

Identifying Protective Factors of Posttraumatic Stress Disorder, Depression, and Self-Reported  
Health Outcomes of Residential Fire Survivors

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## **ABSTRACT**

Posttraumatic Stress Disorder (PTSD) has been demonstrated as the primary pathway through which morbidity and mortality is achieved post-trauma. However, less is known about protective factors to PTSD, depression, and self-reported health outcomes of adults following a traumatic event. Through examination of residential fire survivors, the current project evaluated the predictive validity of protective factors of PTSD as they relate to PTSD, depression, and somatic health outcomes. Additionally, the project collapsed the three outcomes variables into a unified health construct and evaluated protective factors ability to predict health. It was hypothesized the peritraumatic emotionality, social support, and resource loss would predict PTSD, depression, and somatic health. Additionally, it was predicted that peritraumatic emotionality, social support, and resource loss would predict a unified construct of health. Participants were assessed via self-report and semi-structured interviews approximately four months post-fire. Results of the current project demonstrated strong associations amongst peritraumatic emotionality and resource loss for many of the outcome variables. However, social support was not found to be a predictor of any of the outcomes variables. When evaluating the unified health construct, resource loss was found to significant predict a resilient group of trauma survivors four months post-fire. The present study suggests lower peritraumatic emotionality and lower sustained resource loss are significant protective factors for resiliency from trauma.

## **DEDICATION**

To my wife and my family, without any of you, none of this would have been possible.

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## **1.0 - Introduction**

The negative influence of traumatic events on physical and mental health, although well documented, is still a growing body of literature (Schnurr & Green, 2004a). The effects of traumatic events on psychopathology, such as Posttraumatic Stress Disorder (PTSD; Ozer, Best, Lipsey, & Weiss, 2003) and depression (Rayburn, et al., 2005) have been well researched. Further, the impact of such traumas on physical health outcomes (Schnurr & Green, 2004a & Wagner, Wolfe, Rotnitsky, Proctor, & Erickson, 2000) has become increasingly evident. However, less is known about mechanisms of such relationships, more particularly, protective factors for adult trauma survivors. Given the nascent state of the risk and resiliency literature for both mental and physical health outcomes of adults following a traumatic event, further investigation is warranted.

Posttraumatic Stress Disorder has been shown to significantly and negatively impact trauma survivor's health (Schnurr & Jankowski, 1999), and is often the most commonly endorsed disorder following traumatic events (Shalev et al., 1998). Following trauma exposure, survivors often overreact to subsequent stressors which facilitate a cycle of vulnerability to hyperarousal (Kendall-Tackett, 2000).

Additionally, trauma exposure (in and of itself) has a significant negative impact on many physical health problems, such as a reduction in immune system functioning (Carlson, 2002), increased blood pressure (Madhavan, Ooi, Cohen, & Alderman, 1994), and somatic health reports (Escobar, Canino, Rubio-Stipec & Braco, 1992; Koss & Heslet, 1992; & Straight, Harper, & Arias, 2003). A recent meta-analytic review of literature on psychophysiological changes of PTSD found the disorder to be significantly associated with elevated psychophysiological activity (Pole, 2007). Even when the effects of trauma exposure are controlled for, the aforementioned effects of PTSD on somatic symptomatology are still present (Wagner, et al., 2000). In summary, results of such studies indicate PTSD is highly influential of the health outcomes of trauma survivors.

Given findings supporting the association between PTSD and health outcomes, research has begun to evaluate PTSD as a mediator between trauma exposure and adverse health outcomes. Posttraumatic Stress Disorder has been found to mediate the relationship between exposure to trauma and self-reported health outcomes in combat veterans (Kimerling, Clum, &

Wolfe, 2000 & Wolfe, Schnurr, Brown, & Furey, 1994), residential fire survivors (Immel & Jones, in preparation), and to partially mediate the same relationship in a group of individuals exposed to toxic gases (Ford et al., 2004).

Green and Kimerling (2004) summarized multiple studies assessing PTSD as a mediator between trauma exposure and adverse health outcomes in order to more clearly delineate the relationship. The authors found physical symptoms associated with PTSD can be consistent with other mental health disorders post-trauma, and when other psychopathologies are controlled for, PTSD's statistical impact on the relationship is reduced. That said, though psychopathologies other than PTSD may influence the relationship between exposure and health, PTSD most strongly impacts this post-trauma relationship. Green and Kimerling's (2004) model highlights the importance of PTSD in the relationship between trauma exposure and health outcomes. More specifically, the authors describe PTSD as the primary pathway to morbidity and mortality following trauma exposure.

However, what is less clear in the literature is which subclusters of PTSD most strongly influence health outcomes of trauma survivors. The hyperarousal subcluster has been most readily associated with somatic health outcomes, yet researchers have also evaluated the impact of alternative subclusters affecting physical health outcomes. For example, reexperiencing symptoms, even years after the traumatic event have been found to correlate with chronic stress (Baum, Cohen, Hall, 1993) and self-reports of physical health symptoms (McFarlane, Atchison, Rafalowicz, & Papay, 1994; Zoellner, Goodwin, & Foa, 2000). Immel and Jones (in preparation) found the hyperarousal subcluster to mediate the relationship between exposure to residential fires and self-reported health outcomes. They additionally found partial mediation of the avoidance subcluster for the same relationship. In summary, though the hyperarousal subcluster appears to be most influential in impacting health outcomes, no single subcluster has been found to completely account for this relationship. In accordance with this observation, Schnurr and Green (2004b) conceptualize the disorder of PTSD (not any one subcluster) to be impactful on health outcomes.

In order to better conceptualize health outcomes of trauma survivors, a theoretical model has been developed by Schnurr and Green (2004b) to explain health outcomes following a traumatic event. The model proposes that PTSD is the primary pathway through which trauma leads to negative health outcomes. It is important to note, however, that the authors indicated

that PTSD does not fully mediate the relationship between trauma exposure and health outcomes. The model is comprised of eight factors: trauma exposure, PTSD, biological alterations, psychological alterations (including depression), attentional processes, health risk behaviors, illness behaviors, and morbidity & mortality. Please see Figure 1 for a depiction of the model.

The central components of the model are particularly important to review. The Schnurr and Green (2004b) model begins with trauma exposure which the authors described as simply witnessing or participating in a traumatic event. Trauma exposure directly impacts PTSD, which is characterized by a full diagnosis (not any one specific sub-cluster). PTSD then influences biological alterations including such factors as activation of the Hypothalamic-Pituitary-Adrenal (HPA) axis, as well as noradrenergic and immune functioning. The biological alterations lead to the outcome variable of morbidity and mortality (including self-reported somatic symptoms, official medical diagnoses, and fatalities). PTSD is also influential regarding health risk behaviors trauma (i.e., substance use and abuse, risky sexual activity, inactivity, and unhealthy eating habits), which lead to aversive health outcomes. The model is particularly relevant in that, to date, it provides the most comprehensive approach to explaining health outcomes of trauma survivors.

Given the relationship between trauma exposure, PTSD, and health outcomes, it seems reasonable to further investigate the impact of PTSD on health outcomes. One way to assess the relationship between these two constructs is through review of risk and protective factors for both variables. By comparing and contrasting these variables, researchers may gain a clearer understanding of mechanistic and facilitating variables that cause the link between PTSD and self-reported health outcomes. Additionally, a better conceptualization and treatment of health outcomes post-trauma may be facilitated by identification of not only risk factors for health outcomes, but also protective factors of health outcomes.

### **1.1 - Risk Factors of Posttraumatic Stress Disorder**

The literature on risk factors of PTSD is well established (Yehuda, 1999a). Risk factors can be very useful in screening and assessment of disorders, along with the conceptualization of psychopathology. Considerable support for a variety of categories of risk factors exists, including epidemiological (Kessler et al., 1999), genetic (True & Lyons, 1999), family and parental (Yehuda, 1999b), personality (Schnurr & Vielhauer, 1999), and neurocognitive risk factors (Orr & Pitman, 1999). One area of particular interest regarding risk factors for PTSD is

psychosocial risk factors. Additionally, Vogt, King, and King (2007) classify psychosocial risk factors into three categories: preexisting factors or attributes, features of the traumatic event, and posttraumatic circumstances.

Exposure levels to traumatic events often have a significant influence on the development of PTSD symptomatology. In Brewin, Andrews, & Valentine's (2000) meta-analysis of PTSD risk factors, they found the severity of trauma to have a significant impact on PTSD symptomatology. Further, trauma exposure has been shown to have a significant impact on the development of PTSD following a variety of traumas, including (but not limited to) civilians exposed to war (Dahl, Mutapcic, & Schei, 1998), crime (Andrews, Brewin, Rose, & Kirk, 2000), motor vehicle accidents (Frommberger et al., 1998), and burns sustained from fire (Bryant, 1996).

Personal attributes of trauma survivors that precede the traumatic event are some of the most commonly studied psychosocial risk factors. Brewin, et al. (2000) found significant effects for the following risk factors: female gender, young age at time of trauma, low socioeconomic status, lower/lack of education, lower intelligence, minority status, race, having a psychiatric history, childhood abuse, previous trauma, childhood adversity, and family history of mental health problems. The review also indicated that overall effects were moderate, but that features of the trauma and posttrauma characteristics, such as trauma severity or exposure, a lack of social support, and additional life stressors were found to have relatively stronger effects than pre-traumatic factors.

Another meta-analysis of predictors of PTSD within an adult population was completed by Ozer, Best, Lipsey, and Weiss (2003). The review screened 476 studies, using 68 that met the criteria of their meta-analysis. They assessed seven predictors, including factors involving exposure: prior trauma exposure, life threat sustained during the trauma, and peritraumatic emotional responses and dissociation. Additionally, preexisting attributes were evaluated including: prior psychological adjustment, and family history of psychopathology. Finally, posttrauma characteristics were evaluated, including social support following the trauma. Results indicate that each of the aforementioned variables was a significant predictor of PTSD. The authors concluded peritraumatic emotionality and posttrauma characteristics as more influential on PTSD development than preexisting characteristics. Social support has also been linked to

depression onset after a significant life stressor (Brown & Harris, 1978 & Kendler et al., 2005). Given the results of these findings which complement those of Brewin and colleagues (2000), further investigation into peritraumatic emotionality and posttrauma characteristics are needed.

Peritraumatic emotionality (i.e. emotional response during the traumatic event) has been shown to influence the development of PTSD (Ozer, et al., 2003). Ehlers and colleagues (1998) asked motor vehicle accident survivors six months posttrauma to rate how frightening the accident was and found peritraumatic emotionality to significantly predict PTSD. Additionally, Roemer and colleagues (1998) assessed college students (mixed traumas) to rate their helplessness, hopelessness, and/or horror (a single item) and found emotion sustained during the trauma to be predictive of PTSD. Given the results of these findings and reviewed meta-analyses, peritraumatic emotionality appears to be an important factor in PTSD development.

Resource loss during and following a traumatic event is an important risk factor of the development of psychopathology in trauma survivors (Hobfoll, 2002). Changes in resources have been shown to impact PTSD in a variety of adult trauma populations, including hurricane survivors (Freedy, Shaw, Jarrel, & Master, [1992] & Ironson et al., [1997]) and flood survivors (Smith & Freedy, 2000). Similarly, Jones, Ribbe, Cunningham, Weddle, and Langley (2002) found elevated resource loss predicted elevated PTSD symptom reporting.

Focusing on adult trauma survivors, Hobfoll, Tracy, and Galea (2006) interviewed 2752 New York City residents exposed to the terrorist attacks of September 11<sup>th</sup>, 2001. The project evaluated low resource as a factor of risk factor for both PTSD and depressive symptoms above and beyond preexisting attributes. The researchers found support for resource loss as a significant risk factor in adult trauma survivors. Monnier, Cameron, Hobfoll, and Gribble (2002) found resource loss to be predictive of psychological symptoms (including depressive symptoms). Monnier and colleagues (2002) argue that resource loss mediates the relationship between exposure and psychological outcomes (though mediation is not statistically tested). Given these findings, it appears resource loss clearly is a significant risk factor for PTSD posttrauma.

A well-established line of literature has also shown a lack of social support to be a risk factor for PTSD (Vogt, King, & King (2007). King et al. (1999) showed in a national sample of combat veterans that a small (as compared to large) network of social support was a significant risk factor for the development of PTSD. This is consistent with the previously reviewed Brewin

and colleagues' (2000) meta-analytic article, which found an effect size of  $r = .40$  for a lack of social support leading to PTSD. Ozer and colleagues (2003) reported a moderate effect size of  $r = .28$  for a lack of social support leading to PTSD. A lack of social support is a well documented risk factor for PTSD in trauma survivors.

A variety of theoretical models of PTSD have used the aforementioned risk factors to develop a better understanding of the development of PTSD. Theories of PTSD utilizing risk factors include the emotional processing theory (Foa & Kozak, 1986), Elhers and Clark's (2000) cognitive model of PTSD, the diathesis-stress model (McKeever & Huff, 2003), and the dose-response model (La Greca, Silverman, Vernberg, & Prinstein, 1996). This project will utilize the La Greca and colleagues' (1996) dose-response model. Given the usefulness of risk factors in the development of conceptual models of PTSD, it seems appropriate to review the literature on protective factors, as doing so may develop a better overall conceptualization of PTSD.

## **1.2 - Protective Factors of PTSD**

Protective factors have important implications for understanding vulnerability and resistance to PTSD. Protective factors also play a key role in individuals' resiliency posttrauma. Resiliency has been defined a variety of ways. Luthar, Cicchetti, and Becker (2000) define resiliency as a process of positive adaptation when faced with significant adversity, requiring resilient individuals to have both faced significant threat or adversity and achieved positive adaptation even when faced with these adversities. Layne, Warren, Watson, and Shalev (2007) define resiliency as "the capacity of a given system to implement early, effective adjustment processes to alleviate strain imposed by exposure to stress, thus efficiently restoring homeostatic balance or adaptive functioning within a given psychosocial domain following a temporary perturbation therein (p. 500)."

More recently, research has focused on resiliency in adult trauma survivors. When considering adult resiliency, Bonanno (2004) defines the construct 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 life-threatening situation to maintain relatively stable, healthy levels of psychological and physical functioning (p. 20)." Therefore, it will be important to assess what protective factors exist for PTSD, and extend the research to



identify potential factors pertaining to self-reported health. Identifying protective factors for both mental and physical health will add to the understanding of this encompassing definition of resiliency.

A growing body of research has begun to assess protective factors for PTSD. Much of the literature regarding resiliency comes from the developmental perspective, often involving children maltreatment. A common conceptualization of protective factors involves a multidimensional approach involving individual and environmental factors. According to Masten & Obradovic (2007), adaptive capabilities including factors related to attachment, self-efficacy, intelligence, behavior regulation, and social support play a significant role in successful adaptation, or resiliency in the face of adversity. A variety of factors have been identified as intervening variables of resiliency in child abuse, including social support and a positive family environment, financial resources, and access to higher education (Garbarino, 2001).

Alim and colleagues (2008) evaluated protective factors in adults exposed to a variety of traumas. They conceptualized resiliency as an individual having no current psychopathological diagnosis. Results of the project found members of the resilient group had less trauma exposure, were of the male gender (though not exclusively male), and reported having a purpose in life.

Hobfoll and colleagues (2009) evaluated individuals living in Israel for both PTSD and depression symptoms during ongoing terrorist attacks. In their study, significantly fewer individuals were considered resilient (22%) as compared to those considered chronically distressed (54%). The authors found less psychosocial resource loss and majority ethnic status (Jewish) to significantly predict resilience. High socioeconomic status and high social support were also significant predictors.

Bonanno, Galea, Bucciarelli, and Vladhov (2006) assessed 2,752 New York City residents six months after the September 11<sup>th</sup>, 2001 terrorist attacks. Results indicate that 65% of the sample of residents met criteria for being resilient (as defined by having one or no symptoms of PTSD). Less resiliency was found among those who were highly exposed to the trauma. In an extension of the previous research project (and with the same dataset), Bonanno, Galea, Bucciarelli, and Vlahov (2007) assessed inverse risk factors of PTSD (e.g., if females are more at risk for developing, assessing the male gender as a resiliency factor) as protective factors. The study found being of the male gender, age below 65 years, ethnicity (Caucasian, African

American, and Hispanic), lower level of trauma exposure, no reduction in income, high social support and a lack of chronic disease as protective factors. Given the novelty of assessing protective factors of health outcomes posttrauma, similar logic (identifying risk factors and assessing the inverse for resiliency) to Bonanno and colleagues (2007) will be utilized in the current project.

### **1.3 - Risk Factors of Self-Reported Physical Health Outcomes**

The literature on exposure to traumatic events and negative health outcomes is well documented (Schnurr & Green, 2004a: above literature review), particularly in regards to posttrauma characteristics (i.e. development of PTSD, biological alteration, health risk behaviors). However, less is known about the influence of identified risk factors for PTSD and what impact these factors have on trauma survivors' health. One study that does investigate a risk factor for PTSD was completed by Smith and Freedy (2000). The researchers evaluated 131 adult flood survivors in the Midwest following the 1993 floods. Results of the study show resource loss to be a significant risk factor in not only psychological distress post-flood, but also in self-reported physical symptoms. However, few other studies investigated such relationships.

A variety of psychological constructs and psychopathologies have been shown to lead to aversive health outcomes. Posttraumatic Stress Disorder (Schnurr and Green, 2004a) has a significant impact on trauma survivors' health, but researchers have begun to evaluate other pathologies' effects of trauma survivor's health, such as depression. In one retrospective and prospective analysis of the differences between PTSD and depression, Breslau, Davis, Peterson, & Schultz (2000) found that trauma exposed individuals with PTSD were more likely to develop depressive symptoms when compared to trauma survivors who do not develop PTSD. O'Donnell, Creamer, and Pattison (2004) evaluated 363 trauma survivors upon discharge from the hospital to assess potential differences in the constructs of PTSD, and comorbid PTSD/depression. The researchers found significant shared variance between PTSD and depressive symptomatology, indicating they share similar risk factors. The authors do however argue for separate constructs of depression and PTSD in the acute phase of PTSD, given some individuals develop only one of the two pathologies. Depressive symptoms may have a significant impact on trauma survivors' health: Given the high rates of comorbidity (Miranda, et

al., 2003) between PTSD and depression, reported as high as 50% (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), it is likely depressive symptomatology plays a significant role in trauma survivors' health.

A few studies have begun to investigate depressions' influence on trauma survivors' health. For example, depression has been shown to have significant implications for trauma survivors' cardiovascular health (Ford, 2004). Similarly, Clum, Calhoun, and Kimerling (2000) evaluated depression and PTSD symptoms in a sample of sexual assault survivors and found that both contributed uniquely to self-reported health outcomes and global health perceptions. Given these findings, further investigation into the depressive symptomatology posttrauma could provide additional insight into trauma survivors' physical and mental health.

Perhaps the best source of information regarding risk factors for self-reported health complaints and health complications more broadly comes from Schnurr and Green (2004b). Schnurr and Green's (2004b) theoretical model explains the progression of health outcomes following a traumatic event. As previously mentioned, authors argue both in the model and throughout their review that PTSD is the primary pathway through which trauma leads to negative health outcomes (though as noted by the author, not entirely). Given the importance of PTSD and depressive symptoms involving negative health outcomes of trauma survivors, further exploration into the pathologies is certainly warranted.

#### **1.4 - Protective Factors of Self-Reported Physical Health Outcomes**

The resistance and resiliency literature on self-reported health outcomes of trauma survivors is minimal. A thorough review of the literature found only one study involving health outcomes of trauma survivors. Bonanno and colleagues (2008) examined hospitalized patients during the severe acute respiratory syndrome (SARS) outbreak in Hong Kong. The researchers used latent class analysis to identify four groups (chronic dysfunctional, delayed dysfunction, recovery, and resilience) based upon psychological distress. Results of the study found that each of the three other groups had better self-reported health than the chronic dysfunctional group. Social support, less health-related worry, and male gender were factors of the resilient and recovered groups. Finally, the resilient group had more social support than the delayed dysfunctional group and significantly better self-reported health than the recovery group. A review of the literature yielded no results for resiliency involving resource loss or peritraumatic emotionality's influence on self-reported health.

Three logical paths seem apparent in examining protective factors to self-reported health outcomes. First, given the close link of morbidity to PTSD following a traumatic event (Schnurr & Green, 2004b), it seems logical to examine low PTSD as a resiliency factor for self-reported health. Second, given the comorbidity between PTSD and Depression and the influence of depression on self-reported health (Schnurr & Green, 2004b), it seems logical to test low depressive symptomatology as a resiliency factor for self-reported health. Third, inversely evaluating previously identified risk factors for PTSD (peritraumatic emotionality, social support, and resource loss) as protective factors for health complaints is also warranted. Evaluating this literature and testing variables that are the opposite of risk factors may be beneficial to the nascent stages of research in determining protective factors (Bonanno, 2004) for self-reported health outcomes following trauma.

### **1.5 - Rationale for the Project and Hypotheses**

The literature regarding risk and protective factors for PTSD is well established. A number of pre-existing attributes, characteristics of the trauma, and posttrauma factors have been identified as either risk or protective attributes for trauma survivors. Additionally, a sound theoretical model (Schnurr & Green, 2004b) has been established regarding trauma survivors health. However, no research to date has investigated characteristics of the trauma and posttrauma protective factors for adult trauma survivors' health in a sample of residential fire survivors.

The current project investigated protective factors of residential fire survivor's mental and physical health posttrauma. With hypotheses based upon previous findings (Bononno et al. 2007), the project began by investigating protective factors of PTSD and depression symptoms in residential fire survivors. Next, based upon previous findings (Schnurr & Green, 2004b), the study assessed the predictive validity of PTSD and depressive symptoms on residential fire survivors self-reported somatic health. Third, the project investigated the predictive validity of these same protective factors (peritraumatic emotionality, resource loss, and social support) on residential fires self-reported somatic health. Finally, in order to assess the comprehensive definition of adult resiliency (Bonanno, 2004), peritraumatic emotionality, resource loss, and social support was used to predict a resiliency group of trauma survivors (a comprehensive health construct, both physical and mental health) in residential fire survivors. More specifically, the project investigated the following hypotheses:

1. It was hypothesized that protective factors would predict low levels of PTSD and depression symptom reporting.
  - a. It was hypothesized that low peritraumatic emotionality at the time of the traumatic event would predict lower PTSD symptom reporting.
  - b. It was hypothesized that low resource loss sustained during the residential fire would predict lower levels of PTSD symptomology.
  - c. It was hypothesized that high social support following the traumatic event would predict low levels of PTSD symptom reporting.
  - d. It was hypothesized that low symptom reporting of peritraumatic emotionality during the residential fire would predict lower levels of depression symptom reporting.
  - e. It was hypothesized that lower levels of sustained resource loss from the trauma would predict low levels of depression symptomatology.
  - f. It was hypothesized that higher levels of social support following the trauma would predict low levels of depression symptom reporting.
2. The second grouping of hypotheses evaluated the ability of lower psychopathology symptom reporting to serve as a protective factor to somatic health symptomatology.
  - a. It was hypothesized that low PTSD symptomatology reporting would predict low levels of somatic health complaint.
  - b. It was hypothesized that low depression symptomatology reporting would predict low levels of somatic health complaint.
3. The third set of hypotheses evaluated the ability of previously identified protective factors for PTSD to predict somatic symptom reporting
  - a. It was hypothesized that low symptom reporting of peritraumatic emotionality would predict lower symptom reporting of somatic health complaints.
  - b. It was hypothesized that lower levels of sustained resource loss would predict low levels of somatic health complaints.
  - c. It was hypothesized that higher levels of social support would predict low levels of somatic health complaints.

4. Finally, it was hypothesized that previously identified PTSD protective factors would serve as protective factors when testing a comprehensive definition of resiliency (comprised of both physical and mental health).
  - a. It was hypothesized that low levels of peritraumatic emotionality would predict resilient individuals as compared to those with elevated health symptoms.
  - b. It was hypothesized that low levels of resource loss would predict resilient individuals as compared to those with elevated health symptoms.
  - c. It was hypothesized that higher levels of social support would predict resilient individuals as compared to those with elevated health symptoms.
5. An exploratory set of analyses was conducted to evaluate the role of entrapment and control with the current sample of residential fire survivors.
  - a. First, whether participants had to be rescued from their home during the fire was evaluated (as a dichotomous variable) as to explore differences amongst PTSD, depression, and somatic health symptom reporting.
  - b. Second the ability of control to predict PTSD, depression, and somatic health symptomatology was evaluated.

## **2.0 - Method**

### **2.1 - Participants**

Data for the project came from the Residential Fire Project (Jones & Ollendick, 2002). A sample of 44 adults, ages 24-79 (mean = 38.55, SD = 10.35) who participated in the National Institute of Mental Health-sponsored project assessing the impact of residential fire met inclusion criteria for this study. Participants were recruited from five locations: Blacksburg and Richmond, Virginia; Atlanta, Georgia; Charlotte, North Carolina; and Charleston, South Carolina. To be included in the original study, families must have sustained loss of 15% of their home and/or personal belongings. Participants who recently experienced a residential fire in their homes were targeted via incident reports sent to the investigators by fire departments, newspaper or television reports, and information provided to the fire survivors about the study by cooperating Red Cross agencies. Potential participants were then contacted and briefed about the project through letters and telephone calls. If a potential participant showed interest in the study, a brief screening survey was first conducted over the telephone. Those who met inclusion

criteria were asked to participate and assessments were arranged for the participants who agreed to take part in the study. Approximately one third of the potential participants contacted met participation criteria, and two thirds of acceptable potential participants agreed to participate in the study. Approximately 90 percent of these individuals completed the first assessment. Each participant/family received \$75 for their participation in the original Jones and Ollendick (2002) study.

## **2.2 - Measures**

*Brief Symptom Inventory* (BSI; Derogatis, 1993) is a self-report questionnaire assessing nine factors of symptoms including somatization, depression, anxiety, obsessive compulsive, hostility, interpersonal sensitivity, phobic anxiety, paranoid ideations, and psychoticism symptoms. The instrument has three subscales: positive symptom total, global severity, and positive symptom distress. Participants rate their level of distress in response to 53 items on a five point likert scale. The scale has been shown to have good reliability and validity; alpha coefficients for the somatization scale have been calculated at .85 and alpha for the depression subscale at .89 (Boulet & Boss, 1991). Regarding somatic health complaints, the BSI assessed such physical complaints as hot or cold spells, chest pains, and numbness or weakness in parts of the body. The depression subscale assessed such symptoms as suicidal ideations, feeling lonely and blue, anhedonia, feeling hopelessness and worthlessness. Internal consistency for the current project was found to be sufficient, with alpha coefficients of .83 for somatization and .88 for the depression scale. In the current study, the somatization scale was used to assess somatic health complaints post-trauma, the depression subscales was used as proxies of depressive symptomatology. Please see Appendix A for the full version of the instrument.

*Social Support Questionnaire* (Sarason, Levine, Basham, & Sarason, 1983) is a self-report instrument that assesses individuals' level of social support. The instrument asks participants to report both the number of individuals that provide social support and also their perceived quality of the support. Participants provided a report of the number of people and satisfaction for, parents, offspring, siblings, friends, additional relatives, and any other individuals whom they perceive as providing support. The scale has been shown to be a reliable

instrument, demonstrating alpha coefficients as high as .97. The total support index for the scale was used as the measure of social support for the current project. Please see Appendix B for the full version of the instrument.

*Fire Questionnaire* (Jones & Ollendick, 2002) is a semi-structured interview designed for the Residential Fire Project. Using a four-point likert response scale, the Fire Questionnaire assessed 16 factors, including fire characteristics, such as whether the participant was at home during the time of the fire, exposure, negative thoughts, number of professionals seen (and number of visits), emotional control, coping, fire guilt, quality of professional visits, loss, appraisal (both pre- and post-fire), appraisal attributes, fire prevention, and positive life events that have happened since the fire. The instrument was also the primary means of gathering demographic information about the participants for the original study. In the current study, the instrument will be used as a measure of peritraumatic emotionality. Participants ratings of feelings of helplessness, hopeless, and fear were averaged to create the peritraumatic emotionality variable (Cronbach's alpha for the current project was .73). Additionally, participant's rating regarding perceived control was used from the instrument. Finally, information (yes or no) whether participants had to be rescued from their home during the fire was obtained by the Fire Questionnaire. Please see Appendix C for the full version of the Fire Questionnaire.

*Resource Loss Scale* (Freedly, Shaw, Jarrell, and Masters, 1992) is a 53 item self-report measure of loss sustained during and following a traumatic event. The scale evaluated five types of loss: condition loss (15 items; e.g. stability of interpersonal relationships and vocation), energy loss (15 items; e.g. time for pleasurable activities or motivational drive), object loss (12 items; e.g. physical property), personal characteristics loss (10 items; e.g. self-esteem or other personal qualities), and pet loss (1 item; e.g. loss of companionship from the pet). Participants respond to each item on a five point likert scale from 0 (*no loss*) to 4 (*extreme amount of loss*). The alpha coefficient for the scale is good (Smith & Freedly, 2000) and was calculated to be .95 in the current sample. The instrument was summed for a total loss factor, which was used as the measure of loss. Please see Appendix D for the full version of the Resource Loss Scale.

*Anxiety Disorders Interview Schedule-IV: Lifetime Version* (ADIS; Di Nardo, Brown, & Barlow, 1994) is a semi-structured clinical interview designed to assess a variety of axis one disorders. The PTSD module of the ADIS was used in the current study to assess PTSD



symptomatology. The interview consists of asking about as aspects of PTSD diagnosis, including inclusion criteria (experiencing of a traumatic event) and personal response, symptomatology, and frequency, intensity, and interference of the symptoms that are necessary for a PTSD diagnosis. The instrument assesses independently for symptoms of reexperiencing, avoidance, and hyperarousal subclusters consistent with diagnosis for PTSD within the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM, IV, APA, 1994). Participants rated their levels of severity for each symptom on a 0 to 8 point scale (ratings above four are considered clinically significant). The instrument provides a dichotomous diagnosis result and continuous ratings of symptoms for both frequency and distress. Consistent with Kimerling, Clum, and Wolfe (2000), the continuous distress rating of PTSD symptomatology of the ADIS PTSD module was used to assess PTSD symptomatology. The internal consistency for the PTSD item was quite good (Cronbach's alpha of .92).

Additionally, the Medical History module was used to gather participant's health history, which was used in analyses of the current project. Participants responded "yes" or "no" to ever being diagnosed with the following problems: diabetes, heart problems, high/low blood pressure, epilepsy, cancer, thyroid disease, other hormonal problem, asthma, other respiratory problem, migraines, stroke, ulcers/GI problems, blood disorders, human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), and any other disease. Please see Appendix E for the PTSD and medical/treatment history modules of the ADIS.

### **2.3 - Procedure**

During completion of the study, all policies and procedures of the project were in accordance with American Psychological Association (APA) ethical guidelines. Participants participated in an informed consent procedure prior to data collection. Participants were assessed approximately four months, eleven months, and eighteen months post-fire. Data from the four month assessment point were used for the current project. Participants were assessed by trained graduate students who were enrolled in an APA-approved clinical psychology doctoral training program. Assessments were completed at variety of locations, such as health clinics, libraries, local churches, and Red Cross offices. Measures included in this project were part of a larger battery of interviews and assessment measures, with total testing time lasting three hours on average (including measures for both participants themselves and their children). The assessment entailed semi-structured and unstructured interviews as well as multiple self-report

measures in order to target participants' experiences during the fire, psychopathology following the fire, and a number of additional factors including coping, levels of exposure, and resource loss. Participants were debriefed before departing the study.

### **3.0 - Results**

#### **3.1 - Measurement Description**

The following variables from the aforementioned measures were utilized in the current project: peritraumatic emotionality, social support, resource loss, depression symptoms, somatic health complaints, and PTSD symptomology. The peritraumatic emotionality variable was developed by averaging three items selected from the Fire Questionnaire; feelings of fear, helplessness, and hopelessness. For full information regarding descriptive data on each factor please refer to Table 1. Regarding reporting of peritraumatic emotionality, on a 0-3 scale, the average reporting of fear was 1.90 (SD = 1.27), helplessness was reported as 2.05 (SD = 1.29), and hopelessness was reported on average at 1.64 (SD = 1.33). The overall mean for the peritraumatic emotionality variable was 1.86 (SD = 1.05). All participants included in the study provided responses to all three items of the factor.

Social support was measured via the Social Support Questionnaire, utilizing the total social support index. Participants indicated the number of people from whom they could seek support for 6 different domains (i.e. who can you count on when you need help, who can you count on when you are under pressure to feel more relaxed, etc.) and the perceived quality of the support from multiple individuals (i.e. family, friends, etc.). Across the study, the average reporting of a total social support score was 19.25 (SD = 13.16). Participants were required to report six of seven domains of support to remain eligible for the study, mean imputation was completed for missing data.

Loss of property and resources was measured via the Resource Loss Questionnaire, using the total loss index. The instrument measured four types of loss, including object loss (i.e. material possessions), conditional loss (i.e. family relationships, intimacy with interpersonal relationships), personal loss (i.e. confidence, esteem, etc.), and energy loss (i.e. time for sleep, free time, etc.). The instrument produced a total loss index by summing responses from the four subscales, for a total loss index. For the current project, the mean reported score for resource loss was 68.09 (SD = 35.93). Participants were required to provide responses on 45 of 53 items to be included in the sample. Mean imputation was used for missing data on the instrument.

Psychopathology was operationalized as two variables in the current project: PTSD and depression. PTSD was measured via the ADIS-IV PTSD module. The continuous distress rating for each symptom was utilized for analysis. Regarding reporting of PTSD symptomology on the ADIS, in congruence with Kimberling, Clum, and Wolfe (2000), the continuous distress rating of PTSD was used. The average of symptom distress reported across symptom subclusters was used as a rating of full PTSD symptomology. The average symptom reporting for PTSD was 1.94 (SD = 1.65). Participants were included in the current sample if they provided ratings for twelve of the seventeen symptoms (mean imputation was used for missing data). Additionally, depressive symptoms came from the depression factor of the BSI, providing an average distress rating for such depression symptoms as feeling lonely, feeling hopeless about the future, etc. Symptom reporting was averaged across symptoms, the mean reporting of depression symptoms was 0.76 (SD = 0.92). Participants were included in the current sample if they provided responses to five of the six items for the scale.

Participants' measure of self-reported health came from the somatization subscale of the BSI. Seven items were reported on a 0-4 likert scale and averaged for a mean score of somatic symptom reporting. Participants rated their distress regarding such symptoms as faintness or dizziness, pain in heart of chest, nausea or upset stomach, etc. Across the study, the average reporting of somatic symptoms was 0.71 (SD = 0.80). Participants were required to respond to five of seven symptoms for inclusion in analyses.

Finally a dichotomous comprehensive health variable was created as to allow testing of Bonanno's (2004) definition of resiliency by evaluating the data in a categorical and person centered approach. For this analysis, PTSD symptoms were rated as either absent (rating from 0-3) or present (rating 4+), depression symptoms were rated as either absent (0-1 ratings) or present (2-4 ratings), and somatic symptoms were rated as either absent (0-1) or present (2-4). Following recategorization of each symptom, participants were categorized as either not symptomatic (0-1 symptoms) or symptomatic (more than one symptom of the outcome variable). The three outcome variables (PTSD, depression, and somatic health complaints) were then collapsed and rated as either asymptomatic (having one or fewer symptoms in each of the three outcome variable) or symptomatic (having greater than one symptom in one or more of the three

outcome variables). Following collapsing of the variables into a comprehensive health variables, 9 participants (20.45% of participants) were categorized as resilient (or asymptomatic) and 35 participants (79.54% of participants) were categorized as symptomatic.

### **3.2 - Influence of Demographic Variables and Pre-Trauma Health**

Given the influence of education level, age, gender, and ethnicity as risk factors for PTSD (Brewin, et al., 2000 & Ozer, et al., 2003), each variable was evaluated for its association with each of the previously discussed predictors and outcome variables. An education variable was developed with reported information from the Fire Questionnaire. Participant reports were coded on a scale of 1-7 using the Educational Factor Index of Social Status (Hollingshead, 1975). Participants were entered into one of the following categories: 1 = less than 7th grade level education, 2 = junior high school (9th grade) level education, 3 = partial high school (10<sup>th</sup> or 11<sup>th</sup> grade) level education, 4 = high school degree level education, 5 = partial college (at least one year) and/or specialized training level education, 6 = college or university degree, and 7 = graduate professional training (graduate degree) level of education. Two-tailed bivariate correlations were examined to test the relationship between education and outcome variables in the current sample. Education was not found to be significantly correlated with any of the outcome variables, indicating that education levels did not have a significant impact on participant reporting on measured utilized. Please see Table 2 for further details regarding correlational data involving education levels of participants.

The age of participants was also evaluated to examine its potential effect on the current sample of residential fire survivors. Age was found to be significantly correlated with PTSD symptomology,  $r = -.407$ ,  $p < .01$ . Please see Table 2 for all correlations.

The effects of gender were evaluated on the outcomes variables via an independent samples t-test. Assuming equal variance, no significant differences were found between men and women in the current sample for reporting of PTSD, depression, or somatic health symptoms indicating that men and women responded relatively equally. Please refer to Table 3 for full details regarding the influence of gender on health outcomes.

The influence of ethnicity was evaluated for an impact on the current sample of residential fire survivors. In the current sample, one Hispanic and one Asian-American participant were included after listwise deletion; therefore, only differences between African-

American and Caucasian participants were evaluated. An independent samples t-test was conducted, and no differences between African-American and Caucasians were discovered, which indicated African-American and Caucasian participants responded relatively equally on measures utilized in the study. Please see Table 4 for further details regarding the influence of ethnicity of the current sample of residential fire survivors.

Finally, participants' health history was also evaluated to test for significant relationships with outcome variables. Participants either confirmed or denied (for a dichotomous variable) current or history of fifteen different health problems. The following categories were tests to assess its impact on study variables; diabetes, heart problems high/low blood pressure, cancer, thyroid disease, other hormonal problems, asthma, respiratory problems, migraines, stroke, gastrointestinal problems, blood diseases, and other [any other significant health problem]). No participants endorsed a history of Epilepsy or HIV/AIDS, therefore they were not included in the analyses. Of importance, participants reporting a history of respiratory problems reported significantly more depression symptoms ( $t = -2.309, p < .05$ ) and somatic symptomology ( $t = 2.232, p < .05$ ). Please see Table 5 for information regarding the influence of respiratory problems. Reporting a history of all other health problems was not found to have a significant impact of each of the outcomes variables.

For the comprehensive health categorical variable, influence of the same demographic variables were evaluated (age, gender, education, and ethnicity). Given the categorical nature of gender and ethnicity, the impact of the variable on comprehensive health was evaluated via a chi-square test. The percentage of participants that were considered resilient did not differ by gender  $\chi^2(1, N=44) = 1.15, p > .05$  or ethnicity  $\chi^2(3, N=44) = 2.74, p > .05$ . Age and education were evaluated via independent sample t-tests, a significant difference was found for age ( $t(42) = 2.71, p < .01$ ) but not for education ( $t(42) = .306, p > .05$ ). Based upon the results of these analyses, age was entered into logistical regressions to control for the influence of the variable.

### **3.3 - Relationship Amongst Variables**

First, it was necessary to evaluate the relationship among the aforementioned variables. Two-tailed bivariate correlations were examined between the following variables: social support, resource loss, peritraumatic emotionality, PTSD symptomatology, depression symptomology, and somatic symptomology. For full information regarding correlations between variables, please refer to Table 2. For hypothesis one, PTSD was significantly correlated with both

resource loss,  $r = .655$ ,  $p < .01$  and peritraumatic emotionality,  $r = .412$ ,  $p < .01$ . However, PTSD was not significantly correlated with social support,  $r = -.049$ ,  $p > .05$ . Depression symptoms were significantly correlated with peritraumatic emotionality,  $r = .545$ ,  $p < .01$  and resource loss,  $r = .657$ ,  $p < .01$ . However, depression symptomatology was not significantly correlated with social support  $r$

Regarding the second hypothesis, PTSD was significantly correlated with somatic symptomatology,  $r = .385$ ,  $p < .05$ . Depression symptomatology was also significantly correlated with somatic symptom reporting,  $r = .654$ ,  $p < .001$ . For hypothesis three, somatic health complaints were significantly correlated with both resource loss,  $r = .449$ ,  $p < .01$  and peritraumatic emotionality,  $r = .403$ ,  $p < .01$ . However, somatic symptomatology was not significantly correlated with reporting of social support,  $r = .120$ ,  $p > .05$ . Finally, for the experimental hypothesis examining feelings of control, reporting of feelings of control was significantly correlated with PTSD symptoms,  $r = -.457$ ,  $p < .01$ , depression symptoms  $r = -.395$ ,  $p < .01$ , but not somatic symptoms,  $r = -.130$ ,  $p > .05$ .

### **3.4 - Regression Analyses**

Statistical analysis for hypotheses one through three were conducted via linear regression. As appropriate, demographic and health history variables found to significantly impact outcome variables were controlled for in each of the regressions. Given the lack of significance at the correlational level, social support was not evaluated by regression analysis. A Bonferroni adjustment was conducted to control for experiment-wise error (Sankoh, Huque, & Dubey, 1997). The adjustment procedure recommends use of a critical test statistic of  $t > 2.016$ ,  $p < .0253$ . Results of hypothesis one through three and exploratory analyses were evaluated with this test statistic.

For hypothesis one, PTSD was regressed onto peritraumatic emotionality yielding a non-significant result,  $t(43) = 1.899$ ,  $p > .05$ . Second, PTSD was regressed onto resource loss, which produce a significant result,  $t(43) = 4.801$ ,  $p < .001$ . Please see Table 6 for full details regarding the analysis. Third, PTSD was regressed onto both peritraumatic emotionality and resource loss simultaneously, yielding a significant finding for resource loss,  $t(43) = 4.330$ ,  $p < .001$ ) and a nonsignificant finding for peritraumatic emotionality,  $t(43) = .954$ ,  $p > .05$ . Please see Table 7 for full details of this regression. Significant findings for this hypothesis were significant above the suggested Bonferroni adjustment.

As part of hypothesis one, depression symptomology was also regressed onto both predictors reported above. For the first regression, depression symptomology was regressed onto peritraumatic emotionality producing a significant finding ( $t(43) = 4.191, p < .001$ ). Please see Table 8 for full details regarding the analysis. Second, depression symptomology was regressed onto resource loss, yielding a significant finding ( $t = 5.495, p < .001$ ). Please see Table 9 for full details regarding the analysis. Finally, depressive symptomology was regressed onto both predictors, producing a significant finding for both peritraumatic emotionality ( $t(43) = 2.979, p < .01$ ) and resource loss ( $t(43) = 4.407, p < .001$ ). Please see Table 10 for full details of the regression. Significant findings for this hypothesis were significant above the suggested Bonferroni adjustment.

For hypothesis two, the impact of PTSD and depression symptoms on somatic symptom reporting was evaluated. For the first analysis, somatic symptomology was regressed onto depression symptomology, producing a significant finding, ( $t(43) = 4.957, p < .001$ ). Please see Table 11 for full details regarding the analysis. Second, somatic symptoms was regressed onto PTSD symptomology, with results showing a significant finding, ( $t(43) = 2.343, p < .05$ ). Please see Table 12 for additional details regarding the analysis. Finally, somatic health complaints was regressed onto depression and PTSD symptomology simultaneously, producing a significant finding for depression symptomology ( $t(43) = 4.060, p < .001$ ) and a nonsignificant finding for PTSD symptomatology ( $t(43) = .212, p > .05$ ). Please see Table 13 for full details regarding the analysis. Significant findings for this hypothesis were significant above the suggested Bonferroni adjustment.

A third set of analyses was conducted to test hypothesis three. First, somatic symptomology was regressed onto peritraumatic emotionality, producing a significant finding, ( $t(43) = 2.75, p < .01$ ). Please refer to Table 14 for full details regarding the analysis. Second, somatic symptomology was regressed onto resource loss, yielding a significant finding, ( $t(43) = 3.030, p < .01$ ). Please see Table 15 for full details regarding the analysis. Finally, somatic health complaints were regressed onto both peritraumatic emotionality and resource loss simultaneously. Findings revealed a non-significant result for peritraumatic emotionality ( $t(43) = 1.83, p > .05$ ) and a significant result for resource loss ( $t(43) = 2.180, p < .05$ ). Please see Table 16 for full details regarding the analysis. Significant findings for this hypothesis were significant above the suggested Bonferroni adjustment.

A fourth set of regressions was conducted by sorting the data into separate meaningful categories based on upon the presence or absence of both psychopathology symptoms (PTSD and depression) and physical health complaints. Therefore, to test Bonanno's (2004) definition of resiliency involving both physical and mental health, a comprehensive categorical variable of physical and mental health was regressed onto peritraumatic emotionality, resource loss, and social support via logistical regression (each independently, then simultaneously).

In the first logistical, comprehensive health was regressed onto social support and was found to not be significant loss (wald statistic (1) = 2.48,  $p > .05$ ). In this regression, a total of 81.8% of participants were predicted by social support, 97.1% of symptomatic cases were predicted, but only 22.2% of resilient participants were predicted. A second logistic regression was completed in which comprehensive health was regressed onto resource loss, which was found to be significant (wald statistic (1) = 5.92,  $p < .05$ ). In this regression, a total of 81.8% of participants were predicted by resource loss scores, 91.4% of symptomatic participants were predicted, and 44.4% of resilient participants were predicted. A third logistic regression was completed, where comprehensive health was regressed onto peritraumatic emotionality, yielding a significant finding (wald statistic (1) = 5.143,  $p < .05$ ). A total of 79.5% of participants were predicted by peritraumatic emotionality, 91.4% of symptomatic cases were predicted, and 33.3% of resilient participants were predicted. Finally, a fourth regression was completed in which comprehensive health was regressed onto each of two previously significant predictors simultaneously. In this regression, resource loss (wald statistic (1) = 5.49,  $p < .05$ ) was found to be significant; however, peritraumatic emotionality (wald statistic (1) = 3.85,  $p = .05$ ) was not found to be significant. In this final regression, a total of 84.1% of participants were predicted by the model, 91.4% of symptomatic cases were predicted, and 55.6% of resilient participants were predicted.

### **3.5 - Experimental Analyses**

To evaluate the impact of having to be rescued during the residential fire, an independent samples t-test was complete. Symptom reporting for PTSD, depression, and somatic health complaints for those who had to be rescued ( $N = 4$ ) versus those who did not have to be rescued ( $N = 38$ ) were evaluated (two participants did not respond to this question). For PTSD symptoms, no significant differences were found between those who need rescue as compared to those who didn't ( $t(40) = -.804$ ,  $p > .05$ ). Regarding depression symptomatology, no significant



difference was found ( $t(40) = -.176, p > .05$ ). Finally, no significant difference was found for those who had to be rescued as compared to those who did not for somatic symptom reporting ( $t(40) = 1.046, p > .05$ ).

To evaluate the predictive validity of perceived control for two of the three outcome variables (somatic health not tested given lack of correlation), linear regression was completed for each of the two variables. A Bonferroni correction was calculated for the following regressions and a significance above  $t = 2.20, p < .05$ . Posttraumatic Stress Disorder symptoms were regressed onto control, yielding a significant finding ( $t(43) = -2.819, p < .001$ ). Please see Table 17 for full details regarding the analysis. Depression symptomatology was regressed onto control, which produced a significant finding ( $t(43) = -3.019, p < .01$ ). Please see Table 18 for full details regarding the analysis. Each of the significant findings was found at a level above and beyond the Bonferroni correction.

## **4.0 - Discussion**

### **4.1 - Summary of Findings**

The primary aim of the study was to evaluate protective factors regarding PTSD, depression and self reported health outcomes following trauma exposure. The project was developed to further the understanding of social support, peritraumatic emotionality, and resource loss' impact of health outcomes through evaluating survivors of residential fires. Secondly, psychopathology (both PTSD and depression symptomology) were evaluated as protective factors for minimal somatic health complaints. Finally, the project tested a comprehensive definition of resilience (including both physical and mental health) to evaluate the construct that reflects overall health following trauma exposure.

In the project, some of the predictions of the protective factors were supported through the results, while other predictions were not supported. More specifically, low PTSD symptomology was predicted by low resource loss. Reduced depression symptomology was also predicted by low resource loss and peritraumatic emotionality. Further, low somatic symptom reporting was predicted by both low PTSD and low depression symptom reporting. Thirdly, low somatic complaint reporting was predicted by low peritraumatic emotionality and low resource loss. Finally, when looking at health as a comprehensive construct, resilient individuals (having no health problems) were significantly predicted by low peritraumatic emotionality and low resource loss.

However, some of the predictions were not supported. The current study did not find social support to have a significant association with PTSD, depression, or somatic symptoms (as evidenced by the lack of significant correlation between social support and the outcome variables). This may be due to two issues: First, social support as measured in the current project did not in fact have a significant impact on participant reporting of PTSD, depression, or somatic symptoms. Secondly, social support may have not have sufficient time (at four months post trauma) to impact outcome symptomology. For example, Ozer et al. (2003) discuss that their strongest findings amongst social support for its association with PTSD were found when traumas had occurred three years before measurement of PTSD symptoms and that social support may be a secondary prevention rather than having an immediate impact on short-term symptomology. Additionally, the total social support construct may have been too broad of a construct, as previous findings such as King and colleagues (1998) who found an effect for social support as a protective factor when the construct was measured as functional social support or Sutker and colleagues (1995) who measured social support as the number of people available for support.

Further, support was not found for prediction of low PTSD symptomology by low peritraumatic emotionality. The first set of analyses was conducted as to evaluate hypothesis one, which was intended to assess the ability to predict PTSD and depression symptomatology. As part of hypothesis one, peritraumatic emotionality was hypothesized to predict PTSD symptom reporting. The results of the current project did not support the hypothesis, with peritraumatic emotionality failing to predict PTSD symptoms. One potential explanation for this result is the factor used for peritraumatic emotionality. The current project utilized fear as a component of the peritraumatic emotionality variable which may not have accurately captured the construct of horror (as used by Roemer et al. (1998). Further, peritraumatic emotionality may have influenced PTSD symptoms, but other protective factors posttrauma (such as resource loss) may have influenced individuals reporting of PTSD symptoms even more so.

#### **4.2 - Regression Analyses: Protective Factors of Physical and Mental Health**

The study examined the potential protective role of social support, peritraumatic emotionality, and resource loss in mental and physical health outcomes at four months post residential fire. Analyses for hypothesis one were conducted to evaluate whether low sustained resource loss predicted low PTSD symptom reporting. Results of the analyses support this

hypothesis. The finding that low resource loss significantly predicted low PTSD symptom reporting is in congruence with previous findings, including Hobfoll, Trace, and Galea (2006), who found noted findings amongst survivors of the 9/11 terrorist attacks in New York City. When both peritraumatic emotionality and resource loss were entered simultaneously to predict PTSD symptoms, results of the analysis demonstrated a significant finding for resource loss, but not peritraumatic emotionality. The result adds further support for unique variance accounted for by resource loss as an important protective factor to reducing the risk of PTSD symptomology.

A second set of analyses was completed for hypothesis one as to evaluate the influence of low peritraumatic emotional and low resource loss as protective factors for depression symptom reporting. It was hypothesized that low peritraumatic emotionality would predict low depression symptom reporting. Results of the current project supported the hypothesis and found low peritraumatic emotionality did in fact predict low depression symptom reporting.

This finding is somewhat novel but not surprising given the rate of comorbidity between PTSD and depression has been calculated as high as 77% (Brown, Campbell, Lehman, Grisham, & Mancill, 2001). However, it is unknown if depression symptoms in these individuals were present prior to the trauma. For example, Tedstone and Tarrier (1997) found depression to be a significant risk factor for PTSD amongst burn survivors. Therefore, it could be depression symptomatology pre-trauma exposes trauma survivors to heightened peritraumatic emotionality, ultimately leading to elevated PTSD symptomatology. At this time it is difficult to definitively conclude that low sustained peritraumatic emotionality is a protective factor of depression symptom reporting.

A second regression was conducted to evaluate the hypothesis that low resource loss would predict low depression symptomology posttrauma. Support was found for this hypothesis, as results indicated low resource loss was found to predict low depression symptoms. The results of the current project are in congruence with previous findings including Monnier and colleagues (2002) which found resource loss to be predictive of depression symptoms. Results are also similar to Hobfoll and colleagues (2009) which found minimal resource loss as a protective factor from depression symptoms for survivors of terrorist attacks. A final regression was carried out to evaluate whether peritraumatic emotionality and resource loss accounted for unique variance as protective factors from depression (which both were hypothesized to do).

Results show unique variance amongst depression symptoms for both peritraumatic emotionality and resource loss, further strengthening the importance of each construct in depression symptom development.

The second hypothesis was that low PTSD and depression symptomology would serve as a protective factor for somatic symptom reporting. Three regression analyses were conducted to evaluate the influence of PTSD and depression on somatic health outcomes. The first regression evaluated the hypothesis that low PTSD reporting would predict low somatic health complaint reporting. Support was found for the hypothesis in that low PTSD symptom reporting was found to predict low somatic health reporting. This is a relatively new finding in that low PTSD symptomology was found to impact low somatic reporting. Bonanno and colleagues (2008) found delayed dysfunction, recovery, and resilience groups reported better self-reported health as compared to a chronic dysfunctional group. The results are also similar to previous findings which indicate high PTSD symptom reporting is a risk factor for high somatic health complaints (Immel and Jones, in preparation and Wagner, et al., 2000).

A second regression was carried out to evaluate the second component of hypothesis two which predicted that low depression reporting will predict somatic symptom reporting. Support was found for this hypothesis, in that low depression symptoms were found to predict low somatic symptom reporting. This finding is somewhat novel, in that low depression as a protective factor for somatic symptom reporting has little empirical evidence. Clum, Calhoun, and Kimerling (2000) also found that depression impacts self-reported health from a risk perspective. It seems logical that those with lower depression would report fewer health symptoms given the association between depression and somatic health complaints (Haug, Mykletun, & Dahl, 2004). Findings from the current project reinforce previous findings supporting the link between depression and somatic symptoms in trauma survivors.

A third regression was conducted for hypothesis two in which both low PTSD and low depression symptom reporting were hypothesized to account for unique variance in predicting somatic health complaints. Support for the current hypothesis was mixed: depression was found to account for unique variance in predicting somatic complaints, while low PTSD symptom reporting was not found to do so. These results are somewhat in contradiction to Clum, Calhoun, and Kimerling's (2000) findings which found unique variance for both PTSD and depression from a risk perspective. Schnurr and Green (2004b) also argue that PTSD is the primary

pathway in which trauma exposure leads to physical health morbidity and mortality. Results of the current project suggest that low depression may also account for a significant portion of the variance as a protective factor in predicting low somatic symptom reporting. Though given the limitations of the current project, it would not be prudent to fully discount the role of PTSD in trauma survivors' physical health.

Three regressions were completed to evaluate hypothesis three which stated that low peritraumatic emotionality and low resource loss would predict low somatic health reporting. The first regression was completed to examine the hypothesis that low peritraumatic emotionality would predict low somatic symptom reporting. Support was found for this hypothesis in that low peritraumatic emotionality was found to predict low somatic symptom reporting. This is a notable finding because from a protective factor standpoint, peritraumatic emotionality has yet to be evaluated in regards to its impact on somatic symptom reporting from a resiliency perspective. That said, given the relationship between peritraumatic emotionality and PTSD symptoms (Ozer, et al., 2003) and the mediational role of PTSD between trauma exposure and physical health outcomes (Immel & Jones, In preparation, Kimerling, Clum, & Wolfe, 2000 & Schnurr, Brown, & Furey, 1994), these findings fit well within the framework of the greater PTSD literature. Evaluating the relationship from a protective factor orientation allows further support for the importance of peritraumatic emotionality as a predictor of somatic health.

Next, the hypothesis that low resource loss would predict low somatic symptom reporting was examined via linear regression. This hypothesis was supported by the results of the regression, which indicated that low resource loss significantly predicted low somatic health complaints. This too is a relative novel finding as evaluating low resource loss as a predictor of low somatic health complaints has yet to be evaluated in an adult sample of trauma survivors. Hobfoll and colleagues (2009) demonstrated the importance of less psychosocial resource loss as a protective factor for PTSD: it makes sense similar results are found with somatic health as an outcome variable.

A third regression was completed in which somatic health was regressed onto peritraumatic emotionality and resource loss simultaneously. In this regression, low resource loss reporting was found to predict low somatic health complaints. However, peritraumatic

emotionality was no longer found to significantly predict low somatic health complaints. Results point to the strong predictive validity of low resource loss as a protective factor and are original findings in the literature.

A final set of regressions was completed as logistical regressions as to evaluate a comprehensive definition of health as being both mental and physical in nature. The analyses also evaluated the data in a person centered approach by assessing the 20% of resilient participants as compared to those experiencing significant mental or physical health symptom reporting. The portion of resilient participants was similar to findings in previous research, including Hobfoll and colleagues (2009). Bonanno (2004) defined the construct 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 (p. 20).” This study hypothesized that high social support, low peritraumatic emotionality, and low resource loss would serve as protective factors for a comprehensive health outcome variable which included physical and mental health.

The first logistic regression was completed to determine if peritraumatic emotionality would significantly predict resiliency from trauma exposure. No support was found for the proposed hypothesis that social support would predict resilient individuals. This finding is in accordance with previous findings of the study. Support was found for the second hypothesis, in that low peritraumatic emotionality successfully predicted resilient participants. Results of this regression are in general support with previous findings (i.e. low peritraumatic emotionality serving as a protective factor from elevated depression and somatic health outcomes).

A third regression was conducted in which comprehensive health was regressed via logistical regression onto low resource loss. Low resource loss was found to significantly predict resilient individuals in the current sample. The findings are also in accordance with previous findings of the study, in that low resource loss successfully predicted many of the health outcome variables (when predicted as continuous variables). A final logistical regression was completed in which the comprehensive health construct was regressed onto both peritraumatic emotionality and resource loss. Results of the regression suggest that low resource loss account for unique

variance in predicting resilient individuals, whereas low peritraumatic did not successfully predict the group of resilient participants. Results of the third regression lend further support to the importance of low resource loss as a protective factor for trauma survivors.

#### **4.3 - Influence Among Demographic and Pre-Trauma Health Variables**

The effects of demographic variables, including age, gender, education, and ethnicity, were examined in the current study. Gender was not found to have a significant effect on the reporting of any of the variables. This is in contradiction to previous findings such as Alim and colleagues (2008) which found the demographic variable of being male a protective factor. This may be due, in part, to the uneven ratio of women to men in the current sample. Given the project was designed to assess family's impact to residential fire, the primary care provider who participated in the study was often the child's mother. Given the sizable difference in the number of women to men, results of the current project may have more meaning for women's health than men's health.

Secondly, ethnicity was not found to have a significant impact on variables included in the current sample. Though the effects of ethnicity as been shown to have a significant impact on reporting of PTSD symptoms in previous research, the difference in reporting is not always consistent across populations. For example, Brewin, Andrews, and Valentine (2000) found an overall effect for minority status, however the effect was not found in military populations. Therefore, given the sample size of the current project, it is not entirely surprising a significant difference on symptom reporting between ethnicity groups was not found.

Education was not found to have a significant impact on any of the outcome variables included in the study (PTSD, depression, or somatic symptoms). A modest correlation was found between social support and education level, which has been seen in other studies (Morgan & Sorensen, 1999).

Additionally, age was significantly negatively correlated with PTSD symptoms, older adults were more likely to report less PTSD symptomatology. These finds are consistent with Immel and Jones' (In preparation) and Acierno and colleagues' (2006) findings. Norris (1992) reports older adults may be less likely to experience elevated levels or exposure and/or their memories of the trauma fade overtime. However, all participants in the current sample were assessed at relatively the same time (4 months) posttrauma. Norris (1992) also describes a resistance to stress across the lifespan which may serve as a protective factor to PTSD

symptomology. The impact of age may be in part to resiliency from previous stressors and/or traumas and development of different types of coping strategies across the lifespan. However, also found in the current sample was a significant inverse association between age and resource loss,  $r = -.345$ ,  $p < .05$ . This finding may provide key insight into the inverse relationship between age and PTSD, as the negative correlation between age and resource loss shows older adults often report less loss than younger adults. Acierno and colleagues (2006) founds similar findings and speculate this finding may be in part to financial stability in later life. As this project and others (Hobfoll, et al., 2009) demonstrate, a low level of loss is often a good predictor of recovery and/or resiliency posttrauma.

Finally, a significant difference was found in the current sample in depression reporting between those with a history of respiratory problems and those without respiratory problems. It should be noted that only three participants reported a history of respiratory problems. Previous research is mixed on the impact of respiratory problems and a risk for depression (Ede, Yzermans, Brouwer, 1999). Further, the differences between the two groups in somatic health reporting may be due to two items on the BSI which would heavily involve respiratory functions (“Pains in heard or chest” and “Trouble getting your breath”). A review of the literature did not review research evaluating this association in trauma survivors.

#### **4.4 - Having to be Rescued and Perceived Control**

Two experimental analyses were conducted for the project. The first assessed differences on depression, somatic, and PTSD outcomes measures between participants who had to be rescued versus not rescued . The analysis failed to produce significant differences between the two groups. This may be in part due to no actual differences between the groups on depression, PTSD, and somatic outcomes and/or the importance of other protective variables assessed. However, given the small sample size and disproportionate number of those who did not have to be rescued (as compared to those who did), it is difficult to confirm that being rescued is not a significant predictor of trauma survivors outcomes.

Additionally, participants’ perceived control was assessed and tested as a protective factor for survivors’ mental health outcomes. No correlation was found between perceived control and somatic health; therefore, it was not further evaluated. However, perceived control was found to be significantly predict both PTSD and depression symptoms, which indicated the factor is potentially a good protective factor of trauma survivors. Frazier (2003) found similar



results from a risk perspective regarding control and distress. Results of the current project suggest having perceived control during a residential fire may also appear to serve as a protective factor. Given the results of the current project, perceived control appears to warrant further investigation, particularly into great details of what the construct is specifically measuring (i.e. domain mastery, life threat, etc.).

#### **4.5 - Potential Benefits of the Study**

Several protective factors have been shown to have a significant effect on mental and physical health outcomes posttrauma (Hobfoll et al., 2009 & Bonanno et al., 2008). The present study may help to bring light to previous findings that low peritraumatic emotionality and resource loss are important protective factors for trauma survivors.

One of the most significant potential benefits of the present study was the use of the novel comprehensive health construct. Through use of Bonanno and colleagues (2008) definition of health as a uniform (physical and mental) construct, the study lends support to the notion that protective factors and resiliency can be evaluated as a unitary construct. By using a dichotomous outcome variable, the strength of minimal resource loss as a protective factor was further highlighted.

Another strength of the current project is that it applies a person centered approach (by dividing participants into meaningful groups) to evaluation of both protective factors and health as a comprehensive definition. The statistical rigors also lend support to the strengths of the findings. Through use of conservative power adjustments such as the Bonferroni adjustment, we can say with greater confidence that findings are meaningful.

An additional strength of the project is use of a relatively novel trauma population. Protective factors for adult trauma survivors had not been assessed on a sample of residential fire survivors until the current project. The timing of the assessment of protective factors and outcome symptomatology four months post trauma was relatively recent as compared to many studies that assess trauma six months (Bonanno et al., 2007) to years post trauma (Wolfe, et al., 1994).

Finally, the current study controlled for pre-trauma health, something not seen in the adult resiliency literature to date. Even though the occurrence of pre-trauma health problems was relatively low, by controlling for pre-trauma health, it can be concluded with great

confidence that somatic health complaints were indeed due to the trauma exposure and subsequent psychopathology. Future research could benefit from continuing to control for pre-trauma health.

The results may have important implications for early intervention screening and assessment. Clinicians may be able to use assessment of peritraumatic emotionality and resource loss as a relatively early screening tool in detecting those who are likely to be considered resilient following a trauma event. Additionally, these protective factors could be evaluated even before Acute Stress Disorder can/should be assessed (Litz & Gray, 2004) and the one month waiting period for meeting criteria for PTSD (APA, 1994; APA, 2000). Finally, this could be highly useful in mass trauma situations, as the ability to assess via self-report measures would allow for significant assessment with minimal clinician time/resources.

#### **4.6 - Limitations of the Current Project and Future Research**

Despite the strengths of the current project, several limitations should be noted. One of the major limitations of the study is the sample size. Given only 44 participants met inclusion criteria, the study may be somewhat underpowered. This effect may have had important implications for the social support construct and other non-significant findings which contradict previous research. Future research would benefit from a larger sample size as to evaluate the effects perhaps not detectable in the current sample. A larger sample size would also increase the likelihood of an even greater diversity in symptom reporting amongst the residential fire survivors.

Additionally, it is unknown if participants came from “otherwise normal circumstance:” Bonanno (2004) defines resiliency as resistance/recovery from those who come from “otherwise normal circumstance”. The current project did not assess pre-trauma function as a holistic construct. For example, resource loss reporting could be heavily influenced by pre-trauma resources available. Future research could benefit from assessing pre-trauma circumstances of the trauma survivors, as to consider the starting point for such constructs as resource loss.

Another limitation of the current study is that it does not evaluate the neuropsychological alterations that are well-documented in the PTSD literature (Vasterling & Brewin, 2005). Because of the physiological activation and then deactivation of individuals who have sustained a trauma, understanding the neurobiological and biological alterations the body experiences following a traumatic event is important (Yehuda & McFarlane, 1997). Friedman & McEwen’s

(2004) review discusses alterations associated with the HPA axis system that ultimately influences the regulation of cortisol. The review implicates a number of PTSD increased arousal symptoms as important in their impact on the sympathetic nervous system, which could have an impact on somatic health. Friedman and McEwen (2004) explain the influence of PTSD on health and medical illness through use of the allostatic load model. The allostatic load model describes the physical cost to an organism from continuing to adapt and readapt to environmental stressors (McEwen, 1998).

Buckley & Kaloupek (2001) performed a meta-analysis regarding the cardiovascular system and found elevated blood pressure and resting heart rates in individuals with PTSD versus control groups of individuals exposed to trauma without PTSD symptoms and non-trauma survivors. This finding may be important for the current study, in that one symptom assessed was “trouble getting your breath.” Additionally, one symptom of PTSD is share with depression, irritability. Hostility in depression populations have been linked to increase risk for higher levels of calcification in coronary arteries impacting heart health (Iribarren et al, 2000). PTSD has also been linked to a weakening of the immune system (Dougall & Baum, 2004). Finally, individuals with PTSD have been shown to have reduced pain tolerances (Shalev, Peri, Canetti, & Schreiber, 1996) something which may have a significant impact on somatic distress reporting.

Unfortunately, a limitation of this study’s model is that it reflects the system response to a specific target tissue (or potential somatic health complaint) and the effects of pathophysiological implications resulting from psychophysiological findings have been heretofore unexamined by the PTSD literature (Pole, 2007). Future research can attempt to link this relationship between neurological alterations associated with PTSD and somatic health complaints, to do so, research may benefit from reducing the number of health complaints (i.e. focus on one single somatic distress outcome variable) as to isolate and better understand the relationship between brain functioning and somatic outcomes.

Finally, the current study utilized self-report measures of health. While assessing somatic health complaints is important, future research may benefit from using a more objective measurement of health such as physiological measurement or medical reporting. Other potential outcome variables which would be important to examine other variables such as health care utilization and treatment adherence for physical and mental health problems.

#### **4.7 - Summary and Conclusion**

In conclusion, the current study adds further support to the growing body of literature evaluating protective factors for adult trauma survivors. By evaluating residential fire survivors four months posttrauma, the study was able to evaluate protective factors of PTSD depression, and somatic health. Additionally, it extends previous findings which have indicated peritraumatic emotionality and resource losses are important predictors of both psychopathology and physical health complaints posttrauma. Further, low reporting of peritraumatic emotionality and resource loss are solid protective factors from aversive health outcomes. The findings also extend the notion that physical and mental health can be evaluated as a unified construct and that many protective factors of PTSD are applicable to depression, somatic health complaints, and the unified health construct used in the current project. Future research can build on findings and further evaluate additional protective factors of survivors' physical and mental health following trauma.

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Table 1

Measures Range, Means, and Standard Deviations.

	Range	Mean	Standard Deviation
Fire Questionnaire: Peritraumatic Emotionality, Home During Fire, & Perceived Control			
Helplessness N= 44	0-3.0	2.05	1.29
Hopelessness N= 44	0-3.0	1.64	1.33
Fear N= 44	0-3.0	1.91	1.27
Peritraumatic Emotionality (mean) N = 44	0-3.0	1.86	1.05
Perceived Control N=44	0-3.0	1.59	1.11
Resource Loss Scale: Total Resource Loss			
Resource Loss N = 44	7-149	68.09	35.93
Social Support Questionnaire: Social Support			
Social Support N = 44	0-53.00	19.25	13.16
Anxiety Disorder Interview Schedule: Posttraumatic Stress Disorder (averaged across symptoms)			
PTSD Symptoms N= 44	0-6.47	1.94	1.65
Brief Symptom Inventory: Somatic & Depression Symptoms (averaged across symptoms)			
Somatic Complaints N= 44	0-3.0	0.71	0.80
Depression N = 44	0-3.17	0.76	0.91

Table 2

Reporting of Correlations for Two-tailed Pearson's Correlations Amongst Variables

Item	1	2	3	4	5	6	7	8
1, Peritraumatic Emotionality	1							
2. Social Support	-.059	1						
3. Resource Loss	.390**	.129	1					
4. Depression	.545**	.014	.657**	1				
5. Somatic	.403**	.120	.449**	.654**	1			
6. PTSD	.412**	-.049	.655**	.533**	.385*	1		
7, Control	-.425**	.118	-.351*	-.395**	-.130	-.457**	1	
8. Age	-.438**	-.121	-.345*	-.191	-.146	-.407**	.247	1

Note: N=44

\* indicates correlation significant at the .05 level (2-tailed).

\*\* indicates correlation significant at the .01 level (2-tailed).

Table 3

Comparison of Means and Standard Deviations of the Effects of Gender on Peritraumatic Emotionality, Social Support, Resource Loss, Depression Symptoms, Somatic Symptoms, and PTSD Symptoms.

Variable	Gender	<i>M</i>	<i>SD</i>	<i>N</i>	<i>t</i>	<i>df</i>	<i>Significance (Two-tailed)</i>
Peritraumatic Emotionality							
	Men	1.52	1.24	9	1.11	42	.272
	Women	1.95	0.99	35			
Social Support							
	Men	18.73	15.95	9	0.13	42	.896
	Women	19.38	12.61	35			
Resource Loss							
	Men	66.18	29.34	9	0.18	42	.860
	Women	68.58	37.80	35			
Depression Symptoms							
	Men	0.65	0.75	9	0.42	42	.679
	Women	0.79	0.96	35			
Somatic Symptoms							
	Men	0.46	0.72	9	1.03	42	.309
	Women	0.77	0.82	35			
PTSD Symptomology							
	Men	1.87	1.97	9	0.14	42	.893
	Women	1.96	1.59	35			

Note: \* is significant at the  $p < .05$  level.

\*\* is significant at the  $p < .01$  level.



Table 4

Comparison of Means and Standard Deviations of the Effects of Ethnicity on Peritraumatic Emotionality, Social Support, Resource Loss, Depression Symptoms, Somatic Symptoms, and PTSD Symptoms.

Variable	Ethnicity	<i>M</i>	<i>SD</i>	<i>N</i>	<i>t</i>	<i>df</i>	<i>Significance (Two-tailed)</i>
Peritraumatic Emotionality							
	African-American	1.81	1.05	19	-0.23	40	.817
	Caucasian	1.88	1.08	23			
Social Support							
	African-American	15.56	11.32	19	-1.57	40	.124
	Caucasian	21.77	13.81	23			
Resource Loss							
	African-American	57.18	38.59	19	-1.89	40	.066
	Caucasian	77.24	30.28	23			
Depression Symptoms							
	African-American	0.49	0.62	19	-1.82	40	.076
	Caucasian	1.01	1.08	23			
Somatic Symptoms							
	African-American	0.64	0.68	19	-0.75	40	.455
	Caucasian	0.83	0.91	23			
PTSD Symptomology							
	African-American	1.54	1.33	19	-1.63	40	.111
	Caucasian	2.37	1.86	23			

Note: Only the ethnicities of African-American and Caucasian were analyzed because of the low response rate of other ethnicities (n=1 for each).

Table 5

Comparison of Means and Standard Deviations of the Effects of a History of Respiratory Problems on Peritraumatic Emotionality, Social Support, Resource Loss, Depression Symptoms, Somatic Symptoms, and PTSD Symptoms.

Factor	Problem Present	<i>M</i>	<i>SD</i>	<i>N</i>	<i>t</i>	<i>df</i>	<i>Significance (Two-tailed)</i>
Peritraumatic Emotionality							
	No	1.84	1.07	41	-0.61	42	.544
	Yes	2.22	0.69	3			
Social Support							
	No	19.22	13.49	41	-0.06	42	.955
	Yes	19.67	9.07	3			
Resource Loss							
	No	66.64	36.61	41	-0.99	42	.329
	Yes	87.86	17.40	3			
Depression Symptomology							
	No	0.68	0.83	41	-2.31	42	.026*
	Yes	1.89	1.55	3			
Somatic Symptomology							
	No	0.64	0.74	41	-2.23	42	.031*
	Yes	1.67	1.20	3			
PTSD Symptomology							
	No	1.85	1.63	41	-1.38	42	.176
	Yes	3.20	1.70	3			

Note: \* is significant at the  $p < .05$  level.

\*\* is significant at the  $p < .01$  level.

Table 6

Regression Analysis of Resource Loss as a Predictor of PTSD Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.466	.440		
	Demographics			-.205	.099
	Resource Loss			.584	<.001

Note: Age was entered into each equation and due to results of aforementioned t-tests.

Table 7

Regression Analysis of Resource Loss & Peritraumatic Emotionality as a Predictor of PTSD Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.478	.439		
	Demographics			-.162	.221
	Resource Loss			.550	<.001
	Peritraumatic Emotionality			.126	.346

Note: Age was entered into each equation and due to results of aforementioned t-tests.

Table 8

Regression Analysis of Peritraumatic Emotionality as a Predictor of Depression Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.379	.348		
	Demographics			.287	.025
	Peritraumatic Emotionality			.518	<.001

Note: A history of respiratory problems were entered into each equation and due to results of aforementioned t-tests.

Table 9

Regression Analysis of Resource Loss as a Predictor of Depression Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.489	.464		
	Demographics			.242	.038
	Resource Loss			.621	<.001

Note: A history of respiratory problems was entered into each equation and due to results of aforementioned t-tests.

Table 10

Regression Analysis of Resource Loss & Peritraumatic Emotionality as a Predictor of Depression Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.582	.550		
	Demographics			.230	.032
	Resource Loss			.493	<.001
	Peritraumatic Emotionality			.331	.005

Note: A history of respiratory problems was entered into each equation and due to results of aforementioned t-tests.

Table 11

Regression Analysis of Depression Symptoms as a Predictor of Somatic Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.441	.414		
	Demographics			.119	.341
	Depression Symptoms			.614	<.001

Note: A history of respiratory problems was entered into each equation and due to results of aforementioned t-tests.



Table 12

Regression Analysis of PTSD Symptoms as a Predictor of Somatic Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.441	.414		
	Demographics			.257	.078
	PTSD Symptoms			.332	.024

Note: A history of respiratory problems was entered into each equation and due to results of aforementioned t-tests.

Table 13

Regression Analysis of PTSD & Depression Symptomatology as a Predictor of Somatic Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.442	.400		
	Demographics			.119	.350
	PTSD Symptoms			.030	.833
	Depression Symptoms			.598	<.001

Note: A history of respiratory problems was entered into each equation and due to results of aforementioned t-tests.

Table 14

Regression Analysis of Peritraumatic Emotionality as a Predictor of Somatic Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.246	.209		
	Demographics			.290	.039
	Peritraumatic Emotionality			.376	.009

Note: A history of respiratory problems was entered into each equation and due to results of aforementioned t-tests.

Table 15

Regression Analysis of Resource Loss as a Predictor of Somatic Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.270	.234		
	Demographics			.264	.057
	Resource Loss			.409	.004

Note: A history of respiratory problems was entered into each equation and due to results of aforementioned t-tests.

Table 16

Regression Analysis of Resource Loss & Peritraumatic Emotionality as a Predictor of Somatic Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.326	.275		
	Demographics			.255	.060
	Resource Loss			.310	.035
	Peritraumatic Emotionality			.258	.075

Note: A history of respiratory problems was entered into each equation and due to results of aforementioned t-tests.

Table 17

Regression Analysis of Perceived Control as a Predictor of PTSD Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.301	.267		
	Demographics			-.313	.025
	Control			-.380	.007

Note: Age was entered into each equation and due to results of aforementioned t-tests.

Table 18

Regression Analysis of Perceived Control as a Predictor of Depression Symptomatology.

Model	Predictors	$R^2$	$Adj. R^2$	$\beta$	$p$
1	Overall Model Summary	.274	.239		
	Demographics			.343	.014
	Control			-.402	.004

Note: A history of respiratory problems was entered into each equation and due to results of aforementioned t-tests.

Figure 1

Model of Health Following a Traumatic Event

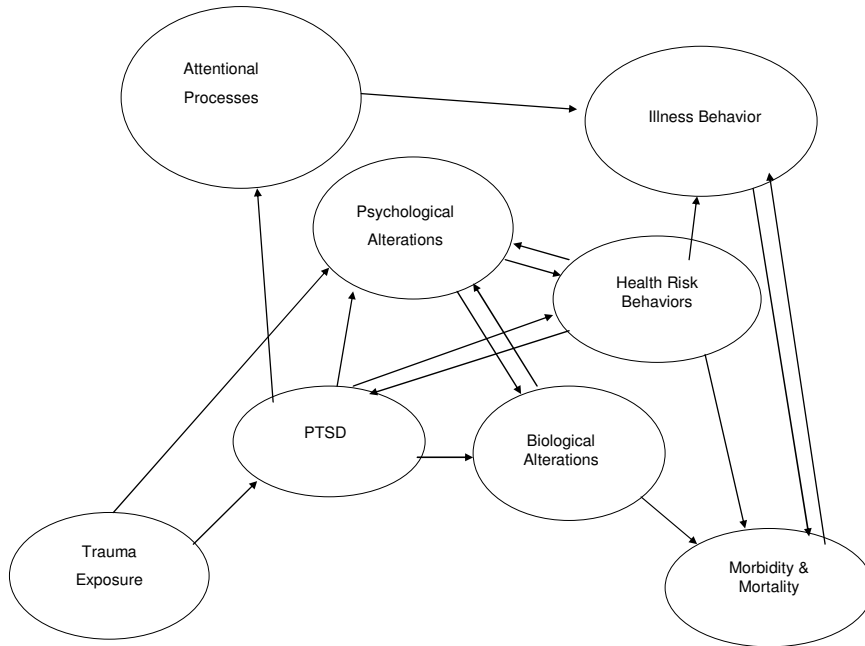


Figure 1. A proposed model of health following exposure to a traumatic event. The influence of exposure, PTSD, attentional processes, psychological alterations, biological alterations, health risk behaviors, illness behavior, on morbidity and mortality.

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From “Understanding relationships among trauma, posttraumatic stress disorder, and health outcomes,” by P. P. Schnurr and B. L. Green, 2004, In P. P. Schnurr & B. L. Green (Eds.), *Trauma and health: Physical health consequences of exposure to extreme stress.* (pp.247-275). Washington DC: American Psychological Association.



# Appendix A

## Brief Symptom Inventory

Below is a list of problems people sometimes have. Please read each one carefully, and circle the number to the right that best describes HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU DURING THE PAST 7 DAYS INCLUDING TODAY. Circle only one number for each problem and do not skip any items. If you change your mind, erase your first mark carefully. Read the example below before beginning, and if you have any questions please ask about them.

MALE   
FEMALE

LOCATION: \_\_\_\_\_

EDUCATION: \_\_\_\_\_

MARITAL STATUS: MAR \_\_\_ SEP \_\_\_ DIV \_\_\_ WID \_\_\_ SING \_\_\_

DATE			ID. NUMBER	AGE
MO	DAY	YEAR		

EXAMPLE	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY
HOW MUCH WERE YOU DISTRESSED BY:					
1. Bodyaches	0	1	2	3	4

VISIT NUMBER: \_\_\_\_\_

HOW MUCH WERE YOU DISTRESSED BY:	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY	
1. Nervousness or shakiness inside	1	0	1	2	3	4
2. Faintness or dizziness	2	0	1	2	3	4
3. The idea that someone else can control your thoughts	3	0	1	2	3	4
4. Feeling others are to blame for most of your troubles	4	0	1	2	3	4
5. Trouble remembering things	5	0	1	2	3	4
6. Feeling easily annoyed or irritated	6	0	1	2	3	4
7. Pains in heart or chest	7	0	1	2	3	4
8. Feeling afraid in open spaces or on the streets	8	0	1	2	3	4
9. Thoughts of ending your life—	9	0	1	2	3	4
10. Feeling that most people cannot be trusted	10	0	1	2	3	4
11. Poor appetite	11	0	1	2	3	4
12. Suddenly scared for no reason	12	0	1	2	3	4
13. Temper outbursts that you could not control	13	0	1	2	3	4
14. Feeling lonely even when you are with people	14	0	1	2	3	4
15. Feeling blocked in getting things done	15	0	1	2	3	4
16. Feeling lonely	16	0	1	2	3	4
17. Feeling blue	17	0	1	2	3	4
18. Feeling no interest in things	18	0	1	2	3	4
19. Feeling fearful	19	0	1	2	3	4
20. Your feelings being easily hurt	20	0	1	2	3	4
21. Feeling that people are unfriendly or dislike you	21	0	1	2	3	4
22. Feeling inferior to others	22	0	1	2	3	4
23. Nausea or upset stomach	23	0	1	2	3	4
24. Feeling that you are watched or talked about by others	24	0	1	2	3	4
25. Trouble falling asleep	25	0	1	2	3	4
26. Having to check and double check what you do	26	0	1	2	3	4
27. Difficulty making decisions	27	0	1	2	3	4
28. Feeling afraid to travel on buses, subways, or trains	28	0	1	2	3	4
29. Trouble getting your breath	29	0	1	2	3	4
30. Hot or cold spells	30	0	1	2	3	4
31. Having to avoid certain things, places, or activities because they frighten you	31	0	1	2	3	4
32. Your mind going blank	32	0	1	2	3	4
33. Numbness or tingling in parts of your body	33	0	1	2	3	4
34. The idea that you should be punished for your sins	34	0	1	2	3	4
35. Feeling hopeless about the future	35	0	1	2	3	4

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Please continue on the following page

HOW MUCH WERE YOU DISTRESSED BY:

	TOTAL	PHYSIC	DEPRETE	FEA A BIT	THREMLY	
36. Trouble concentrating	36	0	1	2	3	4
37. Feeling weak in parts of your body	37	0	1	2	3	4
38. Feeling tense or keyed up	38	0	1	2	3	4
39. Thoughts of death or dying =	39	0	1	2	3	4
40. Having urges to beat, injure, or harm someone	40	0	1	2	3	4
41. Having urges to break or smash things	41	0	1	2	3	4
42. Feeling very self-conscious with others	42	0	1	2	3	4
43. Feeling uneasy in crowds, such as shopping or at a movie	43	0	1	2	3	4
44. Never feeling close to another person	44	0	1	2	3	4
45. Spells of terror or panic	45	0	1	2	3	4
46. Getting into frequent arguments	46	0	1	2	3	4
47. Feeling nervous when you are left alone	47	0	1	2	3	4
48. Others not giving you proper credit for your achievements	48	0	1	2	3	4
49. Feeling so restless you couldn't sit still	49	0	1	2	3	4
50. Feelings of worthlessness	50	0	1	2	3	4
51. Feeling that people will take advantage of you if you let them	51	0	1	2	3	4
52. Feelings of guilt	52	0	1	2	3	4
53. The idea that something is wrong with your mind	53	0	1	2	3	4

# Appendix B

## Social Support Questionnaire

Sarason, I.G., Sarason, B.R., Shearin, E.N., & Pierce, G.R. (1987)  
A brief measure of social support: Practical and theoretical implications,  
*Journal of Social and Personal Relationships*, 4, 497-510.

### Social Support Questionnaire (Short Form)

#### SSQSR

#### INSTRUCTIONS:

The following questions ask about people in your environment who provide you with help or support. Each question has two parts. For the first part, list all the people you know, excluding yourself, whom you can count on for help or support in the manner described. Give the persons' initials, their relationship to you (see example). Do not list more than one person next to each of the numbers beneath the question.

For the second part, circle how satisfied you are with the overall support you have.

If you have had no support for a question, check the words "No one," but still rate your level of satisfaction. Do not list more than nine persons per question.

Please answer all the questions as best you can. All your responses will be kept confidential.

#### EXAMPLE:

Who do you know whom you can trust with information that could get you in trouble?

No one	1) T.N. (brother)	4) T.N. (father)	7)
	2) L.M. (friend)	5) L.M. (employer)	8)
	3) R.S. (friend)	6)	9)

How satisfied?

6 - very satisfied	5 - fairly satisfied	4 - a little satisfied	3 - a little dissatisfied	2 - fairly dissatisfied	1 - very dissatisfied
--------------------	----------------------	------------------------	---------------------------	-------------------------	-----------------------

---

1. Whom can you really count on to be dependable when you need help?
- |        |    |    |    |
|--------|----|----|----|
| No one | 1) | 4) | 7) |
|        | 2) | 5) | 8) |
|        | 3) | 6) | 9) |
2. How satisfied?
- |                    |                      |                        |                           |                         |                       |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
| 6 - very satisfied | 5 - fairly satisfied | 4 - a little satisfied | 3 - a little dissatisfied | 2 - fairly dissatisfied | 1 - very dissatisfied |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
3. Whom can you really count on to help you feel more relaxed when you are under pressure or tense?
- |        |    |    |    |
|--------|----|----|----|
| No one | 1) | 4) | 7) |
|        | 2) | 5) | 8) |
|        | 3) | 6) | 9) |
4. How satisfied?
- |                    |                      |                        |                           |                         |                       |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
| 6 - very satisfied | 5 - fairly satisfied | 4 - a little satisfied | 3 - a little dissatisfied | 2 - fairly dissatisfied | 1 - very dissatisfied |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
5. Who accepts you totally, including both your worst and your best points?
- |        |    |    |    |
|--------|----|----|----|
| No one | 1) | 4) | 7) |
|        | 2) | 5) | 8) |
|        | 3) | 6) | 9) |
6. How satisfied?
- |                    |                      |                        |                           |                         |                       |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
| 6 - very satisfied | 5 - fairly satisfied | 4 - a little satisfied | 3 - a little dissatisfied | 2 - fairly dissatisfied | 1 - very dissatisfied |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
7. Whom can you really count on to care about you, regardless of what is happening to you?
- |        |    |    |    |
|--------|----|----|----|
| No one | 1) | 4) | 7) |
|        | 2) | 5) | 8) |
|        | 3) | 6) | 9) |
8. How satisfied?
- |                    |                      |                        |                           |                         |                       |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
| 6 - very satisfied | 5 - fairly satisfied | 4 - a little satisfied | 3 - a little dissatisfied | 2 - fairly dissatisfied | 1 - very dissatisfied |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
9. Whom can you really count on to help you feel better when you are feeling generally down-in-the dumps?
- |        |    |    |    |
|--------|----|----|----|
| No one | 1) | 4) | 7) |
|        | 2) | 5) | 8) |
|        | 3) | 6) | 9) |
10. How satisfied?
- |                    |                      |                        |                           |                         |                       |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
| 6 - very satisfied | 5 - fairly satisfied | 4 - a little satisfied | 3 - a little dissatisfied | 2 - fairly dissatisfied | 1 - very dissatisfied |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
11. Whom can you count on to console you when you are very upset?
- |        |    |    |    |
|--------|----|----|----|
| No one | 1) | 4) | 7) |
|        | 2) | 5) | 8) |
|        | 3) | 6) | 9) |
12. How satisfied?
- |                    |                      |                        |                           |                         |                       |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|
| 6 - very satisfied | 5 - fairly satisfied | 4 - a little satisfied | 3 - a little dissatisfied | 2 - fairly dissatisfied | 1 - very dissatisfied |
|--------------------|----------------------|------------------------|---------------------------|-------------------------|-----------------------|

---

**TO SCORE SSQSR:**

- Count the total number of people for each of the odd-numbered items. Add the totals together (Max. = 54). Divide by 6 for per item SSQ Number Score, or SSQN.
- Add the total Satisfaction scores for the 6 even-numbered items (Max. = 36). Divide by 6 for per item SSQ Satisfaction score or SSQS.
- You can also compute a Family score and a Non-Family score by using the method in #1 for all people described as family members, or not described as family members respectively.

# Appendix C

## Fire Questionnaire-Adult

### FIRE QUESTIONNAIRE-ADULT FORM

#### DEMOGRAPHICS

Name \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone (home): \_\_\_\_\_

(work): \_\_\_\_\_

Sex: \_\_\_ M \_\_\_ F

Race/Ethnicity:

\_\_\_ American Indian or Alaskan Native

\_\_\_ Asian or Pacific Islander

\_\_\_ African-American

\_\_\_ Hispanic (non-white)

\_\_\_ Caucasian

\_\_\_ Bi/Multiracial (specify) \_\_\_\_\_  
\_\_\_\_\_

**Marital Status:**

\_\_\_ Married \_\_\_\_\_ Date

\_\_\_ Single \_\_\_\_\_ Date

\_\_\_ Cohabiting \_\_\_\_\_ Date

\_\_\_ Separated \_\_\_\_\_ Date

\_\_\_ Divorced \_\_\_\_\_ Date

\_\_\_ Widowed \_\_\_\_\_ Date

\_\_\_ Other \_\_\_\_\_

**Occupational History:**

*Mother:*

\_\_\_\_\_ (present/date)

\_\_\_\_\_ (prior/date)

\_\_\_\_\_

\_\_\_\_\_

*Father:*

\_\_\_\_\_ (present/date)

\_\_\_\_\_ (prior/date)

\_\_\_\_\_

\_\_\_\_\_

Subject Number: \_\_\_\_\_

Interviewer: \_\_\_\_\_

Family Income: \_\_\_\_\_

Number of Dependents: \_\_\_\_\_

Number of Children: \_\_\_\_\_

Date of Interview: \_\_\_\_\_

Primary Language: \_\_\_\_\_

Number of Prior Marriages: \_\_\_\_\_

Dates: \_\_\_\_\_

**Children:**

Age	Sex	At Home	When Left (Date)
-----	-----	---------	------------------

___	___	___	___
-----	-----	-----	-----

___	___	___	___
-----	-----	-----	-----

___	___	___	___
-----	-----	-----	-----

___	___	___	___
-----	-----	-----	-----

**Education (Highest Level attained):**

*Mother:* \_\_\_\_\_

*Father:* \_\_\_\_\_

**Religion:**

*Mother:* \_\_\_\_\_

*Father:* \_\_\_\_\_

**Veteran Status:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

1. Type of Residential Dwelling: (circle--own or rent)

- |    |                         |             |
|----|-------------------------|-------------|
| 1. | Single dwelling -       | Own or Rent |
| 2. | Condominium/Townhouse - | Own or Rent |
| 3. | Apartment -             | Own or Rent |
| 4. | Trailer -               | Own or Rent |
| 5. | Other (specify) _____   | Own or Rent |

2. How much damage did the fire do to your home?

1. Minimal Damage (i.e., dwelling completely intact)
2. Moderate Damage (i.e., some areas uninhabitable)
3. Extensive Damage (i.e., most areas uninhabitable)
4. Total Loss

3. Please estimate the amount of damage to the dwelling and the belongings contained in dollars

---

4. How much dollar loss of property (i.e., dwelling) did the fire cause?

1. None
2. Less than \$500
3. \$501-\$2,000
4. \$2,001-\$15,000
5. \$15,001-\$50,000
6. \$50,001-\$100,000
7. more than \$100,001

5. To what extent did insurance cover your loss?

1. Complete (91%-100% of total loss)
2. Extensive (71%-90% of total loss)
3. Moderate (31%-70% of total loss)
4. Minimal (11-30% of total loss)
5. Insignificant (0-10% of total loss)

6. What is the address of the burned home? \_\_\_\_\_

---

7. Where are you staying now?

1. Same residence
  2. Purchased new residence
  3. Rented new residence
  4. Friend's residence
  5. Relative's residence
  6. Shelter
  7. Other (specify) \_\_\_\_\_
- 

8. If different from above, what is the address of the new/different residence? \_\_\_\_\_

---



Then, \_\_\_\_\_

\_\_\_\_\_

Then, \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



2. Where were you when you heard about the fire?(Q) \_\_\_\_\_

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3. What were you doing when you heard about the fire?(Q) \_\_\_\_\_

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### EXPOSURE

[Silently code question #1 if obvious from information given in previous narrative and steps]

1. Were you home during the fire?      \_\_\_ Yes      \_\_\_ No

**If not at home:** [skip to coping section (question #7)]

**If at home, continue with this section by asking:** "I'd like to find out more about what happened during the fire, okay?"

2. How close were you to the flames during the fire?

\_\_\_ very close    \_\_\_ moderately close    \_\_\_ somewhat close    \_\_\_ at a safe distance

3. Was it necessary for you to be rescued from your house/apartment/trailer because of the fire?      \_\_\_ Yes      \_\_\_ No

4. To what extent were you injured in the fire?

none            a little            some            a lot

**If a little or more:** Tell me about your injury(ies) \_\_\_\_\_

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5. To what extent did you feel your life was threatened?

none            a little            some            a lot

If a little or more: Tell me why you felt your life was threatened? \_\_\_\_\_

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6. During a fire many people will try to remove items from the home. What did you actually do?
1. Could not remove anything
  2. Only grabbed things on the spur of the moment
  3. Only removed valuables (jewelry, heirlooms, papers, etc.)
  4. Could remove items over time (2-3 hours)

7. Did you try to save your family members?      \_\_\_ Yes      \_\_\_ No

If yes: Tell me about that (What did you do?) \_\_\_\_\_

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#### COPING

**Interviewer:** "Frequently when a disaster occurs, people react in several different ways. I'd like to find out more about how you reacted while the fire was happening, okay?"

1. While the fire was actually occurring, how did you handle the fire? Were you:
  1. Calm and collected?
  2. A little nervous?
  3. Pretty nervous?
  4. Very nervous?
2. While the fire was actually occurring, how afraid were you?
  1. Not at all afraid
  2. A Little afraid
  2. Pretty afraid
  3. Very Much afraid
3. How much were you in control?
  1. Not at all in control
  2. A Little in control
  2. Pretty much in control
  3. Very much in control

4. Did you have any of the following thoughts during the fire?

- |     |  |      |          |      |       |
|-----|--|------|----------|------|-------|
| 1.  | Panic (out of control)                                     | None | A Little | Some | A lot |
| 2.  | Helplessness (unable to do anything at the moment)         | None | A Little | Some | A lot |
| 3.  | Hopelessness (things will never get better after the fire) | None | A Little | Some | A lot |
| 4.  | Fear (scared)  | None | A Little | Some | A lot |
| 5.  | Anxiety (nervous)  | None | A Little | Some | A lot |
| 6.  | Thought that you would be OK                               | None | A Little | Some | A lot |
| 7.  | Thought that you would be hurt                             | None | A Little | Some | A lot |
| 8.  | Thought that your life was in danger                       | None | A Little | Some | A lot |
| 9.  | Thought that you would be killed                           | None | A Little | Some | A lot |
| 10. | Thought that a loved one would be hurt                     | None | A Little | Some | A lot |
| 11. | Thought that a loved one was in danger                     | None | A Little | Some | A lot |
| 12. | Thought that a loved one would be killed                   | None | A Little | Some | A lot |
| 13. | Anything else you may have thought? _____                  |      |          |      |       |

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. While the fire was actually occurring, which of the following did you do?

- a. Attempt to fight the fire?      \_\_\_Yes      \_\_\_No
- How helpful was this effort:  
\_\_\_ None    \_\_\_ A little    \_\_\_ Some    \_\_\_ A lot
- b. Attempt to get help?      \_\_\_Yes      \_\_\_No
- How helpful was this effort:  
\_\_\_ None    \_\_\_ A little    \_\_\_ Some    \_\_\_ A lot
- c. Cry, yell, scream?      \_\_\_Yes      \_\_\_No
- How helpful was this effort:  
\_\_\_ None    \_\_\_ A little    \_\_\_ Some    \_\_\_ A lot

d. Feel sorry for yourself?  Yes  No

How helpful was this effort:  
 None  A little  Some  A lot

e. Pray, meditate, chant?

How helpful was this effort:  
 None  A little  Some  A lot

6. What are some other things you could have done during the fire?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_
- h. \_\_\_\_\_
- i. \_\_\_\_\_
- j. \_\_\_\_\_

7. Now that the fire is over, how do you feel that you are dealing with the fire? Are you:

- 1. Having **no problems** dealing with the fire?
- 2. Having **a few problems** dealing with the fire, but nothing you cannot overcome?
- 3. Having **quite a few** problems dealing with the fire?
- 4. Having **a lot of** problems dealing with the fire?

8. Have you gotten professional help to deal with the aftermath of the fire?

Yes  No

9. A. **If yes:** Which of the following did you see?  
B. **For each yes:** How many visits did you have with each?  
C. **For each yes:** To what extent was this helpful?

1) None 2) A Little 3) Some 4) A lot

A.	B.	C.
_____ Psychologist (excluding the grant)	_____	_____
_____ Psychiatrist	_____	_____
_____ Minister/Pastor	_____	_____
_____ Counselor	_____	_____
_____ Social Worker	_____	_____
_____ Physical Therapist	_____	_____
_____ Occupational Therapist	_____	_____
_____ Red Cross	_____	_____
_____ Other (please specify)	_____	_____

LOSS

1. a. Did you have to move after the fire?  
\_\_\_ Yes \_\_\_ No
- b. If so, how many times? \_\_\_\_\_
2. Did you lose your job or have to quit your job because of the aftermath (i.e., damage) of the fire?  
\_\_\_ Yes \_\_\_ No
3. Did any of your friends move away from the area because of the fire?  
\_\_\_ Yes \_\_\_ No

PERCEPTION

1. How serious did you think the fire was at first?
  1. Not at all serious
  2. A Little serious
  3. Pretty serious
  4. Very Serious
2. After the fire was over, how serious did you think it was?
  1. Not at all serious
  2. A Little serious
  3. Pretty serious
  4. Very Serious
3. What was the worst thing caused by the fire? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. What do you think caused the fire?
  1. Intentional arson
  2. Human accident (i.e., dropped cigarette, match, etc.)
  3. Act of nature (i.e., lightning, etc.)
  4. Other (specify) \_\_\_\_\_
  5. Don't know \_\_\_\_\_

**GUILT**

1. A. To what extent do you feel that you should have been able to prevent the fire?  
None      A little      Some      A lot

**If a little or more:** then ask

**If none:** skip to 2A

- B. How much guilt do you feel about this?

None      A little      Some      A lot

**If none:** skip to 2A

- C. What should you have done?

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2. A. To what extent do you feel that you should have been able to save your home from damage?

None      A little      Some      A lot

**If a little or more:** then ask

**If none:** skip to 3A

- B. How much guilt do you feel about this?

None      A little      Some      A lot

**If none:** skip to 3A

- C. What should you have done?

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3. A. To what extent do you feel that you should been able to prepare better for the fire prior to its occurrence?

None      A little      Some      A lot

**If a little or more:** then ask

**If none:** skip to 4A

- B. How much guilt do you feel about this?

None      A little      Some      A lot

**If none:** skip to 4A

C. What should you have done?

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4. A. To what extent do you think there were things you should have known but didn't know about how to stop the fire?

None      A little      Some      A lot

**If yes:** then ask

**If none:** skip to **Good Things** section

B. How much guilt do you feel about this?

None      A little      Some      A lot

**If none:** skip to **Good Things** section

C. What should you have known?

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### GOOD THINGS

1. Did you get new neighbors because of the fire?

\_\_\_ Yes      \_\_\_ No

2. How many new friends did you make because of the fire?

None      A little      Some      A lot

3. a. Were there any other good things that happened because of the fire?

\_\_\_ Yes      \_\_\_ No

b. **If yes:** Please specify

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4. To what extent did you get new things because of the fire?

None      A little      Some      A lot

If a little or more: What sort of things did you get? \_\_\_\_\_

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# Appendix D

## Resource Loss Scale

### Resources Questionnaire

Instructions: Listed below are a number of things which make life easier and/or enjoyable. Since the fire you may have experienced a loss of many of these resources. Carefully consider each resource and rate the extent to which you have experienced a loss of that resource **due to** the fire. Rate the extent of the loss for each resource on the following scale:

- 0 = no loss
- 1 = a little bit of loss
- 2 = a moderate amount of loss
- 3 = quite a bit of loss
- 4 = extreme amount of loss

- |     |   |       |     |  |       |
|-----|---|-------|-----|--|-------|
| 1.  | Personal transportation                           | _____ | 12. | Time for work                            | _____ |
| 2.  | Home contents                                     | _____ | 13. | Feeling that I am accomplishing my goals | _____ |
| 3.  | Time for adequate sleep                           | _____ | 14. | A good relationship with my children     | _____ |
| 4.  | Sentimental possessions (photo albums, etc.)      | _____ | 15. | Time with loved ones                     | _____ |
| 5.  | Clothing  | _____ | 16. | Necessary tools for work                 | _____ |
| 6.  | Feeling valuable to others                        | _____ | 17. | Stamina/endurance                        | _____ |
| 7.  | Family stability                                  | _____ | 18. | Adequate food                            | _____ |
| 8.  | “Free time”                                       | _____ | 19. | A daily routine                          | _____ |
| 9.  | Pets  | _____ | 20. | Personal Health                          | _____ |
| 10. | Vegetation on your property (trees, shrubs, etc.) | _____ | 21. | Sense of optimism                        | _____ |
| 11. | Intimacy with one or more family members          | _____ | 22. | Necessary appliances for home            | _____ |

0 = no loss  
 1 = a little bit of loss  
 2 = a moderate amount of loss  
 3 = quite a bit of loss  
 4 = extreme amount of loss

- |     |  |     |     |   |     |
|-----|--|-----|-----|---|-----|
| 23. | Personal residence                       | ___ | 39. | Adequate credit (financial)   | ___ |
| 24. | Sense of humor                           | ___ | 40. | Feeling independent   | ___ |
| 25. | Stable employment                        | ___ | 41. | Companionship (loved one)   | ___ |
| 26. | Furnishings for residence                | ___ | 42. | Financial assets (stocks, property, etc.)   | ___ |
| 27. | Feeling that I have control over my life | ___ | 43. | Affection from others   | ___ |
| 28. | Essentials for children                  | ___ | 44. | Feeling that my life has meaning or purpose   | ___ |
| 29. | Feeling that my life is peaceful         | ___ | 45. | Involvement with church, synagogue, etc.  | ___ |
| 30. | Ability to organize tasks                | ___ | 46. | Retirement security (financial)   | ___ |
| 31. | Intimacy with at least one friend        | ___ | 47. | Help with tasks at home   | ___ |
| 32. | Money for extras                         | ___ | 48. | Loyalty of friends  | ___ |
| 33. | Understanding from my employer/boss      | ___ | 49. | Help with childcare   | ___ |
| 34. | Savings or emergency money               | ___ | 50. | Involvement in organizations w/ others who have similar interests (i.e. clubs, activities, hobbies) | ___ |
| 35. | Motivation to get things done            | ___ | 51. | Financial help if needed  | ___ |
| 36. | Advancement in my education or training  | ___ | 52. | Health of family/close friends  | ___ |
| 37. | Adequate income                          | ___ | 53. | Companionship (pets)  | ___ |
| 38. | Advancement in my education or training  | ___ |     |   |     |

# Appendix E

## Anxiety Disorder Interview Schedule-IV: Lifetime Version

PTSD/ACUTE STRESS 29

### POSTTRAUMATIC STRESS DISORDER/ACUTE STRESS DISORDER

#### I. INITIAL INQUIRY

- 1a. Have you ever experienced or witnessed a traumatic or life-threatening event such as assault, rape, seeing someone badly injured or killed, combat, accidents, or natural or man-made disasters?

YES \_\_\_ NO \_\_\_

If YES, specify nature and date of event(s); specify date trauma ended if the event persisted (e.g., ongoing physical abuse):

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- b. Do you recall any events of this nature occurring when you were a child?

YES \_\_\_ NO \_\_\_

If YES, specify nature and date of event(s); specify date trauma ended if the event persisted (e.g., ongoing physical abuse):

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\*\*\*\*\*  
If NO to both 1a. and 1b.,  
Skip to MAJOR DEPRESSION (p. 34).  
\*\*\*\*\*

- c. What was your emotional response while the event was occurring? (Specify for each trauma reported in 1a. and 1b.)

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If uncertain, While the event was occurring, did you experience intense fear, helplessness, or horror?

YES \_\_\_ NO \_\_\_

- d. Currently, are you being bothered by such things as recurrent memories, thoughts, or dreams about the event, or distress when you hear or see things that remind you of the event?

YES \_\_\_ NO \_\_\_

If YES, How soon after the event occurred/began did you begin having these symptoms?

\_\_\_\_\_

Skip to 2.

If NO,

- e. Since the event occurred, have you ever been bothered by such things as recurrent and distressing memories, dreams, or thoughts about the event?

YES \_\_\_ NO \_\_\_

If NO, skip to 2.

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After the event occurred, how soon did you begin to experience these distressing thoughts/memories/dreams?; When did these symptoms stop?

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**2. Re-experiencing Symptoms**

Use the space below each symptom to record the specific nature of that symptom (e.g., cues that elicit distress associated with the trauma). Use comment section to record clinically useful information (e.g., duration of symptom more consistent with Acute Stress Disorder).

For each re-experiencing symptom, make ratings of Recurrence/Distress (i.e., frequency and intensity) using the scale and suggested queries below.

**RECURRENCE/DISTRESS:**

Inquiry for patients who respond YES to either items 1d. or 1e.:

**How often do you experience \_\_\_\_\_?; How much distress does/did this produce?**

Inquiry for patients who respond NO to Items 1d. and 1e.:

**Within a month after the event occurred/began, did you experience \_\_\_\_\_?; Currently often do you experience \_\_\_\_\_?; How much distress does this produce?**

0-----1-----2-----3-----4-----5-----6-----7-----8  
 No/ Rarely/ Occasionally/ Frequently/ Constantly/  
 No distress Mild distress Moderate distress Severe distress Extreme distress

	RECUR/ DISTRESS	COMMENTS
a. Intrusive recollections of the event (including images, thoughts, perceptions)	_____	_____
b. Dreams of the event	_____	_____
c. Acting or feeling as if the event were recurring (e.g., flashbacks, hallucinations, illusions, reliving the trauma)	_____	_____
d. Emotional distress at exposure to internal or external cues that are reminders of the event	_____	_____
e. Physical response at exposure to internal or external cues that are reminders of the event	_____	_____

\*\*\*\*\*  
 If no evidence of current or past re-experiencing symptoms,  
 Skip to MAJOR DEPRESSION (p. 34).  
 \*\*\*\*\*

II. CURRENT EPISODE

Now I want to ask you a series of questions about this current period when you have been experiencing recurrent and distressing memories/dreams/thoughts of the event.

Specify traumatic event: \_\_\_\_\_

1. Since the event occurred/began, how often have you experienced \_\_\_\_\_?; To what degree have you experienced \_\_\_\_\_?; Have you had this symptom only since the event occurred/began? (Do not record symptoms that are associated with other conditions such as panic, depression, generalized anxiety, etc.)

0-----1-----2-----3-----4-----5-----6-----7-----8  
 Never/ Rarely/ Occasionally/ Frequently/ Constantly/  
 None Mild Moderate Severe Very severe

- |   | ONSET SINCE |        |
|---|-------------|--------|
|   | SEVERITY    | TRAUMA |
| a. avoidance of thoughts, feelings, or conversations associated with event                  | ___         | ---    |
| b. avoidance of activities, situations, or people that are reminders of the event           | ___         | ---    |
| c. inability to recall important aspect of the event  | ___         | ---    |
| d. loss of interest and/or decreased participation in significant activities                | ___         | Y N    |
| e. feeling detached or emotionally distant from others                                      | ___         | Y N    |
| f. restricted emotions (e.g., unable to have pleasant or loving feelings)                   | ___         | Y N    |
| g. sense of foreshortened future (e.g., does not expect career, marriage, normal life span) | ___         | Y N    |

2. Since the event occurred/began, how often have you experienced \_\_\_\_\_?; To what degree have you experienced \_\_\_\_\_?; Have you had this symptom only since the event occurred/began? (Do not record symptoms that are associated with other conditions such as panic, depression, generalized anxiety, etc.)

0-----1-----2-----3-----4-----5-----6-----7-----8  
 Never/ Rarely/ Occasionally/ Frequently/ Constantly/  
 None Mild Moderate Severe Very severe

- |  | ONSET SINCE |        |
|--|-------------|--------|
|  | SEVERITY    | TRAUMA |
| a. difficulty falling or staying asleep                      | ___         | Y N    |
| b. irritability or outbursts of anger                        | ___         | Y N    |
| c. difficulty concentrating                                  | ___         | Y N    |
| d. hypervigilance (e.g., constant vigilance of surroundings) | ___         | Y N    |
| e. exaggerated startle response                              | ___         | Y N    |

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3. In what ways have these recurrent and distressing memories/thoughts/dreams and the symptoms associated with them interfered with your life (e.g., daily routine, job, social activities)?; How much are you bothered by these symptoms?

Rate interference: \_\_\_\_\_ distress: \_\_\_\_\_

0-----1-----2-----3-----4-----5-----6-----7-----8  
Never/ Rarely/ Occasionally/ Frequently/ Constantly/  
None Mild Moderate Severe Very severe

If there is any uncertainty regarding when the traumatic event occurred/began, ask:

- 4a. Do you recall the specific date that the event occurred/began? (Note: if patient is vague in date of occurrence, attempt to ascertain more specific information, e.g., by linking onset to objective life events.)

Date of Event: \_\_\_\_\_ Month \_\_\_\_\_ Year

For events that were ongoing (e.g., recurrent physical abuse), ask:

- b. Do you recall the specific date that the event ended?

Date Event Ended: \_\_\_\_\_ Month \_\_\_\_\_ Year

If there is any uncertainty regarding the onset of the disorder, ask:

- 5a. When did these recurrent and distressing memories/thoughts/dreams and the symptoms associated with them become a problem in that they occurred persistently, you were bothered by the symptoms and they interfered with your life in some way? (Note: if patient is vague in date of onset, attempt to ascertain more specific information, e.g., by linking onset to objective life events.)

Date of Onset: \_\_\_\_\_ Month \_\_\_\_\_ Year

- b. How soon after the event occurred/began did you begin having the recurrent and distressing memories/thoughts/dreams as well as the other symptoms associated with them?

Note: Assign PTSD with Delayed Onset if syndrome began at least 6 months after the stressor. If symptoms occurred within four weeks of the event and lasted no longer than four weeks, consider Acute Stress Disorder (p. 33).

6. Besides this current period of time when you've been having these recurrent and distressing memories/thoughts/dreams, have there been other, separate periods of time before this when you have had the same problems either in relation to this event or to another event?

YES \_\_\_ NO \_\_\_

If YES, the clinician should consider inquiring about past episodes, particularly if the clinician determines that this information may be important for clinical or diagnostic reasons.

Date(s) of prior episodes: \_\_\_\_\_

**III. ACUTE DISTRESS DISORDER**

If it has been determined that the patient has experienced a traumatic event associated with symptoms of re-experiencing and avoidance of trauma-related stimuli and symptoms of marked arousal/anxiety that emerged within four weeks of the event and lasted no longer than four weeks, administer this section.

Specify traumatic event: \_\_\_\_\_

1. Since the event occurred/began, how often have you experienced \_\_\_\_\_?; To what degree do you experience \_\_\_\_\_? (Do not record symptoms that are associated with other conditions such as panic, depression, generalized anxiety, etc.)

0-----1-----2-----3-----4-----5-----6-----7-----8  
 Never/ Rarely/ Occasionally/ Frequently/ Constantly/  
 None Mild Moderate Severe Very severe

SEVERITY COMMENTS

- a. sense of numbing, detachment, or absence of emotional responsiveness \_\_\_\_\_
- b. decreased awareness of surroundings (e.g., being in a "daze") \_\_\_\_\_
- c. derealization \_\_\_\_\_
- d. depersonalization \_\_\_\_\_
- e. inability to recall an important aspect of the event \_\_\_\_\_
- f. being restless, unable to sit still \_\_\_\_\_

Note: Rating for motor restlessness (1f.) applies not to the B criterion of Acute Stress Disorder but to the E criterion (the remaining symptoms of the E criterion are rated previously in PTSD).

2. How long after the event occurred/began, did you begin to experience these symptoms?  
 \_\_\_\_\_
3. During the past several weeks, have you been regularly taking any types of drugs? (Include drugs of abuse, medication.)

YES \_\_\_ NO \_\_\_

Specify (type; amount; dates of use):  
 \_\_\_\_\_

4. During the past several weeks, have you had any physical conditions?  
 YES \_\_\_ NO \_\_\_

Specify (type; date of onset/remission):  
 \_\_\_\_\_

**II. MEDICAL HISTORY**

- 1a. What is your height? \_\_\_\_\_ b. What is your weight? \_\_\_\_\_  
 2a. Do you have a physician/clinic that you see regularly to receive medical care, physical examinations, etc.?

YES \_\_\_ NO \_\_\_

Name/address of physician or clinic:

\_\_\_\_\_  
 \_\_\_\_\_

- b. Are you currently being treated for any physical disease or condition?

YES \_\_\_ NO \_\_\_

If YES, specify: \_\_\_\_\_

- 3a. When was your last physical exam? \_\_\_\_\_

- b. What were the results of this exam? \_\_\_\_\_

- 4a. Have you ever had to be hospitalized for a physical problem?

YES \_\_\_ NO \_\_\_

Date	Hospital/Doctor	Reason	Comments/Complications
_____	_____	_____	_____
_____	_____	_____	_____

- b. Have you ever had surgery, or been advised to have surgery?

YES \_\_\_ NO \_\_\_

Date	Hospital/Doctor	Reason	Comments/Complications
_____	_____	_____	_____
_____	_____	_____	_____

- c. Have you ever had a concussion or any head injury?

YES \_\_\_ NO \_\_\_

Date	Hospital/Doctor	Treatment	Comments/Complications
_____	_____	_____	_____
_____	_____	_____	_____

3. Have you ever been diagnosed with any of the following:

	Yes	No	Date	Comments
a. Diabetes	___	___	_____	_____
b. Heart problems	___	___	_____	_____
c. High/low blood pressure	___	___	_____	_____



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	Yes	No	Date	Comments
d. Epilepsy	___	___	_____	_____
e. Cancer	___	___	_____	_____
f. Thyroid disease	___	___	_____	_____
g. Other hormonal problem	___	___	_____	_____
h. Asthma	___	___	_____	_____
i. Other respiratory problem	___	___	_____	_____
j. Migraines	___	___	_____	_____
k. Stroke	___	___	_____	_____
l. Ulcers/GI problems	___	___	_____	_____
m. Blood disorders	___	___	_____	_____
n. HIV/AIDS	___	___	_____	_____
o. Any other disease?	___	___	_____	_____
p. Is there a family history (e.g., father, mother, siblings) of any of these problems (e.g., hypertension, heart disease, cancer)?				

YES \_\_\_ NO \_\_\_

If YES, specify: \_\_\_\_\_

4. Do you have any allergies (hay fever, penicillin, medications, etc.)?

YES \_\_\_ NO \_\_\_

If YES, specify: \_\_\_\_\_

5. Are you a smoker?

YES \_\_\_ NO \_\_\_

If YES, Packs/day?: \_\_\_\_\_ How many years? \_\_\_\_\_

6. Have you had any of the following tests in the last five years?; Did these tests indicate any abnormalities?

	Yes	No	Date	Results
a. Electrocardiogram (EKG)	___	___	_____	_____
b. EEG, brain scan, EMI	___	___	_____	_____
c. CT scan or similar	___	___	_____	_____
d. Chest X-ray	___	___	_____	_____
e. Blood test	___	___	_____	_____
f. Urine test	___	___	_____	_____

7. FEMALES:

a. Date last menstrual period began: \_\_\_\_\_

b. Any reason to be believe you may be pregnant?

YES \_\_\_ NO \_\_\_

c. History of any gynecological problems, miscarriages, etc.?

YES \_\_\_ NO \_\_\_

If YES, specify: \_\_\_\_\_