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Investigación sobre los antecedentes del síndrome de burnout en investigadores de universidades públicas de China: un enfoque PLS-SEM.

Research on the antecedents of burnout syndrome in researchers at public universities in China: A PLS-SEM approach

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RESUMEN

Con el aumento de la prevalencia del agotamiento profesional en todo el mundo, especialmente en el ámbito académico, es particularmente urgente estudiar la salud mental de los académicos en las universidades. Los académicos en las universidades chinas enfrentan cargas de trabajo pesadas y expectativas públicas elevadas, lo que a menudo conduce a serios conflictos entre el trabajo y la familia, así como a estrés psicológico, desencadenando así el agotamiento y la depresión. Este estudio adopta un diseño transversal y cuantitativo para explorar la relación entre el clima de seguridad psicosocial y el agotamiento, basándose en la teoría de demandas y recursos laborales. Se recogieron datos de 600 investigadores en universidades públicas de China a través de un cuestionario en línea. Los datos recopilados fueron analizados utilizando el software SmartPLS. Los resultados mostraron que el clima de seguridad psicosocial estaba negativamente relacionado con el agotamiento. El estudio encontró que el conflicto entre el trabajo y la familia mediaba la relación entre el clima de seguridad psicosocial y el agotamiento, y que el agotamiento llevaba a la depresión. Los resultados sugieren que mejorar el clima de seguridad psicosocial puede reducir efectivamente el conflicto trabajo-familia y el agotamiento, disminuyendo así el riesgo de depresión. La relevancia de este estudio radica en que enfatiza el papel clave del apoyo organizacional en la mejora de la salud mental del personal académico. Al mejorar el clima de seguridad psicosocial, la gestión universitaria puede ayudar a los académicos a equilibrar mejor sus responsabilidades laborales y familiares, reducir el agotamiento, prevenir la depresión y mejorar la satisfacción laboral general y la calidad de vida.

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PALABRAS CLAVE

Clima de Seguridad Psicosocial (PSC); Conflicto Trabajo;Familia (CTF); Agotamiento; Depresión; Personal Académico Chino; Universidades Públicas.

ABSTRACT

With the increasing prevalence of burnout worldwide, especially in the academic field, it is particularly urgent to study the mental health of academicians in universities. Academicians in Chinese universities face heavy workloads and public expectations, which often lead to serious work-family conflicts and psychological stress, thus triggering burnout and depression. This study adopts a cross-sectional and quantitative design to explore the relationship between psychosocial safety climate and burnout based on the job demands-resources theory. Data from 600 researchers in public universities in China were collected through an online questionnaire. The data collected were analyzed using SmartPLS software. The results showed that PSC was negatively related to burnout. The study found that WFC mediated the relationship between PSC and burnout, and burnout led to depression. The results suggest that improving PSC can effectively reduce WFC and burnout, thereby reducing the risk of depression. The significance of this study is that it emphasizes the key role of organizational support in improving the mental health of academic staff. By improving the PSC, university management can help academics to better balance work and family responsibilities, reduce burnout, prevent depression, and improve overall job satisfaction and quality of life.

KEYWORDS

Psychosocial Safety Climate (PSC); Work;Family Conflict (WFC); Burnout; Depression; Chinese Academic Staff; Public universities.

1. INTRODUCTION

Burnout has become an escalating problem globally, affecting individuals in all professional fields (Deloitte Burnout Survey, 2023; Teoh & Kee, 2019; 2020; 2022). According to Deloitte's 2023 market survey, even people who are passionate about their work are not immune to job-related stress. 83% of those in the survey said that burnout negatively impacts their relationships. As a result of increased job stress in all industries, burnout as a symptom of life nowadays affects the physical and mental health of individuals. It is, therefore, urgent to develop effective and rational interventions.

As a rigorous and competitive academic field with serious work-family conflicts, the problem of burnout already exists, and its incidence is gradually increasing (Wang, 2023). In China, university academics' duties are not only teaching and supervising students, but also preparing for several administrative tasks such as lectures in the classroom and research conferences. In addition, they must balance non-academic responsibilities such as family and social life (Meng & Wang, 2018). The huge workload, coupled with public expectations, puts many university researchers under immense pressure. This intense stress can lead to an increased willingness to leave, decreased job satisfaction, and the development of mental health problems such as anxiety and depression (Khan et al., 2014; Reevy & Deason, 2014; Veena et al., 2016). Many factors affect the stress levels of academic staff. For example, severe work overload triggers great stress and leads to physical and mental exhaustion (Williams et al., 2014); excessive administrative tasks distract teaching and research time, making researchers feel stressed and work-life imbalance (Sharma et al., 2014). Since 2000, Chinese universities have gradually transitioned academic staff from a job tenure system to an employment system, creating uncertainty in their career development (Li & Li, 2023). Although the initial intention of this system was to improve the

structure of the faculty and enhance work motivation, it ended up bringing multiple pressures on university academic staff, making them vulnerable to negative psychological influences, serious burnout, and intention to leave (Xie & Chen, 2007).

An institution in China (2020) released a report on the psychological status of 30,000 academicians. The report shows that academic staff face tremendous stress, depression, and emotional anxiety, posing serious mental health problems (China News Network, 2021). Given the relatively stable university policy in China and the continuously high burnout of academic staff, this study uses the JD-R model to explore the relationship between PSC and burnout. PSC is an important organizational resource that specifically targets mental health and safety (Dollard & Bakker, 2010; Dollard et al., 2017). It emphasizes that organizations prioritize employees' mental health and behavioral practices. Research shows that PSC can effectively alleviate employees' work-family conflict (Yu, Li, & Qin, 2022). Therefore, this study proposes that WFC is a potential mediator of the relationship between PSC and burnout, influencing the association between PSC and burnout. At the same time, depression, as a mental health disorder, is closely related to burnout. This study suggests that it be included in the research framework because of burnout.

2. LITERATURE REVIEW

2.1 Burnout

Burnout is a syndrome, the concept of which is due to long-term stress in the workplace that has not been successfully managed (World Health Organization, 2019). The WHO (2019) recognizes burnout as a work-related phenomenon in the International Classification of Diseases (ICD-11). According to statistics, academics are among the Top 3 groups vulnerable to burnout (Ye, 2012), and China has approximately 1.93 million educators (Chinese Ministry of Education, 2022) who are facing high levels of burnout (Cheng et al., 2022). Therefore, it is particularly urgent to study the burnout of academics in Chinese universities, given China's unique cultural context.

This study reviews the existing literature on burnout to gain insight into the antecedents of burnout. Several studies have found that burnout and PSC are negatively correlated, and low PSC levels are likely to cause burnout (Dollard & Winefield, 2011; Yu, Li, & Qin, 2022). On the other hand, excessive job demands, such as short deadlines, heavy workloads, and role conflicts, are positively associated with burnout (Jiang, Du & Dong, 2017; Kilroy et al., 2016; Teoh & Kee, 2019). WFC is also found to be a positive predictor of burnout (Shang, 2022; Yu, Li & Qin, 2022). Balancing work and family is a challenging task, and when conflicts arise, it is easy to lead to burnout at work. As Acker (2003) reported, resolving role conflict is crucial because it is positively correlated with burnout. Unclear work roles and conflicting work roles lead to burnout. Therefore, the results of various studies show that burnout is closely related to several variables in this study.

2.2 PSC and WFC

Hall et al. (2013) found that PSC can improve the work outcomes of academics. If management can focus on providing university researchers with high PSC support, then academics will experience fewer negative emotions. In general, high PSC can improve employee engagement in organizations (Idris, Dollard, & Tuckey, 2015). Specifically, high PSC organizations provide employees with clear mental health and safety policies and good communication channels. Karanika-Murray, Michaelides and Wood (2017) suggest that if the workplace has a low PSC, employees may experience a sense of workplace insecurity, which may negatively impact work-related outcomes. Dollard and Bakker (2010) highlight the detrimental effects of low PSC on employees' mental health and productivity. Besides, Teoh and Kee (2019; 2020; 2022) emphasize that a lack of psychological safety and support within the workplace can lead to increased stress, burnout, and a decline in overall job performance.

In recent years, there has been a surge in research on WFC due to the rise of dual-career couples who must deal with the challenges of combining work and family (Fiksenbaum, 2014; Goh et al., 2015). As most employees are increasingly concerned about balancing work and family, more organizations are developing strategies that focus on cultivating a culture that helps employees deal with WFC, which can avoid the negative impact of such conflict on workplace emotions and outcomes (Fiksenbaum, 2014). By strengthening PSC, managers can direct social resources to help employees fulfill their family obligations. At the same time, organizations can cultivate a flexible work environment to mitigate the hazards and challenges of WFC (Dollard et al., 2012). When employees face heavy work demands or have difficulty balancing work and family, it is assumed that in a high PSC situation, managers will be attentive to the concerns of employees, paving the way for alleviating work demands, which may otherwise lead to burnout due to a lack of resources to manage their life roles (Dollard & Barker, 2010). Therefore, based on the above arguments, the researchers propose the following hypotheses for academic staff in Chinese public universities:

H1: PSC is negatively related to WFC.

2.3 WFC as a mediator between PSC and burnout

Researchers have included PSC in their work-family interference studies after evaluating various organizational resources. PSC-oriented policies have the potential to reduce the impact of work-family conflict (Dollard et al., 2012). An increase in PSC can promote a greater sense of security and safety among employees, making it easier to maintain their work-family balance (Dollard et al., 2012). As a promising extension of the JD-R model (Baeriswyl, Krause & Schwaninger, 2016), WFC has a potential impact on employees' health and well-being (Allen et al., 2000; Amstad et al., 2011). On the one hand, WFC can lead to burnout (Hall et al., 2010), and on the other hand, it can also affect overall well-being (Cortese et al., 2010; Beutell & Schneer, 2014). Research has shown that support from supervisors is negatively related to WFC and that WFC, in turn, reduces job satisfaction (Yildirim & Aycan, 2008; Cortese et al., 2010; Lu et al., 2015). Research has shown that WFC, due to work demands, can lead to burnout among employees who are trying to balance their work and family roles (Montgomery et al., 2006). Based on the above literature review, this study proposes the following hypotheses:

H2: WFC is positively related to burnout.

H3: WFC mediates the relationship between PSC and burnout.

2.4 Depression as an outcome

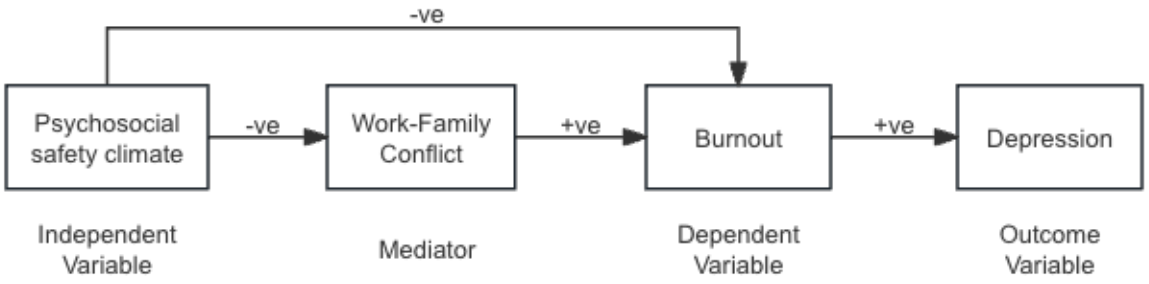
Burnout and depression are both key factors affecting the mental health of academic staff, and their common symptoms include fatigue, withdrawal and a loss of enthusiasm (Bakker et al., 2000). However, some scholars have pointed out that burnout and depression are not the same, and they interact with each other (Ahola & Hakanen, 2007). In contrast, depression often stems from an individual's thoughts and emotions. As Hakanen, Schaufeli and Ahola (2008) found, burnout is a predictor of depression among Finnish workers, and in subsequent studies, an increase in burnout was found to predict an increase in depressive symptoms (Hakanen and Schaufeli, 2012; Sun et al., 2022). Shin et al. (2013) found that it takes approximately 18 months from the initial onset of burnout to the development of depressive symptoms. Therefore, we predict that depression could be a consequence of burnout. Regularly monitoring burnout levels among academic staff is necessary to prevent subsequent health issues. While burnout can predict depression, the reverse is not true (Salmela-Aro, Savolainen & Holopainen, 2009). Based on these findings, the following hypothesis is proposed in this study:

H4: Depression is positively related to burnout.

2.5 Research Framework

The research framework explains the relationships between variables in the study. These variables are supported by underlying theory (Sekaran & Bougie, 2013). In recent years, burnout has been identified as a significant occupational health issue (Maslach & Leiter, 2016). Due to the serious impact of burnout, the need to explore burnout has increased. The JD-R model effectively explains the phenomenon of burnout caused by the increase in job demands and the lack of job resources (Demerouti et al., 2001; Bakker & Demerouti, 2017). Figure 1 presents our research model.

Figure 1 Research Framework.



3. METHODS

This study adopted a cross-sectional and quantitative design, with data collected through an online survey. This method not only provides respondents with a confidentiality space but also gives them freedom of expression and scheduling (Davis, 2000). The sample consisted of 600 researchers from public universities in China. The sampling technique used in this study was purposive sampling, as it was necessary to collect responses from full-time faculty members who had worked at public universities in China for at least one year. According to the latest data, in 2023, there are 1239 public universities in China with approximately 19,767,111 faculty members (National Bureau of Statistics of China, 2023). Given the large number of public universities and faculty members in China, this study focused on the top ten public universities in China. Since most of the literature is written and documented in English, the scales used in this study were in English. However, the subjects were researchers from public universities in China who use Chinese in their daily lives. Therefore, a bilingual questionnaire (one in English and one in Chinese) was created through back-translation to facilitate cross-cultural understanding and increase survey participation (Furlan, Cassady, & Pérez, 2009). Participants in this study were informed of the purpose of the study and were assured that the data would be used for scientific research only.

Burnout consisted of 8 items, which were developed by Demerouti et al. (2003). An example of a reverse-coded question is, "Some days I feel tired before I arrive at work". The higher the level of agreement, the lower the score. With a Cronbach's alpha of 0.87 (Demerouti et al., 2003). The PSC was tested using a 12-item scale adapted by Hall et al. (2010), with a Cronbach's alpha of 0.91. In this scale, the PSC consists of four dimensions, namely management commitment, management priority, management and employee involvement in stress prevention, and organizational communication (Hall et al., 2010). One sample item is "Management supports stress prevention through involvement and commitment". Agreement is measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

WFC is measured using a 3-item scale developed by Carlson et al. (2000). This scale was used to measure WFC experienced by faculty members at public universities in China. The Cronbach's alpha for this scale is 0.96 (Carlson et al., 2000). One sample item is, "I often feel so emotionally exhausted when I get home from work that I cannot contribute to my family." Depression is measured using the 9-item Patient Health Questionnaire (PHQ-9). This scale is designed to assess the depressive tendencies of full-time faculty members at public universities in China. Thus, the depressive tendencies of faculty members will be determined based on the frequency of depressive symptoms. One sample item is "Little interest or pleasure in doing things." A score of 1 indicates no depressive tendencies, while a score of 4 indicates that depressive symptoms occur every day. The Cronbach's alpha value for this measurement was reported to be 0.84. The above scales all use a 5-point Likert scale, except for the depression scale, which uses a 4-point Likert scale. This study will use statistical methods suitable for studying mediating effects (such as bootstrapping) to test the hypotheses proposed and use SmartPLS software to calculate the results.

4. RESULTS

We adapted and employed established measures to ensure the validity of the questionnaire content. The questionnaires were finalized based on feedback from an expert panel and results from a pilot study. The convergent validity of the measurement model was tested using the PLS algorithm. Table 1 presents factor loadings, composite reliability (CR), average variance extraction (AVE), and maximum shared squared variance. In addition, the discriminant validity of the model was assessed. The AVE values for PSC, work-family conflict, burnout, and depression were all greater than 0.5, indicating acceptable levels of convergent validity (Chin, 1998; Hair et al., 2010; Hair et al., 2014). As shown in Table 1, the discriminant validity of all constructs exceeded 0.7. Although Cronbach's alpha and composite reliability can both measure internal consistency, experts recommend using composite reliability rather than Cronbach's alpha as a measure of reliability (Gefen et al., 2000). Table 2 shows that the composite reliability of all constructs is higher than the recommended value of 0.7. Therefore, the scales used in this study are reliable.

Table 1 Average Variance Extracted, Maximum Shared Variance, Maximal Reliability, and Composite Reliability among Study Factors.

	CR	AVE	MSV	MAxR	B	De	PSC	WFC
B	0.907	0.606	0.335	0.907	0.778			
De	0.937	0.659	0.335	0.937	0.579	0.812		
PSC	0.943	0.610	0.262	0.947	−0.486	−0.400	0.781	
WFC	0.870	0.790	0.262	0.870	0.512	0.402	−0.512	0.889

Notes: MaxR (H) = Maximal reliability; B = Burnout; De=Depression; WFC= Work-family Conflict; PSC =Psychosocial Safety Climate.

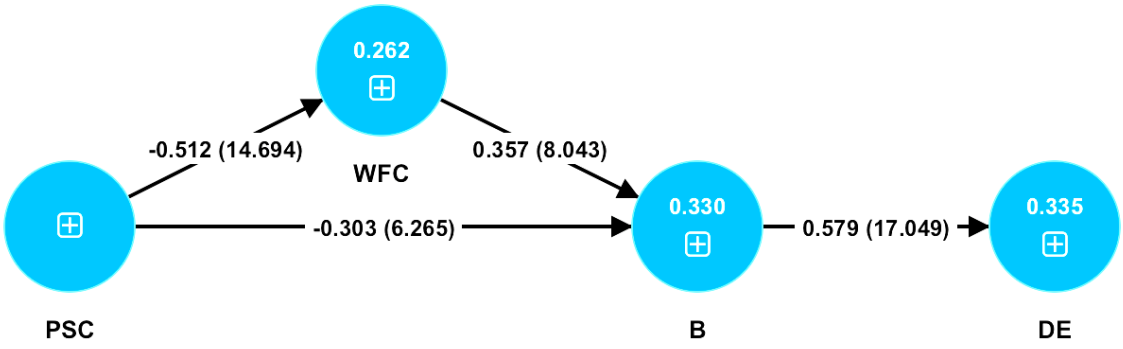
Collinearity refers to the strong linear correlation between the predictor variables in the regression model. When there is collinearity between the predictor variables, they may affect each other in the model, resulting in inaccurate or unstable model estimation (Hair et al., 2014). Therefore, the VIF value is used to determine whether there is a serious problem of multiple collinearity between the independent variables. Generally, if the VIF value is in the range of 1-5, the correlation between the independent variables will not seriously affect the stability and interpretability of the regression model. If the VIF value is greater than 5, there is strong collinearity (Kock, 2015). The VIF values calculated using SmartPLS are all less than 5, so there is no collinearity problem in this study.

Q^2 can measure the predictive ability of the model for new data. Q^2 is calculated through cross-validation, which can help to check whether the model is correctly specified (Chin, 2010). Generally, $Q^2 \geq 0$ indicates that the model has the basic predictive ability, $Q^2 \geq 0.25$ indicates moderate predictive ability, and $Q^2 \geq 0.5$ indicates strong predictive ability (Hair et al., 2019). In this study, the Q^2 values for burnout, depression, WFC, and PSC were 0.488, 0.566, 0.551, and 0.536, respectively (Table 2).

Table 2 Variance Inflation Factor, Predictive Relevance and Cross-Validation Correlation

	VIF	Q^2	q^2
B	2.016	0.488	0.021
DE	2.366	0.566	0.046
WFC	2.276	0.551	0.030
PSC	2.217	0.536	−0.163

Figure 2 Structural model with path coefficients, t-value and R^2.



To test the hypotheses in this paper, the researchers used the PLS algorithm and bootstrapping. PLS uses R^2, t-values and path coefficients as key indicators for model evaluation and interpretation. R^2 reflects the model's ability to explain latent variables (Hair et al., 2017). The closer the R^2 value is to 1, the higher the model's ability to explain the dependent variable. The t-value is used to examine the significance of the path coefficient (Hair et al., 2017). Generally, if the absolute value of the t-value is approximately 2.33, the path coefficient is significant. The path coefficient is the core parameter in the PLS path model and ranges from -1 to 1. The magnitude and sign of the path coefficient provide quantitative information about the relationship between variables. A positive path coefficient indicates a positive relationship, while a negative path coefficient indicates a negative relationship. The greater the absolute value of the path coefficient, the stronger the relationship (Hair et al., 2017). Figure 2 shows the coefficient of each path and the R^2 value of each endogenous variable, as well as the t value.

According to Figure 2 and Table 4, PSC is negatively correlated with WFC ($\beta = -0.512$, $p < 0.01$) and burnout ($\beta = -0.303$, $p < 0.01$). There is also a positive correlation between WFC and burnout ($\beta = 0.357$, $p < 0.01$) and between burnout and depression ($\beta = 0.579$, $p < 0.01$). In addition, Table 4 further

adds that all four relationships are significant, as the t-value for each relationship is greater than 2.33, which means that there is a significant relationship at the 0.01 significance level. In addition, according to Henseler et al. 2009, R^2 values of 0.75 are significant, 0.5 are moderate, and 0.25 are weak. The R^2 value for WFC is 0.262, indicating that PSC can explain 26.2% of the WFC variable. The R^2 value for burnout is 0.330, indicating that PSC can explain 33% of the burnout variable. The R^2 value for depression is 0.335, indicating that burnout can explain 33.5% of the variance in depression.

Table 4 Hypotheses (Direct Hypotheses and Indirect Hypotheses).

H	Relationship	β	Std Error	p-value	t-value	f^2	Decision
H1	PSC→WFC	−0.512	0.035	0	14.694	0.356	S
H2	WFC→B	0.357	0.044	0	8.043	0.140	S
H3	PSC→B	−0.303	0.048	0	6.265	0.101	S
H4	B→DE	0.579	0.034	0	17.049	0.504	S

Notes: P < 0.01; S=Supported

5. DISCUSSION

As the background of this study is Chinese public universities, the target population is academic staff, and the antecedents and consequences of burnout are explored. Due to the special cultural background of China and the recruitment conditions and policies after the education reform, the researchers focused on investigating the burnout status of academic staff in Chinese public universities. Based on the JD-R theory, the researchers established and tested a conceptual model to explain the impact of PSC on academic staff burnout. The model also tested its potential mediating factors and the possible outcome variables of the dependent variable. The results show that PSC is negatively related to burnout. At the same time, WFC acts as an intermediary between the two, and depression is a possible outcome of academic staff burnout.

According to the research results, the psychological health problems of faculty members in Chinese universities, such as anxiety and depression, are ultimately caused by the job stress generated by the recruitment policy and the promotion policy of "up or out" in Chinese universities. The rise in job stress has led to longer working hours and an increased workload. Consequently, employees have less time to commit to their families, creating an imbalance between work and family life and resulting in various conflicts. Therefore, PSC, as an atmosphere conducive to employees' psychological health, is very important in Chinese universities.

5.1 Theoretical and Practical Implications

First, this study enriches the theoretical framework of the impact of the work environment on mental health by emphasizing PSC. Previous studies have focused on the impact of job resources and job demands. This study confirms the negative impact of PSC on burnout, supporting the view that a high level of PSC can help reduce burnout among academic staff at public universities in China. These findings provide a stronger foundation for further theoretical research. Second, the finding that WFC plays a mediating role between PSC and burnout reveals the specific path through which PSC affects burnout and deepens the understanding of the role of WFC in the relationship between work environment and mental health. Depression as an outcome variable of burnout extends the application of the JD-R model and provides new ideas for future research. Third, this study provides important data support for the mental health of academic staff in Chinese universities and also provides a reference for similar studies in other developing countries.

Besides, the findings of this study provide a valuable reference for university management to formulate specific policies, which can help them realize the importance of PSC. By improving the working environment, the level of burnout and depression among academic staff can be reduced, and their job satisfaction and work efficiency can be improved. Second, through the mediating role of WFC between PSC and burnout, a theoretical basis is provided for the development of mental health intervention measures for academic staff in universities. By establishing a comprehensive support system, including psychological counseling, family support services, and job stress management, burnout symptoms can be systematically and effectively reduced. Third, by revealing the mental health problems faced by Chinese university faculty, this study has drawn attention to the work pressure and mental health of academic staff. The results of the study have been used to raise public awareness of the mental health problems of academic staff through academic reports and calls for management support for the mental health of academic staff.

5.2 Limitations and suggestions for future research

First, this study explored the relationship between PSC and burnout from a single dimension. PSC can be divided into four dimensions, and future research can explore the relationship between the two from multiple dimensions. At the same time, other potential mediating factors between PSC and burnout can be explored in depth. Second, the subjects of this study were only academic staff from the top ten public universities in China. Future research directions can be expanded to private universities and even schools at all levels in China. Third, our study employed a cross-sectional design. Future research could involve longitudinal studies across multiple periods and investigate the impact of PSC at the organizational level on individual burnout, which would broaden the scope and enrich the findings. Finally, since the sample of this study was limited to academic staff at public universities in China, the findings may not be applicable to other countries or cultural contexts. Despite the specificity of the academic environment in China, academic staff in different countries and cultures may experience different job stress and mental health challenges. Therefore, the extrapolation of this study is limited. Future studies should consider expanding the sample to include academics from different countries for a more comprehensive and comparative analysis. This would not only enhance the broad applicability of the study, but also provide a more global perspective of the study, which could lead to better interventions and practices at the global level.

6. CONCLUSION

Following the results of this study, it is possible to make several important conclusions that are of special significance in the specific cultural context of China. First, this study verified the importance of PSC in decreasing burnout and preventing depression among academic staff in Chinese public universities. The results showed that a good PSC was effective in reducing WFC, thereby reducing burnout and preventing depressive symptoms. This finding is important for effective administrators to emphasize the need for a supportive work environment to improve the psychological well-being and work engagement of academic staff.

However, in the distinct cultural context of China, the cultural ethnicity of collectivism and high power distance had a significant impact on the relationships in the study. The collectivist culture emphasizes the individual's prioritization of collective goals, which may lead to greater consideration of organizational and team expectations when academic staff face difficult and high-pressure work. This would exacerbate work-family conflict, thereby increasing the risk of burnout.

At the same time, a culture of high power distance makes academic staff more inclined to defer to authority and reluctant to express dissatisfaction with the work environment or to seek help when faced with job stress. This cultural tendency limits the actual effectiveness of PSC, as academic staff may have difficulty in utilizing the psychological support resources provided by the organization, resulting in their mental health problems not being addressed in a timely manner, which in turn increases burnout and depressive symptoms.

Therefore, this study provides new perspectives for understanding the impact of PSC on burnout. And future research should continue to explore how to optimize the construction of a psychologically safe climate in different cultural contexts in order to effectively improve the mental health and overall quality of life of academic staff.

AVAILABILITY OF DATA AND MATERIALS

The data analyzed during the present study and support the findings are available from the author upon request.

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