Generalitat de Catalunya
Departament d'Interior

Authors Note

Elisa Saccinto: Facultat de Psicologia (FPCEE) Blanquerna, Universitat Ramon Llull, Barcelona, Spain / Department of Education, University of Bologna, Bologna, Italy.

Lola Vallès: Institute for Public Security of Catalonia, Barcelona, Spain.

Ed Hilterman: Justa Mesura, Consultancy & Applied Research, Barcelona, Spain.

Malin Roiha: Institute for Public Security of Catalonia, Barcelona, Spain.

Luca Petriantoni: Department of Education, University of Bologna, Bologna, Italy.

Carles Pérez-Testor: Facultat de Psicologia (FPCEE) Blanquerna, Universitat Ramon Llull, Barcelona, Spain.

Correspondence should be addressed to:
Elisa Saccinto, FPCEE – Blanquerna, Universitat Ramon Llull
Carrer Císter 34 – 08022 Barcelona, Spain.

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Abstract
This study investigates if perceived self-efficacy during an emergency situation has a protective role in the development of posttraumatic stress symptoms among Italian and Spanish survivors of several emergency situations. We explored the impact of self-efficacy in a multiple regression model including other predictors of posttraumatic stress symptoms, such as emergency prevention knowledge; trust in emergency services; risk perception of becoming a victim of an emergency situation; and conscious and active behaviours in comparison with no conscious and no active behaviour during the emergency. We carried out a retrospective study recruiting 214 participants who reported their experience as victims of one specific emergency event. Results showed that survivors who perceived themselves as more self-efficacious during the traumatic event had less posttraumatic stress symptoms. In contrast, female gender, more self-threat perception and higher trauma severity were associated with more symptoms. Findings contribute to better understand human behaviour in emergency situations and evidence the protective role of perceived self-efficacy beliefs among survivors of emergency situations.
Key words: posttraumatic stress, self-efficacy, risk factors, emergency situation, trauma.

Resumen
Este estudio investiga si la autoeficacia percibida durante una situación de emergencia tiene un papel protector en el desarrollo de síntomas de estrés postraumático entre los supervivientes italianos y españoles de varias situaciones de emergencia. Se analizó el impacto de la autoeficacia en un modelo de regresión múltiple incluyendo otros predictores de los síntomas de estrés postraumático, como el conocimiento previo en emergencias, la confianza en los servicios de emergencia, la percepción de riesgo de ser víctima de una situación de emergencia y los comportamientos racionales y activos en comparación a los no racionales y no activos durante la emergencia. Se realizó un estudio retrospectivo con 214 participantes, que fueron víctimas de una situación de emergencia. Los resultados mostraron que los supervivientes que se percibieron como más autoeficaces durante el evento traumático tenían menos síntomas de estrés postraumático. Sin embargo, en el sexo femenino, más percepción de amenaza y mayor gravedad del trauma se asociaron con más síntomas. Los resultados contribuyen a entender mejor el comportamiento humano en situaciones de emergencia y evidencian la función protectora de las percepciones de autoeficacia en los supervivientes de situaciones de emergencia.
Palabras claves: estrés postraumático, autoeficacia, factores de riesgo, situaciones de emergencia, trauma.

Introduction

In the last decades, research has increased attention on human behaviour in emergency situations such as natural and man-made disasters, though the majority of studies in this field have been carried out in the United States. This stresses the importance of determining the validity of US findings also in European survivors (Schmidt, Knuth, & Kehl, 2011). In fact, Europe showed an increased number of natural disasters rising from 59 on average per year during 2000-2009 to 70 disasters in 2010 (Guha-Sapir, Vos, Below, & Ponserre, 2011). European citizens have also been affected by man-made incidents such as the bombings in Madrid 2004 and London 2005, or the Torino ThyssenKrupp fire of 2007.

A common outcome to these potentially traumatic events is Posttraumatic stress disorder (PTSD), which may appear in the aftermath of the incident (Foa, Stein, & MacFarlane, 2006). PTSD symptoms include repeated and unwanted re-experiencing of the event, hyperarousal, emotional numbing, and avoidance of stimuli perceived as reminders of the event (Ehlers & Clark, 2000). Previous studies identified many risk and protective factors involved in the development of PTSD among pretraumatic, peritraumatic and posttraumatic variables (Brewin, Andrews, & Valentine, 2000). Consistent with this, self-efficacy beliefs have been found to be the most proximal predictor of mental health outcomes during posttraumatic recovery (Benight & Bandura, 2004). Social cognitive theory (Bandura, 1997) defines self-efficacy as the perceived capacity of managing one's personal functioning and environmental demands occasioned by stressful and traumatic events. In a recent review among survivors of collective traumatic events, Luszczynska, Benight and Cieslak (2009) found that more self-efficacy is associated with less severe and less frequent PTSD symptoms in cross-sectional studies. In the same line, longitudinal studies have shown that self-efficacy is protective in respect of the development of PTSD (Benight, Cieslak, Molton, & Johnson, 2008). However, the majority of studies have investigated the influence of self-efficacy on the recovery process in the aftermath of a traumatic event (Cieslak, Benight, Luszczynska, & Laudenslager, 2011). There is a gap in research on studies focused on survivor's perception of self-efficacy during the emergency situation as protective factor for later posttraumatic stress symptoms. This knowledge may gain new insights in the understanding of human behaviour in potentially traumatic events such as natural and man-made disasters. For instance, perceived self-efficacy in emergency situations may promote action-oriented strategies, such as activating pro-social behaviours, seeking for shelter, evacuating from the location during an emergency situation, and predict adaptation in the aftermath of the event. In fact, an active behaviour during an emergency situation may represent the survivor's effort of managing a threatening situation and reflect an action-oriented coping strategy (Luszczynska et al., 2009). Consistent with this, prior studies have found a negative association between the use of active coping strategies and distress symptoms among emergency medical personnel (McPherson, Hale, Richardson, & Obholzer, 2003) and survivors of natural disasters (Benight & Harper, 2002).

Researchers have also highlighted the importance of identifying those factors that influence human behaviour in emergencies (Kuligowski, 2008); in fact, when a person is affected by an emergency situation, his or her decisions and actions have significant implications in terms of psychological well-being and physical safety. For instance, Drury, Cocking and Reicher (2009) stated that public discourse emphasizes the occurrence of panic and irrational behaviours among victims of emergency situations, despite the fact that this notion has not been supported by empirical findings. On the contrary, it has been found that

the majority of people react in a conscious and adaptive way, while irrational and maladaptive behaviours are extremely rare (Blake, Galea, Westeng, & Dixon, 2004; Fahy & Prolux, 2009). Since no previous research has explored whether active and conscious behaviours during an emergency situation reduce the occurrence of posttraumatic stress symptoms, we decide to study this association.

As observed in other studies, the variables acting during and after the traumatic event are stronger predictors of posttraumatic stress symptoms in comparison with pre-event factors (Ozer, Best, Lipsey, & Weiss, 2003; Schnurr, Lunney, & Sengupta, 2004). However, few studies have explored if pre-trauma variables reflecting the survivors' emergency culture, such as risk perception, emergency prevention knowledge, and trust in the capacity of emergency services, have a role in the development of PTSD symptoms. Proulx (2001) suggested that previous knowledge and training in emergency situations may influence human behaviour during fires, while research has also shown that if people are trained in emergency situations, they start earlier with evacuation (Prolux & Pineau, 1996; Shields, Boyce, & Silcock, 1998). Emergency prevention knowledge may be increased by emergency drills and exercises, which produce benefits both in first responders and in citizens (Peterson & Perry, 1999). Perry (2004) suggested that exercises may favour the attribution of credibility to emergency services and increase the likelihood that victims will comply with recommended measures. Consequently, it is possible that an increase in emergency prevention knowledge may raise the perception of being able to deal with the situation, and result in less posttraumatic stress symptoms.

It has been suggested that higher risk perception for technological disasters may influence the perception of threat and result in greater psychological stress (MacGregor & Fleming, 1996). Studies among survivors of man-made and natural accidents have found that there is a positive association between risk perception and psychological stress (Lange, Fleming, & Toussaint, 2004; López-Vázquez & Marvan, 2003). A positive association was also found between risk perception concerning the occurrence of emergency situations and posttraumatic symptoms among firefighters (Prati et al., *under revision*).

Survivors' trust in emergency personnel is another variable that has received little attention in previous studies focusing on posttraumatic stress predictors. Basolo et al. (2009) found a positive association between preparedness for a disaster and citizens' reliance on authorities in respect of their capacity to manage it. In fact, if individuals believe that control can be achieved through the managing agency, then they will be likely to engage in more action-oriented strategies aimed at modifying the situation (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Lazarus & Folkman, 1984). Consistent with this, survivors who perceived an accident as predictable by experts showed less levels of stress than those who considered the accident as unpredictable (Evans, Wener, & Phillips, 2002; Lange, Toussaint, & Fleming, 2004). These results stress the importance of exploring the influence that survivor's reliance in emergency services has on the development of posttraumatic stress.

This study focuses on survivors of natural and man-made disasters and not on interpersonal violence such as rape or domestic violence. Based on previous studies, we analyse the contribution of self-efficacy in explaining the variance of posttraumatic stress symptoms in a multivariate model. We expect that an increase in perceived self-efficacy in the emergency situation predicts less posttraumatic stress symptoms (Hypothesis 1). We also expect that predictors of higher levels of posttraumatic stress symptoms could be: less

trust in emergency services; less risk perception; less emergency prevention knowledge; no active behaviour in comparison to active behaviour; and no conscious behaviour in comparison to conscious behaviour in the emergency situation (Hypothesis 2). Since an increase in trauma severity (Galea et al., 2002) and perceived threat (Vázquez, Pérez-Sales, & Matt, 2006), female gender (Başoğlu, Kiliç, Şalcioğlu, & Livanou, 2004) and older age (Hall et al., 2008; Johnson et al., 2009) are risk factors for PTSD symptoms, we decided to include them in the regression model as control variables. Moreover, we included the time since the emergency situation and the country as control variables. The first has been included because we recruited participants of emergency situations, which could have occurred up to 11 years ago. As regard the country of the participant, our study has been carried out with two groups made up by Italian and Spanish participants of emergency situations who differed as regards some of the study variables.

Methods
Procedure

Data were collected from July 2010 to March 2011 as part of a funded research project called BeSeCu, which means Behaviour, Security and Culture, (contract 218324) under the European Union Framework 7 Security Program initiative (for more detailed information, please visit the following web page: http://www.besecu.de/html/besecu_aims.html). BeSeCu Research Group developed the questionnaire (Schmidt et al., 2011), which was aimed to assess behaviours, emotions and cognitions of people affected by emergency situations such as domestic fire, fire in a public building, terrorist attack, flood and earthquake.

Participants had to refer to their experience by answering the Besecu-S questionnaire in respect of only one specific emergency situation. At the beginning of the questionnaire, the participant had to indicate to which incident he/she would report. Moreover, in order to avoid misunderstanding, a short title introduced each section of the questionnaire and explained the content of the related questions (e.g. "*Now some questions about emergency in general*"; "*Now some questions about the specific incident you experienced*"). Several strategies to recruit participants were used: recruitment via online advertisement and via social networks; personal contact with victims after a detailed search of emergency situations in print/online newspapers and web pages related to fire-fighters and civil protection. As for the victims of terrorist attacks, participants were recruited mainly through victims' associations.

The inclusion criteria for participation were:

a) Participants should be 18 years old or older;

b) The incident should have happened in the last 11 years;

c) Emergency services should have been involved.

Participation was completely voluntary and anonymity was granted. A written informed consent was distributed and signed before the involvement in the study.

The Besecu-S questionnaire was translated from English into Italian and Spanish. A forward-back-translation technique was used in order to achieve best possible cross-cultural harmonisation. The questionnaire was available in paper-pencil format and online, for both languages. For both formats participants could obtain more information about the project and the questionnaire by contacting a reference person (we provided name, institution affiliation, address, telephone number, email). A third format used was the "support-mode", in which the

participant completed the questionnaire with the help of a BeSeCu staff member or in the case of the terrorist attack victims, accompanied by a psychologist affiliated to the victims' association.

Participants

In the present study, data from Italy and Spain have been used and the sample consisted of 214 participants who had experienced an emergency situation. Sixty-three participants reported a domestic fire ($n_{Spanish} = 32$; $n_{Italian} = 31$), 21 a terrorist attack ($n_{Spanish} = 21$), 7 a flood ($n_{Spanish} = 1$; $n_{Italian} = 6$), 49 a fire in a public building ($n_{Spanish} = 32$; $n_{Italian} = 17$), and 74 an earthquake ($n_{Italian} = 74$). The average length of time since the emergency situation, which the participant reported, was 1173.21 days (i.e. nearly 3 years) ($SD = 977.23$).

The majority of participants were from Italy ($n = 128$; 59.8%) and 86 (40.2%) from Spain ($x^2 = 8.24$; $df = 1$; $p < .01$). The mean age for the total sample was 36.85 ($SD = 14.28$; range: 18-83), 31.63 ($SD = 12.80$; range: 18-83) for the Italian participants and 44.55 ($SD = 12.85$; range: 19-82) for the Spanish participants. Table 1 shows the sample characteristics.

[insert table 1]

Measures

The Italian and Spanish versions of the questionnaire were composed of the same scales and each scale has the same number of items in the two language versions. Each scale was assessed on a 5-point Likert scale ranging from "1 = not at all" to "5 = extremely" with the exception of the Impact of Event Scale Revised (assessing posttraumatic stress symptoms) and Trauma Severity Scale, which presented different ranges (see below). Internal consistency was calculated as Cronbach's α for each subscale. For the purposes of the current study, we selected the following measures from the BeSeCu-S questionnaire (Schmidt et al., 2011).

Emergency Services Trust Scale. Three items from the Emergency Service Trust Scale were selected to assess to what extent participants relied on Medical Service, Police and Fire fighters with a total score ranging from 3 to 15 (e.g. "*Before the incident occurred, to what extent did you believe you could rely on the Medical Service to assist you in an emergency?*"). Internal consistency for the total sample was 0.80 (0.87 for the Italian sample and 0.75 for the Spanish sample).

Emergency Prevention Knowledge Scale. Seven items constituted this scale with a total score ranging from 7 to 35, which explored the participant's emergency prevention knowledge received by professional activity, first aid course, fire safety knowledge, fire drills at school and work, etc. Examples of items were: "*I had taken part in fire drills at work*"; "*I had read safety notices/evacuation plans in public places, such as in hotel rooms, train carriages, etc.*" Internal consistency was 0.75 for the total sample, 0.64 for the Italian sample and 0.88 for the Spanish sample.

Risk Perception Scale. Participants were asked to rate (using percentage from 0 to 100; total score from 0 to 600) the perceived likelihood of becoming a victim in the future in respect of six emergency situations: domestic fire, fire in a public building, terrorist attack, earthquake, flood and traffic accident. Internal consistency for the total sample was 0.80, 0.78 for the Italian sample and 0.89 for the Spanish sample.

Self-efficacy in emergency situation. Three items assessed participants' perception of having been able to deal with the emergency situation throughout the stages of the incident such as in the realization stage, during the evacuation and upon exiting the location (e.g. "*When you realized you were in an emergency situation, did you think you were able to deal with the situation*?"; "*During evacuation/rescue, did you think you were able to deal with the situation?*"; "*Upon exiting the location, did you think you were able to deal with the situation?*"). The total score ranged from 3 to 15. Internal consistency was 0.88 for the total sample, 0.89 for the Italian sample and 0.84 for the Spanish sample.

Automatic Behaviour. Participants had to answer a single item (i.e. *"How would you describe your behaviour when you understood something was happening?"*) by choosing one option between "automatic/instinctive" (0) and "conscious/rational" (1).

Active Behaviour. Participants had to indicate their first action during the emergency situation (i.e. "*What was the first thing you did when you understood something was happening?*") by choosing one option in a list of 10 possible actions. The variable was dichotomized in active (1) and passive behaviours (0). Examples of items reflecting an active behaviour are "*I sought help from the emergency services*"; "*I tried to alert, comfort or save others who might be threatened by the situation*", and examples of passive behaviours are "*I did nothing for a while*"; "*I gave up and let happen whatever was about to happen*".

Trauma severity. Four dichotomised items assessed trauma severity (ranging from 0 to 4). Participants had to indicate: if they were admitted to hospital for injuries (yes = 1; no = 0); if they had family/friends seriously injured (yes = 1; no = 0); if family/friends suffered fatal injuries (yes = 1; no = 0) and if their property/belongings incurred any serious damage in the incident (yes=1; no=0).

Perceived Personal Threat. Three-items assessed participants' perception of personal threat throughout the stages of the incident such as in the realization stage, during the evacuation and upon exiting the location (e.g. "*During evacuation/rescue, did you think your own life was in danger?*"; "*Upon exiting the location, did you think your own life was in danger?*"). The total score ranges from 3 to 15. Internal consistency for the total sample was 0.85, 0.86 for the Italian sample and 0.85 for the Spanish sample.

Posttraumatic stress symptoms. Posttraumatic stress symptoms were assessed by using the Italian (Giannantonio, 2003; Saccinto, Prati, Pietrantoni, & Pérez-Testor, *in press*) and Spanish (Gargurevich, Luyten, Fils, & Corveleyn, 2009) versions of the Impact of Event Scale-Revised (IES-R) (Weiss & Marmar, 1997). Participants had to refer to symptoms related to the emergency situation they described. The instrument is a 22-item self-reported questionnaire designed to capture intrusive, hyperarousal, avoidance and numbing posttraumatic stress symptoms. The total score ranges from 0 to 88, and each item is rated on a 5-point scale from 0 (not at all) to 4 (extremely), reflecting to what extent the particular symptom has been a problem for the respondent during the past week with respect to the described incident. In this study, internal consistency for the total scale was 0.94, 0.90 for the intrusion, 0.87 for the hyperarousal, and 0.80 for the avoidance-numbing subscales. For the Italian group, internal consistency for the total scale was 0.94, for the intrusion 0.90, for the avoidance-numbing 0.79 and 0.88 for the hyperarousal subscale. For the Spanish group, internal consistency for the total scale was 0.97, for the intrusion 0.95, for the avoidance-numbing 0.88 and 0.94 for the hyperarousal subscale. Since the three subscales presented

high positive correlations between each other (intrusion and avoidance-numbing: $r = .74$, p <.01; intrusion and hyperarousal: $r = .78$, $p < .01$; hyperarousal and avoidance-numbing: $r = .72$, $p < .01$), we decided to use the total score instead of the scores of the three subscales in the following analyses.

Statistical analysis

In order to perform parametric tests, we checked if all variables presented a normal distribution. Age and posttraumatic stress symptoms lacked a normal distribution and were transformed logarithmically. The time since the emergency situation did not have a normal distribution either, and the square root transformed variable was used. Independent t-tests and Pearson Chi-squares were used to determine differences between the Italian and Spanish participants regarding the dependent and independent variables.

A multiple hierarchical regression analysis was used to assess the contribution of the selected predictors to posttraumatic stress symptoms.

To perform regression analysis, multi-collinearity was checked. Correlations between predictor variables and posttraumatic stress symptoms did not exceed the value of .70 (Tabachnik & Fidell, 2007). Also the Variance Inflation Factor (VIF) and Tolerance statistics, of multiple regression analysis, did not reach significant values below 0.2 (Menard, 1995) and > 10 (Bowerman & O'Connell, 1990), respectively.

Results

Differences between the Italian and the Spanish participants

Regarding the Italian group, more participants reacted in an automatic/instinctive way than in a conscious/rational way ($x^2 = 10.78$; $df = 1$; $p < .01$); Italian participants also presented more active than passive behaviours ($x^2 = 28.78$; $df = 1$; $p < .001$). The Spanish group presented more conscious/rational behaviours than automatic/instinctive behaviours ($x^2 = 4.76$; $df = 1$; $p < .05$) and more active than passive behaviours ($x^2 = 28.10$; $df = 1$; $p < .001$). Each group did not present significant gender differences.

We found that the Spanish participants were significantly older ($t = 7.97$, $df = 211$, $p < .001$) than the Italian participants. Moreover, the average time since the occurrence of the emergency situation was higher for Spanish than Italian participants ($t = 3.34$, $df = 186$, $p < .01$). Furthermore, other differences between the two groups were that Spanish participants presented more conscious behaviour during the emergency situation ($x^2 = 14.26$; $df = 1$; $p < .001$), perceived themselves as more self-efficacious ($t = -2.97$, $df = 211$, $p < .01$), and presented less posttraumatic stress symptoms ($t = -2.86$, $df = 203$, $p < .01$) than Italian participants. The two groups did not significantly differ regarding gender, trust in emergency services, emergency prevention knowledge, risk perception, active vs passive behaviour, trauma severity and perceived personal threat.

Bivariate correlation analyses between the study variables are presented in table 2.

[insert table 2]

Multiple regression analysis

A multiple hierarchical regression analysis was used to assess the contribution of the selected predictors to posttraumatic stress symptoms. Since the two groups differed regarding the dependent and some independent variables, we included the participant's

country as control variable. Table 3 shows results of the multiple hierarchical regression analysis.

As a first step, country, gender, age, emergency prevention knowledge, trust in emergency service, risk perception, time since the emergency situation, active behaviour, conscious behaviour, trauma severity and self-threat perception were entered in the regression analysis. The model accounted for 32% of the variance in posttraumatic stress symptoms, $F(11, 160) = 7.85$, $p < .001$. Three variables, such as gender ($\beta = .21$, $p = .004$), trauma severity ($\beta = .26$, $p = .000$) and self-threat perception ($\beta = .24$, $p = .002$) significantly predicted the variance in posttraumatic stress symptoms. These results evidenced that women, participants with a higher self-threat perception and those who experienced a more severe traumatic event presented more posttraumatic stress symptoms.

As a second step, the variable perceived self-efficacy during the emergency situation was entered and increased the explained variance of the model ($\Delta R = .07$). The final model accounted for 39.1% of the variance, $F(12, 160) = 9.55$, $p < .001$ ($\Delta F = 18.30$). Four variables were significant predictors of posttraumatic stress symptoms: perceived self-efficacy during the emergency situation ($\beta = -.33$, $p = .000$); gender ($\beta = .17$, $p = .015$), trauma severity ($\beta = .25$, $p = .000$) and self-threat perception ($\beta = .21$, $p = .006$). These results mean that participants, who perceived themselves as more self-efficacious during the emergency situation, presented less posttraumatic stress symptoms. In contrast women, participants with a higher self-threat perception and those who experienced a more severe traumatic event presented more posttraumatic stress symptoms.

[insert table 3]

Discussion

As hypothesized, people who perceived themselves more self-efficacious during the emergency situation presented less posttraumatic stress symptoms in the aftermath of the traumatic event, even when controlling for country, gender, age, time since the occurrence of the emergency situation, trauma severity and self-threat perception. This result is in line with previous research showing that self-efficacy is a protective factor that reduces PTSD symptoms, and predicts adaptive response and recovery among victims of man-made and natural accidents (Benight et al., 2000; Benight & Harper, 2002). On the contrary and in accordance with previous research (Ozer et al., 2003), female gender, trauma severity and self-threat perception contributed to explain the increase in posttraumatic stress symptoms.

It is important to note that, differently from previous studies, our findings focused on the survivor's perceived ability to deal with the situation during its occurrence. To our knowledge, this is the first study that links perceived self-efficacy in the emergency situation and posttraumatic stress. Since more self-efficacious individuals may present more adaptive response in the aftermath of the event, our results have some possible implications. First of all, it stresses the importance of increasing people's self-efficacy and their perception of being able to manage a stressful event. This goal may be achieved, for instance, by developing adequate training programs, which may focus on citizens' knowledge of how to behave during natural and man-made accidents. The programs should explore if people are prepared to adopt protective actions during a danger situation and include simulations of evacuations. Training programs may be conducted with a participatory approach in order to promote proactive attitudes among participants and encourage people to better know

environmental risks and adopt preventive cautionary actions. These programs should target different groups of citizens with a particular attention to more vulnerable ones, such as migrants, children and women. In our study, we found a significant positive association between survivors' emergency prevention knowledge and self-efficacy in the bivariate analysis. It is not unreasonable to hypothesize that more emergency prevention knowledge may increase self-efficacy in emergency situation, which in turn may reduce posttraumatic stress symptoms. Further research should test this hypothesis, which may support the need for the development of preventive plans and educational programs directed towards individuals and communities at risk. Furthermore, future studies could assess perceived peritraumatic self-efficacy in the immediate aftermath of the trauma and evaluate whether it is a predictor in a longitudinal design. To better understand the role of peritraumatic self-efficacy further studies should control for other control variables such as self-esteem and survivors' level of self-efficacy.

In accordance with Benight and Harper (2002), we consider that our findings underline the need to support affected survivors to identify perceptions regarding their behaviours during the emergency situation. This will allow the professional to offer support to more vulnerable individuals and, when possible, to value positively survivors' efforts directed to manage the stressful situation. In fact, this may contribute to promote a positive cognitive appraisal of the event and prevent the development of a negative memory concerning the traumatic situation, which may lead to distress and psychopathology (Ehlers & Clarks, 2000).

Finally, it is noteworthy that the current study concerns the experience of survivors who were victims of several emergency situations that occurred in Italy and Spain in the last decade. This is worth mentioning because future disasters may be multinational events and there is a need to extent results regarding human behaviour in emergency situation to survivors affected by different types of events and/or with different cultural backgrounds. Briere and Elliot (2000) pointed out that previous research has focused on participants who experienced a specific category of event (e.g. all participants were victims of earthquakes or traffic accident) and this limited the generalization of results. They also found that the stressor characteristics (i.e. capacity to injure or damage, fear of death) were stronger predictors of distress symptoms than the specific type of event. Regarding this, our findings have shown that survivors of fires, terrorist attacks, earthquakes and floods with more self-efficacy beliefs have developed less posttraumatic symptoms, even when controlling for the severity of the trauma.

Regarding the pre-event variables, such as emergency prevention knowledge, trust in emergency services and risk perception of becoming a victim of an emergency situation, it emerged that they were not associated to a reduction in posttraumatic stress symptomatology. Although these findings do not support our hypotheses, they are in accordance with previous studies (Schnurr et al., 2004) showing that posttraumatic stress symptoms are more strongly related to factors operating during and after the traumatic event. It is also possible that the lack of association lies on the fact that we assessed these pre-event variables by collecting survivors' perceptions and beliefs.

This study has several limitations. First, the sample size was small and not randomly selected. In fact, the study has been developed with a convenience sample of survivors who voluntarily participated in the research. Consequently, it is possible that there are latent biases linked to the decision of participating in the study, or that the difficulty of reaching

some population groups limited their recruitment. For instance, in spite of our efforts to recruit a representative sample of survivors of emergency situations, we found difficulties especially in recruiting participants of non collective events, such as domestic fires. It is possible that these major difficulties depend on the type of event, which is associated to self-blame for the occurrence of the event (Greenberg & Keane, 2001) and may favour reluctance to participate. Second, the emergency situation reported by the participant could have occurred up to 11 years ago, and it is possible that this long time affected the retrospective recall of the event and in consequence the results. Finally, a further issue is the cross-sectional design of the study, which impedes to identify causal relationships between the studied variables and suggests caution in interpreting and generalizing the observed findings.

Despite these limitations, the study gives a contribution in understanding the role of perceived self-efficacy during the emergency situations in culturally different populations of survivors, which experienced several types of emergency situation such as earthquake, flood, terrorist attack and fires.

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Table 1. *Sample characteristics and country differences (n =214)*

Variable	Italian N (%)	Spanish N (%)
Gender		
Male	53 (24.9)	41 (19.3)
Female	74 (34.7)	45 (21.1)
Relationship status		
No relation	34 (16.0)	23 (10.8)
Relation	93 (43.6)	63 (29.6)
Qualification[a]		
No-Lowest	3 (1.4)	16 (7.5)
Intermediary	8 (3.8)	10 (4.7)
Higher secondary	56 (26.3)	21 (9.9)
University degree	60 (28.1)	39 (18.3)
Employment[b]		
Unemployed	7 (3.3)	15 (7.0)
Employed	120 (56.3)	71 (33.4)
Income[c,d]		
< 70%	70 (35.1)	11 (5.5)
70% ≥ x ≤ 150%	43 (21.6)	40 (20.1)
> 150%	4 (2.1)	31 (15.6)

Note. [a]χ^2 = 22.42, *df* = 3, *p* < .001, Cramer's *V* = .32; [b]χ^2 = 7.88, *df* = 1; *p* < .01, φ = .19; [c]χ^2 = 59.6, *df* = 2, *p* < .001, Cramer's *V* = .55. [d]Thresholds for the three categories were established considering the average income of the country (GfK Group, 2008).

Table 2. *Correlation matrix of all study variables*

	1	2	3	4	5	6	7	8	9	10	11	12
1. Country[1]	-											
2. Gender[2]	.06	-										
3. Age[3]	-.48**	-.08	-									
4. ESTS[4]	-.10	.08	-.06	-								
5. EPKS [5]	-.08	-.19**	-.01	.08	-							
6. RPS[6]	.09	.22**	-.13	.06	.11	-						
7. SE[7]	-.20**	-.29***	.01	.03	.29***	-.10	-					
8. CB[8]	-.26**	-.15*	.27***	-.03	.18*	-.09	.35***	-				
9. AB[9]	-.06	-.15*	.03	-.02	.12	-.13	.30***	.12	-			
10. TS[10]	-.08	-.09	.21**	-.17*	-.08	.01	-.17*	-.04	-.12	-		
11. ST [11]	.12	.24***	-.05	-.06	-.14*	.16*	-.39***	-.21**	-.23**	.38***	-	
12. PTS[12]	.21**	.20**	.01	-.05	-.09	.10	-.51***	-.31***	-.24**	.40***	.50***	-
13. TES[13]	-.24**	-.02	.05	.13	-.14	-.08	-.05	-.12	-.09	.06	-.04	.08

Note. *p* < .05; **p* < .01; ****p* < .001. A point-biserial correlation coefficient (r_{pb}) was computed for correlations between two binary variables, and a binary variable and an interval variable. A Pearson's correlation coefficient (*r*) was computed for correlations between two interval variables.[1]Country (Spanish = 4; Italian = 8); [2]Gender (m = 1; f = 2); [3]Logarithm of age; [4]Emergency Services Trust Scale; [5]Emergency Prevention Knowledge Scale; [6]Risk Perception Scale; [7]Self-efficacy in emergency situation; [8]Conscious Behaviour (conscious behaviour = 1; no conscious behaviour = 0); [9]Active Behaviour (active behaviour = 1; no active behaviour = 0); [10]Trauma severity; [11]Self-threat perception; [12]Logarithm of Posttraumatic stress symptoms; [13]Time since the emergency situation (square root transformed).

Table 3. *Hierarchical Multiple Regression analysis predicting Posttraumatic Stress Symptoms*

Variable	Step 1			Step 2		
	B	$(SE\ B)$	β	B	$(SE\ B)$	β
Country[1]	.04	.02	.14	.03	.02	.10
Gender[2]	.20	.07	.21**	.16	.07	.17*
Age[3]	.17	.24	.05	.14	.23	.04
EPKS[4]	.03	.04	.05	.07	.04	.11
ESTS[5]	.00	.01	.01	.00	.01	-.01
RPS[6]	.00	.00	-.06	.00	.00	-.06
TES[7]	.00	.00	.10	.00	.00	.10
Conscious behaviour[8]	-.13	.07	-.13	-.04	.07	-.04
Active behaviour[9]	-.15	.08	-.13	-.06	.08	-.05
Trauma severity	.15	.04	.26***	.14	.04	.25***
Self-threat perception	.03	.01	.24**	.03	.01	.21**
Self-efficacy[10]				-.05	.01	-.33***

Note. *$p < .05$; **$p < .01$; ***$p < .001$. Step 1: $R^2 = .367$***, Adj.$R^2 = .320$***. Step 2: $R^2 = .436$***, Adj.$R^2 = .391$***. [1]Country (Italian = 8; Spanish = 4); [2]Gender (m = 1; f = 2); [3]Logarithm of age; [4]Emergency Prevention Knowledge Scale; [5]Emergency Services Trust Scale; [6]Risk Perception Scale; [7]Time elapsed since the emergency situation; [8]Conscious Behaviour (conscious behaviour = 1; no conscious behaviour = 0); [9]Active Behaviour (active behaviour = 1; no active behaviour = 0); [10]Self-efficacy in emergency situation.