

The Relationship between Job Stress and Employees' Innovation Behavior

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ABSTRACT

With the fierce market competition, employees' innovative behavior is crucial for organizations to maintain competitiveness. Targeting Chinese corporate employees, this study aims to reveal how job characteristics (including demands and resources) influence employee innovation behavior through challenging and hindering job stress. The empirical research is based on questionnaire survey data. 517 enterprise employees in China were investigated with the Job Requirements-Resources Scale, Challenge-Hindrance Stress Scale, and Innovation Behavior Scale. Results show that: (1) Job demands, challenging stress, and job resources differ significantly by gender (males > females); analysis found that job requirements show a specific trend with age: employees aged 29-39 have the highest job requirements, followed by employees aged 18-28, and both are significantly higher than those aged 40-50 and above; innovative behavior is higher in private enterprises than in state-owned enterprises. (2) Correlation analysis results indicate significant positive correlations among the variables studied. Specifically: Job demands are not only positively correlated with job resources, but also with challenging stress and innovative behavior; Job resources are significantly positively correlated with challenging stress and innovative behavior; Furthermore, challenging stress has also been shown to be significantly positively correlated with innovative behavior. (3) The study shows that challenging stress mediates the impact of job demands on innovative behavior, and job resources moderate the relationship between job demands and challenging stress. This conclusion has guiding value for Chinese organizations to improve employee innovation through job design optimization.

KEYWORDS

Job Characteristics; Job Demands; Job Resources; Challenging Stress; Innovative Behavior.

1. INTRODUCTION

1.1. Research Background

As the market economy continues to develop, the competition faced by enterprises is becoming increasingly fierce. For organizations to remain invincible, innovation is essential—whether institutional innovation or production form innovation [1] [2]. Among them, employees' behavior is the core, as it can significantly enhance an organization's innovation capability. Numerous studies have investigated employees in Western cultural workplace settings; for example, Cavanaugh et al. carried out an empirical analysis of work stress among U.S. managers [3]. However, research exploring the current state of this issue in Eastern cultural contexts remains comparatively scarce. How to improve employees' innovative behavior has become a strategic issue for many organizations, especially in Chinese enterprises.

Traditional studies view job stress as purely negative, but recent research has found that its impact depends on its nature [4]. Karasek [5] proposed that stress research should start from individual-level

job characteristics, Demerouti and his colleagues [6] constructed the job demands-resources (JD-R) model, which systematically divides job characteristics into two dimensions: job demands and job resources, providing an integrative framework for exploring their influencing mechanisms. Organizations can maintain moderate positive stress and reduce unnecessary negative stress by adjusting job demands and resources, thereby creating a better environment for employees' innovation[7][8].

1.2. Research Objectives and Hypotheses

This study aims to: (1) study how job demands, job resources, challenging stress, hindering stress, and innovative behavior vary with demographic characteristics.(2) analyze the correlations between these variables; (3) verify the mediating effect of work stress in the "job demands → innovative behavior" path, and examine the moderating role of work resources in this relationship.

Based on relevant theories and literature, the following research hypotheses are constructed:

- H1: Gender is a predictor of job characteristic perceptions and behaviors, with inter-group differences.
- H2: Employees of state-owned enterprises and private enterprises experienced significant inter-group differences in key variables studied (such as job requirements, job resources, etc.).
- H3: Challenging stress has a positive predictive effect on innovative behavior, while hindering stress shows a negative correlation.
- H4: Both job demands and job resources are significantly positively correlated with innovative behavior.
- H5: As job demands increase, job pressure often increases simultaneously.
- H6: Job stress is the mediator between job demands and innovative behavior; at the same time, job resources moderate the effect of job demands on job stress..

2. RESEARCH METHODS

2.1. Participants

A total of 651 questionnaires were distributed. After excluding invalid questionnaires, the sample size included in the analysis was 517 (effective rate 79.4%). Relevant demographic information is shown in Table 1:

Table 1. Demographic characteristics of the study subjects

Variable	Category	Number	Percentage
Gender	Male	219	42.36%
	Female	298	57.64%
Age	18-28 years	206	39.85%
	29-39 years	153	29.59%
	40-50 years	104	20.12%
	>50 years	54	10.44%
Organizational	State-owned	287	55.51%
	Private	230	44.49%

2.2. Measures

2.2.1. Job Requirements and Resources Scale

Adopted from Zhang Huihui, the Job Demands Scale includes 8 items (e.g., "My working hours are long") with 3 dimensions: workload, quality requirements, and work-family conflict (Cronbach's $\alpha = 0.855$). The Job Resources Scale includes 17 items (e.g., "I can arrange my work independently") with 4 dimensions: work autonomy, feedback, social support, and career development (Cronbach's $\alpha = 0.831$). Both scales use a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

2.2.2. Challenge-Hindrancel Stress Scale

Translated by Cai Xin (2017) from Cavanaugh et al. (2000), the Challenging Stress subscale has 6 items (e.g., "Workload causes me stress") (Cronbach's $\alpha = 0.86$), and the Hindrance Stress subscale has 5 items (e.g., "Unclear work standards cause me stress") (Cronbach's $\alpha = 0.83$). A 5-point Likert scale is used.

2.2.3. Innovation Behavior Scale

Adopted from Scott and Bruce (translated by Zhao Yidan, 2016), it includes 6 items (e.g., "I often have creative ideas") (Cronbach's $\alpha = 0.88$). A 5-point Likert scale is used.

2.3. Data Analysis

The data analysis process was as follows: First, descriptive statistics, independent sample t-test, one-way analysis of variance, Pearson correlation analysis, and multiple linear regression analysis were performed using SPSS 24.0. Subsequently, the mediation and moderation effect models were tested using Mplus 7.0, and parameter estimation was performed using the bootstrap method with 1000 repeated sampling.

3. RESULTS

3.1. Descriptive Statistics Results

The mean (M) and standard deviation (SD) of the main variables are shown in Table 2:

Table 2. Specific core indicators

Variable	M	SD
Job demands	2.48	0.57
Challenging stress	2.68	0.78
Hindrancel stress	2.45	0.87
Innovative behavior	2.77	0.81
Job resources	2.53	0.64

3.2. Demographic Differences

3.2.1. Gender Differences

- Job demands: Males (2.55) > Females (2.44) ($t = 2.11, p < 0.05$).

- Challenging stress: Males (2.83) > Females (2.58) ($t = 3.62, p < 0.001$).
- Job resources: Males (2.76) > Females (2.36) ($t = 7.35, p < 0.001$).
- No significant gender differences in hindrance stress or innovative behavior ($p > 0.05$).

3.2.2. Organizational Nature Differences

- Innovative behavior: Private enterprises (2.86) > State-owned enterprises (2.70) ($t = -2.29, p < 0.05$).
- The differences in the remaining variables were not significant ($p > 0.05$).

3.2.3. Age Differences

- Job demands: 29-39 years old (2.60) > 18-28 years old (2.37) > 40-50 years old (2.54) > 50+ years old (2.45) ($F = 5.51, p < 0.01$).
- The differences in age among the other variables were not significant ($p > 0.05$).

3.3. Correlation Analysis

Controlling for demographics, correlation results (Table 3) show:

- Job demands were significantly positively correlated with job resources, challenge pressure, and innovative behavior, with correlation coefficients of $r = 0.14$ ($p < 0.01$), $r = 0.27$ ($p < 0.001$), and $r = 0.34$ ($p < 0.001$), respectively.
- Challenging stress ($r = 0.55, p < 0.001$) and innovative behavior ($r = 0.38, p < 0.001$) were both significantly positively correlated with job resources.
- Challenging stress is significantly positively correlated with innovative behavior ($r = 0.59, p < 0.001$).
- Hindrance stress shows no significant correlations with other variables ($p > 0.05$).

Table 3. Correlation Matrix

Variable	1	2	3	4	5
1. Job demands	1	0.27***	-0.05	0.34***	0.14**
2. Challenging stress		1	0.14**	0.59***	0.55***
3. Hindrance stress			1	0.02	-0.06
4. Innovative behavior				1	0.38***
5. Job resources					1

3.4. Mediation and Moderation Effects

- The mediation effect test shows that challenging stress has a mediating effect between job demands and innovative behavior ($a = 0.68^*, b = 0.53^*$).
- Job resources significantly moderated the path from job demands to challenging stress ($\beta = -0.57$), and the model fit was good ($\chi^2/df = 2.80, RMSEA = 0.06, CFI = 0.99, TLI = 0.98$).

4. DISCUSSION

4.1. Demographic Differences

Gender differences in job demands and challenging stress may stem from social expectations: males are often assigned more demanding tasks. Higher innovative behavior in private enterprises may be due to their profit-oriented nature, which encourages innovation more actively than state-owned enterprises. The peak job demands in 29-39 years old reflect their role as core employees.

4.2. Variable Relationships

Job demands positively correlate with innovative behavior, supporting that appropriate demands can stimulate problem-solving and innovation. Job resources, as incentives, promote innovative behavior by enhancing autonomy and support. The positive correlation between challenging stress and innovative behavior supports the findings of Cavanaugh et al., who argued that challenging stress fosters growth and achievement.

4.3. Mediation and Moderation

Challenging stress mediates job demands and innovative behavior, indicating that job demands trigger innovative behavior through increasing challenging stress. Job resources moderate this process: sufficient resources buffer excessive demands, turning them into constructive stress.

5. CONCLUSION

5.1. Theoretical Contributions and Practical Significance

This study enriches the JD-R model and challenge-hindrance stress theory by clarifying the mechanism between job characteristics, stress, and innovation. Practically, organizations should: (1) set gender-equitable job demands; (2) improve incentive mechanisms in state-owned enterprises; (3) provide sufficient resources (e.g., autonomy, support) when assigning high demands to promote innovation.

5.2. Limitations and Future Research

Limitations include:

(1) This study only involves Chinese enterprises and was conducted during a period of favorable economic development in 2019, making it a cross-sectional study reflecting only a specific stage. Future research should incorporate time factors through longitudinal studies, introduce foreign enterprise samples to examine whether different external environments affect the relationships between variables.

(2) Unclear role of hindrance stress. Future studies should explore hindrance stress mechanisms.

(3) The study solely relied on online questionnaires, lacking methodological diversity. Future research could integrate interview, experimental designs and mobile device-based data collection for multi-method validation.

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