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Does safety climate mediate the relationship between institutio nal environment and employee safety behavior?

S F Lu[1,2], Y Zhuang[1,2]* and Y Liu[1,2]

[1]School of Management, Wuhan University of Technology, Wuhan430070, P.R.China

[2]China Research Center for Emergency Management, Wuhan University of Technology, Wuhan430070, P.R.China

*E-mail: zhuangyue@whut.edu.cn

Abstract. The purpose of this paper is to explain the impact of institutional environment on employee safety behaviors, which helps to organize research on the safety climate. A set of assumptions was put forward to prove that the healthier the institutional environment is, the better the employees' safety behavior. At the same time, we assume that the dimensions of the institutional environment will affect the safety climate. In particular, other assumptions pertain to safety climate mediated the relation between institutional environment dimensions and employee safety behavior. Through a questionnaire survey of 161 employees in manufacturing enterprises, we obtained a set of factors that measure the enterprise's institutional environment and employees' safety behavior in a specific safety climate. The empirical results show that: 1) The good institutional environment has a positive impact on employees' safety behavior; 2) The healthy institutional environment significantly enhances the safety climate; 3) The relationship between institutional environment dimensions and employee safety behavior can be partially adjusted with a safety climate. The research results also encourage organizations to invest in institutional environments that support improved employee safety behavior.

1. Introduction

Employee safety behavior is critical in workplaces[1]. Safety compliance and safety participation are normally associated with safety-relevant behaviors. Safety compliance refers to the individuals taking the core activities to sustain workplace safety. Safety participation implies the behavior that may help to build the environment for supporting safety but indirectly contribute to personal safety[2, 3] . With widely researched of both safety compliance and safety participation, reduced accidents and injuries have been recorded[3]. Due to an improved employee safety behavior's significant benefits, scholars have carried out a number of researches to discover the factors influencing safety behavior[4]. Further study on the institutional theories also offers convincing explanations of safety behavior.

Institutions are defined as "regulative normative, cognitive structures and activities that provide stability and meaning to social behavior". Although, we convinced that institutions can positively predict the employee safety behavior, but the detailed relationship between structures of institutions and safety behavior has not be addressed. In workplace, the regulator should not only encourage the people to think highly of safety, but also set up regulations advocating safety behaviors[4]. So, deep analysis of the relationship between the structure of institutions and employee safety behavior are thought to positively influence the managers to formulate necessary safety-related regulations. The study will make a unique contribution to better understand the institutional effects on employee safety, which is not explored currently in the field of occupational safety literature.

Drawing upon the institutional theories, the paper introduces a model which empirically analyses the hypotheses and then interprets the relationship between an institutional environment (with the dimensions of regulatory, normative, and cognitive environment) and employee safety behavior. From this perspective, the model is verified through testing mediation effect of safety climate, which refers to employees' common recognition towards their work environment, on relationship between institutional environment dimensions and employee safety behavior. Conclusions are drawn with recommendations for the future work.

2. Theoretical foundation and hypothesis development

2.1. Institutional environment and employee safety behavior
The institution, which includes regulatory, normative and cognitive factors, embodies the characteristics of social structure. It plays a significant role in optimizing resources allocation and stabilizing social order. The existence of regulatory institutional environment can promote or obstruct safety production of enterprises[5]. Sometimes the regulatory agency will resort to violent means to imposing regulations on others. But at the same time, it may also take incentive or induced measures to obtain others' compliance. The government rewards the enterprise who obeys the safety rules and regulations and then punishes the violation ones. Normative institutional environment, which is primarily derived from professionalization, mainly refers to a standardized environment formed both by the enterprise's recognition mechanism of media and trade association. Generally, trade association is an authoritative organization, which forms a universally accepted industry norm by establishing various industry standards. The media play an important role in influencing public opinion. It can perform the communication function of public opinion by promoting the concept of safety production and relative regulations. In the normative institutional environment, employees will attach great importance to safe production and to promote themselves' safety behavior. The cognitive institutional environment is an informal rule that is mainly composed of ethics, value forms, and customs. The cognition system environment mainly exerts the restraining effect through the mimetic mechanism, prompting the organization to imitate the successful behavior of other structurally equal organizations. When uncertainty arises in the environment, or when high-risk conditions are unclear, organizations tend to regulate the behavior of their peers and imitate those that appear legitimate and progressive. Then, in order to obtain more benefits, employees will be required to take appropriate safety actions.

    H1a: Regulatory institutional environment positively relate to employee safety behavior;
    H1b: Normative institutional environment positively relate to employee safety behavior;
    H1c: Cognitive institutional environment positively relate to employee safety behavior.

2.2. Institutional environment and safety climate
Safety climate is defined as employees evaluate their organizational safety environment through collective sense-making process[6], which shows organization's emphasis on safety[7]. Though the safety climate is positively relevant to safety behavior and safety performance, the difficulties that are confronted in building a safer climate can't be ignored, which requires efforts from both organizational all organization members and institutional environment[4]. The institutional environment has created a restrictive pressure on enterprise's safety production, which has encouraged enterprises to comply with rules in institutional environment. Since, the binding force of the institutional environment impels enterprises to strengthen security management to create a good atmosphere of safe production. Thus, the following hypotheses are formulated:

    H2a: Regulatory institutional environment positively relate to safety climate;
    H2b: Normative institutional environment positively relate to safety climate;
    H2c: Cognitive institutional environment positively relate to safety climate.

    Safety climate can be got by testing views of working environments and features and/or by considering personal attitudes and features[8]. With the enterprise's emphasis on safety production, employees will form cognition that the organization supports their safety behavior during production.

Under such safety climate, employees tend to have a sense of responsibility to contribute to the organization and are more willing to contribute their own power and resources to the organization. This paper argues that the institutional environment has a certain impact on employee's behavior through the safety climate. Thus, we put forward the following hypothesizes:

H3a: Safety climate mediates the relationship between regulatory institutional environment and safety behavior of employees；

H3b: Safety climate mediates the relationship between normative institutional environment and safety behavior of employees；

H3c: Safety climate mediates the relationship between cognitive institutional environment and safety behavior of employees.

3. Methods

3.1. Participants and procedure
The manufacturing industry companies in center of China were involved in the survey, 161 responses from were selected to be valid for analysis. The subjects' demographics are as follow (see Table 1).

Table 1. Demographic Characteristics for Works (N=161).

Characteristics	Items	Frequency	Percentage(%)
Gender	Male	81	49.7
	Female	80	50.3
Age	Lower than 25	48	29.8
	26-35	46	28.6
	36-45	45	28.0
	46-55	21	13.0
	More than 55	1	0.6
Employee position	Safety regulators	29	18.0
	Production staffs	69	42.9
	Other personnel	63	39.1

3.2．Measures
The Institutional Environment is measured in three dimensions from the Regulatory Institutional Environment, the Normative Institutional Environment and the Cognitive Institutional Environment[9]. Most scholars measure employee safety behavior using indexes that include safety compliance behavior and safety participation behavior[2]. On the basis of various authors[10], we get 7 items to measure employee safety climate.

4. Result

4.1. Regulatory institutional environment, safety climate, and employee safety behavior
From the results, it is indicated that safety climate partially mediated the effect of regulatory institutional environment on employee safety behavior. Regulatory institutional environment could significantly predict a sound safety climate (β = .608, t = 8.414, p = .003, R^2 = .369) and a good employee safety behavior (β = .491, t = 5.988, p = .000, R^2 = .229). These are respectively in line with hypothesis 2a and hypothesis 1a. Likewise, safety climate could predict a good employee safety behavior significantly (β = .416, t = 6.271, p =.000, R^2 = .245). When we controlled safety climate, the effect of regulatory institutional environment fell off, but stayed significantly (β = .288, t = 2.911, p =.004, R^2 = .295). Namely, safety climate did not totally cancel out the influence of regulatory institutional environment, which partially explains the employee safety behavior (see Fig. 1). This is in line with hypothesis 3a.
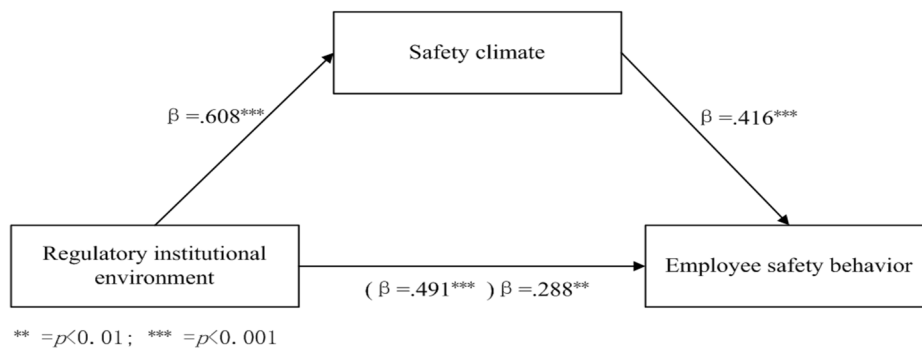
Figure 1.Mediation Test of the Effect of Regulatory Institutional Environment on Employee Safety Behavior by Safety Climate.

4.2. Normative institutional environment, safety climate, and employee safety behavior

The results indicated that safety climate partially mediated the relation between normative institutional environment and employee safety behavior. Normative institutional environment could significantly predict a sound safety climate (β = .742, t = 9.301, p = .000, R^2 = .417) and a good employee safety behavior (β = .469, t = 6.111, p = .000, R^2 = .236). These are respectively in line with hypothesis 2b and hypothesis 1b. When controlling safety climate, the influence of normative institutional environment on employee safety behavior decreased, but stayed significantly (β = .275, t = 2.829, p = .005, R^2 = .292). Namely, safety climate could not totally the eliminate effect of normative institutional environment, which partially explains employee safety behavior (see Fig. 2). This last result confirms our hypothesis 3b.
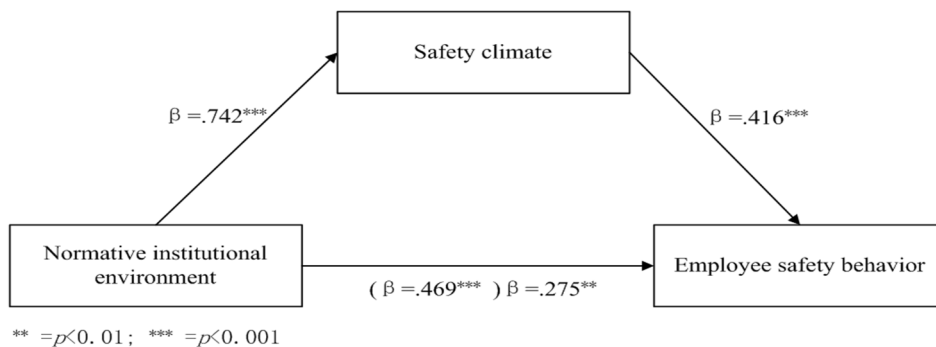

Figure 2. Mediation Test of the Effect of Normative Institutional Environment on Employee Safety Behavior by Safety Climate

4.3. Cognitive institutional environment, safety climate, and employee safety behavior

Here, we introduced cognitive institutional environment on safety questions as the predicting variable. The results proved that safety climate partially mediated the influence of cognitive institutional environment on employee safety behavior (see Fig. 3). In this case, cognitive institutional environment predicted safety climate (β = .669, t = 12.25, p = .000, R^2 = .554), and employee safety behavior (β = .371, t = 6.206, p =.000, R^2 = .241). These respectively support hypothesis 2c and hypothesis 1c. When controlling safety climate, the impact of cognitive institutional environment on employee safety behavior was significant (β = .208, t =2.374, p = .019, R^2=.279). These results show that safety climate indicates a significant partial mediation effect. Our hypothesis 3c is confirmed by these last results.
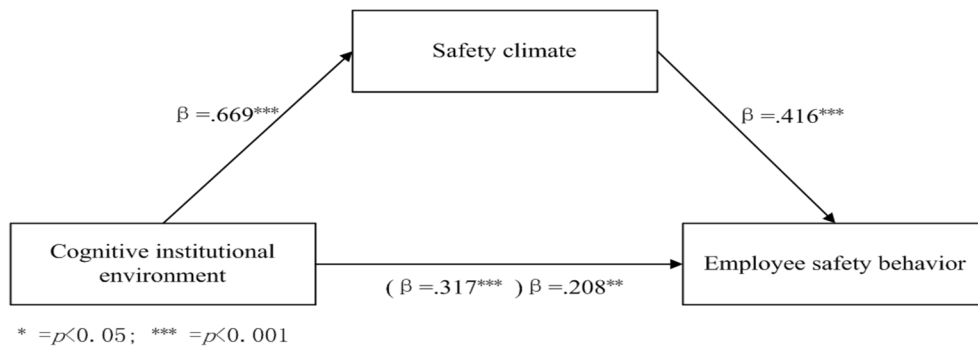
Figure 3. Mediation Test of the Effect of Cognitive Institutional Environment on Employee Safety Behavior by Safety Climate

5．Discussion

Our hypotheses were confirmed by the study results, as expected. We notably demonstrated that institutional environment to which employees were in is positively relevant to employee safety behavior. More specifically, the better institutional environment that operators were in, the more likely they got involved in safety behavior. It showed that employees' awareness of their institutional environment to safety production is crucial for their concentration on safety issues. Besides, our study revealed that a relationship between institutional environment and safety climate. Multiple regression analyses found support for this relationship. The result showed the great significance to strength the safety management and reduce the unsafe behavior of the employees from the institutional perspective. It should be noted that safety climate would mediate the relation between different institutional environment dimensions and employee safety behavior. The relative assumptions were checked through mediated regression analyses. A partial support was proved by the results based on the hypotheses. More specifically, safety climate was discovered to partially mediate the relationships between employee safety behavior and regulatory institutional environment, normative institutional environment, and cognitive institutional environment. Thus, perfect regulatory policies, the supervision of non-governmental organizations and the improvement of corporate safety awareness can provide effective guidance and support for the safety production of enterprises.

The current study aims at discussing the relationship between institutional environment dimensions and employee safety behavior. Firstly, our findings reveal that better institutional environment can improve employee safety behavior, thereby obtaining better safety performance. Secondly, the institutional environment is also a vital factor that influences the effect and passion of firms to create better safety climate.

6. Conclusion

To sum up and notwithstanding the study's limitations, the findings offer greater perceptiveness into the significance of institutional environment dimensions can have on employee safety behavior. The study will assist governments and policy decision-makers improve the level of their institutional environment, and help them formulate more effective, incentive, mandatory policies to improve employee safety behavior.

Acknowledgments

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