The influence of firefighters' perceived stress on job burnout: a moderated mediation model

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Abstract

To find the repercussion of firefighters' perceived stress on job burnout and its psychological mechanism, 488 firefighters were tested with the perceived stress scale, the self-compassion scale, the simplified coping style questionnaire, and the Maslach burnout inventory general survey. The conclusions demonstrated that perceived stress was significantly pertinent to job burnout; both self-compassion and negative coping style acted as intermediaries; the intermediary role of perceived stress in job burnout via self-compassion and negative coping style was moderated by positive coping style. The main findings suggest that firefighters' perceived stress explicitly predicts job burnout and implicitly influences job burnout via self-compassion and negative coping style. Positive coping style moderated the link involving perceived stress and job burnout and the link encompassing perceived stress and negative coping style.

Keywords Firefighters · Perceived stress · Self-compassion · Coping styles · Job burnout

Introduction

Within a specific range, individuals' perception of stress serves as a defensive or protective cognitive mechanism, guarding against excessive physical and mental strain. This function proves beneficial in preserving both a person's physical and mental wellness, ultimately enabling them to engage in diverse daily activities. For professionals, perceived stress and job burnout are critical determinants of work efficiency (Li et al., 2015; Wang et al., 2014). Preceding investigations have predominantly examined perceived stress and job burnout among individuals from different occupational backgrounds, characterized by high job security and minimal life risk. Nevertheless, in high-risk occupations, job burnout entails amplified safety hazards and life risks. Available research specifically investigating

the association involving perceived stress and job burnout within high-risk occupational settings is scarce. Firefighting is extensively acknowledged as part of the most perilous occupations (Mitani et al., 2006). Firefighters are responsible for suppressing hazardous fires that jeopardize the safety of people, properties, and the natural surroundings, as well as managing incidents involving injuries or fatalities among firefighters and other victims. These astounding circumstances are unavoidable and would occasionally increase the susceptibility to job burnout (Huang et al., 2021; Smith et al., 2018), depression (Lee et al., 2019), and suicidality (Bartlett et al., 2018). The occurrence rate of job burnout was up to 57% among rescuers and firefighters (Chatzea et al., 2018). Since 2018, the Chinese firefighting system has shifted from a military management model to a professionalized structure due to the management system reform. This transformation has led to alternating professional characteristics, roles, and responsibilities. Therefore, a group of firefighters was chosen as a sample to assess the connection involving perceived stress and job burnout among high-risk occupational groups.

Perceived stress and job burnout

Job burnout is an enduring reaction to continuous affective and social stressors at work and harms physical and mental

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health (Maslach, 2003). Intense and long-term job stress has garnered considerable attention regarding the investigations on the determinants of job burnout (Guthier et al., 2020). Explorations discovered that job stress was highly associated with job burnout (Liu et al., 2021, 2022; Wu et al., 2021). High intensity of job stress is regarded as an indicator of job burnout (Fischer et al., 2020). The effects of straining incidents on people are contingent upon their perception of stress, instead of solely on the actual incidents (Song et al., 2020).

Past research consistently reveals a notable connection involving perceived stress and job burnout across various non-high-risk occupational contexts (Kumpikaitė-Valiūnienė et al., 2021; Malinauskas et al., 2010; Munnangi et al., 2018). Nevertheless, there exists a research gap that specifically targets high-risk occupational groups. In the case of firefighters, who belong to this high-risk occupational group, stress is commonplace, objective, and inevitable. However, perceived stress is a subjective experience, and both exaggerating or neglecting stress are unfavorable approaches. A scarcity of antecedent exploration has observed that firefighters' perceived stress is positively linked to job burnout in terms of exhaustion and cynicism (Lee et al., 2018). It has the potential to impact job burnout and give rise to hazards. Most studies have scrutinized the correlation between stress load and job burnout. Stress is a subjective phenomenon, and the influence of one's subjective perception of stress on job burnout surpasses that of the actual stress load. Perceived stress can serve as a more direct catalyst for job burnout, functioning as a risk factor that emerges after experiencing stress. Insufficient exploration has been performed to scrutinize whether individual inner resources can function as protective elements in mitigating the repercussions of subjective stress perception on job burnout. Further elucidation of the relationship among protective factors, perceived stress, and job burnout is needed. The proposed model is structured as follows: stress–perceived stress (risk factor) --self-compassion and coping style–job burnout.

How firefighters' perceived stress affects job burnout: the role of self-compassion and coping styles

Apart from the direct correlation involving perceived stress and job burnout, studies have indicated the presence of additional influential factors, namely self-compassion and coping styles. In a review on self-compassion, Neff (2023) provides detailed insights into the reverse link between stress and self-compassion and the tie involving self-compassion and job burnout. Furthermore, congruent with the cognitive appraisal theory of stress (Lazarus & Folkman,

1984), perceived stress prompts the adoption of coping styles, but the impact of perceived stress differs for positive and negative coping style. Increased stress tends to be tied to adopting more negative coping style (Wallace et al., 2010). Considering the disparate influence of perceived stress on these two coping styles, their nature and impact on job burnout may exhibit variation. Therefore, this investigation intends to construct a structural equation model to scrutinize the ramifications of perceived stress, self-compassion, and coping styles on job burnout.

Self-compassion is the capacity or inclination to treat oneself with gentleness, warmth, and insight during periods of loss or suffering (Neff, 2016). It promotes psychological well-being by seamlessly incorporating emotional regulation and offering efficacious tactics to defend themselves against pressure triggers (Dev et al., 2018). As a recognized strategy for relieving stress, stronger self-compassion has been tied to more effective stress reduction (Allen & Leary, 2010; Bluth et al., 2017; Bui et al., 2021; Pinto-Gouveia et al., 2014) and a reduced experience of job burnout (Abdollahi et al., 2021; Kemper et al., 2015; Raab, 2014). However, existing research has predominantly concentrated on nursing, leaving the connection involving self-compassion and job burnout in other occupational groups unclear. As Chinese firefighting and rescue personnel, the military identity focuses primarily on executing orders. The significance of self-compassion as a defensive element seems to be undervalued in Chinese firefighting, resulting in various regulatory factors in managing stress and subsequently impacting job burnout. By examining the tie-up between self-compassion and job burnout among firefighters, this study aims to diversify the sample and enhance the representativeness of research findings.

Coping style encompasses the cognitive and behavioral changes individuals exert to effectively handle stressors specific to their situations (Folkman & Lazarus, 1985). It can be categorized into two distinct types: positive coping style and negative coping style (Folkman & Lazarus, 1986). Positive coping style is characterized by higher levels of positive cognitive and behavioral adjustments when facing stressful events (Andrews et al., 1978), whereas negative coping style is connected to elevated maladaptive issues (Tao et al., 2000). Multiple explorations have discovered a positive connection involving negative coping style and job burnout in various professions (Foley & Murphy, 2015; Wallace et al., 2010). In addition, negative coping style was identified as a conspicuous mediator in the bond involving perceived stress and its negative consequences (Feng, 2016).

The conservation of resources theory proposes a conceptual framework for comprehending how personal characteristic resources influence job burnout (Sattler et al., 2014). Personal characteristic resources include self-compassion

(Lee et al., 2022; Willems et al., 2021) and coping style (Wang et al., 2011; Wood et al., 2007). Conservation of resources theory (Hobfoll, 1988) states that people proactively search and acquire defensive resources in the face of resource loss. Firefighters confront the issue of resource scarcity (Sattler et al., 2014). They are inclined to look for supplementary resources, including self-compassion and coping style (Kaurin et al., 2018; Huang et al., 2022), which could have an impact on their awareness of job burnout (Gustafsson et al., 2011; Sattler et al., 2014).

When individuals perceive stress, if they prime resource investment as soon as possible and successfully obtain beneficial resources, they can effectively offset resource loss and block the pressure process (Liao et al., 2022). The research indicated that positive coping style moderated the bond involving work stress and psychological well-being, while negative coping style had no moderating effect (Chen et al., 2010). In this study, we adopt the cognitive appraisal theory of stress and the conservation of resources theory as the conceptual frameworks. Within these frameworks, we view self-compassion and coping style as separate individual resources, and we aim to systematically examine the tie among perceived stress, individual resources, and job burnout of firefighters.

The present study

The ongoing investigation intended to inspect the impact of protective factors and risk elements on firefighters' job burnout. Specifically, the protective factors under investigation included self-compassion and coping styles, while perceived stress was the identified risk factor. A moderated mediation model was established to address the above problems. The study puts forward the following hypothesis: (1) firefighters' perceived stress positively predicts job burnout, (2) self-compassion and negative coping style serve as intermediaries in the bond involving perceived stress and job burnout among firefighters, and (3) positive coping style moderates the tie involving perceived stress and self-compassion. Positive coping style moderates the bond involving perceived stress and negative coping style. Perceived stress is a key hazard element for job burnout and has a straightforward impact. Nonetheless, protective factors can indirectly mitigate the explicit link encompassing perceived stress and job burnout.

Method

Participants

The subjects were selected from three cities in Inner Mongolia, China, namely Hohhot, Baotou, and Ordos. Cluster sampling was used in this study, and the initial sample consisted of 489 firefighters aged between 18 and 50. After removing incomplete questionnaires, the final sample size was reduced to 488 firefighters, resulting in an effective rate of over 99%. Among the participants, 2 had a junior high school education or below, 117 finished secondary education, 364 completed a college or undergraduate education, and 5 had a master's degree or higher. Regarding the job category, 416 firefighters were involved in fire commanding, 20 were engaged in political work, 10 were in logistical support roles, and 42 were responsible for fire supervision. As for work experience, there were 22 individuals with less than 1 year, 210 individuals with 2–5 years, 130 individuals with 6–9 years, and 126 individuals with more than 10 years of experience.

Measures

Perceived stress scale

The Perceived Stress Scale evaluated the firefighters' perceived stress (Cohen et al., 1983). Firefighters were invited to assess 14 items utilizing a 5-point scale. Greater scores reflected heavier perceived stress on firefighters. The Cronbach's α was 0.81 in the present investigation.

Self-compassion scale

The Self-compassion Scale measured the firefighters' self-compassion (Neff, 2003). Firefighters were instructed to rate 26 items utilizing a 5-point scale. Greater scores signified greater self-compassion. Cronbach's α was 0.86 in the ongoing exploration.

Simplified coping style questionnaire

Participants coping style was measured utilizing the Simplified Coping Style Questionnaire (Joffe & Bast, 1978), including the positive and negative coping style dimensions. The firefighters were invited to answer 20 items utilizing a 4-point scale. Greater scores indicated a stronger manifestation of corresponding coping style tendencies. In the current investigation, Cronbach's α of the positive and negative coping subscale were 0.92 and 0.80, separately.

Table 1 Means, standard deviations (SD), and correlations among all factors

	M	SD	1	2	3	4
1 Perceived Stress	2.44	0.62	-			
2 Self-compassion	3.50	0.48	-0.72**	-		
3 Negative Coping Style	1.00	0.58	0.30**	-0.28**	-	
4 Positive Coping Style	1.91	0.66	-0.49**	0.53**	0.14**	-
5 Job Burnout	2.17	0.75	0.37**	-0.36**	0.29**	-0.17**

$N = 488$. $**p < 0.01$

Table 2 The disparities in job burnout in educational background, job category, and work experience

	Job burnout M(SD)
Educational background	
Primary and lower secondary education (n=2)	2.63(1.41)
Secondary education (n=117)	2.15(0.73)
College or undergraduate education (n=364)	2.18(0.76)
Graduate education (n=5)	1.78(0.58)
F	0.78
Job category	
Fire commander (n=416)	2.13(0.75)
Political work (n=20)	2.33(0.66)
Logistic support (n=10)	2.62(0.86)
Fire supervision (n=42)	2.40(0.70)
F	3.29*
Work experience	
Less than 1 year (n=22)	2.37(1.08)
2–5 years (n=210)	2.15(0.68)
6–9 years (n=130)	2.15(0.80)
More than 10 years (n=126)	2.20(0.74)
F	0.67

$*p < 0.05$

Maslach burnout inventory general survey

Maslach Burnout Inventory General Survey measured the participants' level of job burnout (Schaufeli et al., 1996). The survey includes 16 items employing a 7-point scale. Greater scores reflected a more pronounced sense of job burnout. The Cronbach's α was 0.78 in the ongoing investigation.

Results

Preliminary analyses

In the ongoing study, Harman's single-factor test was implemented to evaluate whether there was a common method bias, and exploratory factor analysis was carried out on the total items of the research variables. The outcomes of principal component factor analysis without rotation illustrated that the eigenvalue of 11 factors surpassed 1. The explained variance by the first factor, totaling 16.27%, did not meet

the critical criterion of 40%, signifying that there was no common method bias during this investigation, and further data analysis can be adopted.

Table 1 shows the mean score, standard deviation, and correlations among perceived stress, self-compassion, positive coping style, negative coping style, and job burnout. Evident from the correlation matrix in Table 1, perceived stress demonstrated a noteworthy positive association with negative coping style and job burnout while exhibiting a notable inverse association with positive coping style and self-compassion. Additionally, self-compassion was tied to positive coping style and significantly inversely linked to negative coping style and job burnout. Moreover, the relationship involving negative and positive coping style and job burnout was positive and significant.

The outcomes of assessing disparities in job burnout among firefighters with diverse educational backgrounds, job categories, and work experience (see Table 2) suggested notable distinctions in job burnout among firefighters belonging to various job categories ($F (3, 487) = 3.29$, $p < 0.05$). The post hoc multiple comparisons manifested that firefighters in the logistic support and fire supervision job categories reported significantly elevated levels of job burnout in comparison to those in the fire commander job category ($t (1, 487) = 2.04$, $p < 0.05$; $t (1, 487) = 2.27$, $p < 0.05$).

Testing for mediation effect

According to the research hypothesis, a moderated mediation model was formulated, with perceived stress as an independent variable, self-compassion and negative coping style as mediating variables, positive coping style as a moderating factor, job burnout as the outcome factor, and job category as a controlling factor.

Firstly, to scrutinize the intermediary mechanism of self-compassion and negative coping style in the tie involving perceived stress and job burnout, the PROCESS macro designed by Hayes (2013) was employed. The outcomes noted that perceived stress was tightly linked to job burnout ($\beta = 0.18$, $t = 3.08$, $p < 0.01$) and inversely proportional to self-compassion ($\beta = -0.72$, $t = -22.83$, $p < 0.001$); self-compassion was adversely tied to job burnout ($\beta = -0.18$, $t = -3.09$,

Table 3 Bias-corrected bootstrap test of the intermediary effect

Paths	Effect Size	Bootstrapped 95% CI	
		LLCI	ULCI
Direct Effect	0.18	0.067	0.301
Mediating Effect	0.18	0.072	0.264
Perceived Stress-Self-compassion-Job Burnout	0.13	0.035	0.212
Perceived Stress-Negative Coping Style-Job Burnout	0.05	0.021	0.081
Total Effect	0.36	0.280	0.445

$p < 0.01$); perceived stress was pertinent to negative coping style ($\beta=0.29$, $t=6.77$, $p<0.001$); negative coping style was closely tied to job burnout ($\beta=0.16, t=3.69, p<0.001$). The bootstrap 95% confidence interval for the explicit impact of perceived stress on job burnout, with self-compassion and negative coping style serving as mediating factors, is displayed in Table 3. Self-compassion and negative coping style partially mediate the bond between perceived stress and job burnout, and their mediating effects account for 36.36% and 12.95% of the overall effect, individually. The direct and mediating effects account for 50.69% and 49.31% of the overall effect.

Testing for moderated mediation

Then, the PROCESS macro created by Hayes (2013) was utilized to explore a moderated mediation model, and the outcomes are displayed in Table 4, and the model is depicted in Fig. 1. After putting positive coping style into the model, perceived stress was inversely proportional to self-compassion ($\beta=-0.59$, $t=-16.73$, $p<0.001$); the synergistic effect of perceived stress and positive coping style significantly predicted self-compassion ($\beta=-0.07$, $t=-2.05$, $p<0.05$). Meanwhile, the predictive role of self-compassion in job burnout was also remarkable ($\beta=-0.18$, $t=-3.09$, $p<0.01$). Additionally, perceived stress was relevant to negative coping style ($\beta=0.45$ $t=9.57$, $p<0.001$); the joint effect of perceived stress and positive coping style yielded a prominent prediction of negative coping style ($\beta=0.11$, $t=2.56$, $p<0.05$). Meanwhile, the predictive role of negative coping style in job burnout was also notable ($\beta=0.16$, $t=3.69$, $p<0.001$). When the score of positive coping style is one SD below the mean, and one SD above the mean, the intermediary effect of self-compassion and negative coping style between perceived stress and job burnout and the bootstrap 95% confidence interval is depicted in Tables 5 and 6.

As is shown in Fig. 2, simple slope tests confirmed that for firefighters with a low level of positive coping style (one

Table 4 Investigating the moderated intermediary role of perceived stress on job burnout

| Regression Equation		Fitting Index		Significance		
Outcome Variables	Predictive Variables	R^2	F	β	95%CI	t
Self-compassion	Perceived Stress	0.57	157.27***	-0.59***	[-0.658, -0.519]	-16.73
	Positive Coping Style			0.25***	[0.184, 0.323]	7.17
	Perceived Stress×Positive Coping Style			-0.07*	[-0.129, -0.003]	-2.05
Negative Coping Style	Perceived Stress	0.23	35.54**	0.4491***	[0.357, 0.541]	9.57
	Positive Coping Style			0.3376***	[0.245, 0.430]	7.16
	Perceived Stress×Positive Coping Style			0.1103*	[0.026, 0.195]	2.57
Job Burnout	Perceived Stress	0.19	28.43***	0.18**	[0.067, 0.301]	3.08
	Self-compassion			-0.18**	[-0.300, -0.067]	-3.09
	Negative Coping Style			0.16***	[0.076, 0.249]	3.69
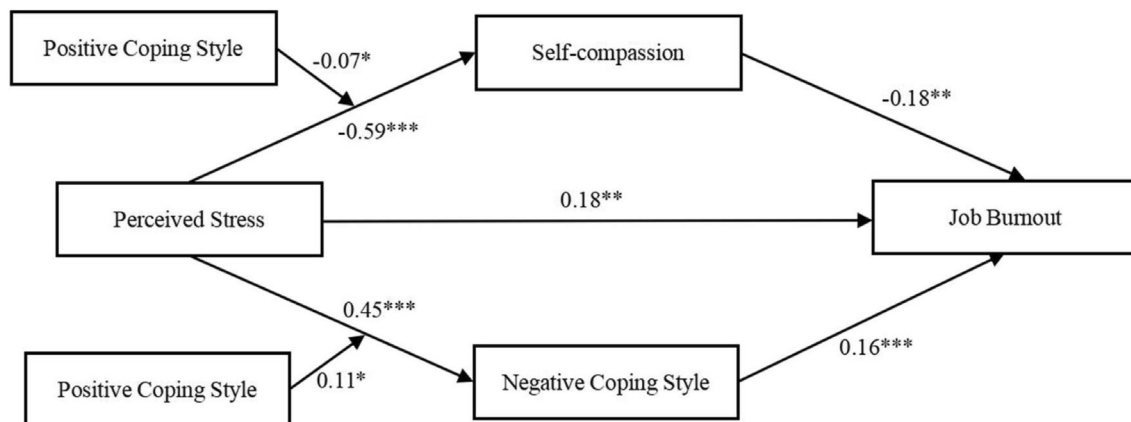
Fig. 1 The moderated mediation effect model

Table 5 The intermediary role of self-compassion when a positive coping style takes various values

Positive Coping Style	β	SE	LLCI	ULCI
M-SD	0.10	0.04	0.028	0.172
M	0.11	0.04	0.030	0.178
M+SD	0.12	0.04	0.033	0.200

Table 6 The intermediary role of negative coping style when a positive coping style takes various values

Positive Coping Style	β	SE	LLCI	ULCI
M-SD	0.06	0.02	0.023	0.103
M	0.07	0.02	0.032	0.117
M+SD	0.09	0.03	0.042	0.144
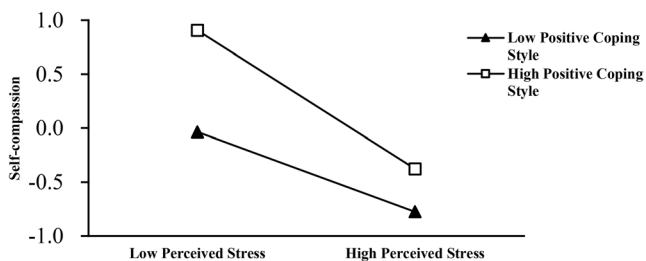
Fig. 2 Positive coping style moderated the connection involving perceived stress and self-compassion
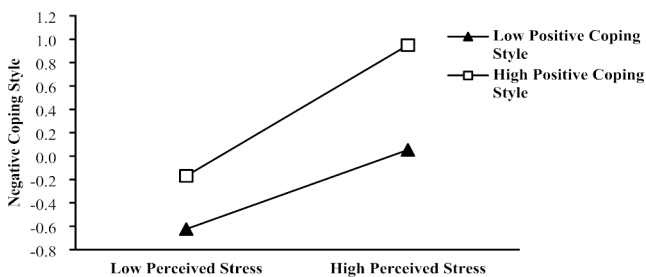
Fig. 3 Positive coping style moderated the connection involving perceived stress and negative coping style

SD below the mean), perceived stress negatively predicted self-compassion, simple slope=-0.52, t=-10.23, $p < 0.001$. For firefighters with a high positive coping style (one SD above the mean), perceived stress was still a significantly adverse predictor for self-compassion, simple slope=-0.65, t=-14.84, $p < 0.001$.

As illustrated in Fig. 3, simple slope tests proved that for firefighters with low positive coping style (one SD below the mean), perceived stress was pertinent to negative coping style, simple slope=0.34, t=4.97, $p < 0.001$. For firefighters exhibiting an elevated positive coping style (one SD above the mean), perceived stress was still a significant predictor for negative coping style, the simple slope=0.56, t=9.50, $p < 0.001$.

Discussion

The current investigation unveiled that self-compassion and negative coping style partially explained the tie involving perceived stress and job burnout. Furthermore, positive coping style moderated the relation involving perceived stress and self-compassion and the relation encompassing perceived stress and negative coping style. In the following section, we reexamine these discoveries in the context of existing literature, present some initial explanations, and suggest future research directions.

The influence of firefighters' perceived stress on job burnout

Regarding the main findings, heightened stress levels were indicative of elevated job burnout in the group of firefighters. Previous research has consistently demonstrated that perceived stress remarkably predicts elevated job burnout (Ankit et al., 2021). The subjective perception of a stressful situation outweighs objective stressful events and can influence one's response to stressors (Abdollahi et al., 2014). With the advancement of firefighting reform, China's emergency rescue force has developed in the direction of professionalism, integration, and centralization (Sun et al., 2022). However, there are still countless obstacles that require resolutions. The National Fire Department of China recorded 1.956 million emergency calls in 2021, continuing the trend of alarm calls exceeding one million for the ninth consecutive year. This put an immense burden on China's firefighting system.

Additionally, China is recognized as one of the nations facing some of the most severe disasters worldwide, and the frequency of these disasters has seen a substantial rise in recent years compared to two decades ago (Huang et al., 2021). However, the number of firefighters is far below the average of developed and some developing countries. This causes a heavier workload for firefighters in China. Above all, firefighters' economic and social treatment is inconsistent with occupational characteristics, and the gap is large compared to foreign firefighters' treatment. This has also been connected to elevated job burnout among Chinese firefighters. As previously mentioned, Chinese firefighters have been burdened with overwhelming workloads and rigorous demands, aggravated by inadequate staffing. This elevates the probability of firefighters' evaluating their situations as stressful, potentially leading to an escalation in job burnout.

The mediating role of self-compassion and negative coping style

Furthermore, the study unveiled that self-compassion and negative coping style partially mediate in the bond involving perceived stress and job burnout. From one perspective, the discoveries align with previous research, suggesting that firefighters who perceive greater stress levels are less prone to employing self-compassion as an effective emotional coping mechanism (Jin, 2016). They are inclined to experience job burnout because of the lower level of self-compassion, which also agrees with the preceding investigation (Dev et al., 2018; Duarte et al., 2016). The theory suggests that people will employ various coping tactics depending on the evaluation of whether their resources can effectively address stressful events (Lazarus & Folkman, 1987). From another perspective, as evidenced by earlier research (Sun et al., 2018; Ma et al., 2022), firefighters exhibiting elevated levels of perceived stress are inclined to select negative coping style, which subsequently heightens the risk of triggering job burnout. As previously stated, negative appraisals triggered by occupational characteristics may prompt individuals to employ negative coping style with greater frequency (Guo et al., 2015; Sirois et al., 2015). In contrast, negative coping style does not contribute to altering the demanding work conditions. Returning to the workplace could make them more irritable, heightening job burnout. To put it succinctly, self-compassion and negative coping style mediate the connection encompassing perceived stress and job burnout. The investigation results validated the cognitive reappraisal theory of stress.

The moderating role of positive coping style

The ongoing study enriches the existing literature by scrutinizing positive coping style as a moderator in the connection involving perceived stress and self-compassion and the link involving perceived stress and negative coping style. Less congruent with earlier studies highlighting the effectiveness of positive coping style as an alleviator of detrimental consequences (Li et al., 2016) was the discovery that while positive coping style moderated the connection involving perceived stress and self-compassion, as well as the link involving perceived stress and negative coping style among the firefighters, it did so in a counterintuitive way. Instead of attenuating the connection involving perceived stress and self-compassion and the connection involving perceived stress and negative coping style, this connection was more pronounced among firefighters. In delving into this discovery, it is crucial to contemplate both (a) why moderation was manifested in firefighters but not observed across various communities and (b) why positive coping style bolstered the link instead of diminishing it.

Given the scarce knowledge of positive coping style in firefighters, it is conceivable that this finding portrays the peculiarities of the firefighters' profession. Positive coping style theoretically pertains to adopting a straightforward and logical method of addressing an issue. Conversely, negative coping style encompasses evasion, retreat, and disavowal (Roohafza et al., 2014). Firefighters in high-pressure, high-workload, high-intensity risk environments do not have sufficient psychological resources. Positive coping (such as actively seeking problem-solving) will consume many emotional and cognitive resources, leading to a complete lack of psychological resources and increased psychological stress, further exacerbating job burnout.

Additionally, it is noteworthy that earlier investigations have generally demonstrated that positive coping style mitigates the negative impact of adverse aspects in psychological functioning on mental wellbeing (Cheng et al., 2013; Zhang et al., 2022). As mentioned, however, other investigations have discovered diverse moderation patterns. For instance, in a particular study, positive coping style moderated the bond involving migrant children's perceived discrimination and depression such that the correlation became more prominent with increasing levels of positive coping style (Fan & Chen, 2012). In line with this study, higher positive coping style was intertwined with a more conspicuous bond encompassing perceived stress and self-compassion and the tie involving perceived stress and negative coping style. Grounded in the conservation of resources theory and limited resource theory (Hobfoll, 1988; Muraven et al., 1998), the resources are limited, and when some behaviors and mental activities that deplete cognitive resources have been done before, there is no resource to cope with the subsequent tasks (Baumeister et al., 1998). Positive coping style like problem-solving, asking for assistance, and rationalization depletes cognitive resources (He et al., 2022), so the higher arousal of positive coping style, the more resources are depleted, and the fewer resources are available for the personal characteristic resources of self-compassion, which leads to job burnout. Regarding the moderating role of positive coping style in the connection encompassing perceived stress and negative coping style, the conservation of resources theory proposes that resources can be replaced with one another to accomplish the same motivation and goals (Huang & Zhang, 2013). Reducing the cognitive conflict caused by inconsistent coping style and saving more cognitive resources, positive coping style will be easier to transform into negative one, such as self-blame, fantasy, and avoidance for firefighters. Facing stress with a consistent coping style is cognitively more economical and makes space for more cognitive resources. Perhaps this

transformation of coping style is a unique phenomenon for individuals in particular occupations.

Our results also unveiled a positive link between positive and negative coping styles. This discovery is sensible and consistent with Dou and his colleagues' opinion (2022) and Zimmer-Gembeck's perspective (2011), which pointed out that, among firefighters, there is a surge in negative coping style, such as evasion, retreat, and disavowal (Roohafza et al., 2014) and other useful coping strategies, such as constructive regulation of emotion. From the standpoint of Zimmer-Gembeck and Skinner (2011), positive and negative coping styles are not the opposite. Both styles include contextual and process-driven attributes, which can alter as time passes and contexts vary (Schoenmakers et al., 2015). This may also explain the contradictory findings that coping styles play mediating and moderating roles. The mediating and moderating effects of the same variable are not mutually exclusive (Ma, 2012). Using coping style is a complex process; it may be affected by the individual's personality and stress intensities (Jia & Lin, 2013).

Drawing upon the cognitive appraisal theory of stress, the primary objective of participants adopting specific coping styles is to alleviate stress (Lazarus & Folkman, 1984). Consequently, participants do not necessarily need to differentiate between various coping styles consciously. Additionally, in conformity with the conservation of resources theory (Sattler et al., 2014), individuals who experience resource loss endeavor to find alternative resources. The severity of the resource loss determines the need for alternative resources. Participants characterized by lower levels of positive coping style may have reduced demand for alternative resources compared to those characterized by increased levels of positive coping style.

Consequently, the utilization of self-compassion may also be less frequent. As a result, their sensitivity to changes in perceived stress is lower compared to participants with high positive coping style. Furthermore, since there exists a positive link involving positive and negative coping style, participants may employ positive and negative coping style interchangeably to mitigate stress. Consequently, individuals with substantial positive coping style may also exhibit substantial negative one. Specifically, as perceived stress increases, participants with high positive coping style tend to rely more on negative coping style as supposed to those characterized by low positive coping style.

Limitations and future directions

The discoveries of our study largely corroborated the postulations. However, this study has a limitation. As the results are solely derived from cross-sectional data, no determinations can be made concerning the causality of the relationships between factors. Prospective research could employ longitudinal studies to analyze the tie encompassing perceived stress and job burnout. Additionally, it is indispensable to determine whether the bidirectional path of positive coping style is exclusive to the transitional period of firefighters or a pervasive occurrence within the firefighting profession. The distinct roles of positive coping style warrant further exploration in subsequent studies.

Implications

On the one hand, it is practical to enhance the implementation of positive emotion regulation tactics like self-compassion. On the other hand, coping styles are not primary for stressful work; reducing stress frequency and personal perceptions are crucial. In documenting these findings, the study may raise awareness in firefighting professions regarding how stress exhibits itself in their occupational practice and how positive coping style may (and may not) promote more efficient stress handling. Chinese firefighters face inherent work pressure that cannot be reduced directly. However, by leveraging inner resources, including self-compassion and coping style, it is possible to decrease job burnout and enhance work efficiency. Furthermore, in high-risk occupational groups, there is a greater propensity for shifting from positive to negative coping style. This research significantly contributes to the advancement of the cognitive appraisal theory of stress, in conjunction with the conservation of resources theory.

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