

# Socioeconomic and Gender Inequalities in Job Dissatisfaction among Japanese Civil Servants: The Roles of Work, Family and Personality Characteristics

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*Received May 25, 2014 and accepted July 7, 2014*

*Published online in J-STAGE July 24, 2014*

**Abstract:** This study examines (1) whether there are employment grade and gender differences in job dissatisfaction and (2) whether work, family, and personality characteristics explain grade and gender differences in job dissatisfaction. The participants were 3,812 civil servants, aged 20–65, working at a local government in Japan. In both males and females, low control, low social support, work-to-family conflict, type A behaviour pattern and negative affectivity were significantly associated with job dissatisfaction. In females, high demands, long work hours and being unmarried were also associated with job dissatisfaction. Among males, in comparison with the highest grade employees, the age-adjusted odds ratio (OR) for job dissatisfaction in the lowest grade employees was 1.90 (95% CI: 1.40–2.59). The grade differences reduced to 1.08 (0.76–1.54) after adjustment for work, family and personality characteristics. Among females, similar grade differences were observed, although the differences were not statistically significant. In comparison with males, the age-adjusted OR in females for job dissatisfaction was 1.32 (1.14–1.52). This gender difference was reduced to 0.95 (0.79–1.14) following adjustment for the other factors. The majority of employees belong to low to middle grades, and female employees have increased. Reducing grade and gender differences in work and family characteristics is needed.

**Key words:** Affect balance, Employment grade, Job satisfaction, Psychosocial stress, Socioeconomic status (SES), The Japanese civil servants study (the JACS study), Type A behaviour, Work-family balance

## Introduction

Over several global economic fluctuations since the late 1980's, organizational management and personnel

administration have drastically changed worldwide<sup>1, 2)</sup>. From the viewpoint of employees, the working environment has obviously worsened. For example, deregulation and liberalization enhanced globalization and international competition, forcing firms to become flatter and more flexible to improve efficiency, which in turn led to employee wage cuts, low promotion prospects, job insecurity and job dissatisfaction<sup>1)</sup>.

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Job dissatisfaction may have a variety of negative effects not only on employees, but also on customers and organizations. For employees, job dissatisfaction is a potential risk factor for the development of coronary heart disease and mortality<sup>3</sup> and is associated with burnout, job quitting and early retirement<sup>4,5</sup>. For customers, employee job dissatisfaction results in a decrease in service quality and an increase in customer dissatisfaction<sup>6</sup>. For organizations, job dissatisfaction may ultimately deteriorate the overall performance of an organization as a consequence of decreased productivity and increased expenses resulting from absenteeism and job quitting<sup>7</sup>.

Interestingly, Marmot *et al.*<sup>8</sup> reported that there were socioeconomic inequalities in job dissatisfaction among British civil servants: the low employment grade employees (i.e. low socioeconomic status) were more dissatisfied with their jobs than the high employment grade employees. Kawada and Otsuka<sup>9</sup> recently reported that job dissatisfaction is more likely among blue collar workers than among white collar workers. In addition, there is some evidence that more females than males have job dissatisfaction<sup>10</sup>. Because the majority of employees belong to low to middle employment grades and the number of female employees is increasing, understanding the causes of the socially unequal distribution of job dissatisfaction and tackling the problems associated with these inequalities may have positive effects on employee motivation, productivity and health. However, research evaluating the causes of socioeconomic and gender inequalities in job dissatisfaction is lacking.

Previous studies have suggested that low decision latitude, high job demands, long work hours, shift work, and low social support from supervisors and colleagues are associated with job dissatisfaction<sup>9-12</sup>. Work-family conflicts, conflicts between the demands of work and family roles, are also associated with the intention to quit and job dissatisfaction among health care workers<sup>11</sup>. Individuals with the Framingham type A behaviour pattern, as characterised by a sense of time urgency, hard-driving work and hostility<sup>13</sup>, are more likely to have job dissatisfaction than those with other types of behavioural patterns<sup>14</sup>. In addition, individuals with negative affectivity, as characterised by negative psychological reactions to events in daily life<sup>15</sup>, tend to have job dissatisfaction<sup>16</sup>. However, a comprehensive research on the associations of work, family and personality characteristics with job dissatisfaction is still lacking.

Among Japanese civil servants, psychosocial stress at work, work hours and work-family conflicts were not

socially equally distributed: low grade employees had low job control and low social support at work, while high grade employees had high job demands, longer work hours and a high level of work-family conflict<sup>17</sup>. In addition, more females than males had low job control, high job demands, long work hours, shift work, an unmarried status and a high level of work-family conflict<sup>18</sup>. There is some evidence that type A behavior pattern is more common among high grade employees and among women and that negative affectivity is more common among low grade employees and among men<sup>19,20</sup>. Such socioeconomic and gender inequalities in work, family, and personality characteristics may contribute to socioeconomic and gender inequalities in job dissatisfaction.

The purpose of this study is, therefore, to examine the following research questions in a population of Japanese civil servants: (1) whether there are employment grade and gender differences in job dissatisfaction; (2) whether work, family and personality characteristics are associated with job dissatisfaction and (3) whether and how much employment grade and gender differences in job dissatisfaction can be explained by work, family and personality characteristics.

## Methods

### *Participants*

The Japanese civil servants study (the JACS study) is an international collaborative study conducted in association with the British civil servants study (the Whitehall II study) and the Helsinki Health Survey (HHS)<sup>21</sup>. Phase I of the survey was conducted between 1998 and 1999. Phase II was conducted in 2003. The participants of this study were all civil servants 20–65 yr of age working at a local government in Japan at the time of each survey. The participants consisted primarily of administrative workers, clerical workers and professional and technical workers; all were non-industrial employees.

A postal questionnaire with a cover letter explaining the research aim, a request for voluntary participation and the anonymity of the data and publication was sent to the participants through the personnel section of the local government department. The participants completed their questionnaires and returned them to the personnel section in sealed envelopes. Then, the researchers opened the envelopes, and the datasets were built. In phase II of the survey, data regarding the grades of employment were made available; therefore, this study uses data from the second phase.

In phase II, altogether, 4,272 participants (response rate: 79.2%) responded. Participants who did not answer one or more questions about personal attributes, work and family characteristics, personality traits, job satisfaction and long-standing illnesses were excluded from the analysis. The remaining 3,812 participants (2,537 males and 1,275 females) represented the study population. The differences in personal attributes between the study population and the excluded subjects indicated that older subjects and females were slightly underrepresented in this study population. The mean age of the participants was 42.7 yr (standard deviation: 10.2 yr). For the analysis, we divided participants into 5 age groups: those aged 20–24, 25–34, 35–44, 45–54, and 55–64<sup>22</sup>).

The Japanese civil servants study was conducted under the control of the Safety and Health Committee of the local government, as a part of the annual health checkups regulated by the Industrial Safety and Health Law. The study was set up in 1998 before the Ethics Guidelines for Epidemiological Research was enforced. Considering the declaration of Helsinki and a global trend in ethical considerations for epidemiological research, the civil service organized an ad hoc committee to discuss the content and ethical aspects of the study. The review board comprised ordinary members of the Safety and Health Committee, labor representatives and personnel representatives. The study was approved by the committee. Written informed consent was obtained from each participant. All subjects participated voluntarily.

#### *Questionnaire*

The questionnaire items were chosen from among those used in the Whitehall II study. A Japanese version was developed using translation/back-translation method<sup>17</sup>).

#### *Grade of employment*

The grade of employment was determined based on the questionnaire information and hierarchically ranked in the following manner: the highest grade employees with an employment grade of section leader or higher and professional equivalents; intermediate grade employees with an employment grade lower than section leader and professional equivalents; the lowest grade employees with no particular administrative title and professional equivalents.

#### *Work characteristics: psychosocial stress, work hours and shift work*

The job demand-control-support model<sup>23</sup>) was used to evaluate psychosocial work stress. Based on its use in the

Whitehall II study, this self-reported questionnaire consists of 25 items (15 items for job control, four items for job demand and six items for social support at work)<sup>24</sup>). The response categories range from 0 (often) to 3 (never). After all items were recorded in the same direction, scores for each scale were calculated by summing the item scores. A higher score for each scale indicates high job control, high job demands or high social support at work. In this study, the reliability coefficient (Cronbach's alpha<sup>25</sup>) was 0.79 for job control, 0.69 for job demands and 0.83 for social support at work. For group comparisons, a reliability coefficient of more than 0.50 is considered acceptable<sup>26</sup>). All scales were grouped into tertiles for the analysis.

With respect to shift work, the participants were asked to answer whether they were engaged in shift work (yes or no). Regarding work hours, the participants answered this question according to one of 10 response categories ranging from less than six hours to 14 h or more. The participants were grouped into four groups: those reporting working less than seven hours, seven to nine hours, nine to 11 h or 11 h or more.

#### *Family characteristics: family structure and work-family conflicts*

As for the marital status, the participants were grouped into unmarried participants (including never married, divorced, separated and widowed participants) and married participants (including cohabiting participants). As for nurturing young children, the participants were grouped into two groups according to whether they nurtured young children less than 15 yr of age.

The questions regarding family-work conflicts consisted of eight items (four items for family-to-work conflict and four items for work-to-family conflict)<sup>27</sup>). Each question had three response categories ranging from 0 (never) to 2 (often). Each scale score was calculated by summing the item scores. A high score for each scale indicates a high level of conflict. Both the work-to-family conflict and the family-to-work conflict variables were grouped into tertiles for the analysis. In this study, Cronbach's alpha was 0.82 for family-to-work conflict and 0.73 for work-to-family conflict.

#### *Personality characteristics: type A behaviour pattern and affect balance*

The Framingham type A questionnaire consists of 10 items with two to four response categories and a score range of 0–1 for each item, yielding a total score of 0–10<sup>13</sup>). The participants were grouped into those with a

type A behaviour pattern, who scored over the median of the score distribution in this study population, and those with a type B behaviour pattern, who scored at the median level or below<sup>13</sup>). In this study, Cronbach's alpha was 0.82.

The affect balance scale consists of 10 items (five items for positive affect and five items for negative affect) with four response categories and a score of 0–3 for each item<sup>15</sup>). The affect balance score was calculated as the positive affect score minus the negative affect score, yielding a total score of –15 to 15. The participants were grouped into those with a positive affect, who scored 0 or higher, and those with a negative affect, who scored less than 0. In this study, Cronbach's alpha was 0.67 for the positive scale and 0.68 for the negative scale.

### *Job satisfaction*

Global job satisfaction was evaluated using a single-item measure by asking whether the participants were satisfied with their job as a whole taking everything into consideration<sup>8</sup>). The participants rated their job satisfaction according to one of four response categories: very satisfied, satisfied, dissatisfied, very dissatisfied. For the analysis, the participants were divided into two groups: those who were satisfied and those who were dissatisfied with their jobs. In our previous study of Japanese civil servants, the single-item overall job satisfaction measurement was found to be moderately to strongly correlated with facets of job satisfaction, including satisfaction with take-home pay, work prospects, coworkers, physical working conditions, management of one's department, how one's abilities are used and the interest and skill involved in the job<sup>10</sup>). In that study, age, work hours and the facets of the job satisfaction measurement accounted for 67.9% of the variance observed in the overall measurement.

### *Long-standing illnesses*

Participants with long-standing illnesses may be more likely to report that they are exposed to stressful work or family characteristics and that they are dissatisfied with their job due to their negative prospects for their work. To control the potential confounding effects of long-standing illnesses, the participants were asked to answer yes or no to a question regarding whether they had a long-standing illness.

### *Statistical analysis*

A logistic regression analysis was performed to examine (1) whether there were employment grade and gender differences in job dissatisfaction, (2) whether work, family

and personality characteristics contribute to job dissatisfaction and (3) whether and how much employment and gender differences in job dissatisfaction can be explained by work, family and personality characteristics. To clarify which characteristics contributed more to employment grade differences in job dissatisfaction than other characteristics, we calculated the age-adjusted model, and then each of the work, family and personality characteristics was added to the age-adjusted model. In the fully-adjusted model, all of age, work, family, and personality characteristics were simultaneously entered. To clarify which characteristics contributed more to gender differences in job dissatisfaction, we calculated the age- and grade-adjusted model, and then each of these characteristics was added to the model. In the fully-adjusted model, all of age, grade, and these characteristics were simultaneously entered. There is some evidence of gender differences in job dissatisfaction<sup>10</sup>), statistical analyses on employment grade differences in job dissatisfaction were performed separately by gender.

The odds ratios (ORs) and 95% confidence intervals were calculated. The Hosmer-Lemeshow test<sup>28</sup>) was used to validate the multivariate models. The statistical analyses were performed using the IBM-SPSS software program (18.0.0). A two-tailed *p* value of less than 0.05 was considered to be significant.

## **Results**

Table 1 shows work, family and personality characteristics by age. With an increase in age, the proportion of participants with low employment grade, low job control and shift work decreased, while the proportion of those with low social support, married status and longstanding illness increased. High job demands, long work hours, raising young children, high family-to-work conflict, high work-to-family conflict and type A behavior pattern were more common among those of middle age than among those of other age. There was no significant association of age with affect balance. Job dissatisfaction was more common among those of middle age groups than among those of other age groups. Spearman's correlation coefficients for the relationships between the work, family and personality characteristic variables ranged from –0.32 to 0.44 for males and from –0.36 to 0.45 for females.

Table 2 shows the grade differences in job dissatisfaction following adjustment for work, family and personality characteristics among males. In the age-adjusted model, in comparison with the highest grade employees, the OR

Table 1. Work, family, and personality characteristics by age

	Males (n=2,537)					Females (n=1,275)					p-value	
	Total %	20-24 (n=19) %	25-34 (n=568) %	35-44 (n=693) %	45-54 (n=876) %	55-64 (n=381) %	Total %	20-24 (n=74) %	25-34 (n=407) %	35-44 (n=310) %		45-54 (n=334) %
<b>Grades</b>												
Grade I	15.1	0.0	0.7	2.2	19.9	49.6	1.6	0.0	0.0	0.0	1.2	10.7
Grade II	20.2	0.0	0.2	11.5	37.1	27.8	13.6	0.0	1.5	9.4	31.1	23.3
Grade III	64.8	100.0	99.1	86.3	43.0	22.6	84.8	100.0	98.5	90.6	67.7	66.0
<b>Control</b>												
Low	32.2	15.8	33.8	35.6	33.2	22.3	49.9	39.2	39.1	38.1	42.5	40.7
Intermediate	34.6	68.4	35.9	33.3	34.1	34.6	38.2	37.8	40.5	41.0	34.7	34.0
High	33.1	15.8	30.3	31.0	32.6	43.0	21.9	23.0	20.4	21.0	22.8	25.3
<b>Demand</b>												
Low	34.2	57.9	28.3	30.2	35.8	45.4	25.7	32.4	25.1	22.9	23.4	35.3
Intermediate	43.4	31.6	49.3	45.5	41.3	36.2	39.9	40.5	40.0	42.6	36.8	40.7
High	22.4	10.5	22.4	24.4	22.8	18.4	34.4	27.0	34.9	34.5	39.8	24.0
<b>Support</b>												
Low	36.9	26.3	25.4	34.8	43.9	42.3	35.4	12.2	27.5	34.5	45.5	47.3
Intermediate	35.0	15.8	35.6	36.4	32.5	38.1	33.5	24.3	31.0	38.1	34.1	34.0
High	28.1	57.9	39.1	28.9	23.5	19.7	31.1	63.5	41.5	27.4	20.4	18.7
<b>Work hours</b>												
<7 h	8.7	5.3	6.5	6.5	10.5	12.1	4.9	2.7	4.7	4.8	5.1	6.7
7-9 h	63.3	73.7	57.4	57.4	67.7	72.4	56.8	50.0	51.8	57.1	58.7	68.7
9-11 h	19.7	10.5	24.1	26.0	15.8	11.3	29.8	35.1	34.2	31.9	27.8	15.3
11< h	8.2	10.5	12.0	10.1	6.1	4.2	8.5	12.2	9.3	6.1	8.4	9.3
<b>Shift work</b>												
No	91.5	84.2	91.5	92.5	90.6	92.1	53.3	37.8	57.5	54.5	42.5	70.7
Yes	8.5	15.8	8.5	7.5	9.4	7.9	46.7	62.2	42.5	45.5	57.5	29.3
<b>Marital status</b>												
Married	81.9	5.3	58.1	82.5	93.7	92.7	67.5	2.7	46.9	82.3	86.2	83.3
Unmarried	18.1	94.7	41.9	17.5	6.3	7.3	32.5	97.3	53.1	17.7	13.8	16.7
<b>Children under 15 yr</b>												
No	65.6	100.0	68.0	34.9	74.0	97.1	73.5	98.6	71.3	43.9	88.6	94.7
Yes	34.4	0.0	32.0	65.1	26.0	2.9	26.5	1.4	28.7	56.1	11.4	5.3
<b>Family-to-work conflict</b>												
Low	48.5	78.9	55.3	39.5	46.3	58.0	35.5	73.0	42.3	19.0	32.6	38.7
Intermediate	28.3	10.5	24.3	29.3	31.2	26.5	22.8	16.2	19.4	21.3	26.3	30.7
High	23.3	10.5	20.4	31.2	22.5	15.5	41.7	10.8	38.3	59.7	41.0	30.7

Continuation of Table 1.

	Males (n=2,537)					Females (n=1,275)					p-value	
	20-24 (n=19) %	25-34 (n=568) %	35-44 (n=693) %	45-54 (n=876) %	55-64 (n=381) %	Total %	20-24 (n=74) %	25-34 (n=407) %	35-44 (n=310) %	45-54 (n=334) %		55-64 (n=150) %
Work-to-family conflict												
Low	34.3	36.6	25.1	33.8	47.5	19.9	32.4	22.6	12.3	16.2	30.7	
Intermediate	34.9	33.8	35.9	36.6	31.2	32.2	37.8	31.0	28.7	35.3	32.7	
High	30.8	29.6	39.0	29.6	21.3	47.9	29.7	46.4	59.0	48.5	36.7	<0.001
Type A behaviour pattern												
Type A	42.4	47.0	47.9	40.4	29.7	64.8	56.8	61.7	64.8	68.3	54.7	
Type B	57.6	53.0	52.1	59.6	70.3	35.2	43.2	38.3	35.2	31.7	45.3	0.034
Affect balance												
Negative	52.2	57.6	61.2	61.1	58.3	56.0	56.8	58.2	55.8	60.8	55.3	
Positive	47.8	42.4	38.8	38.9	41.7	44.0	43.2	41.8	44.2	39.2	44.7	0.707
Long-standing illness												
Yes	36.2	13.4	29.0	49.7	54.1	29.9	12.2	16.7	28.7	38.6	57.3	
No	63.8	86.6	71.0	50.3	45.9	70.1	87.8	83.3	71.3	61.4	42.7	<0.001
Job satisfaction												
Being satisfied	67.6	66.7	64.8	65.9	77.4	61.6	74.3	57.5	58.4	59.9	76.7	
Being dissatisfied	32.4	33.3	35.2	34.1	22.6	38.4	25.7	42.5	41.6	40.1	23.3	<0.001

Grade I: highest grade employees; Grade II: intermediate grade employees; Grade III: lowest grade employees



**Table 2. Grade differences in job dissatisfaction after adjustment for work, family and personality characteristics among males (n=2,537)**

	Percentage of job dissatisfaction %	Model 1 (Age-adjusted) OR (95%CI)	Model 2 (Model 1+ work) OR (95%CI)	Model 3 (Model 1+ family) OR (95%CI)	Model 4 (Model 1 + personality) OR (95%CI)	Model 5 (Fully-adjusted) OR (95%CI)
<b>Grades</b>						
Grade I	21.2	1.00	1.00	1.00	1.00	1.00
Grade II	32.0	1.58 (1.15–2.17)	1.23 (0.88–1.72)	1.56 (1.13–2.16)	1.50 (1.07–2.09)	1.20 (0.84–1.71)
Grade III	35.2	1.90 (1.40–2.59)	1.10 (0.79–1.54)	1.99 (1.45–2.73)	1.70 (1.23–2.35)	1.08 (0.76–1.54)
<b>Age</b>						
20–24	26.3	0.86 (0.30–2.50)	1.50 (0.49–4.65)	0.75 (0.25–2.26)	1.02 (0.33–3.11)	1.45 (0.44–4.81)
25–34	33.3	1.21 (0.86–1.71)	1.66 (1.14–2.42)	1.02 (0.70–1.48)	1.22 (0.85–1.76)	1.54 (1.01–2.34)
35–44	35.2	1.36 (0.98–1.88)	1.62 (1.14–2.30)	1.10 (0.77–1.59)	1.31 (0.93–1.85)	1.46 (0.98–2.18)
45–54	34.1	1.51 (1.13–2.02)	1.52 (1.12–2.07)	1.39 (1.03–1.88)	1.46 (1.08–1.98)	1.47 (1.06–2.03)
55–64	22.6	1.00	1.00	1.00	1.00	1.00
<b>Control</b>						
Low	49.8		4.29 (3.34–5.50)			3.42 (2.63–4.44)
Intermediate	31.4		2.19 (1.72–2.79)			1.91 (1.48–2.45)
High	16.7		1.00			1.00
<b>Demand</b>						
Low	30.2		1.00			1.00
Intermediate	29.8		1.25 (1.01–1.55)			1.00 (0.79–1.26)
High	41.0		2.04 (1.58–2.64)			1.28 (0.96–1.71)
<b>Support</b>						
Low	44.9		2.82 (2.21–3.60)			2.63 (2.04–3.39)
Intermediate	29.8		1.70 (1.33–2.17)			1.61 (1.25–2.08)
High	19.5		1.00			1.00
<b>Work hours</b>						
<7 h	32.6		1.05 (0.76–1.45)			1.00 (0.72–1.39)
7–9 h	30.6		1.00			1.00
9–11 h	35.8		1.13 (0.89–1.43)			0.95 (0.73–1.22)
11< h	38.3		1.25 (0.90–1.75)			0.99 (0.70–1.42)
<b>Shift work</b>						
No	32.3		1.00			1.00
Yes	34.4		1.01 (0.74–1.39)			0.97 (0.69–1.35)
<b>Marital status</b>						
Married	31.8			1.00		1.00
Unmarried	35.4			1.30 (1.00–1.69)		1.21 (0.91–1.61)
<b>Children under 15 yr</b>						
No	31.8			1.00		1.00
Yes	33.7			0.93 (0.74–1.15)		0.93 (0.74–1.18)
<b>Family-to-work conflict</b>						
Low	26.9			1.00		1.00
Intermediate	34.0			1.26 (1.02–1.56)		1.28 (1.02–1.62)
High	42.0			1.33 (1.05–1.69)		1.17 (0.90–1.52)
<b>Work-to-family conflict</b>						
Low	24.1			1.00		1.00
Intermediate	28.6			1.19 (0.95–1.49)		1.13 (0.88–1.45)
High	46.1			2.42 (1.91–3.07)		1.96 (1.47–2.62)
<b>Type A behaviour pattern</b>						
Type A	42.5				1.87 (1.57–2.24)	1.51 (1.22–1.88)
Type B	25.1				1.00	1.00
<b>Affect balance</b>						
Negative	43.1				3.48 (2.85–4.24)	2.55 (2.07–3.16)
Positive	16.5				1.00	1.00
<b>Long-standing illness</b>						
No	31.7					1.00
Yes	33.7					1.12 (0.91–1.37)

Grade I: highest grade employees; Grade II: intermediate grade employees; Grade III: lowest grade employees; OR: odds ratio; 95%CI: 95% confidence interval. Model 1 is adjusted for grade and age. Model 2 is adjusted for grade, age and work characteristics (control, demand, support, work hours and shift work). Model 3 is adjusted for grade, age and family characteristics (marital status, young children, family-to-work conflict and work-to-family conflict). Model 4 is adjusted for grade, age and personality characteristics (type A behaviour pattern and affect balance). Model 5 is adjusted for grade, age, work, family characteristics, personality characteristics and long-standing illness.

for job dissatisfaction was 1.58 for the intermediate grade employees and 1.90 for the lowest grade employees. The grade differences were reduced and were no longer significant after adjusting for work characteristics (Model 2). Being middle-aged and having low job control, high job demands and low social support were strongly associated with job dissatisfaction. Long work hours and shift work did not have links with job dissatisfaction. To clarify which work characteristics were most important in reducing the grade differences, each of the work characteristic variables was added to Model 1. The largest reduction was observed when job control was added to the Model 1 (the OR of the lowest grade employees for job dissatisfaction decreased from 1.90 to 1.09), followed by social support (OR=1.67), shift work (OR=1.89), work hours (OR=1.90) and job demands (OR=2.00).

When the family characteristic variables were added to Model 1 (Model 3), the associations between employment grade and job dissatisfaction were slightly strengthened. The association between being middle-aged and job dissatisfaction weakened. Among the family characteristic variables, work-to-family conflict exhibited the strongest links with job dissatisfaction, followed by family-to-work conflict and being unmarried. Nurturing young children was not associated with job dissatisfaction. To clarify which family characteristics contributed to the changes observed in the grade differences, each of the family characteristic variables was added to Model 1. The inclusion of each of the family characteristic variables hardly changed the grade differences: the OR of the lowest grade employees for job dissatisfaction was 1.84 for family-to-work conflict, 1.89 for the marital status, 1.90 for nurturing young children and 2.06 for work-to-family conflict.

When the personality characteristic variables were added to Model 1 (Model 4), both a type A behaviour pattern and negative affectivity were associated with job dissatisfaction, and the grade differences were reduced only slightly. The OR of the lowest grade employees for job dissatisfaction increased to 2.01 when the type A behaviour pattern was added to Model 1 and decreased to 1.16 when negative affectivity was added to Model 1. In the fully-adjusted model (Model 5), the grade differences in job dissatisfaction were not significant. Being middle-aged and having low job control, low social support, a high level of work-to-family conflict, a type A behaviour pattern and negative affectivity remained significant.

Table 3 shows the grade differences in job dissatisfaction following adjustment for work, family and personality characteristics among females. In the age-adjusted model,

in comparison with the highest grade employees, the OR for job dissatisfaction was 3.73 for the intermediate grade employees and 3.54 for the lowest grade employees; however, the grade differences were not statistically significant. The grade differences were reduced after being adjusted for work characteristics (Model 2). Being middle-aged and having low job control, high job demands, low social support and long work hours were associated with job dissatisfaction. There were no significant associations between shift work and job dissatisfaction. To clarify which work characteristics were most important in reducing the grade differences, each of the work characteristic variables was added to Model 1. The largest reduction was observed when job control was added to Model 1 (the OR of the lowest grade employees for job dissatisfaction decreased from 3.54 to 1.67), followed by social support (OR=2.81), shift work (OR=3.26), work demands (OR=4.77) and work hours (OR=5.01).

When the family characteristic variables were added to Model 1 (Model 3), the associations between the employment grade and job dissatisfaction strengthened and became statistically significant. The association between being middle-aged and job dissatisfaction weakened. Among the family characteristic variables, work-to-family conflict exhibited the strongest association with job dissatisfaction, followed by family-to-work conflict and being unmarried. Females nurturing young children tended to have lower ORs for job dissatisfaction; however, the association was not significant. To clarify which family characteristics contributed to the changes observed in the grade differences, each of the family characteristic variables was added to Model 1. The largest increase was observed when work-to-family conflict was added (the OR of the lowest grade employees for job dissatisfaction increased to 4.87), followed by family-to-work conflict (OR=3.73), the marital status (OR=3.61) and nurturing young children (OR=3.55).

When the personality characteristic variables were added to Model 1 (Model 4), the grade differences in job dissatisfaction slightly increased and both a type A behaviour pattern and negative affectivity demonstrated links with job dissatisfaction. The OR of the lowest grade employees for job dissatisfaction increased to 4.47 when a type A behaviour pattern was added to Model 1 and decreased to 3.30 when negative affectivity was added to Model 1. In the fully-adjusted model (Model 5), the grade differences were not significant, and low job control, high job demands, low social support and being unmarried remained significant.

Table 4 shows the gender differences in job dissatisfaction



**Table 3. Grade differences in job dissatisfaction after adjustment for work, family and personality characteristics among females (n=1,275)**

	Percentage of job dissatisfaction %	Model 1 (Age-adjusted) OR (95%CI)	Model 2 (Model 1+ work) OR (95%CI)	Model 3 (Model 1+ family) OR (95%CI)	Model 4 (Model 1 + personality) OR (95%CI)	Model 5 (Fully-adjusted) OR (95%CI)
<b>Grades</b>						
Grade I	10.0	1.00	1.00	1.00	1.00	1.00
Grade II	38.5	3.73 (0.82–17.0)	2.89 (0.60–13.9)	4.58 (0.99–21.2)	3.95 (0.84–15.6)	3.40 (0.67–17.1)
Grade III	38.9	3.54 (0.79–15.8)	2.38 (0.50–11.4)	5.29 (1.16–24.1)	3.72 (0.81–17.1)	2.88 (0.58–14.4)
<b>Age</b>						
20–24	25.7	1.05 (0.54–2.02)	1.33 (0.66–2.70)	0.78 (0.38–1.61)	1.01 (0.51–1.99)	1.09 (0.49–2.41)
25–34	42.5	2.24 (1.43–3.48)	2.46 (1.53–3.96)	1.76 (1.08–2.87)	2.20 (1.38–3.49)	2.18 (1.28–3.71)
35–44	41.6	2.15 (1.36–3.38)	2.22 (1.37–3.59)	1.75 (1.06–2.88)	2.11 (1.32–3.39)	2.11 (1.23–3.61)
45–54	40.1	2.02 (1.29–3.15)	1.83 (1.15–2.92)	1.80 (1.14–2.86)	1.82 (1.15–2.89)	1.74 (1.07–2.83)
55–64	23.3	1.00	1.00	1.00	1.00	1.00
<b>Control</b>						
Low	46.8		3.38 (2.31–4.94)			2.87 (1.93–4.27)
Intermediate	39.4		2.33 (1.62–3.35)			2.08 (1.43–3.03)
High	21.5		1.00			1.00
<b>Demand</b>						
Low	28.4		1.00			1.00
Intermediate	34.2		1.37 (0.98–1.90)			1.13 (0.79–1.61)
High	50.9		2.62 (1.81–3.79)			1.78 (1.18–2.68)
<b>Support</b>						
Low	48.8		2.21 (1.60–3.06)			2.12 (1.51–2.98)
Intermediate	36.5		1.30 (0.95–1.79)			1.35 (0.97–1.89)
High	28.7		1.00			1.00
<b>Work hours</b>						
<7 h	41.3		1.61 (0.93–2.80)			1.92 (1.08–3.43)
7–9 h	31.9		1.00			1.00
9–11 h	47.6		1.61 (1.20–2.17)			1.36 (1.00–1.87)
11< h	48.1		1.81 (1.14–2.87)			1.56 (0.96–2.53)
<b>Shift work</b>						
No	34.5		1.00			1.00
Yes	43.0		0.97 (0.74–1.27)			0.85 (0.64–1.14)
<b>Marital status</b>						
Married	37.2			1.00		1.00
Unmarried	41.1			1.59 (1.15–2.20)		1.49 (1.05–2.12)
<b>Children under 15 yr</b>						
No	38.6			1.00		1.00
Yes	37.9			0.75 (0.54–1.04)		0.79 (0.56–1.12)
<b>Family-to-work conflict</b>						
Low	31.4			1.00		1.00
Intermediate	37.5			1.27 (0.90–1.79)		1.25 (0.86–1.81)
High	44.9			1.45 (1.04–2.01)		1.36 (0.96–1.93)
<b>Work-to-family conflict</b>						
Low	23.6			1.00		1.00
Intermediate	30.0			1.34 (0.92–1.95)		1.16 (0.78–1.73)
High	50.2			3.10 (2.15–4.46)		2.00 (1.30–3.07)
<b>Type A behaviour pattern</b>						
Type A	45.1				2.15 (1.66–2.78)	1.47 (1.07–2.01)
Type B	27.0				1.00	1.00
<b>Affect balance</b>						
Negative	48.9				3.01 (2.34–3.87)	2.27 (1.73–2.98)
Positive	24.0				1.00	1.00
<b>Long-standing illness</b>						
No	38.1					1.00
Yes	39.1					1.13 (0.84–1.51)

Grade I: highest grade employees; Grade II: intermediate grade employees; Grade III: lowest grade employees; OR: odds ratio; 95%CI: 95% confidence interval. Model 1 is adjusted for grade and age. Model 2 is adjusted for grade, age and work characteristics (control, demand, support, work hours and shift work). Model 3 is adjusted for grade, age and family characteristics (marital status, young children, family-to-work conflict and work-to-family conflict). Model 4 is adjusted for grade, age and personality characteristics (type A behaviour pattern and affect balance). Model 5 is adjusted for grade, age, work, family characteristics, personality characteristics and long-standing illness.

**Table 4. Gender differences in job dissatisfaction after adjustment for work, family and personality characteristics (n=3,556)**

	Prevalence of job dissatisfaction %	Model 1 (Age -adjusted) OR (95%CI)	Model 2 (Model 1 + grade) OR (95%CI)	Model 3 (Model 2+ work) OR (95%CI)	Model 4 (Model 2+ family) OR (95%CI)	Model 5 (Model 2 + personality) OR (95%CI)	Model 6 (Fully-adjusted) OR (95%CI)
<b>Sex</b>							
Men	21.2	1.00	1.00	1.00	1.00	1.00	1.00
Female	31.4	1.32 (1.14–1.52)	1.24 (1.07–1.44)	1.04 (0.88–1.24)	0.97 (0.83–1.13)	1.16 (0.99–1.35)	0.95 (0.79–1.14)
<b>Age</b>							
20–24	18.9	1.03 (0.61–1.71)	0.85 (0.50–1.43)	1.28 (0.73–2.23)	0.74 (0.42–1.29)	0.86 (0.50–1.49)	1.15 (0.63–2.12)
25–34	25.4	1.93 (1.52–2.46)	1.57 (1.20–2.05)	2.01 (1.50–2.68)	1.33 (0.99–1.79)	1.57 (1.18–2.08)	1.85 (1.34–2.56)
35–44	27.8	2.00 (1.57–2.54)	1.63 (1.26–2.12)	1.85 (1.40–2.45)	1.35 (1.01–1.82)	1.59 (1.21–2.09)	1.71 (1.25–2.35)
45–54	24.0	1.90 (1.50–2.40)	1.69 (1.33–2.16)	1.65 (1.28–2.12)	1.57 (1.22–2.02)	1.61 (1.25–2.07)	1.59 (1.22–2.08)
55–64	18.5	1.00	1.00	1.00	1.00	1.00	1.00
<b>Grades</b>							
Grade I	15.5		1.00	1.00	1.00	1.00	1.00
Grade II	23.7		1.62 (1.20–2.18)	1.26 (0.92–1.73)	1.58 (1.17–2.15)	1.52 (1.12–2.08)	1.23 (0.88–1.70)
Grade III	26.0		1.77 (1.33–2.35)	1.06 (0.77–1.44)	1.90 (1.42–2.55)	1.58 (1.17–2.14)	1.07 (0.75–1.43)
<b>Control</b>							
Low	29.4			3.94 (3.21–4.85)			3.23 (2.60–4.91)
Intermediate	24.4			2.29 (1.88–2.80)			2.02 (1.64–2.48)
High	18.8			1.00			1.00
<b>Demand</b>							
Low	19.1			1.00			1.00
Intermediate	24.5			1.25 (1.04–1.49)			1.01 (0.83–1.22)
High	33.7			2.21 (1.79–2.72)			1.43 (1.13–1.81)
<b>Support</b>							
Low	28.6			2.56 (2.11–3.10)			2.39 (1.96–2.92)
Intermediate	23.8			1.53 (1.26–1.86)			1.49 (1.22–1.82)
High	20.3			1.00			1.00
<b>Work hours</b>							
<7 h	26.5			1.22 (0.93–1.61)			1.21 (0.91–1.62)
7–9 h	20.1			1.00			1.00
9–11 h	30.5			1.30 (1.09–1.57)			1.10 (0.91–1.34)
11< h	38.0			1.40 (1.07–1.83)			1.14 (0.86–1.51)
<b>Shift work</b>							
No	32.8			1.00			1.00
Yes	40.7			1.07 (0.88–1.83)			0.98 (0.80–1.20)
<b>Marital status</b>							
Married	33.4				1.00		1.00
Unmarried	38.1				1.40 (1.14–1.71)		1.30 (1.05–1.62)
<b>Young children</b>							
No	34.1				1.00		1.00
Yes	34.9				0.87 (0.73–1.05)		0.90 (0.74–1.09)
<b>Family-to-work conflict</b>							
Low	17.4				1.00		1.00
Intermediate	22.2				1.24 (1.04–1.49)		1.27 (1.05–1.55)
High	37.8				1.34 (1.11–1.63)		1.23 (1.00–1.51)
<b>Work-to-family conflict</b>							
Low	15.5				1.00		1.00
Intermediate	26.3				1.21 (1.00–1.47)		1.11 (0.90–1.37)
High	42.2				2.58 (2.12–3.14)		1.91 (1.51–2.42)
<b>Type A behaviour pattern</b>							
Type A	43.6					1.94 (1.68–2.25)	1.49 (1.25–1.77)
Type B	25.6					1.00	1.00
<b>Affect balance</b>							
Negative	45.0					3.29 (2.82–3.84)	2.44 (2.07–2.88)
Positive	19.1					1.00	1.00
<b>Long-standing illness</b>							
Yes	21.6						1.00
No	30.3						1.09 (0.92–1.29)

Grade I: highest grade employees; Grade II: intermediate grade employees; Grade III: lowest grade employees; OR: odds ratio; 95%CI: 95% confidence interval. Model 1 is adjusted for sex and age. Model 2 is adjusted for sex, age and grade. Model 3 is adjusted for sex, age, grade and work characteristics (control, demand, support, work hours and shift work). Model 4 is adjusted for sex, age, grade and family characteristics (marital status, young children, family-to-work conflict and work-to-family conflict). Model 5 is adjusted for sex, age, grade and personality characteristics (type A behaviour pattern and affect balance). Model 6 is adjusted for sex, age, grade, work, family characteristics, personality characteristics and long-standing illness.

tion before and after adjustment for work, family and personality characteristics. In comparison to males, the age-adjusted OR of females for job dissatisfaction was 1.32 (Model 1). The inclusion of the employment grade to the model (Model 2) slightly attenuated the gender difference (OR=1.24). Lower grade employees tended to have job dissatisfaction. When controlling for work characteristics (Model 3), the gender difference was no longer significant (OR=1.04). Low job control, high job demands, low social support and long work hours were independently associated with job dissatisfaction. There were no significant relationships between shift work and job dissatisfaction. To clarify which work characteristics were most important in reducing the gender differences, each of the work characteristic variables was added to Model 2. When either shift work or work demands was added to Model 2, the OR was reduced to 1.14, followed by job control (OR=1.18), work hours (OR=1.22) and social support at work (OR=1.26).

When the family characteristic variables were added to Model 2 (Model 4), the gender differences in job dissatisfaction were no longer significant (OR=0.97). Both high levels of work-to-family conflict and family-to-work conflict were strongly related to job dissatisfaction. To clarify which family characteristics were most important in reducing the gender differences, each of the family characteristic variables was added to Model 2. The largest reduction in the gender differences was observed when work-to-family conflict was added to Model 3 (OR=1.03), followed by family-to-work conflict (OR=1.12), nurturing young children (OR=1.23) and the marital status (OR=1.23).

When the personality characteristic variables were added to Model 1 (Model 5), the gender differences were no longer significant, and males were found to be more dissatisfied with their jobs than females. The OR of females for job dissatisfaction decreased to 1.06 when a type A behaviour pattern was added to Model 1 and increased to 1.32 when negative affectivity was added to Model 1.

The Hosmer-Lemeshow tests validated the final models (Model 5 in Tables 2 and 3 and Model 6 in Table 4).

## Discussion

This study showed that low grade employees have job dissatisfaction. Various work, family and personality characteristics were significantly associated with job dissatisfaction. Among these characteristics, low job control, low social support and negative affectivity were the three major explanatory factors of grade differences in job dis-

satisfaction. This study also showed that there are gender differences in job dissatisfaction. Various work, family and personality characteristics were found to more or less contribute to gender differences in job dissatisfaction.

### *Associations of work, family and personality characteristics with job dissatisfaction*

Previous studies reported that employees with limited job control, high job demands, long work hours, shift work, poor social support at work, work-family conflicts, type A behaviour pattern and negative affectivity were more likely to have job dissatisfaction<sup>9-11, 14, 16</sup>. The findings from this study are consistent with previous studies.

It is worth noting that the strength of the associations between job dissatisfaction and being middle-aged, having high job demands and working long hours were reduced considerably, particularly among males, after adjusting for work-family conflicts and family structure. This may partly reflect that high demands, long work hours, work-family conflicts, and raising young children were more accumulated among those of middle age in this study. This attenuation of the associations indicates that: (1) long work hours and high job demands are potential causes of work-family conflicts; (2) work-family conflicts are more important causes of job dissatisfaction; and (3) demanding long work hours themselves may not be a major cause of job dissatisfaction. In addition, the attenuation of the associations between job dissatisfaction and age and work characteristics observed after adjusting for family and personality characteristics is not explained primarily by collinearity among the variables because the work, family and personality characteristic variables were not strongly correlated.

### *Socioeconomic inequalities in job dissatisfaction*

This study showed that low grade employees have job dissatisfaction, consistent with previous research<sup>8, 9</sup>. In addition, the magnitude of the grade differences decreased, increased or hardly changed after adjustment for each of the work, family and personality characteristics. The different patterns in changes observed in the grade differences observed before and after adjustment can be explained by the combination of patterns observed in the grade differences in work, family and personality characteristics and the patterns observed in the associations between these characteristics and job dissatisfaction. In fact, in this study, high grade employees were more common among senior age groups, and their work and family characteristics also differed from those of other age groups,

suggesting that there are grade differences in work, family, and personality characteristics.

It was reported that a low employment grade is associated with low job control, low job demands, low social support and shift work<sup>17</sup>). There were no significant grade differences in long work hours among males, whereas high grade female employees had longer work hours. Meanwhile, low job control, high job demands, low social support and long work hours were associated with job dissatisfaction in this study, while shift work had no significant links with job dissatisfaction. Therefore, the relatively large reduction in the grade difference in job dissatisfaction observed after adjustment for job control and social support may be explained by the combination of a predominant distribution of these work characteristics among low grade employees and the strong associations between these work characteristics and job dissatisfaction. The little changes observed in the grade differences after adjusting for shift work may be attributable to the combination of a predominant distribution of shift work among low grade employees and a lack of significant associations between shift work and job dissatisfaction. The rather large increase observed in the grade difference after adjusting for work hours and job demands may be attributable to the combination of a predominance of these work characteristics among high grade employees and the strong associations between these work characteristics and job dissatisfaction.

In this study, the grade differences in job dissatisfaction hardly changed following adjustment for family characteristics among males, while the differences increased among females. The gender differences in the changes in the grade differences observed after adjustment for family characteristics may be attributable to the gender difference in grade differences in the family characteristics. Among males, there were no significant grade differences in any of the family characteristics, except for the marital status, in our previous study<sup>17</sup>); therefore, making adjustments for family characteristics may have resulted in the little change observed in the grade differences in job dissatisfaction among males, even if some of the family characteristics were associated with job dissatisfaction. Among females, disadvantaged family characteristics were more common among high grade employees in the previous study; however, these participants were found to be more satisfied with their jobs in this study. Therefore, in females, making adjustments for family characteristics may have resulted in an increase in the grade differences in job dissatisfaction.

In this study, the grade differences increased following adjustment for a type A behavior pattern and decreased following adjustment for negative affectivity. The different patterns in changes observed in the grade differences may be explained by the different patterns in the grade differences between a type A behavior pattern and negative affectivity. While negative affectivity has been reported to be more common among low grade employees<sup>19</sup>), a type A behavior pattern was more common among high grade employees<sup>20</sup>). Because both personality characteristics were significantly associated with job dissatisfaction, making adjustments for a type A behavior pattern may have resulted in an increase in the grade difference, and the opposite may be true for negative affectivity.

Overall, in both males and females, low job control, low social support and negative affectivity were the three major explanatory factors of the grade differences in job dissatisfaction. According to the Local Public Service Act, local civil servants must obey the laws, regulations and orders of superiors; therefore, the level of job control each civil servant has may be highly influenced by his or her employment grade. Well-educated individuals such as civil servants may have a certain degree of confidence in their thinking and decision-making at work; therefore, rejection and limited acceptance of their work by superiors may result in negative feelings toward their work and be a potential source of grade differences in job dissatisfaction.

#### *Gender inequalities in job dissatisfaction*

In this study, females were more likely to have job dissatisfaction than males, consistent with the existing data<sup>10</sup>). The gender differences observed in job dissatisfaction were attenuated significantly and were no longer significant after adjusting for work, family and personality characteristics. However, the magnitude of the changes in the gender differences observed after making the adjustments differed among the variables. Among the work characteristic variables, all of the variables, except for social support, contributed to reducing the gender differences in job dissatisfaction. This can be explained by the fact that (1) high demands at work, long work hours and shift work were more common among females than males in our previous study<sup>18</sup>) and were significantly associated with job dissatisfaction in this study and (2) there were no significant gender differences in low social support at work in the previous study, although low social support was associated with job dissatisfaction in this study.

Among the family characteristics, family-to-work conflict and work-to-family conflict contributed more to

reducing the gender differences in job dissatisfaction than the marital status and nurturing young children. These results can be explained by the fact that (1) the gender difference was much larger for family-to-work conflict and work-to-family conflict than the marital status and nurturing young children in our previous study<sup>18)</sup> and (2) the associations between family-to-work conflict and work-to-family conflict and job dissatisfaction were much stronger than those observed between the family structure variables and job dissatisfaction in this study.

Among the personality characteristics, although both a type A behaviour pattern and negative affectivity were associated with job dissatisfaction, the gender differences were reduced following adjustment for a type A behaviour pattern and increased following adjustment for negative affectivity. The different patterns in changes observed after making the adjustments can be explained by the fact that there are gender differences in the prevalence of a type A behaviour pattern and negative affectivity: a type A behaviour pattern is more common among females than males, while the opposite is true for negative affectivity<sup>20)</sup>.

Overall, the gender difference in job dissatisfaction can be explained by the combined effects of the degree of gender differences in each work, family and personality characteristic variable and the associations between these variables and job dissatisfaction. In Japan, although gender equality policies have been more intensively introduced in public sectors than private sectors, gender differences in work and family characteristics remain and may be potential sources of gender differences in job dissatisfaction.

#### *Methodological limitations*

It should be mentioned that there are several methodological limitations that may affect the interpretation of the results of this study. First, this study is a cross-sectional study; therefore, it cannot be used to determine the causal nature of the associations observed between job satisfaction and age, gender, employment grade, work characteristics, family characteristics, personality traits and illness. However, reverse causation may not be the major direction because job satisfaction is an overall result of how employees think about their work and family characteristics.

Second, it may be difficult to generalize the results of this study, as the participants were working civil servants. Civil servants comprise a narrow-ranged population in terms of age, education, payment and job security. In addition, gender equality policies are more strictly implemented in civil service workplaces than in non-

governmental workplaces. Therefore, it should be noted that the prevalence of job dissatisfaction and grade and gender differences in job satisfaction may be much larger in general working populations.

#### *Conclusions*

This study showed that low grade employees and females have job dissatisfaction. The grade differences were explained largely by job control, social support at work and negative affectivity. The gender differences were explained by a wide variety of work, family and personality characteristics. Reducing socioeconomic and gender inequalities in work and family environments may be sometimes difficult but is important for reducing socioeconomic and gender inequalities in job dissatisfaction.

#### **Acknowledgements**

We are indebted to all the civil servants at the local government for their participation in this study and also to Ms Yasuko Yamazaki, Ms Yoriko Yoshida, and Ms Noriko Anzen for their valuable clerical support. The Japanese civil servants study was supported by grants from the Ministry of Health, Labour and Welfare, the Japanese Society for the Promotion of Science (20790437), the Occupational Health Promotion Foundation, the Univers Foundation (98.04.017), the Daiwa Anglo-Japanese Foundation (03/2059) and the Great Britain Sasakawa Foundation (2551). No funding organizations were involved in the design, conduct, interpretation or analysis of the study or review or approval of the manuscript.

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