

**Brief report**

## Change in organizational justice and job performance in Japanese employees: A prospective cohort study

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**Abstract: Change in organizational justice and job performance in Japanese employees: A prospective cohort study: Yuko NAKAGAWA, et al. Department of Health Policy and Management, Graduate School of Medical Science, University of Occupational and Environmental Health, Japan—Objective:** The aim of the present study was to investigate the association of one-year change in organizational justice (i.e., procedural justice and interactional justice) with job performance in Japanese employees. **Methods:** This study surveyed 425 men and 683 women from a manufacturing company in Japan. Self-administered questionnaires, including the Organizational Justice Questionnaire (OJQ), the World Health Organization Health and Work Performance Questionnaire (WHO-HPQ) and the scales on demographic characteristics, were administered at baseline (August 2009). At one-year follow-up (August 2010), the OJQ and WHO-HPQ were used again to assess organizational justice and job performance. The change in organizational justice was measured by dichotomizing each OJQ subscale score by median at baseline and follow-up, and the participants were classified into four groups (i.e., stable low, adverse change, favorable change and stable high). Analysis of covariance (ANCOVA) was employed. **Results:** After adjusting for demographic and occupational characteristics and job performance at baseline, the groups classified based on the change in procedural justice differed significantly in job performance at follow-up (ANCOVA:  $F [3, 1097]=4.35, p<0.01$ ). Multiple

comparisons revealed that the stable high procedural justice group had significantly higher job performance at follow-up compared with the stable low procedural justice group. The groups classified based on change in interactional justice did not differ significantly in job performance at follow-up ( $p>0.05$ ). **Conclusions:** The present findings suggest that keeping the level of procedural justice high predicts higher levels of job performance, whereas the psychosocial factor of interactional justice is not so important for predicting job performance.

(J Occup Health 2015; 57: 388–393)

**Key words:** Interactional justice, Japan, Panel study, Procedural justice, Productivity

Organizational justice, which is defined as employees' perception of fairness in the workplace, has recently been introduced as a psychosocial determinant of employee health<sup>1</sup>. Prospective studies in Europe (mainly in Finland, the UK and the Netherlands) reported that a lack of organizational justice was associated with poor physical and mental health<sup>2,3</sup>. The occupational health research field has focused mainly on procedural and interactional (or relational) components of organizational justice<sup>4</sup>. Procedural justice refers to whether managers or supervisors share information concerning decision-making processes and procedures with their subordinates<sup>5</sup> or adhere to fair process criteria, i.e., consistency, lack of bias, correctability, representation, accuracy and ethicality<sup>6</sup>. Interactional (or relational) justice refers to whether managers or supervisors treat their subordinates with respect and dignity and provide rationales for their decisions<sup>7</sup>.

Although both procedural justice and interactional

Received Sept 11, 2014; Accepted Apr 10, 2015

Published online in J-STAGE May 15, 2015

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justice are likely to influence employee's job performance through sharing information or providing rationales for their decisions, research on the association between organizational justice and job performance is still limited. Only one study reported that procedural justice had a significant direct effect on job performance, while the direct effect of interactional justice on job performance was only minimal<sup>8)</sup>. However, that study used a cross-sectional design; thus, no causal relationship could be determined. Furthermore, a very limited number of studies have considered the "time-dependent change" in organizational justice. To date, only one study has investigated the effect of change in organizational justice (mainly interactional justice) on self-rated health<sup>9)</sup>. If change in organizational justice was found to have a positive effect on job performance, the present study would possibly provide a piece of evidence supporting the effect of organizational justice interventions on improvement in job performance.

Therefore, the purpose of the present study was to investigate the association of change in procedural and interactional justice with job performance among Japanese employees.

## Methods

### Participants

From August 2009 to August 2010, a prospective cohort study was conducted with employees of a manufacturing company in Japan. These participants were selected because they were better equipped to provide a concrete notion of their productivity due to the presence of more directly observable outputs on a daily basis. At baseline, all employees (N=1,279) were invited to participate in this study, and 1,277 employees agreed to participate. Because 118 employees transferred out, took a leave of absence, retired or died during the one-year follow-up period, 1,159 employees were eligible to participate in the follow-up survey (August 2010). Out of 1,159 employees, 1,157 employees returned the completed questionnaires. Out of 1,157 employees, 49 employees did not respond to more than half of the items in each organizational justice subscale or had at least one missing response for the other variables; thus, they were excluded from the analyses. Finally, the data from 1,108 employees (425 men and 683 women) were analyzed. Detailed characteristics of participants and average scale scores are shown in Table 1.

Study purpose and procedures were explained to the employees, and written informed consent was obtained from them prior to initiation of the study. The Ethics Committee of the Graduate School of Medicine/Faculty of Medicine, The University of Tokyo, reviewed and approved the aims and proce-

dures of the study (No. 2580).

### Measures

#### 1) Organizational justice

The Japanese version of the organizational justice scale<sup>10, 11)</sup>, sometimes known as the Organizational Justice Questionnaire (OJQ), was used to assess organizational justice at baseline and follow-up. The OJQ consists of a seven-item procedural justice scale (response range 1–5) and a six-item interactional justice scale (response range 1–5), both measured on a five-point scale: 1=strongly disagree to 5=strongly agree. A total score for each OJQ subscale was calculated by averaging item scores. When the number of missing items was equal to or less than half the number of each OJQ subscale's items, the missing item(s) was not used in calculations of the total score. In this sample, Cronbach's  $\alpha$  coefficients were 0.87 and 0.93 at baseline and 0.89 and 0.94 at follow-up for procedural justice and interactional justice, respectively (Table 1). The test-retest correlations were 0.56 for procedural justice and 0.48 for interactional justice. In line with an earlier study<sup>12)</sup>, the change in organizational justice was measured by dichotomizing procedural justice or interactional justice scores by median at baseline and follow-up. The participants were classified into four groups: stable high (high justice at baseline and follow-up), favorable change (low justice at baseline and high justice at follow-up), adverse change (high justice at baseline and low justice at follow-up) and stable low (low justice at baseline and follow-up) groups.

#### 2) Job performance

The World Health Organization Health and Work Performance Questionnaire (WHO-HPQ)<sup>13)</sup> was used to assess job performance at baseline and follow-up. The WHO-HPQ includes scales for sickness absence (absenteeism) and reduced job performance due to health problem (presenteeism). We used the Japanese version of the "HPQ short form", which is a single-item questionnaire measuring self-rated job performance over the past four weeks on an 11-point Likert-type scale ranging from 0=the worst performance to 10=the best performance. The test-retest correlation was 0.52.

#### 3) Other covariates

Demographic and occupational characteristics included age, education, marital status, occupation and employment contract. Demographic characteristics (i.e., age, education and marital status) were assessed using a self-administered questionnaire, and information on occupational characteristics (i.e., occupation and employment contract) was obtained from the personnel records of the surveyed company. Detailed classification of each demographic and occupational

**Table 1.** Demographic and occupational characteristics, organizational justice and job performance at baseline and organizational justice and job performance at one-year follow-up among participating employees (N=1,108)

Demographic characteristics	Average (SD)	n (%)
Gender		
Men		425 (38.4)
Women		683 (61.6)
Age (years)	37.0 (8.0)	
50 years old or more		73 (6.6)
40–49 years old		345 (31.1)
30–39 years old		457 (41.2)
29 years old or less		233 (21.0)
Education (years)	15.0 (1.6)	
More than 12 years		968 (87.4)
12 years or less		140 (12.6)
Marital status		
Currently married		553 (49.9)
Never married		489 (41.1)
Divorced/widowed		68 (6.0)
Occupation		
Administrator/clerk		240 (21.7)
Quality assurance/after service		23 (2.1)
Sales support staff		249 (22.5)
Sales/sales engineer		308 (27.8)
Call talker		276 (24.9)
Others		12 (1.1)
Employment contract		
Manager		194 (17.5)
Regular employee		352 (31.8)
Group business employee		35 (3.2)
Contract employee		245 (22.1)
Temporary employee		276 (24.9)
Others		6 (0.5)
Scale scores †	Average (SD)	Cronbach's $\alpha$
Baseline		
Organizational justice (OJQ)		
Procedural justice (1–5)	3.46 (0.69)	0.87
Interactional justice (1–5)	3.97 (0.76)	0.93
Job performance (HPQ) (0–10)	6.17 (1.75)	—
One-year follow-up		
Organizational justice (OJQ)		
Procedural justice (1–5)	3.48 (0.72)	0.89
Interactional justice (1–5)	3.95 (0.78)	0.94
Job performance (HPQ) (0–10)	6.24 (1.71)	—

†OJQ, Organizational Justice Questionnaire; HPQ, World Health Organization Health and Work Performance Questionnaire.

characteristic is shown in Table 1.

#### Statistical analysis

Analysis of variance (ANOVA) and analysis of covariance (ANCOVA) were conducted to compare crude and adjusted job performance at one-year follow-up by groups classified based on the changes in procedural justice or interactional justice. In the ANCOVA, the demographic and occupational characteristics were adjusted first, and then job performance at baseline was additionally adjusted. Post hoc multiple comparison tests were conducted using the Bonferroni method. In addition, as an alternative analysis, the structural equation modeling (SEM) approach was used to examine the causal relationship between organizational justice and job performance. In the SEM approach, a cross-lagged model, which examined the prospective reciprocal association of procedural justice or interactional justice with job performance, was compared with a synchronous effects model, which examined the reciprocal association of procedural justice or interactional justice with job performance within follow-up, to determine the appropriateness of the one-year follow-up period<sup>14</sup>. The level of significance was 0.05 (two-tailed). The statistical analyses were conducted using SPSS Statistics 17 and IBM SPSS Amos 22 for Windows.

## Results

In the ANOVA, the groups classified based on change in procedural justice differed significantly in job performance at follow-up ( $F [3, 1104]=8.18, p<0.001$ ) (Table 2). A post hoc multiple comparison test revealed that the stable high procedural justice group had significantly higher job performance at follow-up compared with the stable low procedural justice group. The difference remained significant after adjusting for demographic and occupational characteristics and job performance at baseline (ANCOVA:  $F [3, 1097]=4.35, p<0.01$ ). On the other hand, the groups classified based on change in interactional justice did not differ significantly in job performance at follow-up ( $p>0.05$ ). SEM analysis indicated no significant association of procedural justice or interactional justice with job performance in the cross-lagged or synchronous effects model.

## Discussion

In the present one-year cohort study, the groups classified based on change in procedural justice differed significantly in job performance at follow-up after adjusting for demographic and occupational characteristics and job performance at baseline. In specific, the stable high procedural justice group

**Table 2.** Comparison of crude and adjusted job performance at one-year follow-up by groups classified based on the changes in organizational justice among Japanese employees (N=1,108)

Organizational justice	n	Crude	Demographic and occupational factors adjusted	Demographic, occupational factors and job performance at baseline adjusted
		Average (SD) <sup>†</sup>	Average (SE) <sup>‡</sup>	Average (SE) <sup>§</sup>
Procedural justice				
Stable low	374	5.93 (1.74) <sup>a)</sup>	5.97 (0.09) <sup>a)</sup>	6.07 (0.08) <sup>a)</sup>
Adverse change	161	6.12 (1.77)	6.12 (0.13)	6.10 (0.11)
Favorable change	171	6.39 (1.51) <sup>b)</sup>	6.39 (0.13) <sup>b)</sup>	6.39 (0.11)
Stable high	402	6.51 (1.70) <sup>b)</sup>	6.47 (0.08) <sup>b)</sup>	6.39 (0.07) <sup>b)</sup>
		$p<0.001$	$p<0.001$	$p=0.005$
Interactional justice				
Stable low	501	6.11 (1.67)	6.13 (0.08)	6.15 (0.07)
Adverse change	168	6.25 (1.82)	6.27 (0.13)	6.22 (0.11)
Favorable change	156	6.39 (1.59)	6.35 (0.13)	6.43 (0.12)
Stable high	283	6.37 (1.78)	6.36 (0.10)	6.30 (0.09)
		$p=0.123$	$p=0.238$	$p=0.176$

<sup>†</sup> One-way analysis of variance (ANOVA) was used to compare crude averages. Analysis of covariance (ANCOVA) was used to compare adjusted averages. SD: standard deviation. SE: standard error. <sup>‡</sup> Adjusted for gender, age, education, marital status, occupation and employment contract. <sup>§</sup> Additionally adjusted for job performance at baseline. a, b) A significant difference in the HPQ scores at one-year follow-up was observed between groups using the Bonferroni method.

had significantly higher job performance at follow-up compared with the stable low procedural justice group. However, the groups classified based on the change in interactional justice did not differ significantly in job performance at follow-up. The results of the SEM analysis did not show a significant association of organizational justice with job performance in the cross-lagged or synchronous effects model.

The stable high procedural justice group had significantly higher job performance at follow-up compared with the stable low procedural justice group. This finding is consistent with a previous study that reported that a higher level of procedural justice predicts subsequent greater job performance<sup>8)</sup>. The present study expanded upon this finding by examining the Japanese working population. On the other hand, we found no significant difference in job performance at follow-up between the stable high interactional justice group and the stable low interactional justice group. It has been reported that interactional justice has a weaker effect on job performance compared with procedural justice<sup>8)</sup>. The present findings suggest that the fairness of decision-making procedures is more important for improvement of an employee's job performance than the interpersonal treatment by supervisors. However, a recent study<sup>15)</sup> showed that supervisors' self-regulatory resources are drained when they perform activities related to procedural justice. In turn, improving procedural justice may increase subordinates' performance at the cost of decreasing supervisors' performance. Since only 17.5% of the present sample comprised managers (see Table 1), the present findings may mainly reflect the situation of subordinates, even though we statistically adjusted for the employment contract. Further study is needed to estimate more detailed associations of organizational justice with job performance stratified by employment contract or job title.

Interestingly, a decrease in job performance at follow-up for the stable high procedural justice group and an increase in job performance at follow-up for the stable low procedural justice group were observed after adjusting for job performance at baseline. (see Table 2). These findings may be explained by the high test-retest correlations ( $r=0.52$ ) of job performance, suggesting that job performance at baseline strongly influences job performance at follow-up. Thus, those who perceived higher levels of job performance at baseline are likely to evaluate their job performance at follow-up as high, which may lead to overestimated job performance at follow-up in the crude model, especially among the stable high procedural justice group. Considering the reverse principle, those who perceived lower levels of job performance at baseline are likely to evaluate their job performance

at follow-up as low, which may lead to underestimated job performance at follow-up in the crude model.

On the other hand, the results of SEM did not show a significant association of organizational justice with job performance in the cross-lagged or synchronous effects model. These findings are inconsistent with the results of ANOVA/ANCOVA, especially for procedural justice. Although the SEM approach is useful for panel studies to estimate the causal relationship between an independent variable and dependent variable, it may be difficult to evaluate the "intrapersonal stability or change" of an independent variable from baseline to follow-up. For example, in the present study, those who perceived higher levels of justice at baseline did not necessarily perceive higher levels of justice at follow-up; a part of them perceived lower levels of justice at follow-up. Similarly, those who perceived lower levels of justice at baseline did not necessarily perceive lower levels of justice at follow-up. While the grouping approach, such as ANOVA/ANCOVA, can distinguish individuals by means of intrapersonal changes in perceived justice, the SEM approach may not be able to distinguish them, which may explain the discrepancy between the results of ANOVA/ANCOVA and SEM.

Some possible limitations of the present study should be considered. First, the sample in the present study comprised employees of one particular manufacturing company in Japan; therefore, generalization of the findings should be done cautiously. Second, because supervisors collected questionnaires in sealed envelopes from each department, some respondents might have felt forced to participate in the study, even though all employees were told that their participation was voluntary and that supervisors could not open the sealed envelopes. This data collection method may have influenced the association of organizational justice (especially interactional justice) with job performance. Third, organizational justice and job performance were assessed using self-administrated questionnaires, which may result in a bias due to a common response style. Fourth, we used only one item to measure employees' overall job performance, which may have induced a common method bias. Fifth, when we conducted the ANOVA/ANCOVA, the change in organizational justice was classified based on the median scores for each OJQ subscale at baseline and follow-up, which may have led to random misclassification, especially for the participants who scored around the median. This misclassification may have contributed to the lack of findings regarding the two change groups (i.e., the adverse change and the favorable change groups). Furthermore, a recent study<sup>16)</sup> has suggested that a one-year follow-up period is too long to identify the effect of psycho-

social work characteristics on well-being. Therefore, short-term research, such as a diary study, should be conducted to examine in more detail the effect of change in organizational justice on job performance in the future.

*Acknowledgment:* The present study was supported by JSPS KAKENHI Grant Numbers 20240062 (Grant-in-Aid for Scientific Research (A)) and 26860448 (Grant-in-Aid for Young Scientists (B)).

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