± 0.54 [3.80-3.93]	3.80 ± 0.93 [3.77-3.84]	3.83 ± 0.41 [3.69-3.97]	2 (between groups)	1.484	0.227
Intimacy	3.65 ± 0.60	3.68 ± 0.64 [3.60-3.75]	3.63 ± 0.59 [3.58-3.68]	3.72 ± 0.51 [3.55-3.90]	916 (within groups) 2 (between groups) 937 (within groups)	0.791	0.454
Motivation for accomplishment	3.48 ± 0.66	3.56 ± 0.69 [3.47-3.64]	3.46 ± 0.65 [3.41-3.51]	3.43 ± 0.65 [3.21-3.65]	2 (between groups)	2.154	0.117
Cooperation	4.23 ± 0.51	4.19 ± 0.56 [4.12-4.25]	4.24 ± 0.49 [4.20-4.28]	4.23 ± 0.38 [4.10-4.36]	936 (within groups) 2 (between groups)	1.112	0.329
Self-respect	3.49 ± 0.61	3.61 ± 0.63 [3.54-3.69]	3.44 ± 0.60 [3.39-3.49]	3.53 ± 0.45 [3.37-3.68]	937 (within groups) 2 (between groups) 935 (within groups)	7.671	<0.001 *

* $P < 0.001$ ANOVA and *post-hoc* between group analyses with Bonferroni adjustment
Values are mean ± standard deviation per item [95% confidence intervals].

Table 5 Association between SPE and "willingness to form a family"

Willingness to marry	Overall	Want (clear timing)	Want (unclear timing)	Do not want	Do not know	df	F-value	P-value
Total	3.84 ± 0.49	3.95 ± 0.45 [3.91-4.00]	3.82 ± 0.45 [3.78-3.88]	3.35 ± 0.51 [3.20-3.50]	3.52 ± 0.50 [3.43-3.61]	3 (between groups) 913 (within groups)	46.563	<0.001 ***
Intimacy	3.65 ± 0.60	3.81 ± 0.57 [3.76-3.86]	3.62 ± 0.54 [3.56-3.68]	3.19 ± 0.74 [2.98-3.40]	3.30 ± 0.55 [3.20-3.40]	3 (between groups) 934 (within groups)	37.977	<0.001 ***
Motivation for accomplishment	3.48 ± 0.66	3.59 ± 0.63 [3.53-3.65]	3.48 ± 0.61 [3.41-3.55]	3.13 ± 0.88 [2.88-3.39]	3.23 ± 0.66 [3.11-3.35]	3 (between groups) 935 (within groups)	15.483	<0.001 ***
Cooperation	4.23 ± 0.51	4.32 ± 0.46 [4.28-4.36]	4.27 ± 0.46 [4.22-4.32]	3.70 ± 0.56 [3.54-3.87]	3.97 ± 0.60 [3.87-4.08]	3 (between groups) 933 (within groups)	36.259	<0.001 ***
Self-respect	3.49 ± 0.61	3.55 ± 0.61 [3.50-3.61]	3.38 ± 0.58 [3.32-3.45]	2.95 ± 0.70 [2.75-3.15]	3.08 ± 0.57 [2.98-3.19]	3 (between groups) 932 (within groups)	30.550	<0.001 ***
Willingness to have children		Want	Do not want	Do not know				
Total	3.84 ± 0.49	3.92 ± 0.45 [3.89-3.96]	3.33 ± 0.56 [3.18-3.49]	3.66 ± 0.47 [3.60-3.73]		2 (between groups) 913 (within groups)	55.976	<0.001 ***
Intimacy	3.65 ± 0.60	3.76 ± 0.58 [3.72-3.81]	3.07 ± 0.66 [2.89-3.26]	3.45 ± 0.54 [3.38-3.52]		2 (between groups) 934 (within groups)	52.450	<0.001 ***
Motivation for accomplishment	3.48 ± 0.66	3.57 ± 0.63 [3.52-3.62]	3.03 ± 0.91 [2.77-3.28]	3.35 ± 0.60 [3.27-3.43]		2 (between groups) 935 (within groups)	23.463	<0.001 ***
Cooperation	4.23 ± 0.51	4.31 ± 0.46 [4.28-4.35]	3.81 ± 0.56 [3.66-3.96]	4.09 ± 0.57 [4.01-4.16]		2 (between groups) 933 (within groups)	37.720	<0.001 ***
Self-respect	3.49 ± 0.61	3.50 ± 0.60 [3.46-3.55]	2.92 ± 0.74 [2.72-3.13]	3.25 ± 0.59 [3.17-3.32]		2 (between groups) 932 (within groups)	32.475	<0.001 ***

***P<0.001 ANOVA and *post-hoc* between group analyses with Bonferroni adjustment

**P<0.005 *post-hoc* between group analyses with Bonferroni adjustment

Values are presented as mean ± standard deviation per item [95% confidence intervals].

Table 6 Association between "attitude toward love," "gender equality attitude," and "willingness to form a family"

	Want (clear timing)	Want (unclear timing)	Do not want	Do not know	<i>df</i>	<i>F</i> -value	<i>P</i> -value
Willingness to marry							
Attitude toward love	3.13 ± 0.67	3.40 ± 0.59 [3.35-3.45]	2.18 ± 0.58 [2.01-2.35]	2.63 ± 0.54 [2.53-2.72]	3 (between groups)	107.197	<0.001 ***
		***	***		934 (within groups)		
Gender role view	4.03 ± 0.77	3.98 ± 0.73 [3.90-4.06]	3.84 ± 0.88 [3.58-4.09]	3.73 ± 0.77 [3.60-3.87]	3 (between groups)	107.197	<0.001 ***
		*	*		940 (within groups)		
Willingness to have children							
Attitude toward love	3.13 ± 0.67	3.32 ± 0.60 [3.28-3.37]	2.22 ± 0.67 [2.04-2.41]	2.81 ± 0.60 [2.74-2.89]	2 (between groups)	124.274	<0.001 ***
		***	***		934 (within groups)		
Gender role view	4.03 ± 0.77	4.13 ± 0.74 [4.08-4.19]	3.87 ± 0.82 [3.64-4.09]	3.79 ± 0.76 [3.98-4.08]	3 (between groups)	13.101	<0.001 ***
		*	*		940 (within groups)		

****P*<0.001 ANOVA and *post-hoc* between group analyses with Bonferroni adjustment

***p*<0.01 *post-hoc* between group analyses with Bonferroni adjustment

**p*<0.05 *post-hoc* between group analyses with Bonferroni adjustment

Values are presented as mean ± standard deviation per item [95% confidence intervals].

Table 7 Determinants of "willingness to form a family"

	Odds ratio	95% CI	P-value	VIF	AUC
Explanatory variables for "willingness to marry"					
Gender ^a	0.93	0.63-1.37	0.72	1.02	
Age (years)	1.01	0.82-1.26	0.90	1.04	
Intimacy	1.22	0.79-1.89	0.38	1.54	
Motivation for accomplishment	0.84	0.58-1.21	0.34	1.47	0.846
Cooperation	2.26	1.44-3.55	<0.001 **	1.35	
Self-respect	1.31	0.83-2.09	0.25	1.73	
Attitude toward love	6.16	4.16-9.13	<0.001 **	1.14	
Gender role view	1.11	0.85-1.45	0.43	1.08	
Explanatory variables for "willingness to have children"					
Gender ^a	0.92	0.64-1.31	0.46	1.02	
Age (years)	1.07	0.80-1.25	0.64	1.04	
Intimacy	1.34	0.93-1.93	0.12	1.63	
Motivation for accomplishment	0.95	0.70-1.30	0.75	1.53	0.778
Cooperation	1.36	0.92-2.00	0.12	1.45	
Self-respect	0.92	0.63-1.35	0.67	1.90	
Attitude toward love	4.27	3.09-5.90	<0.001 **	1.26	
Gender role view	1.30	1.03-1.63	0.03 *	1.08	

AUC: area under the curve

CI: confidence interval

VIF: variance inflation factor

a: Female coded 0, male coded 1

*Statistically significant at P-value <0.05

**Statistically significant at P-value <0.001

With the subsequent economic downturn due to the COVID-19 pandemic, the Ukraine war, a weak yen, and inflation, the percentage of respondents who intend to marry and want to have children may be lower than that reflected in the results of this survey.

In this survey, 81.5% and 69.6% of the respondents expressed a desire to marry and have children, respectively. Compared to the high school students in a survey conducted by the Ministry of Health, Labor, and Welfare (MHLW) in 2016¹⁰, 73.5% and 70.0% of respondents were willing to marry, and have children, respectively. This indicates that participants in this survey were highly motivated to marry, and their willingness to have children was at a national average level. Furthermore, regarding the combination of willingness to marry and willingness to have a child, a higher percentage of the respondents indicated that they "want to marry and have a baby" (67.6%), "do not know whether to marry and have a baby" (10.7%), "do not want to marry but want to have children" (0.6%), "don't know if I will marry but want children" (1.5%), and "don't want to marry or have children" (3.2%). These ranges were 0.5%-3.2% lower than the national survey values (68.1%, 12.5%, 1.1%, 4.4%, and 6.4%, respectively). Conversely, the value for "do not want to marry or have children" (1.3%) was only 0.3% higher than that in the national survey¹⁰ (1.0%).

A survey conducted by the MHLW¹⁰⁾ on approximately 20,000 middle and high school students in 2016 reported an average desired age of marriage of 25 years. Thus, both surveys had a common age of approximately 25 years old. The average age of first marriage in 2019 was 31.2 years for men and 29.6 years for women.²⁾ Many junior high and high school students set their desired age of marriage at approximately 25 years; however, the actual age of marriage has been delayed due to higher education and lower employment levels.

The significantly higher desired age of marriage for men versus women is consistent with the gender differences in the actual age at first marriage²⁾. Nevertheless, it has been noted that men tend to marry women of the same age in recent years²⁾. The significantly lower percentage of gender-nonrespondents wishing to have children is consistent with Saito et al.'s report that acceptance of masculinity and femininity was linked with higher generativity⁶⁾.

The predominant number of children wanted by participants in this study, regardless of gender, was two, followed by three, which is the same as in other studies^{9,15)}. Japan's total fertility rate in 2021 was 1.30¹⁶⁾, indicating that young people were not having the desired number of children.

5.2 Participants' self-positive evaluation

The highest score in both Saito et al.'s 2011 survey⁸⁾ of first- and second-year high school students in Tokyo and the present survey was "cooperativeness." However, participants in the current survey had higher scores (4.23 ± 0.51 and 3.93 ± 0.81 , respectively). The second highest was "motivation for accomplishment" (3.63 ± 0.51) in Saito et al.'s study⁸⁾, whereas it was "intimacy" in the present study. The third highest score was "self-respect" (3.48 ± 0.48 and 3.49 ± 0.61 , respectively) in both Saito et al.'s⁸⁾ and the present study. The highest score in Saito et al.'s 2011 survey⁸⁾ of first- and second-year high school students in Tokyo and the current survey was "cooperation." However, participants in this survey had higher scores (4.23 ± 0.51 and 3.93 ± 0.81 , respectively). The second highest was "motivation for accomplishment" (3.63 ± 0.51) in Saito et al.'s study⁸⁾, whereas it was "intimacy" in the present study. The third highest score was "self-respect" (3.48 ± 0.48 and 3.49 ± 0.61 , respectively) in both Saito et al.'s⁸⁾ and the present study. Participants in this study had higher self-evaluations of "cooperation" and "intimacy" than Saito et al.'s participants⁸⁾. Notably, modern young people are constantly connected to others and care about their relationships because of the rapid spread of smartphones and social networking systems^{22,23)}. This is a common theme in the results of this survey.

The "self-respect" score was significantly higher for boys than for girls. This may be related to the fact that the cooperating high school in this study was active in sports club activities, with boys achieving excellent results in athletic competitions, and that the number of boys was lower than that of girls. In Yoshikawa and Adachi's survey²⁴⁾, club activities were associated with the desire to marry and raise children, possibly because striving for a common goal with students from different grades can improve communication skills. Saito et al.⁸⁾ showed that the group with higher EPSI scores had higher stress tolerance, more positive attitudes toward child-rearing, and a lower propensity to abuse. They concluded that there was a relationship between personality maturity and the ability to nurture the next generation. In addition, those who considered communication with the opposite sex troublesome in middle and high school tended to avoid marriage in their 20s and 30s²⁾. The same was true in the present study, with "intimacy," "motivation for accomplishment," "cooperation," "self-respect," "attitude toward love," and "gender equality awareness" all being significantly correlated with "willingness to form a family" ($p < 0.001$).

5.3 Determinants of "willingness to form a family"

Two determinants were extracted for "willingness to marry" and "willingness to have children" - "attitude toward love" was the most influential determinant in both. The eighth national survey of sexual behavior among youth³⁾ conducted by the Japanese Association for Sex Education showed a decline in interest in sexual matters among male and female high school students. From 1981 to 1999, more than

90% of boys and nearly 80% of girls were interested in sexual matters; however, since 2005, there has been a significant decline in both sexes, to approximately 79% of boys and 45% of girls in the 2017 survey. Negative perceptions of sex were noted as contributing factors. Today, in Japan, smartphones and personal computers provide easy access to a vast amount of information on distorted sexuality. According to a survey by the Ministry of Internal Affairs and Communications²⁵⁾, smartphones are frequently used for social media and video viewing, and the average time spent on them is increasing. Meanwhile, real-life human relationships have been increasingly reported to be declining²⁶⁾.

Human rights-based sex education is standard worldwide²⁷⁾. The six areas of human relations values, attitudes, and skills; culture; society; human rights; sexual behavior; and sexual and reproductive health were taught according to the level of understanding²⁸⁾. In Japan, however, very little time is spent on sex education in schools, and the content mainly concerns bodily changes, birth, contraception, and the prevention of sexually transmitted diseases²⁹⁾. Due to recent surges in the number of incidents wherein children have become victims or perpetrators of sexual crimes and sexual violence, including pornography and dating domestic violence, the Ministry of Education, Culture, Sports, Science and Technology (MeXT) launched "Safety education for life"³⁰⁾ in June 2020. This program provides teaching materials and conducts educational activities. In October 2021, the MEXT also issued "Education on sexuality in schools,"³⁰⁾ which includes the need to adopt appropriate attitudes and behaviors related to sexuality, such as respect for the opposite sex and coping with sexual information.

Another determinant of marital desire was "cooperation," and another determinant of "willingness to have children" was "gender equality awareness," which is consistent with another study²⁾. Those willing to work, do housework, and raise children in cooperation with their partners, regardless of gender, are highly motivated to raise children. Human relationships and gender equality awareness are not cultivated only in school education but are also affected by the social environment, including the attitudes, words, and actions of adults in daily life. Therefore, it is essential for children to witness adults in their homes and communities, as well as in educational settings, have a gender equality awareness and build cooperative relationships with others.

6. Conclusion

We investigated the willingness to form a family and its determinants among high school students attending a commercial high school in Okayama Prefecture, Japan. The results suggest the importance of promoting positive attitudes toward relationships, cooperation, and gender equality awareness.

Limitation

A limitation of this study was that the participants were students from one commercial high school in Okayama Prefecture, by association with one of the authors. The fact that 70% of the students were girls and 80% were employed immediately after graduation cannot be said to reflect high school students in Japan, thus limiting the interpretation of the results.

Conflicts of interest

None to declare.

Ethical approval

Approval (16-072) from the Ethics Committee of Kawasaki University of Medical Welfare was obtained before the survey was conducted.

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