

# The effects of workplace psychosocial factors on whether Japanese dual-earner couples with preschool children have additional children: a prospective study

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**Abstract:** This study explored the effect of workplace psychosocial factors (job demand, job control, and workplace social support) on dual-earner couples in Japan having additional children, using a prospective study design. We conducted a 2-year prospective cohort study with 103 dual-earner couples with preschool children in Japan, as part of the Tokyo Work–Family Interface Study II. We used multivariable logistic regression analyses to evaluate the prospective association of job strain (categorized into low-strain job, active job, passive job, and strain job groups) and workplace social support (high and low) with couples having additional children during the follow-up period, adjusting for age, for men and women separately. Men in the active job group (i.e., with high job demands and high job control) had a significantly higher odds ratio (OR) of having additional children during the follow-up period, after controlling for age (OR 9.07, 95% confidence interval: 1.27–64.85). No significant association between any workplace psychosocial factor and having additional children was confirmed among women. Having an active job may have a positive influence on having additional children among men in dual-earner couples.

**Key words:** Additional children, Fertility intention, Japan, Psychosocial factor, Workplace

## Introduction

Worldwide, Japan has one of the lowest total fertility

rates (TFR), leading to projections of rapid population aging and decline<sup>1</sup>). Although there was a “baby boom” from 1971–1974, the TFR continued to decrease. The Japanese government implemented full-scale measures to address the problem from the 1995 fiscal year<sup>2</sup>). The TFR has recently increased slightly, to approximately 1.3–1.4, although this remains lower than the replacement level.

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The trend of having fewer children per family has not changed recently<sup>1,3</sup>.

Various factors at the individual and/or couple (micro-), social relationships and social networks (meso-), and cultural and societal (macro-) levels may be associated with the fertility intentions of men and women in dual-earner couples<sup>4</sup>. At the micro-level, these may include partner's fertility intentions<sup>5</sup>, the sex-based division of domestic labor between partners<sup>6</sup>, and the opportunity cost of having children<sup>7</sup>. At the meso-level, social interactions<sup>8</sup>, place of residence<sup>9</sup>, and social capital<sup>10</sup> may be important, along with economic<sup>11</sup> and unemployment trends<sup>12</sup> and policy measures<sup>13</sup> at the macro-level.

Workplace psychosocial factors are considered a meso-level factor that may potentially affect fertility intentions. Previous studies have shown that job demand and job control are relevant and important in predicting work–family conflict<sup>14</sup>. Some studies have indicated that work–family conflict may be associated with fertility intention<sup>15</sup>. However, the evidence of a direct association between workplace psychosocial factors and fertility intention is limited. Only one study indicated that higher levels of job control were associated with a woman's intention to have a second child<sup>16</sup>.

Most previous studies have used fertility intentions as an outcome, and few have explored actual childbearing. This study considered the effects of workplace psychosocial factors (job demand, job control, and workplace social support) on having additional children, in a prospective study of dual-earner couples with preschool children in Japan.

## Methods

### *Participants and procedures*

This study is part of the Tokyo Work–Family Interface Study (TWIN) II, a large-scale cohort study that started in 2011. Details of the TWIN II study sample have been published elsewhere<sup>17</sup>. The TWIN study aimed to examine intra-individual (spillover) and inter-individual (crossover) processes of well-being among dual-earner couples with preschool children in Setagaya Ward, Tokyo, Japan. All TWIN I participants<sup>18</sup> were invited to participate in TWIN II (N=321 families). We also approached all day-care centers (N=22) in another ward, Meguro, with the permission of the ward day-care division. Details of the research plan and consent forms were sent to the principals of all day-care centers. All centers agreed to participate and distributed the research plan and consent forms to parents. After

checking the signed consent forms from participating parents, we sent questionnaires to their addresses (N=357 families). Questionnaires were distributed to all participating parents in Setagaya and Meguro wards (N=678 families) in 2011. In total, 413 families responded to the questionnaire (response rate 70.5%). Follow-up questionnaires were distributed in 2012 and 2013, with 137 responses received (follow-up rate 33.2%).

### *Outcome measures (having additional children)*

The TWIN study asked respondents how many children they had. We constructed a binary variable of having additional children by allocating a value of 1 to families with at least one additional child in 2012 or 2013, and 0 to those with no change in the number of children in 2012 and 2013.

### *Workplace psychosocial factors*

Workplace psychosocial factors were defined according to either a job demand–control<sup>19</sup> or demand–control–support model<sup>20</sup>. Job demand, job control, and workplace social support were measured using the Brief Job Stress Questionnaire (BJSQ)<sup>21</sup>. The job demand scale comprises six items measured on a 4-point scale (score range from 6–24), with a higher score indicating a greater workload. Job control was measured with three items on the same 4-point scale (score range from 3–12), with a higher score indicating greater job control and more opportunities to participate in workplace decision-making. Both supervisor and coworker support were measured on three-item scales, with scores ranging from 3–12. The sum of the supervisor and coworker support scales (range 6–24) was used as a proxy for total workplace social support, with a higher score indicating better workplace relationships. There were high correlations between the two aspects of support (men:  $r=0.49$ , women:  $r=0.53$ ). To avoid multicollinearity, we combined the two subscales into an overall workplace support score. The BJSQ scales have been shown to have acceptable levels of internal consistency, reliability, and factor-based validity<sup>21</sup>. In this sample, the Cronbach's alpha coefficients for job demand were 0.75 (men) and 0.78 (women); for job control were 0.77 (men) and 0.74 (women); and for workplace social support were 0.81 (men) and 0.84 (women). The scores for job demand and job control were categorized using the median: job demand (low: 3–9, high: 10–12), job control (low: 3–9, high: 10–12). The two categorical variables (job demand and job control) were used to determine a four-category job strain variable corresponding to Karasek's  $2 \times 2$  model

**Table 1. Comparison of frequencies (and percentages) of demographic characteristics and study variables between men and women (N=103)**

	Men				<i>p</i> <sup>a</sup>	Women				
	Not having additional children (N=85)		Having additional children (N=18)			Not having additional children (N=85)		Having additional children (N=18)		
	N	(%)	N	(%)		N	(%)	N	(%)	
<b>Age</b>										
<29	3	(60.0)	2	(40.0)	0.16	1	(50.0)	1	(50.0)	0.10
30–39	45	(78.9)	12	(21.1)		50	(78.1)	14	(21.9)	
40–49	35	(92.1)	3	(7.9)		34	(91.9)	3	(8.1)	
>50	2	(66.7)	1	(33.3)		0	(0.0)	0	(0.0)	
<b>Occupation</b>										
Management	17	(89.5)	2	(10.5)	0.38	2	(100)	0	(0.0)	0.51
Non-management	68	(81.0)	16	(19.0)		83	(82.2)	18	(17.8)	
<b>Employment contract</b>										
Administrator and regular employee	74	(83.1)	15	(16.9)	0.46	60	(78.9)	16	(21.1)	0.11
Non-regular employee	11	(78.6)	3	(21.4)		25	(92.6)	2	(7.4)	
<b>Weekly working hours</b>										
40 hours or less	25	(80.6)	6	(19.4)	0.74	67	(81.7)	15	(18.3)	0.67
More than 40 hours	60	(83.3)	12	(16.7)		18	(85.7)	3	(14.3)	
<b>Job characteristics category</b>										
Low strain	20	(87.0)	3	(13.0)	0.08	12	(80.0)	3	(20.0)	0.79
Active job	6	(54.5)	5	(45.5)		5	(71.4)	2	(28.6)	
Passive job	41	(85.4)	7	(14.6)		52	(85.2)	9	(14.8)	
Strain job	18	(85.7)	3	(14.3)		16	(80.0)	4	(20.0)	
<b>Workplace social support</b>										
Low (6–16)	53	(82.8)	11	(17.2)	0.92	46	(80.7)	11	(19.3)	0.59
High (17–24)	32	(82.1)	7	(17.9)		39	(84.8)	7	(15.2)	
<b>Yearly household income</b>										
10,000,000 JPY or less	40	(76.9)	12	(23.1)	0.13	40	(76.9)	12	(23.1)	0.13
More than 10,000,000 JPY	45	(88.2)	6	(11.8)		45	(88.2)	6	(11.8)	
<b>Number of children</b>										
One	28	(68.3)	13	(31.7)	<0.01	28	(68.3)	13	(31.7)	<0.01
More than two	57	(91.9)	5	(8.1)		57	(91.9)	5	(8.1)	

<sup>a</sup> Chi-square test.

of job demand–control. A four-category job strain variable was defined in the previous studies<sup>19, 22</sup>. Low job demand and high job control represented a low-strain job (reference category), high job demand and high job control represented an active job, low job demand and low job control represented a passive job, and high job demand and low job control represented a strain job. To investigate statistical associations between workplace psychosocial factors and having additional children, multiple logistic regression analyses were conducted by grouping participants into four groups by job strain, and two groups by the median of workplace social support (low: 6–16, high: 17–24).

#### Demographic factors

Demographic factors, included age, occupation, type of employment contract, working hours, annual household income, and number of children. Please note that age, occupation, type of employment contract and working hours were assessed based on the individual (men and women), whereas annual familial income and the number of children were assessed on family unit. Occupation was divided into two groups based on the International Standard Classification of Occupations<sup>23</sup>: management and non-management. Type of employment contract was classified as administrator and regular employee, and non-regular employee. Weekly working hours were classified as 40 hours or less, and more than 40 hours. Annual house-

hold income was expressed as a categorical variable with two groups: 10 million JPY (equivalent to 90,000 USD as at March 2016) or less, and more than 10 million JPY. The number of children was divided into two groups: one child and two or more children.

*Statistical analysis*

Chi-square tests were performed to investigate the association between psychosocial factors and demographic variables and having additional children. Logistic regression adjusted by age was used to examine potential associations between workplace factors and the study outcome (having additional children). Statistical analyses were performed with SPSS (IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY, USA). A two-tailed *p* value of 0.05 was considered significant, unless otherwise indicated.

**Results**

Table 1 shows participants’ demographic characteristics by whether or not the couple had additional children. In total, 17.5% of working couples reported that they had additional children during the follow-up period. There were no significant differences in the studied variables for either men or women in the groups with and without additional children. Working couples with only one child at baseline were more likely to have additional children than those who already had two or more children.

Table 2 describes the statistical associations of the four-category job strain variable, and workplace social support with having additional children for both men and women in the age-adjusted model. Men with an active job at baseline had a significantly higher odds ratio (OR) of having additional children during the follow-up period (OR 9.07, 95% confidence interval [CI] 1.27–64.85). No significant association between the four-category job strain variable and having additional children was confirmed among women. Workplace social support at baseline was not significantly associated with having additional children during the follow-up period for either men or women.

**Discussion**

This study investigated the potential associations between workplace psychosocial factors and having additional children among dual-earner couples with preschool children in Japan. Several potential determinants of having additional children were identified. Men with high job

**Table 2. Association between the four-category job strain variable and workplace social support, and having additional children (N=103)**

(No. of cases among those who have additional children=18)	OR <sup>b</sup>	95%CI	<i>p</i> -value
<b>Men</b>			
Job characteristics category			
Low strain	ref		
Active job	9.07	(1.27–64.85)	0.03
Passive job	1.05	(0.23– 4.89)	0.95
Strain job	1.18	(0.17– 7.99)	0.87
Workplace support			
Low (6–16)	ref		
High (17–24)	0.92	(0.28– 3.00)	0.89
<b>Women</b>			
Job characteristics category			
Low strain	ref		
Active job	2.20	(0.18–26.19)	0.53
Passive job	0.58	(0.12– 2.86)	0.50
Strain job	1.29	(0.20– 8.38)	0.79
Workplace support			
Low (6–16)	ref		
High (17–24)	0.89	(0.27– 2.95)	0.85

OR: Odds Ratio; CI: Confidence Interval.

<sup>b</sup> Adjusted for age of men and women.

demands and high job control (an active job) had a significantly higher OR of having additional children during the follow-up period. To our knowledge, this is the first study to demonstrate a significant prospective association between workplace psychosocial factors and having additional children.

For men, having an active job was associated with having additional children. This result might be explained by the positive effect of an active job on proactive attitudes toward work. Active jobs are associated with a feeling of mastery which might reduce the psychophysiological impact of stressful work situations<sup>22</sup>. Proactive attitudes toward work have previously been found to be associated with a positive work–family spillover<sup>18, 24</sup>, which might in turn lead to having additional children.

For women, an active job was not associated with having additional children. Japanese women tend to bear the majority of the responsibility for child care and housekeeping, even when employed outside the home. Female workers spend an average of 165 minutes per day on child care and housekeeping, compared with 32 minutes per day for men<sup>25</sup>. In such conditions, demand may be too high to be compensated by the positive effect of an active job among women.

We also found no significant association between work-

place social support and having additional children for either men or women. Workplace social support may relate to having additional children via reduced work–family conflict. Work–family conflict has adverse effects on fertility intention<sup>15, 16, 26–28</sup>, so specific work–family support rather than general support provided by an employee’s supervisor may help an employee cope with work–family conflict<sup>29, 30</sup>. However, this study suggested that general workplace social support was not linked to having additional children among dual-earner couples. Another possible explanation might be that general workplace social support is less influential than obtaining social support through placing a child in a day-care center or receiving other support. Therefore, specific work–family support might be more effective than general workplace social support.

This study had some limitations. First, the target participants were dual-earner couples with preschool children. Intention to become a parent is commonly viewed as a process governed by considerations that differ from the decision to have an additional child<sup>31</sup>. The generalizability of this result to dual-earner couples without children therefore requires caution. Second, Setagaya and Meguro are two of the most affluent areas in Japan. The average income was high (more than 10,000,000 JPY). The generalizability of this result to rural areas or couples with a relatively lower income requires caution. Third, although we tried to capture a population-based sample, participants may not be a representative sample given the relatively low response and follow-up rates. The sample size was also small. The low response rate and small sample size might therefore have affected our results. More studies with larger sample sizes and higher response rates are needed to validate our findings. Fourth, owing to the low number of additional children, workplace psychosocial factors could not be divided into three groups, and we could not confirm the dose-response of the association. Fifth, the follow-up period for the study was 2 years with three time points, which limits the interpretation of the findings. Finally, unmeasured confounding is likely to be substantial. Important contextual factors missing from this study include fertility intention, pregnancy status, family composition, sources of child care support, age of existing children, company size, and company arrangements for maternity leave.

#### *Practical implications*

Our findings suggest that workplace psychosocial factors influenced whether or not dual-earner couples had

additional children. Previous studies suggested that both organizations and supervisors should support employee work life balance by improving work control and workplace social support<sup>32–34</sup>. Improving the working environment is a possible first step to encourage families to have additional children. Moreover, supervisors can act as role models in this respect by work style that places importance on work-life balance. This is particularly important in a country like Japan, because those who are in charge of changing long working culture in Japan are often work addicts themselves<sup>35</sup>.

Employers may be interested in meso-level such as not only institutional family support (e.g., child care leave and shorter working hours) but also organizational management, policy and design. Supporting a greater percentage of families and improving sex integration in organizations have been coupled with a corresponding trend toward changes in macro-level policies such as greater organizational adoption of formal family supportive policies<sup>1</sup>. In a previous study to improve physicians’ work conditions, hospital management and strategies could be used to change the work environment<sup>36</sup>. In other study, organizational change could affect the work environment<sup>37</sup>. Occupational health professionals may consider working environment as a factor related to employees’ attitudes not only toward their health but also toward having additional children.

## **Conclusions**

Active jobs may have a positive influence on decisions to have additional children among men in dual-earner couples.

## **Ethics Review and Approval**

The study aims and protocol were reviewed by the Research Ethics Committee of the Graduate School of Medicine and Faculty of Medicine, The University of Tokyo (No. 3245-(3)).

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