

The Influence of Psychological Stress Reaction of Science-Technology Talents on Organizational Citizenship Behavior

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Abstract. This article is based on the mechanism of the psychological stress reaction (PSR) of science-technology talents on their organizational citizenship behavior (OCB), and uses perceived organizational support (POS) as an intermediary variable to introduce this mechanism for further discussion. The science-technology talents of the two scientific research institutes were used as research objects, and 364 valid questionnaires were collected. SPSS20.0 was used for data analysis and the PROCESS program developed by Hayes was used to test the mediation. Research indicates that there is a negative correlation between PSR of science-technology talents and OCB. There is a significant positive correlation between POS of science-technology talents and their OCB. PSR of science-technology talents is negatively correlated with POS. And POS of science-technology talents plays a unique intermediary role between their PSR and OCB.

Introduction

The scientific and technological forces have increasingly become an important force for advancing the progress of the times and the development of the country. The competition of scientific and technological forces is the competition of science-technology talents. The report of the 19th National Congress of the Communist Party of China puts forward that "We should cultivate a large number of world-class scientists and technologists in strategically important fields, scientific and technological leaders, and young scientists and engineers, as well as high-performing innovation teams." [1]. This has also made the development and management of science-technology talents become a hot issue in the field of human resources management. However, due to the increasingly fierce competition in the market today, the pressure for survival and development of enterprises will increase, which will inevitably give greater responsibility and organizational expectations to the core talents in the enterprise. In such a high-load environment, the pressure on employees cannot be ignored.

Studies have shown that science-technology talents will be more active in making organizational citizenship behavior (OCB) when they feel the importance of their careers [2]. In view of the fact that science-technology talents have rich psychological capital, high independence and innovation, it is of great significance to give full play to the advantages and characteristics of science-technology talents to the survival and development of enterprises. The concern of enterprises for the work pressure of science-technology talents and the sense of organizational support is conducive to shaping a good corporate culture and enhancing employee loyalty. The research on the impact of the psychological stress response of science-technology talents on their organizational citizenship behavior provides a guiding basis for the future management of science-technology talents.

Theory and Hypotheses

Definition of Science-Technology Talents

As a unique concept in China, science-technology talents are essentially a policy concept that has

not been quantified so far (Mo Yang et al., 2011) [3]. Human Resources for Science and Technology (HRST) is a concept that corresponds to and is comparable to the concept of “science-technology talents” in China (Hu Wei et al., 2014) [4]. In 1995, Technology Human Resources It is defined in the Manual as a technology professional with a level of education above the junior college level and above, or who does not reach the above-mentioned level of education, but who usually do the above work. Based on the views of previous scholars, this paper believes that science-technology talents can be defined as: possessing certain professional knowledge or skills, and undertaking scientific and technological undertakings. Workers engaged in creative science and technology work that contribute to economic development.

The Impact of Psychological Stress Response on Organizational Citizenship Behavior

In 2003, scholars Jex and Thomas (2003) argued that the work stress caused by overworked work has a significant negative impact on employees' organizational citizenship behavior (OCB) (Jex, Thomas, 2003) [5]. Domestic scholars Guo Shumei and Du Zongbin (2013) conducted research on the employees of the hotel industry and concluded that the work pressure caused by work overload and unfairness has a high negative impact on the OCB of employees in the industry [6]. Based on this, this paper proposes:

H1: There is a negative correlation between psychological stress response (PSR) of science-technology talents and their OCB;

The Impact of Organizational Support on Organizational Citizenship Behavior

Employees' sense of support for the organization is an important variable that affects their OCB. Summarizing the empirical research views of predecessors, the more organizational support employees perceive, the more OCB they exhibit. The improvement of employee organization support can enable employees to actively increase extra-role behaviors—that is, to promote the increase of employee OCB (George et al., 1992) [7]; Shore and other scholars in an empirical study of 276 pairs of subordinates The conclusion that the two are positively correlated (Shore et al., 1993). Domestic scholar Wu Zhiming and others based on empirical analysis, through questionnaire survey, the employee's POS prompted him to show OCB, and social exchange psychology played a regulatory role (Wu Zhiming et al., 2006) [8]. Based on the above analysis, this paper proposes:

H2: There is a positive correlation between science-technology talents' POS and their OCB;

The Impact of Psychological Stress Response on Organizational Support

As early as 1993, foreign scholar George and other research found that employees' POS can help employees to relieve their stress response, including anxiety and tension, when faced with fast-paced and high-stress work (George et al., 1993) [9]. In addition, some studies by Stamper et al. have shown that PSR caused by role conflicts and the like will lead to a decrease in organizational support for employees (Stamper et al., 2003) [10]. In summary, this paper proposes:

H3: There is a negative correlation between the PSR of science-technology talents and the POS;

Mediating Role of POS

At present, there is relatively little research on the impact of PSR and POS on employee's OCB. In his master's thesis, Wang Yigui explored the impact of work pressure on OCB through questionnaire surveys of grassroots employees from five cities, and concluded that there is POS between the work pressure of the grassroots employees and OCB. The conclusion that feelings play an intermediary role (Wang Yigui, 2013) [11]. Therefore, this paper proposes:

H4: POS for science-technology talents plays a mediating role between their PSR and OCB.

Data Analysis

The data in this paper is from the China National Survey Database, and the survey institution is Renmin University of China. The survey was conducted through questionnaires. The questionnaires were conducted by science-technology talents from a Beijing science-technology talents service

organization and a central enterprise R&D department. The paper questionnaires were randomly distributed to the target units' science-technology talents through contacts. Bring it home and fill it in. It must be returned in envelopes within one week and sent back to the research team by the contact person. A total of 479 questionnaires were collected, of which 364 were valid.

In this study, spss20.0 was used and the PROCESS program developed by Hayes (2012) was run. Firstly, the correlation coefficient between variables was obtained through correlation analysis. Finally, hypothesis testing was carried out according to the preconditions provided in previous step.

Correlation Coefficient Significance Test

In this paper, Pearson product difference correlation was used to analyze the age, gender, position, and education level, working years, PSR, OCB, and POS of science-technology talents.

As shown in Table 1, the correlation coefficient between the PSR of science-technology talents and their OCB is -0.225, indicating a negative correlation between the two, and the negative correlation is significant at the 0.01 level. H1 is established; The correlation coefficient between POS and OCB of science-technology talents is 0.297. The positive correlation is significant at the 0.01 level, and the H2 is established. The correlation coefficient between the PSR and POS perceived by the science-technology talents is -0.399, showing a significant negative correlation at the 0.01 level. H3 is established. In addition, PSR was significantly correlated with OCB and POS, and POS was significantly correlated with PSR and OCB. The above results provide a prerequisite for the mediating effect of POS below.

Table 1. Variable correlation test

Variables	1	2	3	4	5	6	7	8
1.Age	1							
2.Gender	-0.009	1						
3.Position	-0.325**	-0.095	1					
4.Education	0.037	-0.104	-0.011	1				
5.Working years	0.543**	0.075	-0.251**	-0.031	1			
6.PSR	0.101	-0.010	0.031	-0.041	0.173**	1		
7.OCB	0.013*	-0.133	-0.130*	0.041	0.017	-0.225**	1	
8.POS	-0.080	-0.024	-0.102	0.063	-0.204**	-0.399**	0.297**	1

Note: **p<0.01, *p<0.05

Hypothesis Test

In the correlation test, we have confirmed the H1, H2, H3, that is, the PSR of science-technology talent has a negative effect on its OCB, and the PSR of science-technology talents has a negative impact on its POS. POS has a positive effect on its OCB. Then, whether POS in the mechanism of PSR of science-technology talent affects its OCB will play a certain intermediary role in it will be the hypothesis that this paper needs to test next. .

In the current mediation effect analysis, most of the literature still refers to the three steps of causal stepwise analysis for intermediary testing, but many researchers have pointed out many shortcomings of this method. In general, this method is only a concept. The model can only be used as a simple introductory test [12]. Therefore, Bootstrap mediation effect test method came into being. Hayes and its collaborators designed the PROCESS plug-in as the Bootstrap test tool running in SPSS, and conducted mediation effect analysis according to zhao et al. (2010) mediation effect test and analysis program. Therefore, this study runs the PROCESS program developed by Hayes (2012) in SPSS 20.0 to test the mediating effect. The research framework is shown in Figure 1.

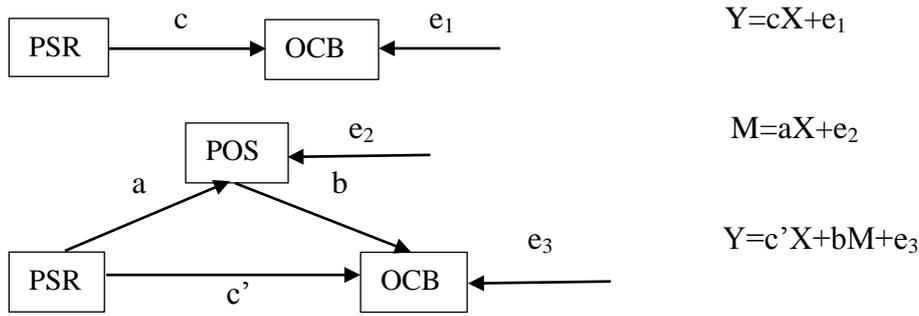


Fig.1 Research framework

X stands for PSR and Y stands for OCB. The important results are summarized as follows (Tables 2 and 3):

Table 2. Direct effect of X on Y

Effect	SE	t	p	LLCI	ULCI
-0.1279	0.0679	-1.8833	0.0606	-0.2615	0.0057

Table 3. The indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
-0.0930	0.0320	-0.1670	-0.0411

This paper corresponds to the simple mediation effect, so choose model 4 (Model=4), the sample size is 5000 (bootstrap samples=5000) for the general setting, and the confidence interval is 95%. As can be seen from Table 1, age, position and working years are related to PSR, OCB, and POS to some extent. Therefore, to control the interference of other factors in Table 1, age, position, and work. The age is used as a control variable. According to the mediation effect analysis program proposed by zhao et al. (2010), the BootLLCI and BootULCI in the X-to-Y indirect effect (Table 3) are -0.1670 and -0.0411, respectively, and therefore do not contain 0, that is, the indirect effect confidence interval does not include 0. Then $a*b$ is significant; and in the X-to-Y direct effect test (Table 2), $p=0.0606>0.05$, the direct effect is not established, LLCI and ULCI are -0.2615 and 0.0057, respectively, including 0, ie c' is not significant.

According to the mediation effect test procedure, in the case where c is significant, when both a and b are significant, c' is not significant, and the complete mediating effect is remarkable.

Therefore, after controlling the three variables of age, position and working years, the sense of POS plays a unique intermediary role in the process of PSR and OCB, the coefficient is $a=-0.6106$, $b=0.1702$, $c=-0.1279$. That is to say, POS for science-technology talents has played a mediating role in the mechanism of the impact of PSR on OCB. In a theoretical sense, it can be understood that for a science-technology talent who is in the same age group, has a similar position, and has a similar working life, when the pressure generated by the overloaded work is perceived at work, a pressure reaction will occur. PSR makes POS reduced, and because of the reduction of POS, its OCB is reduced.

Discussions and Conclusions

Conclusions

First, there is a negative correlation between the PSR of science-technology talents and OCB. If science-technology talents are subjected to overloaded work pressures, their job satisfaction and investment in organization and work are likely to be reduced, and their OCB will also decrease.

Second, there is a positive correlation between POS that science-technology talents can perceive and their OCB. When the attention and support from the organization can be clearly perceived by the science-technology talents, based on the principle of reciprocity, the employees will also show

more behaviors that are conducive to organizational development.

Third, there is a negative correlation between the PSR of science-technology talents and POS. PSR caused by stress may lead to employees' anxiety and other emotions, and may show low job satisfaction, which will reduce POS of employees.

Fourth, this paper follows the testing procedure of mediating effect, and concludes that POS for science-technology talents plays a unique intermediary role between PSR and OCB. Specifically, when science-technology talents are under overloaded work at work, they show that PSR are reduced by their POS and thus affect their OCB.

Suggestions

Control the Working Stress Source and Adjust the PSR.

Firstly, reasonable arrangements for tasks to achieve matching between people and posts. In view of the special nature of science-technology talents, companies can redesign their work to balance the types of work, difficulty, duration, complexity, etc., to avoid the fatigue and boring feeling caused by frequent repetition of content. Secondly, we attach importance to the training and development of employees, and constantly improve the competency of science-technology talents in their positions, thus alleviating the pressure caused by high-load work to a certain extent. Third, strengthen the allocation of human resources. Combine the actual needs of the enterprise with the actual situation of the post workload, rationally allocate science-technology talents to optimize organizational efficiency, and improve the organizational commitment of science-technology talents. Fourth, the implementation of the employee assistance program (EAP) in order to maintain the mental health of employees, reduce stress, and thus improve work performance to a certain extent.

Create a Supportive Work Environment for Employees and Enhance POS.

First, maintain organizational justice. Studies have shown that the fairness of maintenance procedures and the fairness of distribution will promote the growth of POS. Therefore, maintaining organizational equity is conducive to eliminating the work pressure of science-technology talents to a certain extent. Second, strengthen the support of superiors. Recognition from the superior and organizational levels forms part of the employee's psychological rewards. Therefore, the superior can express emotional support by performing a certain degree of promotion, providing vocational skills training opportunities, speech or action care. Third, improve the organization reward mechanism. The feedback and recognition of the work of science-technology talents by enterprises can enhance employees' sense of belonging to enterprises to a certain extent, and POS will grow.

Research Limitations and Prospects

This paper also has the following limitations: Firstly, in terms of research samples, the sample object source of this paper is only two national research institutes, and the effective questionnaire is only 364; Secondly, in terms of research content, this paper refers to the selection of variables. The existing research results, although the conclusion is relatively consistent with the objective situation, but the detailed relationship between the variables remains to be further determined.

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