

Gender Differences in the Motivational Process of the Job Demands-Resources Model

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ABSTRACT

Background Achieving gender equality is an important goal in Japan. Consequently, this study aimed to examine gender differences in a series of associations between job demands or resources and job performance mediated by work engagement (WE) in the motivational process of the job demands-resources model.

Methods This study recruited 671 non-manual workers (260 men and 411 women) through an online survey. The measured variables were demographic information, job demands or resources, WE, and job performance. Multiple-group structural equation modeling was used to analyze the data.

Results Regarding the level of job demands or resources and WE, no significant difference was observed between men and women. Whereas, job performance was significantly higher in women than in men. Additionally, multiple-group structural equation modeling indicated that the model that imposed on all path coefficients for equality constraints had a better fit, and consequently, no gender differences.

Conclusion Although the motivational process indicated no gender differences, job performance was higher in women than in men due to the management of a gender-equal and friendly work environment. Further comprehensive examinations, that use other variables not included in the present study, are required to understand women's high job performance.

Key words gender differences; job demands-resources model; motivational process; multiple-group structural equation modeling

“Achieving gender equality and empowering all women and girls” is among the 17 Sustainable Development Goals (SDGs).¹ It aims to eliminate discrimination, violence, and prejudice and create a society in which individuals share equal responsibilities and rights, regardless of gender. This is an important goal in Japan since the country's gender gap index ranks extremely low internationally.² The causes are characterized by women's social advancements, such as a low percentage of women in managerial positions and a large number of women non-regular employees.^{2, 3} Therefore, fostering

a social climate and work environment where women can work comfortably is important. Consequently, the Japanese government has been attempting to reform work styles.⁴

Previous studies that examined gender differences in occupational stress found that there were differences in the types of job stressors,⁵ effects of job stressors on the mind/body,^{6, 7} and the use of stress coping strategies.⁸ Some studies that discussed the association between job stressors and depression reported that the association was stronger in men than in women.^{9–11} In contrast, women were found to be more vulnerable to stressors, such as work-family role conflicts, few opportunities for career advancement, and gender discrimination and stereotypes in the workplace.¹² Consequently, practitioners and researchers involved in interventions related to workers' mental health should consider gender differences in the type of job stressors and the degree of the relationship between job stressors and stress reactions.

Eguchi et al.¹³ conducted a one-year longitudinal study on manufacturing company workers and reported that the influence of work engagement (WE) on job performance was stronger in women than men. This indicated that a part of the motivational processes, the positive aspects of the job demands-resources model (JD-R model), differed based on gender. Considering that the type of stressors and influence of job stressors on well-being differed based on gender,^{5, 14} the present study predicted that the association between WE and job performance and between job demands or resources and WE would differ.

To discuss gender differences in motivational processes, differences in the relationship between job demands or resources and WE should be examined. The motivational process refers to a series of flows in which

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Abbreviations: BJSQ, brief job stress questionnaire; JD-R, job demands-resources; SDGs, sustainable development goals; WE, work engagement; WHO-HPQ, world health organization health and work performance questionnaire

WE mediates the influence of job resources on organizational outcomes.^{15–17} Job demand is not included in this motivational process; however it was found to be associated with WE.^{18–20} Schaufeli and Taris²¹ stated that “the JD-R model is an open, heuristic model rather than a specific model that includes well-defined sets of particular demands, resources, mental states, and outcomes.” They reported that the JD-R model roughly described the relationship between the variables related to job demands and resources. Furthermore, other theoretical frameworks were required to further explain the relationship.²¹ In other words, the JD-R model, unlike other occupational stress models, such as the job demand-control-support and effort-reward imbalance models,^{22, 23} does not use a specific set of variables. Rather, it selects and uses variables that constitute job demands and resources. Considering the characteristics of the JD-R model described above, this study used job demands, controls, and supervisor or co-worker supports in the job demand-control-support model, which has been widely used,²² and examined the relationships between job demands or resources and WE.

Furthermore, to control for the effects of occupational status, the subjects in this study were limited to non-manual workers. This was because Eguchi et al.¹³ reported that differences in occupational status and job descriptions may have affected their results. In their study, approximately 20% of the male participants were engaged in manual work, while the majority of the female participants were engaged in non-manual work. Therefore, this study clarified whether the relationship between WE and job performance differed among men and women by controlling for occupational status and considering the relationship between WE and job demands or resources, which were psychosocial factors in workplaces.

The present study aimed to examine the gender differences in the motivational processes of the JD-R model for non-manual workers. Specifically, gender differences were examined in a series of processes in which WE mediated the relationship between job demands or resources and job performance.

SUBJECTS AND METHODS

Participants

This survey was conducted with registered monitors of the Internet research firm Rakuten Insight, Inc. Since the registered monitors had various characteristics, such as gender and age, the inclusion criteria were defined as (a) Japanese and (b) full-time employees of an organization. Individuals who were self-employed, part-time workers, or unemployed individuals were excluded.

Before the survey began, informed consent was obtained from all participants via a web-based form.

To increase the likelihood of obtaining a representative sample of Japanese workers, population proportions were assigned by gender, age, and residential area based on population estimates published by the Statistics Bureau of the Ministry of Internal Affairs and Communications (2019).²⁴ Subsequently, data were obtained from 1,000 Japanese workers (504 men and 496 women). However, only data from non-manual workers were used for the analysis. The final analysis included 671 non-manual workers (260 men and 411 women).

This study was approved by the Tottori University School of Medicine Ethics Committee (No. 20A100).

Measures

Demographic characteristics

The following demographic characteristics were included: age, gender, education level, marital status, number of children, career length, and occupational status.

Job demands

Six items from the Brief Job Stress Questionnaire (BJSQ) were used: three items each for quantitative and qualitative demand.²⁵ Although there are a total of 17 items on the BJSQ that ask about job stressors, since this study targets non-manual workers, we used the items of quantitative and qualitative demand that ask about general workload. Items that ask about quantitative demand include “I have an extremely large amount of work to do,” and items that ask about qualitative demand include “I have to pay very careful attention.” These items were rated on a 4-point scale (from 1 “very much so” to 4 “not at all”). The total score was used in the analysis. Both quantitative and qualitative demand scores were calculated so that the heavier the job load, the higher the score.

Job resources

To assess job resources, nine items from the BJSQ were used: three items each for job control, supervisor support, and co-worker support.²⁵ These are items among the variables used as job resources that correspond to control and support in the job demands-control-support model.²² Items that ask about job control include “I can work at my own pace.” Items asking about the supervisor support and co-worker support include “How comfortable are you talking to the following people?” The respondents were asked to answer these questions by assuming that they were their supervisors or colleagues. All items were rated on a 4-point scale (job control: from 1 “very much so” to 4 “not at all”; supervisor or

co-worker support: from 1 “extremely” to 4 “not at all”). The total score in job control, supervisor or co-worker support was used for analysis. All of these scores were calculated so that higher job control and more support from supervisors and co-workers resulted in higher scores for each.

Work engagement

The Japanese short version of the Utrecht work engagement scale was used.²⁶ This scale consisted of nine items, rated on a 7-point scale, and included three sub-factors: vigor, dedication, and absorption. Shimazu et al.²⁶ reported that, for Japanese workers, the one-factor structure fits better than the conventional three-factor structure. Therefore, this study used the total scores of the three sub-factors.

Job performance

Job performance was assessed using the Japanese version of the World Health Organization Health and work Performance Questionnaire short version (WHO-HPQ).²⁷ This study used a questionnaire item of absolute presenteeism included in the scale: “On a scale from 1 to 10, where 1 is the worst job performance anyone could have at your job and 10 is the performance of a top worker, how would you rate your overall job performance on the days you worked during the past four weeks?” The absolute presenteeism score was obtained by multiplying the participant’s response by ten. Consequently, the absolute presenteeism score ranged from 10 (total lack of performance during the time on the job) to 100 (no lack of performance).

Statistical analyses

To examine the demographic characteristic differences by gender, t-tests were conducted for age and career length and chi-squared (χ^2) tests for education level, marital status, number of children, and occupational status. Additionally, t-tests were conducted to examine the gender differences in job demands or resources, WE, and job performance.

Pearson’s correlation and Cronbach’s alpha coefficients were calculated for each gender.

To examine the gender differences in the motivational process, multiple-group structural equation modeling was conducted. The model assessed was one in which job demands and resources were related to job performance via WE. Statistical analyses were performed using R version 4.0.4.

RESULTS

Gender differences in demographic characteristics

Table 1 presents the participants’ demographic characteristics. Results of the t-tests showed that women were older than men; however, there was no significant difference in career length between the two. Regarding education level, marital status, number of children, and occupational status, the results of the chi-squared tests were all significant. Regarding education level, the percentage of university or graduate school graduates was higher in men than in women. Meanwhile, the percentage of high school, vocational school, or junior college graduates was higher in women than in men. Regarding marital status and number of children, the percentage of unmarried and childless participants was higher in women than in men. Regarding occupational status, a larger proportion of women were clerical support workers, while a smaller proportion were technicians and associate professionals and services and sales workers.

To examine the gender differences in job demands and resources, WE, and job performance, t-tests were conducted (Table 1). No significant differences were found in WE and all sub-variables of job demands or resources. However, a significant difference was observed in job performance, which indicated that women’s job performance was higher than men’s.

Pearson’s correlation and Cronbach’s alpha coefficients for each gender are presented in Table 2. All Cronbach’s alpha coefficients were above 0.70 for both men and women, which was sufficient.

Gender differences in motivational processes

Without equality restrictions by gender, the goodness-of-fit of a diagram that established paths from job demands and job resources to WE and WE to job performance was calculated. Additionally, the goodness-of-fit of a diagram that controlled for the effect of age was calculated, as there was a significant difference between men and women regarding age (Table 1). Since the results indicated that the goodness-of-fit of the diagram that controlled for age was slightly better than that of the diagram that did not control for age, this study included age as a variable in the subsequent analyses (without controlling for age; $\chi^2(22) = 74.22$, AGFI = 0.994, CFI = 0.957, RMSEA = 0.084; after controlling for age; $\chi^2(22) = 71.54$, AGFI = 0.993, CFI = 0.962, RMSEA = 0.082). The age-controlled diagram was labeled Model 1.

Subsequently, the gender differences in each path coefficient in Model 1 were examined and significant trends were observed in the two associations between supervisor support and WE or WE and job performance. For other associations, no significant

Table 1. Demographic characteristics of the subjects (N = 671)

	Men (N = 260)				Women (N = 411)				P value
	Mean	SD	N	%	Mean	SD	N	%	
Age (yrs)	41.6	12.4			44.8	13.2			0.002 ^b
Education									0.000 ^c
University/graduate school graduate			200	76.9			191	46.5	
Vocational school/college graduate			39	15.0			137	33.3	
High school graduate			21	8.1			83	20.2	
Marital status									0.000 ^c
Unmarried			77	29.6			174	42.3	
Married			171	65.8			174	42.3	
Other ^a			12	4.6			63	15.3	
Number of child(ren)									0.042 ^c
0			117	45.0			235	57.2	
1			41	15.8			53	12.9	
2			75	28.8			87	21.2	
3			24	9.2			33	8.0	
4			3	1.2			3	0.7	
Career length (yrs)	12.5	11.3			12.5	11.2			0.993 ^b
Occupational status (Non-manual workers)									0.000 ^c
Professionals			82	31.5			131	31.9	
Technicians and associate professionals			63	24.2			15	3.6	
Clerical support workers			76	29.2			226	55.0	
Services and sales workers			39	15.0			39	9.5	
Measurements									
Job demands									
Quantitative demand	8.2	2.1			8.0	2.3			0.333 ^b
Qualitative demand	8.3	2.1			8.2	2.1			0.750 ^b
Job resources									
Job control	8.2	2.1			8.2	2.0			0.746 ^b
Supervisor support	7.3	2.3			7.0	2.4			0.124 ^b
Co-worker support	7.6	2.1			7.6	2.2			0.869 ^b
Work engagement	21.3	11.5			22.6	11.7			0.159 ^b
Job performance	63.1	17.2			67.5	16.9			0.001 ^b

^aDivorce or Berevement. ^bt-test. ^cchi-square test. yrs, years.

differences were found. Therefore, the goodness-of-fit of the model that imposed the equality constraints on all the path coefficients of Model 1 was calculated (Model 2). Additionally, the goodness-of-fit of the model that removed equality constraints of the two paths that had significant trends between men and women was calculated: paths from supervisor support to WE and WE to job performance (Model 3). To compare the goodness-of-fit of these three models, likelihood ratio tests were conducted. The results indicated that Model 2, with the

greatest number of equality constraints, had the best fit. In other words, the results showed no gender differences in the motivational process relationships. The goodness-of-fit of the models and results of the likelihood ratio test are presented in Table 3. Model 2 is shown in Fig. 1.

DISCUSSION

This study aimed to examine the gender differences in the motivational processes of the JD-R model among Japanese non-manual workers. The results indicated

Table 2. Correlations and reliability estimate (Men/Women) (N = 671)

	1	2	3	4	5	6	7	8	9	Cronbach's alpha
1 Age (yrs)	–									–
2 Career length (yrs)	0.66*** / 0.59***	–								–
3 Quantitative demand	–0.25*** / –0.12*	–0.06 / –0.13**	–							0.76/0.80
4 Qualitative demand	–0.10 / –0.05	–0.02 / –0.06	0.65*** / 0.69***	–						0.77/0.79
5 Job control	0.09 / 0.12*	0.07 / 0.15**	–0.13* / –0.21***	–0.16* / –0.16**	–					0.82/0.74
6 Supervisor support	–0.14* / –0.10*	–0.12 / 0.00	0.04 / –0.09	–0.04 / –0.07	0.39*** / 0.33***	–				0.86/0.89
7 Co-worker support	–0.08 / –0.09	–0.07 / 0.00	0.14* / –0.07	0.10 / –0.07	0.31*** / 0.29***	0.64*** / 0.69***	–			0.83/0.87
8 Work engagement	0.16* / 0.17***	0.11 / 0.15**	0.04 / 0.10	0.13* / 0.23***	0.39*** / 0.29***	0.31*** / 0.39***	0.35*** / 0.34***	–		0.96/0.96
9 Job performance	0.19** / 0.17***	0.11 / 0.16**	0.04 / 0.03	–0.01 / 0.07	0.37*** / 0.23***	0.12* / 0.16**	0.17** / 0.13**	0.40*** / 0.28***	–	–

*P < 0.05, **P < 0.01, ***P < 0.001. yrs, years.

Table 3. The fits of motivational process (N = 671)

Model	Explanation	χ^2	df	P	AGFI	CFI	RMSEA	Likelihood ratio test
1	No equality constraints for men and women.	71.54	22	0.000	0.993	0.962	0.082	—
2	All paths in men and women are constrained to equal values.	92.37	39	0.000	0.995	0.959	0.064	vs Model 1; $\Delta\chi^2(17)=20.83$, n.s.
3	Restrictions of two paths in Model 2 (supervisor support \rightarrow work engagement, and work engagement \rightarrow job performance) are removed.	87.28	37	0.000	0.995	0.961	0.064	vs Model 1; $\Delta\chi^2(15)=15.74$, n.s. vs Model 2; $\Delta\chi^2(2)=5.09$, n.s.

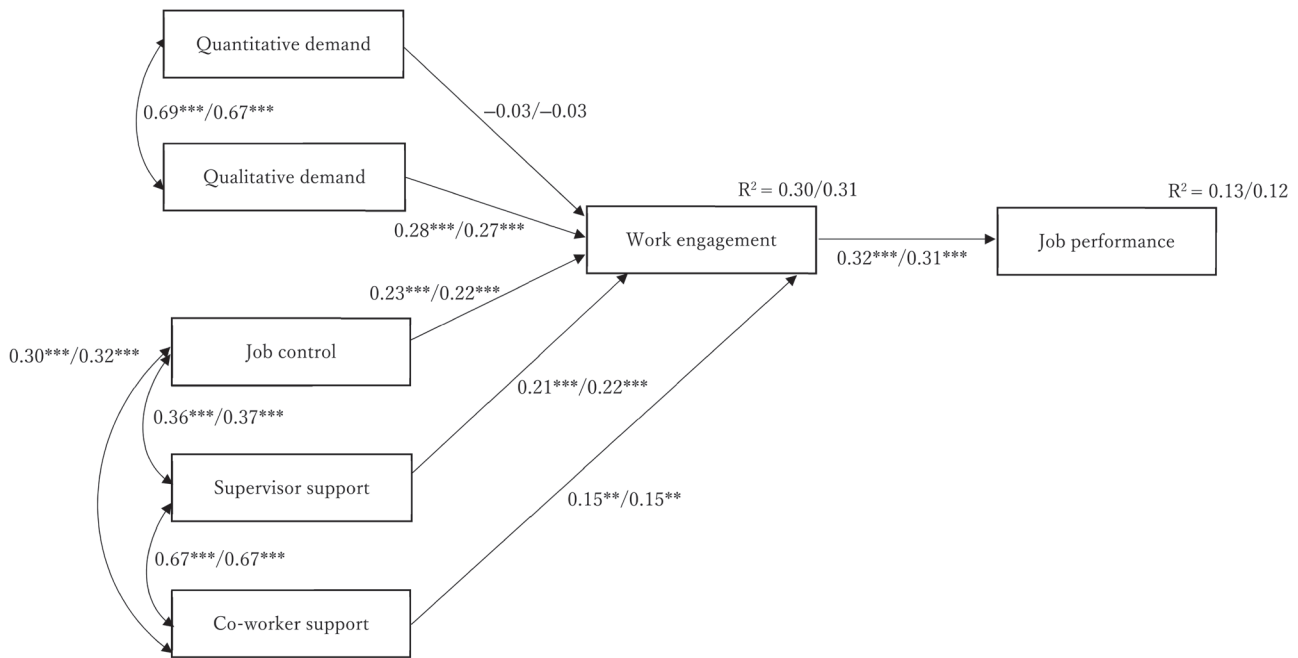


Fig. 1. The effect of job demands and resources on job performance via work engagement (Model 2 in Table 3). $N = 671$. $\chi^2 = 92.37$, $df = 39$, $P < 0.001$, AGFI = 0.995, CFI = 0.959, RMSEA = 0.064. Values are standardized estimations (men/women). Age variable, path coefficients from age to all variables, and all error variables are omitted. *** $P < 0.001$, ** $P < 0.01$, * $P < 0.05$.

no clear gender differences in a series of associations in which WE mediated the relationship between job demands or resources and job performance.

The results of this study differed from those of Eguchi et al.¹³ which indicated a stronger association between WE and job performance in women than in men. Furthermore, the job demands or resources and WE variables were not significantly different between men and women; they were of similar levels. In contrast, women's job performance was higher than that of men. This result indicated that when job demands or resources were equally distributed among men and women, women outperformed men.

Regarding the women's job performance levels, the variables excluded in this study may have been associated. There are two possibilities for these variables. First, the family factor influences and the possibility that the

participating women workers' workplaces had a good balance between work and family. In Japan, the burden of housework and childcare is heavily skewed toward women.²⁸ Furthermore, women workers had a stronger magnitude of family-to-work negative spillover on job performance or depression than men workers.^{29, 30} Additionally, for married individuals, family-to-work negative spillover was reported to be approximately twice as strong for women than men in affecting job performance.²⁹ Therefore, the benefits of schedule flexibility in balancing family and work lives are greater for women than men.³¹ In addition, workplaces with flexible schedules that consider family factors may make it easier for women to work and fully demonstrate their job performance. In other words, in this study, women workers may have worked in workplaces that were more considerate and understanding of their families.

Second, the influence of the health impairment process is a negative aspect of the JD-R model. This is a job demands process that exacerbates the stress response, which subsequently has a negative effect on organizational outcomes.^{15–17} Women are more likely to experience chronic stress reactions^{32, 33} and more susceptible to major depression than men.^{34, 35} In the present study, lower stress reactions among women workers contributed to their higher job performance, as WE, which was associated with psychological stress response or somatic complaint,^{36, 37} had similar levels between men and women. In addition, job demands or resources also had similar tendencies.

All variables of job resources were positively associated with WE, regardless of gender. In contrast, regarding job demands, the quantitative workload was not associated with WE, while the qualitative workload was positively associated with it. This result highlighted the need for paying attention to components of job demands to increase WE. In previous studies that examined the relationship between the constructs of job demands and WE, challenge stressors, such as workload or time pressure, were positively associated with WE.^{18–20} In the present study, the quantitative workload corresponded to challenge stressors. However, the quantitative workload was not associated with WE, while the qualitative workload was positively associated with it. Employees' WE improved with the use of job skills and varied significantly based on the content of their work tasks.^{38, 39} Conversely, if the job description did not fully utilize the employee's abilities and skills, such as simple tasks, the WE may not increase or decrease. Consequently, job descriptions that enable employees to utilize their abilities and promote their growth are important to improve WE. Hence, supervisors or managers need to manage their subordinates in such a way that allows them to gradually acquire these skills.

This study had some limitations. First, this study was a cross-sectional survey. Hence, the causal effects of the motivational process were not verified. Second, to control the effect of the participants' occupations, the analysis was limited to non-manual workers. However, there may have been gender differences among non-manual workers. Additionally, since there were gender differences regarding education, marital status, and number of children, these factors' effects could not be controlled. Third, although absolute presenteeism from the WHO-HPQ was used to measure job performance with a score range of 10 to 100 points, it should be noted that this scale was traditionally used with a score range of 0 to 100 points.²⁷ Finally, due to the comprehensive model for the JD-R model,^{15–17} the variables not used in the present study require further examination.

Particularly, since the personal resources variables were not used and the gender differences among them have been reported,⁴⁰ a future study should include these variables.

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