Research on Influencing Factors of Employee Safety Behavior-Data from Construction Enterprises in Hebei Province, China

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Abstract

The three-fold objectives are: 1) To identify the factors that affect employees' safety behavior in construction enterprises; (2) To examine the relationship between organizational safety climate, psychological capital, and employees' safety behavior in construction enterprises; (3) To construct a practical management framework to improve employees' safety behavior in construction enterprises.

In this research, with the help of colleagues, friends, and teachers, 412 employees were randomly selected from 44 enterprises with AAA credit in the Hebei construction industry to conduct an empirical investigation through an online questionnaire. Data were analyzed using SPSS 22.0 and AMOS 22.0 data processing tools.

The results of this research are as follows: (1) From the organizational perspective, organizational safety climate is the factor that affects employees' safety behavior in construction enterprises; From the individual perspective, psychological capital affects employees' safety behavior in construction enterprises; (2) Organizational safety climate has a positive correlation with employees' safety behavior in construction enterprises; organizational safety climate has a positive correlation with employees' psychological capital in construction enterprises; employees' psychological capital has a positive correlation with their safety behavior in construction enterprises; (3) Psychological capital plays a partial mediating role in the relationship between organizational safety climate and employees' safety behavior in construction enterprises.

The study offers a practical management framework to improve employees' safety behavior in construction enterprises. Construction enterprises should create an excellent organizational safety climate to improve employees' psychological capital, promote safe behavior in production activities, and improve the safety management ability of enterprise managers in engineering project management.

Keywords: Employee Safety Behavior; Organizational Safety Climate; Psychological Capital; Construction Enterprises; Hebei.

Introduction

The construction industry is a pillar of the national economy and plays an essential role in developing the country and improving people's lives (Zhang & Li, 2020). The National Bureau of Statistics of China (2021) points out that in the 13th Five-Year Plan period (2016-

2020), the country promoted the accelerated development of the construction industry, and the added value of the construction industry accounts for more than 6.6% of the GDP. In 2019, it reached a 10-year high of 7.16 per cent. Even under the influence of COVID-19, the GDP in 2020 exceeded 100 trillion yuan, increasing by 2.3% compared with the previous year. The total output value of the national construction industry also reached 26,394.7 billion yuan, with a year-on-year growth of 6.2% (Wen, 2021).

When the construction industry has become an essential industry of national economic development, the government, enterprises, and people also pay particular attention to another aspect of safety production (Huang, 2018). Due to the objective conditions of construction projects, such as long construction time, large project scale, complex construction technology, a large amount of open-air work, etc. Production safety accidents frequently occur in the construction industry, which is considered one of the most severe safety problems (Zhang & Li, 2020).

Occupational health and safety issues are at the forefront of every industry's concern in today's complex and demanding working environment. Among many industries, the construction industry has frequented occupational and work-related accidents (Fang & Wu, 2013). According to the US Bureau of Labour Statistics, there were approximately 1,102 deaths in the construction industry, with an injury rate of 2.8 per 100 full-time workers in 2019 alone (US Bureau of Labour Statistics, 2021). Between 2015 and 2020, about 616 deaths in the Malaysian construction industry were due to safety problems in construction (DOSH Malaysia, 2020). Compared with the occupational accident data of the United States and Malaysia, the occupational health status of the construction industry in China is not exceptional because the industry has reached a very high level even globally (Raheem & Hinze, 2014; Zhang, 2020).

Studies have pointed out that the safety behavior of front-line workers is directly related to the safety production of enterprises, and the safety accidents caused by unsafe behavior of individuals reach more than 90%. Especially in the construction industry, the number of construction workers in China has been growing in the past ten years (Cui & Li, 2021). In 2020, the total number of construction workers in China may reach more than 55 million (Zhang & Li, 2016). Other studies have pointed out that about 80% of occupational accidents are caused by human behavior, making them the most common cause (Choi et al., 2017).

China's government promulgated a series of laws and regulations to ensure construction projects' quality and production safety. Such as *the Construction Law of the People's Republic of China, the Regulations on the Quality Control of Construction Projects*, and *the Regulations on the Management of Safe Production of Construction Projects*, to regulate the construction process and the behavior of all participating units in construction projects (Han, 2020). Especially in recent years, with the rapid development of China's economy and society, the scale of construction projects is gradually expanding, and engineering safety accidents across the country are constantly connected, resulting in severe consequences (Zhang, 2020).

The surge in occupational accidents in the construction industry has prompted researchers and academics to propose and evaluate new ideas, focusing on employee safety behavior (Yu et al., 2022). In addition to the work system, unsafe behavior is an indispensable factor leading to construction accidents (He et al., 2020). Controlling construction worker safety behavior can effectively prevent construction accidents and motivate researchers and practitioners to identify organizational and individual factors influencing safety behavior (Cui & Li, 2021). Therefore, it is necessary to research employee safety behavior and its predictive factors, which facilitates the development of interventions to improve safe employee behavior, thereby promoting workplace safety (Hao & Yu, 2022).

Employee safety behavior is a leading indicator of safety performance, as it has been found to minimize the risk of unsafe incidents, accidents, injuries, and other adverse safety

outcomes (Yu et al., 2022). As front-line workers, construction workers face high-altitude work, construction equipment, physical labour, etc.; their attitude and behavior choices in complex environments are critical to reducing safety accidents (Xu, 2019). In addition to increasing the input of "hardware" facilities to ensure the safety of workers, such as safe construction facilities, safety guarantee equipment, safety supervision system, safety production technology, etc., in the aspect of "software," creating an excellent organizational safety atmosphere has also become one of the critical management means. Organizational safety climate significantly impacts employee safety behavior in the construction industry (Yang, 2018).

Organizational safety climate refers to employees' perception of the importance they attach to the safety and security of the enterprise working environment, formed when employees share and summarize their views on the working environment. These views are also the reference frame for safety behavior in the work process and psychologically affect employees (Hu & Xu, 2014). As the perceiver of the organizational safety environment, construction workers understand their surroundings. This understanding also constitutes the frame of reference for safety behavior, which psychologically affects construction workers and influences their behavior (Wen, 2021). Many studies have explored the relationship between organizational safety climate and employee safety behavior. For example, the survey data of He et al. (2020) came from 119 supervisors and 536 field workers of 22 construction projects in China. The research results show that organizational safety climate positively correlates with the safety behavior of supervisors and construction workers (He et al., 2020).

Social cognitive theory points out that a series of organizational, physical, and psychological factors affect the cognitive mechanism of individual safe behavior (Ye et al., 2020). As a core concept of positive organizational behavior, psychological capital is attracting the attention of the safety scientific community (Wang et al., 2018); it has been widely used to research its relationship with employee behavior, job engagement, and performance (He et al., 2021). Studies have shown that people with a high level of psychological capital tend to have positive attitudes and behavior at work (Shen & Li, 2020).

Psychological capital is an individualistic state or tendency formed in development and growth (Saleem, 2022). While the construction industry is one of the unsafe industrial sectors that causes considerable harm to the workforce and organizations globally, psychological capital can positively impact the mental health of construction workers and may bring about positive performance (Saleem et al., 2022).

Guo et al. (2021) pointed out that coal mining enterprises attach importance to developing employee psychological capital to create an excellent organizational safety climate. Implementing employer commitments can improve employees' safety behavior and avoid accidents (Guo et al., 2021). However, in the context of construction enterprises, it is still a gap in current research to explore the intermediary relationship between psychological capital in organizational safety climate and employee safety behavior.

Based on the above description, this research takes employees of construction enterprises as the research object. It examines the mediating relationship between organizational safety climate and employee safety behavior by constructing the research framework of organizational safety climate, psychological capital, and employee safety behavior. In this research framework, organizational safety climate is from the organization's perspective, and psychological capital is from the individual's perspective. It combines organizational and individual factors to explain the influencing factors of employee safety behavior and provide effectively feasible management suggestions for promoting employee safety behavior in construction enterprises.

Research Objectives

1. To identify the factors that affect employees' safety behavior in construction enterprises.
2. To examine the relationship between organizational safety climate, psychological capital, and employees' safety behavior in construction enterprises.
3. To construct a practical management framework to improve employees' safety behavior in construction enterprises.

Literature review

The Theoretical Basis of Research

Social Exchange Theory

George Casper Homans (1958) first put forward the social exchange theory in his article on social behavior as a kind of exchange and pointed out that all social behavior of human beings belong to exchange activities (Ogbonna & Mbah, 2022). From the perspective of resources and values, this theory believed that social relations are the activities of resource or value exchange between at least two individuals. This kind of exchange includes material exchange and non-material emotional exchange (Cortez & Johnston, 2020). In addition, the theory also emphasizes that the exchange activities among the individuals who constitute social relations should follow the basic principle of equal distribution (Wang et al., 2019). Because individuals are in a social exchange relationship, and when they conduct social exchange activities, they will compare the cost of their input with the remuneration of exchange activities and form a judgment result, mainly based on their own cognitive experience or the comparison objects they identify with (Chernyak-Hai & Rabenu, 2018).

All human behavior is governed by some exchange, explicit or covert, which brings rewards. Therefore, all human social activities can be summed up as a kind of exchange, and the social relations formed by people in the workplace can only be a kind of exchange relations (Cortez & Johnston, 2020). Social exchange in the workplace is one of the most concerning studies in exchange theory. An organization is built on the willingness of employees to collaborate, which depends on the balance between their contributions and incentives (Wang et al., 2019). Contribution is a relevant activity made by an individual that contributes to the realization of an organization's purpose. The incentive is the incentive that the organization provides to satisfy the individual's purpose and motivation. An organization can maintain balance when the incentive provided or assigned to each member is equal to or greater than its contribution. Only when the organization maintains balance can it survive and develop (Ogbonna & Mbah, 2022).

Therefore, the social exchange theory is the theoretical support of organizational safety climate. In an environment with a high organizational safety climate, the organization's managers will pay great attention to and attach importance to employees' mental health and safety, bringing a great sense of security and satisfaction. At the same time, the organization also provides many opportunities for employees to acquire knowledge and skills to improve their mental health. These are resources that are valuable to the individual employee (Wen, 2021). Therefore, in exchange, employees' organizational commitment, work motivation, and work performance will also be improved, and more emphasis will be placed on individual safety behavior at work.

Social Cognitive Theory

Bandura (1986) put forward the social cognition theory, which explains and understands the influencing factors of individual voluntary behavior. It provides the theoretical basis for explaining and predicting individual behavior (Govindaraju, 2021). In the interaction with the environment, the result does not appear as an event unrelated to the action. Thus, how an individual performs his work largely determines the results he achieves. Similarly, the outcomes people expect depend heavily on their judgment of their level of behavior in each situation. In addition, individual behavior can also be influenced by psychological perceptions (Shen & Li, 2020).

Social cognitive theory points out that individual behavior is influenced by environment and psychological perception, which depends on individual characteristics to some extent. As a key indicator to measure an individual's psychological state, psychological capital is core self-evaluation (Ye et al., 2020). Research shows that the greater the psychological capital, the stronger the individual's ability to cope with difficulties. Moreover, psychological capital can help employees complete the work within their responsibilities and motivate them to conduct organizational citizenship behavior (Margheritti et al., 2022). Other studies have pointed out that psychological capital is a positive state or ability cultivated during a person's growth and development, which is used to evaluate, develop, and utilize this ability to improve performance (Saleem et al., 2022).

Therefore, the social cognitive theory is the theoretical support of psychological capital. As an essential environmental factor, safety atmosphere refers to the cognition, belief, and attitude of enterprise employees towards the policies, procedures, and behavior adopted by the organization for safety, which belongs to the perceived safety environmental factors (Ye et al., 2020). Psychological capital reflects the individual's mental state in growth and development, which belongs to individual cognitive factors (Shen & Li, 2020). In the face of complex and challenging safety goals at work, employees with high self-efficacy may acquire knowledge and skills, integrate them confidently, and then complete the work with high standards, which all come from personal psychological capital (Wang et al., 2018).

Definitions of Research Variables

Organizational Safety Climate

Organizational safety climate refers to an individual's perception of workplace safety, which can be observed from management's commitment to safety, personnel training, safety rules and procedures, promotion opportunities for participation in safe behavior, safety communication, and worker participation in safety activities (Alruqi et al., 2018). Organizational safety climate is employees' overall perception of organizational culture, and such notice is easily influenced by organizational behavior and rules (Curcuruto & Griffin, 2018). Organizational safety climate refers to individuals' views on safety-related policies, practices, and procedures that affect personal happiness at work (Fugas et al., 2012).

Dollard & Bakker (2010) defines organizational safety climate as an organization's development of policies, procedures, and practices to protect employee mental health and workplace safety. It is an organizational climate oriented to specific aspects (Chuayounan, 2022). It mainly comes from the four aspects of workplace health and safety: management commitment, organizational communication, organizational participation, and health priority (Yu et al., 2022). Organizational safety climate is employees' shared attitude towards safety-related policies, procedures, and practices at work, which affects the safety behavior of organizations and employees.

Based on those discussions, the organizational safety climate is defined in this research as the cognition degree of employees in the construction industry to organizational safety rules and their perception of the importance of organizational safety management.

Psychological Capital

Luthans et al. (2004) identified four sub-dimensions of psychological capital: self-efficacy, optimism, hope, and resilience. Psychological capital is a unique positive mental resource in which individuals have confidence (self-efficacy) to complete challenging tasks. Make positive attributions (optimism) for present and future successes. Stick to their goals, and adjust their strategies, when necessary (hope), to achieve them. Overcome problems and adversities when encountering them (resilience) to succeed. Therefore, the common feature of the four components of psychological capital is that the individual tends to act as an agent of his environment, to successfully achieve his goals through an upbeat assessment of the environment and the likelihood of individual success, enabling him to make efforts and pursue to be able to achieve it (Kamei et al., 2018).

However, there needs to be a unified conclusion on the connotation of psychological capital. There are three main viewpoints: the characteristic viewpoint, the state viewpoint, and the synthesis viewpoint. Among them, state viewpoint is in the mainstream, regarded as a mental state or a spirit with a positive state. This unique resource enables individuals to implement positive behavior and perform well (Saleem et al., 2022).

Timo et al. (2016) believe that psychological capital defines individual positive psychological factors and positive organizational behavior. Psychological capital can surpass human capital and social capital to a large extent to gain competitive advantages for organizations. Most importantly, psychological capital can develop through training interventions, which makes it a valuable and tangible structure capable of influencing individuals and even entire organizations in a positive way (Ge, 2020)

Psychological capital is a durable and stable psychological internal framework that individuals acquire through learning, including personality quality and tendency, self-monitoring, cognitive ability, and adequate emotional communication quality. Another scholar defines psychological capital as synthesizing individual beliefs, attitudes, and cognition of self, work, ethics, and life (Paliga et al., 2022).

Based on those discussions, this research defines psychological capital as employees who work in the construction industry have the confidence to complete challenging tasks; make positive attributions to present and future successes; stick to their goals, adjust their strategies when necessary to achieve them, and overcome problems and adversities when you encounter them to achieve success.

Employee Safety Behavior

Safety behavior refers to safety-related work performance, which is also one of the main factors in preventing accidents. To improve employees' safety behavior, it is helpful to reduce workplace accidents (Lu et al., 2020). Employee safety behavior results from actions initiated by employees when they encounter any security-related situation in the organization. In other words, safety behavior is the actual safety performance of employees in the occupational environment (Saleem, 2022).

In contrast to the conceptualization and measurement of the safety climate, which focuses on employees' perception of organizational safety policies and management safety practices, safety behavior focuses on specific actions or behavior exhibited by employees (Suifan et al., 2018). Typically, organizations view safe behavior as employee compliance with

behavioral safety procedures. These behaviors include safety activities as part of formal work rules and procedures, such as proper use of personal protective equipment, proper implementation of locking and listing procedures, application of appropriate work practices to reduce exposure to potential hazards and injuries, and following safety policies and procedures (Fugas et al., 2012).

Griffin & Neal (2000) proposed two dimensions of safety behavior: safety compliance and participation. Safety compliance is the in-role behavior required by an employer when it encounters a safety-related situation (Lu et al., 2018). It consists of those mandatory or required actions that are enforced as part of a policy or standard operating procedure. Specific actions in compliance with safety regulations are following safety policies, wearing personal protective equipment, (Wannasermsakul et al., 2022) and listening to the organization's views on workplace safety. Safety involvement is a voluntary extra-role activity that involves providing advice and feedback to enhance safety, encouraging others to learn, act and perform safely, actively learning and participating in safety training, highlighting possible safety-related issues in the organization, and managing behavior (Margheritti et al., 2022).

Based on those discussions, employee safety behavior is defined in this research as the behavior of employees strictly abide by the safe operation process, correctly wear safety protective equipment, consciously abide by the rules and regulations of construction operations, actively report the organization of safety affairs, and actively accept the supervision and inspection of superiors in the organization of production safety activities.

Research Hypotheses

Organizational Safety Climate and Employee Safety Behavior

The research fields of applied social psychology and organizational behavior show a strong interest in employee safety behavior. Organizational safety climate has become an essential cornerstone for developing health and safety in modern enterprises (He et al., 2021; Ye et al., 2020). In previous studies, some researchers attempted to determine the impact of organizational safety climate on employee occupational safety behavior and injury in various industrial settings and confirmed that organizational safety climate could positively influence employee behavioral outcomes (Shen & Li, 2020; Lu et al., 2018).

Maneechaeye & Potipiroon (2022) tested the influence of organizational safety climate on safety behavior based on 610 civil pilots in Thailand. It is found that the organizational safety climate positively impacts pilots' safety behavior by increasing safety motivation. Organizational safety climate can directly affect safety motivation and pilots' safety behavior (Maneechaeye & Potipiroon, 2022).

The research sample of Fugas et al. (2012) comprised 356 workers in the transportation organization. The results showed that compliance safety behavior could be explained through different combination patterns of safety-related personal and organizational factors. There is a positive correlation between organizational safety climate and workers' safety behavior (Fugas et al., 2012).

Song et al. (2016) analyzed valid questionnaires from 127 employees of coal mining enterprises. Moreover, it tested the relationship between the organizational safety climate of coal mining enterprises and employees' safety behaviors. The results showed that in the organizational safety climate, investment and guarantee in organizational safety conditions strongly predict employees' active safety participation behavior and passive safety compliance behavior (Song et al., 2016).

Yu et al. (2022) took 1,600 miners from 35 coal mines enterprises in Shanxi Province as research objects to verify the influence of social psychological safety climate on mine

workers' safety behaviors in China. The research results show that a social psychological safety climate positively impacts workers' safety behaviors (Yu et al., 2022).

Social exchange theory provides a basis for understanding the relationship between organizational safety climate and employee safety behavior. According to this theory, all kinds of social activities engaged by individuals belong to exchange. According to the principle of reciprocity, after construction workers get a higher safety climate provided by enterprises, they will show positive safety behaviors as feedback (Ye, 2014). A high safety climate reflects the enterprise's incredible attention to worker safety, involving the supervision attitude of regulators towards workers, the specific safety policies of the enterprise, the safety training provided by the enterprise, and the safety communication climate created by the enterprise. Workers will form their judgment standards according to feeling safety climate. Then, according to the exchange principle, different safety behavior levels are shown as feedback (Zhang, 2020).

The above analysis shows that when employees feel that the enterprise attaches great importance to safety and provides an excellent organizational safety climate for them, they will generate feedback psychology, recognize, and follow the behavioral standards set by the enterprise, consciously participate in safety meetings, take the initiative to help, and remind workers and friends to pay attention to safety. On the contrary, if employees perceive the organization's safety climate as poor, their initiative and initiative will be strengthened, and their safety behaviors will improve. Some unsafe behaviors may even occur intentionally to attract leaders' attention, such as intentional violation and destruction. Based on those discussions, this research believes that organizational safety climate can directly affect employees' safety behavior in construction enterprises. So, the hypothesis was formed,

H1. Organizational safety climate positively impacts employees' safety behavior in construction enterprises.

Psychological Capital Organizational and Safety Climate

Hu & Xu (2014) researched the relationship between organizational safety climate and safety behavior among 268 enterprise employees and introduced the quality of work and life as the mediating variable. The results showed that the better the organizational safety climate, the higher the perception of work and life quality, and the more attention to employees' safety behavior. The quality of work and life plays a partial mediating role in the relationship between organizational safety climate and employees' safety behavior. It is also pointed out that when enterprises emphasize safety behavior in the future, they should not only pay attention to the construction of an organizational safety climate but also pay more attention to the psychological needs of employees (Hu & Xu, 2014).

Sun et al. (2019) investigated the influence of tunnel workers' psychological capital on their safety behavior. Furthermore, the research found that organizational safety climate significantly moderates tunnel workers' psychological capital and safety behavior (Sun et al., 2019).

He et al. (2021) discussed the relationship between leadership member exchange and construction worker safety behavior among 536 construction workers in China. Moreover, to verify the mediating role of organizational safety climate and psychological capital in the relationship between leadership member exchange and construction worker safety behavior. The results show that leader-member exchange directly affects organizational safety climate and psychological capital and indirectly affects construction workers' safety behavior through organizational safety climate and psychological capital (He et al., 2021).

According to the social exchange theory, employees and organizations complete social exchange through resource exchange. Both parties play the behavioral game for common

interests, and their behaviors influence each other (Ogbonna & Mbah, 2022). Organizational safety climate is an essential organizational resource and an important embodiment of employees' perception of organizational support. It communicates the organization's commitment to safety, mental health priorities, and safety responsibilities to employees and helps employees gain access to social resources, salary incentives, and promotion opportunities. Based on the principle of reciprocity, when employees perceive the organization's safety climate, they will give back to the organization with positive behaviors, reflected in that employees consciously abide by safety rules and operating standards. Based on those discussions, this research believes that organizational safety climate can directly affect the employees' psychological capital in construction enterprises. So, the hypothesis was formed,

H2. Organizational safety climate positively impacts employees' psychological capital in construction enterprises.

Psychological Capital and Employee Safety Behavior

Saleem et al. (2022) took 345 construction workers in different states of Malaysia as samples to investigate the role of psychological capital and job involvement in improving the construction workers' safety behavior. The research showed that psychological capital could improve construction workers' safety behavior and job engagement (Saleem et al., 2022).

He et al. (2019) took 655 construction workers in China as research objects to explore the impact of psychological capital on construction workers' safety behaviors. Furthermore, the research results confirmed that psychological capital directly correlates with construction workers' safety behaviors (He et al., 2019).

Weiming et al. (2016) analyzed 333 samples of new-generation employees and tested the influence of psychological capital on new-generation employees' safety behavior. The research showed that psychological capital significantly correlates with new-generation employees' safety behavior.

Wang et al. (2018) studied the predictive ability of safety-related stress and psychological capital on employees' safety behavior in 359 construction workers in China. The research results revealed that psychological capital could positively predict employees' safety behavior (Wang et al., 2018).

Guo et al. (2021) researched the impact of psychological capital on workers' safety behavior among 297 coal miners. The results showed a significant positive correlation between psychological capital and workers' safety behavior. Organizational culture significantly affects psychological capital and workers' safety behavior (Guo et al., 2021).

Social cognitive theory points out that individual behaviors are not only affected by external environmental factors but also driven by internal factors of individuals. At the same time, such influence relationships are independent and interact with each other. Individual behaviors are not only directly affected by the external environment but also influenced by internal factors of individuals (Ye, 2014). This indicates that an individual's behavior is driven by their internal thinking. Specifically, thinking is the specific psychological activity within an individual, including thought, emotion, motivation, etc. Therefore, the external expression of internal psychological activity is the individual's behavior (Zhang, 2020). Mental activity is internal, while the behavior is explicit. The explicit behavior is controlled by inner mental activity. Conversely, the inner mental activity can only be expressed through the behavior. Based on those discussions, this research believes psychological capital can affect construction enterprise employees' safety behavior. So, the hypothesis was formed,

H3. Psychological capital positively impacts employees' safety behavior in construction enterprises.

Organizational Safety Climate, Psychological Capital, and Employee Safety Behavior

Han (2020) selected 225 construction workers as the target population and investigated the impact of organizational safety climate and self-efficacy on workers' safety behaviors in the construction enterprise. The results reveal that organizational safety climate promotes worker safety behavior. Self-efficacy partially mediates the influence of organizational safety climate on worker safety behavior (Han, 2020).

Cui & Li (2021) conducted a questionnaire survey on 600 construction workers to test the relationship among construction workers' emotional safety culture, psychological capital, and workers' safety behavior. Research results show that psychological capital can promote workers' safety behavior, and psychological capital plays a partial mediating role in the influence of emotional safety culture on workers' safety behavior (Cui & Li, 2021).

Based on social cognitive theory and psychological capital theory, Ye et al. (2014) investigated the impact of organizational safety climate on the safety behavior of 309 employees from coal mining enterprises in China. And the research results showed that organizational safety climate had a significant positive impact on employees' psychological capital. Psychological capital has a significant positive effect on employees' safety behavior; Psychological capital plays a partial mediating role in organizational safety climate and employees' safety behavior (Ye et al., 2014).

Social exchange theory proposes that the relationship between people is one of social exchange, and individual behavior will be affected by exchange activities that can bring rewards (Cortez & Johnston, 2020). People follow the principle of reciprocity in the exchange process. For the enterprise, when the employees in the organization think that the management of the enterprise pays close attention to the safety situation of the enterprise (such as improving the safety environment, configuring complete safety equipment, caring about the physical and mental health of employees, paying attention to the discussion of safety affairs of employees, providing safety education and training, etc.), they will give back to the enterprise or organization because of the material or spiritual rewards. Accordingly, they will improve their safety behavior level and adjust it to a level equal to the safety climate of the enterprise (Han, 2020). Therefore, when employees believe that management is committed to employee safety considerations, they reward management's efforts to improve safety. A positive organizational safety climate is expected to form positive social security norms in groups through psychological capital (Fugas et al., 2012).

The characteristics of engineering projects in the construction industry determined that the construction environment is complex and that the workplace is hazardous. In the face of high-intensity operating pressure and high-demand operating standards, in such a situation, their internal psychology is in an unstable state, and they are easily affected by the interference of the external environment, resulting in psychological fluctuations (Zhang, 2020).

According to the social cognitive theory, construction workers' behavior can be directly controlled by their mental state. The working environment in which construction workers live daily is the most direct factor affecting the change in their internal mental state. This relates to the relationship between organizational safety climate and individual safety behavior. Organizational safety climate can not only directly affect individual safety behavior, but also affect the performance of safety behavior by acting on individual psychological characteristics, such as psychological capita. Therefore, when employees feel the organization's attention and support for their work safety, they will have a positive impact on their willingness and ability to participate in and observe safe behaviors, gradually improve their psychological state at work, and become more confident, optimistic, hopeful, and persevering in the face of work

difficulties. Based on those discussions, this research believes that organizational safety climate affects employees' safety behavior in construction enterprises through psychological capital. So, to propose a hypothesis,

H4. Psychological capital is an intermediary in the relationship between organizational safety climate and employees' safety behaviors in construction enterprises.

Empirical Framework

Based on the above research hypothesis, an empirical framework was constructed in this research, as shown in Fig. 1. Among them, organizational safety climate is the independent variable, employee safety behavior is the dependent variable, and psychological capital is the intermediary variable.

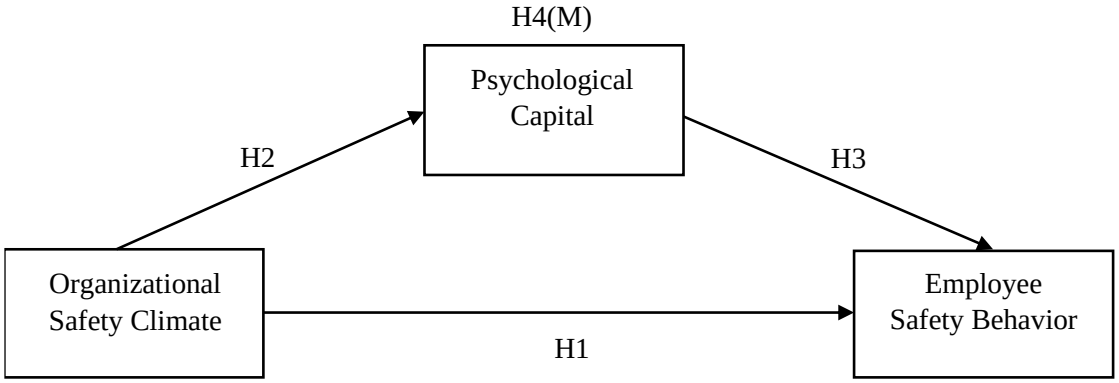

Fig. 1. Empirical Framework of Research

Research Methodology

Population and Sampling

This research uses quantitative research methods, conduct empirical research through a questionnaire survey, and analyzes data with the help of SPSS 22.0 and AMOS 22.0.

According to the general information on construction enterprises in *the Hebei Statistical Yearbook 2021* released by the Hebei Provincial Bureau of Statistics, by the end of 2021, there were 2,094 construction enterprises in Hebei Province, with 984,700 employees. As for the determination of sample size, there is a simplified formula: $n = N / 1 + N (e)^2$ for sample size calculation (accuracy is 5%, confidence is 95%). According to the calculation results of the formula, it can be concluded that at least 400 samples are required to meet the sample size requirement.

In the context of construction enterprises in Hebei Province, China, and to ensure the representativeness of samples, the target population of this research is the employees of 44 enterprises in the *List of AAA Grade Enterprises in Hebei Construction Industry in 2021* issued by Hebei Construction Industry Association. A simple random sampling method was adopted within the sampling range to ensure the survey's objectivity.

Measurement and Questionnaire

This research takes organizational safety climate as the independent variable, employee safety behavior as the dependent variable, and psychological capital as the intermediary variable. The measurement of research variables directly adopts relatively mature scales widely used in existing studies. The organizational safety climate scale refers to the modified version of Zohar & Luria's (2005) organizational safety climate scale. This six-item included measurements of employees' perceptions of how safety issues are managed and addressed

within their organizations (Zohar & Luria, 2005). The psychological capital scale refers to Lorenz et al. (2016) 's revision of the composite psychological capital scale and develops 12 scales of psychological capital, including 3 items of self-efficacy; 4 items of hope; 2 items of optimistic; 3 items of resilience (Lorenz et al., 2016). The employee safety behavior scale refers to Fugas et al. (2012) 's revised general safety performance scale and the safety citizen role definition and behavior project to evaluate self-reported safety behaviors. Therefore, 6 items of the employee safety behavior scale were obtained (Fugas et al., 2012).

Based on those scales, an initial questionnaire was designed for this research. The organizational safety climate, psychological capital, and employee safety behavior scales in the questionnaire were measured by a seven-level Linker scale, and the seven answers from "strongly disagree" to "strongly agree" were scored from 1 to 7. The higher the score, the higher the perceived level of corresponding indicators. The questionnaire consists of four parts and a total of 30 questions. The first part is the descriptions of demographic information (1-6 questions are gender, age, occupation, marital status, work experience, and salary level). The second part is a description of the organizational safety climate (7-12 questions); The third part is a description of psychological capital (13-24 questions); The fourth part is a description of employees' safety behavior (questions 25-30).

Appendix A is the English version of the questionnaire. Appendix B is the Chinese version of the questionnaire.

Data Collection

COVID-19 still has certain limitations on field research, considering that mobile phones are widely used as information communication tools in today's society. So that people can respond through mobile phones and directly participate in the questionnaire survey in their spare time. Therefore, an online questionnaire has good feasibility.

With the help of teachers, friends, and colleagues, this research published online questionnaires through WeChat, QQ, email, and other online channels. The questionnaire participants were all construction enterprise employees within the research area. Due to time limitations, through coordination at work and with the help of colleagues in the enterprise, the questionnaire survey has won the support and participation of many employees in the enterprise. Before December 31, 2022, there were 412 valid questionnaires collected, which conforms to the established sample size of the research. (Descriptive statistics of the samples are described in Chapter Four).

Data Analysis

After data collection, SPSS 22.0 and AMOS 22.0 were used to analyze the questionnaire data. Analysis procedures include descriptive statistical analysis, reliability and validity test, confirmatory factor analysis, and structural equation modeling.

The descriptive statistical analysis mainly describes the relevant data of all variables in the research population, including the proportion analysis of basic demographic information and the normal distribution of the population to which the sample belongs (Han, 2020).

Reliability and validity test. Cronbach-α is the most used test method for scale reliability. Cronbach-α coefficient ranges from 0 to 1, and the closer it is to 1, the better the reliability is. Nunnally's (1978) research suggests that the Cronbach-α coefficient is above 0.9, indicating that the reliability of the measuring tool, namely the scale, is good. The Cronbach-α coefficient is between 0.8 and 0.9, indicating good reliability. The Cronbach-α coefficient is between 0.7 and 0.8, indicating acceptable, but some scale contents needed to be modified. The Cronbach-α coefficient is below 0.7, indicating that some scale contents need to be rewritten. In addition, KMO and Bartlett sphericity tests were used for validity analysis. Generally, factor

analysis is suitable when the KMO value is more significant than 0.5, and the Bartlett sphericity test shows that Sig is less than 0.01 (Ge, 2020).

Confirmatory factor analysis is a method used to measure whether the correspondence between factors and measured items (scale items) is consistent with the researcher's prediction. Convergent validity, which emphasizes measures that belong to the same factor, does fall under the same factor when measured. If the purpose is to perform the polymerization validity analysis, the two indexes, AVE and CR, can be used for analysis. If the AVE value of each factor is more significant than 0.5, and the CR value is greater than 0.7, it indicates that the polymerization validity is good. Meanwhile, it is generally required that the corresponding factor loading coefficient value of each measurement item is more significant than 0.7 (Wen, 2021).

Discriminative validity, which emphasizes that the measurement items should not be under the same factor, is indeed not under the same factor when measured. If the AVE root value of each factor is greater than the maximum value of the correlation coefficient between the factor and other factors, it has good discriminative validity (Wen, 2021).

Structural equation modeling is a statistical analysis technique, including factor analysis and path analysis, which is suitable for researching the relationship between multiple variables. It is a method of building, estimating, and testing causation models to verify the validity of research hypotheses, including verifying direct and indirect relationships (Yang, 2018).

Ethical Consideration

Considering that ethical issues may arise in the empirical research process, which will affect the validity of the entire research process and data, to avoid bias and sensitive issues in the survey process, this research also focuses on ethical issues.

Firstly, selecting a research topic, which is about the common concern of the research population in work and wants to get more attention and help from more people or organizations, is conducive to the active participation of the research population.

Secondly, to determine the content of the questionnaire, on the one hand, the content only focuses on the participant's perception of the work, which can be intuitively responded to without involving sensitive and biased items. On the other hand, the design of the question is transformed into an easy-to-understand expression, which is conducive to the understanding and response of the participants.

Thirdly, the anonymity of the questionnaire and anonymous questionnaires can protect the participants' privacy.

Finally, the questionnaire data is only used for this academic research. After data analysis, the data will be destroyed in time or stored in encryption.

Research Results

In SPSS 22.0 and AMOS 22.0 data processing and analysis programs, 30 questionnaire items represent Q1-Q30 in the data processing process to better identify the corresponding research variables and items. Q1-Q6 refers to gender, age, occupation, marital status, working experience, and salary level. Q7-Q12 is the question item on organizational safety climate (OSC); Q13-Q24 is the item on psychological capital (PC); Q25-Q30 is the item on employee security behavior (ESB).

Demographic Data Statistics

The sample data used in this empirical study were from the online questionnaire survey, and the respondents were all employees of AAA credit-level construction enterprises in Hebei Province. A total of sent out 450 questionnaires. After the questionnaires were collected, incomplete questionnaires or those whose contents were inconsistent with the actual situation were removed, and 412 valid questionnaires were obtained. The effective recovery rate was 91.6%. The demographic data statistics as shown in Table 1.

Table 1. The Demographic Data Statistics

	Category	**Frequency**	**Percentage**
Gender	Male	377	91.5%
	Female	35	8.5%
Age	<30 years old	134	32.5%
	30-50 years old	260	63.1%
	> 50 years old	18	4.4%
Occupation	Worker	367	89.1%
	Technician	33	8.0%
	Administrator	12	2.9%
Marital status	Single	98	23.8%
	Married	305	74.0%
	Divorced	9	2.2%
Work experience	< 5 years	16	3.9%
	5-15 years	387	93.9%
	> 15 years	9	2.2%
Salary level	<5000 yuan	9	2.2%
	5000-10000 yuan	389	94.4%
	>10000 yuan	14	3.4%
Total sample size: 412.			

Table 1 shows that, in this sample statistics concerning gender, 377 males, accounting for 91.5%. The number of females was 35, accounting for 8.50%. In terms of age, 394 people were less than 50 years-old, accounting for 95.6% of the total. Among them, those aged between 30 and 50 accounted for 63.1%, more than half of the total sample. In terms of occupation, 89.1% are a worker. In terms of marital status, 74.0% were married. In terms of working experience, 93.9% of employees in construction companies have worked for 5 to 15 years. From the perspective of the salary level, 94.4% of employees in construction enterprises concentrated on an income of 5,000 to 10,000 yuan.

Questionnaire Statistical Analysis

Only when the sample data obey the normal distribution can it meet the basic requirements of constructing a structural equation model. Therefore, descriptive statistical analysis was made on the sample data obtained to obtain the mean value, standard deviation, and variance of all items in the questionnaire. SPSS 22.0 software was used for descriptive statistical analysis of questionnaire data, and the results are shown in Table 2.

Table 2. Descriptive Statistics of Questionnaire Data

	Mean	**Std. Error**	**Std. Deviation**	**Variance**
Q7	5.57	0.048	0.973	0.946
Q8	5.68	0.048	0.977	0.954
Q9	5.81	0.047	0.95	0.903
Q10	5.8	0.048	0.984	0.968
Q11	5.86	0.051	1.034	1.068
Q12	5.75	0.049	0.994	0.987
Q13	5.82	0.05	1.009	1.019
Q14	5.58	0.053	1.07	1.144
Q15	5.97	0.049	0.991	0.982
Q16	5.69	0.052	1.057	1.118
Q17	5.75	0.049	0.986	0.973
Q18	5.72	0.05	1.022	1.044
Q19	6.18	0.04	0.819	0.67
Q20	5.87	0.052	1.057	1.117
Q21	5.72	0.048	0.982	0.965
Q22	6.11	0.044	0.898	0.807
Q23	5.85	0.048	0.966	0.933
Q24	5.84	0.05	1.014	1.029
Q25	5.7	0.047	0.947	0.897
Q26	5.91	0.051	1.045	1.091
Q27	6.11	0.043	0.875	0.766
Q28	5.82	0.049	0.996	0.991
Q29	5.93	0.051	1.037	1.075
Q30	5.92	0.052	1.048	1.099
Valid N (listwise)	412			

As can be seen from Table 2, the mean value, standard deviation, and variance of samples all are within the relatively balanced data range. Therefore, questionnaire data are typically distributed.

Reliability and Validity Test

In reliability analysis, the Cronbach α coefficient was used further to evaluate the consistency of variables in different measurement questions. The reliability test result is shown in Table 3.

Table 3. The Reliability Test

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
-	0.917	0.896	30
OSC	0.883	0.871	6
PC	0.897	0.893	12
ESB	0.824	0.817	6

As can be seen from Table 3, Cronbach's α value of the overall scale is 0.896, and Cronbach's α value of each variable is above 0.8, indicating that the reliability of the organizational safety climate, psychological capital, and employee safety behavior scales is good, and the reliability of the recovered questionnaire results is high.

Validity refers to the degree to which the scale accurately expresses the measurement items of the variables to be studied. The higher the validity of the questionnaire, the more accurately the questionnaire items can describe the conceptual connotation of the research variables. Bartlett sphericity test and KMO test were conducted on the questionnaire data, as shown in Table 4.

Table 4. The KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.930
Bartlett's Test of Sphericity	Approx. Chi-Square	5071.026
	df.	435
	Sig.	0.000

As can be seen from Table 4, the KMO value is 0.930, more significant than 0.5, and the Bartlett sphericity test shows that Sig. is less than 0.01, indicating high validity and suitability for factor analysis.

Confirmatory Factor Analysis

After the reliability and validity of the questionnaire met the standards, confirmatory factor analysis was carried out to measure whether the correspondence between factors and measured items (scale items) was consistent with the researcher's prediction. Convergent validity, which emphasizes measures that belong to the same factor, does fall under the same factor when measured. It is generally believed that the combined reliability of all potential variables of the scale reaches the minimum estimate value of 0.6, and the critical ratio is C.R. All of them is greater than 1.96. All the P-values are significant at the level of 0.001, indicating that the combination reliability of the model is good. AVE values of the mean-variance sampling of each factor were all greater than 0.5, indicating that the model had good aggregation validity. The convergence validity test of confirmatory factor analysis in this study is shown in Table 5.

Table 5. The Convergence Validity Test

Potential Variables	Items	Estimate	C.R.	AVE
OSC	Q7	0.688	0.884	0.559
	Q8	0.737		
	Q9	0.798		
	Q10	0.769		
	Q11	0.755		
	Q12	0.735		
PC	Q13	0.616	0.899	**0.444**
	Q14	0.697		
	Q15	0.695		
	Q16	0.737		
	Q17	0.746		
	Q18	0.772		
	Q19	**0.309**		
	Q20	0.761		
	Q21	0.767		
	Q22	**0.222**		
	Q23	0.702		
	Q24	0.689		
ESB	Q25	0.666	0.833	**0.472**
	Q26	0.783		
	Q27	**0.263**		
	Q28	0.778		
	Q29	0.769		
	Q30	0.716		
Above all the items P-value is *** indicating $P < 0.01$.				

In addition, the fitting index of confirmatory factor analysis was used as a reference, according to previous studies, scholars generally adopt CMIN/DF, RMSEA, GFI, AGFI, NFI, TLI, and CFI as model-fitting evaluation indexes. The value of CMIN/DF is generally 3 as the critical value; the smaller, the better. The RMSEA index value is between 0 and 1, and the closer it is to 0, the better; usually, 0.08 is the critical value. The GFI, AGFI, NFI, TLI, and CFI are all between 0 and 1, and 0.9 is usually taken as the critical value, and the closer the value is to 1, the better the fitting effect is. the fitting indexes of the confirmatory factor model are shown in Table 6 below.

Table 6. The Fitting Indexes of the Confirmatory Factor Model

Fitting index	CMIN/DF	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference standard	< 3	< 0.08	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9
Result	2.415	0.059	**0.894**	**0.873**	**0.881**	0.918	0.926

It can be seen from the fitting index in Table 4.6 that GFI, AGFI and NFI do not reach the standard of 0.9; and from the convergence validity table in Table 4.5 that the AVE values of OSC and PC do not reach the standard of 0.5; it can be seen from the factor loading of the items (Estimate) that Q19, Q22, and Q27 do not reach 0.5. Therefore, these items are deleted, and the confirmatory factor analysis is performed again.

Table 7 shows the results of the aggregation validity test after deleting the items.

Table 7. The Convergence Validity Test (Delete Items)

Potential Variables	Items	Estimate	C.R.	AVE
OSC	Q7	0.688	0.884	0.559
	Q8	0.736		
	Q9	0.798		
	Q10	0.770		
	Q11	0.755		
	Q12	0.735		
PC	Q13	0.615	0.915	0.519
	Q14	0.696		
	Q15	0.699		
	Q16	0.737		
	Q17	0.743		
	Q18	0.775		
	Q20	0.764		
	Q21	0.766		
	Q23	0.703		
	Q24	0.690		
ESB	Q25	0.670	0.861	0.554
	Q26	0.780		
	Q28	0.780		
	Q29	0.770		
	Q30	0.715		
Above all the items P-value is *** indicate P < 0.001.				

Table 8 shows the fitting indexes of the confirmatory factor model after deleting the item.

Table 8. The Fitting Indexes of the Confirmatory Factor Model (Delete Items)

Fitting index	CMIN/DF	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference standard	< 3	< 0.08	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9
Result	2.327	0.057	0.910	0.918	0.910	0.939	0.946

As can be seen from Table 8, in terms of convergent validity, the AVE value of the average variance extraction of each variable is between 0.519 and 0.559, all of which are greater than the standard of 0.5, and the combination reliability CR is between 0.861 and 0.915, all of which are greater than 0.7, indicating that the adjusted convergence validity is reliable. It can be seen from Table 4.8 that the fitting indexes of the deleted confirmatory factor model are all within the reference range, indicating that the adjusted model has a good fitting degree.

Finally, in confirmatory factor analysis, the test discrimination validity is shown in Table 9.

Table 9. The Discriminative Validity Test

Potential Variables	OSC	PC	ESB
OSC	**0.748**		
PC	0.641	**0.720**	
ESB	0.562	0.615	**0.744**
Note: The diagonal is the square root of the corresponding dimension AVE.			

As can be seen from Table 9, the absolute value of the correlation coefficient between any two factors is less than the square root of the corresponding factor AVE, indicating a certain degree of discrimination between the three potential variables. Therefore, the discrimination validity of the scale after deleting questions is reliable

.

Structural Equation Model

In this research, AMOS 22.0 was used to construct a structural equation model to further verify the hypotheses in the study. Firstly, the overall fit of the model should be tested. The overall fitness index is shown in Table 10.

Table 10. The Fitting Indexes of the Structural Equation Model

Fitting index	CMIN/DF	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference standard	< 3	< 0.08	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9
Result	2.327	0.057	0.910	0.916	0.910	0.939	0.946

As can be seen from Table 10, fitting indexes of the structural equation model are all within the reference range, indicating that the overall model has a good fit and is suitable for further analysis of the model. The structural equation model is shown in Fig. 2.

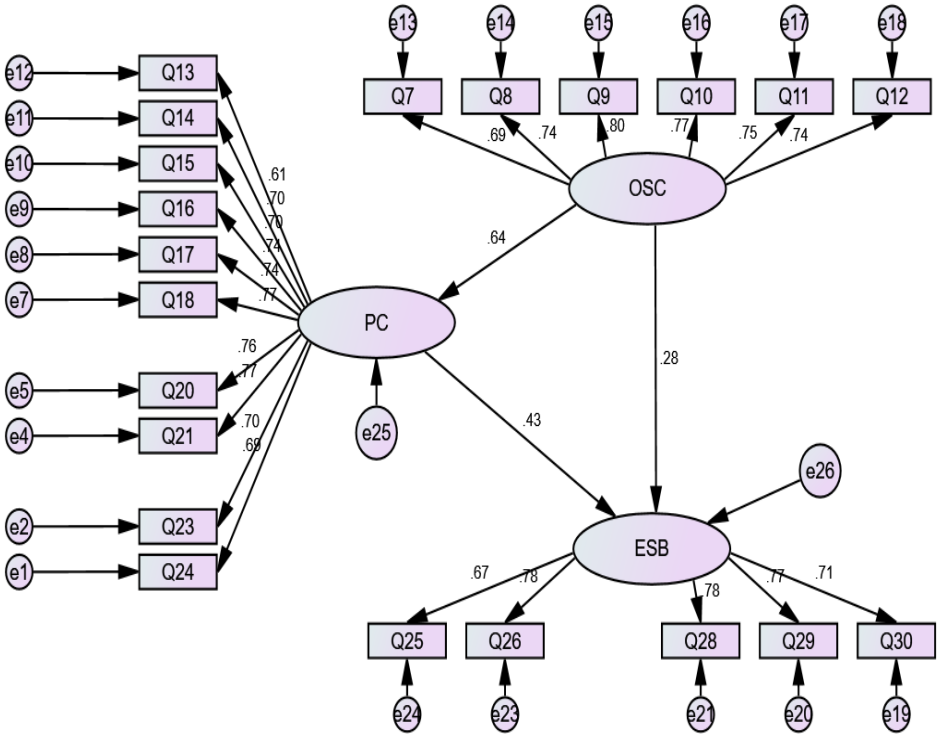

Fig. 2. Structural Equation Model Diagram of Research

After the structural equation model is established, the estimated value of the detection path, the standardized path coefficient, the standard error S.E., and C.R. are obtained by calculating the data through the model. Value and significance P value. In general, if C.R. is more significant than 1.96 and the P-value is less than 0.05, this path coefficient can pass the significance test within the 95% confidence interval, indicating that the corresponding hypothesis of the preset model is supported. Otherwise, the hypothesis is not supported. The path test results are shown in Table 11.

Table 11. The Path Test

Hypothesis	Path	Estimate	β	S.E.	C.R.	P	Result
H1	OSC→PC	0.670	0.641	0.068	9.815	***	Supported
H2	OSC→ESB	0.318	0.284	0.074	4.270	***	Supported
H3	PC→ESB	0.464	0.433	0.075	6.225	***	Supported
P-value is *** indicate P < 0.001.							

As shown in Table 11, the test results show that OSC has a significant positive effect on P.C. (β=0.641, P<0.001); OSC had a significant positive effect on ESB (β=0.284, P<0.001); P.C. has a significant positive impact on ESB (β=0.433, P<0.001). Therefore, it can be concluded that research hypotheses H1, H2, and H3 are all supported.

Finally, indirect effects detect in the structural equation model to verify the mediation hypothesis H4 between the study variables. The test results of the mediation effect are shown in Table 12.

Table 12. The Indirect Effect Test

Effect	Path	Effect Value	Standard Error	Bootstrapping (N=2000)	
				95% CI	
Total effect	OSC→ESB	0.562	0.058	0.445	0.672
Direct effect		0.284	0.070	0.145	0.420
Indirect effect	OSC→PC→ESB	0.278	0.055	0.184	0.399

According to the detection results in Table 12, the upper and lower 95% range of the total effect of the path "OSC→ESB" is [0.445,0.672], excluding 0, indicating that the total effect between OSC and ESB is significant, and the effect value is 0.562. The upper and lower 95% interval of the direct effect path of the path "OSC→ESB" is [0.145,0.420], excluding 0, indicating that the direct effect between OSC and ESB is significant, and the effect value is 0.284. The upper and lower 95% interval of the mediation path "OSC→PC→ESB" is [0.184,0.399], excluding 0, indicating that PC plays a significant role in mediating between OSC and ESB, and the effect value is 0.278. Therefore, it can be confirmed that research hypothesis H4 is valid.

Discussion

According to the research results, we analyze and discuss as follows:

Based on the statistical analysis of demographic data, this study obtained the basic personal information of employees in construction enterprises (the research target population), including gender, age, occupation, marital status, working experience, and salary level. According to the survey data analysis, there are 377 males, accounting for 91.5%. Most employees in construction enterprises are males; it has to do with the nature of the profession. There were 394 employees under 50, accounting for 95.6% of the total. Among them, 63.1% are 30 to 50 years old, which is more than half of the total sample, indicating that construction enterprises mainly comprise middle-aged employees. It can be inferred that after receiving higher education, many young people under 30 years old choose jobs related to their major of study, and few work in construction enterprises. Furthermore, the elderly over 50 years old, due to individual physical factors, may not be competent for construction production activities. There are 89.1% ordinary workers, and the staff composition of construction enterprises is mainly ordinary front-line workers, which is in line with the primary staff composition proportion of construction enterprises. Moreover, 74.0% of the employees are married, which is consistent with most young and middle-aged people in the sample. The working experience of 93.9% of employees in construction enterprises is concentrated 5 to 15 years, and most have an income between 5,000 and 10,000 yuan. Combined with the current social per capita income level of Hebei Province and the national minimum wage tax exemption index, the current salary level of employees in the construction industry can meet the life requirements of employees. Therefore, Comparable pay also gives construction enterprise employees employment stability.

According to the statistical analysis of questionnaire items, this research's mean, standard deviation, and variance samples are all relatively balanced data ranges. The sample data is normally distributed, which meets the basic requirements of the samples.

The reliability and validity test results show that the questionnaire in this research has high reliability and validity, which meets the basic requirements for sample data analysis.

In the confirmatory factor analysis, after the aggregate validity detection of the original data, it was found that the AVE values of the potential variables OSC and PC did not reach the minimum standard reference value of 0.5. Moreover, the factor loading coefficients of items Q19, Q22, and Q27 did not reach the minimum standard reference value of 0.5. In addition, in

the test of model fit, the fitting indexes GFI, AGFI, and NFI did not reach the minimum standard reference value of 0.9. Therefore, we deleted these questions and conducted confirmatory factor analysis again. The adjusted model test showed that the indexes of aggregate validity, discriminative validity, and model fit were all in line with the requirements of confirmatory factor analysis.

In the structural equation model, the fitting of the structural equation model is confirmed first, showing that the fitting degree of the model is suitable for further data analysis. Secondly, the direct effect path in the model is tested, and the results support the research hypothesis of H1, H2, and H3. Finally, the indirect effect path in the model is tested, and the results support the research hypothesis H4.

To sum up, this research effectively verifies established research hypotheses through data analysis, and all the hypotheses proposed are supported. It provides data support for drawing research conclusions.

Conclusion

Based on the above analysis and discussion, this study draws the following conclusions:

From the organizational perspective, organizational safety climate is the factor that affects employees' safety behavior in construction enterprises; from the individual perspective, psychological capital affects employees' safety behavior in construction enterprises.

Organizational safety climate has a positive correlation with employees' safety behavior in construction enterprises; organizational safety climate has a positive correlation with employees' psychological capital in construction enterprises; employees' psychological capital has a positive correlation with their safety behavior in construction enterprises.

Psychological capital plays a partial mediating role in the relationship between organizational safety climate and employees' safety behaviors in construction enterprises.

The above conclusions answer all research questions and achieve the research objectives. Based on this, this study builds an effective management framework and provides practical ideas for improving employees' safety behavior in construction enterprises. Construction enterprises should create an excellent organizational safety climate to improve employees' psychological capital to promote their safety behavior in production activities.

Limitations of Research

This research has answered the research questions and achieved the research objectives. The research conclusions have specific theoretical and practical contributions. However, due to the limitation of individual ability and time, this research still has two limitations.

First, the limitations of researching geographical areas. In this research, only some employees of construction enterprises in Hebei Province were selected as samples. However, considering the regional gap in the development of the construction industry in different regions of China, the conclusions of this research cannot be directly applied to the practice of construction enterprises in the whole of China. However, it is still of a significant reference value.

Second, research the limitations of mediating variables. With psychological capital as the mediating variable, this research explores the mechanism of the influence of organizational safety climate on employees' safety behavior. It provides a feasible management path for improving employees' safety behavior. However, other mediating variables still need to be further identified in the research on the influence mechanism of organizational safety climate on employee safety behavior.

Recommendation

Based on the above discussion and conclusion, this research has the following recommendations:

Firstly, this research suggested that the administrators of the construction industry should propose the importance of improving employees' safety behavior in the policy guidance and industry regulations. So that the construction industry enterprises can pay attention to employees' safety behavior in the production process and the employees can establish personal safety awareness. To better regulate the leading development of the construction industry and promote the stability and sustainability of society and the industry.

Secondly, this research suggested that construction enterprise managers should create a healthy and safe organizational climate. Moreover, strengthen the publicity and training of employees' awareness of safe production in the construction of enterprise culture. Most importantly, they should pay attention to employees' psychological capital, find out more about the psychological needs of employees, and establish effective communication and mutual assistance mechanisms to improve their psychological capital. In this way, they can effectively improve employees' safety behavior, which is conducive to the human resource management of enterprise managers.

Thirdly, this research suggested that employees of construction enterprises should enhance their awareness of safety responsibility and strengthen practical learning of safety skills. Safety is the life and property of employees, as well as the product performance and image of enterprises. Only every employee carries out safe production activities, the whole enterprise's energy is gathered, and the local enterprise has a good reputation and image in the construction industry.

Finally, this research suggested that more scholars should continue to pay attention to the research on the safety behavior of employees in construction enterprises in future research. To discover more potential factors to carry out related empirical research more widely and provide more practical suggestions for improving employees' safety behavior in construction enterprises. Moreover, ultimately improve the safety management ability of enterprise managers in construction projects.

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