



Acute stress disorder and job burnout in primary and secondary school teachers during the COVID-19 pandemic: The moderating effect of sense of control

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Abstract

The study aim was to examine the relationship between acute stress disorder and job burnout among primary and secondary school teachers, and to explore the moderating effect of sense of control on this relationship. A total of 751 teachers completed self-report questionnaires during the COVID-19 pandemic. The results showed that acute stress disorder, emotional exhaustion, and depersonalization were significantly lower in female teachers than in male teachers. Age was positively associated with acute stress disorder and negatively associated with inefficacy. Acute stress disorder was significantly and positively associated with emotional exhaustion and depersonalization dimensions of job burnout. The relation between acute stress disorder and inefficacy was moderated by sense of control: acute stress disorder was positively associated with inefficacy when the sense of control was strong and was negatively associated with inefficacy when the sense of control was weak. These findings demonstrate that acute stress disorder is a risk factor for job burnout, and that sense of control is a protective factor for some aspects of job burnout. However, in individuals with a strong sense of control, acute stress disorder is associated with greater inefficacy, suggesting that sense of control can both positively and negatively affect burnout.

Keywords Acute stress disorder · Job burnout · Sense of control · Teacher

Introduction

Coronavirus disease 2019 (COVID-19) has spread rapidly around the world, leading to a public health emergency and substantially affecting many people's lives and work. For many individuals, existing work stress has been compounded by additional stress caused by the pandemic, resulting in physical and emotional exhaustion and lack of personal accomplishment in their work (Liu & Zhang, 2020; Liu et al., 2020; Pressley, 2021). These factors constitute job

burnout (Freudenberger, 1974), which comprises three main dimensions: emotional exhaustion, depersonalization, and inefficacy (Maslach & Jackson, 1981; Maslach et al., 2001). Job burnout has been frequently reported in the general population during the COVID-19 pandemic (Mion et al., 2021). Studies have shown that job burnout limits occupational accomplishment and can lead to a high turnover prevalence (Dinibutun, 2020; Maslach & Leiter, 2016).

Importantly, job burnout may have been more serious in primary and secondary school teachers than in the general population during the COVID-19 pandemic (Sokal et al., 2020). Diliberti and Kaufman (2020) have suggested that the pandemic has contributed to increased burnout. A recent longitudinal survey also showed that teachers demonstrated increasing exhaustion and depersonalization during the early part of the pandemic (Sokal et al., 2020). One possible reason is that teachers have experienced multiple work pressures, such as substantial changes in teaching modalities and workload. During the COVID-19 pandemic, teachers have had to familiarize themselves with remote teaching methods and have experienced increased work stress owing to anxiety about teaching results (Ozamiz-Etxebarria et al., 2021; Silva

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et al., 2021). The sudden change in working environment and teaching methods may have increased work hours and the incidence of burnout in teachers (Cheptea et al., 2021; Lizana & Vega-Fernandez, 2021). In addition, teachers must cope with mental health problems caused by the pandemic as well as taking care of students with mental health problems (Naff et al., 2020; Weisbrot & Ryst, 2020; Zhou & Yao, 2020). Therefore, more investigations and interventions are needed to address burnout in teachers during the pandemic.

To achieve this aim, clarifying the factors that may predispose teachers to job burnout should be a research priority (Lambert et al., 2013). What do we know about the influencing factors of job burnout? According to the conservation of resources theory (Hobfoll, 1989; Hobfoll & Freedy, 2018), people strive to obtain, build, and protect resources which they value. When they perceive a loss of resources, they feel threatened and stressed and engage in maladaptive coping and stress reactions, which leads to increased burnout (Alarcon, 2011). During the COVID-19 pandemic, many people have experienced mental health problems (Shi et al., 2020). These problems are a manifestation of resource loss, and contribute to the development of job burnout. Acute stress disorder is one of the most common such problems (Sattler et al., 2006; Shahrour & Dardas, 2020; Ye et al., 2020).

Acute stress disorder is a stress reaction to resource loss. During the ongoing COVID-19 pandemic, individuals with acute stress disorder may experience excessive demands on coping resources and the development of resource spirals (the continued loss of resources) (Sattler et al., 2006), which may result in inefficiency or even inability to complete work (Hobfoll, 2001; Kim & Asbury, 2020). Thus, individuals may lose their enthusiasm for work and lose confidence in themselves, resulting in emotional exhaustion (Chen & Eyoun, 2021; Merey et al., 2013; Osipova et al., 2018). Acute stress disorder may also lead to emotional numbing (American Psychiatric Association, 2013); this can lead to a lack of emotional resources, engender a negative and callous attitude toward others, and cause depersonalization reactions (Bryant, 2018; Maslach et al., 2001; Miguel-Puga et al., 2021). Furthermore, acute stress disorder may cause negative cognitions about work; these reduce self-perceived job competence and prevent individuals from gaining a sense of value from work, thus reducing their sense of accomplishment and self-efficacy (Leiter et al., 2014).

However, individuals may be able to draw on other resources to replace the loss of resources and thus reduce burnout. Individuals naturally possess many personal resources (Bakker & Demerouti, 2007). Of these, an important cognitive resource is a sense of control (Keeton et al., 2008), which may mitigate the effect of acute stress disorder on job burnout by increasing individual coping resources. Here, sense of control refers to a generalized belief that one can and will master, control, and shape one's own life

(Keeton et al., 2008). Empirical research shows that lack of a sense of control is strongly associated with job burnout (Khan et al., 2020; Southwick & Southwick, 2018). Individuals who have a sense of control may possess greater mastery, which helps them to more effectively manage demanding conditions (Bakker & Demerouti, 2007), makes up for the lack of resources, and prevents exhaustion and burnout. Individuals with acute stress disorder who have a strong sense of control are more likely to take a positive attitude to problem solving (Chen et al., 2021) and thus obtain a sense of value and accomplishment, which reduces job burnout. In contrast, individuals with acute stress disorder who have a weak sense of control may feel unable to change the situation through their own abilities (Pagnini et al., 2016) and lose confidence in work (Yang et al., 2020). Such individuals feel incompetent and tend to give up (Patel et al., 2018), which increases the likelihood of job burnout. Therefore, we suggest that a sense of control moderates the relationship between acute stress disorder and job burnout.

Previous studies have shown that psychological factors and some key personal resources are strongly associated with job burnout (Bakker & de Vries, 2021; Barelo et al., 2021; Makasheva et al., 2016). Some studies have identified variables (e.g., a sense of calling) that may moderate the relationship between psychological distress and job burnout (Jo et al., 2018; Slagsvold & Sørensen, 2008). There is some discussion in the literature of the relationship between acute stress disorder and burnout in health care providers after epidemics and natural disasters (Restauri & Sheridan, 2020). However, the nature of the relationships between psychological distress and job burnout in teachers during the COVID-19 pandemic, and whether these relationships are moderated by personal resources like sense of control, remain unclear. To investigate these issues, we conducted a study on primary and secondary school teachers in China. Because the three dimensions of job burnout represent different progressive stages (Alarcon, 2011), we analyzed these dimensions separately. We hypothesized that sense of control moderates the relationship between acute stress disorder and job burnout, and examined these moderating effects.

Method

Participants and Procedures

This study was conducted from March 12 to 16, 2020, during the COVID-19 pandemic. Because most people were quarantining at home, we used an online questionnaire survey to assess the psychological status of teachers in China. We used the WeChat platform (a free message and call app widely used in China) to send an online questionnaire to primary and secondary school teachers. Teachers were invited

to complete the questionnaire and send copies to all of their friends who were teachers. A total of 759 teachers were recruited. To ensure the quality of the questionnaire, teachers who submitted the questionnaire within 1 min and those whose responses seemed random or uniform were excluded, resulting in 751 valid questionnaires. Of participants, 494 (65.8%) were women and 257 (34.2%) were men. The mean age was 40.02 years (standard deviation 8.40 years; range 19–59 years). Informed consent was obtained from all participants. Red envelopes (1–2 CNY of electronic money) were provided for participants as compensation for completing the questionnaire.

Measurements

Acute Stress Disorder

In this study, the scale from the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), Acute Stress Disorder Diagnostic Criteria B (American Psychiatric Association, 2013) was used to assess acute stress disorder in teachers. The total scale contains 14 items (example items: “Inability to remember an important aspect of the pandemic” and “Difficulty falling or staying asleep”). Response options for each item are “no” (0) and “yes” (1). Higher scores indicate higher levels of acute stress disorder. A previous study found that the DSM-5 acute stress disorder scale has good validity (McKinnon et al., 2016). The scale showed good reliability in the present study (Cronbach’s $\alpha = 0.86$).

Job Burnout

Job burnout was evaluated using the Primary and Secondary School Teachers’ Job Burnout Questionnaire. This scale was revised by Wu et al. (2016) and is based on the Burnout Inventory-Educators Survey (MBI-ES) developed by Maslach et al. (2001). The scale comprises three subscales: emotional exhaustion, depersonalization, and inefficacy. The total scale contains 22 items rated on a 7-point Likert scale ranging from 1 (completely inconsistent) to 7 (completely consistent). This scale has shown good reliability in previous studies (Wang et al., 2020). In this study, the emotional exhaustion (Cronbach’s $\alpha = 0.91$), depersonalization (Cronbach’s $\alpha = 0.90$), and inefficacy (Cronbach’s $\alpha = 0.76$) subscales demonstrated good reliability.

Sense of Control

We used the sense of control subscale from the feelings of safety scale developed by Cong and An (2004) to assess teachers’ sense of control. This scale contains eight items

(example items: “I feel that life is always full of uncertainty and unpredictability” and “I feel powerless to deal with the sudden dangers in my life”) rated on a 5-point Likert-type scale from 1 to 5 (1 = completely disagree and 5 = completely agree). The scale demonstrated good reliability in this study (Cronbach’s $\alpha = 0.90$).

Data Analysis

We used SPSS 21.0 to perform descriptive statistical analysis and hierarchical regression analysis. First, we performed descriptive statistical analysis and examined the correlations between variables. Then, a hierarchical regression analysis was performed with gender and age as control variables; acute stress disorder as the independent variable; sense of control as the moderating variable; and emotional exhaustion, depersonalization, and inefficacy as dependent variables. Finally, simple slope analysis (Preacher et al., 2006) was used to analyze the moderating role of sense of control.

Results

Descriptive Statistics and Correlations Between Main Measures

We examined gender and age in this study, because these demographic variables may be substantially associated with job burnout (Dinibutun, 2020) and acute stress disorder. Table 1 shows the correlations between acute stress disorder, sense of control, emotional exhaustion, depersonalization, and inefficacy. Gender was significantly associated with acute stress disorder, emotional exhaustion, and depersonalization. Specifically, acute stress disorder, emotional exhaustion, and depersonalization were significantly lower in women than in men, indicating that male teachers were more prone to burnout. Age was positively associated with acute stress disorder and negatively associated with inefficacy. Acute stress disorder was negatively associated with sense of control and positively associated with emotional exhaustion and depersonalization. Sense of control was negatively associated with emotional exhaustion, depersonalization, and inefficacy. There were significant positive pairwise correlations between emotional exhaustion, depersonalization, and inefficacy.

As significant correlations were observed between gender and age, there was a possibility of multicollinearity. The variance inflation factor (VIF) was used to check for multicollinearity in the regression equation; a value of $VIF > 10$ indicates multiple correlations between variables (Bowerman & O’Connell, 1990). In the present study, VIF values ($VIF_{\text{gender}} = 1.071$, $VIF_{\text{age}} = 1.071$) for all variables

Table 1 Descriptive statistics and correlations among main variables

Variables	<i>M</i> ± <i>SD</i>	1	2	3	4	5	6
1. Gender	1.66 ± 0.48	1					
2. Age	40.02 ± 8.39	-0.26**	1				
3. Acute stress disorder	3.06 ± 3.30	-0.08*	0.16**	1			
4. Sense of control	27.87 ± 6.24	0.03	0.07	-0.41**	1		
5. Emotional exhaustion	27.44 ± 9.76	-0.07*	0.04	0.44**	-0.52**	1	
6. Inefficacy	22.91 ± 7.32	0.00	-0.18**	0.06	-0.21**	0.14**	1
7. Depersonalization	14.21 ± 5.24	-0.12**	-0.04	0.30**	-0.42**	0.51**	0.30**

** $p < 0.01$, * $p < 0.05$. *M* = mean; *SD* = standard deviation

were < 10 . Therefore, it was unlikely that multicollinearity affected the results.

Testing the Moderating Role of Sense of Control

To examine the moderating effect of sense of control on the relationship between acute stress disorder and job burnout, we conducted a hierarchical regression with gender and age as control variables; acute stress disorder as the independent variable; sense of control as the moderating variable; and emotional exhaustion, depersonalization, and inefficacy as dependent variables. First, we transformed acute stress disorder and sense of control using centering, and obtained the interaction term for acute stress disorder and sense of control after centralization. Then we entered emotional exhaustion, depersonalization, and inefficacy, respectively, as dependent variables in the hierarchical regression. Gender and age were entered in the first regression level as control variables, and acute stress disorder and sense of control entered in the second regression level. Finally, the interaction terms were entered in the third regression level (see Table 2). The results showed that acute stress disorder positively and significantly related to emotional exhaustion ($\beta = 0.26$, $p < 0.001$) and depersonalization ($\beta = 0.16$, $p < 0.001$), but did not significantly relate to inefficacy ($\beta = 0.01$, $p > 0.05$). Sense of control was negatively associated with emotional exhaustion ($\beta = -0.41$, $p < 0.001$), inefficacy ($\beta = -0.19$, $p < 0.001$), and depersonalization ($\beta = -0.35$, $p < 0.001$). The moderating effect of sense of control on the relationship between acute stress disorder and emotional exhaustion ($\beta = -0.01$, $p > 0.05$) and depersonalization ($\beta = 0.03$, $p > 0.05$) was non-significant. Sense of control moderated the relationship between acute stress disorder and inefficacy ($\beta = 0.18$, $p < 0.001$).

Simple slope analysis was used to analyze the moderating effect of sense of control on the relationship between acute stress disorder and inefficacy. The results showed that when sense of control was strong, acute stress disorder was positively associated with inefficacy (simple slope = 0.44, $t = 2.97$, $p < 0.01$); when sense of control was weak, acute

stress disorder was negatively associated with inefficacy (simple slope = -0.24 , $t = -2.49$, $p < 0.05$) (Fig. 1).

Discussion

In this study, we tested the relationship between acute stress disorder and job burnout during the COVID-19 pandemic, and the moderating role of sense of control on this relationship. The results reflect those of earlier studies (Trachik et al., 2015; Wapperom, 2016) and showed that acute stress disorder was significantly and positively associated with the emotional exhaustion and depersonalization dimensions of job burnout. Furthermore, we found that sense of control was negatively associated with job burnout, and moderated the relationship between acute stress disorder and inefficacy. This suggests that a very high or very low sense of control is not conducive to teachers' work. Therefore, efforts to help teachers alleviate acute stress disorder symptoms must take into account both the positive and negative aspects of sense of control. The maintenance of a moderate sense of control is more useful in alleviating the effect of public health emergencies on teachers' job burnout.

Acute stress disorder significantly and positively predicted the emotional exhaustion and depersonalization dimensions of job burnout. This may be because teachers have experienced tremendous work pressure (Chitra, 2020; Collie, 2021) and greater job demands during the COVID-19 pandemic (Sokal et al., 2020). Acute stress disorder may increase resource consumption because it may lead to more negative emotion (Guo et al., 2020). Therefore, acute stress disorder may lead to insufficient resources to complete work during the pandemic, resulting in job burnout, which supports the conservation of resources theory.

The present findings showed that sense of control was negatively associated with job burnout, which is similar to previous study findings (Patel et al., 2018; Rupert et al., 2015; Wu et al., 2020). As an important cognitive resource (Keeton et al., 2008), sense of control may make up for the loss of resources during the pandemic and help individuals

Table 2 Moderating effect of sense of control on the association between acute stress disorder and job burnout

Dependent variable	Independent variable	ΔR^2	F	β	t	
Emotional exhaustion	First level	0.002	2.08			
	Gender			-0.07	-1.76	
	Age			0.02	0.538	
	Second level	0.33	91.75 ^{***}			
	Acute stress disorder			0.26	7.82 ^{***}	
	Sense of control			-0.41	-12.28 ^{***}	
	Third level	0.33	73.35 ^{***}			
	Acute stress disorder × Sense of control			-0.01	-0.38	
	Inefficacy	First level	0.03	13.49 ^{***}		
		Gender			-0.05	-1.26
		Age			-0.19	-5.19 ^{***}
		Second level	0.07	14.91 ^{***}		
Acute stress disorder				0.01	0.23	
Sense of control				-0.19	-4.97 ^{***}	
Depersonalization	Third level	0.09	16.36 ^{***}			
	Acute stress disorder × Sense of control			0.18	4.54 ^{***}	
	First level	0.02	7.42 ^{**}			
	Gender			-0.14	-3.65 ^{***}	
	Age			-0.08	2.13 [*]	
	Second level	0.21	50.03 ^{***}			
Depersonalization	Acute stress disorder			0.16	4.28 ^{***}	
	Sense of control			-0.35	-9.70 ^{***}	
	Third level	0.21	40.18 ^{***}			
	Acute stress disorder × Sense of control			0.03	0.91	

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

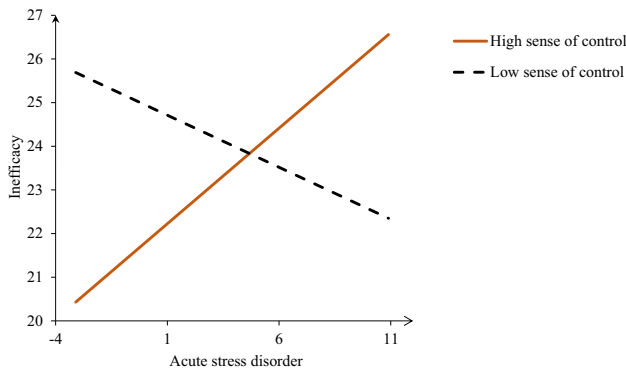


Fig. 1 Simple slope analysis of the moderating role of sense of control

to regain a balance between job demands and job resources, thus reducing job burnout.

Interestingly, sense of control strengthened the relationship between acute stress disorder and inefficacy. One possible reason is that individuals with a strong sense of control attempt to change the environment to meet their own needs,

whereas individuals with a weak sense of control attempt to fit in with the environment by changing themselves (Rothbaum et al., 1982). However, individuals may find it difficult to change the environment during a pandemic. Therefore, individuals with a strong sense of control may experience more negative emotions over time. These negative emotions may combine with negative emotions caused by acute stress disorder and strengthen the relationship between acute stress disorder and inefficacy. This result supports previous findings that the sense of control may be a “double-edged sword” in very stressful situations (Joseph et al., 1991; Zeng et al., 2017).

Moreover, we found that the moderating effect of sense of control on the relationship between acute stress disorder and emotional exhaustion and depersonalization was non-significant. One possible reason is that emotional exhaustion and depersonalization develop separately from inefficacy, as suggested by some researchers (Alarcon, 2011). For example, Brookings et al. (1985) argued that emotional exhaustion and depersonalization arise from the stressor of job surroundings (Horvat & Tement, 2020; Mitani et al., 2006), whereas inefficacy is an emotion that

arises from relationships with others. Acute stress disorder symptoms may cause self-perceived substantial work stress, and may increase emotional exhaustion and depersonalization regardless of the level of sense of control.

Several limitations of the present study should be noted. First, we relied on self-report questionnaires. Standardized interviews or observational methods should be used in future studies to obtain more accurate information about the relationships between acute stress disorder, sense of control, and job burnout. Second, there may be substantial differences between secondary school teachers and primary school teachers in acute stress disorder, sense of control, and job burnout. Additional studies are needed to analyze and compare these variables in both primary and secondary school teachers. In addition, we focused on primary and secondary school teachers, which limits the generalizability of the results. Other populations should be examined in future studies to ensure that the results are broadly applicable to different populations. Third, many factors may affect teachers' job burnout during the COVID-19 pandemic. In this study, we examined only gender, age, acute stress disorder, and sense of control. More research is needed to investigate the effects of additional factors on job burnout in teachers. Finally, this was a cross-sectional study, so the difference between job burnout in teachers before and after the pandemic was unclear, and causal relationships could not be confirmed. Longitudinal studies are needed to investigate this topic.

Despite these limitations, these findings have important theoretical and practical implications. We showed that acute stress disorder may lead to greater job burnout, and sense of control may lead to lower job burnout among primary and secondary school teachers, indicating that the conservation of resources theory is applicable in the context of public health emergencies. In addition, we identified a dual role of sense of control. From a clinical perspective, timely mental health services should be provided after public health emergencies to reduce acute stress disorder symptoms in teachers. This would help them to regulate negative emotions and directly reduce job burnout. Alternatively, reduction of teaching workloads, provision of more work resources, and use of familiar teaching methods could greatly help to reduce job burnout, because these factors increase teachers' psychological resources.

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Author contribution Baohua Zhen: Conceptualization, Investigation, Data curation, Formal analysis, Writing -original draft. Benxian Yao: Visualization, Project administration, Writing—review & editing, Supervision. Xiao Zhou: Conceptualization, Investigation, Data curation, Formal analysis, Writing—review & editing.

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Availability of data and material The datasets used during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical approval This project was approved by the Research Ethics Committee of the Department of Psychology and Behavioral Sciences, Zhejiang University.

Informed consent Informed consent was obtained from all participants included in the study.

Conflicts of interest The authors have no conflicts of interest to declare.

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