



Perievent distress during fires – The impact of perceived emergency knowledge

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ABSTRACT

Emotional distress during fire situations and other emergencies has been found to be an important factor in predicting posttraumatic stress symptoms. Little research has been done concerning the predictors of peri-event emotional distress itself and its related factors. The present study investigated the predictive power of pre- and peri-event factors on peri-event emotional distress in a European convenience sample of 574 domestic fire survivors. In addition to peri-event emotional distress, the increase in distress due to the fire (i.e. fire-induced emotional distress) was investigated. It was found that fire-induced emotional distress could be predicted by the amount of prior perceived emergency knowledge, perceived time pressure, perceived threat, panic attack symptoms and education. Results of a path analysis revealed perceived emergency knowledge as the most important factor in reducing stress caused by the fire. Possible differences between perceived and actual emergency knowledge and their implications for training are discussed.

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1. Introduction

Emergency situations such as fires demand that various decisions be made, usually in a short period of time. The situations tend to be considered as threatening and therefore induce emotions like worry or fear and can lead to distress, i.e. the negative dimension of stress (Lazarus & Folkman, 1984, p. 456; Proulx, 1993). The term distress in this paper refers to negative emotions like worry or fear, which are usually experienced during or immediately after threatening or harmful events (Birmes et al., 2005; Lazarus, 1993; Lazarus & Folkman, 1984, p. 456). Lazarus' stress theory considered the interpretation of an event as being more important than the event itself (Lazarus, 1993; Lazarus & Folkman, 1984, p. 456). It depends highly on the appraisal of the situation, which incorporates possible consequences as well as the perceived ability to handle demands, if the situation is considered stressful or not (Lazarus, 1993; Lazarus & Folkman, 1984, p. 456).

Stress is neither an abnormal nor a necessarily obstructive reaction in an emergency and it can motivate appropriate reactions (Paulsen, 1984; Proulx, 1993). However, post-event distress reactions have been predicted by peri-event reactions such as

emotional distress (Bernat, Ronfeldt, Calhoun, & Arias, 1998; Lawyer et al., 2006; Marmar, Weiss, Metzler, Ronfeldt, & Foreman, 1996; Nishi et al., 2012; Thomas, Saumier, & Brunet, 2012), as well as dissociation (Bernat et al., 1998; Bryant, Moulds, & Guthrie, 2000; Marmar, Weiss, & Metzler, 1996; Marmar, Weiss, Metzler, et al., 1996) and panic attack symptoms (Ahern, Galea, Resnick, & Vlahov, 2004; Bernat et al., 1998; Bryant & Panasetis, 2001; Pfefferbaum, Stuber, Galea, & Fairbrother, 2006) in various studies. A meta-analysis regarding the predictors of posttraumatic stress disorder (Ozer, Best, Lipsey, & Weiss, 2003) also revealed perceived life threat, peri-event emotions and peri-event dissociation to be important factors. It has been found that each of these constructs accounts for unique variance in PTSD symptoms (Birmes et al., 2005). There is little doubt then that these acute emotional reactions can affect possible later stress responses but research on how these peri-event distress reactions can be predicted or how they are related to one another is rare.

A study investigating acute stress disorder (Bryant & Panasetis, 2001) revealed more panic attack symptoms within the 28 days after the event (i.e. motor vehicle accident or nonsexual assault) in samples with a clinical or subclinical acute stress disorder. In a sample of New York City residents directly and indirectly affected by 9/11, the pre-event factors female gender, age (25–34 years and 45–54 years), experiencing one or more lifetime stressors in the past 12 months as well as being divorced or never married, were

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among factors significantly associated with experiencing more emotional reactions (i.e. fear of dying, helplessness, horror) during the event (Lawyer et al., 2006). It must be noted that emotional reactions were assessed with only three yes/no questions rather than with an intensity rating as suggested in previous studies (Bovin & Marx, 2011) and it remains unclear what other lifetime stressors were included and why these particular age groups were prone to more emotional reactions during the attacks (Lawyer et al., 2006). Nevertheless, age, as well as female gender and income, were found in another study to have a negative relationship with acute stress reactions (Benight & Harper, 2002). This study also revealed that the perceived ability to cope with environmental demands may reduce not only acute distress induced by floods and fires but also long-term psychological distress, confirming similar findings revealed earlier with hurricane survivors (Benight et al., 1999). Further pre-event factors that have been found to increase distress were the relationship status *single* (Taylor et al., 2012) and intermediate education level of women (compared to high education level; Ahnquist, Wamala, & Lindström, 2010). Lower trust in health-care services was also related to greater psychological distress (Ahnquist et al., 2010).

A study with professional rescue workers (Marmar, Weiss, Metzler, et al., 1996) revealed that workers who felt less prepared by prior training for a critical incident were also those who reported higher levels of peri-event distress and perceived threat during the event and were more likely to display greater distress up to four years after the event. In a study with earthquake survivors, a positive relationship between perceived threat and general distress was found as well as negative relationships between perceived control and distress and between self-efficacy and distress (Sumer, Karanci, Berument, & Gunes, 2005). Another recent path analysis, involving a sample of athletes engaging in a competition, also revealed a positive relationship between threat and unpleasant emotions as well as a negative relationship between controllability and threat (Nicholls, Polman, & Levy, 2012).

To sum up, it has been found that pre-event socio-demographic factors like gender and age may influence peri-event distress. The peri-event factors perceived threat and panic attack symptoms have been positively associated with peri- as well as post-event distress. Moreover, distress during an event has been negatively associated with the pre-event factor emergency training and the peri-event perceived ability to handle a situation. The studies cited here tended to look at the relationships of interest in isolation, therefore interactions remain unclear. Furthermore, the issues were examined in a variety of settings, ranging from stressful but non-emergency scenarios, to emergencies such as crimes against the person, through to large-scale disasters. The setting of interest to the current study was a fire in the home as this is a stressful situation that poses a serious threat to lives and well-being and, unlike emergencies such as floods or earthquakes, can and does happen anywhere. These fires are therefore a concern to all sections of the public, all over the world. It remains to be seen whether the relationships involving distress observed in previous studies will be replicated in this kind of setting.

The aim of this study is to investigate the predictive power of pre- and peri-event factors for peri-event distress in domestic fire events. Not only will already revealed factors be studied but also further factors that might influence stress reactions. In this context, the total amount of distress will be investigated as well as the amount of distress that is due only to the emergency situation itself (i.e. fire-induced distress). As a second goal, the relationships between revealed predictors for fire-induced distress are investigated more closely for their total, direct and indirect effects on peri-event emotional distress. In line with the previous literature it is hypothesized that:

- 1) Perceived emergency knowledge (i.e. knowledge participants perceived themselves to have gained from emergency training and other relevant sources) and the ability to handle the situation will reduce emotional distress during a fire. Perceived threat, female gender and panic attack symptoms during the situation will increase emotional distress.
- 2) A positive relationship will be detected between perceived emergency knowledge and the ability to handle the situation, as well as between perceived threat, panic attack symptoms and fire-induced distress.
- 3) Additionally, it is hypothesized that perceived emergency knowledge, as well as increasing the ability to handle the situation, will reduce the perception of threat.

2. Method

2.1. Participants

A sample of 574 domestic fire survivors from seven different countries was drawn (i.e. Poland, Italy, Spain, Germany, Turkey, Czech Republic and Sweden) as part of the project BeSeCu (Behavior, Security and Culture), which was funded under the European Union Framework programme 7 – Security and Space. The main goal of the project was the exploration of human behavior in different crisis situations (Schmidt, Knuth, & Kehl, 2011). Participants were included if they gave their informed consent and met the following inclusion criteria: (1) had experienced a domestic fire not before 1999 (i.e. not longer than 11 years ago); (2) the emergency services were involved; and (3) participants were at least 18 years of age. Criterion (1) was chosen in order to include survivors of the Izmir earthquake of 1999 in the overall project. Furthermore, research regarding memory biases has found that memories are less biased in children at the age of seven and older (Bauer, Burch, Scholin, & Güler, 2007; Cordón, Pipe, Sayfan, Melinder, & Goodman, 2004; Pillemer, 1998; Rubin, 2000) and since participants had to currently be at least 18 years of age, that meant our sample only included participants who were at least seven at the time of the incident. The mean age of the sample was 42.13 years (SD = 15.85 years) with a range of 18–96 years. On average, the incidents happened 2.38 years (SD = 2.87 years; median = 1.06 years) before the survey was carried out. Further sample details are displayed in Table 1.

2.2. Measures

Participants were asked to complete a standardized instrument, the BeSeCu-S, which was designed on the basis of a detailed literature review, expert consultations, cross-cultural focus groups and interviews with survivors (Freitag, Grimm, & Schmidt, 2011) as well as a pilot test (Grimm, Hulse, & Schmidt, 2012). The questionnaire was available online and in a paper and pencil version. Both administration types were identical with respect to layout and response styles across all languages. Among the 574 survivors, 80% filled out a paper and pencil questionnaire and 20% the online version. A 5-point Likert scale ranging from 1 to 5 (1 = not at all, 2 = a little bit, 3 = moderately, 4 = quite a bit, 5 = extremely) was adopted from the Impact of Event Scale – Revised (Weiss & Marmar, 1996) and used for all items of the scales (unless stated otherwise), since translated versions already existed in the languages of participating countries.

Factors identified in previous studies were measured in the following ways. Perceived emergency knowledge was assessed with the seven items of the Emergency Prevention Knowledge Scale (EPKS). The scale was introduced by the following question:

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