Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Research paper

Relationship between working stress and anxiety of medical workers in the COVID-19 situation: A moderated mediation model

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ABSTRACT

Background: The COVID-19 pandemic has brought a lot of working stress to medical workers and has a certain impact on their mental health. Working stress is closely related to the increase in anxiety, but few studies have explored whether their relationship will be affected by positive psychological factors in the special situation.
Methods: 798 medical workers were investigated online after the outbreak of the COVID-19 (10 February to 1 March 2020) in China. The relevant questionnaires were used to evaluate working stress, anxiety, sense of control, and psychological capital. The moderated mediation model test was performed using the SPSS software and PROCESS macro program.
Results: Working stress could directly affect anxiety, and indirectly affect anxiety through sense of control. In addition, psychological capital moderated the direct effect of working stress on anxiety, which is more effective at high level of psychological capital. Psychological capital also moderated the second half of the indirect effect of working stress on anxiety, at low level of psychological capital, sense of control was more effective in predicting anxiety.
Limitations: All the data in this study was collected through online questionnaire. The anxiety response measured in this study cannot be specific to the viral epidemic.
Conclusions: Under the COVID-19 epidemic situation, for medical workers, low sense of control and low level of psychological capital may be important risk factors of anxiety caused by working stress. Thus, strengthening the sense of control and psychological capital of medical workers would be helpful to reduce their anxiety and maintain their mental health.

1. Introduction

Anxiety, as a universal negative emotion experience (Lang et al., 2000), has always been an issue of interest for researchers and practitioners. Relevant studies have shown that in ordinary situations, anxiety is closely related to the environment and individuals' pressure (Cherry, 1978; Hunter et al., 2019). Especially, working stress is an important factor leading to anxiety (Abbott, 2020; Cherry, 1978; Hunter et al., 2019; Melchior et al., 2007). Understanding the underlying mechanism of stress affecting anxiety can not only improve people's understanding of the relationship between stress and anxiety, but also provide an important basis for seeking intervention methods to reduce anxiety.

Major emergencies often lead to changes in the environment, which in turn changes the emotional state of individuals in the environment (Beltzer et al., 2019; Mouna et al., 2015; Zhang et al., 2020). The outbreak and epidemic of COVID-19 in 2020 was a typical major public health emergency (WHO, 2020). The COVID-19 epidemic brought many adverse effects to people's mental state, such as anxiety, depression, panic and other negative emotions (Hagerty and Williams, 2020; Shanafelt et al., 2020). In general, compared with most other occupations, medical workers have higher working stress even in the normal situation (Pehlivan et al., 2016). In the COVID-19 epidemic situation, due to the particularity of their professional nature, medical workers need to undertake more work responsibilities and thus experience stronger working stress in the process of epidemic prevention and control. The outbreak of the COVID-19 has caused great changes in the working

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process and working environment of medical workers, such as increasing working hours, increasing work tasks, increasing work risks, increasing working procedures, increasing social concerns and increasing public pressure, which aggravated the stress of their work. In addition, COVID-19 is mainly transmitted through close air droplets and close contact. This makes medical workers have a higher risk of infection, which may strengthen their anxiety (Lai et al., 2020; Spoorthy et al., 2020; Wu et al., 2020). In the COVID-19 epidemic situation, due to the impact of epidemic prevention and control tasks, as well as the risk of virus infection, the working stress of medical workers increases, this may cause more serious anxiety in medical workers. Therefore, this study hypothesized that work stress could positively predict the anxiety of medical workers in the COVID-19 epidemic situation (*H1*). Although previous studies have revealed that working stress is an important factor leading to anxiety in ordinary situations, but in the context of major public health events (such as the COVID-19 epidemic situation), whether the influence of medical workers' working stress on anxiety is positively influenced by the positive psychological traits of individuals, and whether the mechanism of action is similar to that in ordinary situations? There is still little discussion on this issue.

Previous studies have shown that anxiety is affected by sense of control, the sense of control may play a fundamental role in the formation and persistence of anxiety (Gallagher and Trigg, 2016; Huang et al., 2019; Zhang et al., 2017). The sense of control refers to a feeling or belief that an individual controls his own behavior and controls the external world through their behaviors (Beck et al., 2017; Moore and Fletcher, 2012; Moore and Obhi, 2012), and has an important impact on the individual's mental health. Individuals with higher sense of control usually have better mental health status (Bryson et al., 2007; Ward, 2013). Related research shows that the level of stress has a certain impact on individual's sense of control. The higher level of stress is associated with the lower degree of control (O'Connor and Shimizu, 2002). It has been shown that the sense of control has a partial mediating effect between stress, anxiety and job satisfaction (Wei et al., 2014). In the occupational environment, job insecurity is related to the increase of work stress, i.e., long-term job insecurity may lead to the weakened personal sense of control (Glavin, 2013). Gibbs et al. (1998) found that environment and personal security have a certain impact on the sense of control, environmental factors and personal security directly or indirectly affect individuals' emotional state through the sense of control, low sense of control may lead to more negative emotions. In the COVID-19 epidemic situation, the occupational environment of medical workers has changed due to the outbreak of the epidemic. The change of working environment and the increase of working stress may affect their sense of control and make anxiety prominent. Therefore, this study assumes that the sense of control plays a mediating role in the process of working stress affecting medical workers' anxiety (*H2*).

The mediating effect of sense of control can explain how working stress affects anxiety. Of note, not all medical workers in special environment will have obvious anxiety (Lai et al., 2020). Some studies have shown that psychological resilience can play a partial mediating role between working stress and anxiety (Wen et al., 2014). For instance, self-efficacy has a moderating effect on the relationship between working stress and anxiety of female staff (Kahn and Long, 1988), and self-concern also has a moderating effect on college students' stress and anxiety (Chen et al., 2014). These findings suggest that there are some moderating factors between working stress and anxiety. For medical workers in the COVID-19 epidemic situation, some of their own positive psychological resources may reduce the risk of anxiety, and psychological capital is one of the most important psychological resources.

Psychological capital refers to an individual's positive psychological state in the process of growth and development (Luthans et al., 2004; Luthans and Youssef, 2004), which usually includes four core components: self-efficacy, optimization, resilience and hope (Luthans et al., 2007). Individuals' psychological capital is closely related to their mental health (Zhang et al., 2010). For instance, high psychological capital is positively correlated with positive emotions (Avey et al., 2008). Related research shows that psychological capital can positively predict adolescents' life satisfaction and negatively predict anxiety, and has a moderating effect on the relationship between cumulative family risk and anxiety (Xiong et al., 2020). Using psychological capital to cope with stress and risks can be seen as a self-regulating process that mobilizes its own psychological resources to meet external challenges (Molden et al., 2016). According to the theory of self-depletion, when people are faced with stress and risks, they will mobilize internal resources to respond. However, the capacity of individuals' internal resources is different and limited, serious stress or risk will lead to the depletion of internal psychological resources. If internal resources are not replenished in time, the retrieval process will be blocked after depletion, which will affect mental health (Baumeister et al., 1998). Individuals with high psychological capital have more positive psychological resources to cope with stress and risk, while individuals with low psychological capital are more likely to have internal resources depletion and lead to more mental health problems (Xiong et al., 2020). The COVID-19 epidemic situation brings challenges to people's life safety. Medical workers need to bear more risks and stress. In the process of coping with these risks and stress, their psychological capital may play a positive moderating role. Therefore, this study hypothesized that psychological capital plays a moderating role in the process of working stress affecting anxiety (*H3*). The broaden-and-build theory of positive emotions (Fredrickson, 2001; Fredrickson, 2004) proposes that individuals with high psychological capital have more flexible cognitive and behavioral patterns, are more proactive in dealing with external stress and risks, and are more likely to obtain energy supplements from the outside environment. Accordingly, individuals with high psychological capital may have a higher sense of control. Meanwhile, individuals with a high sense of control may be more active in coping with the stress and risk through psychological capital, so as to reduce the risk of anxiety. Thus, it was hypothesized that psychological capital play a moderating role in the process of working stress affecting sense of control (*H4*), and psychological capital may also play a moderating role in the process of sense of control affecting anxiety (*H5*).

To sum up, the current study hypothesized a moderated mediating model with sense of control as a mediating variable and psychological capital as a moderating variable (Fig. 1). Systematically explored the effects of psychological capital and sense of control in the process of working stress affecting anxiety, and provided empirical data. Specifically, we examined whether the sense of control plays an intermediary role in the relationship between working stress and anxiety in medical workers under the COVID-19 epidemic environment, and examined whether psychological capital regulates the intermediary process in which working stress affects the anxiety of medical workers.

2. Methods

2.1. Participants

The participants were 798 medical workers who were distributed in 5 provinces or of China (Sichuan, Chongqing, Shaanxi, Shanxi, Inner Mongolia, and Guangdong). The data were collected through an online questionnaire between February 10 and March 1, 2020. Through the masking scale (5 items in total; if the score of one participant was more than 3 points, his/her data was invalid), the data of three participants were excluded, and finally 795 valid data were obtained. The age of the participants ranged from 21 to 55 years ($M = 35.84$ years, $SD = 8.41$). The detailed demographic information is shown in Table 1. The survey was agreed with the ethical review of the Ethics Committee of the Faculty of Psychology, Southwest University (IRB NO. 2019087).

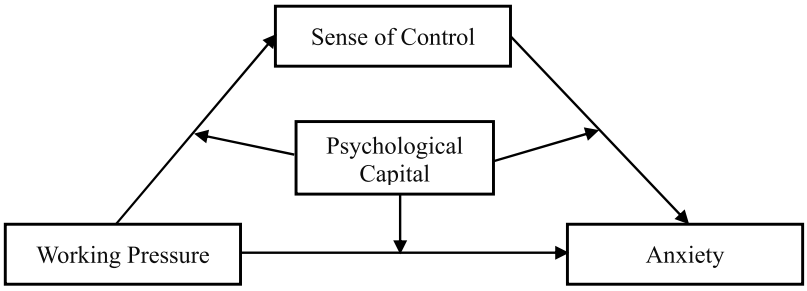

Fig. 1. A moderated mediation model.

Table 1
Demographic information of participants ($n = 795$).

Variable	Classification	Number	Proportion (%)
Sex	Male	225	28.3
	Female	570	71.7
Job type	Physician	225	28.3
	Nurse	275	34.6
	Other	295	37.1
Medical institution level	Frist level	30	3.8
	Second level	90	11.3
	Third level	675	84.9
Education	Technical secondary school and below	45	5.7
	Junior college	245	30.8
	Undergraduate	465	58.5
	Graduate or above	40	5.
Working years	≤ 5	130	16.4
	6-10	235	29.6
	11-20	185	23.3
	≥ 21	245	30.8
Current monthly number of patients treated or managed	≤ 50	285	35.8
	51-100	260	32.7
	101-150	55	6.9
	151-200	35	4.4
	≥ 201	160	20.1
Physical health	Good health	645	81.1
	Suffering from general and curable diseases	110	13.8
	Suffering from chronic or serious diseases	40	5.0

2.2. Measures

2.2.1. Working stress

The work stressor scale for clinicians (Chen, 2009) was used to evaluate medical workers working stress. There were 20 items in the scale, including 12 items of stressors, such as "my working time is very long", and 8 items of stress feeling, such as "my work makes me feel tired on duty every day". Each item was assessed on a 5-point Likert scale (strongly disagree to strongly agree). The Cronbach's alpha of the scale was 0.94.

2.2.2. Anxiety

The Generalized Anxiety Disorder Questionnaire (GAD-7) was used to measure the anxiety of the participants in the past two weeks (Toussaint et al., 2020). The scale has a total of 7 items, using a 4-level score (0 = "not at all", 3 = "almost every day"), the higher the total score, the more serious the anxiety. The Chinese version of GAD-7 scale is widely used clinically in China (Qu and Sheng, 2015). In this study, the Cronbach's alpha of the scale was 0.94.

2.2.3. Sense of control

The Sense of Control Scale compiled by Lachman and Weaver (1998) was translated and revised by Li (2012). The scale includes two dimensions, personal mastery and perceived constraints, with a total of 12 items. A 7-point scoring is adopted, from 1 point for "completely disagree" to 7 points for "completely agree". In order to obtain the total score of the sense of control, refer to the existing research (Kraus et al., 2009), reverse scoring all the items of the "perceived constraints" subscale, and then sum the two subscales. The higher the total score, the higher the level of sense of control. The Cronbach's alpha of the scale in this study is 0.85.

2.2.4. Psychological capital

The psychological capital questionnaire compiled by Luthans et al. (2007) was used to measure the psychological capital of the participants. The questionnaire consists of four dimensions: self-efficacy, hope, resilience, and optimism. It has 24 items and used a 6-point scoring method, ranging from 1 point for "strongly disagree" to 6 points for "strongly agree". The questionnaire has good reliability and validity (Bai et al., 2010). In this study, the Cronbach's alpha was 0.96.

2.3. Procedure and statistical analysis

This study uses online questionnaires to conduct the test. All questionnaires are filled out voluntarily and anonymously, they will be submitted and recovered upon completion. Using SPSS 23.0 for statistical analysis and Bootstrap method to test the significance of regression coefficients (Wen and Ye, 2014a).Using PROCESS macro program written by Hayes (2013) (downloaded from http://www.Afhayes.com) in *Model 1* and *Model 4* to test the specific moderation effect and mediation effect. The sample distribution was reconstructed by random sampling with effective replacement. In this study, a total of 5000 samples were constructed, each with a sample size of 795. From this, the standard error (*SE*) and 95% confidence interval (95% CI) of the parameter estimate were obtained. If the 95% CI does not include zero, it means that the statistical results have significance.

3. Results

3.1. Common method bias testing

The use of questionnaires in this study may lead to common method deviations. In order to avoid the possible deviation, the scales were arranged separately, some items were scored reversely, and anonymity was emphasized. According to the previous suggestions (Xiong et al., 2012), the Harman single factor analysis was used to test common method deviations. The results showed that 11 factors were generated when the rotation was not conducted. The first factor explained 22.67% variance variation, which was less than 40% critical standard, indicating that there was no obvious common method deviation.

3.2. Mean, standard deviation and correlations for all study variables

The mean, standard deviation and correlation coefficient of each variable are shown in Table 2. Working stress is significantly negatively correlated with sense of control and psychological capital, and

Table 2
Mean, standard deviation and correlations for all study variables.

	M	*SD*	1	2	3
1. Working stress	53.94	16.01	—		
2. Anxiety	10.09	3.94	0.46**	—	
3. Sense of control	57.57	10.72	-0.69**	-0.53**	—
4. Psychological capital	108.20	16.56	-0.46**	-0.48**	0.62**

Note. $^{**}p < 0.01$.

significantly positively correlated with anxiety. Anxiety is significantly negatively correlated with sense of control and psychological capital. Sense of control is significantly positively correlated with psychological capital.

3.3. Hypothesis testing

According to the analysis steps of the moderated mediation model proposed by Wen and Ye (2014b). Under the conditions of controlling sex, job type, medical institution level, education, working years, current monthly diagnosis and treatment of patients, and physical health, a moderated mediation model was constructed with sense of control as the mediating variable and psychological capital as the moderating variable. The test results are shown in Table 3.

The test of the moderated mediation model in this study found that working stress in the COVID-19 epidemic situation can positively predict the anxiety of medical workers, and the results confirm *H1*. The sense of control plays a part of the mediating role in the relationship between working stress and anxiety of medical workers in the COVID-19 epidemic situation, and the mediating effect of the sense of control accounts for 38.04% of the total effect, this result proves *H2*. Psychological capital has a moderating effect on the direct path of working stress affecting anxiety, thus *H3* has been confirmed. Psychological capital has no moderating effect on the first half of the path mediated by the sense of control, but has a moderating effect on the second half of the path. Therefore, *H4* has not been confirmed, while *H5* has been confirmed. In order to explain the moderated mediation model more clearly, using the average score of psychological capital plus or minus one standard deviation, the participates were divided into a high psychological capital group (participants above average plus one *SD*) and a low psychological capital group (participants below average minus one *SD*). Through simple slope analysis, we further examine the predictive effect of working stress and sense of control on anxiety under different levels of psychological capital. The results show that, when the level of psychological capital is low, the predictive effect of working stress on anxiety is not significant ($t = .07$, $p = .95$); when the level of psychological capital is high, working stress significantly positively predicts anxiety, with a simple slope $b = .05$ ($t = 4.10$, $p < .001$), which shows that with the increase of psychological capital level, the predictive effect of working stress on anxiety is enhanced, but the anxiety level of the high psychological capital group is significantly lower than that of the low psychological capital group (see Fig. 2). When the level of psychological capital is low, the sense of control significantly negatively predicts anxiety, and the simple slope $b = -.21$ ($t = -8.16$, $p < .001$); when the level of psychological capital is high, the sense of control significantly negatively predicts anxiety, but the predictive effect is small, the simple slope $b = -.04$ ($t = -2.24$, $p = .03$), as shown in Fig. 3., which shows that with the increase of psychological capital level, the predictive effect of sense of control on anxiety gradually weakens, that is, higher psychological capital weakens the mediating effect of sense of control.

4. Discussion

This study explored the impact of medical workers' working stress on anxiety and its internal mechanism under the COVID-19 epidemic situation. The results found that working stress has a positively predictive effect on anxiety, which is consistent with previous research results (Abbott, 2020; Hunter et al., 2019), indicating that working stress is an important factor leading to anxiety. Especially in the COVID-19 epidemic environment, due to the special occupational nature of medical workers and the impact of the special environment of the epidemic, medical workers experience more stress at work and more negative emotions (Wu et al., 2020).

In addition, the results of this study show that in the COVID-19 epidemic situation, the sense of control plays a mediating role in the process of working stress affecting anxiety (Gallagher and Trigg, 2016; Huang et al., 2019). According to the theory of limited self-control, self-control and mental health are closely related, and external stressful situations will deplete self-control resources, which in turn will lead to maladjustment or emotional behavior problems (Tan and Guo, 2008). Individuals under high working stress will show obvious work insecurity and loss of self-control, resulting in a weakened sense of personal control (Glavin, 2013). When working in an unsafe or dangerous environment, the individual's sense of work insecurity is more serious, leading to a lower sense of control, and thus unable to effectively deal with

Table 3
The results of the moderated mediation model test.

Predictor Variable	Equation 1 (outcome variable: anxiety)			Equation 2 (outcome variable: sense of control)			Equation 1 (outcome variable: anxiety)		
	β	*t*	95%CI	*B*	*t*	95%CI	*β*	*t*	95%CI
Sex	-0.07	-2.38*	[-1.14, -0.11]	2.49	4.52***	[1.41, 3.57]	-0.31	-1.20	[-0.81, 0.20]
Job type	-0.08	-2.49*	[-0.42, -0.05]	-0.28	-1.39	[-0.67, 0.11]	-0.26	-2.85**	[-0.44, -0.08]
Medical institution level	-0.12	-3.86***	[-1.47, -0.48]	1.92	3.61***	[0.87, 2.96]	-0.82	-3.33***	[-1.30, -0.34]
Education	0.05	1.65	[-0.06, 0.68]	-0.88	-2.23*	[-1.66, -0.10]	0.23	1.26	[-0.13, 0.58]
Working years	0.08	2.15*	[0.02, 0.53]	-0.02	-3.76***	[-1.55, -0.49]	0.09	0.73	[-0.16, 0.34]
Current monthly number of patients treated or managed	-0.14	-4.50***	[-0.52, -0.21]	-0.02	-0.13	[-0.35, 0.31]	-0.37	-4.71***	[-0.52, -0.21]
Physical health	-0.05	-1.43	[-0.80, 0.13]	1.68	3.37***	[0.70, 2.66]	-0.19	-0.84	[-0.64, 0.26]
Working stress	0.28	8.23***	[0.05, 0.09]	-0.32	-18.07***	[-0.35, -0.28]	0.03	2.60**	[0.01, 0.04]
Psychological capital	-0.33	-9.53***	[-0.10, -0.06]	0.28	16.35***	[0.25, 0.32]	-0.05	-5.42***	[-0.07, -0.03]
Interactive item 1	-0.08	-2.65**	[-0.002, -0.001]	-0.002	-1.82	[-0.003, 0.001]	0.002	2.50*	[0.001, 0.003]
Interactive item 2							0.005	6.15***	[0.004, 0.007]
Sense of control							-0.12	-7.16***	[-0.16, -0.09]
R	.60			.78			.64		
R^2	.36			.62			.41		
F	43.47***			125.73***			44.77***		

Note. $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$. The standard score was used for each variable in the model. Interactive item 1 is the product of working stress and psychological capital, and Interactive item 2 is the product of sense of control and psychological capital.

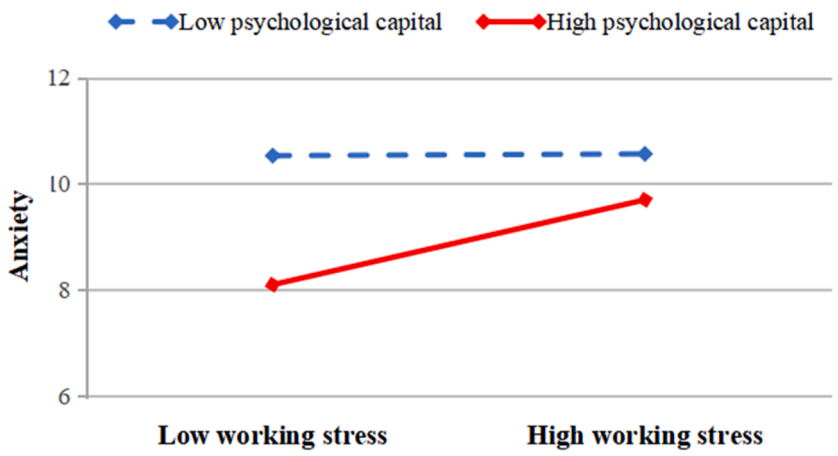

Fig. 2. The moderating role of psychological capital in the process of working stress affecting anxiety.

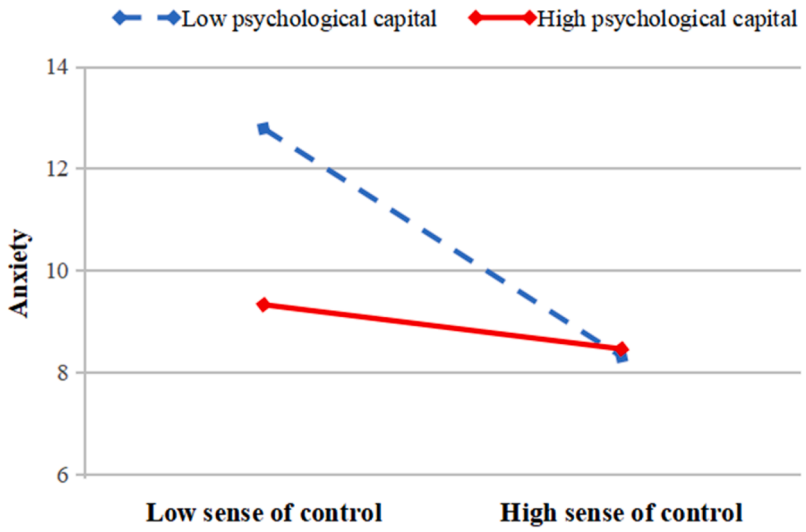

Fig. 3. The moderating role of psychological capital in the process of sense of control affecting anxiety.

environmental crisis and work stress, making individuals more likely to suffer from negative emotions such as anxiety, depression, despair (Gibbs et al., 1998). Therefore, as a bridge between working stress and anxiety, sense of control may be an important factor to improve the anxiety of medical workers under the COVID-19 epidemic situation.

The results of this study confirm that psychological capital has a moderating effect on the direct path of work stress affecting anxiety. The anxiety level of medical workers with high psychological capital level is significantly lower, and with the increase of working stress, the anxiety of medical workers with high psychological capital also increases significantly. Therefore, high psychological capital can buffer the impact of working stress on anxiety, while low psychological capital may be an important risk factor for medical workers to develop anxiety under the working stress. As a positive psychological feature, psychological capital is often positively correlated with positive emotions (Avey et al., 2008). When dealing with external pressure or risk, individuals can mobilize their own resources to deal with them (Molden et al., 2016), thus effectively reducing the risk of adverse emotions (Kwok, 2019; Schotanus-Dijkstra et al., 2017). Compared with individuals with low psychological capital, individuals with high psychological capital have lower risk of psychological exhaustion because they have more psychological resources (Xiong et al., 2020). Especially in the unsafe environment of the COVID-19 epidemic situation, high psychological capital can buffer the adverse effects of external stress and risk on individual psychology, and reduce individual anxiety experience.

In addition, the results showed that psychological capital also has a moderating effect in the process of sense of control affecting anxiety. The positive effect of sense of control was stronger in individuals with low psychological capital. With the increase of psychological capital level, the anxiety of medical workers indicated a significant downward trend. Thus, high psychological capital can reduce the high anxiety risk of medical workers under the low sense of control, that is, psychological capital can be used as an internal cause to regulate the influence of sense of control on anxiety. Individuals with high psychological capital generally have more positive psychological resources to cope with stress and risk. Rich psychological resources can enhance the sense of control and improve the ability of coping with stress and risk, so as to reduce the risk of negative emotions in the adverse environment (Demir, 2018; Molden et al., 2016). Compared with individuals with low psychological capital, individuals with high psychological capital have more flexible cognitive and behavioral patterns and high initiative in coping with external pressure (Fredrickson, 2001), which makes individuals have higher sense of control and reduce the possibility of anxiety.

However, the moderating effect of psychological capital is different between the direct and indirect paths in this model. The moderating effect of psychological capital on the direct path is greater than that on the latter half path. This may be due to the fact that psychological capital, as a positive psychological trait formed and displayed in the

process of individual growth and development, should play a more direct and natural role in responding to external stress and risks. Especially in this COVID-19 epidemic situation, although this positive role may also occur in other indirect psychological processes, which however is less than the direct process. In addition, the working stress of medical workers is higher under the COVID-19 epidemic situation than under a normal situation. Increased work requirements and higher risk of infection make medical workers more nervous (such as fear and sensitivity) than usual (Rymarowicz et al., 2020), which may weaken the moderating effect of psychological capital in the working stress affects anxiety through the sense of control.

From the perspective of individual positive psychological factors, this study explored the influence and mechanism of working stress on anxiety of medical workers in the COVID-19 epidemic situation, and analyzed the factors and internal mechanism influencing the mental health of special occupational groups in major emergencies, which has certain theoretical significance. Especially when the COVID-19 is still rampant all over the world, it is more practical value to explore the mechanism of mental health of medical workers. In addition, this study confirmed that the sense of control and psychological capital have a certain role in the process of working stress influencing anxiety, and explored its internal mechanism. In general, the results confirmed that the regulation of positive psychological characteristics on negative emotions in special situations is consistent with that in ordinary situations. However, they also show some new features. First, psychological capital only moderating the second half of the process in which the sense of control is mediated, but does not have a moderating effect on the process of working stress affecting the sense of control. Second, the results of this study confirmed that psychological capital can moderating the relationship between working stress and anxiety. Third, low sense of control and low psychological capital are the important risk factors of anxiety caused by working stress in the COVID-19 epidemic situation.

The results of this study have guiding significance for the prevention and intervention of negative emotions of medical workers. Improving the psychological capital or enhancing the sense of control may help to reduce the anxiety risk of individuals in high working stress situation. Relevant research shows that mindfulness training, psychological group assistance and other ways can improve people's psychological capital and sense of control (Zhang et al., 2019), which provides a way for us to reduce the anxiety of medical workers in the stress situation.

5. Limitations and directions for future research

This study still has some limitations. First, all the data in this study was collected through online questionnaire, the data through self-reporting, which may have a certain impact on the accuracy of the data. Second, this study used GAD-7 scale as a tool to evaluate anxiety, which is not a special anxiety of COVID-19 pandemic. Therefore, the anxiety response measured in this study cannot be specific to the viral epidemic. Third, this study uses a cross-sectional research design, so causal reasoning could not be obtained. Future research can explore the causal relationship between variables through tracking research. Finally, in a stressful situation, the anxiety of individuals with special occupations may also be affected by other factors. This study only analyzes the relationship between psychological capital, sense of control and anxiety. In the future, the researcher should further explore the relationship between other factors and anxiety, in order to understand the mechanism of anxiety, and provide a scientific basis for promoting the mental health of medical workers more comprehensively.

6. Conclusion

The main conclusions of this study are listed as follows:

(1) The working stress of medical workers under the COVID-19 epidemic situation significantly positively predicts their anxiety level.
(2) The sense of control plays a part of the mediating role in the relationship between working stress and anxiety of medical workers.
(3) Psychological capital has a moderating effect on the direct path of working stress affecting anxiety, and it also has a moderating effect in the second half of the mediating effect of the sense of control on working stress and anxiety.

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Ethical Standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

CRediT authorship contribution statement

Yongqing Hou: Conceptualization, Data curation, Investigation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. **Wanying Hou:** Conceptualization, Formal analysis, Methodology. **Yinghui Zhang:** Data curation, Investigation. **Wen Liu:** Data curation, Investigation. **Antao Chen:** Conceptualization, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

No authors of this paper have any conflicts of interest.

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Supplementary materials

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