

# Work-family Spillover among Japanese Dual-earner Couples: A Large Community-based Study

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Abstract: Work-family Spillover among Japanese **Dual-earner Couples: A Large Community-based** Study: Kyoko Shimada, et al. The University of Tokyo **Graduate School of Medicine, Department of Mental** Health—Objectives: To examine the effects of multiple types of work-family spillover (work-to-family negative spillover, WFNS; family-to-work negative spillover, FWNS; and work-family positive spillover, WFPS) on psychological distress among Japanese dual-earner couples with preschool children. Methods: 2,346 parents completed questionnaires measuring workfamily spillover, work- and family-specific variables (i.e., job demands and resources, family demands and resources), and psychological distress. A hierarchical multiple regression analysis was conducted by entering demographic characteristics (gender, age, age of the youngest child, and job contract) in step 1, job demands and resources in step 2, family demands and resources in step 3, work-family spillover in step 4, and three twoway interactions between types of work-family spillover and gender in the final step. Results: Both WFNS and FWNS were positively related to psychological distress after controlling for demographic characteristics and domain specific variables (i.e. job and family demands/resources), and FWNS ( $\beta$ =0.26) had a stronger relation with psychological distress than WFNS ( $\beta$ =0.16). Although WFPS was significantly and negatively related to psychological distress, the relationship was weak ( $\beta$ =-0.05). In addition, two-way interactions of WFNS and FWNS with gender were found; the impact of both WFNS and FWNS on psychological distress is stronger for females than for

males. No significant interaction effect was observed between WFPS and gender. **Conclusions:** In this study of Japanese dual-earner couples with preschool children, work-family negative spillover had a stronger relationship with psychological distress than positive spillover. Gender had a moderating effect on the relationship between negative spillover and psychological distress.

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**Key words:** Community-based study, Dual-earner couples, Gender, Psychological distress, Work-family negative spillover, Work-family positive spillover

There is accumulating evidence that poor psychosocial job characteristics have adverse effects on employee well-being, and lead to increased psychological distress. For instance, several studies using the Job demands-control-support model<sup>1, 2)</sup> have shown that high demands, low control, and low support conditions are associated with impaired well-being. In addition to research focusing on these work-related antecedents (e.g., work overload, decision latitude, supervisor and co-worker support), studies have confirmed the relationship between non-work factors and employee psychological health<sup>3)</sup>.

Contemporary society has greater numbers of dualearner families and longer working hours, and the need to keep balance between work and family roles is becoming an important issue for both males and females. More specifically, employed males and females are increasingly concerned that participation in one domain (e.g., work) negatively impacts participation in another domain (e.g., family)<sup>4,5)</sup>, known as "work-family negative spillover".

Work-family negative spillover, often referred to as "work-family conflict", is defined as a form of inter-role conflict, in which the role pressures from the work and family domains are mutually incompatible in some

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respect<sup>6</sup>). The origin of the concept is the scarcity hypothesis<sup>7)</sup>, which proposes that individuals have limited cognitive, time and energy resources, and that strain, negative affect and frustration may result from individuals' inability to meet the competing demands from these two separate life domains<sup>8)</sup>. This definition implies a bi-directional relationship between the work and family domains: work can interfere with family (work-to-family negative spillover: WFNS), and family can interfere with work (family-to-work negative spillover: FWNS)9, 10). Although previous studies have shown that increased conflict is associated with impaired health, such as psychological distress<sup>11, 12)</sup>, the vast majority of studies have focused primarily on WFNS, examining how experiences in the work domain are transferred to and interfere with the non-work domain<sup>13)</sup>.0However, considering the growing body of evidence that both types of work-family negative spillover (WFNS/FWNS) are independently related to psychological health<sup>11, 13–15)</sup>, it is important to simultaneously examine both types of workfamily negative spillover (WFNS/FWNS) to fully understand their impact on psychological health. Therefore, the first aim of the present study was to investigate significant relations of WFNS and FWNS with psychological distress.

In addition to the evidence indicating that work-family negative spillover results in a variety of problems, researchers have also identified benefits of combining work and family, and that these benefits are worth the difficulties<sup>16)</sup>, known as "work-family positive spillover". It is defined as the extent to which participation at work (or family) is made easier by virtue of the experiences, skills, and opportunities gained or developed at family (or work)<sup>9)</sup>. Like negative spillover, positive spillover has a bi-directional dimension, whereby work facilitates family life (work-to-family positive spillover: WFPS) and family facilitates work life (family-to-work positive spillover: FWPS). According to the role enhancement hypothesis, multiple roles bring rewards, such as income, heightened self-esteem, opportunities for social relationships, and the experience of success<sup>16)</sup>. From this perspective, the combination of certain roles has a positive, rather than a negative, effect on well-being<sup>5)</sup> especially on better psychological health<sup>8)</sup>. To date, however, these benefits (i.e., positive spillover) have been much less frequently studied than the difficulties (i.e., negative spillover, conflict) of engaging in multiple roles despite the importance of considering the beneficial aspects of the work-family interface<sup>4,16)</sup>. In addition, there is little existing research examining the benefits of combining work and family roles on psychological health in Japan. Therefore, the second aim of the present study was to investigate the relationship of positive spillover with psychological distress.

We extended previous work-family literature in the

following two ways. First, we included multiple types of work-family spillover, incorporating both negative and positive aspects. In contemporary Japanese society, changing trends such as an increasing number of dualearner families<sup>17)</sup> signal the need to identify benefits and favorable effects of holding multiple roles (i.e., positive spillover between work and family) on psychological health among dual-earner couples. To gain a better understanding of the effects of work-family spillover on psychological health, it is important to consider both positive and negative aspects of combining work and family roles. Second, although there have been several studies in Japan that have examined the relationship between work-family negative spillover and health outcomes<sup>18–20)</sup>, generalization of the results awaits further empirical examination due to the limited number of participants and/or the use of homogeneous samples (e.g., working mothers, men in specific type of employment). Hence, an investigation among a broader and heterogeneous sample of employees still stands out.

Because demands (like work pressure and emotional demands) and resources (like autonomy and social support) have been found to be related to occupational well-being<sup>21)</sup>, in the analysis we examine the impact of work-family spillover after controlling for demands and resources in job and family domains.

Although gender seems an important issue in considering the relationship between work-family spillover and psychological health, the research evidence on gender differences is inconsistent<sup>9)</sup>. For instance, Frone et al. 11, 14) found that gender did not moderate the relation between work-family conflict and psychiatric disorders, and Watai et al.20) showed that WFNS was significantly correlated with depression and fatigue among both male and female employees in Japan. On the other hand, MacEwen and Barling<sup>22)</sup> reported that FWNS was related to depression only for males, Hammer et al.8) also found significant relationships between WFNS/FWNS and depression only for males. Overall, the evidence for gender differences is mixed. Hence, we examine gender differences in the relationship between work-family spillover and psychological distress in an exploratory manner.

## Methods

## 1. Sampling procedure and participants

The present study was conducted as part of the Tokyo Work-family INterface (TWIN) study, a large cohort study. The TWIN study aims to examine the spillover and crossover processes of well-being among all dual-earner couples with preschool children (more than 4,000 couples) in Setagaya ward, Tokyo, Japan. To the best of our knowledge, this is the largest work-family interface study that has collected data from dual-earner couples. In this paper, we focus on spillover and analyze the first

**Table 1.** Demographic characteristics among dual-earner couples who met the study criteria (N=2,346)

		%
Gender	Male	47.1
	Female	52.9
Educational b	ackground	
	Less than college or	37.7
	special training school	
	Bachelor's degree or higher	62.3
Having chron	ic disease	15.4
Number of ch	ild (ren)	
	1	46.8
	2	42.2
	3	9.7
	More than 4	1.2
Occupation	Company employee	64.8
	Civil servant, teacher	11.7
	Self-owned business	11.7
	Other	11.8
Job contract	Full-time employee (≥40 h/wk)	82.2
	Part-time employee (<40 h/wk)	17.8

wave of independent data collected from September to October in 2008.

First, a letter was sent to all directors of nursery schools in Setagaya ward through the Child-raising Assistance Department of the ward in August 2008. The letter explained the aims, procedures, and ethical considerations of the study. Eighty-one out of all 82 nurseries agreed to participate. A total of 8,964 questionnaires were distributed. Participants were requested to fill out the questionnaire independently from their partner and return it in a sealed envelope to the researchers by mail.

Of the 8,964 questionnaires distributed, 2,992 were returned, resulting in a response rate of 33.4%. All respondents included in the analyses met the following four criteria: (a) having at least one child of six years or younger, (b) having a partner (neither widowed nor divorced status), (c) being a dual-earner household, (d) completed all the items of the key variables. In total, 2,346 respondents (1,104 males and 1,242 females) met these criteria (492 had missing values, 154 had no partner). Demographic information, such as gender, age, chronic disease, educational background, number of children, age of the youngest child, occupation and job contract, are shown in Table 1. Comparisons of key study variables between "couple data", both father and mother returned completed questionnaires, and "single data", only one parent returned the questionnaire, did not reveal serious selection bias. Although "couple data" showed a significantly younger age (t=3.87, p<0.001) and higher family support (t=3.44, p<0.001) for females than "single data", no significant differences were found for any of the other variables.

The whole procedure followed in the present study was reviewed and approved by the Ethics Committees of the Graduate School of Medicine, The University of Tokyo.

## 2. Measures

A self-administered questionnaire was used which included measures of 1) work-family spillover, 2) psychological distress, 3) work- and family-related variables, and 4) demographic variables.

- 1) Work-family spillover: Work-family negative spillover (WFNS and FWNS) and work-family positive spillover (Work-to-family positive spillover and Familyto-work positive spillover) were measured with 22 items using the Survey Work-home Interaction-NijmeGen, the SWING developed in the Netherlands<sup>23)</sup>. WFNS was measured with 8 items (e.g., "Your work schedule makes it difficult for you to fulfill your domestic obligations"). FWNS was measured with 4 items (e.g., "You have difficulty concentrating on your work because you are preoccupied with domestic matters"). Work-to-family positive spillover was measured with 5 items (e.g., "You manage your time at home more efficiently as a result of the way you do your job"). Finally, Family-to-work positive spillover was measured with 5 items (e.g., "After spending a pleasant weekend with your spouse/family/ friends, you have more fun in your job"). Items are scored on a four-point Likert scale, from (0) "never" to (3) "always". In order to avoid multi-collinearity due to high correlations between Work-to-family positive spillover and Family-to-work positive spillover (r=0.67 for males and 0.64 for females), we summed up Work-to-family positive spillover and Family-to-work positive spillover into Positive spillover (PS) following the example of previous studies 5, 8, 23)
- 2) Psychological distress: The Kessler 6 (K6) questionnaire was employed to assess psychological distress<sup>24, 25)</sup>. It includes six items assessing how frequently a person experiences symptoms of psychological distress (e.g. feeling so sad that nothing can cheer you up) during the past 30 days. Items are scored on a five-point scale, from (1) "none of the time" to (5) "all of the time". The Japanese version of the K6 has been validated for screening mental disorders<sup>24)</sup>.
  - 3) Work- and family-related variables
- (1) Work demands: *Work overload* was measured with 4 items that refer to quantitative, demanding aspects of the job (e.g., "Do you have a lot of work to do?")<sup>26)</sup>. Items are scored on a five-point frequency scale, from (1) "never" to (5) "always". Work emotional demands were measured with 6 items referring to emotionally charged situations <sup>27)</sup>. The same answer categories as for work overload were used. A sample item is "Does it sometimes happen that others intimidate you

- verbally?" We regarded the work demands as the total scores of work overload and work emotional demands for the purpose of eliminating their multi-collinearity.
- (2) Work resources: Work control was measured with a subscale of the Brief Job Stress Questionnaire (BJSQ)<sup>28)</sup>. The scale includes 3 items, like "My job allows me to allocate time by myself". Supervisor and co-worker support were also measured with a subscale of the BJSQ. Each scale also included 3 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 four-point Likert scale, from (1) "agree" to (4) "disagree".
- (3) Family demands: *Family demands* were assessed with 8 items<sup>10</sup> that refer to the quantitative and emotional burdens of home (e.g., "Do you often have to do things in a hurry at home?", "Do emotions run high at home?"). Items are scored on a five-point Likert scale, from (1) "never" to (5) "always". These scales were developed on the basis of the respective scales that measure job demands.
- (4) Family resources: Family control and family support were assessed with 4 items each, like "I determine what happens at home" and "My partner pays attention to my feelings and problems" 29). Items are scored on a five-point Likert scale, from (1) "never" to (5) "always". As for Family demands, these scales were developed on the basis of the respective work-related scales.

# 4) Demographic variables

Gender, age, educational background, having chronic disease, number of children, age of the youngest child, occupation and job contract were assessed in the questionnaire.

## 3. Statistical analyses

A hierarchical multiple regression analysis<sup>30)</sup> was carried out for psychological distress. The independent variables were entered into the equation as follows. In step 1, demographic variables such as gender, age, age of the youngest child, and job contract were entered. In step 2, work demands and resources were entered. In step 3, family demands and resources were entered. In step 4, work-family spillover items (i.e., WFNS, FWNS and PS) were entered. In order to test the interactive effects between work-family spillover and gender on psychological distress, three two-way interactions (WFNS × Gender, FWNS × Gender, and PS × Gender) were entered in the final step. Since we are especially interested in the unique relationship between work-family spillover and psychological distress, we controlled for demographic variables and domain specific variables (i.e., work demands and resources, family demands and resources) by entering them before the work-family interface variables. As one problem of this analytical approach is the lack of power<sup>31</sup>), we used a more liberal significance criterion of 0.10. According to Finney *et al.*,<sup>32)</sup> the average effect generated by using deviation scores is the most appropriate parameter estimate for the main effects in the presence of significant interactions. Therefore, the multiplicative interaction term was computed from centered variable scores (i.e., mean subtraction)<sup>33)</sup>. Accordingly, unstandardized regression coefficients are presented in the table as well<sup>31, 33)</sup>. These statistical analyses were performed with *SPSS 17.0J* for Windows.

#### **Results**

#### 1. Descriptive statistics

Means, standard deviations and internal consistencies (Cronbach's alpha coefficients) for the key study variables and inter-correlations between them are shown in Table 2. All scales showed acceptable levels of reliability (Cronbach's alpha coefficients of 0.75 or higher). Examination of Table 2 indicates that work demands, family demands, WFNS and FWNS were significantly and positively related to psychological distress. Meanwhile, work control, work support, family control, family support and positive spillover were significantly and negatively related to psychological distress.

# 2. Effects of work family spillover

Table 3 shows the result of the hierarchical multiple regression analysis for psychological distress. The table presents the adjusted  $R^2$ , unstandardized and standardized regression coefficients for each step. The increases in adjusted  $R^2$  are significant in all steps. Work-related variables entered in step 2 explained 15.8% of the variance of psychological distress, and family-related variables entered in step 3 additionally and significantly explained 5.9% of the variance. In step 4, three workfamily spillover variables (WFNS, FWNS and PS) additionally and significantly accounted for 8.8 % of the variance in psychological distress after adjusting for demography, demands and resources. WFNS and FWNS were significantly and positively related to psychological distress ( $\beta$ =0.16 and 0.26 for WFNS and FWNS, respectively, p<0.001) and PS was significantly and negatively related to psychological distress ( $\beta$ =-0.05, p<0.01). After adjusting for all of the above variables, the proportion of explained variance that was added by the interaction variables was 0.4% (p<0.001). Two interaction terms (i.e. FWNS × gender and WFNS × gender) were significant (p<0.5 and p<0.1, respectively). As shown in Fig. 1, although females showed lower psychological distress scores than males at low (mean-1 SD) to medium levels of WFNS, the score became comparable between the two groups at a high (mean + 1 SD) level of WFNS. Regarding the interaction between FWNS and gender (Fig. 2), although females showed

Table 2. Means, standard deviations, Cronbach's alphas and intercorrelations between demographic characteristics, work-related variables, family-related variables, work-family

spinovers and psychological disuess aniong duar-cannel couples (11-2,177)	Sycholog	gıcaı aıs	uces an	nong adai-	carrier coup	) ICS (14-2,	(1/1)										
Variable	Mean	$SD^{\mathrm{a}}$	$a^{\mathrm{b}}$	-	2	3	4	5	9	7	∞	6	10	11	12	13	14
1. Gender	I	I	I	1													
2. Age	37.18	4.87	I	-0.17**	ı												
3. Age of the youngest	2.65	1.69	ı	0.02	0.29 **	I											
child																	
4. Job contract c	I	ı	ı	0.34 **	-0.08 **	0.04											
5. Work demands	26.81	8.49	0.90	$-0.15^{**}$	0.04	0.02	$-0.18^{**}$	ı									
6. Work control	8.26	2.08	0.85	-0.09 **	0.04	-0.02	-0.02	-0.33 **	ı								
7. Work support	16.14	3.71	08.0	0.06**	-0.11 **	-0.03	0.02	-0.18**	0.28 **	I							
8. Family demands	24.86	68.9	0.75	0.53 **	-0.02	-0.02	0.14**	0.10**	-0.09	-0.02	ı						
9. Family control	12.68	3.54	0.81	0.17 **	-0.06 **	0.01	0.06**	-0.15**	0.19 **	0.18**	-0.08**	ı					
10. Family support	13.00	4.12	0.89	-0.08 **	-0.09 **	-0.08 ***	-0.05*	-0.01	0.10 **	0.18**	-0.22 **	0.29 **	ı				
11. WFNS d	7.36	4.66	98.0	-0.12**	0.05 *	0.04	-0.14**	0.52**	-0.18**	-0.15***	0.20**	-0.19 **	-0.06 ***	ı			
12. FWNS e	1.20	1.75	0.81	-0.10*	0.02	0.03	-0.04*	0.19**	-0.07 **	-0.13**	0.19**	-0.16**	-0.14 **	0.35***	ı		
13. PS <sup>f</sup>	14.13	6.24	0.88	0.09 **	-0.08 ***	-0.01	0.01	0.04	0.11 **	0.18**	0.03	0.23 ***	0.18***	-0.03	0.01	ı	
14. Psychological distress	9.33	4.31	06.0	0.020	0.03 0	0.04 *	0.020	0.32**	-0.22 **	-0.27**	0.26**	-0.19** -0.16**	-0.16**	0.38**	0.39**	093 **	ı

\*p<0.05, \*\*p<0.01. a Standard deviation. b Cronbach's alpha. c0=full-time employee (>40 h/wk), 1=part-time employee (<40 h/wk). d Work-to-family negative spillover. e Family-to-work negative spillover. f Positive spillover.

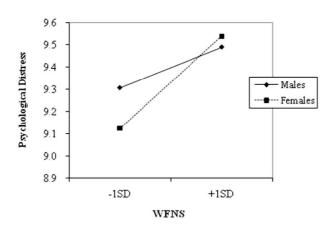
Step and variable	$B^{\mathrm{b}}$	$eta^{ m c}$	p	Adjusted R <sup>2</sup>
Step1				0.001
Gender	-0.033	-0.004	0.870	
Age	-0.009	-0.010	0.581	
Age of the youngest child	0.051	0.020	0.269	
Job contract d	0.688	0.061	0.001	
Step2				0.159
Work demands	0.072	0.143	0.000	
Work control	-0.112	-0.054	0.005	
Work support	-0.168	-0.145	0.000	
Step3				0.217
Family demands	0.088	0.141	0.000	
Family control	-0.039	-0.032	0.095	
Family support	-0.033	-0.031	0.099	
Step4				0.305
WFNS e	0.149	0.162	0.000	
FWNS f	0.631	0.257	0.000	
PS g	-0.037	-0.054	0.003	
Step5				0.308
WFNS × Gender	0.058	0.031	0.092	
FWNS × Gender	0.208	0.042	0.023	

**Table 3.** Hierarchical multiple regression analyses predicting psychological distress among Japanese dual-earner couples (N=2,197)<sup>a</sup>

-0.006

-0.008

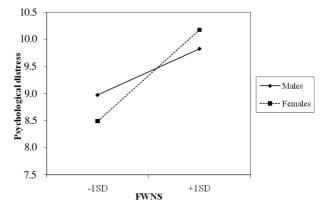
<sup>&</sup>lt;sup>c</sup> Standardized regression coefficients. <sup>d</sup> 0=full-time employee (≥40 h/wk), 1=part-time employee (<40 h/wk). <sup>e</sup> Work-to-family negative spillover. <sup>f</sup> Family-to-work negative spillover. <sup>g</sup> Positive spillover.



PS × Gender

**Fig. 1.** Interaction effect of Work-to-family negative spillover (WFNS) and gender on psychological distress (K6 score). N=2,197.

lower psychological distress scores than males at low (mean–1 SD) to medium levels of FWNS, they showed higher scores at high (mean + 1 SD) levels of WFNS. The interaction pattern indicates that there was a stronger positive relationship between WFNS as well as FWNS and psychological distress for females than for males.



0.724

**Fig. 2.** Interaction effect of Family-to-work negative spillover (FWNS) and gender on psychological distress (K6 score). N=2,197.

No significant interaction between PS and gender was observed.

## Discussion

The overarching goal of this study was to examine the relationship between multiple components of work-family

<sup>&</sup>lt;sup>a</sup> Psychological distress was measured by K6 scores. <sup>b</sup> Unstandardized regression coefficients.

spillover (i.e., WFNS, FWNS, and PS) and psychological distress. The hierarchical multiple regression analysis showed that both WFNS and FWNS were positively related to psychological distress ( $\beta$ =0.16 and  $\beta$ =0.26, respectively) whereas PS was negatively but weakly related to psychological distress ( $\beta$ =-0.05). These results suggest that the negative aspect of work-family spillover was related to increased psychological distress regardless of direction (i.e., WFNS and FWNS) for both genders. The present findings confirm and further support previous findings that for working parents conflicting demands from two domains in either direction are an important factor in predicting their psychological distress, in addition to work and family demands themselves<sup>34, 35)</sup>. The present findings also confirm the findings of previous studies in Japan that indicate a negative relationship between work-family negative spillover and psychological health. Specifically, since generalization of previous results awaits further empirical examination due to limited numbers of participants and/or use of homogeneous samples (e.g., working mothers, men in specific types of employment), our findings among a broader and heterogeneous sample of workers contributes to the generalization of previous findings in Japan.

It is interesting to note that the results of the present study show FWNS had stronger relationships with psychological distress than WFNS. In other words, it suggests the possibility that working parents in this sample are more concerned about the adverse impact of family responsibilities on their work than that of workplace burden affecting their family life. This finding can be explained on the basis of identity theory. Accordingly, people devote time and energy to constructing desired identities and are threatened when their self-images are damaged by impediments to selfidentifying activities<sup>11,36)</sup>. In this sense, FWNS represents an impediment to successfully meeting "work"-related demands and responsibilities, thereby undermining a person's ability to construct and maintain a positive workrelated self-image<sup>11)</sup>. These results were in line with previous studies with Japanese participants<sup>37)</sup>.

As to the positive aspect of work-family spillover, the relationship between PS and psychological distress was significant but weak ( $\beta$ =–0.05, p<0.01). It suggests that even if working parents experience benefits from combining work and family roles, such as higher income, heightened self-esteem, opportunities for social relationships, and the experience of success<sup>16</sup>, such experiences coincide only to a small extent with increased psychological distress. Since some existing studies have shown that positive spillover is more likely to link to positive outcomes<sup>5,38</sup>, positive aspects of well-being such as job or life satisfaction, work engagement<sup>39)</sup> and work motivation may be included for assessing the effect of positive spillover, which should be a focus of future

research.

It is notable that the present study showed that gender moderates the relations of either types of work-family negative spillover (WFNS/FWNS) with psychological distress. More specifically, the impact of both WFNS and FWNS on psychological distress is stronger for females than for males, which is unique and inconsistent with existing studies<sup>8, 11, 14, 20, 22)</sup>. As noted above, Frone *et* al.11,14) and Watai et al.20) found no significant gender interaction in the magnitude of the relationships of workfamily conflict to psychological health. Further, MacEwen and Barling<sup>22)</sup> and Hammer et al.<sup>8)</sup> found significant relationships between work-family conflict and depression only for males, which is contrary to our findings. Our results, therefore, suggest that more crosscultural work-family spillover research on gender differences is needed. Based on traditional gender role expectations that still exist in Japan today<sup>17, 19)</sup>, it is common for working mothers to take on the largest part of household and care-taking activities alongside their work compared to fathers. At the same time, working mothers living in the Tokyo metropolitan area, such as Setagaya, might have important responsibilities at work as well. These double burdens may mentally affect their health.

# Limitations and future directions

Although the current findings can integrate and expand previous studies on work-family spillover, this study has several limitations. First, the present study relied on cross-sectional data. Therefore, causal inferences could not be made and long-term effects remain unknown. Longitudinal studies are needed to further test the causality of these relationships and to reveal long-term effects. A second limitation was the use of self-report measures. This may introduce the problem of common method variance, although some studies indicate that it is not as problematic as once thought 40). Objective measures such as actual working time, actual hours on domestic duties, should be used to reconfirm the present results in the future. Third, the relatively low response rate might have unexpected influences on the results. There is a possibility that the parents who were engaged in long hours working or childrearing could not find time to respond to the questionnaire. It is also possible that parents who have low work-family negative spillover or low psychological distress did not participate in this survey because of not feeling the need to do so. Future research should make an effort to reduce these selection biases by using a more appealing questionnaire with fewer items.

#### **Conclusions**

The present large-scale community-based crosssectional study revealed that negative spillover between work and family (both WFNS and FWNS) was strongly associated with psychological distress, unlike work-family positive spillover, among Japanese dual-earner couples with preschool children. These associations were stronger for females than for males. It implies that decreasing work-family negative spillover, compared to increasing work-family positive spillover, should have higher priority when considering measures for decreasing psychological distress, especially for working mothers.

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