

UNIVERSIDADE DE LISBOA
FACULDADE DE PSICOLOGIA



**PSYCHOLOGICAL TRAUMA AND RESILIENCE: THE
AFTERMATH OF MADEIRA ISLAND'S WILDFIRES
AND FLOODS**

Rita Ribeiro de Carvalho Soares Fatela

MESTRADO INTEGRADO EM PSICOLOGIA

(Secção de Psicologia Clínica e da Saúde/Núcleo de Psicologia Clínica Sistémica)

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Dissertação orientada pela Professora Doutora Maria Teresa Ribeiro

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“(...) because if we all did our part, maybe we could have our little slice of Heaven back.”

(P.)

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Resumo

O estudo da vivência de desastres, enquanto acontecimentos idiossincráticos e potencialmente traumáticos, constitui-se da maior relevância atendendo ao seu impacto na saúde mental. A presente investigação visa, assim, explorar os conceitos de resiliência, trauma psicológico e crescimento pós-traumático associados à experiência de um ou mais desastres. A amostra, recolhida através da técnica não probabilística “bola de neve”, abrangeu indivíduos adultos de ambos os sexos (n=15) residentes na ilha da Madeira que tenham sido expostos a incêndios florestais e/ou às cheias de Fevereiro de 2010. Ambas as situações remetem para um impacto generalizado na comunidade, com danos materiais consideráveis e perda de vidas humanas.

As variáveis consideradas para análise prendem-se com os níveis de resiliência e de crescimento pós-traumático, o evento stressor (único ou múltiplo), a exposição traumática, as medidas preventivas e interventivas, o suporte social e as variáveis sociodemográficas (sexo, idade, estado civil, habilitações académicas). A informação quantitativa, recolhida com recurso a questionários referentes às variáveis de resiliência, crescimento pós-traumático e sociodemográficas, foi posteriormente analisada no IBM SPSS *Statistics* (22.0 para *Windows*). A informação qualitativa, de carácter exploratório, foi obtida através da realização de uma entrevista semi-estruturada e analisada através do *software* NVIVO (11.0 versão para *Windows*). Os resultados apontam para diversas possíveis relações, nomeadamente entre os graus de exposição traumática e os valores de crescimento pós-traumático, e entre a atribuição de origem e as medidas tomadas durante o desastre. São, por fim, descritas possíveis implicações dos dados encontrados, e sugeridas direcções futuras.

Palavras-chave: Resiliência, Trauma Psicológico, Crescimento Pós-Traumático, Desastre, Prevenção, Intervenção

Abstract

Studying the experience of a disaster, a potentially traumatic event rather idiosyncratic, gets its relevance from the proven impact of disasters in the survivors' mental health. The present dissertation aims, then, to explore the concepts of resilience, psychological trauma and posttraumatic growth associated to the experience of one or more disasters. The sample, gathered through the non-probabilistic sampling method "Snowball", was constituted by adults from both genders (n=15) who resided in Madeira island and were exposed to wildfires and/or February 2010's floods. Both situations refer to a generalized impact in the community, with considerable material damage and loss of human lives. The variables selected for analysis were resilience, posttraumatic growth, main event (single or multiple), traumatic exposure, preventive and interventive measures, social support and sociodemographic information. The quantitative information, collected through questionnaires regarding resilience, posttraumatic growth and sociodemographic information, was subsequently analysed via IBM SPSS Statistics (22.0 version for Windows). The qualitative data, of exploratory nature, was obtained through semi-structured interviews and analysed via NVivo software (11.0 version for Windows). Results point towards several possible relationships, namely between the severity of traumatic exposure and posttraumatic growth values, and between the attributed source of origin and the disaster measures. Lastly, implications at several levels (including clinical) are described, and future directions are suggested.

Key words: Resilience, Psychological Trauma, Posttraumatic Growth, Disaster, Prevention, Intervention

Introduction

Resilience

Research shows that the majority of individuals experience at least one potentially traumatic event (PTE) during the course of their lives (Bonanno, Westphal, & Mancini, 2011, 2012; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). The intentional use of the word “potentially” when referring to the psychological impact of an event means to highlight the variability of interindividual responses to acute situations (Bonanno & Mancini, 2008; Bonanno et al., 2011), possible reactions encompassing the presence or absence of distress, different levels of intensity and duration of symptoms, and early to late onset of physical or mental health problems (Bonanno, 2004). Most people, however, manage to cope with PTEs without significant disruptions in their levels of normal functioning (Bonanno & Mancini, 2008; Bonanno, 2004; Bonanno, Papa, & O’Neill, 2001; Bonanno et al., 2011). Indeed, the currently dominant paradigm of human responses to loss and potential trauma accepts the resilient outcome – formerly considered rare and either a sign of exceptional mental health or psychopathology due to its overall absence of pronounced distress – as the most prevalent following a PTE.

Despite its well-established use in science and mathematics, the term resilience has only relatively recently gained substantial momentum as a psychological construct (Bonanno, Romero, & Klein, 2015). While its usage in physics alludes to the ability of a tense body, through properties such as tolerance for applied strength and elasticity, to recover its size and form after deformation, resilience viewed through a psychological lens typically revolves around the concepts of adversity and positive adaptation (Fletcher & Sarkar, 2013). Positive adaptation has been defined as a “behaviourally manifested social competence” in need of accurate and appropriate examination criteria and domains (Luthar, Cicchetti, & Becker, 2000). Regarding the occurrence of a PTE, a rigorous definition of competence comprises the absence of a psychiatric diagnosis, and not an evidently altogether non-disturbed functioning (Fletcher & Sarkar, 2013). Ungar and Liebenberg (2011) drew attention to the cultural bias surrounding the operationalization of positive adaptation, with criteria such as healthy relationships and academic success being deemed tendentiously Western, and suggested an approach to the concept that instead embraces the cultural environment.

Adversity was, in turn, described in terms of negative life circumstances with an established statistically significant association with adjustment difficulties (Luthar et al.,

2000). Contrasting the idea of adversity as contiguous to the concept of risk, Davis, Luecken and Lemery-Chalfant (2009) proposed that most adverse situations stem not from major occurrences, but rather from modest ones related to the individual's daily quotidian. Fletcher and Sarkar (2013), given the widespread tendency to reduce the concept of adversity to a mere predictor of maladjustment, emphasized the need to include positive life events in its definition, as even occurrence such as planned parenthood, unlikely to be construed as adverse, requires an adjustment to that new role's demands.

While resilience is consistently linked to these two main concepts, there is a standing debate on whether to consider it a trait or a process. Its notion as a trait emerged in 1980 alongside Block's concepts of ego-control and ego-resilience, the former responsible for impulse control and the latter for the suitability of the personality components to the external environment's constraints (Farkas & Orosz, 2015). Under this assumption, Connor and Davidson (2003) considered resilience to be a "multidimensional characteristic that varies with context, time, age, gender, and cultural origin, as well as within an individual subjected to different life circumstances" (p. 76) that aids the individual's adaptation to a new context. Meanwhile, conceptualizing resilience as a dynamic process implies a contextual and temporal variation of the effects and efficacy of the protective and promotive factors, making it so that an individual's resilience gets altered with the change in circumstances (Fletcher & Sarkar, 2013).

Bonanno's (2004, pp.20-21) take on psychological resilience depicts it as "the ability of adults in otherwise normal circumstances who are exposed to an isolated and potentially highly disruptive event such as the death of a close relation or a violent or life-threatening situation to maintain relatively stable, healthy levels of psychological and physical functioning (...) as well as the capacity for generative experiences and positive emotions". In his work, he accentuates the dissimilarities between resilience, a maintained state of homeostatic equilibrium post-PTE with a possible occurrence of transient disruptions (sporadic and short-lived symptomatology), and recovery, in which there is a temporary decrease in the individual's normal functioning and a subsequent gradual return to pre-PTE levels that can take up to two years. Furthermore, chronic distress is mentioned as yet another possible outcome, present in a small portion of the exposed individuals (5 to 10%), even if said percentage tends to increase in cases of extreme losses (up to 30% of the sample).

Although several studies have been dedicated to the unearthing of factors associated with the resilience pattern, no variable has been labelled as a dominant predictor (Bonanno et al., 2015). Furthermore, risk and protective or promoting factors are not necessarily “mirror images” (McNally et al., 2011), hence the need for continuous research.

Research conducted after a terrorist attack in New York City found a positive association between resilience and the male gender, older age and greater education (Bonanno, Galea, Bucciarelli, & Vlahov, 2007). In a similar fashion, a study with survivors of the Hurricane Katrina found the female gender, PTE-related financial loss, low social support and post-PTE stressors and traumatic events to be risk factors regarding PTSD symptoms and their duration (Galea, Tracy, Norris, & Coffey, 2008).

Regarding PTE exposure, its well-known negative association with psychological adjustment does not exclude the possibility of resilience (Bonanno et al., 2011). When considering both proximal and distal exposure – incidents and consequences that occur, respectively, during the approximate period of the PTE and in its aftermath –, it is the former that holds a consistent connection with increased distress and psychopathology (Bonanno, Brewin, Kaniasty, & Greca, 2010), particularly when the perception of immediate danger of death or injury to oneself or others is present (Bonanno et al., 2011).

Hardiness, or mental toughness, refers to one’s ability to maintain control, commitment and confidence so that a demanding situation may be perceived as a challenge and not a threat, and acts as a buffer for stress thus supporting a resilient outcome (Bonanno, 2004; Kuiper, 2012; Maddi, 2013).

Self-enhancement also seems to be generally viewed as a protective trait in the face of potential trauma (Bonanno & Mancini, 2008; Bonanno, 2004; Bonanno, Rennieke, & Dekel, 2005; Gupta & Bonanno, 2010), since the unrealistic and positive illusions regarding one’s self appear to promote its preservation in the event of a PTE, even if seemingly at the expense of their social adjustment. In fact, coping with a PTE may require strategies that in normative circumstances would be deemed ineffective or maladaptive (Bonanno & Mancini, 2008; Bonanno, Galea, Bucciarelli, & Vlahov, 2006; . Bonanno et al., 2005).

Regarding coping styles, repressive copers’ – individuals whose reaction to a PTE is characterized by low levels of reported anxiety, high scores on defensiveness regarding emotional distress, and possible physiological activation (Coifman, Bonanno, Ray, & Gross, 2007; McNally et al., 2011) – tendency to avoid hostile stimuli like intrusive memories or

thoughts, a mechanism suggested to be prejudicial long-term, appears to carry benefits for a post-PTE adjustment (Bonanno, 2004). Guo, Gan and Tong (2013) examined the role of three major coping styles – meaning-focused (MFC), problem-focused (PFC) and emotion-focused (EFC) – in post-earthquake survivors’ adjustment, and found that MFC like positive re-evaluation was linked to fewer depression symptoms, higher well-being and positive affect. Moreover, while MFC impacted the well-being by promoting an increase in positive outcomes, PFC decreased the negative ones like depression, and EFC bore no apparent association with an improved well-being.

The employment of positive emotion, humour and laughter as a coping mechanism in the aftermath of a PTE, once viewed as defensive denial, can be an effective way to reduce levels of distress, either by impacting directly the negative emotions or by fostering social contact and support (Bonanno, 2004; Bonanno et al., 2011; Kuiper, 2012).

Posttraumatic Growth

Adding to the aforesaid patterns of adjustment in the aftermath of a PTE, it is also possible, and not entirely exceptional, for people to report positive growth (Cho & Park, 2013).

The aptitude to ascertain benefits from a crisis situation, despite being defended by many as a valid post-PTE outcome (Helgeson, Reynolds, & Tomich, 2006), poses theoretical and methodological concerns starting with the multitude of terms it has been referred to as: “benefit finding” (Affleck & Tennen, 1996), “thriving” (Carver, 2010), adversarial growth (Linley & Joseph, 2004), stress-related growth (Park, Cohen, & Murch, 1996) and posttraumatic growth (Tedeschi & Calhoun, 1996). These constructs’ shared premise that it is possible to perceive positive changes following an adverse event is the foundation for their apparent conceptual overlap (Cho & Park, 2013), even if some may vary to some extent in aspects such as exposure to stress (stress-related growth vs. posttraumatic growth) and timing of onset (benefit finding vs. posttraumatic growth (Mols, Vingerhoets, Coebergh, & van de Poll-Franse, 2009)).

Furthermore, in addition to the lack of a consensus regarding terminology, it is also essential to distinguish growth in its reported form from actual growth. While both strongly depend on self-report measures, which in itself presents a limitation concerning possible priming effects (Jayawickreme & Blackie, 2014), reported growth’s evaluation, the most commonly resorted to, relies solely on the individual’s subjective perceptions of personal

change. A fair assessment of actual posttraumatic growth – objective positive changes (Frazier et al., 2009) – entails a longitudinal approach with pre and post-PTE comparison of the same dimension, a task made difficult by the fact that it is mostly impossible to predict who will experience a potentially traumatic encounter (Gunty et al., 2011).

Regardless of the standing debates, several authors look to posttraumatic growth (PTG) as the most widely accepted term to describe growth following an adverse event (Alexander & Oesterreich, 2013; Jayawickreme & Blackie, 2014, 2016; Tedeschi, Calhoun, & Groleau, 2015; Zoellner & Maercker, 2006). An important decision to be made concerning the conceptualization of PTG is whether it should be deemed a process or an outcome, the former granting it the status of an independent variable and the latter that of a dependable one (Tedeschi et al., 2015), and Jurišová (2016) credits the outcome models' current dominance in the field to their comprehensive nature.

In this sense, Tedeschi and Calhoun (2004, p.1) described posttraumatic growth as “positive psychological change experienced as a result of the struggle with highly challenging life circumstances”. The authors' functional descriptive model includes several fundamental components. The “seismic event” (Calhoun & Tedeschi, 2006) that brings about PTG may concern the loss of a loved one, a natural disaster, or an accident (Karanci et al., 2012), and a higher perceived seismicity is linked to an increased likelihood of positive outcomes (Calhoun & Tedeschi, 2004; D. R. Jones, 2010). Since the disruption of the assumptive beliefs is viewed as the prompter of growth, the process of rumination as an effort to rebuild them earns a central stand in the process (Cho & Park, 2013), with the emotional distress owed to an initial period of intrusive thoughts being the instigator of more deliberate forms of rumination. Factors like self-disclosure (in the form of writing and talking), social support, pre-PTE personality (extraversion, openness to experience, agreeableness and conscientiousness and neuroticism), sociocultural influences (proximal and distal) and life wisdom also play vital roles, and the outcome of positive change implies an interaction between the variables (Calhoun & Tedeschi, 2006).

The development of the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996) as an instrument for assessing the positive changes post-PTE classified the results in terms of five factors – New Possibilities, Relating to Others, Personal Strength, Spiritual Change and Appreciation of Life – and three broader categories of growth – perceived changes in the self, in the relationship with others, and in the philosophy of life.

Resilience and Posttraumatic Growth

Despite their shared health-oriented nature (Levine, Laufer, Stein, Hamama-Raz, & Solomon, 2009), the interaction between resilience and PTG is still largely unclear. Evidence congruent with a positive association between both concepts has been found in several studies. Ogńska-Bulik's (2015) study with bereaved people revealed that although the relationship between resilience and PTG is complex, the former is positively linked to two of the latter's dimensions in particular (self-perception and appreciation of life). Moreover, a study conducted with a group of motor-vehicle accident survivors reported positive correlations between some PTG dimensions (changes in relationships with others, new possibilities and personal strength) and resilience, while others (spirituality and appreciation of life) were positively linked to PTSD symptoms, suggesting that PTG might not only be considered the outcome of successfully employed coping strategies, but also a coping strategy in itself (Nishi, Matsuoka, & Kim, 2010).

Contrarily, Levine (2009) uncovered a negative correlation between resilience and PTG levels and proposed two possible explanations. Firstly, resilient people's tendency to lessen the impact of a PTE might reduce their psychological suffering in such a way that it does not elicit meaning-making behaviours, thus impeding the occurrence of PTG. The second hypothesis is that by regarding PTG as a positive illusion utilized when there is a loss of psychological stability, a negative association between PTG and resilience makes sense since resilient people manage to maintain their equilibrium, save for short-lived and mild loss or trauma reactions. Bonanno and Westphal (2007) share Levine's view, and stress the likelihood of a more consistently positive association between the recovery outcome of trauma and PTG.

Disasters

UN-ISDR (Cassel-Gintz, 2006) defined disaster as a severe disturbance in the functioning of a community or a society causing extensive human, material, economic or environmental losses that overwhelm said community or society's resources and ability to cope.

Several criteria have been brought forward with the sole purpose of categorizing the different known types of disasters. Castro (de Castro, 1999) grouped them according to their intensity (levels I to IV, pertaining to an increasing degree of severity and need of external support), duration (episodic or chronic), evolution (sudden, gradual, or added sum of partial

effects), and origin (natural, human, or mixed). North (2007) focused on a more discriminate source of origin and produced three categories: natural disasters, derived from extreme natural phenomena; technological accidents, the main role being that of human error such as in structural collapses and mass transportation accidents; and wilful human-induced incidents, like mass murders or terrorism.

Given the essentially generalized presence of human actions or omissions that aggravate or exacerbate the consequences of natural phenomena, regarding a disaster as purely natural is currently utopian (Kobiyama et al., 2006). Therefore, the term “natural disaster” is employed to describe an extreme geological, meteorological or hydrological event that, with or without human interference, exceeds the coping ability of the afflicted community (Kobiyama et al., 2006; Lindell & Prater, 2003).

Psychosocial impact of natural disasters

The examination of the psychosocial impact of a disaster must necessarily consider the potential for a multitude of reactions across individuals, populations and type of disaster (Bonanno et al., 2010; North, 2007).

According to North (2007), variables like gender, pre-existing psychopathology and post disaster adverse events have a more prominent effect than disaster severity or degree of exposure in the survivors’ mental health.

While men are shown to be more vulnerable to substance abuse disorders (Goldmann & Galea, 2014; Ni et al., 2013), the female gender has been consistently linked to higher levels of psychopathology overall, namely concerning depression, PTSD and Acute Stress Reaction (ASR) symptomatology (Breslau & Anthony, 2007; Ni et al., 2013; Norris, Baker, Murphy, & Kaniasty, 2005; Sattler et al., 2006).

A study conducted by Goldman and Galea (2014) revealed that survivors with clinical histories reflecting pre disaster psychopathology were more prone to PTSD, depression, substance abuse, diminished resilience levels and post disaster psychopathological symptoms.

In regards to the impact of pre and post-disaster PTEs – loss of job and/or income, relational rupture, serious illnesses or injuries, and death of loved ones –, research points to a central role of accumulated number and severity of the events in the incidence and intensity of PTSD symptoms (Maes, Mylle, Delmeire, & Janca, 2001; North, 2007).

The present study aims to add to the existing knowledge on psychological outcomes of survivors of natural disasters, a very idiosyncratic form of PTE. Furthermore, by focussing on residents of Região Autónoma da Madeira, a Portuguese island with increasingly high risk of floods and wildfires (Abreu, Roxo, & Neri, 2014), exploring the community's experiences and perceptions might provide useful information on how to promote the survivors' safety and well-being both during and in the disasters' aftermath.

Method

Methodology

Narrowing on the broad concept of PTE, this study – which was developed in the context of Dr. Joana Faria Anjos' Clinical Psychology Ph. D. project on Resilience and Psychological Trauma – focusses on the psychological impact of natural disasters. Its sample was entirely composed by individuals residing in Madeira who were exposed, in different degrees, to 2010's floods and/or a wildfire in the last six years.

The employment of an almost exclusively qualitative approach was directly linked to this research's exploratory nature and chosen emphasis on depth of data – rather than a larger sample size – since the interpretative analysis of the participants' interviews allowed for a greater insight into the perceptions and meanings they attribute to living through that PTE (Zainal, 2007). Although it is argued that the ideal qualitative analysis is purely inductive so as to preserve all possibly emerging themes, several authors defend an alternative in which the initial design of the study is founded on theory-based constructs (Ali & Birley, 1999). Therefore, the present investigation featured a set of concepts derived from theory, and the in-depth analysis bore the purpose of allowing the emergence of additional prominently relevant themes.

Furthermore, the qualitative data was complemented by basic statistical analysis, namely regarding the concepts of psychological resilience and posttraumatic growth.

Conceptual map and research questions

Initial Research Question

The research question in which this investigation was inspired was:

“In the event of a natural disaster, is there a relationship between the defining characteristics of the disaster and its survivors’ psychological resilience and posttraumatic growth?”

Conceptual Map

Figure 1 portrays a visual schematization of the variables considered in the study and their hypothesised interactions. The first main concept – “Disaster” – encompassed several variables, such as symptomatology, exposure (to primary and secondary stressors), disaster measures (preventive and interventive) and attributed source of origin (natural, man-made or mixed). “Resilience”, another central variable, while known to be linked to a great number of constructs, was assessed in terms of coping strategies and social support perception. Lastly, “Posttraumatic Growth” comprised its three known dimensions: perception of self and others, openness and involvement, and spiritual matters.

The sociodemographic data referred to gender, age, marital status and education. The arrows mean to be a graphic representation of the interactions that were explored.

Furthermore, the conceptual map also serves the purpose of representing the more specific research questions:

1. How does the sociodemographic information relate to resilience and posttraumatic growth levels?
2. Is there a relationship between post-disaster resilience and posttraumatic growth levels?
3. How do the characteristics of the disaster relate to resilience and posttraumatic growth levels?

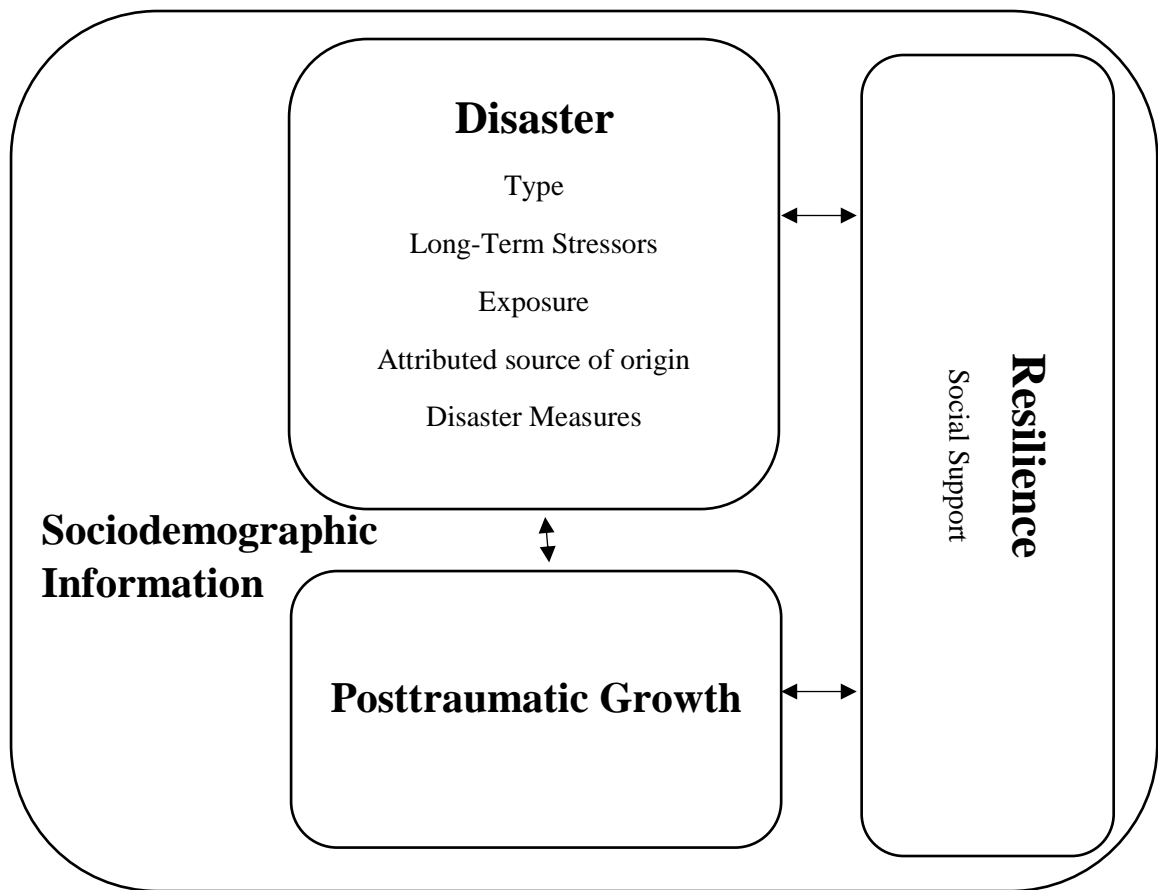


Figure 1 Conceptual Map

Research aims

Considering the framework provided by the research questions, the present investigation was centred on the following research aims:

1. To analyse possible relationships between the sociodemographic information and resilience and posttraumatic growth levels;
2. To assess whether resilience and posttraumatic growth levels are correlated;
3. To understand if the two disaster types considered in this sample (wildfire and flood) are linked to specific symptomatology, types of exposure, coping strategies and dimensions of posttraumatic growth;
4. To examine whether disaster characteristics relate to resilience and posttraumatic growth levels;
5. To allow for prominent themes to emerge, namely regarding measures undertaken to survive the disaster and factors associated with the post-disaster recovery period.

Participants

This research's sample was obtained through a snowball, or chain, method. Through the use of two key informants, fifteen more individuals that met the required criteria were recruited. This particular type of sampling is frequently employed in cases of "hidden populations" (Dragan & Isaic-Maniu, 2013), like people suffering from rare diseases, criminals, drug-addicts and, in the current study's case, PTE survivors.

A total of 18 people were contacted so as to participate, and three dropped out (both stating personal reasons). The sample was thus composed by 15 participants (N=15), 10 females (66.7%) and 5 males (33.3%), with ages ranging from 23 to 74 years (M=47.13, SD=14.596). In what concerned to civil status, 4 were single (13.3%), 7 were married (46.7%), 1 was a widow (6.7%) and 3 were divorced (20%). Regarding education, 13 were of lower education (86.7%), one participant had concluded high school (6.7%) and another had a college degree (6.7%). 2 of the participants (13.3%) considered themselves to be non-believers in regards to religion, while 7 (46.7%) were non-practicing believers and 6 (40%) were practicing believers. Only 4 (26.7%) were on any kind of prescribed psychiatric medication. Regarding direct exposure, there were 5 people (33.3%) in the flood group, 7 in the wildfire group (46.7%), and 3 participants (20%) were exposed to both disasters.

Measures

Disaster

The disaster sub-themes – type, long-term stressors, traumatic exposure, disaster measures, and attributed source of origin – were all assessed via the combined efforts of the information collected from the interviews and the one gathered in the literature review. The long-term stressors were exclusively made up from the participants' accounts, and so was the traumatic exposure and the disaster measures. The source of origin, however, was ascertained through direct questioning.

Resilience

Resilience was measured both qualitatively, through open-ended questions in the semi-structured interview regarding well-known resilience promoting factors, and quantitatively, through the application of the Connor-Davidson Resilience Scale (CD-RISC), the version that was adapted to the Portuguese population (Faria, Ribeiro & Ribeiro, 2008) (Appendix 1). This scale encompasses 25 items and a five-point scale that goes from (0) "not true at all", (1)

“rarely true”, (2) “sometimes true”, (3) “often true” to (4) “true nearly all the time”. The original scale (Connor, & Davidson, 2003) possesses very solid psychometric properties (Cronbach’s Alpha of 0.89 and a test-retest reliability measure of 0.87), allowing for the distinction between more or less resilient individuals. The Portuguese adaptation culminated in only four out of the five original factors – “Personal Competence, High Standards, Control and Tenacity” (Factor 1), “Trust in One’s Instincts, Tolerance of Negative Affects, and Strengthening Effects of Stress” (Factor 2), “Positive Acceptance of Change and Secure Relationships” (Factor 3), and “Spiritual Influences” (Factor 4) – and the resulting Cronbach’s Alpha for the complete scale was 0,88.

While completing the scale, the participants scored each item with a number, and the total score – ranging from 0 to 40 – was obtained through the adding of said numbers.

Posttraumatic Growth

Posttraumatic growth was measured qualitatively and quantitatively. Qualitatively through specific questions throughout the interview directed at assessing growth in three dimensions: “Openness to new possibilities and involvement in personal relations”, “Perception of Self and life in general” and “Spirituality” (Appendix 2). This variable’s quantitative assessment was possible through the utilization of the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996) in the version that was translated and adapted to the Portuguese population (Resende, Sendas, & Maia, 2008). Although the original version bore five factors – “Relating to Others”, “New Possibilities”, “Personal Strength”, “Spiritual Change” and “Appreciation of Life” –, the Portuguese adaptation (internal consistency of .95) found only three – “Greater openness to new possibilities and greater involvement in interpersonal relations”, “Change to the perception of self and life in general” and “Spiritual Change”, the Cronbach’s Alpha values for which were, respectively, .94, .89 and .64. The participants answered through a six-point scale: (0) “I did not experience this change as a result of my crises”; (1) “I experienced this change to a very small degree as a result of my crisis”; (2) “I experienced this change to a small degree as a result of my crisis”; (3) “I experienced this change to a moderate degree as a result of my crisis”; (4) “I experienced this change to a great degree as a result of my crisis; and (5) “I experienced this change to a very great degree as a result of my crisis.

While completing the scale, the participants scored each item with a number, and the total score – ranging from 0 to 105 – was obtained through the adding of said numbers.

Sociodemographic questionnaire

The sociodemographic questionnaire focussed on personal information such as age, gender, marital status, household, education, employment situation, religion, psychiatric and/or psychological history and substance consumption.

Data analysis

The data provided by the CD-RISC, PTGI and the sociodemographic questionnaire was analysed with the aid of the statistic software SPSS (24.0 version for Windows). Following the full transcription of the semi structured interviews, their content and theme analysis with the software NVIVO (11.0 version for Windows) constituted the qualitative part of the methodology. Although certain categories were built *a priori* so as to allow for a more structured approach to the fundamental concepts, the purpose of the qualitative analysis was for prevalent themes to emerge. Therefore, both the diversity and frequency of content were analysed. The quantitative information gathered through NVivo (number of sources and references, and percentage of coverage) was also analysed in light of the remaining quantitative measures.

Procedure

The sample for the current study was obtained entirely in Região Autónoma da Madeira, a Portuguese island. Participants were required to have suffered through either a wildfire or a flood in the past six years, and they had to have been at least 18 years old at the time of the disaster. Both criteria were explained to the two key informants, who then recruited the remaining participants out of their social network. Those who felt compelled to participate provided the key informant with their contact information, and were later contacted by the researcher so as for the anonymity, confidentiality and voluntary nature of their participation to be asserted. Following seventeen positive initial responses, two participants dropped out stating personal reasons.

The fifteen individuals that progressed to the individual face to face meetings – either in their house, their place of work or a café, according to each's preference (the only requirement being that the meeting place be as free of distractions as possible) – were then explained the investigation's protocol in more detail. After guaranteeing the participants' full comprehension of their participation and the study's goals, the informed consents were signed. Prior to the beginning of the semi-structured interview, every participant was inquired about the possibility of being recorded, which all fifteen agreed to. After the end of the

interviews, they were then handed two questionnaires – CD-RISC and sociodemographic questionnaire – and one inventory – PTGI, in this order.

Throughout the entire meeting, the levels of emotional distress were assessed through observation, and participants were asked if they would like to take a break. Moreover, given the low education of several of the participants (86.7%), the instructions and items of the questionnaires and inventory were, by their own request, read aloud by the investigator, who would then write down the reported answer.

Every participant was asked to keep the investigator’s contact information, in the event of emerging doubts or requests.

Results and Discussion

The present study borrowed accounts from 15 survivors of disasters that occurred in Madeira with the intent of deepening the already growing knowledge concerning personal adaptation to this particular type of PTE. The content analysis of the interviews paired with descriptive and correlational analyses of the variables (for complementary purposes only, given the small sample size) will be presented below, with different purposes associated to each type of NVivo’s results: the frequency of the variables will be assessed through the number of sources (inter-individual) and references (intra-individual), while the intensity and relevance will be assessed through coverage percentage.

Descriptive Statistics and Correlations

Table 1 describes the mean results of both CD-RISC and PTGI according to gender, civil status and research group.

Table 23 (Appendix 5) shows CD-RISC total scores in relation to two of the social demographic variables: Gender and Research Group. Concerning Gender, there were no women in the [55-70[group, there were two in the [70-85[and five in the [85-100]. Male participants, however, were featured in the same groups in the following distribution: two in the [55-70[group, two in the [70-85[group, and one in the [85-100. Regarding CD-RISC means, women in this study tended to score higher than men. According to Group, the results were more scattered: the Flood group had one element with scores between [55-70[, and between [70-85[and two between [85-100]; the Wildfire group had no participant scoring under 70 points, two scoring between [70-85[and five between [85-100]; the Flood and Wildfire group had one participant scoring between [55-70], zero participants between [70-

85[and two between [85-100]. No CD-RISC mean stood out in regards to this variable (Table 1).

Table 24 (Appendix 5) shows PTGI total scores in relation to two of the social demographic variables: Gender and Research Group. Concerning Gender, there were two women in the [0-25[group, one in the [25-50[, four in the [50-75[and three in the [75-105]; and there was one man in the [0-25[group, zero in the [25-50[, one in the [50-75[and three in the [75-105]. According to Group, the Flood group encompassed two people in the [0-25[and three in the [75-100]; the Wildfire group had one element in the [0-25 group, one in the [25-50[, four in the [50-75[and one in the [75-105]; and the Flood and Wildfire Group had one element in the [50-75[and two in the [75-105]. Moreover, the mean PTGI scores for all three groups differed significantly (Table 1), especially between those who experienced a single event, and those who experienced both (single event means: 57.80 and 56.43; both events: 74.67).

Table 1 Descriptive Statistics and Mean and Standard Deviation differences according to Gender, Civil Status and Disaster Group

Variable	Amplitude	CD-RISC		PTGI	
		M	SD	M	SD
Gender	1-2				
Women	1-2	86	2.191	60.20	8.944
Men	1-2	73.8	4.994	61.20	13.339
Group	0-2				
Flood	0-2	79	4.438	57.80	19.022
Wildfire	0-2	84.29	3.421	56.43	7.473
Flood and Wildfire	0-2	81.33	8.743	74.67	8.413

PTG and CD-RISC

Both CD-RISC and PTG were assessed through the use of a scale (CD-RISC) or an inventory (PTGI) and the use of open-ended questions during the interview. The mean scores

for CD-RISC were 81.93, with a standard deviation of 10.096, while for PTGI the mean scores were 60.53 with a standard deviation of 27.775.

Although the correlational analyses only serve a complementary purpose, the results are as follows (Tables 2, 3 and 4): no correlations were found either between CD-RISC Total Score and PTGI Total Score (0.04), or between PTGI Total Score and PTG from the Interviews (-.435). The latter, particularly, is interesting given that it contests the reliability of the scores obtained through the application of the inventory. Since participants scored higher when prompted about concrete aspects related to posttraumatic growth, possible explanations for this inconsistency in the results are difficulties with abstract reasoning (benefiting from tangible examples, such as the inventory items) and a possible suggestive effect of the inventory itself.

Table 2 Descriptive Statistics of the Variables

Descriptive Statistics of the Variables				
		Age	Resilience (CD-RISC)	Posttraumatic Growth (PTGI)
N	Valid	15	15	15
	Missing	0	0	0
Mean			81,93	60.53
Std. Deviation			10.096	27.725

Table 3 Correlation between CD-RISC Total Score and PTGI Total Score

Correlation between CD-RISC Total Score and PTGI Total Score			
		CD-RISC Total Score	PTGI Total Score
CD-RISC Total Score	Pearson Correlation	1	0.04
	Sig. (2-tailed)		.990
	N	15	15
PTGI Total Score	Pearson Correlation	0.04	1
	Sig. (2-tailed)	.990	
	N	15	15

Table 4 Correlation between PTGI Total Score and PTG from the Interviews (measured in coverage)

Correlation between PTGI Total Score and PTG from the Interviews (measured in coverage)			
		PTGI Total Score	PTG from the Interviews
PTGI Total Score	Pearson Correlation	1	-.435
	Sig. (2-tailed)		.105
	N	15	15
PTG from the Interviews	Pearson Correlation	-.435	1
	Sig. (2-tailed)	.105	
	N	15	15

Disaster Measures

This broad category was assessed throughout the interview, both through prompted questions and spontaneous accounts. It encompasses all the active efforts towards avoiding or minimizing the negative consequences and promoting positive outcomes of either, or both, disasters, and it was subdivided into four subthemes: “Interventive Measures”, “Preventive Measures”, “Forced evacuation” and “Refusal to abandon home”.

Table 5 remits to a clear discrepancy in the number of references related to reportedly employed measures before or during either disaster, with the flood inspiring only 10 mentions and the wildfire amounting to 69. Interventive measures were mentioned by 8 participants (2 from the Flood Group, 5 from the Wildfire Group and 1 from the Flood and Wildfire Group), and so were the preventive measures (3 from the Flood Group and 5 from the Wildfire Group). Moreover, most preventive measures were of a short-term capacity, that is, they were used concomitantly with the real and active threat of wildfire in a nearby town. Only two participants mentioned long-term, throughout the year, preventive measures, which included consistent maintenance of garden and green areas (including, but not limited, to their own properties, as C. put it: “(...) and I called them [city maintenance] regarding my neighbour’s garden. That thing was a fire hazard, with all that weed.”). Although five participants attributed, at least partially, the flood to human error or neglect (table X), only one of them included herself in the shared responsibility of river maintenance (“I think if we all did our

part, our beautiful place wouldn't have been destroyed." (P.)), while the others placed said duty solely on the government (*"They built, and built, and built, not caring about what would happen when the water from the rain had nowhere else to go but the paved roads"* (U.)), which may partly explain the almost total absence of long-term prevention in this regard.

Watering was used both as an interventive and as a preventive measure in relation to the wildfires. In fact, water as a resource was significant not only in this category, but also in the category "Additional Stressors" (subtheme of "PTE Exposure"). While people generally resorted to water in order to preventively protect the house and garden (*"We wet the rooftop and our garden, and we kept doing it until it was too dangerous to stay home (...)"* (A.)), avoid or diminish smoke exposure (*"We put wet cloths under the doors to prevent the some from entering the rooms."* (C.)) and put out lit fires (*"At a certain point, I felt water coming down my forehead and I realised someone had dropped it on me because my hair had caught on fire."* (C.)), water shortage was a reported stressor cited by six participants (*"There was no water after a few hours (...)"* (A.)). As an alternative to public waters, some utilized swimming pools or water tanks for the same effect (*"Thank God for the pool... otherwise it would have been so much worse."* (I.)).

Also quite connected to the subtheme of "Water Shortage" was the action of "Forced Evacuation". The word "forced" means to imply that the evacuation was not planned nor was it initially wanted by the participants, and the most cited reason as to why they finally resorted to it was the water shortage (*"And then we ran out of water, so we had to flee."* (D.)). Being that water was one of the main resources during the wildfires, its absence is implicitly connected to a greater perception of danger.

The preventive actions of watching over the progression of either the fire or the water – subtheme "Keeping an eye on things" (*"So I told him, you watch over the fire, and I watch over the road. You know, to be safe."* (I.); *"And we had to watch our feet, because who knew what was under those dark waters..."* (E.))–, protecting (by putting soaking cloths over them) or removing flammable products – such as gas cylinders – from potential harm's way (*"So I took my two gas cylinders to a place in the house where I knew the fire couldn't reach, and I left them there with soaking wet cloths on top"* (C.)), and cleaning the garden or surrounding areas (*"We took everything that could catch on fire from the backyard (...)"* (C.)) were mostly used in relation to the wildfires.

The subtheme of “Refusal to abandon home” was associated to a perceived lack of danger, in the case of the floods (“*My sister wanted to go, but I thought it was okay, it wasn’t that bad.*” (O.)), and to a profound desire to save one’s property despite the perceived danger, in the case of the wildfires (“*I only left my house when there was no-one else around. When there was nothing else around. Because first I had to try [and save the house].*” (F.)). In fact, two participants reported pride in having disobeyed official orders to evacuate their houses, as they were then able to save them through interventive measures (“*It was my instinct [to stay]... like many people’s instinct was to abandon their houses, but if they had chosen, like me to stay a bit longer...*” (F.); “*Yes, I chose to stay, and that is the only reason I still have a house.*” (C.)).

Regarding the CD-RISC and PTGI scores, no statistically significant correlation was found between them and the disaster measures the participants stated, although the value obtained in relation to Interventive Measures and CD-RISC (.454) points to a possible positive correlation (appendix 5, Table 19).

Table 5 Disaster Measures employed before or during the two types of disasters (measured in references)

	Flood	Wildfire
Forced Evacuation	3	7
Interventive Measures	0	11
Watering as an interventive measure	0	6
Preventive Measures	3	17
Cleaning the garden or surrounding areas	0	6
Keeping an eye on things	2	9
Removal or protection of flammable products	0	1
Watering as a preventive measure	0	6
Refusal to abandon home	2	6
Total	10	69

Source of Origin

This category referred to the source of origin attributed to the disaster, and it branched out into three subthemes – natural (caused mainly by hydrological, meteorological and geological events, free of human action), man-made (caused mainly by human action), and mixed (shared responsibility between human action and hydrological, meteorological and geological events) (Table 6). No participant considered the wildfires to be natural events, being a general notion among them that the fire, although able to start solely due to weather conditions, required human action to reach such dangerous and lethal proportions (*“But fire like that doesn’t start without matches.”* (N.)). Allied to this perception lie feelings of sadness and outrage towards the perceived lack of governmental action regarding the people deemed accountable (*“[referring to her notion that people who started fires were mentally ill] We live in a country where mental illnesses are a little bit neglected.”* (A.)).

Despite the floods’ similar reasoning – that human error and neglect played at least a small part on the disaster’s proportions (*“If only the streams had been clean...”* (P.))– there is a clear impression of the rain as being a crucial and, especially, uncontrollable and unavoidable prompter (*“Because it rained. It really, really rained. And, well... regarding that there’s not much...”* (O.)).

Table 6 - Characterization of node "Attributed Source of Origin" and respective child nodes (measured in sources)

Attributed Source of Origin		
	Flood	Wildfire
Natural	1	0
Mixed	2	1
Man-made	3	8

Long-Term Stressors

This category refers to the stressors that, having occurred as direct consequence of the PTE, prolong themselves over time. Four subthemes emerged – “Fear of Repetition”, “Managing Symptomatology in the Present”, “PTE Reminders” and “Revisiting the Disaster”.

The subtheme “Fear of Repetition” refers to the reported fear of reoccurrence. As demonstrated in table 7, this fear is significantly more pronounced in relation to the floods (*“I*

actually get scared that it will happen again.” (E.); *“Every time it rains, I think about it [floods], and hope it stops.”* (P.)), which may be partly motivated by the perceived unavailability and lack of control associated to the rain, allied to its perceived frequency in the island. Also, three participants showed displeasure towards the accuracy rate of weather reports, one of them even connecting it to a “useless and unnecessary” state of nervousness (*“And I get really anxious when I hear them on tv, and for what? It’s never right.”* (S.)).

The subtheme “Managing Symptomatology in the Present”, refers to the participants’ management of psychiatric symptomatology, derived from the disaster, at the time of the interview. All the entries fit into one of the following categories: “Intrusive and Recurrent Memories” (*“I never forget... never, never forget. It’s always on my mind, it’s a day I will never forget.”* (P.)), “Intrusive and Recurrent Thoughts or Images” (*“Sometimes that dark water... it was horrible, I can almost still see that really dark water.”* (P.)) and “Anxiety” (*“It’s not that I... but I don’t really like thunders. They still make me nervous.”* (E.)). These three categories are intimately connected to the “PTE Reminders”, since the latter seem to function as triggers. Particularly in the case of the floods, the occurrence of heavy rain seems to be associated to anxiety and intrusive symptoms and permanently linked to the possibility of reoccurrence (*“Even if it’s only a little bit of rain. I remember, and I wonder.”* (S.)). Two of the participants even mention strategies to deal with the intrusive thoughts of repetition: counting the minutes of heavy rain in order to leave after a chosen number of minutes (P. and E.), and counting the seconds between lightning and thunder to assess the distance (E.).

The subtheme “Disaster Revisiting” remits to the spontaneous revisiting of the disaster through sensorial memories – which in this sampleng of the disvisual or auditory memories, not necessarily intrusive. The sound of gas cylinders and giant canes exploding al memories the distancetter seem to function as triggers.ers. interv– belonged solely to the experience of wildfire (*I heard an explosion and I knew right away. Gas cylinders.l* (C.)). People screaming, however, was a sound reportedly associated with both experiences cetter seem to function as triggers.ers. interview. the (c*We would hear people screaming in the distance, it was horrible (expe(C.))*), and in the floods, the participants would witness them first-hand (r*Everyone around me screamed, my colleagues screamed, it was truly terrifying.”*veryon. The most prominent visual memory appeared to be of smog, in relation to the wildfires, even if one participant form the flood group mentioned, for several times, how the “The most prominent visual memory appeared to be of smog, in (P.).

There were no significant correlations found between long-term stressors and CD-RISC or PTGI scores (Appendix 5, Tables 21 and 22).

Table 7 Long-term Stressors (measures through number of references) according to type of disaster

	Main Event – Flood	Main Event - Wildfire
Fear of repetition	11	2
Managing symptomatology in the present	19	7
PTE Reminders	10	5
Auditive Revisiting	9	6
Gas cylinders exploding	0	4
Giant Cane	0	2
People screaming	7	5
Visual Revisiting	3	12
Smog	0	9

Pre and Post-Disaster PTEs

The conceptualization of these two categories – Pre-Disaster PTEs and Post-Disaster PTEs – remits to the notion proposed by several authors (Maes et al., 2001; North, 2007) that accumulated number and severity of pre and post-disaster PTEs play a significant role in post-disaster symptomatology. Using coverage as a tentative approximation at intensity – given that it translates into the percentage the participant unknowingly dedicated to the PTE – , a negative correlation (-.528) was found between coverage, but not accumulated number, of Pre-Disaster PTE and CD-RISC total score (Table 8). Moreover, Managing Symptomatology in the Present and Post-Disaster PTE seem to be positively correlated, both in number (.648) and in coverage (.686) (Tables 9 and 10). Although, once more, the size of the sample does not allow for definite conclusions, these results point towards a possible relationship between these variables.

Table 8 Correlation between CD-RISC Total Score and Pre-Disaster PTE (measured in coverage)

Correlation between CD-RISC Total Score and Pre-Disaster PTE			
		CD-RISC	Pre-Disaster PTE
CD-RISC	Pearson Correlation	1	-.528*
	Sig. (2-tailed)		.043
	N	15	15
Pre-Disaster PTE	Pearson Correlation	-.528*	1
	Sig. (2-tailed)	.043	
	N	15	15

*. Correlation is significant at the 0.05 level (2-tailed).

Table 9 Correlation between Managing Symptomatology in the Present and Post-Disaster PTE (measured in number of events)

Correlation between Managing Symptomatology in the Present and Number of Post-Disaster PTE			
		Managing Symptomatology in the Present	Number of Post-Disaster PTE
Managing Symptomatology in the Present	Pearson Correlation	1	.648**
	Sig. (2-tailed)		.009
	N	15	15
Number of Post-Disaster PTE	Pearson Correlation	.648**	1
	Sig. (2-tailed)	.009	
	N	15	15

**.. Correlation is significant at the 0.01 level (2-tailed).

Table 10 Correlation between Managing Symptomatology in the Present and Post-Disaster PTE (measured in coverage)

Correlation between Managing Symptomatology in the Present and Post-Disaster PTE			
		Managing Symptomatology in the Present	Post-Disaster PTE
Managing Symptomatology in the Present	Pearson Correlation	1	.686**
	Sig. (2-tailed)		.005
	N	15	15
Post-Disaster PTE	Pearson Correlation	.686**	1
	Sig. (2-tailed)	.005	
	N	15	15

** . Correlation is significant at the 0.01 level (2-tailed).

PTE Exposure

This category refers to the participants’ personal exposure to the disaster. It subdivides into three subthemes: “Additional Stressors” (stress factors indirectly related to the disaster); “Primary PTE Exposure” (firsthand personal and direct exposure to the disaster); and “Secondary PTE Exposure” (secondhand personal exposure) (Table 11).

The subtheme “Additional Stressors” encompasses several ideas: the water shortage (in relation to wildfire prevention or intervention), road blockage in both disasters (“(...) *and they had cut all access already, it was really difficult to get home (...)*” (S.)), lack of cell signal (“*And then I wanted to call them, but the lines were cut, or busy, I don’t know.*” (P.)), mainly in the flood scenario, and being on the job during the disasters (“*I was working [as a fireman] when it happened. I was working when he died.*” (J.)); “*It was tough... working through the floods, and the fires. All that smoke, and I had to drive the bus. Everyone wanted to flee, and I had to do my job, so I couldn’t flee as well.*” (H.)). Regarding “Primary PTE Exposure”, the most prevalent types of reports are of widespread destruction (13 participants), in either one of the disasters. From Table 11, it becomes evident that the perception of danger, while present in both situations, earns a more central role in the wildfire scenarios, which is congruent with an idea shared by many of the participants – six – in which they would “*take water over fire any day* (V.)”. This notion is true even for

participants who were only in one of the disasters, suggesting another kind of exposure to support it.

Moreover, in this study’s sample, the only reported deaths were in relation to the floods – not only dead bodies, but also the death of loved ones.

Regarding “Secondary PTE Exposure”, three people reported media exposure as a source of discomfort and/or anxiety (“*It was silly, really. I stuck to the tv, watching everything unfold, and it only made me more nervous.*” (E.)).

Table 11 PTE Exposure according to type of event (measured in number of references)

	Main Event – Flood	Main Event - Wildfire
PTE Exposure	53	77
Additional stressors	13	16
Water Shortage	0	11
Primary PTE Exposure	48	64
Dead bodies	4	0
Death of loved ones	5	0
Extreme emotional distress of other people	4	9
Loss or damage of property	9	13
Loved ones are missing	3	0
Perception of danger to loved one's life	3	13
Perception of danger to own life	9	23
Widespread destruction	25	23
Secondary PTE Exposure	0	0
Media Exposure	3	3

The correlation value between CD-RISC Total Score and Primary PTE Exposure is (-.449), which, despite not being statistically significant, points towards a negative correlation and indicates a possible damaging effect of primary exposure on resilience levels (Table 12).

Table 12 Correlation between CD-RISC and Primary PTE Exposure (measured in coverage)

Correlation between CD-RISC and Primary PTE Exposure			
		CD-RISC	Primary PTE Exposure
CD-RISC	Pearson Correlation	1	-.449
	Sig. (2-tailed)		.093
	N	15	15
Primary PTE Exposure	Pearson Correlation	-.449	1
	Sig. (2-tailed)	.093	
	N	15	15

Concerning PTGI Total Scores, positive correlations were found between them and PTE Exposure Total Scores (.687) and Primary PTE Exposure (.689) (Tables 13 and 14). These results seem congruent with Calhoun and Tedeschi’s (2006) concept of a “seismic event” as a posttraumatic growth instigator, since higher perceived seismicity appears to be connected to higher PTGI Total Scores. The subtheme “Emotional Expression”, while initially non-exclusive and open to both positive and negative reported emotions, ended up thoroughly constituted by the latter (“*It was horrible*” (P.); “*It was so, so tough.*”; “*It was terrifying.*” (C.)). In that regard, the participants’ openness in reporting the suffering they associate with the disaster (measured also in coverage) was also positively correlated with Primary PTE Exposure (.518) (Table 15), corroborating the idea of higher exposure being associated with higher suffering.

Additionally, these two types of PTE Exposure are also positively correlated with Managing Symptomatology in the Present (Tables 16 and 17), alluding to the possibility that the higher the perceived severity of the event, the higher the rate (measured in coverage) of the reported symptoms at the time of the interview.

Table 13 Correlation between PTGI Total Score and PTE Exposure Total Score (measured in coverage)

Correlation between PTGI Total Score and PTE Exposure Total Score			
		PTE Exposure Total Score	PTGI Total Score
PTE Exposure Total Score	Pearson Correlation	1	.687**
	Sig. (2-tailed)		.005
	N	15	15
PTGI Total Score	Pearson Correlation	.687**	1
	Sig. (2-tailed)	.005	
	N	15	15

** . Correlation is significant at the 0.01 level (2-tailed).

Table 14 Correlation between PTGI Total Score and Primary PTE Exposure (measured in coverage)

Correlation between PTGI Total Score and Primary PTE Exposure			
		PTGI Total Score	Primary PTE Exposure
PTGI Total Score	Pearson Correlation	1	.689**
	Sig. (2-tailed)		.005
	N	15	15
Primary PTE Exposure	Pearson Correlation	.689**	1
	Sig. (2-tailed)	.005	
	N	15	15

** . Correlation is significant at the 0.01 level (2-tailed).

Table 15 Correlation between Emotional Expression and Primary PTE Exposure (measured in coverage)

Correlation between CD-RISC and Primary PTE Exposure			
		Emotional Expression	Primary PTE Exposure
Emotional Expression	Pearson Correlation	1	.518*
	Sig. (2-tailed)		.048
	N	15	15
Primary PTE Exposure	Pearson Correlation	.518*	1
	Sig. (2-tailed)	.048	
	N	15	15

*. Correlation is significant at the 0.05 level (2-tailed).

Table 16 Correlation between Primary PTE Exposure and Managing Symptomatology in the Present (measured in coverage)

Correlation between Primary PTE Exposure and Managing Symptomatology in the Present			
		Primary PTE Exposure	Managing Symptomatology in the Present
Primary PTE Exposure	Pearson Correlation	1	.579*
	Sig. (2-tailed)		.024
	N	15	15
Managing Symptomatology in the Present	Pearson Correlation	.579*	1
	Sig. (2-tailed)	.024	
	N	15	15

*. Correlation is significant at the 0.05 level (2-tailed).

Table 17 Correlation between PTE Exposure Total Score and Managing Symptomatology in the Present (measured in coverage)

Correlation between PTE Exposure Total Score and Managing Symptomatology in the Present			
		Managing Symptomatology in the Present	PTE Exposure Total Score
Managing Symptomatology in the Present	Pearson Correlation	1	.554*
	Sig. (2-tailed)		.032
	N	15	15
PTE Exposure Total Score	Pearson Correlation	.554*	1
	Sig. (2-tailed)	.032	
	N	15	15

*. Correlation is significant at the 0.05 level (2-tailed).

Social Support

This category refers to reported social support during or after the disaster. It subdivides into two main subthemes: “Offered Social Support” (instances in which the participant offered his help) and “Received Social Support” (instances in which the participant was offered help). Out of the fifteen participants, eleven reported, at one time or another, having offered social support to someone in need – be those loved ones (“*I ran over there to help her [the sister]*” (V.)), friends (“*(...) and the next day it was my friend’s house down the road, so I went there as well*” (V.)), or random people (“*It was an old lady, and she couldn’t really see anymore. And so I told her, ‘Fire! Fire! Run, you have to go!’*” (I.)). Heavily linked to this subtheme is the one named “Worry about Loved Ones” – moments of mild to severe worry about loved ones, with or without resulting social support actions (“*My son. All I could think about was my son, and what was happening near his house.*” (P.)).

Regarding being the receivers of said support, although it was true for fourteen of the participants – from family (“*My nephew’s wife came to pick us up, she was the one to do it.*” (U.)), friends (“*And suddenly lots of my friends were in my house, to help.*” (C.)) and acquaintances (“*None of my customers left before the café was cleaned.*” (U.)) –, three were

featured in the “Absence of Social Support” node. This node pertains to the perceived absence of social support in times of need. One other subtheme that emerged in this regard was the “Lack of Social Support Received from Emergency Services”. Although only one person cited such a stressor, three more emphasised along their interviews they expected emergency services not to show up should they need them to. In fact, C. even stated that she had no negative feelings towards “the firemen not showing up” because she was “used to taking care of herself” and they had “enough work as it was”.

Since the node “Solidarity and Productivity” as a possible reaction of the community to the disasters was coded in seven of the fifteen sources, this fact may partly help to explain how receiving social support is positively correlated to Interventive Measures (.535) (Table 18). Only V., R. and P. mentioned Interventive Measures that were performed by the participant alone, which alludes to collaboration as being a motivator for these disaster measures in particular.

Table 18 Correlation between Received Social Support and Interventive Measures (measured in coverage)

Correlation between Received Social Support and Interventive Measures			
		Received Social Support	Interventive Measures
Received Social Support	Pearson Correlation	1	.535*
	Sig. (2-tailed)		.040
	N	15	15
Interventive Measures	Pearson Correlation	.535*	1
	Sig. (2-tailed)	.040	
	N	15	15

*. Correlation is significant at the 0.05 level (2-tailed).

Conclusions, Limitations and Future Research

The present dissertation serves the purpose of furthering the knowledge concerning individual adaptation to a natural disaster, considered by several authors a potentially traumatic event (Acierno et al., 2007; Bonanno et al., 2007; Felix et al., 2015; R. T. Jones, Ribbe, Cunningham, Weddle, & Langley, 2002). This particular sample lives in Madeira, a Portuguese island with a very high frequency and continued risk of wildfires and floods (Abreu et al., 2014), legitimating the relevance of such an analysis. The intent of adding a descriptive and correlational analysis was not to demonstrate the prove the existence of relationships between the variables, but rather to allude to possible associations that ought to be taken into consideration in future researches – especially ones with bigger and more representative samples.

Regarding the sociodemographic variables, one aspect worth highlighting was the difference in CD-RISC total scores between men and women. The rather small sample size allows for no definite conclusions, but not only the means were higher for women than for men, but also the distribution for women was more concentrated on the upper score groups. This contradicts the notion defended by several (Bonanno et al., 2007; Masood, Masud, & Mazahir, 2016) that the female gender was associated with a reduced likelihood for resilience. In this sense, it is worth noting that three of the five men who agreed to participate in the study claimed that they could benefit from it since they still “*weren’t okay*” (J.), hinting to a possible bias effect impacting the lower scores of men: perhaps only the less resilient men agreed to participate in the study.

Regarding posttraumatic growth, one of the core variables of this dissertation, the main finding concerned its possible positive association with number of main events experienced and PTE Exposure. The mean PTGI found for the group that had experienced both disasters was significantly higher than both means for the single event groups, hinting that greater exposure promoted posttraumatic growth. Concerning “PTE Exposure”, given that it was, in itself, positively correlated not only to posttraumatic growth, but also to “Emotional Expression”, a subtheme made up of almost exclusively negative reported emotions implying some degree of psychological suffering, it raises questions regarding posttraumatic growth’s possible association with psychological well-being. PTG’s relationship with psychological well-being outcomes is still a standing debate – hypotheses go from a lack of influence altogether, to positive and negative impacts, with some authors defending direct effects and others claiming PTG works as a stress-buffering mechanism (Husson et al., 2017). It would

be interesting and rather useful to further the knowledge on this subject, particularly in order to ascertain whether PTG can serve as a predictor of mental health in survivors of PTEs.

By exploring, in depth, the survivors' accounts regarding their experience and subsequent perceptions, several noteworthy themes emerged and remitted to the concepts of individual resilience and disaster resilient communities, which entails a continuing and constantly developing capacity of the community to recognize its vulnerabilities and strengths in three levels (Chandra, 2011). The first one pertains to prevention, endurance and reducing the stress of the disaster; the second refers to recovery and restoration to self-sufficiency and at least pre-disaster health and social levels; finally, the third focuses on the utilization of the knowledge obtained through the experience to improve the community's response to a future event. In this sense, it was of the utmost importance to review the survivors' accounts and perceptions in order to better understand the aspects that were successful and/or helpful, and the aspects that need improving.

The category "Disaster Measures" that emerged from the qualitative analysis embraces two major themes – "Preventive Measures" and "Interventive Measures" –, although lacking a statistical correlation with CD-RISC scores, is shown to be rather connected (qualitatively) to the participants' ability to deal with the disasters' demands, and thus to the concept of resilience. The role of the shared responsibility in disaster prevention, or rather lack thereof (remarkably evident in the case of the floods), was an especially interesting finding. Allied to the inevitability of the rain – participants admitted they could not control its timing or duration –, there was an overall attribution of the floods' catastrophic proportions to human error (building houses on risk-prone locations, or cementing the roads to a point where the rain cannot drain to the soil) that did not appear to fuel something other than negative emotions towards the government. In fact, only one included herself (P.) in the shared maintenance of the rivers, which may be part of the explanation as to why there was a generalized absence of preventive long-term disaster measures in relation to the flood. Similarly, while the wildfires instigated more preventive measures, they only appeared to do so in cases of real threat or danger in a tangible, nearby location. Even if the wildfires were generally credited to human action, since most participants associated them with criminal intent the perception of control appeared to drop long-term, given that only the government, and not them, could deal with transgressors and prevent them from setting the fires. Nevertheless, they still adopted several preventive short-term measures (for example, while they would be ready to clean the garden and strip it of everything flammable as soon as they

heard of fire near their houses, very few (only A. and C.) mentioned keeping the garden clean all year long). Therefore, these results point to the idea of shared responsibility as a potential catalyst for the adoption of preventive measures. Although this notion is growing increasingly popular, future investigations with this island's idiosyncrasies in mind are needed in order to develop better suited and more effective interventions. Future attempts should also ponder on the tentative correlation found between "Receiving Social Support" and "Interventive Measures", since it raises attention to the relevance of transforming the community into an organized system gifted with disaster-responding skills. This is congruent with Chandra's (2011) recommendation of improving social connectedness of the community as a way to improve community resilience.

There seems to be a generalized need for education, namely regarding: risk analysis, as a potential victim of disaster (such as danger perception, and which actions to undertake in order to preserve one's life and/or property); safety measures during the actual disaster (especially given that the emergency teams may be delayed or permanently prevented from reaching certain areas, especially during widespread events or events that occur in isolated areas); and preventive behaviour (with psychoeducation regarding not only concrete measures, but the importance of shared responsibility).

The positive correlations found between "Managing Symptomatology in the Present" and both "PTE Exposure" and "Primary PTE Exposure" point to the necessity for psychological crisis intervention in the immediacy of the PTE. This is also rather connected to the idea of disaster recovery, since this study's results suggest the need for improvements in the adequacy between emergency response and community psychosocial needs (both short-term and long-term). Although the exposure to primary PTE stressors is typically unavoidable and fundamentally connected to a PTE such as either of this study's disasters, some of those stressors may at least be partially managed through the educated efforts of emergency services teams. For example, teams who are knowledgeable on the harmful and long-term effects of stressors like witnessing extreme emotional distress of others may be more sensitive to it on the field and find ways to diminish the traumatic exposure. Therefore, it appears paramount not only to educate the already existing emergency resources, but also to keep endorsing the existence of crisis intervention and psychological trauma-informed units on the field concomitant with the first respondents.

The high rate of current symptomatology reported during the interview seems to also corroborate the gradually increasing perception of need for specific psychosocial intervention in trauma situations. This suggestion is strengthened by the fact that the symptoms were mainly associated with the floods, which happened six years before the study (contrary to the wildfires, which happened between 6 months and two years prior to the interview). Furthermore, the intrusive symptomatology was almost exclusively associated with rain, a PTE reminder that functions as a trigger for this population and one that is rather frequent on the island.

Inherent to the study's focus on a "hidden population" – survivors of a PTE – lie two rather clear limitations: sampling method, and sample size. The snowball sampling, widely used to access target or rare populations, whilst extremely useful in mainly explorative and qualitative investigations due to its practicality (Atkinson & Flint, 2001), carries several shortcomings: the inevitable reliability of the investigator on the subjective choices of the key informants; and the key informants' bias towards including members of their own social network (far down as they may be on said network, the resulting sample would necessarily carry more similarities than a random one would, thus influencing the findings). Furthermore, Groger and colleagues (1999) also bring attention to the existence of a "Gatekeeper bias", a subtype of selection bias in which the key informants, the "gatekeepers", would protect and hinder it impossible for the investigator to access people that they deemed too vulnerable. A large sample size, regarded by Atkinson & Flint (2001) as a possible way to minimize the bias, was also missing from this study, impeding a proper representation and comparison of each group and subcategory of variables. Nevertheless, the qualitative data gathered through the content analysis of the interviews, paired with the complementary descriptive and correlational statistical analysis, drew attention to several relevant aspects and potential associations. Subsequent investigations should consider larger sample sizes in order to attenuate the selection bias and allow for proper representation and comparison of categories.

The main variables of this study also required a certain degree of self-knowledge, self-awareness and capacity for abstract thinking, which may prove difficult (especially in a population such as this study's, since 13 out of the participants were of low education) and, once more, bias-inducing. In fact, one of the proposed explanations for the inconsistency between PTGI and PTG from the interviews remits to precisely that: perhaps when prompted, during the interview, about posttraumatic growth, the absence of concrete examples (examples such as the PTGI items) hampered the participants' ability to recognize personal

changes, which in turn did not happen when completing the inventory (scoring significantly higher).

Moreover, there is an implicit limitation to the cross-sectional study of variables like resilience and posttraumatic growth, for different reasons. Resilience, when conceptualized as a process, is vulnerable to change – for better or for worse – in light of life circumstances. Therefore, certain associations that this study pointed to – like the negative correlation between CD-RISC total scores and Primary PTE Exposure –, albeit not statistically significant, raise some questions of their own. Was there indeed a bigger exposure to primary PTE stressors, or were less resilient people more focused on the struggles and negative aspects of their survival? And more, considering resilience as the personal capacity to deal and adapt with a challenging situation, did the participants' resilience change (improve or suffer) with the experience of the PTE, or were, for example, less resilient people less able to find suitable strategies to avoid PTE exposure (hence the allusion to a possible negative correlation)? Similarly, posttraumatic growth, by directly implying the occurrence of personal transformation following a potentially traumatic event, requires the an assessment of past state, current state, and the degree of change concerning the prompt, thus infusing the participants with multiple demands for their capacities for self-awareness and self-knowledge. Therefore, a baseline (pre-PTE) and post-PTE levels would, in both cases, benefit the accuracy of the results. Also, both self-report measures refer to reported resilience and reported growth, which may not actually reflect their real values (Frazier et al., 2009).

Regarding the variables that emerged during the content analysis of the interviews, it is worth noting that they might not reflect their real values. By allowing themes to rise according to the participant's narrative, the investigator's emphasis rests necessarily upon relevance instead of comprehensiveness of response. Future studies should take this study's results as potential directions, and deepen the degree in which certain themes are explored.

In conclusion, this dissertation's entire sample was composed of people original natural from an insular context, which emphasises the potential cultural aspect of the results. While a more diverse and ample sample would be highly beneficial for the generalization of the results, more studies should undoubtedly embrace this cultural bias and turn it into advantageous research – such as studies regarding a possible disaster subculture, or interventions specifically designed to improve this population's response to disaster.

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Appendixes

Appendix 1

POR FAVOR COMPLETE COM CANETA PRETA.

Connor-Davidson - Escala de Resiliência (CD-RISC)

iniciais do nome BI data / /

idade estado civil casado(a) separado (a) viúvo(a)
 solteiro(a) divorciado(a)

SEXO masculino caucasiana asiática
 feminino raça ou origem étnica africana outra

Por favor indique até que ponto concorda com as seguintes afirmações enquanto se aplicam à sua realidade e a si nesta última semana. Se alguma destas situações não ocorreu recentemente, responda de acordo com o que pensa que teria sentido caso tivessem ocorrido.

	não verdadeira	raramente verdadeira	às vezes verdadeira	geralmente verdadeira	quase sempre verdadeira
1 Eu sou capaz de me adaptar quando ocorrem mudanças.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
2 Eu tenho pelo menos uma relação próxima e segura que me ajuda quando estou sob stress.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
3 Quando não existem soluções óbvias para os meus problemas, por vezes o destino ou Deus podem ajudar.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
4 Eu consigo lidar com qualquer coisa que aconteça na minha vida.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
5 Os sucessos do passado dão-me confiança para lidar com os novos desafios e dificuldades.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
6 Eu tento ver as coisas com humor quando me deparo com problemas.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
7 Ter de lidar com o stress torna-me mais forte.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
8 Tenho tendência para recuperar rapidamente depois de períodos com doença, ferimentos ou outras dificuldades.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
9 Bem ou Mal, acredito que a maioria das coisas acontece por uma razão.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
10 Eu dou o meu melhor independentemente dos resultados que possa vir a ter.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
11 Eu acredito que posso atingir os meus objectivos, mesmo que existam obstáculos.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
12 Mesmo quando as coisas parecem não ter solução, eu não desisto.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4

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Tradução Faria, J.A. e Ribeiro, M.T. 2008

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25-09-2008

iniciais do nome BI data / / visita

	não verdadeira	raramente verdadeira	às vezes verdadeira	geralmente verdadeira	quase sempre verdadeira
13 Durante momentos de stress / crise, eu sei onde procurar ajuda.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
14 Sob pressão, mantenho-me focado(a) e a pensar com clareza.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
15 Eu prefiro liderar na resolução de problemas, do que deixar que os outros tomem todas as decisões.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
16 Eu não sou facilmente desencorajado(a) pelo insucesso.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
17 Eu penso em mim como uma pessoa forte ao lidar com os desafios e dificuldades da vida.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
18 Eu consigo tomar decisões pouco populares ou difíceis com implicações para outras pessoas, se necessário.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
19 Eu sou capaz de lidar com sentimentos desagradáveis ou dolorosos como a tristeza, o medo e a raiva.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
20 Ao lidar com os problemas da vida, às vezes temos que agir por impulso, sem olhar para o porquê.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
21 Eu acredito fortemente que a vida tem um sentido.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
22 Eu sinto que a minha vida está sob o meu controlo.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
23 Eu gosto de desafios.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
24 Eu trabalho para atingir os meus objectivos independentemente dos obstáculos que encontro pelo caminho.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
25 Eu orgulho-me dos sucessos que alcanço.	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4

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Appendix 2

I.C.P.T.

(Tedeschi & Calhoun, 1996; tradução de Sendas, Resende e Maia, 2007)

Em relação ao acontecimento em questão indique, por favor, o quanto sente que mudou em consequência desse acontecimento.

Não Mudei					
Ou					
Mudei mas não foi devido a esse acontecimento	Mudei muito ligeiramente	Mudei ligeiramente	Mudei moderadamente	Mudei acentuadamente	Mudei muito acentuadamente

Para as afirmações que se seguem, indique o grau em que essa mudança ocorreu na sua vida como resultado desse acontecimento.

Não Mudei	Mudei muito ligeiramente	Mudei ligeiramente	Mudei moderadamente	Mudei acentuadamente	Mudei muito acentuadamente
0	1	2	3	4	5

1- Mudei as minhas prioridades (mudei o valor) acerca do que é importante na vida.

2- Dou mais valor à minha vida.

3- Tenho novos interesses.

4- Confio mais em mim próprio.

5- Tornei-me uma pior pessoa.

6- Compreendo melhor a espiritualidade.

7- Percebo mais claramente que posso lidar com as outras pessoas nos momentos difíceis.

8- Estabeleci um novo rumo para a minha vida.

9- Sinto-me mais próximo das outras pessoas.

10- Agora sei até que ponto pode chegar a crueldade humana.

11- Consigo transmitir mais as minhas emoções.

-
- 12- Agora sei que sou capaz de lidar com situações difíceis.
-
- 13- Sou capaz de fazer coisas melhores com a vida.
-
- 14- Perdi muito da minha fé e crença em Deus.
-
- 15- Aceito melhor a forma como as coisas são.
-
- 16- Agora percebo o quanto o mundo pode ser injusto.
-
- 17- Aprecio mais cada dia da vida.
-
- 18- Apareceram oportunidades que não teriam aparecido de outra forma.
-
- 19- Sinto mais compaixão pelas outras pessoas.
-
- 20- Percebi que não existem amigos verdadeiros.
-
- 21- Esforço-me mais nos meus relacionamentos.
-
- 22- É mais provável eu mudar as coisas que precisam ser mudadas.
-
- 23- Tornei-me insensível aos pequenos problemas dos outros.
-
- 24- Tenho uma fé religiosa mais forte.
-
- 25- Descobri que sou mais forte do que pensava.
-
- 26- Percebi que há muitos acontecimentos maus que não podemos evitar.
-
- 27- Aprendi que as pessoas podem ser maravilhosas.
-
- 28- Aceito melhor o facto de precisar dos outros.
-

Appendix 3

Guião da Entrevista Semi-Estruturada		
Áreas Temáticas	Objectivos	Exemplos de Perguntas
Caracterização da situação vivida e das variáveis contextuais	Introduzir o tema de “acontecimentos exigentes” e tentar que a pessoa nomeie o acontecimento mais exigente para si até ao momento	
	Averiguar a frequência (percebida) do acontecimento escolhido	Podemos falar um pouco do que aconteceu no dia do_____?
	Não sendo intrusivo e sem aprofundar detalhes que possam ser causadores de ansiedade ou mal-estar, tentar perceber da narrativa espontânea do participante o grau de envolvimento e exposição aos seguintes estímulos:	
	<i>Pessoas mortas</i>	Como tomou conhecimento / se apercebeu do que estava a acontecer?
	<i>Pessoas com ferimentos graves</i>	
	<i>Cenários de grande destruição</i>	Como reagiu ao que estava a acontecer?
	<i>Reacções de descontrolo emocional de outras pessoas afectadas</i>	
	<i>Pessoas significativas desaparecidas</i>	
<i>Percepção de que a sua vida ou integridade física corria perigo</i>		
<i>Exposição a actos de violência extrema</i>		

**Significado
atribuído ao
acontecimento**

Avaliar o significado atribuído ao acontecimento (responsabilidade pela morte de outra pessoa, culpa, castigo, destino,...)

**Sintomatologia
Psicológica**

Sintomatologia despoletada pelo acontecimento vivido

Sintomatologia anterior ao acontecimento

**Consequências
do
Acontecimento
Vivido**

Mudanças despoletadas pelo acontecimento:

Lesões Físicas

Perda de recursos sociais

Morte de Familiares / Amigos

Desaparecimento de pessoas significativas

Perda de bens significativos

**Significado
atribuído ao
acontecimento**

**Stress
percebido**

Tarefas inesperadas a realizar

Percepção de controlo e competência face às tarefas a realizar / dificuldades inesperadas

Como se tem sentido / como tem passado estes últimos dias?

Esta "dificuldade em dormir, (...)", apareceu agora ou já é anterior ao acidente?

De que forma o acontecimento vivido alterou a sua vida?

Como tem sido gerir tudo isto?

De que forma é que tem tido de fazer essa

Estratégias de coping adaptativas e não-adaptativas

**Estratégias de
Coping**

Consumos / Auto-medicação

gestão influenciou a forma como geriu outros acontecimentos exigentes no futuro?

Como é que a forma como viveu o acontecimento A influenciou a forma como viveu o acontecimento B?

Como é que o facto de viver o B influenciou o facto de ter vivido o A?

Como tem lidado com a situação? Há alguma coisa ou alguém que o ajude /tenha ajudado a sentir-se melhor?

Sente que a comunidade tem formas de lidar específicas para acontecimentos como este?

Como é que as pessoas da sua comunidade veriam a maneira como lidou com a situação?

Como é que viu a maneira como a comunidade lidou com a situação?

Sente que as pessoas próximas de si o preparam/prepararam para lidar com

	Adaptabilidade familiar	acontecimentos como este? Como é que a família está a lidar com o que aconteceu? Têm conseguido apoiar-se uns aos outros?
Suporte Social	Amigos / Vizinhos/ Comunidade	Para além da família há mais alguém que esteja a ser particularmente importante para si neste momento?
	Recursos institucionais	Na altura, tiveram algum tipo de apoio? Apoio psicológico?
Espiritualidade		Acredita que existe algo superior /uma entidade/ alguma coisa que a ajude?

Appendix 4

Table 19 Description of the nodes that emerged from NVivo content analysis, with examples, numbers of sources and references

Code	Node	Description	Examples	Sources	References
(A)	Absence of warning signs	This node contains all the references related to the perceived absence of warning signs prior to the occurrence of the disaster.	“They were scared, because never in their lives did they think it would happen.”	5	15
(A.1.)	Weather Reports	This node contains all the references related to the perceived low accuracy, and thus low reliability, of weather reports and warnings.	“Lots of times, there are those scary warnings, but most times it’s nothing like that. Why should a person get nervous right away?”	3	4
(A.2.)	Why should this rain be any different	This node contains all the references related to the perception of the rain that culminated in a flood as being inoffensive at first due to previous instances of non-disaster rain.	“But torrential rain we had it several times before...”	1	1

Code	Node	Description	Examples	Sources	References
(B)	Attributed Source of Origin	This node contains all the references related to the attribution of a specific origin to the disaster.		0	0
(B.1.)	Man-made	This node contains all the references related to the attribution of a man-made origin to the disaster.	“I think it wasn’t of natural causes. (...) It may be very hot, but that’s... a fire doesn’t just start overnight.”	8	12
(B.2.)	Mixed	This node contains all the references related to the attribution of a mixed origin (with natural and man-made influences) to the disaster.	“First, it had to do with the weather. (...) But experts say that there were lots of errors on the infrastructures along the river. Things poorly built that should have never had got the permission to be there to start with.”	3	3
(B.3)	Natural	This node contains all the references related to the attribution of a natural origin to the disaster.	“This has to do with the fact that it is a volcanic island. With a lot of mountain and whatever. And if anything	1	1

Code	Node	Description	Examples	Sources	References
(C)	Community Response	This node contains all the references related to the community's overall response to the disaster.	happens, it can rain a lot, and the soil gets very smooth.”	0	0
(C.1.)	Panic and Counterproductivity	This node contains all the references related to the perception of panic and counterproductive measures as community responses to the disaster.	“The world was in a panic and nobody knew what to do.”	3	5
(C.2.)	Solidarity and Productivity	This node contains all the references related to the perception of solidarity and productive measures as community responses to the disaster.	“And people try to help, with food and clothes.”	7	13
(D)	Coping Strategies	This node contains all the references related to the coping		0	0

Code	Node	Description	Examples	Sources	References
(D.1.)	Avoidance	<p>strategies employed during or following a potentially traumatic event.</p> <p>This node contains all the references related to the utilization of avoidance as a coping strategy during or following a potentially traumatic event.</p>	<p>“And I saw him there, and for more than a year I couldn’t go there afterwards.”</p>	4	6
(D.2.)	Emotion-Focused Coping	<p>This node contains all the references related to the emotion-focused coping strategies employed during or following a potentially traumatic event.</p>	<p>“And I said, it will be okay.”</p>	8	13
(D.3.)	Humor	<p>This node contains all the references related to utilization of humor as a coping strategy during or following a potentially traumatic event.</p>	<p>“Oh, I am always the same. I laugh, and everything is okay. If I use my sense of humor, it’s okay.”</p>	2	9
(D.4.)	Meaning-Focused Coping	<p>This node contains all the</p>	<p>“But I think he died too soon,</p>	7	14

Code	Node	Description	Examples	Sources	References
		references related to the meaning-focused coping strategies employed during or following a potentially traumatic event.	to start with. I can't explain it."		
(D.5.)	Problem-Focused Coping	This node contains all the references related to the problem-focused coping strategies employed during or following a potentially traumatic event.	"I went down there, took my car off the road, and put it on the sidewalk."	13	42
(D.5.1.)	Act before you think	This node contains all the references related to problem-focused coping strategies employed during or following a potentially traumatic event in which conscious reasoning on the action did not precede the action itself.	"It's trying to help and thinking about it later."	5	9
(D.5.2.)	Think before you act	This node contains all the references related to problem-	"Stop, think, and you will act better than you would with a	4	6

Code	Node	Description	Examples	Sources	References
		focused coping strategies employed during or following a potentially traumatic event in which conscious reasoning on the action preceded the action itself.	hothead.”		
(D.6.)	Self-Reliance	This node contains all the references related to the utilization of self-reliance as a reported coping strategy during or following a potentially traumatic event.	“It has to be, because Lord Jesus is not coming to help you. Either you do it, or you don’t.”	6	6
(D.7.)	Spirituality	This node contains all the references related to the utilization of spirituality as a coping strategy during or following a potentially traumatic event.	“In a time of need, all of us need to go to God... to something bigger than us to help us.”	11	14
(E)	Disaster measures	This node contains all the references related to the disaster measures employed before,		12	72

Code	Node	Description	Examples	Sources	References
		during or following the disaster itself.			
(E.1.)	Forced Evacuation	This node contains all the references related to evacuation either as a preventive or as an interventive measure.	“But since we ran out of water, we weren’t going to stay there. So we left.”	6	10
(E.2.)	Interventive Measures	This node contains all the references related to the disaster measures that were employed in the face of the disaster as an active strategy to avoid or minimize the occurrence of negative consequences such as loss of lives and/or property.	“Everything burnt down, but at least we defended our homes.”	8	18
(E.2.1.)	Watering as an interventive measure	This node contains all the references related to the action of watering as an active strategy to avoid or minimize the occurrence of negative consequences such as loss of lives and/or property.	“It didn’t burn down completely because we were ready with the hoses.”	4	7

Code	Node	Description	Examples	Sources	References
(E.3)	Preventive Measures	This node contains all the references related to the disaster measures that were employed either as an active strategy to prevent the disaster from ever happening, or as a way to minimize the potential damage should it actually happen.	“I think it’s better if we take the cars from there, anyway.”	8	36
(E.3.1.)	Cleaning the garden or surrounding areas	This node contains all the references related to the action of cleaning the garden or surrounding outside areas as an active strategy to prevent or minimize the potential damage of the disaster.	“Ah, in the meantime, I swept the roofs to take off everything that could be [flammable]...”	2	7
(E.3.2.)	Keeping an eye on things	This node contains all the references related to the action of surveilling either the fire or the water, depending on the disaster, as an active strategy to prevent or	“But we had to keep watch.”	7	11

Code	Node	Description	Examples	Sources	References
(E.3.3.)	Removal or protection of flammable products	minimize its potential damage. This node contains all the references related to the action of removing or protecting flammable products as an active strategy to prevent or minimize the potential damage of the disaster.	“We removed the gas from the barbecue (...) placed it in a place in the house where I knew the fire wouldn’t get to.”	1	1
(E.3.4.)	Watering as a preventive measure	This node contains all the references related to the action of watering as an active strategy to prevent or minimize the potential damage of the disaster.	“Everything I could put water in, I did. And where did I pour it? In strategic points in the backyard.”	3	6
(E.4.)	Refusal to abandon home	This node contains all the references related to a refusal to abandon one's home either as a preventive or an interventive measure.	“If we had abandoned our houses, like the authorities wanted, we would have lost them.”	4	8
(F)	Emotional Expression	This node contains all the references related to emotional	“And I went... and when I got home, all I saw was	13	100

Code	Node	Description	Examples	Sources	References
		expression regarding a potentially traumatic event.	smoke, shocking.”		
(F.1.)	Live it to really feel it	This node contains all the references related to the belief that only through living a certain experience can people really understand it and empathize with it.	“Now, the February 20 th was something that no-one can imagine. Those who weren’t there can’t really...”	5	9
(F.2.)	Solastalgia	This node contains all the references related to distress regarding environmental change, particularly personal surroundings with strong sentimental value.	“The next day, when they told us to go outside, it didn’t look like where we lived. Because I live in an urban zone with lots of green, and there wasn’t anything anywhere...”	2	3
(G)	Long-term stressors	This node contains all the references related to the stressors that, having occurred as a direct consequence of the potentially traumatic event, prolong		12	105

Code	Node	Description	Examples	Sources	References
(G.1.)	Fear of repetition	themselves over time. This node contains all the references related to the fear of a reoccurrence of the disaster.	“It really had an impact on me since I am afraid it will happen again.”	7	14
(G.2.)	Managing symptomatology in the present	This node contains all the references related to the management of psychiatric symptomatology, derived from the disaster, at the time of the interview.	“I did it. But every once in a while it pops up in my head. Those horrible moments.”	11	30
(G.3.)	PTE Reminders	This node contains all the references related to PTE reminders.	“And I was a little scared as soon as rain came.”	9	15
(G.4.)	Revisiting the Disaster	This node contains all the references related to the spontaneous revisiting of the disaster through sensorial memories - visual, Auditory or Olfactory.		8	44
(G.4.1.)	Auditory Revisiting	This node contains all the		4	24

Code	Node	Description	Examples	Sources	References
		references related to the spontaneous Auditory revisiting of the disaster through sensorial memories.			
(G.4.1.1.)	Gas cylinders exploding	This node contains all the references related to the spontaneous Auditory revisiting of the disaster through sensorial memories, namely the sound of gas cylinders exploding.	“(….)and sporadically an explosion or another... and then I made the association: these are gas cylinders.”	3	4
(G.4.1.2.)	Giant Cane	This node contains all the references related to the spontaneous Auditory revisiting of the disaster through sensorial memories, namely the sound of giant canes exploding.	“In that area there are a lot of giant canes (...) and when they catch fire [they make those pops]...”	1	2
(G.4.1.3.)	People screaming	This node contains all the references related to the spontaneous Auditory revisiting of the disaster through sensorial	“People suffering on the other side. We only heard people screaming.”	3	13

Code	Node	Description	Examples	Sources	References
(G.4.2.)	Olfactory Revisiting	<p>memories, namely people screaming.</p> <p>This node contains all the references related to the spontaneous olfactory revisiting of the disaster through sensorial memories.</p>	<p>“The worst was in my husband’s field, where a Japanese bomb blew up and it smelled horribly.”</p>	1	1
(G.4.3.)	Visual Revisiting	<p>This node contains all the references related to the spontaneous visual revisiting of the disaster through sensorial memories.</p>	<p>“That dark, dark water...”</p>	8	19
(G.4.3.1.)	Smog	<p>This node contains all the references related to the spontaneous visual revisiting of the disaster through sensorial memories, namely the sight of smoke.</p>	<p>“We would look and we would no longer see houses.”</p>	7	10
(H)	Main Event - Flood	<p>This node contains all the references related to the flood as</p>	<p>“What I think was the most terrible so far was seeing</p>	8	19

Code	Node	Description	Examples	Sources	References
		being the main potentially traumatic event.	people falling down the market, that black water, and being unable to see people, just arms and legs.”		
(I)	Main Event - Wildfire	This node contains all the references related to the wildfire as being the main potentially traumatic event.	“About the fires? (...) It was complicated...”	10	17
(J)	Perceived Self-Efficacy	This node contains all the references related to the perception of personal competence.	“Well, I was surprised, because I am usually much more scared, and that day I think I surpassed my expectations.”	7	10
(K)	Post-Disaster PTE	This node contains all the references related to the occurrence of post-disaster potentially traumatic events.		0	0
(K.1.)	Coverage of Post-Disaster PTE	This node contains all the references related to the coverage of post-disaster potentially	“Not where I live. Where I live, the wildfires affected me in 2012.”	4	6

Code	Node	Description	Examples	Sources	References
(K.2.)	Number of Post-Disaster PTE	traumatic events, containing all the references of each event. This node contains all the references related to the number of post-disaster potentially traumatic events, containing solely the first reference of each event.		4	5
(L)	Posttraumatic Growth	This node contains all the references related to personal growth, or its reported absence, following a potentially traumatic event.		0	0
(L.1.)	Absence of personal transformations	This node contains all the references related to the reported absence of personal transformations following a potentially traumatic event.	“I don’t think it changed. It is the same, the way I see it.”	8	11
(L.2.)	Openness and Involvement	This node contains all the references related to personal	“Actually, some of the neighbors didn’t really get	2	2

Code	Node	Description	Examples	Sources	References
		growth following a potentially traumatic event, namely regarding openness and involvement concerning the establishment and management of personal relationships.	along, but after this, we started talking.”		
(L.3.)	Perception of Self and Others	This node contains all the references related to personal growth following a potentially traumatic event, namely regarding the perception of own's self and others.	“Yes, brave. I felt brave.”	6	12
(L.4.)	Personal negative transformations	This node contains all the references related to personal negative transformations following a potentially traumatic event.	“What I think is people are more envious, so to speak.”	6	8
(L.5.)	Spiritual Matters	This node contains all the references related to personal growth following a potentially	“On the contrary, I stood more on the positive side, I held on to the faith that He	1	1

Code	Node	Description	Examples	Sources	References
		traumatic event, namely regarding spirituality.	had never abandoned me...”		
(M)	Pre-Disaster PTE	This node contains all the references related to the occurrence of pre-disaster potentially traumatic events.		0	0
(M.1.)	Coverage of Pre-Disaster PTE	This node contains all the references related to the coverage of pre-disaster potentially traumatic events, containing all the references of each event.	“Ah, the most traumatic event in my life was when my mother passed away.”	5	9
(M.2.)	Number of Pre-Disaster PTE	This node contains all the references related to the number of pre-disaster potentially traumatic events, containing solely the first reference of each event.		5	9
(N)	PTE Exposure	This node contains all the references related to personal exposure to a potentially		0	0

Code	Node	Description	Examples	Sources	References
		traumatic event.			
(N.1.)	Additional stressors	This node contains all the references related to stress factors indirectly related to the disaster.	“We ran out of water, we ran out of everything.”	12	30
(N.2.)	Primary PTE Exposure	This node contains all the references related to primary (first-hand) personal exposure to a potentially traumatic event.		0	0
(N.2.1.)	Dead bodies	This node contains all the references related to the viewing, in person, of human cadavers, or bodies of people perceived as dead.	“We only see legs, arms, it was really horrible.”	2	7
(N.2.2.)	Death of loved ones	This node contains all the references related to the death of loved ones.	“My sister-in-law’s family that went down the river with the baby... they were never found.”	5	24
(N.2.3.)	Extreme emotional distress of other people	This node contains all the references related to the witnessing, in person, of other	“People would panic. Screaming, screaming.”	6	13

Code	Node	Description	Examples	Sources	References
		people in extreme emotional distress.			
(N.2.4.)	Loss or damage of property	This node contains all the references related to the loss of personal property.	“And the fire reached my house around seven in the afternoon.”	9	22
(N.2.5.)	Loved ones are missing	This node contains all the references related to the disappearance of loved ones.	“We found two little pieces of human bone... and so far as I can recall, no-one else died in that river.”	2	3
(N.2.6.)	Perception of danger to loved one's life	This node contains all the references related to the perception of danger to loved one's life.	“It was me seeing that the fire going over her house. And I knew it was her house. And I knew she was there, with her kid...”	10	19
(N.2.7.)	Perception of danger to own life	This node contains all the references related to the perception of danger to own life.	“I thought I was going to die.”	11	28
(N.2.8.)	Widespread destruction	This node contains all the references related to the witnessing, in person, of	“Look, it was a tragedy, it was fire, houses burnt down...”	13	53

Code	Node	Description	Examples	Sources	References
(N.3.)	Secondary PTE Exposure	widespread destruction. This node contains all the references related to secondary (second-hand) personal exposure to a potentially traumatic event.		0	0
(N.3.1.)	Media Exposure		“And when I start watching the images of the fire that was happening, I started getting really anxious, with a lot of anxiety.”	4	5
(O)	Relationship with the deceased	This node contains all the references related to the relationship with a deceased loved one prior to their death.	“We had a relationship that was good.”	2	4
(P)	Social Support	This node contains all the references related to social support, either offered or received,		0	0
(P.1.)	Offered social support	This node contains all the references related to offered	“Then I sent my kids with that lady and stayed home to	11	38

Code	Node	Description	Examples	Sources	References
(P.1.1.)	Worry about loved ones	social support. This node contains all the references related to reported worry about loved ones.	protect the house.” “What I thought the most about was family, friends, if everything was okay...”	10	36
(P.2.)	Received social support	This node contains all the references related to received social support.	“Yes, I do. My brother-in-law helped me take care of things, of business.”	14	34
(P.2.1.)	Absence of social support	This node contains all the references related to the perceived absence of received social support.	Maybe if it is the other way around, I don’t know if I will get this [referring to social support].”	3	8
(P.2.2.)	Lack of support received from emergency services	This node contains all the references related to the lack of social support received from emergency services during the disaster.	“So, firemen we couldn’t count with. It was out of the question.”	1	1
(P.2.3.)	Support received from emergency services	This node contains all the references related to social support received from emergency services during the disaster.	“In our case, police came, and they kept the peace.”	5	9

Code	Node	Description	Examples	Sources	References
(Q)	Symptomatology	This node contains all the references related to reported symptomatology regarding a potentially traumatic event.		0	0
(Q.1.)	Acute Stress Reaction	This node contains all the references related to reported symptoms of acute stress reaction during or following a potentially traumatic event, including tremors, dry mouth, fainting and loss of physical sensation in the extremities.	“(….)because when I found my father dead I started screaming... didn’t even think of getting out of there.”	1	1
(Q.2.)	Anxiety	This node contains all the references related to reported anxiety during or following a potentially traumatic event.	“We already... I already got kind of nervous.”	7	17
(Q.3.)	Disorientation	This node contains all the references related to reported disorientation during or following a potentially traumatic event.	“I don’t even know if it was three or four a.m., I was no longer sane. I couldn’t tell where I was going.”	1	1

Code	Node	Description	Examples	Sources	References
(Q.4.)	Disruption of sleep patterns	This node contains all the references related to reported disruption of sleep patterns during or following a potentially traumatic event.	“There were days and days when I didn’t sleep.”	3	3
(Q.5.)	Feeling of panic	This node contains all the references related to reported feeling of panic during or following a potentially traumatic event.	“Exactly. It was when panic started and we decided to flee.”	2	2
(Q.6.)	Intrusive and recurrent memories	This node contains all the references related to reported intrusive and recurrent memories during or following a potentially traumatic event.	“It was in the February 20 th . I never forgot. It’s like they say, it’s gone but you never forget.”	6	15
(Q.7.)	Intrusive thoughts or images	This node contains all the references related to reported intrusive thoughts or images during or following a potentially traumatic event.	“Yes, yes. And something happened, and I saw his image in the well.”	7	11

Appendix 5

Table 20 Correlation between CD-RISC Total Score and Interventive Measures

Correlation between Primary PTE Exposure and Managing Symptomatology in the Present			
		CD-RISC Total Score	Interventive Measures
CD-RISC Total Score	Pearson Correlation	1	.454
	Sig. (2-tailed)		.089
	N	15	15
Interventive Measures	Pearson Correlation	.454	1
	Sig. (2-tailed)	.089	
	N	15	15

Table 21 Correlation between PTGI and Long Term Stressors

Correlation between PTGI Total Score and Long Term Stressors			
		PTGI Total Score	Long Term Stressors
PTGI Total Score	Pearson Correlation	1	.100
	Sig. (2-tailed)		.723
	N	15	15
Long Term Stressors	Pearson Correlation	.100	1
	Sig. (2-tailed)	.723	
	N	15	15

Table 22 Correlation between CD-RISC Total Score and Long Term Stressors

Correlation between CD-RISC Total Score and Long Term Stressors			
		CD-RISC Total	Long Term Stressors
		Score	
CD-RISC Total Score	Pearson Correlation	1	.100
	Sig. (2-tailed)		.723
	N	15	15
Long Term Stressors	Pearson Correlation	.100	1
	Sig. (2-tailed)	.723	
	N	15	15

Table 23 CD-RISC Total Scores and Sociodemographic variables

	CD-RISC Total Scores		
	[55-70[[70-85[[85-100]
Group			
Flood	1	2	2
Wildfire	0	2	5
Flood and Wildfire	1	0	2
Gender			
Men	2	2	1
Women	0	2	5

Table 24 PTGI Total Scores and Sociodemographic variables

	PTGI Total Scores			
	[0-25[[25-50[[50-75[[75-105]
Group				
Flood	2	0	0	3
Wildfire	1	1	4	1
Flood and Wildfire	0	0	1	2
Gender				
Men	1	0	1	3
Women	2	1	4	3

Appendix 6

Consentimento Informado

Foi solicitada a sua participação numa investigação realizada no âmbito do Doutoramento em Psicologia Clínica da Faculdade de Psicologia da Universidade de Lisboa, que tem por objectivo investigar como reagimos perante situações exigentes e/ou potencialmente traumáticas.

As suas informações são confidenciais pois os resultados serão codificados e utilizados apenas no âmbito deste estudo.

Gostaríamos de saber se aceita participar nesta investigação respondendo a algumas questões. A sua colaboração é essencial.

A sua participação é voluntária, pelo que poderá interrompê-la a qualquer momento.

A Investigadora
Responsável

O Participante

____/____/____

____/____/____