



HAL
open science

The Moderating Role of Emotional Intelligence on the Relationship Between Conflict Management Styles and Burnout among Firefighters

Estelle Michinov

► **To cite this version:**

Estelle Michinov. The Moderating Role of Emotional Intelligence on the Relationship Between Conflict Management Styles and Burnout among Firefighters. *Safety and Health at Work*, 2022, 10.1016/j.shaw.2022.07.001 . hal-03757243

HAL Id: hal-03757243

<https://hal.science/hal-03757243v1>

Submitted on 22 Aug 2022

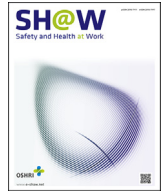
HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Contents lists available at ScienceDirect

Safety and Health at Work

journal homepage: www.e-shaw.net

Original article

The Moderating Role of Emotional Intelligence on the Relationship Between Conflict Management Styles and Burnout among Firefighters

Estelle Michinov*

Laboratory of Psychology: Cognition, Behavior and Communication (LP3C, UR 1285), Department of Psychology, Univ Rennes, Rennes, France

ARTICLE INFO

Article history:

Received 15 February 2022

Received in revised form

5 July 2022

Accepted 5 July 2022

Available online xxx

Keywords:

Burnout

Conflict management style

Emotional intelligence

Firefighters

Occupational stress

ABSTRACT

Background: While the organizational factors that account for firefighters' burnout have been extensively explored, the individual factors related to how they regulate interpersonal conflicts and emotions remain to be investigated. Previous research has demonstrated the association between emotional intelligence and conflict management styles and burnout, but no study has looked at the interrelationships among these factors in high-risk sectors. The present exploratory study aimed to fill this research gap by investigating the relationships between conflict management style, emotional intelligence and burnout in a sample of firefighters.

Methods: A cross-sectional study was conducted with 240 French firefighters. Measures comprised validated scales of conflict management styles, emotional intelligence and burnout.

Results: Results showed that the integrating conflict style reduced burnout. They also revealed the effects of emotion regulation on burnout, whereby the awareness and management of one's own emotions reduced burnout. Moreover, awareness of one's own emotions moderated the relationship between integrating conflict resolution style and burnout, whereby the effect of integrating style on reduced burnout was higher when awareness of one's own emotions was high.

Conclusion: These results reveal that strategies used by firefighters to regulate their emotions in order to meet the emotional demands specific to their job are important for reducing the emotional exhaustion component of burnout. Training programs for conflict and emotion management are needed to preserve the mental health of firefighters and ensure the safety of interventions.

© 2022 Occupational Safety and Health Research Institute, Published by Elsevier Korea LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Firefighters work in high-risk emergency situations involving considerable physical, mental and emotional demands [1]. They must cope with many occupational stressors such as physical strain, irregular work hours, time pressure, shift work, work-family conflict, and insults on the public highway [2–4]. They are exposed to emotional demands in terms of regulation and suppression of emotions [5]. Studies on firefighters' mental health have reported that they may suffer from burnout, depression, and suicidal ideas [1–3,5,6]. There has been growing academic interest in firefighters' occupational stress and burnout [2,4,7–13]. Burnout is broadly defined in terms of three components: emotional exhaustion, cynicism and reduced personal accomplishment [14,15]. Research conducted in high-risk contexts has found that burnout leads to physical fatigue, job dissatisfaction, intention to quit the job, and

critical incidents. In extreme cases, burnout may lead to depression and suicidality [11].

According to job stress models [16–18], burnout may occur when there is an imbalance between the job demands and the resources available in work situations. According to the job demand - resource (JD-R) model [16,19], risk factors are categorized as job demands, and protective factors as job resources. For firefighters, these resources have been studied in relation to work organization and social support [2], safety climate and safety-specific transformational type of leadership [20], and to personal factors such as personality traits or individual differences used to mitigate problems caused by high job demands [16,21,22]. Studies show that the personal resources that buffer burnout include individual factors or personality characteristics such as self-efficacy, hardiness, resilience, hope or optimism, and emotional intelligence [11,22–26]. While there has been extensive investigation of the contextual and

Estelle Michinov: <https://orcid.org/0000-0001-5872-2450>

* Université Rennes 2, Département de psychologie, Place du Recteur Henri le Moal, F-35043 Rennes Cedex, France.

E-mail address: estelle.michinov@univ-rennes2.fr (E. Michinov).2093-7911/\$ – see front matter © 2022 Occupational Safety and Health Research Institute, Published by Elsevier Korea LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).<https://doi.org/10.1016/j.shaw.2022.07.001>Please cite this article as: Michinov E, The Moderating Role of Emotional Intelligence on the Relationship Between Conflict Management Styles and Burnout among Firefighters, Safety and Health at Work, <https://doi.org/10.1016/j.shaw.2022.07.001>

organizational factors that account for firefighters' burnout [2,4,7–13], research into the personal resources related to how they cope with psychosocial stressors is needed. Indeed, firefighters have to cope with specific operational stressors including management issues, conflict with management, team conflict, and insults on the public highway [27]. The profession of firefighters in some countries is changing, and involves not just managing fires or accidents, but also responding to medical and social emergencies [12]. How to handle conflicts with supervisors, co-workers, patients or families can be a major factor in managing occupational stress among firefighters [4,12]. They are also exposed to various types of emotion when they intervene with patients and families or during emergency calls. These specific operational stressors can be emotionally demanding for firefighters who need to be able to regulate or suppress their emotions [28]. Emotion regulation consists of active attempts to manage emotional states, stress and a range of affective responses [29]. Individuals can adopt different emotion regulation strategies depending on contextual, organizational or personal factors [30]. Thus, the present exploratory study examined the personal resources related to conflict management styles and emotional intelligence that could improve emotion regulation and reduce burnout among French firefighters.

1.1. Conflict management styles and work stress

Concerning the effects of different conflict management styles (CMS) on work stress, a number of studies have shown that an appropriate CMS can increase the benefits of constructive conflict and develop harmonious and cooperative work [31]. Rahim identified five styles of CMS [32]. The integrating style involves high levels of concern for both self and others; individuals who use this style manage conflicts in a cooperative manner and seek a solution collaboratively with the other parties. The obliging style involves high other-party concern and low self-concern [a degree of self-sacrifice]. The dominating style consists of satisfying one's own needs to the detriment of others. In the avoiding style, individuals do not attempt to satisfy the needs or concerns of any of the parties [avoidance of all disputes]. Lastly, the compromising style involves both parties giving up something to reach a mutually acceptable decision. Some studies in hospital contexts have demonstrated that the way nurses manage conflict with doctors may have an impact on work stress [33,34]. For example, Johansen and Cadmus [33] found that emergency nurses who avoided conflict with doctors experienced higher levels of work stress, but they did not observe any relationship between other conflict resolution styles and job stress. Tabak and Orit [34] found that the integrating and dominating styles are associated with low occupational stress levels, whereas the obliging and avoidance styles are linked to higher stress. In fact, studies in the literature show that the relationship between CMS and work stress is complex and depends on the type of conflict (e.g., task or relationship conflict), on the status of the other party (e.g., supervisor, colleague, client or patient), and on organizational factors or individual characteristics [35]. Further studies are thus needed to better understand factors that could influence the effects of CMS on work stress.

1.2. Emotional intelligence, conflict management style and work stress

When conflict occurs, it will have an impact on the emotional state of the individuals involved, with either a positive or negative affect [36]. Emotions play an important role in conflictual situations, with implications for employees, including frustration, anger, stress, or depression [37]. The ability to resolve or manage conflicts is a significant facet of emotional intelligence (EI). Salovey and

Mayer [38] first introduced the concept of EI and conceptualized it in four dimensions: (1) appraisal of emotion in oneself, (2) appraisal and recognition of emotion in others, (3) regulation of emotion in oneself, and (4) use of emotion to facilitate performance [39]. Appraisal of emotion in oneself involves the ability to accurately perceive and monitor one's own deep emotions and to express them naturally. Appraisal of others' emotions is the ability to accurately perceive and understand the internal and external emotions of others. Goleman [40] conceptualized EI based on four categories (i.e., self-awareness, self-management, social awareness, and relationship management), postulating that individuals with higher EI can select effective conflict resolution strategies to manage stressful conditions.

Concerning the relationships between EI and CMS, high EI has been shown to be associated with use of the integrating, compromising and obliging styles, while low EI is associated with use of the dominating and avoiding styles [41–45]. According to Jordan and Troth [46], "people with the ability to deal with one's own emotions may be more inclined to listen to alternative viewpoints and seek superior solutions without feeling threatened by the possibility of being wrong. This requires emotional self-control" (p. 211). Given that EI provides a wide range of abilities to regulate emotions and accurately process emotional information, emotionally intelligent workers may choose the most appropriate strategies to cope with frustration and respond efficiently to emotional demands [47]. Emotionally intelligent workers avoid dysfunctional emotions and use them adaptively to reduce feelings of frustration which otherwise produce burnout [48]. The relationships between EI and stress, or EI and burnout are also well established [49–53]. Several studies have shown that higher EI scores are associated with less burnout and higher job satisfaction in nursing and medical staff [50,54–56], in staff working in services for people with intellectual disabilities [57], and among service employees [26]. The interrelationships between EI, CMS and organizational or individual outcomes are complex, showing the mediating effect of CMS or the moderating effect of EI. Some studies have shown that EI is significantly associated with CMS, with the integrating style mediating the relationship between EI and performance [58], while others have demonstrated that EI has a significant moderating effect on CMS [59–61].

1.3. Objective and hypotheses

Previous research has demonstrated the association between EI and CMS and burnout, but to the best of our knowledge, no study has looked at the interrelationships among these factors in high-risk sectors. The present exploratory study aimed to fill this research gap by investigating the relationships between CMS, EI and burnout in a sample of firefighters. Using a correlational design, it addressed the following research questions: (1) What role does conflict management style play in reducing the level of burnout of firefighters? (2) Does a high level of emotional intelligence help reduce the level of burnout of firefighters? (3) What are the respective effects of conflict resolution style and emotional intelligence on reducing firefighter burnout?

2. Materials and methods

2.1. Participants and procedure

Participants were 240 French firefighters (195 men and 36 women). Their mean age was 38 years ($SD = 10.7$), and their average organizational tenure was 15 years ($SD = 9.99$). Firefighters received an e-mail sent by their line manager inviting them to complete an online survey. All the participants provided their

informed consent. Access to the responses of the questionnaires was restricted to the research institute and confidentiality was guaranteed. Ethical approval was granted by the Ethics Committee of the University of Rennes 2. The survey was administered between January and February 2020.

2.2. Measures

The questionnaires were administered in French, and covered 3 main constructs: emotional exhaustion, conflict management styles, and emotional intelligence. The scales were largely validated and already available in French, except for the one concerning conflict management styles, which was translated into French using the translation/back-translation procedure recommended by Brislin [62]. Socio-demographic questions included gender, age and job tenure.

2.2.1. Burnout

Burnout was measured by the level of emotional exhaustion expressed by firefighters. Emotional exhaustion refers to a psychological state of physical and emotional depletion caused by work [15] and is a key dimension of occupational burnout. In the present study, emotional exhaustion was measured with the 9-item Maslach Burnout Inventory-Human Services Survey [15]. One item is: "I feel emotionally drained by my work". The participants answered on a 6-point scale ranging from 0 (*never*) to 5 (*every day*). To verify the factorial structure of this measure, a Confirmatory Factor Analysis was performed. The results indicate overall satisfactory fit indices for a one-factor structure ($\chi^2(27) = 106, p < .0001$, CFI = 0.91, AIC = 5315, RMSEA = 0.11, SRMR = 0.06). The internal consistency is satisfactory, $\alpha = 0.87$.

2.2.2. Conflict management styles (CMS)

The Rahim Organizational Conflict Inventory-II [32] was used to assess CMS. This scale is widely used, and comprises 15 items that differentiate five styles of conflict resolution in organizations along two dimensions: *concern for self* (high or low) and *concern for others* (high or low). The five styles are the following: *integrating* (collaborating: high concern for self and others), *obliging* (accommodating: low concern for self and high concern for others), *compromising* (intermediate in both concern for self and others), *dominating* (competing: high concern for self and low concern for others), and *avoiding* (low concern for self and others). Participants are asked to indicate how they handle disagreements with their colleagues. Items include: "I collaborate with my colleagues to come up with decisions acceptable to us" (Integrating), "I try to find a middle course to resolve an impasse" (Compromising), "I usually allow concessions to my colleagues" (Obliging), "I use my authority to make a decision in my favor" (Dominating), "I try to stay away from disagreements with my colleagues" (Avoiding). Each item is evaluated on a 5-point Likert scale ranging from 1 (*rarely*) to 5 (*always*). A higher value represents greater use of a conflict style. CFA reveals that a five-factor model has an acceptable fit with the data ($\chi^2(340) = 820, p < .0001$, CFI = 0.77, AIC = 16570, RMSEA = 0.07, SRMR = 0.08). The internal consistency of each dimension was good: $\alpha = 0.80$ for integrating style, $\alpha = 0.68$ for compromising style, $\alpha = 0.76$ for obliging style, $\alpha = 0.76$ for dominating style, and $\alpha = 0.76$ for avoiding style.

2.2.3. Emotional intelligence (EI)

We used the French version of the Work Group Emotional Intelligence Profile - short version (WEIP-S) [63,64]. This scale has 16 items divided into four dimensions, each comprising 4 items: (1) awareness of own emotions, i.e., the ability to discuss and disclose one's emotions; (2) management of own emotions, i.e., the ability

to control one's emotional responses; (3) awareness of others' emotions, i.e., the ability to recognize others' feelings, to read faces and body language; and (4) management of others' emotions, i.e., the ability to positively influence others' emotional states. Each item is rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), scores for each dimension ranging from 4 to 28. A CFA confirmed the four-factor structure of the scale ($\chi^2(98) = 175, p < .0001$, CFI = 0.96, AIC = 11119, RMSEA = 0.06, SRMR = 0.05). The Cronbach's alphas were good: $\alpha = 0.91$ for awareness of own emotions, $\alpha = 0.70$ for management of own emotions, $\alpha = 0.84$ for awareness of others' emotions, $\alpha = 0.87$ for management of others' emotions.

2.3. Data analysis

First, to check a potential problem of common method variance, we performed some of the statistical remedies suggested by Podsakoff et al. [65]. We used Harman's single-factor test [66]. We loaded all items of all measures used in the study into an exploratory factor analysis (EFA) and examined the solution. The results revealed six distinct factors accounting for 42.7% of the total variance. The first unrotated factor captured only 16.5% of the variance. These results confirm that no single factor emerged and the first factor did not capture most of the variance (i.e., did not exceed 50-60% of the explained variance) [66].

Secondly, relationships between the studied variables were analyzed by correlational analyses. The correlations are clearly below the critical threshold of 0.70 [67]. Therefore, we avoided the problem of multicollinearity. Multiple regression analyses were also conducted to examine the effects of control variables associated with age, gender and job tenure on CMS, EI and burnout.

Finally, to test the relationships between the variables (i.e., conflict management style, emotional intelligence and burnout), we used the PROCESS macro for moderation and mediation models following the guidelines of Hayes [68]. Hayes [68] demonstrated that results obtained with PROCESS are similar to the data obtained from structural equation modelling. The PROCESS macro makes it possible to estimate a moderation or mediation effect using a bootstrapping technique. This method has advantages over more traditional moderation analyses in that it is non-parametric and uses bootstrapping to calculate confidence intervals. When interpreting the results, if the confidence interval does not include zero, this indicates a statistically significant effect. The hypotheses concerning direct relationships were also verified based on the PROCESS macro results. All statistical analyses were performed using Jamovi [69] from the dataset available on OSF at <https://osf.io/mxhfw/>.

3. Results

3.1. Descriptive statistics and correlations among variables

Descriptive statistics and Pearson's correlations are presented in Table 1. The highest mean value was for the integrating conflict resolution style, indicating that this is the style most frequently used by firefighters. The lowest mean score was for dominating style, indicating that this is the least frequently used. For emotional intelligence, the highest mean scores were for management of emotions (one's own and others'), and the lowest scores for awareness of emotions (one's own and others'). Regarding the relationships between CMS and EI, the results show that the integrating conflict resolution style correlated positively with the different facets of EI. The compromising conflict resolution style correlated positively with management of one's own and others' emotions. The obliging and dominating styles correlated positively

Table 1
Descriptive statistics and correlations among variables

	1	2	3	4	5	6	7	8	9	10
1. Integrating	—									
2. Obligating	.284*	—								
3. Dominating	.046	.187**	—							
4. Avoiding	-.029	.332***	.138*	—						
5. Compromising	.588***	.391***	.068	.108	—					
6. Awareness of own emotions	.267***	.049	.101	-.086	.091	—				
7. Management of own emotions	.395***	.116	-.102	.115	.272***	.301***	—			
8. Awareness of others' emotions	.482***	.262***	.141*	.016	.462***	.273***	.307***	—		
9. Management of others' emotions	.525***	.189**	.199**	-.112	.371***	.410***	.212***	.538***	—	
10. Burnout	-.164*	.039	.011	.065	-.115	-.216***	-.233***	-.018	-.074	—
M	4.04	3.32	2.52	3.35	3.85	4.76	5.56	4.31	5.36	0.97
SD	0.53	0.62	0.78	0.77	0.59	1.40	0.86	1.13	0.95	0.75

with awareness and management of others' emotions. Only the integrating conflict resolution style and regulation of one's own emotions were negatively related to the emotional exhaustion component of burnout.

3.2. Control variables

A multiple regression analysis was conducted to examine the relative contributions of age, gender and job tenure on CMS, EI and burnout. The results show that gender, age and job tenure were not significant predictors. Thus, we did not control for these variables in further analyses. The detailed analyses and results are available from the dataset on our OSF project (<https://osf.io/mxhfw/>).

3.3. Hypothesis testing

Because correlational analyses showed that only integrating conflict resolution style and awareness and management of one's own emotions were related to burnout, we tested the relationships between these variables following the guidelines of Hayes [68].

First, the results showed a marginal direct effect of integrating conflict resolution style ($t = -1.76$, $SE = 0.09$, $BCa\ CI (-0.33, 0.02)$, $p < .08$) and a significant direct effect of awareness of one's own emotions on burnout ($t = -3.09$, $SE = 0.03$, $BCa\ CI (-0.17, -0.04)$, $p = .002$). Moreover, the moderation effect was significant ($t = -2.33$, $SE = 0.06$, $BCa\ CI (-0.24, -0.02)$, $p = .02$). Simple slope analyses are presented at the bottom of Table 2 and graphically represented

in Fig. 1. The results show that the effect of integrating style on reduced burnout is higher for individuals with higher awareness of their own emotions.

Second, the results show a significant direct effect of management of one's own emotions on burnout ($t = -3.11$, $SE = 0.05$, $BCa\ CI (-0.26, -0.06)$, $p = .002$). The moderation effect was marginally significant ($t = 1.92$, $SE = 0.09$, $BCa\ CI (-0.004, 0.36)$, $p = .055$). Simple slope analyses are presented at the bottom of Table 3 and graphically represented in Fig. 2. The results show that the effect of integrating conflict resolution style on reduced burnout is higher for individuals with lower scores for management of their own emotions.

These results show that the effects of CMS, specifically the integrating style, on the level of emotional exhaustion depend on the level of EI (i.e., awareness and management of one's own emotions). Alternative models of mediation or moderation effects were tested, but the results were not significant. The alternative models tested are available from the dataset on our OSF project (<https://osf.io/mxhfw/>).

4. Discussion

Based on the job demand-resource model [16,19], the aim of this study was to examine the personal resources related to CMS and EI likely to decrease the level of burnout among firefighters.

First, our results reveal that the integrating conflict resolution style is the one most frequently used by firefighters, and that the

Table 2
Results of the moderation effect of awareness of one's own emotions and simple slopes analyses

	Moderation estimates					
	Estimate	SE	95% confidence interval		Z	P
			Lower	Upper		
Integrating style	-0.157	0.0891	-0.331	0.0177	-1.76	0.078
Awareness of own emotions	-0.105	0.0342	-0.172	0.0385	-3.09	0.002
Integrating style * Awareness of own emotions	0.131	0.0561	0.241	-0.0206	-2.33	0.020
	Simple slope estimates					
	Estimate	SE	95% confidence interval		Z	P
			Lower	Upper		
Average	-0.1583	0.0898	-0.334	0.0177	-1.763	0.078
Low (-1SD)	0.0206	0.1183	0.211	0.2525	0.174	0.862
High (+1SD)	-0.3372	0.1187	-0.570	-0.1045	-2.840	0.005

Note. Shows the effect of the predictor (Integrating style) on the dependent variable (Burnout) at different levels of the moderator (Awareness of one's own emotions).

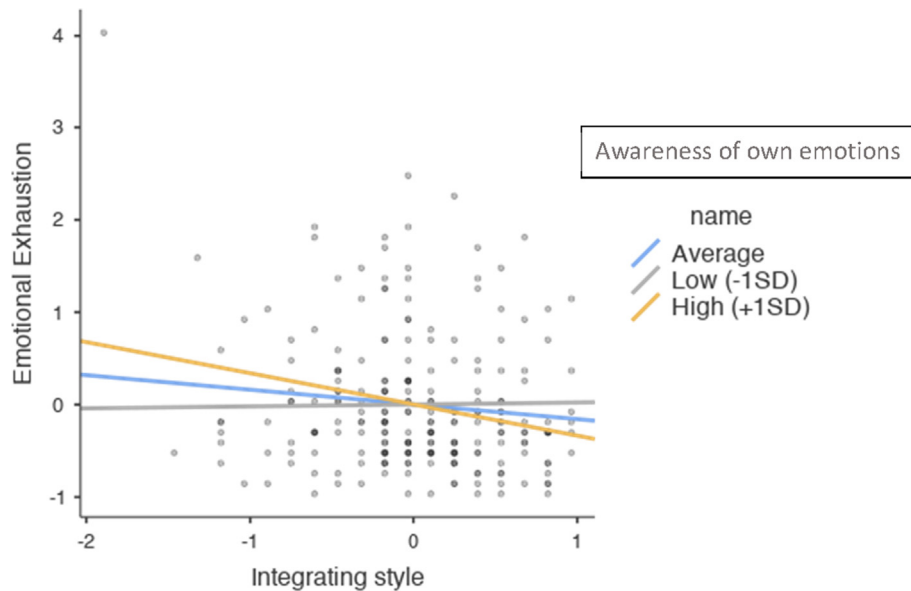


Fig. 1. Simple slope analysis of integrating style predicting emotional exhaustion for 1 SD below the mean of awareness of one's own emotions, and 1 SD above the mean of awareness of one's own emotions.

dominating style is the least used. This finding is consistent with previous research conducted with employees in other sectors who also preferentially use the integrating or compromising resolution styles [33,34,41,43]. The preferential choice of cooperative modes of conflict resolution can be explained by the fact that our study concerned the emergency response sector, whose core values, as in the medical and education sectors, are cooperation and service. It would be interesting in future research to conduct comparisons with other professional sectors where competitive values are more prevalent. The use of questionnaires could also have led to a social desirability bias, particularly for items regarding CMS. Regarding the effects of CMS on work stress, our results indicate a single marginal effect of the integrative conflict style on burnout reduction. Other conflict resolution styles were not directly related to the level of burnout. These findings support previous research revealing the complexity of the relationship between different conflict resolution styles and work stress [35], and indicating that the direct effects may be moderated by factors such as the nature of the conflict (i.e., task or relationship conflict), contextual and

individual characteristics associated with the regulation of emotions such as EI [33–35].

Secondly, our results show that awareness and management of one's own emotions are negatively related to the level of burnout, but no relationship was found with awareness and management of others' emotions. This confirms findings observed in other populations [61], such as nurses [52,70,71] and police officers [64]. For example, Trivellas et al [71] concluded that only the dimensions of self-emotional appraisal and use of emotion are related to job satisfaction. In another study, Michinov and Michinov [64] found that police teams with high emotional intelligence scores achieved the best performance during simulation exercises, with a significant contribution of regulation of one's own emotions, but no effect related to regulation of others' emotions. Our results again suggest that emergency response personnel such as firefighters mobilize skills that require regulation of one's own emotions.

More importantly, the results show that EI has a moderating role in the relationship between CMS and burnout. More specifically, awareness of one's own emotions moderated the relationship

Table 3

Results of the moderation effect of management of one's own emotions and simple slopes analyses

	Moderation estimates					
	Estimate	SE	95% confidence interval		Z	P
			Lower	Upper		
Integrating style	-0.0827	0.0913	-0.26167	0.0963	-0.906	0.365
Management of own emotions	-0.1692	0.0544	-0.27573	-0.0627	-3.113	0.002
Integrating style * Management of own emotions	0.1791	0.0933	-0.00373	0.3620	1.920	0.055
	Simple slope estimates					
	Estimate	SE	95% confidence interval		Z	P
			Lower	Upper		
Average	-0.0852	0.0916	-0.265	0.0943	-0.930	0.352
Low (-1SD)	-0.2400	0.1100	-0.456	-0.0245	2.183	0.029
High (+1SD)	0.0696	0.1334	-0.192	0.3310	0.521	0.602

Note. Shows the effect of the predictor (Integrating Style) on the dependent variable (Burnout) at different levels of the moderator (Management of one's own emotions).

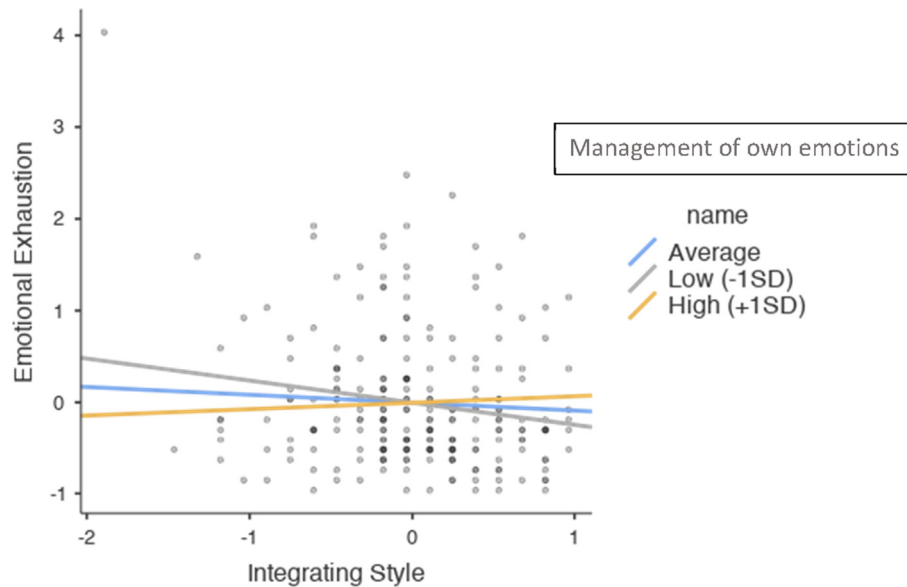


Fig. 2. Simple slope of integrating style predicting emotional exhaustion for 1 SD below the mean of management of one's own emotions, and 1 SD above the mean of management of one's own emotions.

between the integrating conflict resolution style and burnout, with a greater effect when self-awareness is high. The moderating role of management of one's own emotions, although small, also tended to be significant, with a greater effect when the management of own emotions is low. These results attest to the importance of awareness and management of emotions for emergency response professionals in terms of both ensuring the safety of interventions and reducing job stress. This finding is consistent with previous studies showing the moderating role of EI in the relationship between CMS and performance in organizations [59–61], and extends earlier studies by showing the moderating role of EI in the relationship between CMS and employees' well-being. We found no significant moderating role of regulation of others' emotions. One possible explanation is that the negative emotions engendered by conflictual situations are more likely to interfere with the regulation of one's own emotions than with controlling others' emotions. The non-influence of the regulation of others' emotions could also be explained by items in the WEIP-S, which concern the management and awareness of the emotions of the participants' workgroup colleagues, not those of users, victims, or patients [64].

There are a number of limitations to this study that should be mentioned. First, our data relied on self-report measures, which can lead to concerns about common method variance [72]. Moreover, it is not possible to demonstrate a causal relationship between variables using this method. Secondly, the measurement of CMS and EI by self-report scales has been the subject of debate. Although we used valid measures of CMS and EI, future research should use alternative and multi-source measures (conflict resolution and regulation of team emotions, as assessed by leaders). Finally, a single sample of French firefighters was analyzed; in order to generalize the results, they should be replicated in future studies in other countries.

To conclude, despite these limitations, the present study provides new insights into the relationships between CMS, EI and burnout among high-risk sector personnel. Specifically, our results show that the ability to identify and manage emotions during a conflict or a critical incident, and in particular EI, play an important role in reducing the emotional exhaustion of firefighters. It seems important to help this largely male population learn about their

CMS [35], its impact on work stress, and how to regulate their emotions at work [73]. Providing training programs in the management of conflicts and emotions at work may be an interesting way to preserve the mental health of firefighters and ensure the safety of interventions. These could include structured training on conflict management in organizations, individual coaching, simulation, and role playing to understand and deal with emotions in teams [35,61].

Funding

This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.

Compliance with ethical standards

This study was conducted in line with the principles of the Declaration of Helsinki. Ethical approval was granted by the Ethics Committee of University of Rennes 2 (N°2021-004). A written informed consent form was provided to each of the participants. All of them agreed to the study conditions described in this form and gave their consent for their data to be used for scientific purposes. All the data were anonymized.

Data availability

The datasets generated during and/or analyzed during the current study are available on OSF project available from: <https://osf.io/mxhfw/>.

Conflict of interest

The author declares that there is no conflict of interest.

Acknowledgments

The authors would like to thank Marion Lelièvre and Lise Liniger for their help in collecting data.

References

- [1] Johnson CC, Vega L, Kohalmi AL, Roth JC, Howell BR, Van Hasselt VB. Enhancing mental health treatment for the firefighter population: understanding fire culture, treatment barriers, practice implications, and research directions. *Prof Psychol Res Pract* 2020 Jun;51(3):304–11.
- [2] Huang Q, An Y, Li X. Coping strategies as mediators in the relation between perceived social support and job burnout among Chinese firefighters. *J Health Psychol* 2020 Sep;3:135910532095347.
- [3] Smith TD, DeJoy DM, Dyal MA, Aimee), Huang G. Impact of work pressure, work stress and work–family conflict on firefighter burnout. *Arch Environ Occup Health* 2019 Jul 4;74(4):215–22.
- [4] Wu TJ, Yuan KS, Yen DC, Xu T. Building up resources in the relationship between work–family conflict and burnout among firefighters: moderators of guanxi and emotion regulation strategies. *Eur J Work Organ Psychol* 2019 May 4;28(3):430–41.
- [5] Boffa JW, Stanley IH, Hom MA, Norr AM, Joiner TE, Schmidt NB. PTSD symptoms and suicidal thoughts and behaviors among firefighters. *J Psychiatr Res* 2017 Jan;84:277–83.
- [6] Smith TD, Hughes K, DeJoy DM, Dyal MA. Assessment of relationships between work stress, work–family conflict, burnout and firefighter safety behavior outcomes. *Saf Sci* 2018 Mar;103:287–92.
- [7] Ângelo RP, Chambel MJ. The role of proactive coping in the Job Demands–Resources Model: a cross-section study with firefighters. *Eur J Work Organ Psychol* 2014 Mar 4;23(2):203–16.
- [8] Ângelo RP, Chambel MJ. The reciprocal relationship between work characteristics and employee burnout and engagement: a longitudinal study of firefighters. *Stress Health* 2015 Apr;31(2):106–14.
- [9] Bernabé M, Botia JM. Resilience as a mediator in emotional social support's relationship with occupational psychology health in firefighters. *J Health Psychol* 2016 Aug;21(8):1778–86.
- [10] Katsavouni F, Bebetos E, Malliou P, Beneka A. The relationship between burnout, PTSD symptoms and injuries in firefighters. *Occup Med* 2016 Jan;66(1):32–7.
- [11] Kim R, Ha JH, Jue J. The moderating effect of compassion fatigue in the relationship between firefighters' burnout and risk factors in working environment. *J Risk Res* 2020 Nov 1;23(11):1491–503.
- [12] É Sandrin, Gillet N, Fernet C, Leloup M, Depin–Rouault C. Effects of motivation and workload on firefighters' perceived health, stress, and performance. *Stress Health* 2019 Oct;35(4):447–56.
- [13] Wong JY, Lin JH, Liu SH, Wan TH. Fireman's job stress: integrating work/non-work conflict with Job Demand–Control–Support model. *Eur Rev Appl Psychol* 2014 Mar;64(2):83–91.
- [14] Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol* 2001 Feb;52(1):397–422.
- [15] Maslach C, Jackson SE. The measurement of experienced burnout. *J Organ Behav* 1981 Apr;2(2):99–113.
- [16] Bakker AB, Demerouti E. The job demands–resources model: state of the art. *J Manag Psychol* 2007 Apr 3;22(3):309–28.
- [17] Hobfoll SE. The influence of culture, community, and the nested-self in the stress process: advancing conservation of resources theory. *Appl Psychol* 2001 Jul;50(3):337–421.
- [18] Siegrist J. Adverse health effects of high-effort/low-reward conditions. *J Occup Health Psychol* 1996;1(1):27–41.
- [19] Bakker AB, Demerouti E, Sanz–Vergel AL. Burnout and work engagement: the job–resources approach. *Annu Rev Organ Psychol Organ Behav* 2014 Mar 21;1(1):389–411.
- [20] Smith TD, Eldridge F, DeJoy DM. Safety-specific transformational and passive leadership influences on firefighter safety climate perceptions and safety behavior outcomes. *Saf Sci* 2016 Jul;86:92–7.
- [21] Hobfoll SE. Social and psychological resources and adaptation. *Rev Gen Psychol* 2002 Dec;6(4):307–24.
- [22] Xanthopoulou D, Bakker AB, Demerouti E, Schaufeli WB. The role of personal resources in the job demands–resources model. *Int J Stress Manag* 2007 May;14(2):121–41.
- [23] Alarcon G, Eschleman KJ, Bowling NA. Relationships between personality variables and burnout: a meta-analysis. *Work Stress* 2009 Jul;23(3):244–63.
- [24] Bakker AB, Van Der Zee KI, Lewig KA, Dollard MF. The relationship between the big five personality factors and burnout: a study among volunteer counselors. *J Soc Psychol* 2006 Feb;146(1):31–50.
- [25] Langelaan S, Bakker AB, van Doornen LJP, Schaufeli WB. Burnout and work engagement: do individual differences make a difference? *Personal Individ Differ* 2006 Feb;40(3):521–32.
- [26] Lee J, Jay), Ok C. Reducing burnout and enhancing job satisfaction: critical role of hotel employees' emotional intelligence and emotional labor. *Int J Hosp Manag* 2012 Dec;31(4):1101–12.
- [27] Ryu HY, Hyun DS, Jeung DY, Kim CS, Chang SJ. Organizational climate effects on the relationship between emotional labor and turnover intention in Korean firefighters. *Saf Health Work* 2020 Dec;11(4):479–84.
- [28] Hochschild AR. *The managed heart: commercialization of human feeling*. Berkeley, CA: University of California Press; 2012. Berkeley, CA.
- [29] Koole SL. The psychology of emotion regulation: an integrative review. *Cogn Emot* 2009 Jan;23(1):4–41.
- [30] Gross JJ, editor. *Handbook of emotion regulation*. 2nd ed. New York London: The Guilford Press; 2015. 669 p paperback edition.
- [31] Rahim MA. *Managing conflict in organizations*. 3rd ed. Westport, CT: Greenwood Publishing Group; 2001.
- [32] Rahim MA. A measure of styles of handling interpersonal conflict. *Acad Manage J* 1983;26(2):368–76.
- [33] Johansen ML, Cadmus E. Conflict management style, supportive work environments and the experience of work stress in emergency nurses. *J Nurs Manag* 2016 Mar;24(2):211–8.
- [34] Tabak N, Orit K. Relationship between how nurses resolve their conflicts with doctors, their stress and job satisfaction. *J Nurs Manag* 2007 Apr;15(3):321–31.
- [35] Labrague LJ, Al Hamdan Z, McEnroe–Petitte DM. An integrative review on conflict management styles among nursing professionals: implications for nursing management. *J Nurs Manag* 2018 Nov;26(8):902–17.
- [36] Watson D, Wiese D, Vaidya J, Tellegen A. The two general activation systems of affect: structural findings, evolutionary considerations, and psychobiological evidence. *J Pers Soc Psychol* 1999;76(5):820–38.
- [37] Jehn KA. A qualitative analysis of conflict types and dimensions in organizational groups. *Adm Sci Q* 1997 Sep;42(3):530.
- [38] Salovey P, Mayer JD. Emotional intelligence. *Imagin Cogn Personal* 1990 Mar;9(3):185–211.
- [39] Salovey P, Mayer JD, Goldman SL, Turvey C, Palfai TP. Emotional attention, clarity, and repair: exploring emotional intelligence using the Trait Meta–Mood Scale. In: Pennebaker JW, editor. *Emotion, disclosure, & health* [Internet]. Washington: American Psychological Association. 1995 [cited 2022 Jan 6]. pp. 125–54. Available from: <http://content.apa.org/books/10182-006>.
- [40] Goleman D. *Emotional Intelligence: why it can matter more than IQ*. New York: Bantam Books; 1995.
- [41] Al–Hamdan Z, Adnan Al–Ta'ameh I, Rayan A, Bawadi H. The impact of emotional intelligence on conflict management styles used by Jordanian nurse managers. *J Nurs Manag* 2019 Apr;27(3):560–6.
- [42] Başoğul C, Özgür G. Role of emotional intelligence in conflict management strategies of nurses. *Asian Nurs Res* 2016 Sep;10(3):228–33.
- [43] Chan JCY, Sit ENM, Lau WM. Conflict management styles, emotional intelligence and implicit theories of personality of nursing students: a cross-sectional study. *Nurse Educ Today* 2014 Jun;34(6):934–9.
- [44] Hopkins MM, Yonker RD. Managing conflict with emotional intelligence: abilities that make a difference. *J Manag Dev* 2015 Mar 2;34(2):226–44.
- [45] Morrison J. The relationship between emotional intelligence competencies and preferred conflict-handling styles. *J Nurs Manag* 2008 Nov;16(8):974–83.
- [46] Jordan PJ, Troth AC. Managing emotions during team problem solving: emotional intelligence and conflict resolution. *Hum Perform* 2004 Apr;17(2):195–218.
- [47] Troth AC, Lawrence SA, Jordan PJ, Ashkanasy NM. Interpersonal emotion regulation in the workplace: a conceptual and operational review and future research agenda. *Int J Manag Rev* 2018 Apr;20(2):523–43.
- [48] Carmeli A. The relationship between emotional intelligence and work attitudes, behavior and outcomes: an examination among senior managers. *J Manag Psychol* 2003 Dec;18(8):788–813.
- [49] Augusto Landa JM, López–Zafra E, Berrios Martos MP, Aguilar–Luzón M del C. The relationship between emotional intelligence, occupational stress and health in nurses: a questionnaire survey. *Int J Nurs Stud* 2008 Jun;45(6):888–901.
- [50] Karimi L, Leggat SG, Donohue L, Farrell G, Couper GE. Emotional rescue: the role of emotional intelligence and emotional labour on well-being and job-stress among community nurses. *J Adv Nurs* 2014 Jan;70(1):176–86.
- [51] Karimi L, Cheng C, Bartram T, Leggat SG, Sarkeshik S. The effects of emotional intelligence and stress-related presenteeism on nurses' well-being. *Asia Pac J Hum Resour* 2015 Jul;53(3):296–310.
- [52] Newton C, Teo STT, Pick D, Ho M, Thomas D. Emotional intelligence as a buffer of occupational stress. *Pers Rev* 2016 Aug 1;45(5):1010–28.
- [53] Slaski M, Cartwright S. Emotional intelligence training and its implications for stress, health and performance. *Stress Health* 2003 Oct;19(4):233–9.
- [54] Görgens–Eckermans G, Brand T. Emotional intelligence as a moderator in the stress–burnout relationship: a questionnaire study on nurses. *J Clin Nurs* 2012 Aug;21(15–16):2275–85.
- [55] Szczygiel DD, Mikolajczak M. Emotional intelligence buffers the effects of negative emotions on job burnout in nursing. *Front Psychol* 2018 Dec 21;9:2649.
- [56] Weng HC, Hung CM, Liu YT, Cheng YJ, Yen CY, Chang CC, Huang CK. Associations between emotional intelligence and doctor burnout, job satisfaction and patient satisfaction: emotional intelligence and doctor and patient satisfaction. *Med Educ* 2011 Aug;45(8):835–42.
- [57] Shead J, Scott H, Rose J. Investigating predictors and moderators of burnout in staff working in services for people with intellectual disabilities: the role of emotional intelligence, exposure to violence, and self-efficacy. *Int J Dev Disabil* 2016 Oct 1;62(4):224–33.
- [58] Zhang SJ, Chen YQ, Sun H. Emotional intelligence, conflict management styles, and innovation performance: an empirical study of Chinese employees. *Int J Confl Manag* 2015 Oct 12;26(4):450–78.
- [59] Moeller C, Kwantes CT. Too much of a good thing? Emotional intelligence and interpersonal conflict behaviors. *J Soc Psychol* 2015 Jul 4;155(4):314–24.
- [60] Flores HR, Jiang X, Manz CC. Intra-team conflict: the moderating effect of emotional self-leadership. *Int J Confl Manag* 2018 May 16;29(3):424–44.
- [61] Lee C, Wong CS. The effect of team emotional intelligence on team process and effectiveness. *J Manag Organ* 2019 Nov;25(6):844–59.

- [62] Brislin RW. Back-translation for cross-cultural research. *J Cross-Cult Psychol* 1970 Sep;1(3):185–216.
- [63] Jordan PJ, Lawrence SA. Emotional intelligence in teams: development and initial validation of the short version of the Workgroup Emotional Intelligence Profile (WEIP-S). *J Manag Organ* 2009 Sep;15(4):452–69.
- [64] Michinov E, Michinov N. When emotional intelligence predicts team performance: further validation of the short version of the Workgroup Emotional Intelligence Profile. *Curr Psychol [Internet]*. 2020 Feb 18 [cited 2020 Aug 14]; Available from: <http://link.springer.com/10.1007/s12144-020-00659-7>.
- [65] Podsakoff PM, MacKenzie SB, Podsakoff NP. Sources of method bias in social science research and recommendations on how to control it. *Annu Rev Psychol* 2012 Jan 10;63(1):539–69.
- [66] Fuller CM, Simmering MJ, Atinc G, Atinc Y, Babin BJ. Common methods variance detection in business research. *J Bus Res* 2016 Aug;69(8):3192–8.
- [67] Hair JF, Black WC, Babin BJ, Anderson RE. *Multivariate data analysis: a global perspective*. London: Pearson Education; 2010.
- [68] Hayes AF. *Introduction to mediation, moderation, and conditional process analysis: a regression-based approach*. 2nd ed. New York: Guilford Press; 2018. 692 p (Methodology in the social sciences).
- [69] The Jamovi project; 2021. Available from: <https://www.jamovi.org>.
- [70] Güleriyüz G, Güney S, Aydın EM, Aşan Ö. The mediating effect of job satisfaction between emotional intelligence and organisational commitment of nurses: a questionnaire survey. *Int J Nurs Stud* 2008 Nov;45(11):1625–35.
- [71] Trivellas P, Gerogiannis V, Svarna S. Exploring workplace implications of emotional intelligence (wleis) in hospitals: job satisfaction and turnover intentions. *Procedia - Soc Behav Sci* 2013 Feb;73:701–9.
- [72] Podsakoff PM, MacKenzie SB, Lee JY, Podsakoff NP. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *J Appl Psychol* 2003;88(5):879–903.
- [73] Kotsou I, Mikolajczak M, Heeren A, Grégoire J, Leys C. Improving emotional intelligence: a systematic review of existing work and future challenges. *Emot Rev* 2019 Apr;11(2):151–65.