

博士論文

Longitudinal effects of work-family spillover on psychological distress among Japanese dual-earner couples with preschool children: Dyadic data analysis using multilevel models

(未就学児を持つ共働き夫婦における

ワーク・ライフ・バランスの精神的健康影響：

夫婦間の関連を考慮したマルチレベルモデルによる検討)

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ABSTRACT

Objective: As contemporary Japanese society has greater numbers of dual-earner couples, the need to balance work and family roles has become an important issue. In the field of occupational health in Japan, it is crucially indispensable to accumulate the evidence of the effects of work and family roles on mental health. To obtain a better understanding of the work-family spillover in the context of occupational health, existing studies show that it is significant to investigate longitudinal effects of both negative and positive sides of spillover on workers' mental health. Therefore, the purpose of the present study is to examine the effects of multiple types of work-family spillover on mental health using longitudinal data.

Methods: Of the 2,992 dual-earner parents with preschool children in Tokyo who answered the baseline survey (T1), 1,466 agreed to participate in the one-year follow-up (T2). Among 963 participants who answered the T2 survey (follow-up rate: 65.7%), valid responses from 894 parents (394 males, 500 females) were analyzed. Multiple regression analyses on T2 psychological distress were conducted by sex, whereby predictor variables (T1) such as demographics, psychological distress, job demands/resources, family demands/resources, work-family spillover (work-to-family negative/positive spillover and family-to-work negative/positive spillover), were entered into the equation. Additionally, we conducted a multilevel analysis (or hierarchical linear modeling (HLM)) on 894 individuals nested within 393 couples to consider couple correlation. We also investigated association between T2-T1 difference in psychological distress and difference in predictor variables such as spillover, job demands/resources, and family demands/resources, by another multilevel analysis.

Results: Regarding hierarchical multiple regression analyses and multilevel analysis for

the effects of T1 work-family spillover on T2 psychological distress, work-to-family negative spillover (WFNS) was positively associated with psychological distress for men. For women, neither negative nor positive spillover were significantly associated with psychological distress. In turn, family demands were positively, family control was negatively associated with women's psychological distress. Regarding multilevel analysis for one year difference in outcomes, both men and women's negative spillover (both WFNS and FWNS) and work support were significantly associated with difference in psychological distress. Difference in women's work-to-family positive spillover (WFPS) was also associated with difference in psychological distress.

Conclusions: Our results reveal that factors that have long-term impact on psychological distress differ by gender. Regarding work-family spillover, only work-to-family negative spillover (WFNS) was longitudinally associated with elevated levels of T2 psychological distress among men. In contrast, any type of spillover was not significantly associated with women's T2 psychological distress. However, regarding one year difference of psychological distress, difference of both types of negative spillover (WFNS/FWNS) for both genders, and difference of women's work-to-family positive spillover (WFPS) were possible factors.

INTRODUCTION

Social trends such as the increasing participation of women in the workforce, greater numbers of dual-earner families, and the increasing number of elderly people who need nursing care are providing new responsibilities and challenges for workers to blend work and family commitments [1, 2]. “Work-family negative spillover” is defined as the inter-role conflict between work and family roles. Participating in one domain (e.g., work) negatively impacts participating in another domain (e.g., family) [3-5]. Researchers have found that work-family negative spillover is linked to poor mental health such as psychological distress, depression, and increased alcohol intake [6-10].

On the other hand, researchers have also identified several benefits of combining work and family roles, which is called “work-family positive spillover” [11, 12]. Although it is much less frequently studied than negative spillover [7, 8], positive spillover has been linked to outcomes such as better mental health, satisfaction, and organizational commitment [13-15]. As research has demonstrated that work-family negative spillover and positive spillover are independent constructs, it is important to examine *both* positive and negative spillover to gain a better understanding of the relationship between work-family spillover and mental health [1, 5, 7].

Work-family negative and positive spillover

Spillover, the extent to which participating in one domain (e.g., work) impacts participating on another domain (e.g., family), reflects two relatively distinct sets of concepts: negative spillover and positive spillover. The concept of negative spillover originates with the scarcity hypothesis [16], which proposes that individuals have limited cognitive, time, and energy resources. As such, strain, negative affect, and frustration may result from individuals’ inability to meet competing demands from two separate life

domains [7, 17]. This definition implies bi-directional relationships between the work domain and family domain, such that work can interfere with family life (work-to-family negative spillover; WFNS) and family can interfere with work life (family-to-work negative spillover; FWNS) [6, 10, 17, 18].

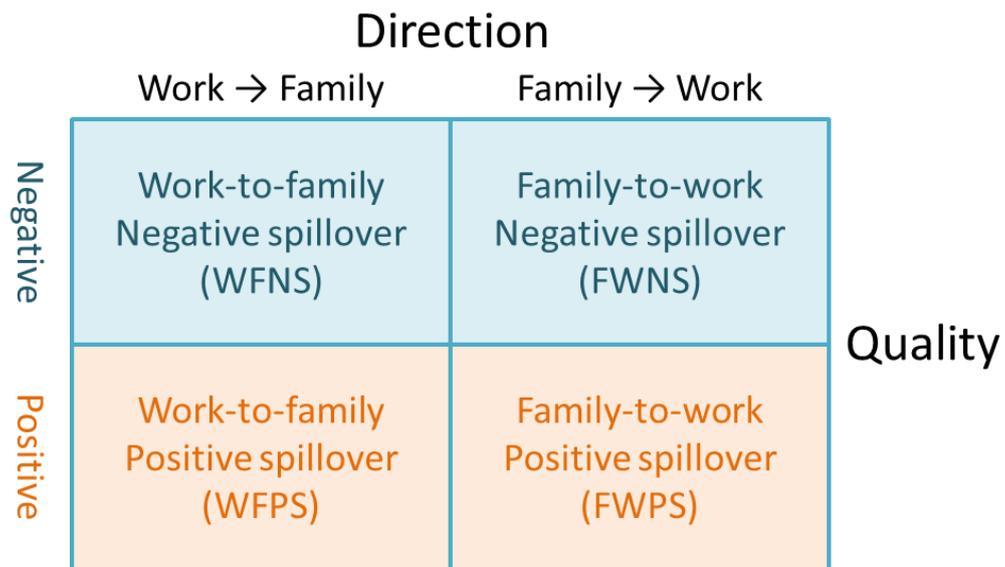


Figure1. Four dimensions of work-family spillover

A parallel body of theory to the role strain approach suggests that participating in multiple roles provides a greater number of opportunities and resources to the individual that he or she can use to promote growth and function more effectively in other life domains [19, 20]. This is called the role enhancement approach. From this perspective, multiple roles bring rewards, such as income, heightened self-esteem, opportunities for social relationships, and the experience of success [3]. In addition to work-family negative spillover, researchers have also identified the benefit of combining work and family, known as “work-family positive spillover” [12]. It is defined as the extent to which participating at work (or family) is easier by virtue of the experiences, skills, and opportunities gained or developed at family (or at work) [17]. Much like negative spillover, positive spillover has bi-directional dimensions, whereby work facilitates family life (work-to-family positive spillover; WFPS) and family facilitates work life (family-to-work positive spillover; FWPS) (Figure1). To date, however, positive spillover has been far less frequently studied than negative spillover despite the importance of considering the beneficial aspects of work-family spillover [4, 11, 21]. To develop a comprehensive picture of work-family spillover, it is important to consider both the bi-dimensional (negative and positive) and bi-directional (work-to-family and family-to-work) elements of work-family spillover.

Work-family spillover and its outcomes

Regarding the potential outcomes of work-family spillover, several well-being variables have been examined. For example, outcomes include psychological distress [5, 8, 22], depressive symptoms and fatigue [6, 7, 9, 10, 23, 24, 25], satisfaction [26-29], burnout [18, 30], sickness absence, and organizational commitment [15, 31]. These research studies and several existing meta-analyses [6, 10, 14] have revealed that negative

spillover has been considered a potential antecedent of reduced well-being, whereas positive spillover has been considered a potential antecedent of higher well-being [1, 5, 7, 8, 28, 32, 33]. Among the well-being variables listed here, psychological distress was included in the current study.

Additionally, although several cross-sectional epidemiological studies and several meta-analyses have shown significant associations between work-family spillover with well-being, the longitudinal effects of the work-family spillover on well-being are still uncertain. Although several studies ([9, 23, 30, 31, 33, 34]) have investigated a prospective association of work-family spillover with well-being, the results of these analyses were inconsistent. For example, Wang et al. (2012), Grice et al. (2011), and Janssen et al. (2004) ([30, 33, 34]) reported both WFNS and FWNS were potentially associated with well-being (recurrent major depressive disorder, fatigue, and general mental health) at follow-up. A four-year longitudinal study by Frone and Cooper (1997) reported that only FWNS (not WFNS) was longitudinally related to elevated levels of depression from a random community sample of 267 U.S. workers ($\beta = 0.21, p < 0.001$) [9]. Furthermore, Goodman and Crouter (2009) revealed that WFNS predicted higher levels of depressive symptoms ($\beta = 0.21, p < 0.01$) [23]. And, in a sample of 234 working couples in the U.S., Hammer et al. (2005) found that neither type of spillover (WFNS, FWNS, WFPS, nor FWPS) at baseline was associated with depression at follow-up [7]. A strong need exists, therefore, for scholars to accumulate longitudinal evidence to examine the prospective relationships between work-family spillover and well-being.

The Japanese context

As in Western countries, Japan has gradually accumulated scientific evidence regarding work-family negative spillover in the field of occupational health [35-42]. For the

Japanese population, however, few research studies exist that have examined the relationship between multidimensional (including both positive and negative aspects) work-family spillover and health [8]. And, no study has examined longitudinal effects of work-family spillover on mental health in Japan.

In the Japanese culture, time logged at one's desk or workstation is often a symbolic statement of submission to managerial power and loyalty to the organization [37, 43]. Consequently, workers in Japan are often asked to volunteer for overtime or work considerable amounts of unpaid extra time [45]. In addition to the economic difficulties this causes, this Japanese work ethic is one of the reasons Japan is known as a country in which long working hours prevail and as a country whose workforce has difficulties balancing work and family life [37, 46]. In terms of family structure, although the number of dual-earner families has increase more than that single-earner families (i.e., working men and a housewife) since 1997, women still play a more important role in child care and housework in households with a dual-earner couples and children. Indeed, Japanese men with preschool children spend only 0.8 hours on child care and housework at their homes per day [48]. These Japanese unique culture and situation make it difficult to apply the same results of European research evidence. To assess the impact of work-family negative/positive spillover on mental health for Japanese workers, therefore, is clearly the next step.

The present study

The purpose of the present study is to investigate the potential association between multi-dimensional work-family spillover with psychological distress among dual-earner couples with preschool children in Japan. Two-year data, including negative and positive work-family spillover variables, were collected to explain the “longitudinal” association

between “multi-dimensional” work-family spillover and mental health, which is our strength and originality. Based on the foregoing discussion, we tested four hypotheses that negative spillover would be positively, and positive spillover would be negatively, associated with psychological distress. Specifically, higher levels of work-family negative spillover (WFNS and FWNS) at baseline would be positively associated with psychological distress at follow-up (Hypothesis 1); 1 year difference of work-family negative spillover (WFNS and FWNS) would be positively associated with 1 year difference of psychological distress (Hypothesis 2); higher levels of work-family positive spillover (WFPS and FWPS) at baseline would be negatively associated with psychological distress at follow-up (Hypothesis 3); and 1 year difference of work-family positive spillover (WFPS and FWPS) would be negatively associated with 1 year difference of psychological distress (Hypothesis 4).

METHODS

Participants and Procedure

This study was part of the Tokyo Work-family Interface (TWIN) study, a large cohort study. The TWIN study was conducted among working parents with preschool children in a ward of Tokyo, Japan. We analyzed the data of the first and second waves collected in 2008 (baseline: T1) and 2009 (follow-up: T2), respectively. The interval between the two measurements was 1 year. In 2008, working parents were approached through their children’s daycare centers. We collected parents’ data from daycare centers because it allowed us to collect data from dual-earner couples from a wider variety of employment and industries. With the cooperation of the Child-Raising Assistance Department of the ward, a letter was sent to all directors of daycare centers in the ward asking if they would approach the parents who used their facilities. The letter explained the study aims,

procedures, and ethical considerations. Eighty-one of 82 daycare centers agreed to participate. We subsequently distributed questionnaires to all parents through these centers. Participants were included in our study on a voluntary basis. Respondents returned their questionnaires in sealed, pre-stamped envelopes to researchers at the University of Tokyo. When applying for enrollment into daycare centers in Japan, it is notable that dual-earner, full-time working couples take precedence over those working part-time, because of the competitive nature of these centers, especially metropolitan areas. Of the 8,964 questionnaires distributed, 2,992 were returned, which resulted in a response rate of 33.4%. Among the 2,992 respondents, 1,466 agreed to participate in the follow-up (T2) survey (49.0% agreement rate). For the follow-up study in 2009, a total of 963 participants filled in the T2 questionnaire among the 1,466 respondents (65.7% follow-up rate). After excluding 69 incomplete questionnaires, a total of 894 participants (394 men and 500 women) represented the panel group (Figure 2). The entire procedure was reviewed and approved by the Ethics Committees of the Graduate School of Medicine at the University of Tokyo.

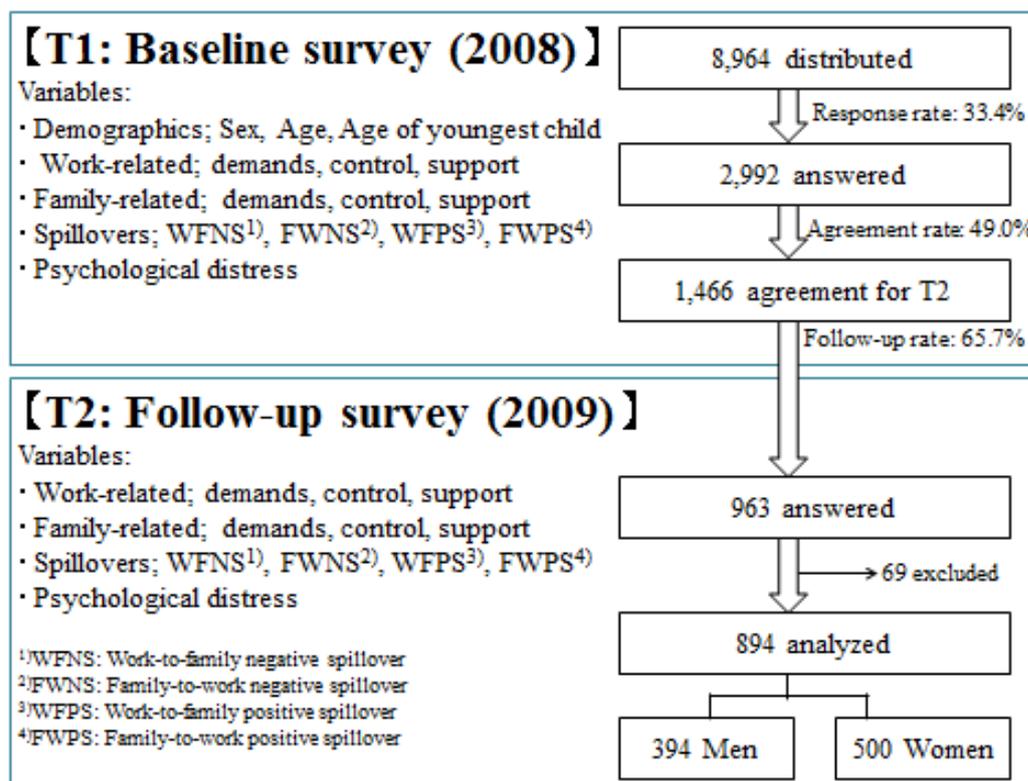


Figure2. Flow chart of current study

Measures

A self-administered questionnaire was used that included measures of (1) work-family spillover, (2) psychological distress, (3) job- and family-related variables, and (4) demographic variables. Each is described in the following paragraphs.

1) Work-family spillover: Work-family negative spillover (WFNS and FWNS) and work-family positive spillover (WFPS and FWPS) were measured using 22 items from the *Survey Work-home Interaction-Nijmegen* (SWING) developed in the Netherlands [25]. *Work-to-family negative spillover* (WFNS) was measured with eight items (e.g., “Your work schedule makes it difficult for you to fulfill your domestic obligations”). Cronbach’s alpha coefficients were 0.84 for men and for women. *Family-to-work*

negative spillover (FWNS) was measured with four items (e.g., “You have difficulty concentrating on your work because you are preoccupied with domestic matters”). Cronbach’s alpha coefficients were 0.82 for men and 0.76 for women. *Work-to-family positive spillover (WFPS)* was measured with five items (e.g., “You manage your time at home more efficiently as a result of the way you do your job”). Cronbach’s alpha coefficients were 0.74 for men and 0.73 for women. Finally, *Family-to-work positive spillover (FWPS)* was measured with five items (e.g., “After spending a pleasant weekend with your spouse/family/friends, you have more fun in your job”). Cronbach’s alpha coefficients were 0.86 for men and 0.85 for women. All items are scored on a four-point Likert scale, anchored by 0 = *never* to 3 = *always*. We translated the SWING into Japanese language and a back-translation procedure confirmed that the translation was appropriate. The internal consistency reliability, factor-based and convergent validity of this measure were examined by a total of 2,701 dual-earner parents with preschool children (1,193 men and 1,508 women). Four factors (i.e., work-to-family negative spillover, family-to-work negative spillover, work-to-family positive spillover, family-to-work positive spillover) were extracted by the exploratory factor analysis. A series of confirmatory factor analyses revealed that the hypothesized four-factor model fitted the data best. Convergent validity was generally supported by expected correlations of work-family spillover with possible predictors and consequences. Cronbach's alpha coefficients of the four subscales of the SWING-J were sufficient (0.75-0.86) [74]. We are currently preparing the paper for its validation.

2) Psychological distress: The Kessler 6 (K6) questionnaire was employed to assess psychological distress [49, 50]. This scale includes six items assessing how frequently a person experiences symptoms of psychological distress (e.g., feeling so sad that nothing

uplifts one's mood) during the past 30 days. Items are scored on a 5-point Likert scale anchored by 1 = *none of the time* to 5 = *all of the time*. Cronbach's alpha coefficients were 0.89 at baseline and at follow-up for men, 0.90 at baseline and 0.89 at follow-up for women. The Japanese version of the K6 has been validated for screening mental disorders [49].

3) Work- and family-related variables

(1) Job demands: The variable *Job demands* was measured with four items that refer to the quantitative, demanding aspects of one's job (time pressure, working hard; e.g., "Do you have a lot of work to do?") [51], which was validated in previous studies [52]. Items are scored on a 5-point frequency scale anchored by 1 = *never* to 5 = *always*. Cronbach's alpha coefficients were 0.89 for men and 0.90 for women.

(2) Job resources: *Job control* was measured with a subscale of the Brief Job Stress Questionnaire (BJSQ) [53]. The scale includes three items (e.g., "My job allows me to allocate time by myself"). Cronbach's alpha coefficients were 0.75 for men and 0.72 for women. *Workplace support* measured using *work supervisor and co-worker support* with a subscale of the BJSQ [53]. Each scale also included three items for supervisor and co-worker support, respectively. A sample item is "How much can each of these people be relied on when things get tough?" Items are scored on a 4-point Likert scale anchored by 1 = *agree* to 4 = *disagree*. To avoid multi-collinearity, we summed two subscales in workplace support due to high correlations between them ($r = 0.56$ for men, $r = 0.50$ for female). Cronbach's alpha coefficients were 0.84 for both men and for women.

(3) Family demands: *Family demands* were assessed with five items [18] that refer to the quantitative burdens of family (e.g., "Do you often have to do things in a hurry at home?"). Items are scored on a 5-point Likert scale anchored by 1 = *never* to 5 = *always*.

This was developed on the basis of the respective scales that measure job demands. Japanese version was translated and confirmed of its reliability and validity by Shimazu et al. [38]. Cronbach's alpha coefficients were 0.77 for men and 0.81 for women.

(4) Family resources: *Family control* and *family support* were assessed with four items each, for example, "I determine what happens at home" and "My partner pays attention to my feelings and problems" [54]. Items are scored on a 5-point Likert scale anchored by 1 = *never* to 5 = *always*. The scales on family resources were developed on the basis of the respective work-related scales. Cronbach's alpha coefficients of family control were 0.78 for men and 0.79 for women, and those of family support were 0.87 for men and 0.88 for women.

4) Demographic characteristics: Sex, age, occupation, working style, type of work, work hours, marital status, number of children, and age of youngest child were assessed in the present study.

Statistical analyses

Initially, Student's *t* tests and the chi squared tests were performed to compare demographic characteristics, job- and family-related variables, work-family spillover, psychological distress, and one year difference of each variable between men and women. To examine potential selection bias, we compared respondents for the panel group (N = 894) with respondents for the dropout group (i.e., those who answered only the first-wave survey; N = 2,052) with respect to their baseline levels on the main variables by *t* tests and the chi squared tests.

Secondly hierarchical multiple regression analyses [55] were carried out for T2 psychological distress by sex. The independent variables were entered into the equations as follows. In step 1, demographic characteristics such as age, educational background,

marital status, type of work, and working style were entered. In step 2, psychological distress at T1 was entered. In step 3, job demands and job resources were entered. In step 4, family demands and family resources were entered. In step 5, work-family spillover (i.e., WFNS, FWNS, WFPS, and FWPS) were entered. Because we are especially interested in the unique relationship between T1 work-family spillover and T2 psychological distress, we controlled for T1 demographic characteristics, T1 psychological distress, and T1 job-/family-related variables (i.e., job demands and resources, family demands, and resources) by entering them before T1 work-family spillover.

Additionally, two multilevel analyses (or hierarchical linear modeling (HLM)) were carried out; one for T2 psychological distress, and the other for T1-T2 difference in psychological distress. Associations between work-family spillover and psychological distress among men (Table 4) and among women (Table 5) were remodeled with random couple-effects (intercepts) that may lead to more efficient estimates by incorporating within-couple correlation. For fitting the mixed-effects (multilevel) linear models, we only included the product terms of each of the variables listed below with m.int and f.int, where m.int and f.int were indicators of being male and female, respectively. The general intercept was removed and replaced with the dummy coded variables ‘men’s intercept’ and ‘women’s intercept’ [66, 67]. Using this approach, we examined associations between work-family spillover and psychological distress for men and women within the same model.

In the analysis for psychological distress at T2, the independent variables were all T1 variables, such as demographic characteristics, psychological distress, job-/family-related variables, and work-family spillover (i.e., WFNS, FWNS, WFPS, and FWPS). We tested

three sets of multilevel regression models (random intercept models), detailed here:

Model 1: In the null model, the intercept was the only predictor.

Model 2: It included all demographic variables, psychological distress, and job-/family-related variables for each sex.

Model 3; Work-family spillover for each sex were additionally entered as the core predictor variables of interest.

As we are especially interested in the unique relationship between work-family spillover and psychological distress, we added them in the final model.

In the analysis for T1-T2 difference in psychological distress, the independent variables were T1-T2 difference in job-/family-related variables, and work-family spillover (i.e., WFNS, FWNS, WFPS, and FWPS). We added this latter multilevel analysis because we were also interested in who has changed more or less regardless of their baseline scores. And also we used T1-T2 difference because it might be difficult to identify the lagged effects between T1 work-family spillover and T2 psychological distress because of the stability of work-family spillover and psychological distress after one year [7]. Again, we tested three sets of multilevel regression models (random intercept models) as follows:

Model 1: In the null model, the intercept was the only predictor.

Model 2: It included all demographic variables and job-/family-related variables for each sex.

Model 3; Work-family spillover for each sex were additionally entered as the core predictor variables of interest.

The present study provided data with a two-level structure, level 1 is for 894 individuals, nested within 520 couples (at level 2). Past research on couple data has often been conducted by analyzing the data with two models, one for each spouse, which fails to

include important cross-spouse influences. Multilevel analysis is used to study nested data, such as couples, and allows for the analysis of interrelated data within one model [68, 70, 73]. In the track of Atkins' work (2005), we used a series of indicator variables to identify man and woman variables within one model (for a discussion of this, see: Atkins, 2005) [70]. It allowed us to analyze men's and women's variables in the same model to account for the interdependence that arises from the high correlation [70, 73].

All statistical analyses were performed using SPSS 17.0J (SPSS MIXED MODELS for multilevel analyses) for Windows.

RESULTS

Descriptive statistics

Table 1 shows respondents' demographic characteristics by sex. The mean age of participants were 38.1 years for men (SD = 5.1) and 36.3 years for women (SD = 4.1). Of the participants, 44.1% was men and the majority was married (98.9% for men; 91.6% for women). More than 80% of the families have either one or two child(ren) (one child: 47.0% for men, 48.0% for women; two children: 42.4% for men, 40.8% for women), and 10.4% families have three children. The mean age of the youngest child in the family was 2.3 years old (SD = 1.6 for men, 1.5 for women). The majority of male participants had a university degree (74.1%), were company employees (72.3%), and were full-time employees (93.6%). In contrast, more than the half of the female participants had a university degree (57.6%), were company employees (62.4%), and were full-time employees (73.0%). The most frequently mentioned types of work for men were the technical system engineering (36.0%), followed by management (21.3%), and the clerical job (14.5%), whereas for women the most common occupations were clerical jobs

(39.6%), followed by technical system engineering (36.6%), and service-sector jobs (10.8%). Age, educational background, marital status, occupation, working style, the type of work, and working hours per day were all significantly different by sex.

Table1. Demographic characteristics at baseline by sex ($N=894$)

	Men ($n = 394$)				Women ($n = 500$)				p value
	n	%	Mean	SD	n	%	Mean	SD	
Age (range)									< 0.001
		(25-59)	38.1	5.1		(22-49)	36.3	4.1	
Educational background									
Less than college or special training school	102	25.9			212	42.4			< 0.001 ^{a)}
University degree or higher	292	74.1			288	57.6			
Marital status									
Being married	390	98.9			458	91.6			< 0.001 ^{a)}
Divorced or widowed, never married	4	1.1			42	8.4			
Number of children			1.6	0.7			1.7	0.7	0.724
1	185	47.0			240	48.0			
2	167	42.4			204	40.8			
3	41	10.4			52	10.4			
Above 4	1	0.3			4	0.8			
Age of youngest child			2.3	1.5			2.4	1.5	0.989
Occupation									
Company employee	285	72.3			312	62.4			0.001 ^{a)}
Civil servant, teacher	44	11.2			66	13.2			
Self-owned business	39	9.9			45	9.0			
Others	26	6.7			77	15.4			
Working style									
Full-time employee (≥ 40 h/wk)	369	93.6			365	73.0			< 0.001 ^{a)}
Part-time employee (< 40 h/wk)	6	1.5			96	19.2			
Others	19	4.8			39	7.8			
Type of work									
Management	84	21.3			26	5.2			< 0.001 ^{a)}
Technical system engineering	142	36.0			183	36.6			
Service-sector job	39	9.9			54	10.8			
Construction, factory business	19	4.8			7	1.4			
Over-the-counter business	5	1.3			10	2.0			
Sales person	29	7.4			8	1.6			
Warehousing, vehicular, haulage business	8	2.0			1	0.2			
Clerical job	57	14.5			198	39.6			
Others	11	2.8			13	2.6			
Working hours per day			10.0	2.9			7.5	1.8	< 0.001 ^{a)}

p value: t test; ^{a)} Chi-squared test.

Table 2 shows the average score for each variable of T1 and T2-T1 difference by sex. Regarding the job-related scales of T1, average scores for job demands and job control were significantly higher among men than those among women ($p = 0.032$, $p = 0.016$, respectively). Women had a significantly higher score on workplace support than men ($p = 0.009$). Meanwhile, regarding family-related variables of T1, women had significantly higher family demands ($p < 0.001$) and family control ($p < 0.001$) than men. No significant difference was found in family support between men and women. Regarding spillover scales of T1, both negative spillover (WFNS and FWNS) were significantly higher among men than among women ($p < 0.001$, $p = 0.002$, respectively). However, both positive spillover (WFPS and FWPS) were significantly higher among women than among men ($p = 0.005$, $p = 0.001$, respectively). No significant differences in T1 and T2 psychological distress were found between the sexes. Regarding scales of T2-T1 difference, no significant difference was found except family-to-work negative spillover (FWNS) and work-to-family positive spillover (WFPS). FWNS scores of women were significantly decreased than those of men ($p = 0.034$), and WFPS scores of men were significantly increased than those of women ($p = 0.013$).

Table2. Mean and standard deviation for job-related and family-related variables, work-family spillover, and psychological distress by sex ($n = 894$)

	Men (n = 394)		Women (n = 500)		<i>p</i> value
	Mean	SD	Mean	SD	
Job-related variables (T1)					
Job demands	13.2	4.1	12.5	4.3	0.032
Job control	8.4	2.0	8.1	2.0	0.016
Worksite support	15.9	3.5	16.6	3.8	0.009
Working hours per day	10.0	2.9	7.5	1.8	< 0.001
Family-related variables (T1)					
Family demands	14.7	4.0	19.7	4.0	< 0.001
Family control	11.9	3.1	13.3	3.5	< 0.001
Family support	13.4	3.6	13.1	4.3	0.345
Work-family spillover variables (T1)					
Work-to-family negative spillover (WFNS)	7.8	4.4	6.7	4.5	< 0.001
Family-to-work negative spillover (FWNS)	1.9	0.1	1.4	0.1	0.002
Work-to-family positive spillover (WFPS)	6.1	3.0	6.7	3.2	0.005
Family-to-work positive spillover (FWPS)	7.5	3.6	8.4	3.7	0.001
Psychological distress					
Psychological distress (T1)	8.9	4.0	9.1	4.3	0.476
Psychological distress (T2)	10.4	4.4	10.8	4.7	0.170
Job-related variables (T2-T1 difference)					
Job demands	0.0	3.8	-0.1	3.5	0.609
Job control	-0.1	1.6	0.1	1.8	0.193
Worksite support	-0.2	3.4	0.1	3.3	0.153
Family-related variables (T2-T1 difference)					
Family demands	0.2	3.8	-0.2	3.6	0.150
Family control	0.0	3.0	0.1	3.3	0.579
Family support	-0.1	3.1	-0.3	3.4	0.326
Work-family spillover variables (T2-T1 difference)					
Work-to-family negative spillover (WFNS)	0.1	1.7	0.0	1.7	0.366
Family-to-work negative spillover (FWNS)	-0.1	1.4	0.1	1.1	0.034
Work-to-family positive spillover (WFPS)	1.0	2.6	0.6	2.6	0.013
Family-to-work positive spillover (FWPS)	0.3	2.8	0.2	2.8	0.438
Psychological distress(T2-T1 difference)					
Psychological distress	1.4	4.4	1.5	4.4	0.608

p value: *t* test.

To examine potential selection bias, we compared respondents from the panel group ($N = 894$) with those from the dropout group (i.e., those who answered only the first-wave survey: $N = 2,052$) with respect to their demographic characteristics and baseline levels on the study variables. The panel group reported a higher level of family support (mean = 13.2, $SD = 4.0$ vs. mean = 12.8, $SD = 4.3$; $p = 0.014$) and WFPS (mean = 6.4, $SD = 3.1$ vs. mean = 6.1, $SD = 3.1$; $p = 0.023$), whereas the panel group reported a lower level of the age of the youngest child (mean = 2.3, $SD = 1.5$ vs. mean = 2.9, $SD = 1.8$; $p < 0.001$), FWNS (mean = 1.1, $SD = 1.7$ vs. mean = 1.3, $SD = 1.8$; $p = 0.022$) and T1 psychological distress (mean = 9.1, $SD = 4.2$ vs. mean = 9.6, $SD = 4.5$; $p = 0.014$) than the dropout group. There was also difference between the two groups regarding educational background ($\chi^2(4) = 18.7$, $p < 0.001$), occupation ($\chi^2(6) = 13.4$, $p = 0.037$), work style ($\chi^2(2) = 9.9$, $p = 0.007$), and type of work ($\chi^2(8) = 18.2$, $p = 0.020$). For example, the percentage of individuals who completed higher education (i.e., university and graduate school) was higher in the panel group (64.9%) than in the dropout group (58.0%). Also, the percentage of company employees and civil servants was higher, whereas that of self-employed individuals was lower in the panel group than in the dropout group (company employees: 66.8% in panel, 62.3% in dropout; civil servants: 12.3% in panel, 11.1% in dropout; self-employed: 9.4% in panel, 12.1% in dropout). In addition, the percentage of full-time workers was higher in the panel group (82.1%) than in the dropout group (80.4%). Overall, the panel group is more highly educated, has younger children, receives more family support, has less FWNS and more WFPS, and has less T1 psychological distress than the dropout group.

Correlation between the variables

Examining the inter-correlations between job-related variables, family-related

variables, work-family spillover, and psychological distress are shown in Table 3. The upper right-hand corner of the table reports information for men and the lower left-hand corner of the table reports information for women. The correlation between T1 psychological distress and T2 psychological distress was $r = 0.49$ for men and $r = 0.53$ for women ($p < 0.001$). For men, job demands, family demands, WFNS, and FWNS at T1 were significantly and positively correlated with T1 and T2 psychological distress, whereas job control and workplace support at T1 were significantly and negatively correlated with T1 and T2 psychological distress. For women, job demands, family demands, WFNS, and FWNS at T1 were significantly and positively correlated with T1 and T2 psychological distress, whereas job control, workplace support, family control and family support at T1 were significantly ($p < 0.001$) and negatively correlated with T1 and T2 psychological distress

Table3. Intercorrelations between job-related and family-related variables and work–family spillover and psychological distress by sex

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Job demands (T1)		-0.36 ***	-0.14 **	0.22 ***	-0.03	0.06	0.53 ***	0.16 **	0.08	0.09	0.23 ***	0.14 **
2. Job control (T1)	-0.20 ***		0.28 ***	-0.09	0.13 *	-0.01	-0.30 ***	-0.15 **	0.08	0.06	-0.27 ***	-0.15 **
3. Worksite support (T1)	-0.05	0.32 ***		-0.09	0.08	0.15 **	-0.13 *	-0.13 **	0.11 *	0.15 **	-0.27 ***	-0.20 ***
4. Family demands (T1)	0.23 ***	0.01	-0.09		-0.20 ***	-0.08	0.24 ***	0.27 ***	0.07	0.02	0.15 **	0.10 *
5. Family control (T1)	-0.09	0.22 ***	0.17 ***	-0.21 ***		0.32 ***	-0.15 **	-0.13 **	0.24 ***	0.10 *	-0.09	-0.06
6. Family support (T1)	-0.01	0.09	0.24 ***	-0.21 ***	0.31 ***		0.00	-0.16 **	0.18 **	0.15 **	-0.11 *	-0.10
7. Work-to-family negative spillover (T1)	0.43 ***	-0.12 **	-0.23 ***	0.30 ***	-0.17 ***	-0.16 **		0.40 ***	0.02	-0.01	0.34 ***	0.26 ***
8. Family-to-work negative spillover (T1)	0.04	-0.03	-0.16 **	0.12 **	-0.10 *	-0.19 ***	0.30 ***		0.08	0.02	0.43 ***	0.27 ***
9. Work-to-family positive spillover (T1)	0.14 **	0.13 **	0.13 **	0.01	0.22 ***	0.18 ***	0.04	0.01		0.69 ***	-0.02	-0.03
10. Family-to-work positive spillover (T1)	0.08	0.09	0.24 ***	0.02	0.15 **	0.14 **	0.00	-0.06	0.67 ***		-0.07	-0.03
11. Psychological distress (T1)	0.20 ***	-0.18 ***	-0.32 ***	0.18 ***	-0.25 ***	-0.22 ***	0.41 ***	0.38 ***	-0.08	-0.13 **		0.49 ***
12. Psychological distress (T2)	0.14 **	-0.19 ***	-0.26 ***	0.22 ***	-0.22 ***	-0.13 **	0.27 ***	0.24 ***	-0.07	-0.08	0.53 ***	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Upper right-hand corner of the table is for men ($n = 394$) and lower left-hand corner of the table is for women ($n = 500$).

T1 = baseline; T2 = follow-up.

1 **Effects of T1 work–family spillover on T2 psychological distress**

2 **1) Hierarchical multiple regression analyses**

3 Tables 4 and 5 show the results of hierarchical multiple regression analyses predicting
4 T2 psychological distress (Table 4 for men, Table 5 for women, respectively). Each table
5 presents standardized regression coefficients, as well as R^2 and its increment, for each
6 step by sexes. For men (Table 4), increases in R^2 are significant from step 1 to step 2 (ΔR^2
7 $= 0.20, p < 0.001$), and marginally significant from step 4 to step 5 ($\Delta R^2 = 0.02, p = 0.080$).
8 For women (Table 5), the increases in R^2 are significant from step 1 to step 2 ($\Delta R^2 = 0.29,$
9 $p < 0.001$) and from step 3 to step 4 ($\Delta R^2 = 0.03, p = 0.001$), and marginally significant
10 from step 2 to step 3 ($\Delta R^2 = 0.01, p = 0.084$). At the final step 5, we found that for men,
11 T1 psychological distress and their work-to-family negative spillover (WFNS) at T1 were
12 significantly related to higher levels of T2 psychological distress ($\beta = 0.38, p < 0.001; \beta$
13 $= 0.17, p = 0.008$ respectively). On the other hand, women's T1 psychological distress,
14 their T1 family demands, and family control were significant related to higher levels of
15 T2 psychological distress ($\beta = 0.46, p < 0.001; \beta = 0.14, p = 0.002; \beta = -0.10, p = 0.031$
16 respectively). We found that neither direction of T1 work-family positive spillover
17 (WFPS/FWPS) nor family-to-work negative spillover (FWNS) was associated with T2
18 psychological distress for men. Also, none of T1 spillover variables
19 (WFNS/FWNS/WFPS/FWPS) was associated with women's T2 psychological distress.

20 **2) Multilevel analysis**

21 Results of the multilevel modeling analysis predicting T2 psychological distress are
22 reported in Table 6. The dependent variable was T2 psychological distress. The null
23 model with no predictors revealed a significant variation in T2 psychological distress
24 between couples ($\delta^2 = 3.00$). However this result did not consider any fixed effects.

1 In model 2, the results of the fixed effect revealed that higher scores in T1
2 psychological distress for both sexes ($B = 0.48, p < 0.001$ for men; $B = 0.51, p = 0.002$
3 for women), and family demands for women ($B = 0.14, p = 0.004$), were more likely to
4 have higher scores in T2 psychological distress.

5 In model 3, the results revealed that higher scores in T1 WFNS for men were more
6 likely to have higher psychological distress scores ($B = 0.19, p = 0.002$), even after
7 adjusting for confounders. For women, no spillover variable was associated with T2
8 psychological distress. In turn, higher scores of family demands ($B = 0.15, p = 0.004$),
9 and lower scores of family control ($B = -0.13, p = 0.036$) were more likely to have higher
10 psychological distress scores. After adjusting for job-/family-related variables, we found
11 that the positive association between T1 WFNS for men and T2 psychological distress
12 remained.

13 Slight differences between our results from the (fixed-effects) linear models (Tables 4
14 and 5) and from the mixed-effects linear model (Table 6) may be due to three primary
15 reasons. First, the latter model reduced variance of an error term by introducing random
16 family-effects, which may have affected the standard error of the model-coefficients
17 estimates. Second, the latter used a ‘sandwich’ formulae rather than naive model-based
18 estimators for the standard errors that lead to more conservative inferences (e.g., wider
19 confidence intervals and higher p-values). Third, the point-estimators of the latter model
20 included the variance estimates of an error term and random effects.

21 **Effects of difference in work-family spillover on differences in psychological distress**

22 Tables 7 shows the results of multilevel analysis predicting the T2-T1 difference in
23 psychological distress. The dependent variable here was the T2-T1 difference in
24 psychological distress. The null model with no predictors revealed a significant variation

1 in the T2-T1 difference in psychological distress between couples ($\delta^2 = 2.533$). However,
2 it did not consider any compositional factors.

3 In model 2, the results revealed that higher scores the T2-T1 differences in job demands
4 for women ($B = 0.15, p = 0.016$) were more likely to have higher scores the T2-T1
5 differences in psychological distress. At the same time, higher scores of the T2-T1
6 difference for support at the workplace for both sexes ($B = -0.33, p < 0.001$ for men; $B =$
7 $-0.24, p < 0.001$ for women) were more likely to have lower scores the T2-T1 difference
8 in psychological distress.

9 In model 3, after adjusting for job-/family- related variables, we found that the positive
10 association between the T2-T1 difference in both negative spillover (WFNS/FWNS) and
11 the T2-T1 difference in psychological distress also remained for both sexes (WFNS: $B =$
12 $0.71, p < 0.001$ for men, $B = 0.48, p < 0.001$ for women; FWNS: $B = 0.54, p = 0.001$ for
13 men, $B = 0.81, p < 0.001$ for women). At the same time, the negative association between
14 the T2-T1 difference in WFPS and difference in psychological distress also remained for
15 women ($B = -0.22, p = 0.016$).

16

Table 4. Hierarchical multiple regression analyses predicting psychological distress at T2 among men ($n = 394$)^a

Step and variable ^{b)}	Step 1		Step 2		Step 3		Step 4		Step 5	
	$\beta^{c)}$	p	$\beta^{c)}$	p	$\beta^{c)}$	p	$\beta^{c)}$	p	$\beta^{c)}$	p
Age	-0.08	0.177	-0.10	0.048	-0.10	0.049	-0.11	0.042	-0.09	0.083
Marital status ^{d)}	-0.11	0.065	-0.06	0.236	-0.06	0.271	-0.06	0.268	-0.05	0.329
Number of children	0.02	0.705	0.02	0.704	0.02	0.670	0.02	0.708	0.01	0.785
Age of youngest child	0.08	0.165	0.04	0.387	0.05	0.315	0.05	0.327	0.05	0.356
Occupation ^{e)}	0.01	0.925	0.06	0.294	0.04	0.464	0.04	0.453	0.04	0.497
Working style ^{f)}	0.17	0.016	0.09	0.135	0.11	0.092	0.11	0.088	0.10	0.107
Psychological distress			0.46	0.000	0.42	0.000	0.42	0.000	0.38	0.000
Job demands					0.07	0.179	0.07	0.228	-0.01	0.931
Job control					0.03	0.607	0.03	0.649	0.03	0.567
Worksite support					-0.07	0.188	-0.07	0.223	-0.06	0.249
Family demands							0.03	0.524	0.01	0.876
Family control							0.01	0.835	0.03	0.629
Family support							-0.02	0.675	-0.02	0.681
Work-to-family negative spillover									0.17	0.008
Family-to-work negative spillover									0.02	0.777
Work-to-family positive spillover									0.04	0.608
Family-to-work positive spillover									-0.03	0.697
R^2 change			0.20	< 0.001	0.01	0.310	0.00	0.898	0.02	0.080
R^2	0.04	0.044	0.24	< 0.001	0.25	< 0.001	0.25	< 0.001	0.27	< 0.001

^a Psychological distress was measured by K6 scores.

^b All independent variables are measured at baseline.

^c Standardized regression coefficients.

^d 1 = Being married, 2 = Divorced or widow, never married.

^e 1 = Company employee, 2 = Civil servant, teacher, 3 = Self-owned business, 4 = Others.

^f 1 = Full-time employee, 2 = Part-time employee, 3 = Others.

Table 5. Hierarchical multiple regression analyses predicting psychological distress T2 among women ($n = 500$)^a

Step and variable ^{b)}	Step 1		Step 2		Step 3		Step 4		Step 5	
	$\beta^{c)}$	p	$\beta^{c)}$	p	$\beta^{c)}$	p	$\beta^{c)}$	p	$\beta^{c)}$	p
Age	-0.03	0.539	-0.02	0.645	-0.03	0.536	-0.05	0.293	-0.05	0.278
Marital status ^{d)}	0.04	0.483	0.03	0.442	0.03	0.559	0.04	0.389	0.04	0.384
Number of children	-0.04	0.480	-0.06	0.196	-0.05	0.219	-0.07	0.101	-0.07	0.122
Age of youngest child	0.12	0.027	0.05	0.245	0.05	0.246	0.06	0.170	0.06	0.182
Occupation ^{e)}	0.08	0.109	0.04	0.430	0.03	0.470	0.04	0.376	0.04	0.346
Working style ^{f)}	-0.01	0.905	0.01	0.826	0.02	0.705	0.03	0.521	0.03	0.525
Psychological distress			0.55	0.000	0.51	0.000	0.47	0.000	0.46	0.000
Job demands					0.04	0.339	0.01	0.808	0.01	0.915
Job control					-0.07	0.112	-0.06	0.171	-0.07	0.133
Worksite support					-0.05	0.311	-0.05	0.334	-0.04	0.403
Family demands							0.14	0.002	0.14	0.002
Family control							-0.10	0.037	-0.10	0.031
Family support							0.04	0.433	0.04	0.464
Work-to-family negative spillover									-0.01	0.891
Family-to-work negative spillover									0.02	0.619
Work-to-family positive spillover									0.06	0.314
Family-to-work positive spillover									-0.04	0.520
R^2 change			0.29	< 0.001	0.01	0.084	0.03	0.001	0.00	0.854
R^2	0.02	0.157	0.32	< 0.001	0.33	< 0.001	0.35	< 0.001	0.36	< 0.001

^a Psychological distress was measured by K6 scores.

^b All independent variables are measured at baseline.

^c Standardized regression coefficients.

^d 1 = Being married, 2 = Divorced or widow, never married.

^e 1 = Company employee, 2 = Civil servant, teacher, 3 = Self-owned business, 4 = Others.

^f 1 = Full-time employee, 2 = Part-time employee, 3 = Others.

Table 6. Results of multi-level models predicting psychological distress at T2 (n = 894)^a

Variable ^b	Model 1							Model 2							Model 3						
	estimate	SE	df	t	p	95% CI		estimate	SE	df	t	p	95% CI		estimate	SE	df	t	p	95% CI	
Fixed effects																					
Men, Intercept	10.35	0.23	891.14	45.25	0.000	9.90	10.80	9.09	2.66	746.82	3.42	0.001	3.87	14.30	8.07	2.69	710.44	3.00	0.003	2.79	13.35
Men, Psychological distress								0.48	0.06	741.06	8.74	0.000	0.37	0.59	0.44	0.06	704.68	7.37	0.000	0.32	0.56
Men, WFNS															0.19	0.06	708.32	3.15	0.002	0.07	0.31
Men, FWNS															-0.07	0.18	700.13	-0.37	0.708	-0.42	0.28
Men, WFPS															0.06	0.10	703.29	0.65	0.513	-0.13	0.26
Men, FWPS															0.00	0.08	703.55	-0.01	0.996	-0.15	0.15
Men, Job demands								0.05	0.06	740.94	0.81	0.418	-0.06	0.16	-0.02	0.06	700.55	-0.25	0.805	-0.14	0.11
Men, Job control								0.07	0.11	742.34	0.64	0.525	-0.15	0.30	0.12	0.11	703.52	1.03	0.305	-0.11	0.34
Men, Worksite support								-0.10	0.06	739.05	-1.56	0.118	-0.22	0.02	-0.09	0.06	698.91	-1.46	0.144	-0.21	0.03
Men, Family demands								0.02	0.05	739.44	0.38	0.705	-0.09	0.13	-0.01	0.06	703.65	-0.20	0.843	-0.12	0.10
Men, Family control								0.03	0.07	743.53	0.44	0.663	-0.11	0.17	0.05	0.08	706.24	0.70	0.482	-0.10	0.20
Men, Family support								-0.03	0.06	746.78	-0.46	0.645	-0.15	0.09	-0.04	0.06	710.97	-0.59	0.557	-0.16	0.09
Women, Intercept	10.77	0.20	881.70	52.89	0.000	10.37	11.17	9.68	2.58	753.49	3.76	0.000	4.62	14.75	8.50	2.67	718.99	3.19	0.002	3.26	13.74
Women, Psychological distress								0.51	0.05	750.98	10.29	0.000	0.41	0.61	0.52	0.06	718.28	9.28	0.000	0.41	0.63
Women, WFNS															-0.02	0.05	712.29	-0.30	0.766	-0.12	0.09
Women, FWNS															0.01	0.21	713.90	0.03	0.973	-0.40	0.41
Women, WFPS															0.11	0.09	713.36	1.32	0.189	-0.06	0.28
Women, FWPS															-0.05	0.07	712.57	-0.76	0.450	-0.19	0.09
Women, Job demands								0.02	0.05	749.50	0.40	0.691	-0.07	0.11	0.02	0.05	713.70	0.34	0.735	-0.09	0.12
Women, Job control								-0.17	0.10	747.97	-1.68	0.094	-0.37	0.03	-0.16	0.11	712.01	-1.50	0.133	-0.37	0.05
Women, Worksite support								-0.04	0.06	746.97	-0.77	0.444	-0.15	0.07	-0.03	0.06	712.19	-0.49	0.628	-0.14	0.09
Women, Family demands								0.14	0.05	749.52	2.87	0.004	0.04	0.24	0.15	0.05	712.63	2.87	0.004	0.05	0.25
Women, Family control								-0.09	0.06	750.39	-1.51	0.132	-0.21	0.03	-0.13	0.06	715.27	-2.10	0.036	-0.25	-0.01
Women, Family support								0.02	0.05	752.68	0.40	0.691	-0.07	0.11	0.02	0.05	718.70	0.48	0.629	-0.07	0.12
Covariates																					
Men, Age								-0.09	0.04	750.69	-2.16	0.031	-0.18	-0.01	-0.09	0.04	715.58	-1.98	0.049	-0.17	0.00
Women, Age								-0.11	0.05	755.80	-2.23	0.026	-0.21	-0.01	-0.08	0.05	722.67	-1.65	0.100	-0.18	0.02
Age of youngest child								0.20	0.10	474.92	1.97	0.049	0.00	0.39	0.20	0.10	469.92	1.91	0.057	-0.01	0.40
Random parameters																					
Residual	17.73	1.24						12.35	0.98						11.79	0.96					
Intercept	3.00	1.06						2.03	0.84						2.45	0.86					
-2 log likelihood	5240.00							4155.00							3963.00						

^a Psychological distress was measured by K6 scores.

^b All independent variables are measured at baseline.

Table 7. Results of multi-level models predicting T1-T2 changes in psychological distress (n = 894)^a

Variable ^b	Model 1					Model 2					Model 3				
	estimate	SE	p	95% CI		estimate	SE	p	95% CI		estimate	SE	p	95% CI	
Fixed effects															
Men, Intercept	1.34	0.22	0.000	0.90	1.77	4.35	1.76	0.013	0.90	7.80	4.98	1.70	0.003	1.65	8.32
Men, Δ WFNS											0.71	0.14	0.000	0.43	0.98
Men, Δ FWNS											0.54	0.16	0.001	0.22	0.85
Men, Δ WFPS											0.02	0.10	0.819	-0.17	0.21
Men, Δ FWPS											-0.06	0.09	0.516	-0.23	0.12
Men, Δ Job demands						0.05	0.07	0.485	-0.08	0.18	-0.06	0.07	0.352	-0.19	0.07
Men, Δ Job control						-0.27	0.14	0.057	-0.55	0.01	-0.27	0.14	0.053	-0.54	0.00
Men, Δ Worksite support						-0.33	0.07	0.000	-0.46	-0.20	-0.30	0.07	0.000	-0.43	-0.17
Men, Δ Family demands						0.12	0.06	0.050	0.00	0.24	0.07	0.06	0.244	-0.05	0.18
Men, Δ Family control						-0.06	0.08	0.509	-0.22	0.11	-0.05	0.08	0.543	-0.21	0.11
Men, Δ Family support						0.06	0.07	0.410	-0.08	0.20	0.13	0.07	0.064	-0.01	0.27
Women, Intercept	1.51	0.20	0.000	1.13	1.90	4.47	2.01	0.026	0.53	8.40	3.03	1.95	0.122	-0.81	6.86
Women, Δ WFNS											0.48	0.12	0.000	0.24	0.73
Women, Δ FWNS											0.81	0.18	0.000	0.46	1.16
Women, Δ WFPS											-0.22	0.09	0.016	-0.40	-0.04
Women, Δ FWPS											0.01	0.08	0.904	-0.15	0.17
Women, Δ Job demands						0.15	0.06	0.016	0.03	0.27	0.09	0.06	0.125	-0.03	0.21
Women, Δ Job control						0.06	0.12	0.603	-0.17	0.30	0.09	0.12	0.452	-0.14	0.32
Women, Δ Worksite support						-0.24	0.07	0.000	-0.37	-0.12	-0.17	0.06	0.008	-0.30	-0.04
Women, Δ Family demands						0.01	0.06	0.826	-0.11	0.13	-0.03	0.06	0.561	-0.15	0.08
Women, Δ Family control						-0.02	0.07	0.751	-0.15	0.11	0.00	0.07	0.976	-0.13	0.13
Women, Δ Family support						-0.02	0.06	0.682	-0.14	0.09	0.00	0.06	0.950	-0.12	0.12
Covariates															
Men, Age						-0.08	0.05	0.078	-0.17	0.01	-0.10	0.04	0.033	-0.18	-0.01
Women, Age						-0.08	0.06	0.148	-0.19	0.03	-0.04	0.05	0.470	-0.15	0.07
Age of youngest child						0.01	0.11	0.898	-0.20	0.23	0.01	0.11	0.940	-0.20	0.22
Random parameters															
Residual	16.36	1.18				13.20	1.09				11.68	1.01			
Intercept	2.53	1.01				3.27	1.00				2.90	0.93			
-2 log likelyhood	5060.00					3981.00					3693.00				

^a Psychological distress was measured by K6 scores.

^b All independent variables of fix effect are T1-T2 changes, and all covariates are measured at baseline.

DISCUSSION

The aim of the present study was to examine whether multiple types of work-family spillover were associated with psychological distress over a 1-year period among Japanese dual-earner couples with preschool children. The findings contribute to the existing literature in three ways. First, we examined both negative and positive aspects of work-family spillover. Second, we assessed the relationship between work-family spillover and psychological distress using 1-year follow-up data. This enabled us to examine the longer-term influences of work-family spillover on psychological distress. At the same time, we examined the influence of 1-year work-family spillover difference on variation of psychological distress regardless of their initial values. Third, we assessed the relationship between work-family spillover and psychological distress using Japanese data. Studies that have examined work-family spillover and its health outcomes have been rare in the field of occupational health in Japan. According to previous studies, we developed four hypotheses that (1) higher work-family negative spillover (both WFNS and FWNS) at baseline would be positively associated with psychological distress at follow-up, (2) 1-year difference of work-family negative spillover (WFNS and FWNS) would be positively associated with 1-year difference of psychological distress, (3) higher work-family positive spillover (both WFPS and FWPS) at baseline is negatively associated with psychological distress at follow-up, and (4) 1-year difference of work-family positive spillover (WFPS and FWPS) would be negatively associated with 1-year difference of psychological distress. We examined these hypotheses by conducting hierarchical multiple regression by genders, and multilevel analysis to consider cross-spouse influences.

Negative spillover and psychological distress (Hypothesis 1 and 2)

Our results revealed that the relationship between negative spillover and psychological distress differed according to gender. According to hierarchical multiple regression (Table 4 and 5) and former multilevel analysis (Table 6), only WFNS was positively and significantly associated with psychological distress at follow-up and FWNS did not have a significant effect on psychological distress at follow-up among men. In contrast, neither WFNS nor FWNS were associated with psychological distress among women. These results suggest that Hypothesis 1 was partially supported only for men.

Stronger effect of WFNS (compared to FWNS) among men could be explained on the basis of identity theory. According to identity theory, people devote time and energy to constructing desired identities and are threatened when their self-images are damaged by impediments to self-identifying activities [56, 57]. In this sense, WFNS represents an impediment to successfully meeting ‘family’-related demands and responsibilities, which undermines a person’s ability to construct and maintain a positive family-related self-image [56]. Because working fathers with younger children need to invest more resources (e.g., time and energy) for family-related responsibilities, such as child care and domestic affairs [58], negative spillover from work-to-family (WFNS) are more likely to impair psychological health than are those from family-to-work (FWNS). Fathers of dual-earner families may feel frustrated and guilty about neglecting their family roles because their spouse are often busy working, doing household chores, and caring for children. Participants in the present study all had working parents, lived in urban settings, and had preschool children. These features indicate that they need to share the responsibility of taking care of their children and doing household chores, even during busy times at work. In these situations, working men may feel a dilemma or frustrated by the difficulty of engaging in housework and child-rearing to their satisfaction because of their work (e.g.,

work-to-family negative spillover). This may lead to an increase in their psychological distress over time. A meta-analysis by Amstad et al. (2011) showed stronger association of WFNS with psychological strain (weighted mean correlation: $r = 0.35$) than that of FWNS ($r = 0.21$) [65].

Regarding women, neither WFNS nor FWNS is associated with psychological distress at follow-up, which is inconsistent with Hypothesis 1. This finding is also inconsistent with the meta-analyses and reviews ([6, 10, 17, 24, 59]), and many other existing research studies. Instead, both hierarchical multiple regression analysis and multilevel analysis for psychological distress (T2) revealed that family demands and family control were associated with psychological distress at follow-up among women. Several existing studies have also shown that family-related variables, such as family demands, family control, marital status, and having elders who need care, were significantly associated with workers' mental health, especially for women ([60, 61]). For example, Artazcoz (2004) revealed that only women's (not men's) family demands were associated with their own poor health status and psychosomatic symptoms in a Spanish sample of 1281 participants [71]. Additionally, Chandola et al. (2004) indicated that low family control predicted coronary heart disease among women but not among men in UK [72].

This finding can be explained by traditional gender role expectations, in which working mothers take on the largest part of household chores and child care activities in addition to outside work compared to working fathers. Given the fact that current participants were taking care of preschool children who needed a careful hand, they have tremendous family demands. According to the Japanese Ministry of Internal Affairs and Communications [63], Japanese working women with preschool children spend almost six times as much time on housework and childcare compared to working men.

Conversely, whereas working men with preschool children work almost double the amount of time compared to working women. These findings confirm that women have high levels of burden and control in the family domain. The present study expanded existing evidence that family-related variables are associated with mental health among Japanese working women with small children, and suggested that high levels of family demands and deficient family control can cause potential harm to subsequent mental health.

Another explanation for the perverse results is a healthy worker effect. Our dropout analysis suggested that the panel group received more family support, had less negative spillover, and had less psychological distress than the dropout group. Thus, dropout could lead to an underestimation of the relationship between negative spillover and psychological distress. That is, if participants suffered from a serious work-family negative spillover and psychological distress, they might not have been participants in this study.

It is notable that the increase in both WFNS and FWNS were significantly associated with an increase in psychological distress among men and women (Table 7). Because work-family spillover and psychological distress could be stable after 1 year, it may be difficult to identify the lagged effects between T1 work-family spillover and T2 psychological distress [7]. This was one reasons why we included additional multilevel analysis to predict the association between the T2-T1 differences in work-family spillover and differences in psychological distress. In the sense of annual change of psychological distress, our results suggest that it is important to pay more attention to annual variations of WFNS and FWNS, rather than work and family demands at baseline for both men and women. For practical implications, our results suggest that the person in charge should be

aware of individual annual variation of negative spillover as well as those of initial-value.

In sum, important contributions of this study were as follows: 1) father's WFNS is significantly associated with psychological distress in 1 year, and 2) One year increases in both WFNS and FWNS were significantly associated with increases in psychological distress among men and women. These contributions offer our strength and originality by using a Japanese panel survey.

Positive spillover and psychological distress (Hypothesis 3 and 4)

The results of the hierarchical multiple regression analyses and multilevel analysis revealed that neither WFPS nor FWPS were associated with psychological distress at follow-up, regardless of gender. Therefore, neither Hypothesis 3 nor Hypothesis 4 were supported. However, in the analysis for annual change of psychological distress, the results revealed that annual change of WFPS was significantly and negatively associated with change in psychological distress among women.

Although some existing studies have shown the significant and direct relationships between work-family positive spillover and mental health, the current results suggest that even if working parents experience the benefits of combining work and family roles (e.g., income, heightened self-esteem, opportunities for social relationships, and the experience of success) [11], it does not necessarily lead to decreased psychological distress. Our participants, who were dual-earner couples with small children, might not have enough time to fully enjoy the benefits of work-family positive spillover.

One reason for a directional difference of spillover (significant association in WFPS but not in FWPS) regarding annual change among women is the same reason for negative spillover, identity theory. Because identities of working mothers in our study might have placed more emphasis on the family domain (compared to the work domain), the sense

of *work* facilitates *family* life (not *family* facilitates *work* life) might decrease their psychological distress after 1 year.

The other reason why only women's positive spillover had a significant association with their psychological distress is that women tend to enjoy combining work and family roles. Thoits (1991) claimed that women tend to experience combining work with other roles as positive and beneficial in the sense of gendered role expectations and practice [32, 62, 64]. That is, women who engage mainly in the role of caretaking activities (cf. breadwinner role for men), may consider work roles as "self-chosen" (voluntary, often seem to work for self-realization or social significance) rather than "obligatory" (often seem to work for financial need). Self-chosen roles are emotionally and instrumentally easier to maintain than are obligatory roles, and they produce beneficial effects for well-being [32, 47]. Because the area in which our participants live is regarded as a wealthy, highly educated district in Tokyo [69], some female participants may have worked for self-realization rather than for financial need. The characteristics of these women might lead to significant relationships between work-family positive spillover and decreased psychological distress.

However, one thing to be mentioned is the healthy worker effect. Our dropout analysis suggested that the panel group had more positive spillover and less psychological distress than the dropout group, which could lead to an overestimation of the relationship between positive spillover and psychological distress. One limitation of the dropout group might be that they experience difficulties with significant relationships between the increase of WFPS and decrease of psychological distress. Nonetheless, this is supposedly one of the first studies to examine the relationship between spillover including positive aspects and psychological distress using Japanese longitudinal data. In the result, mothers' 1-year

increase of WFPS was significantly associated with a decrease in psychological distress in 1 year.

Limitations

Although the current findings can integrate and expand previous studies on the work-family spillover, the present study has several limitations. First, the relatively low response rate might have unexpected influences on the results. It is possible that parents who devote long hours to work or childrearing could not find time to respond to the questionnaire. It is also possible that parents with low work-family negative spillover or low psychological distress did not participate in the survey because they did not feel the need to do so [37]. Future research should make an effort to reduce these selection biases by using a questionnaire that is more appealing, with fewer items and sentences written in a plain style. Producing free leaflets to share information about stress management and stress coping might also be a good idea. We could distribute such materials with the survey feedback to the high-risk population on mental health.

A second limitation was that some Japanese scales used in this study were still in development. Even though scales for family control and support were translated into Japanese, with back-translation, validity of the Japanese version was not confirmed. Verification of validity regarding family control and support should be examined.

A third limitation was that we used only self-report measures, which could introduce the problem of common method variance, although some studies indicate that it is not as problematic as once thought [44]. Objective measures such as actual work time, actual hours on domestic duties, and partner's ratings of work-family spillover should be included to reconfirm the current results in the future. A fourth limitation was that participants consisted of dual-earner couples with preschool children who lived in one

particular ward of Tokyo, Japan. Therefore, generalization of the findings should be made with caution. Future research should include heterogeneous participants, such as those living in other regions (e.g., suburban city), single-earner couples, or “dinks” (double income no kids) couples.

Practical implications

Regarding practical implications, the present results suggest that employees should be more concerned with decreased work-to-family negative spillover for men, whereas family demands, control, work-to-family positive spillover for women are potential relevant factors of stress for mental health. Organizational work-family initiatives, such as telecommuting, childcare leave, and flexible working style have been offered mainly to female employees. The current results, however, suggest the importance of preventing men’s WFNS as well. Meanwhile, to reduce women’s psychological distress, it is important to take a multi-faceted perspective, such as reducing their family burdens, increasing their family control, and increasing work-to-family positive spillover. For example, family support policies implemented by national or local governments, such as extending childcare services and increasing daycare for sick children, might be effective in reducing family demands. At the same time, preferential policies and rules for working mothers, such as upgrading child-support allowance and special holiday office-tour programs for kids, might be worthwhile to increase positive spillover from work to family. Employer-sponsored child support programs, such as installing an in-house daycare center and preparing for family benefits (e.g., flexible working hours, extended maternity leave, etc.) might be also effective in reducing family demands and increasing WFPS. Regarding family control, assertive skills to negotiate with one’s husband or time management skills might be effective in increasing family controls for working mothers.

CONCLUSIONS

The results of present study indicate that work-to-family negative spillover (WFNS) was longitudinally associated with elevated levels of psychological distress among Japanese working fathers with preschool children. In contrast, an annual increase of work-to-family positive spillover (WFPS) was associated with an annual decrease of psychological distress among Japanese working mothers with preschool children. Our results reveal that factors with long-term effects on psychological distress differ by gender.

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ワーク・ライフ・バランスと健康についてのアンケート

〔こちらはお父様用です〕

◆◆ご記入に関するおねがい◆◆

- アンケートは全部で16ページあります。できるだけすべての質問にお答え下さい。
- ご夫婦で相談することなくお答えいただきますようお願いいたします。
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(お問い合わせはメールもしくはFAXでお願いします)

A. あなたの仕事や職場についてお伺いします。

A1. あなたが職場で体験するストレスについての質問です。 あなたの状況に最もあてはまる番号に○をつけて下さい。		全くない	たまにある	定期的にある	よくある	いつもある
1	とても速く働かなければならない	1	2	3	4	5
2	仕事量が多い	1	2	3	4	5
3	何かを終えるために特に一生懸命働かなければならない	1	2	3	4	5
4	時間のプレッシャーを感じながら仕事をしている	1	2	3	4	5
5	感情面でストレスを感じる仕事だ	1	2	3	4	5
6	そのため、感情がたかぶった状態になる	1	2	3	4	5
7	不平を常にもらしている人や感情的に訴える人とかかわる仕事だ	1	2	3	4	5
8	強い感情を引き起こす状況に出会う仕事だ	1	2	3	4	5
9	周りの人が言葉であなたを威圧することがある	1	2	3	4	5
10	あなたに敬意を払わなかったり、礼儀をわきまえずに接する人と仕事をしなければならない	1	2	3	4	5

A2. あなたの仕事についてお伺いします。 最もあてはまる番号に○をつけて下さい。		ちがう	ややちがう	まあそうだ	そうだ
1	自分のペースで仕事ができる	1	2	3	4
2	自分で仕事の順番・やり方を決めることができる	1	2	3	4
3	職場の仕事の方針に自分の意見を反映できる	1	2	3	4
4	仕事で私の強みを伸ばす機会がある	1	2	3	4
5	仕事で十分に自らを成長させることができる	1	2	3	4
6	私の仕事は私に新しいことを学ぶ機会を与えてくれる	1	2	3	4

A3. あなたの周りの方々についてお伺いします。 最もあてはまる番号に○をつけて下さい。		全くない	多少	かなり	非常に
1	<u>上司</u> と、どのくらい気軽に話ができますか	1	2	3	4
2	<u>職場の同僚</u> と、どのくらい気軽に話ができますか	1	2	3	4
3	あなたが困った時、 <u>上司</u> は、どのくらい頼りになりますか	1	2	3	4
4	あなたが困った時、 <u>職場の同僚</u> は、どのくらい頼りになりますか	1	2	3	4

5	あなたの個人的な問題を相談したら、 上司は 、どのくらい聞いてくれますか	1	2	3	4
6	あなたの個人的な問題を相談したら、 職場の同僚は 、どのくらい聞いてくれますか	1	2	3	4

A4. 仕事についてどのように感じているかの質問です。 あなたの状況に最もあてはまる番号に○をつけて下さい。		ほとんど感じない	やや感じる	結構感じる	とても感じる
1	急いでいて、時間と競争しているように感じる	1	2	3	4
2	常に忙しく、一度に多くの仕事に手を出している	1	2	3	4
3	電話で話しながら、昼食をとり、メモをするというように、同時に2つや3つのことをしていることに気づく	1	2	3	4
4	同僚が仕事を切り上げた後にも自分が働き続けているのに気づく	1	2	3	4
5	友人と会ったり趣味や余暇活動に費やす時間よりも、仕事に費やす時間の方が多い	1	2	3	4
6	私にとって重要なのは、やっていることが面白くないときでも一生懸命に働くことだ	1	2	3	4
7	一生懸命働くように自分を駆り立てている何かを、自分の中に感じることもある	1	2	3	4
8	楽しくないときでさえ、一生懸命働くことが義務だと感じる	1	2	3	4
9	仕事を休んでいる時間は、罪悪感を覚える	1	2	3	4
10	仕事をしていないときはリラックスするのが難しい	1	2	3	4

A5. 仕事についてどのように感じているかの質問です。 あなたが仕事についてそのように感じているかどうかを判断してください。そのように感じたことが一度もない場合は、0（ゼロ）を、感じたことがある場合はその頻度に当てはまる番号に○をつけて下さい。		全くない	ほとんど感じない	めったに感じない	時々感じる	よく感じる	とても感じる	とても感じる
1	仕事をしていると、活力がみなぎるように感じる	0	1	2	3	4	5	6
2	職場では、元気が出て精力的になるように感じる	0	1	2	3	4	5	6
3	仕事に熱心である	0	1	2	3	4	5	6
4	仕事は、私に活力を与えてくれる	0	1	2	3	4	5	6
5	朝に目がさめると、さあ仕事へ行こう、という気持ちになる	0	1	2	3	4	5	6

	(A5. 続き)	全くない	ほとんど感じない	めったに感じない	時々感じる	よく感じる	とても感じる	いっしょを感じる
6	仕事に没頭しているとき、幸せだと感じる	0	1	2	3	4	5	6
7	自分の仕事に誇りを感じる	0	1	2	3	4	5	6
8	私は仕事にのめり込んでいる	0	1	2	3	4	5	6
9	仕事をしていると、つい夢中になってしまう	0	1	2	3	4	5	6

A6. 仕事で感じるさまざまな感情についての質問です。過去 30 日間で仕事（職務、同僚、上司、顧客、給与など）から受けた感情の程度について、最もあてはまる番号に○をつけて下さい。		全くない	めったにない	ときどきある	よくある	非常によくある
1	安心感をおぼえた	1	2	3	4	5
2	気持ちが落ち着いた	1	2	3	4	5
3	充実感をおぼえた	1	2	3	4	5
4	エネルギーが湧いてきた	1	2	3	4	5
5	興奮した	1	2	3	4	5
6	得意になった	1	2	3	4	5
7	熱中した	1	2	3	4	5
8	鼓舞された	1	2	3	4	5
9	満足感をおぼえた	1	2	3	4	5
10	くつろいだ	1	2	3	4	5

A7. 過去30日間のあなたの全般的な仕事の出来具合は何点で表せますか？

あなたの仕事を他の誰かがやって最悪だった時の出来を0点、一番仕事ができる人がやった場合を10点とした時、あなたの出来は何点で表されますか？最もあてはまる番号に○をつけて下さい。

最低											最高
0	1	2	3	4	5	6	7	8	9	10	

B. あなたの仕事外の生活についてお伺いします。

B1. 家庭生活（余暇，家族，友人，親戚付き合い）についての質問です。最もあてはまる番号に○をつけて下さい。		全くない	たまにある	定期的にある	よくある	いつもある
1	家庭で急いでやらなければならないことがある	1	2	3	4	5
2	家庭では忙しい	1	2	3	4	5
3	家庭でやること（家事や家族の世話）がたくさんある	1	2	3	4	5
4	家庭でやるべきことをするための十分な時間がある	1	2	3	4	5
5	家庭でやるべきことをするための時間が足りない	1	2	3	4	5
6	家庭で強い感情を引き起こす状況に出会う	1	2	3	4	5
7	家庭で感情的になる	1	2	3	4	5
8	プライベートな生活で感情的になる事柄を経験する	1	2	3	4	5
9	家の行事をある程度決められる	1	2	3	4	5
10	余暇の使い方は自分で決められる	1	2	3	4	5
11	家庭では物事を自分のやりたいようにする自由がある	1	2	3	4	5
12	仕事以外の時間をどのようにするか自分で決められる	1	2	3	4	5
13	余暇の時間で自分の才能を伸ばすことができる	1	2	3	4	5
14	余暇の時間にたくさんのことを学んでいる	1	2	3	4	5
15	余暇の時間に自らを成長させる機会がある	1	2	3	4	5

B2. 夫/妻（もしくはそれに相当する方）についての質問です。 <u>該当される方がいらっしゃる場合のみ</u> 、最もあてはまる番号に○をつけて下さい。		全くない	たまにある	定期的にある	よくある	いつもある
1	夫/妻は私の気持ちや問題を気にかけてくれる	1	2	3	4	5
2	夫/妻は私のすることを感謝してくれる	1	2	3	4	5
3	夫/妻は必要に応じて、できることをして助けてくれる	1	2	3	4	5
4	夫/妻は必要に応じて、アドバイスをくれる	1	2	3	4	5

C. あなたの仕事と家庭との関連についてお伺いします。

C1. 以下のことはどのくらいの頻度でありますか？ 最もあてはまる番号に○をつけて下さい。		全くない	時々ある	よくある	いつも
1	仕事が大変で、家庭でイライラしてしまう	0	1	2	3
2	仕事のことを考え続けているために、家庭でやるべきことを遂行するのが難しい	0	1	2	3
3	仕事に関する責任から夫 / 妻・家族・友人との約束をキャンセルしなければいけない時がある	0	1	2	3
4	仕事のスケジュールのために、家庭でやるべきことを遂行するのが難しい	0	1	2	3
5	仕事のせいで夫 / 妻・家族・友人と余暇を過ごす余力がない	0	1	2	3
6	仕事を一生懸命しなければならないので自分の趣味などに費やす時間がない	0	1	2	3
7	仕事にとらわれすぎていて家庭でゆっくりくつろげない	0	1	2	3
8	仕事に時間を費やされるため、夫 / 妻・家族・友人ともっと一緒に時間をすごしたいのに、と思う	0	1	2	3
9	家庭の問題でイライラして、職場の同僚たちにあたってしまう	0	1	2	3
10	家庭の問題で悩んでいるために、仕事に集中するのが難しい	0	1	2	3
11	夫 / 妻・家族・友人との問題が仕事のパフォーマンスに影響してしまう	0	1	2	3
12	夫 / 妻・家族・友人との問題のために、仕事へのやる気がでない	0	1	2	3
13	職場でよい1日/1週間を過ごした後は、より配偶者/家族/友人と関わりたい気分になる	0	1	2	3
14	仕事で培ったスキルによって、家庭での作業（家事など）もよりうまくこなすことができる	0	1	2	3
15	仕事で約束を守ることが必要なので、家庭でも約束を守ることができる	0	1	2	3
16	自分の仕事の進め方にならって、家庭でもより効率的に時間を使うことができる	0	1	2	3
17	仕事で学んだことの結果として、夫 / 妻・家族・友人とよりよい付き合いができる	0	1	2	3
18	夫 / 妻・家族・友人と楽しい週末を過ごした後は、仕事もより楽しく感じる	0	1	2	3
19	家庭で責任ある立場にいるので、仕事でも真剣に責任を負うことができる	0	1	2	3

	(C1. 続き)	全くない	時々ある	よくある	いつも
20	家庭で約束を守ることが必要なので、 仕事でも約束を守ることができる	0	1	2	3
21	家庭では効率的に時間を使わなければいけないので、 職場でもより効率的に時間を使うことができる	0	1	2	3
22	家庭生活をきちんとしていることで、 職場でもさらに自信を持つことができる	0	1	2	3

**D. あなたとあなたの妻/夫（もしくはそれに相当する方）との関係について
お伺いします。**

		全くそう 思わない	そう 思わない	どちらとも いえない	そう 思う	全くその 通り
D1. あなたの夫/妻（もしくはそれに相当する方）との関係についての 質問です。該当される方がいらっしゃる場合のみ、最もあてはまる番 号に○をつけて下さい。						
1	夫 /妻は私が必要な時に支えてくれる	1	2	3	4	5
2	夫 /妻は私に怒りや攻撃的な態度を示す	1	2	3	4	5
3	夫 /妻は私のことをひとりの人間として 気にかけていることをはっきり示してくれる	1	2	3	4	5
4	夫 /妻のために、自分の生活が非常に複雑になる	1	2	3	4	5
5	夫 /妻は有益な情報やアドバイスを必要な時に与えてくれる	1	2	3	4	5
6	夫 /妻は私のことを愛していないとはっきり示す	1	2	3	4	5
7	夫 /妻は私がとても大事なことを話したい時、話を聞いてくれる	1	2	3	4	5
8	夫 /妻といると私が必要とされていないと感じる	1	2	3	4	5
9	夫 /妻は私に自信がつくことを言ってくれる	1	2	3	4	5
10	夫 /妻といると神経質になる	1	2	3	4	5
11	夫 /妻は私の考え方を理解してくれる	1	2	3	4	5
12	夫 /妻は私のことを批判する	1	2	3	4	5
13	夫 /妻は私が必要な援助をすぐに与えてくれ、 必要なことをしてくれ、必要なものを与えてくれる	1	2	3	4	5
14	夫 /妻は本当はそうしたくない時でも私のことをけなす	1	2	3	4	5
15	夫 /妻には全面的な信頼を寄せられる	1	2	3	4	5

D2. あなたと夫/妻（もしくはそれに相当する方）とのコミュニケーションについての質問です。該当される方がいらっしゃる場合のみ、最もあてはまる番号に○をつけて下さい。		全くない	たまにある	定期的にある	よくある	いつもある
1	あなたの夫 /妻は、否定的な感情について話すことがどれくらいありますか	1	2	3	4	5
2	あなたの夫 /妻は、肯定的な感情について話すことがどれくらいありますか	1	2	3	4	5
3	あなたの夫 /妻は、仕事上の問題について話すことがどれくらいありますか	1	2	3	4	5
4	あなたの夫 /妻は、仕事で起きた良いことについて話すことがどれくらいありますか	1	2	3	4	5
5	あなたの夫 /妻は、仕事で起こった問題について不満を言うことがどれくらいありますか	1	2	3	4	5
6	あなたの夫 /妻は、仕事について夢中になって話すことがどれくらいありますか	1	2	3	4	5
7	あなたの夫 /妻は、仕事について不平を言うことがどれくらいありますか	1	2	3	4	5
8	あなたの夫 /妻は、仕事で起こった楽しいことについて話すことがどれくらいありますか	1	2	3	4	5

D3. 仕事が終わったあとの夫/妻（もしくはそれに相当する方）との時間の過ごし方についてお伺いします。該当される方がいらっしゃる場合のみ、最もあてはまる番号に○をつけて下さい。		全くない	たまにある	定期的にある	よくある	いつもある
1	夫/妻といるとリラックスしてくつろげる	1	2	3	4	5
2	夫/妻とリラックスできることを一緒にする	1	2	3	4	5
3	夫/妻と一緒にくつろぐための時間をとる	1	2	3	4	5
4	夫/妻と一緒に余暇を過ごす時間を取っている	1	2	3	4	5

E. あなたの夫/妻（もしくはそれに相当する方）の仕事と家庭の関係についての質問です。あなたのお立場から見た夫/妻に最もあてはまると思われる番号に○をつけて下さい。

		全くない	時々ある	よくある	ごくまれに
E1.	夫/妻（もしくはそれに相当する方）の仕事が家庭に与える影響についてです。該当される方がいらっしゃる場合のみ、あてはまる番号に○をつけて下さい。				
1	夫/妻の仕事が大変で、（夫/妻が）家庭でイライラしてしまう	0	1	2	3
2	夫/妻が仕事のことを考え続けているために、（夫/妻が）家庭でやるべきことを遂行するのが難しい	0	1	2	3
3	夫/妻の仕事に関する責任から私・家族・友人との約束をキャンセルしなければいけない時がある	0	1	2	3
4	夫/妻の仕事のスケジュールのために、（夫/妻が）家庭でやるべきことを遂行するのが難しい	0	1	2	3
5	夫/妻の仕事のせいで、私・家族・友人と余暇を過ごす余力がない	0	1	2	3
6	夫/妻が仕事を一生懸命しなければならないので趣味などに費やす時間がない	0	1	2	3
7	夫/妻が仕事にとらわれすぎていて家庭でゆっくりくつろげない	0	1	2	3
8	夫/妻が仕事に時間を費やされるため、私・家族・友人ともっと一緒に時間をすごしたい、と思っている	0	1	2	3
9	夫/妻の仕事がうまくいった日は家へもいい気分で帰ることができ、その気分が家庭の雰囲気にも影響している	0	1	2	3
10	夫/妻が仕事で培ったスキルによって、家庭での作業（家事など）もより上手くこなすことができる	0	1	2	3
11	夫/妻が仕事で約束を守ることが必要なので、家庭でも約束を守ることができる	0	1	2	3
12	夫/妻の仕事の進め方にならって、（夫/妻が）家庭でもより効率的に時間を使うことができる	0	1	2	3
13	夫/妻が仕事で学んだことの結果として、私・家族・友人とよりよい付き合いができる	0	1	2	3

F. あなたご自身のことについてお伺いします。あてはまる番号に○をつけて下さい。

		全くそうではない	そうではない	どちらでもない	そうである	全くそうである
F1.	あなたに最も当てはまると思われる番号に○をつけて下さい。					
1	自分より弱い立場の人を思いやり、心配する気持ちを持つことが多い	1	2	3	4	5
2	小説の中の登場人物に強く感情移入する	1	2	3	4	5
3	判断を下す前に問題のあらゆる側面を見ようとしている	1	2	3	4	5
4	強い感情を感じる状況になると どうしていいかわからないことがある	1	2	3	4	5
5	友達をもっと理解するために、その友達の視点から見たら 物事がどう見えるかを考えることがある	1	2	3	4	5
6	演劇や映画を観た後、登場人物の一人だったかのように感じる	1	2	3	4	5
7	何かを見て、心を打たれることが多い	1	2	3	4	5
8	自分は気持ちの優しい人間だと思う	1	2	3	4	5
9	緊急事態では平常心を失うことが多い	1	2	3	4	5
10	面白い話や小説を読んでいるとき、 話の中の出来事が自分に起こったらどんな気持ちかを想像する	1	2	3	4	5
11	ひどく助けを求めている人を見ると、いてもたってもいられない	1	2	3	4	5
12	誰かを批判する前に、その人の立場になったらどんな気持ちになるかを考えようとする	1	2	3	4	5

F 2. 最近 1 か月間のあなたの状態についてお伺いします。
 あなたの状況に最もあてはまる番号に○をつけて下さい。

		ほとんどなかった	とくに少なかった	つねに少なかった	ほとんどいつもあった			ほとんどなかった	とくに少なかった	つねに少なかった	ほとんどいつもあった
1	活気がわいてくる	1	2	3	4	16	気分が晴れない	1	2	3	4
2	元気いっぱいだ	1	2	3	4	17	仕事や家事が 手につかない	1	2	3	4
3	生き生きする	1	2	3	4	18	悲しいと感じる	1	2	3	4
4	怒りを感じる	1	2	3	4	19	めまいがする	1	2	3	4
5	内心腹立たしい	1	2	3	4	20	体のふしぶしが痛む	1	2	3	4
6	イライラしている	1	2	3	4	21	頭が重かったり 頭痛がする	1	2	3	4
7	ひどく疲れた	1	2	3	4	22	首筋や肩がこる	1	2	3	4
8	へとへとだ	1	2	3	4	23	腰が痛い	1	2	3	4
9	だるい	1	2	3	4	24	目が疲れる	1	2	3	4
10	気がはりつめて いる	1	2	3	4	25	動悸や息切れがする	1	2	3	4
11	不安だ	1	2	3	4	26	胃腸の具合が悪い	1	2	3	4
12	落ち着かない	1	2	3	4	27	食欲がない	1	2	3	4
13	ゆううつだ	1	2	3	4	28	便秘や下痢をする	1	2	3	4
14	何をするのも 面倒だ	1	2	3	4	29	よく眠れない	1	2	3	4
15	物事に集中 できない	1	2	3	4						

F 3. 過去 30 日の間にどれくらいの頻度で次のことがありましたか。		全くない	少しだけ	とくに多い	たいてい	いつも
1	神経過敏に感じましたか	1	2	3	4	5
2	絶望的だと感じましたか	1	2	3	4	5
3	そわそわ、落ち着かなく感じましたか	1	2	3	4	5

4	気分が沈みこんで、何が起ころうとも 気分が晴れないように感じましたか	1	2	3	4	5
5	何をするにも骨折れだと感じましたか	1	2	3	4	5
6	自分は価値のない人間だと感じましたか	1	2	3	4	5

F 4. 満足度について、あなたの状況に最も当てはまる番号に○をつけて下さい。		不満足	やや不満足	まあ満足	満足
1	仕事に満足だ	1	2	3	4
2	家庭生活に満足だ	1	2	3	4

F 5. 全体として、あなたの生活はどれくらい幸福ですか。
あなたの状況に最もあてはまると思う番号に○をつけて下さい。

1	2	3	4	5	6	7	8	9	10
全く幸福でない			どちらでもない				非常に幸福		

G. 最後にあなたご自身やご家族についてお伺いします。

G 1. あなたの性別はどちらですか？（あてはまる番号に○）

1. 男	2. 女
------	------

G 2. あなたの年齢は何歳ですか？（□に数字を記入）

	歳
--	---

G 3. あなたは医師から診断された慢性的な疾患がありますか？（あてはまる番号に○）

1. はい	2. いいえ
-------	--------

G 4. あなたが最後に卒業された学校は、次のうちどれですか？

中退・在学中は卒業としてお答えください（最もあてはまる番号に○）

1. 小学校・中学校	2. 高校・専門学校	3. 短大・高専
4. 大学	5. 大学院以上	

G 5. あなたの現在の婚姻状況は、次のうちどれですか？（最もあてはまる番号に○）

1. 未婚（これまで結婚したことがない）	2. 既婚（現在結婚している）
3. 婚姻以外の内縁（現在結婚はしていないが、同棲・内縁関係にある）	
4. 離婚（今は結婚していない）	5. 死別（今は結婚していない）

G6. お子さんの数は何人ですか？（□に数字を記入）

人

G7. 一番下のお子さんの年齢は何歳ですか？（□に数字を記入）

満 歳

G8. 現在同居（もしくは徒歩圏内在住）中のご家族はあなたを含め何人ですか？
（□に数字を記入）

人

G9. 現在同居（もしくは徒歩圏内在住）中のご家族はどなたですか？
（あてはまる番号すべてに○）

1 配偶者	2 子ども	3 自分の父	4 自分の母
5 配偶者の父	6 配偶者の母	7 孫	8 その他（ <input type="text"/> ）

G10. 保育園以外の家事や子育てサポートについて、利用しているものすべてに○をつけてください。

1 家族・親類のサポート	2 児童館・学童保育など都や区のサービス
3 ベビーシッターなど民間のサービス	4 地域のボランティアスタッフ
5 その他（ <input type="text"/> ）	

G11. 家事の中であなたが負担する割合は全体のどの程度ですか？（□に数字を記入）

全体の %程度

G12. あなたが家事に割いている時間は1日当たりどのくらいですか？（□に数字を記入）

1日に 時間 分程度

G13. あなたがお子さんと過ごす時間は1日当たりどのくらいですか？（□に数字を記入）

1日に 時間 分程度

G14. あなたのご職業は以下のどれにあたりますか？（最もあてはまる番号に○）

1 会社員	2 公務員	3 自営業	4 教員
5 学生	6 無職	7 その他（ <input type="text"/> ）	

G15. あなたの勤務形態は、以下のどれにあたりますか。(最もあてはまる番号に○)

- | | |
|-----------------------|------------------------|
| 1 フルタイム勤務 (週 40 時間以上) | 2 パートタイム勤務 (週 40 時間未満) |
| 3 その他 () | |

G16. あなたの主な仕事内容はどのようなものですか？(最もあてはまる番号に○)

- | | | |
|-------------|----------|-----------|
| 1 経営・管理職 | 2 専門・技術職 | 3 サービス職 |
| 4 生産・建設・技能職 | 5 店頭販売職 | 6 外交・営業職 |
| 7 倉庫・運転・運搬職 | 8 事務職 | 9 その他 () |

G17. あなたの仕事は夜勤がありますか？

- | | |
|-------|--------|
| 1. はい | 2. いいえ |
|-------|--------|

G18. あなたの仕事は裁量労働制ですか？

- | | |
|-------|--------|
| 1. はい | 2. いいえ |
|-------|--------|

G19. あなたの職場に以下の制度はありますか？(あてはまる番号すべてに○)

- | | | |
|-------------|------------|----------|
| 1 フレックス勤務制度 | 2 時間短縮勤務制度 | 3 在宅勤務制度 |
|-------------|------------|----------|

G20. あなたは以下の制度を現在利用中ですか？(あてはまる番号すべてに○)

- | | | |
|-------------|------------|----------|
| 1 フレックス勤務制度 | 2 時間短縮勤務制度 | 3 在宅勤務制度 |
|-------------|------------|----------|

G21. あなたの1日の平均勤務時間(残業含む)はどのくらいですか？(□に数字を記入)

約 □ 時間 □ 分程度

G22. あなたの一日の通勤時間は往復でどのくらいですか？(□に数字を記入)

約 □ 時間 □ 分程度

G23. お子さんの通われている保育園名を以下から選び、
右の□に番号を記入してください。

□ 番

世田谷地域

- | | | | | | | | |
|-------------|------------|---------------|---------|--------|--------|----------|-------|
| 1. 池尻 | 2. 三宿 | 3. 太子堂 | 4. 三軒茶屋 | 5. 世田谷 | 6. 桜 | 7. 東弦巻 | 8. 弦巻 |
| 9. 西弦巻 | 10. 南桜丘 | 11. わかくさ | 12. 下馬 | 13. 駒沢 | 14. 上馬 | 15. 鳩ぽっぽ | |
| 16. 下馬鳩ぽっぽ | 17. おともだち | 18. おともだち(分園) | 19. 桜ヶ丘 | 20. 経堂 | | | |
| 21. 経堂コドモの園 | 22. 野沢こども園 | | | | | | |

北沢地区

23. 代田 24. 豪徳寺 25. 下北沢 26. 大原 27. 若竹 28. 松原北 29. 松原
30. 赤堤 31. 梅丘 32. 春明 33. 早苗 34. 河田 35. 羽根木こども園

玉川地区

36. 南奥沢 37. 奥沢 38. 奥沢西 39. 中町 40. 玉川 41. 上用賀 42. ふじみ
43. 用賀 44. 深沢 45. 新町 46. ナオミ 47. 等々力 48. 尾山台
49. 身延山 50. 身延山（分園） 51. わかな 52. めぐみ 53. 用賀なのはな
54. 用賀なのはな（分園） 55. さくらしんまち

砧地区

56. 砧 57. 船橋東 58. 希望丘 59. 船橋西 60. 小梅 61. 喜多見 62. 南大蔵
63. 大蔵 64. 青い空 65. 祖師谷わかば 66. 大蔵ふたば 67. すこやか園 68. 千歳
69. 宇奈根なごやか園

烏山地区

70. 松沢 71. 上北沢 72. 上祖師谷 73. 上祖師谷南 74. 南八幡山 75. 八幡山 76. 給田
77. 芦花 78. 烏山北 79. 西之谷 80. 祖師谷 81. 烏山杉の子 82. 烏山

仕事と子育ての両立についての考え方や区政への提言、このアンケートに関するご意見やご感想など、どんなことでも結構ですので、以下にご記入ください

来年以降も追跡調査を実施いたします。よろしければぜひお名前をご記入下さい。

お名前は今年と来年の回答を照合する目的のみに使用させていただきます。

あなたのお名前（カタカナで）	様
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以上で質問はおわりです
ご協力いただきまして、本当にありがとうございました

