Relevance of coping strategies: comparative study of firefighters and pre-hospital emergency technicians

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Abstract: Emergency rescuers are the first to respond and are often exposed to potentially traumatic stimuli and situations. Implementing coping strategies helps them to minimize the effects of exposure and ensures their mental health. This study aims to identify and compare, in a sample of 394 firefighters and 404 pre-hospital emergency technicians, the coping strategies most used after exposure to stressful situations, and to analyze if they vary according

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to sociodemographic variables. Results revealed that active coping strategies, planning, positive reinterpretation, and acceptance are the most prominent in both groups. Significant differences were found between the two groups in all coping dimensions, with firefighters having the highest averages in almost all strategies. Negative correlations between age, weekly hours and some coping dimensions were found. This highlights the need to promote psychological well-being of first responders and more resilient emergency organizations.

Keywords: Coping strategies, firefighters, prehospital emergency technicians, comparative study

Background

First responders are often exposed to potentially traumatic stimuli and situations, but it is not always assured that they take care of their own mental health. Thus, some events where they must intervene may trigger trauma on emergency and rescue workers, who are the first to arrive at the scene. When these situations involve an event with traumatic potential, they are referred as a critical incident. This is considered a negative event and as being incongruent with the cognitive structures of the individual, affecting their normal confrontation and adaptation mechanisms, causing loss of psychological balance and alteration of habitual functioning (Everly, & Mitchell, 1997). Exposure to a critical incident is not an absolute condition for the installation of mental pathology, since the reactions of people exposed to the same situation are different. Thus, there are risk factors that predict the presence of distress and the appearance of physical and psychological health problems after exposure to a critical incident (Leon, 2004).

Literature points out that there are protective factors related to lower levels of stress, anxiety and depression disorders in survivors, such as coping strategies, which allow them to resume normal day-to-day activities and take an active stance in the face of the consequences of the incident (Van Ommeren, Saxena, & Saraceno, 2005). Coping can be a stabilizing factor that facilitates the adjustment of the individual or his/her adaptation to stressful situations or moments (Pais-Ribeiro & Rodrigues, 2004), allowing to integrate what happened and restore normal functioning. Coping strategies act as a prerequisite for successful adaptation, both of which are mediators of stress effects (Lima, Lemos, & Guerra, 2002). Although there are several definitions of coping, the concept of coping is relatively consensual as a set of cognitive behavioral efforts made by the individual to cope with threatening or stressful situations, chronic or acute, regardless of their outcome, which seeks to manage the demands, internal or external, considered to exceed personal resources (Lazarus & Folkman, 1984). Thus, coping encompasses the whole set of strategies used by the person to adapt to adverse circumstances (Antoniazzi, Dell'Aglio, & Bandeira, 1998). For professionals who daily face critical incidents, this process of consciously responding to a negative or stressful external event may be essential to minimize the effects of exposure and ensure their mental health. Moreover, it is crucial that emergency professionals are resilient and that the coping strategies favored allow to mitigate exposure to potentially traumatic stimuli.

Considering the relevance of these professionals for society, there is a growing interest in the study of their working conditions, and also in the risk and protective factors that can create healthy work environments and promote psychological well-being. Studies with firefighters revealed that these professionals frequently use avoidance strategies when exposed to high stress (Witt, Stelcer, & Czarnecka-Iwańczuk, 2018), that problem-focused coping is often used

while in the incident and in the early stages of operational tasks, while the emotion-focused responses are more common during post-incident periods of fatigue and exhaustion (Young et al., 2014). Critical incidents are also a constant for paramedics, and research shows a positive correlation between coping strategy of engagement and quality of life among emergency service employees (Matonkar, 2019) and that dysfunctional coping style, anxiety, and depression were more likely to increase severity of post-traumatic stress symptoms, being young professionals more vulnerable to stress (Kerai, et al., 2017). Studies also suggest that occupational stress is higher for ambulance crewmembers (Mildenhall, 2012). Moreover, according to Ângelo (2016), emergency organizations face specific organizational demands related to relief tasks, as well as chronic demands related to professional practice and acute demands resulting from unforeseen situations, and many psychosocial risks are difficult to eliminate.

The volatile and unexpected nature of incidents, as the ones that recently occurred in Portugal (e.g., June and October 2017 forest fires, INEM helicopter crash in 2018, Madeira tourist bus crash in 2019), imply the development of competences that enable, on the one hand, the management of the most frequent occurrences and for which there is a high level of knowledge/preparation, and on the other hand, the management of less frequent incidents and/or for which there is little knowledge/preparation (Nilakant et al., 2016). Recently, the International Critical Incident Stress Foundation (Shallcross, 2013) has warned that relief workers are "first to respond, but last to seek help". Thus, it is important that they take care of themselves because, despite their high resilience and their ability to adapt to critical incidents, the accumulation of incidents has a detrimental effect on individual well-being and relief services provided. Moreover, it is essential to analyse these factors, both the protective and risk factors, in order to alert to the importance of rescue workers' mental health, namely those involved in tragedies, which may affect them in the long run. This study aims to identify and to compare, in a sample of volunteer firefighters and of pre-hospital emergency technicians, the coping strategies most used after exposure to stressful situations, and to analyze if they vary according to sociodemographic variables.

Method

This study used a probabilistic sample, composed of 394 volunteer firefighters (86% male and 14% female) and 404 pre-hospital emergency technicians (70% male and 30% female). Table 1 shows that both professionals have a similar average age. Regarding Firefighters, the average professional experience is higher, compared to Pre-hospital Emergency Technicians professionals, but this group is the one who works more hours per week.

Table 1. Sample characterization

Variable	Firefighters' Mean (SD)	Pre-hosp. Emergency Technicians' Mean (SD)
Age	33.1 (8.4)	34.6 (4.8)
Job experience	14.1 (16.4)	7.8 (2.9)
Hours per week	35.7 (21.4)	41.7 (5.8)

An anonymous and confidential self-completed printed questionnaire was used, composed by two groups of questions. Group I was constituted by questions of socio-demographic and

professional characterization, such as age, gender, years of service and average weekly working hours.

Group II corresponds to the Brief Cope (Carver et al., 1989; translated by Pais-Ribeiro & Rodrigues, 2004) aiming to evaluate coping strategies and including 28 items organised into 14 dimensions of two items each: active coping ("I do what has to be done, one step at a time."), planning ("I think about how I might best handle the problem."), seeking social support for instrumental reasons ("I ask people who have had similar experiences what they did."), seeking social support for emotional reasons ("I try to get emotional support from friends or relatives."), turning to religion ("I prayed or meditated."), positive reinterpretation and growth ("I look for something good in what is happening."), self-blame ("I criticized myself."), acceptance ("I learn to live with it."), focus on and venting of emotions ("I get upset and let my emotions out."), denial ("I refuse to believe that it has happened."), mental disengagement ("I turn to work or other substitute activities to take my mind off things."), behavioral disengagement ("I just give up trying to reach my goal."), use of substances ("I took refuge in alcohol or other drugs: pills, etc. to make myself feel better.") and humor ("I faced the situation with a sense of humor"). Items are presented as actions and scored on a 4-point likert scale (between 0 = I never did this, and 3 = I almost always did this). The final result is presented as a profile of coping strategies, since the subscales are not summed nor is possible to calculate a global score.

For statistical analysis, the IBM-SPSS 25 program was used for descriptive, comparative and correlational analysis.

Results

The results revealed that active coping strategies, planning, positive reinterpretation and acceptance are the most prominent in firefighters and pre-hospital emergency technicians, except for active coping who presents high values in firefighters (Figure 1).

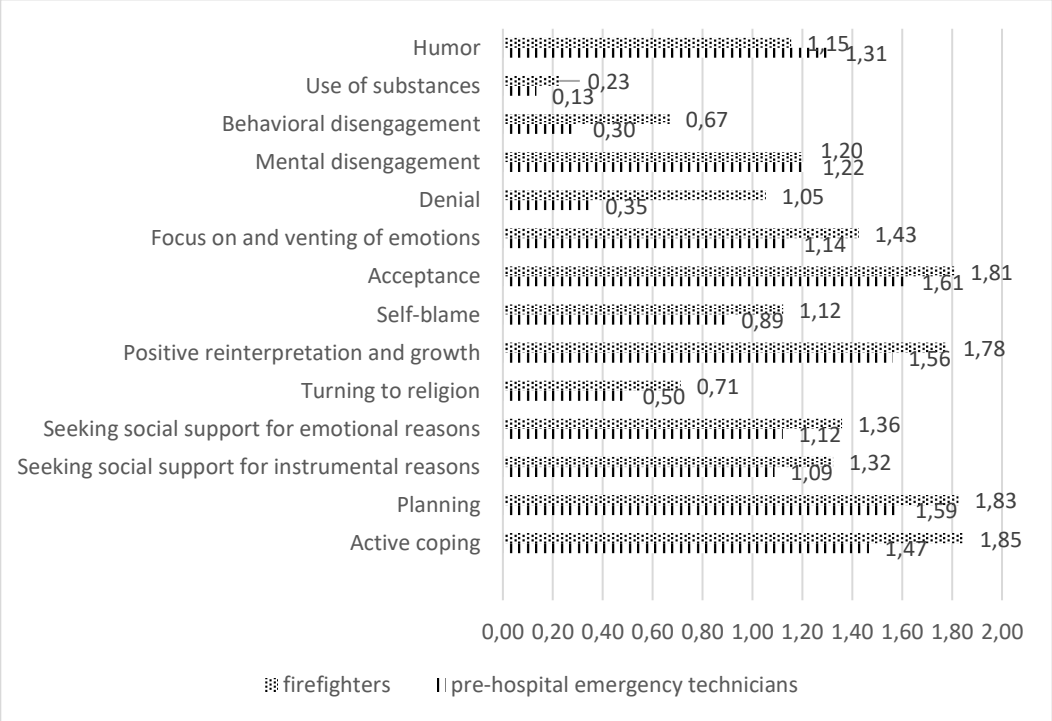

Figure 1. Mean and Comparation between the two professional groups.

Statistically significant differences were found between the two professional groups in all coping dimensions ($p \leq 0,01$), with firefighters having the highest means in almost all strategies except humor and mental disengagement (Figure 1, values in bold), higher in the prehospital emergency technicians.

Regarding correlational analysis, Table 2 presents the cases where statistically significant correlations were found. Thus, among firefighters it was found negative correlations between age and acceptance strategy, and between the average number of weekly hours and the strategies: positive reinterpretation, self-blame and mental disengagement. Among pre-hospital emergency technicians, age correlates negatively with the use of humor and positively with the focus on and venting of emotions.

Table 2. Correlational analysis separated by professional group

Firefighters	Age	Hours per week
Acceptance	-.133**	
Positive Reinterpretation		-1.112*
Self-Blame		-1.118*
Mental Disengagement		-1.127*
Pre-hospital Emergency Technicinas	Age	Hours per week
Humour	-.103*	
Focus on and venting of emotions	-.106*	

Conclusions

Scientific research is providing visibility to first responders, showing that less positive coping strategies predict burnout (Vara, Queirós, & Kaiseler, 2013), lack of control contributes to experiencing negative emotions (Avraham, Goldblatt, & Yafe, 2014) and firefighters who use passive coping such as emotional-centered coping have negative effects on mental health such as post-traumatic stress disorder (Lee, Jeong, & Choi, 2019). Additionally, firefighters prefer to manage stressful feelings within their own culture, using informal coping strategies, namely cognitive mechanisms and peer support (Mildenhall, 2012). Folwell and Kauer (2018) recommended for volunteer emergency medical technicians: financial assistance with Employee Assistance Programs, social events that encourage communication and interaction, and taking time off and having a clear recruitment/retention plan. This highlights the need to promote psychological well-being, as well as to develop and train coping and stress management skills, during and after critical incidents, to minimize the development of traumatic symptoms.

These skills and competencies can be developed through interventions aimed at the organizational structure and professionals, with mutual benefits for both (Salanova, Llorens, & Martínez, 2016), as well as for their service-dependent community (Shakespeare-Finch & Daley, 2017). Bennett and colleagues (2005) emphasized the importance of these interventions

being developed in the organizational structures within the emergency field, adapting to the idiosyncratic features of this institutional type. However, given the impossibility of intervening with the contingencies and potentially traumatic stimuli to which these professionals are daily exposed, the importance of intervening with the professionals is emphasized, seeking to privilege well-being and to develop a learning environment, alleviating suffering at work (Areosa, 2018; Salanova et al., 2016). As advocated by the Job Demands-Resources Model (Bakker, Demerouti, & Schaufeli, 2003), to address occupational demands and their potential consequences for workers' health, it is important to develop and promote professional resources, namely strategies for managing the technical and psychological demands and challenges (Lanza, Roysircar, & Rodgers, 2018; Malinen, Hatton, Naswall, & Kuntz, 2019). However, for this to be feasible, it is essential to understand these demands and associated traumatic potential, as well as the adaptive coping strategies used and that can be promoted by the organizational structure, namely through continuous training and psychoeducation.

In general, it is recognized the importance of promoting healthier and more resilient emergency organizations and professionals, and therefore of preparing each rescuer technically and psychologically (Ishak & Williams, 2018). This preparation may focus on coping strategies given the impossibility of minimizing exposure to potentially traumatic stimuli with clear impact on psychological and occupational health (Petrie et al., 2018). Thus, due the risk involved in fulfilling their duties and functions, it is of utmost importance, at the organizational and individual levels, to proactively develop coping skills that enable professionals to adapt to these challenges, their transformation and learning (Sawalha, 2015). It is also important to prevent traumatic symptoms and the use of maladaptive coping strategies (Cunha et al., 2017), while promoting the occupational health of the professionals involved. Thus, both professionals and organizations will better face disasters/tragedies and become more resilient.

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