



## Research article

# Breaking the burnout cycle: Association of dispositional mindfulness with production line workers' job burnout and the mediating role of social support and psychological empowerment

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## ABSTRACT

Burnout among production line workers has become an issue for their physical and mental health and for the productive efficiency of companies. However, this large group of workers has received insufficient attention, particularly in exploring how employees' dispositional factors are associated with burnout. Therefore, this study aimed to examine the association between dispositional mindfulness and job burnout and the potential mediating roles played by perceived social support and psychological empowerment. Participants in the study included 780 production line workers recruited from a foreign company in China. Participants completed measures related to dispositional mindfulness, perceived social support, psychological empowerment, and job burnout. The results showed that (a) dispositional mindfulness was significantly related to lower burnout ( $\beta = -0.446$ , 95% CI [-0.552, -0.340]); (b) perceived social support ( $\beta = -0.073$ , 95% CI [-0.126, -0.025]) and psychological empowerment ( $\beta = -0.106$ , 95% CI [-0.171, -0.058]) mediated this association individually; and (c) perceived social support and psychological empowerment had a serial mediating effect in this context ( $\beta = -0.055$ , 95% CI [-0.095, -0.028]). This study revealed the association between dispositional mindfulness and job burnout, with an additional focus on how dispositional mindfulness correlates with other resources, such as perceived social support and psychological empowerment.

## 1. Introduction

The scope of China's manufacturing industry has increased extraordinarily quickly as a result of the investment of numerous foreign manufacturing companies in China to support the construction of factories and the rapid expansion of local manufacturing enterprises, thus creating a large workforce in the manufacturing industry. Production line workers play a critical role in maintaining the efficient operation of industrial businesses. Their work stability and productivity are closely related to the company's overall productivity and competitiveness. On the other hand, manufacturing workers frequently experience psychological issues such as burnout, which have a detrimental impact on job performance and can even lead to turnover intention [1].

Burnout is a prolonged response to chronic emotional and interpersonal stressors at work, and it can result in a lack of energy (emotional exhaustion), a distant and indifferent attitude towards one's job (cynicism), and a low sense of efficacy (reduced professional efficacy) [2]. Due to factors such as monotonous job content, limited personal development, and economic pressure, this large

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group of production line workers is vulnerable to severe job burnout [3,4], which is harmful to their physical and mental health [5–7] and can lead to lower job satisfaction and higher turnover intentions as well as negative consequences for organizational development [2,8].

Research has shown that burnout is related to the resources available to individuals [9,10]. Resources refer to anything that an individual perceives can help them achieve their goals, and they can be classified into the subcategories of personal and contextual resources in accordance with their source [11]. Conservation of resources theory (COR theory) suggests that individuals are motivated to protect their current resources and to acquire more resources; individuals with sufficient initial resources are able to invest and make full use of those resources, thus facilitating the acquisition of more resources; and individuals with scarce initial resources are more likely to experience resource losses because they tend to preserve their resources, which may eventually lead to a negative cycle [10, 12]. Burnout occurs when employees recognize the fact that the resources currently available do not meet the demands of their job [9]. When individuals realize that the resources they have are threatened, when they suffer a real loss, or when they do not receive the expected return on their investments, they therefore become susceptible to burnout [10].

In China, production line workers engage in many hours of repetitive physical labour featuring difficult and boring work content, little room for career advancement, and low economic return per unit of time spent [13]. These job characteristics can pose a serious threat to workers' available resources and may also cause them to perceive a mismatch between resource inputs and economic rewards [14]. Moreover, research has shown that line workers also have fewer environmental resources, such as work climate and social networks [3]. Therefore, production line workers may face more serious burnout problems.

Studies related to burnout in production line workers have been given neither the attention nor the prominence they deserve, and previous studies have only explored the relationship between burnout and external factors such as workload, organizational socialization, and leadership behaviour [3,15], with little focus on interventions aimed at alleviating burnout and its underlying mechanisms. Some studies have demonstrated that mindfulness training has a positive influence on burnout in health care professionals and teachers [16,17], but the effectiveness and mechanisms of such training for diverse types of occupational contexts require further research [18]. Therefore, the purpose of this study is to examine the association between dispositional mindfulness and burnout and to explore the underlying mechanisms in the context of production line workers from a resource-based perspective. Considering the practical needs of manufacturing firms, this study aims to contribute insights that could inform strategies for reducing job burnout and enhancing job performance among production line workers in the manufacturing industry.

## 2. Theoretical background and hypotheses development

### 2.1. Dispositional mindfulness and burnout

Mindfulness refers to one's awareness of and attention to the present moment without judgement [19]. Some researchers have argued that mindfulness is a universal quality of individuals that reflects their ability to maintain a state of mindfulness, which is also known as dispositional mindfulness [20–22]. The self-regulation of attention and an orientation towards experience are fundamental components of dispositional mindfulness, with the latter highlighting a stance of openness towards and acceptance of the reality of the present moment, which helps encourage people to actively notice new things [20]. While dispositional mindfulness is relatively stable across time and contexts, it is also mutable and can be enhanced through practice [23]. Research has indicated a close association between dispositional mindfulness and mental health and well-being [24,25], and it has been observed to correlate with various aspects of employees' cognition, affect, and behavior in the workplace [26].

According to COR theory, employees with a higher level of dispositional mindfulness are likely to have more initial resources, a stronger capacity to cope with resource threats and losses, and a greater ability to acquire new resources [27]. Research concerning the relationship between dispositional mindfulness and work resources has found that such mindfulness not only helps individuals explore personal and contextual resources that are conducive to the attainment of work objectives but also strengthens their ability to effectively manage and optimize the available resources [27,28]. It may be hypothesized that dispositional mindfulness is associated with reduced perceptions of resource scarcity among production line workers, potentially correlating with lower burnout risk. Empirical studies suggest a negative correlation between dispositional mindfulness and levels of perceived stressors, which are significantly associated with burnout [29]; dispositional mindfulness not only affects burnout by way of work-related psychological factors but also impacts burnout directly [18]. According to studies focusing on teachers and health care providers, it is feasible to reduce burnout by providing training to increase those individuals' levels of dispositional mindfulness, with this effect persisting for quite a long time [16,30]. It is worth noting, however, that the mechanism by which dispositional mindfulness alleviates burnout requires further exploration [31].

In summary, drawing upon relevant theories and findings from previous studies, it is hypothesized that dispositional mindfulness may act as a protective factor for production line workers, potentially being associated with lower levels of burnout through its connection to improved resource exploration and allocation. Therefore, we proposed Hypothesis 1: dispositional mindfulness is significantly and inversely associated with job burnout.

### 2.2. The mediating role of social support

Individuals cannot exist without the social interactions that provide them with social support as a crucial contextual resource [11]. Perceived social support illustrates an individual's beliefs regarding the amount of material, emotional, or spiritual support that they can obtain via social contact and, although it is closely related to objective social support, this factor focuses on individuals' subjective

perceptions of being supported [8]. Put simply, perceived social support refers to a person's perception of social support as a contextual resource. According to the relevant research, perceived social support relieves stress and promotes psychological well-being [32].

Social support, as noted above, is a crucial contextual resource derived from social connections. Research suggests that dispositional mindfulness enhances the ability to identify and utilize such resources [11]. Individuals with high levels of mindfulness have been found to exhibit a more open and nonjudgemental awareness of themselves and their surroundings and hence are more sensitive to resources such as social support [27]. Furthermore, dispositional mindfulness is associated with an increased perception of objective social support. Research has shown that mindfulness helps individuals reduce their judgements of others and increases their ability to detect and regulate emotions in both themselves and others. People with a higher level of mindfulness are alleged to be more capable of understanding others' behaviors, to be more empathetic, and to establish more positive connections with others, which is correlated with higher-quality interpersonal relationships [33,34] and may be linked to an increase in objective social support. Therefore, production line workers with higher dispositional mindfulness are able to establish more positive connections with leaders, family members, etc., from which they derive substantial perceived support; they are then able to invest these resources into the workplace.

As an essential contextual resource, social support can be a motivating factor for employees by assisting them in achieving their work objectives and satisfying their desire for belonging [9]. Employees who perceive sufficient social support have more resources to store and are less likely to experience burnout due to a shortage of resources [10]. Perceived social support, whether work-related or not, has been found to be inversely associated with job burnout [35]. Employees with a high level of perceived social support are also more likely to seek assistance when they encounter difficulties, which helps relieve stress and lower the risk of burnout [9,36].

According to the research, dispositional mindfulness in the group of production line workers may be associated with higher levels of perceived social support, which in turn is correlated with lower levels of burnout. As a result, Hypothesis 2 was proposed: perceived social support mediates the relationship between dispositional mindfulness and burnout.

### 2.3. *The mediating role of psychological empowerment*

Psychological empowerment, which has attracted the attention of organizational management researchers [37], refers to individuals' experiences of empowerment in terms of four cognitive factors related to work: meaningfulness, competence, choice, and impact [38]. Psychological empowerment addresses two of three innate psychological needs proposed by self-determination theory: autonomy and competence [38]. Furthermore, addressing these needs facilitates the attainment of personal goals [11,39]. In addition, psychological empowerment reflects employees' positive perceptions of the meaning and impact of their work itself (for example, an appreciation of the work task itself rather than the wealth gained as a reward). Thus, psychological empowerment is an intrinsic motivator for individuals, indicating an increase in internal work drive [40].

According to the cognitive model of empowerment, interpretive styles play a key role in empowerment assessments [38]. Mindfulness can contribute to a positive interpretive style, thereby promoting employees' psychological empowerment. For example, individuals with a high level of mindfulness tend not only to adopt an accepting attitude towards current tasks and goals but also to evaluate and attribute current events more positively and to have more optimistic expectations for the future. Such individuals can manage their attentional resources efficiently [41], thus enabling themselves to resist the influence of negative interpretive styles. Furthermore, by being aware of and paying attention to current events, employees with a high level of mindfulness have the opportunity to identify and embrace values and goals at work that are meaningful to them [42]. From the perspective of resource theory, psychological empowerment is considered by many researchers to be a resource that is relevant for occupational goals [43,44], while dispositional mindfulness is believed to enhance an individual's ability to explore and utilize resources [27,28], suggesting a potential association between dispositional mindfulness and psychological empowerment. Studies have also found that participants' psychological empowerment can be enhanced via mindfulness training [45]. Some studies have shown that dispositional mindfulness can positively correlate with an individual's sense of meaning of work [46], which is an important component of psychological empowerment.

Employees with greater psychological empowerment, who recognize more autonomy and decision-making capabilities, and have a deep understanding of the meaning and impact of their work, tend to develop higher internal motivation. This heightened motivation is associated with more active and enthusiastic engagement in work, which has been correlated with lower reports of burnout [11,39]. This characteristic also reflects the impact of psychological empowerment as a valuable resource on an individual's working state. Studies have found a correlation between psychological empowerment and reduced instances of burnout [44,47,48]. It is observed that employees who perceive themselves as empowered tend to report lower levels of burnout [49].

In conclusion, it is anticipated that dispositional mindfulness may be associated with reduced burnout, potentially through fostering positive interpretive styles and enhancing psychological empowerment levels. Hypothesis 3 was thus proposed: psychological empowerment serves as a mediator in the association between dispositional mindfulness and job burnout.

### 2.4. *The serial mediating role of perceived social support and psychological empowerment*

According to COR theory, different resources can interact, such that the acquisition of one resource contributes to the acquisition of the other [50]. Previous research has found a positive relationship between perceived social support and psychological empowerment, both of which are resources that are relevant for occupational goals [51]; perceived support from superiors is associated with increased levels of psychological empowerment and motivation among employees [52], and social support can increase psychological empowerment by promoting self-esteem [53]. However, more research is required to clearly establish the direct association between perceived social support and psychological empowerment. Furthermore, cross-cultural empowerment studies have revealed that

sociocultural factors such as values may influence the outcomes of empowerment measures [54]. In contexts featuring large power gaps, such as China [55], social support systems may be the foundation of the successful implementation of empowerment [56,57].

Based on the evidence presented above, it is conceivable that the perceived social support of Chinese production line workers positively predicts their level of psychological empowerment. Hypothesis 4 was therefore proposed: perceived social support and psychological empowerment have a serial mediating effect on the relation between dispositional mindfulness and burnout.

### 3. Materials and methods

#### 3.1. Participants

A total of 780 production line workers from a foreign manufacturing company located in Nanjing were invited to voluntarily participate in the current study and to complete an electronic questionnaire distributed via an online questionnaire distribution platform. Invalid questionnaire data were excluded in accordance with to the following criteria: (1) response times that were too short or too long (3 min < Time <30 min) and (2) at least one incorrect response to the two attention check items, which were randomly placed (for example, “please select the first option in this item”). Ultimately, 687 valid questionnaires were collected for analysis, i.e., a recovery efficiency of 88.08%. Demographic information is shown in Table 1.

#### 3.2. Measures

##### 3.2.1. Dispositional mindfulness

This study used the Chinese version of the Mindfulness Attention Awareness Scale (MAAS) revised by Deng et al. [58], one of the most widely used tools for measuring dispositional mindfulness. This scale consists of 15 items that are rated on a 6-point Likert scale ranging from 1 (*almost always*) to 6 (*almost never*). The unidimensional measurement includes items such as the following: “I find it difficult to pay attention to what is happening currently”. All items were scored inversely, with higher scores indicating higher levels of dispositional mindfulness. The Cronbach’s alpha coefficient in the current survey was 0.886.

##### 3.2.2. Perceived social support

The Chinese version of the Perceived Social Support Scale (PSSS) revised by Jiang [59], was used to measure perceived social support from different sources. We slightly adjusted the expression of items related to support from other sources to highlight support from leaders or colleagues. The scale thus contains 12 items, including the three dimensions of perceived support from family (4 items, e.g., “my family can help me practically and concretely”), friends (4 items, e.g., “my friends can share my happiness and sadness”), and leaders or colleagues (4 items, e.g., “some people, like my leaders or colleagues, will be there for me when I encounter problems”). The scale is rated on a 7-point Likert scale that ranges from 1 (*extremely disagree*) to 7 (*extremely agree*), with higher scores indicating higher levels of perceived social support. The Cronbach’s alpha coefficient in this sample was 0.903.

**Table 1**  
Sociodemographic characteristics of participants (N = 687).

Variables	N(%) / (M±SD)
Age	29.29 ± 6.92
Gender	
Male	203(29.5)
Female	484(70.5)
Educational level	
Junior high school or below	454(66.1)
Technical secondary school or high school	154(22.4)
Junior college	79(11.5)
Time spent working in the same company	
Below 1 year	160(23.6)
1–3 years	250(36.4)
3–5 years	60(8.7)
More than 5 years	217(31.6)
Marital status	
Single	180(26.2)
In a relationship	63(9.2)
Married	429(62.4)
Divorced	15(2.2)
Individual income (¥/month)	
Below 4,000	91(13.3)
4,000–5,000	381(55.5)
5,000–6,000	158(23)
6,000–9,000	57 (8.3)

### 3.2.3. Psychological empowerment

The Chinese version of the Psychological Empowerment Scale revised by Li and his colleagues [37] is a scale consisting of 12 items across four dimensions pertaining to work meaning (3 items, e.g., “my job is very meaningful to me”); self-efficacy (3 items, e.g., “I am very confident in my working competence”); self-determination (3 items, e.g., “I can decide for myself how to proceed with my work”); and impact (3 items, e.g., “I have a great impact on affairs in my department”). The scale is rated on a 5-point Likert scale ranging from 1 (*totally disagree*) to 5 (*totally agree*), with higher scores indicating higher levels of psychological empowerment. The Cronbach’s alpha coefficient for this measurement was 0.828.

### 3.2.4. Burnout

The Maslach Burnout Inventory-General Survey (MBI-GS) revised by Li and Shi [60] was used in this study.) This scale consists of 15 items across three dimensions: emotional exhaustion (5 items, e.g., “my work makes me feel like I am about to collapse”); cynicism (4 items, e.g., “I am increasingly less concerned about whether I am contributing to my work”); and reduced personal accomplishment (6 items, e.g., “I have accomplished a lot of valuable work”). The scale is rated on a 7-point Likert scale ranging from 0 (*not at all*) to 6 (*very frequently*), and questions 10 to 15 are reverse scored. The severity of burnout is reflected in the overall score. In the present study, the Cronbach’s alpha coefficient of the scale was 0.879.

### 3.3. Procedure

Researchers communicated a brief introduction to the study prior to the test, emphasizing the principles of voluntariness, anonymity, and truthful responses and addressing some of the concerns raised by participants. The questionnaire was distributed via a web-based questionnaire distribution platform, and data were collected over a period of two weeks. Participants signed an informed consent form before starting to complete the questionnaire, and they were informed that they could withdraw from the study at any time.

### 3.4. Statistical analysis

After initial screening of the data, descriptive statistics, correlation analysis and multivariate regression analysis were conducted for the valid data using SPSS 22.0 software (IBM Corp, Armonk, NY, USA). Descriptive statistics were collected to describe socio-demographic characteristics; Pearson correlation analysis was conducted to investigate correlations among the study variables; and multiple regression analysis was used to identify potential covariates [61].

Structural equation modelling (SEM) was used in this study to test for multiple mediating effects with the aid of Mplus 7.4 software (Muthen & Muthen, Los Angeles, CA, USA). A 5,000-resampling bias-corrected nonparametric percentile bootstrap method was used to compute the mediating effects and to estimate confidence intervals. The indirect effect was considered statistically significant at the 0.05 level if the 95% confidence interval (CI) did not include zero [62]. The structural equation model fit indices included chi-square ( $\chi^2/df < 3$ ), the root-mean-square error of approximation (RMSEA  $< 0.05$ ), the comparative fit index (CFI  $> 0.90$ ), the Tucker–Lewis index (TLI  $> 0.90$ ) and the standardized root-mean-square residual (SRMR  $< 0.08$ ) [63,64].

## 4. Results

### 4.1. Common method

Since all measures were self-reported, it was necessary to account for the impact of common method bias. To ensure that common method bias was eliminated or minimized, necessary controls were implemented, such as a statement concerning the protection of anonymity, the use of reverse presentation and scoring for some of the items, and attention check items. To further establish the data’s dependability, we also employed the widely used Harman’s single-factor test [65]. The results of the test showed that the variance explained by the first factor was 24.38%, which was less than the critical value of 40% [66], indicating that no serious common method bias affected the current data.

### 4.2. Descriptive statistics and correlation analysis

The results of descriptive statistics and correlation analysis are shown in Table 2. The correlation analysis revealed that

**Table 2**

Descriptive statistics and correlation matrix of study variables ( $N = 687$ ).

Variables	<i>M(SD)</i>	1	2	3	4
1. Dispositional mindfulness	72.83(9.10)	–			
2. Job burnout	1.95(0.82)	–0.55**	–		
3. Perceived social support	4.86(0.89)	0.35**	–0.50**	–	
4. Psychological empowerment	3.47(0.45)	0.30**	–0.47**	0.38**	–

Notes: Averaging scores across items yielded composite scores for each variable. *SD* = standard deviation; \* $p < 0.05$ , \*\* $p < 0.01$ .

dispositional mindfulness was positively correlated with perceived social support and psychological empowerment and negatively correlated with burnout. Perceived social support and psychological empowerment were also positively correlated, and both were negatively correlated with burnout. The hypothesized model was testable based on the correlations among the variables.

4.3. Control variables

According to the results of multivariate regression analysis, gender had a significant effect on psychological empowerment ( $\beta = -0.120, p = 0.003$ ), and educational level had a significant effect on burnout ( $\beta = 0.120, p = 0.004$ ). Consequently, gender and educational level were used as control variables in the test of the mediating effects.

4.4. Test of the mediating effects

Structural equation modelling was used to test the multiple mediating effects. The standardized estimates of the path coefficients as computed by structural equation modelling analysis are displayed in Fig. 1. The results of the analysis showed that the serial mediation model yielded an acceptable fit with the data ( $\chi^2/df = 2.226, p < 0.001, CFI = 0.937, TLI = 0.927, RMSEA = 0.042 [0.040, 0.045], SRMR = 0.069$ ). The results revealed that dispositional mindfulness had a significant direct effect on job burnout ( $\beta = -0.446, 95\% CI [-0.552, -0.340]$ ), while perceived social support ( $\beta = -0.073, 95\% CI [-0.126, -0.025]$ ) and psychological empowerment ( $\beta = -0.106, 95\% CI [-0.171, -0.058]$ ) had partial mediating effects on the association between dispositional mindfulness and job burnout. The serial mediating effect of perceived social support and psychological empowerment on the negative effect of dispositional mindfulness on job burnout was also found ( $\beta = -0.055, 95\% CI [-0.095, -0.028]$ ). The model showed that dispositional mindfulness had a direct effect on workers' burnout and that perceived social support and psychological empowerment mediated the relation between these two variables via the following three paths: the separate mediating effect of perceived social support, the separate mediating effect of psychological empowerment, and the serial mediating effect of perceived social support and psychological empowerment.

5. Discussion

5.1. The relationship between dispositional mindfulness and burnout

To validate Hypothesis 1, the researchers investigated the relationship between dispositional mindfulness and burnout in

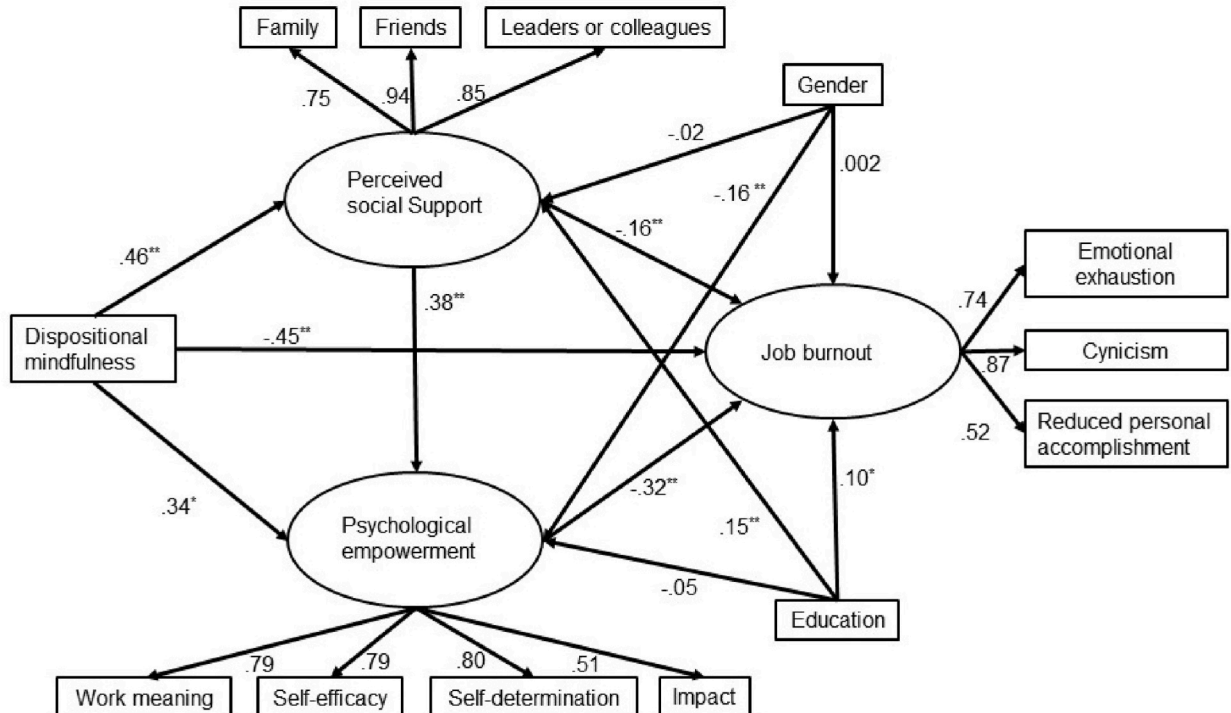


Fig. 1. Path diagram for the relationship among Dispositional mindfulness, Job burnout, Perceived social Support and Psychological empowerment (N = 687). Notes: Latent variables are represented by ovals, while observable variables are represented by rectangles. The factor loading of all the observed variables on the latent variables was significant at 0.001 level. The significance of path coefficient: \* $p < 0.05$ , \*\* $p < 0.01$ ; data are standardized path coefficients.

production line workers and discovered a significant negative correlation between these two variables, indicating that employees with higher levels of dispositional mindfulness had lower levels of burnout severity, which was consistent with the results of previous studies [18,67]. Workers in production lines who undertake repetitive physical tasks for long periods of time are particularly vulnerable to resource scarcity, which can lead to burnout. Dispositional mindfulness, on the other hand, represents an individual's ability to effectively explore and utilize resources [50], and workers with a high level of dispositional mindfulness are able to focus on and maintain nonjudgemental awareness of the productive activity being performed in the present moment, thereby mitigating the negative effects of work resource deprivation. Simultaneously, such workers maintain a positive focus on their work state and work environment, causing them to be sensitive to the available contextual and personal resources. In addition, they can monitor and improve their working experience continuously via emotional and behavioral self-regulation. Therefore, a significant negative correlation is observed between dispositional mindfulness and burnout among production line workers.

### 5.2. The mediating effects of perceived social support and psychological empowerment

By testing Hypothesis 2, the researchers found that perceived social support among line workers partially mediates the negative relationship between dispositional mindfulness and burnout. This result is consistent with previous findings that dispositional mindfulness is positively related to perceived social support [34] and is associated with reduced job burnout [36]. The results of this study, which included all three variables in the analysis simultaneously, suggest that dispositional mindfulness may be conducive to alleviating burnout for workers on production lines by enhancing their perceived social support. This effect might be due to the fact that workers with a high level of dispositional mindfulness are less likely to form preconceived judgements concerning others, which helps them recognize others' emotions and promotes understanding of others, resulting in more positive emotional interactions with the people around them and therefore high-quality interpersonal networks [34], leading to additional social support. On the other hand, dispositional mindfulness appears to enhance employees' ability to recognize others' concerns and to openly and frankly receive assistance from their social networks. This enhancement potentially leads individuals to perceive themselves as having adequate social support. Consequently, as a vital contextual resource, perceived social support is associated with mitigating the effects of resource scarcity on employees, potentially reducing the risk of severe burnout [10,12].

The results also suggest that psychological empowerment partially mediates the association between dispositional mindfulness and burnout. The findings of this study highlight a positive association between dispositional mindfulness and psychological empowerment. This positive relationship appears to have a connection with lower levels of burnout among workers, consistent with prior research [44,46,47]. The observed relationship may be attributed to the likelihood that production line workers with a high level of dispositional mindfulness adopt a positive perspective when interpreting work events. For example, they tend to adopt an accepting attitude towards the work assignment at hand, focusing their attention on ongoing tasks and working experiences, which improves working efficiency and allows them to discover the meaning and value of work for themselves as well as the impact of their performance on the company [42]. Such individuals may also be able to efficiently manage their attentional resources, maintain a positive focus on the present experience, and respond to current events in a flexible manner, which could potentially help in avoiding the influence of negative interpretation styles and beliefs. According to the cognitive model of empowerment, workers' interpretive styles play a central role in their assessment of work tasks, and a positive interpretative style can significantly increase empowerment experience [38]. Increased psychological empowerment, seen as a valuable resource, is associated with higher internal work motivation, potentially encouraging greater job commitment and possibly reducing the risk of burnout.

The study indicated that perceived social support and psychological empowerment had a serial mediating effect on the relation between dispositional mindfulness and burnout, thus confirming Hypothesis 4. Previous research has found a positive association between perceived social support and psychological empowerment [51,53]. These findings lend credence to the claim of COR theory that resources can be mutually reinforcing [50]. Higher levels of dispositional mindfulness are associated with increased perception of social support resources. This perception of support from multiple sources is related to a greater sense of empowerment and is linked to higher internal motivation to work [55], which may contribute to reducing the risk of burnout.

### 5.3. Implications

In this study, framed within the COR theory, we investigated the role of dispositional mindfulness in resource management, thereby offering a valuable expansion to the theory. The observed serial mediation effect of perceived social support and psychological empowerment in the relationship between dispositional mindfulness and job burnout enriches our comprehension of how individual psychological traits contribute to resource acquisition and management. Additionally, the interplay between perceived social support and psychological empowerment suggests that the process of resource acquisition and utilization is not merely linear but may be a complex, multi-level, and interactive dynamic.

Focusing on the occupational group of production line workers, this study extends the literature on burnout factors in this demographic and uncovers the potential mechanism linking dispositional mindfulness to burnout. The findings of this study suggest the potential for mindfulness-based interventions to be effective in addressing burnout among manufacturing line workers, warranting further research in this area.

This study highlights the potential value of nurturing personal factors, such as dispositional mindfulness, in exploring ways to prevent and alleviate job burnout. The study's findings suggest potential strategies for the management of production line workers. For instance, in response to the observed association between dispositional mindfulness and reduced burnout, manufacturing firms might consider incorporating training programs aimed at enhancing dispositional mindfulness into their Employee Psychological Assistance

Programs (EAP). This could include organizing mindfulness-based stress reduction (MBSR) programs for workers, which have been explored in other contexts for their potential benefits in stress reduction. This program, created by Kabat-Zinn [68], attempts to teach mindfulness meditation, breathing, basic yoga, and other relaxation techniques and is widely and frequently applied in the context of burnout interventions for professionals [31]. Furthermore, adaptations and innovations to traditional MBSR programs, such as by shortening practice times [69] or shifting to a remote course online [70], can be developed to make the techniques more operational and applicable to production line workers.

Regarding the roles of perceived social support and psychological empowerment as identified in the study, it suggests that managers in manufacturing settings could consider revising their management approaches. Specifically, they could adopt leadership strategies that focus on benevolence and individualized care, aiming to offer more personalized, comprehensive, and long-term support to enhance worker welfare. Such management philosophies, centered around understanding and addressing the unique needs of each worker, might contribute to fostering a more supportive and empowering work environment [71]. In addition, companies might explore leveraging the alignment between employees' individual values and cultural goals in a collectivist environment [72]. Strategies like fostering a "company as family" corporate culture could be explored to potentially improve workers' perceptions of their job value and meaning [73], which might positively influence their work motivation [74].

#### 5.4. Limitations and future research

This study has certain limitations, which can be considered opportunities for future research. First, the study's cross-sectional design constrains our capacity to infer causal relationships from its findings. In other words, due to the lack of control groups or baseline data, the results of this study should be interpreted as indicative rather than conclusive. Without further experimental or longitudinal research, establishing a direct causal link between dispositional mindfulness and job burnout remains tentative. Second, due to the epidemic, this study employed an online questionnaire that relied on self-report measures to collect workers' perceptions. Although the effective recall of questionnaires was ensured with the aid of publicity and supervision by corporate staff, and although the principles of anonymity and confidentiality were emphasized prior to the test and screening was performed according to the indicators after the test to ensure the validity of the data, some of the findings may have been affected by social desirability bias. Future research could use a variety of paradigms to ensure the authenticity of the data. Finally, the majority of existing mindfulness-based intervention studies have been conducted with respect to medical practitioners and teachers, and future studies could take this study as an empirical foundation for conducting mindfulness-based intervention studies pertaining to manufacturing line workers.

## 6. Conclusions

Dispositional mindfulness is associated with lower levels of job burnout, and this relationship is mediated through three distinct mechanisms: the individual mediating effects of perceived social support and psychological empowerment, and the serial mediation involving both perceived social support and psychological empowerment. The findings of this study contribute to a more comprehensive understanding of the factors associated with burnout and the mechanisms through which they might operate. Therefore, these results suggest potential intervention approaches, such as mindfulness training, to address burnout in production line workers and provide insights for the organizational management practices of foreign companies in China.

### Data availability statement

Data associated with this study has not been deposited into any publicly available repository. However, the data is available with the corresponding author and will be made available on request.

### Institutional review board statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of Nanjing Normal University (protocol code NNU2022060043).

### Funding statement

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### Research involving human participants and/or animals

Data were collected from humans only after obtaining formal approval and we confirm that no humans were harmed during the data collection process.

### Informed consent statement

Informed consent was obtained from all subjects involved in the study.



## Submission declaration and verification

Submission of an article implies that the work described has not been published previously.

## Use of inclusive language

The Authors ensure that writing is free from bias, stereotypes, slang, reference to dominant culture and/or cultural assumptions.

## ORCID iD authorship contribution statement

**Lidong Qi:** Writing – review & editing, Visualization, Validation, Supervision, Software, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Mei Shu:** Writing – original draft, Validation, Project administration, Methodology, Formal analysis, Conceptualization. **Yun Liu:** Validation, Conceptualization. **Liping Yang:** Resources, Funding acquisition.

## Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Liping Yang reports financial support was provided by National Social Science Foundation of China (22BSH101). If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2024.e29118>.

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