Secondary Traumatic Stress and Posttraumatic Growth: Risk and Protective Factors among American Red Cross Disaster Responders and Disaster Mental Health Workers

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Abstract

The impact of natural and human-caused disasters can be devastating. Not only is there a loss of life and financial resources, but there is a psychological toll as well. Survivors of disasters are not the only ones who experience psychological consequences from the disasters. Disaster relief workers are impacted psychologically as well. Secondary traumatic stress and posttraumatic growth describe the negative and positive impacts of vicarious exposure to traumatic events, respectively. This study examined risk and protective factors in disaster relief workers for secondary traumatic stress and posttraumatic growth. Participants (N = 92) were recruited from the American Red Cross and included those who have responded to a national disaster within the past five years. Participants completed an online survey that was comprised of several measures including a demographics questionnaire; Secondary Traumatic Stress Scale (STSS; Bride, Robinson, Yegidis, & Figley, 2004); Professional Quality of Life Scale Version 5 (ProQOL-5; Stamm, 2009); Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996); Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985); Flourishing Scale (FS; Diener et al., 2010); Self-Care Assessment, and one qualitative question. Multiple regression analyses were conducted with each of the standardized measures to determine predictors of secondary traumatic stress and posttraumatic growth. Comparisons between disaster responders and disaster mental health responders were examined using *t*-tests. The qualitative question was analyzed using a modified consensual qualitative research approach (CQR; Hill, Thompson, & Williams, 1997) to create domains, categories, and sub-categories. Risk factors for secondary traumatic stress and burnout include those whose disaster response was 7-12

months ago, being a young adult, being single, and having a master's degree. Protective factors that decrease the risk of secondary traumatic stress in disaster relief workers include those who work with trauma survivors outside of their volunteer work, those who are unemployed, and those who always or sometimes engage in self-care. Factors that contribute to posttraumatic growth include working part time, being involved in a greater number of disaster responses in the past five years, and having greater than 13 months of time since the last disaster response. Factors that decrease the likelihood of developing posttraumatic growth include being a middle-aged adult, having a professional or doctoral degree, and having some college. When examining the differences between disaster responders and disaster mental health workers, the only significant difference in secondary traumatic stress symptoms was in intrusion symptoms, with disaster responders reporting more intrusion symptoms than disaster mental health responders. There were no significant differences between the two groups in posttraumatic growth. The results of the study indicated that the majority of participants do not experience significant symptoms of secondary traumatic stress; however, many experience at least some symptoms, and in some cases, almost 25% reported difficulties with secondary traumatic stress symptoms and/or burnout. This is a significant number of relief workers, and it is apparent that disaster relief organizations need to be prepared to assess for risks, as well as provide support to those who struggle.

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Chapter 1: Introduction

The impact of natural and human-caused disasters throughout history is indisputable, including the loss of lives, financial loss due to damage, and the physical and psychological impact on survivors and emergency responders. In 2013, 334 natural disasters were registered around the world, with an estimated death count of 22,616 people, as well as 96 million people affected and $118 billion dollars in damage (Guha-Sapir, 2014). According to the Federal Emergency Management Agency (FEMA; 2015), in the United States there were 45 major disaster declarations in 2014 and 62 in 2013. A disaster is defined by the Centre for Research on the Epidemiology of Disasters (CRED) as "a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction, and human suffering" (Guha-Sapir et al., 2012, p. 15). The impact of these disasters is far more than just physical or financial. The mental health impacts on survivors is well-documented, including specific psychological problems such as anxiety, major depressive disorder, and posttraumatic stress disorder; non-specific psychological distress; functional impairment; sleep difficulties; and loss of social support (Norris, Friedman, Watson, Byrne, Diaz, & Kaniasty, 2002; Neria, Nandi, & Galea, 2008; Salguero, Fernandez-Berrocal, Iruarrizaga, Cano-Vindel, & Galea, 2011; van der Velden, Wong, Boshuizen, & Grievink, 2013); however, it should be noted that many survivors of disasters do not experience long-term negative reactions. In fact, the majority of survivors of natural disasters experience immediate intense distress, but then are able to effectively manage the symptoms using their own coping strategies over time (Freedy, Kilpatrick, & Resnick, 1993; Dass-Brailsford, 2010). The prevalence rates of

PTSD in disaster survivors varies depending on the type of disaster, but has ranged from 6.9% after a hurricane (Pietrzak et al., 2012) to 11.3% after the Indian Ocean tsunami in 2004 (Arnberg, Johannesson, & Michel, 2013) to 39.8% after an earthquake (Carmassi et al., 2013), and in all cases, the prevalence rates decreased over time.

Although the research has mostly focused on survivors of disasters, survivors are not the only ones impacted psychologically. Disaster relief workers can be impacted psychologically without having actually experienced the disaster themselves. There are several terms in the literature that describe the impact of this secondary traumatization, such as compassion fatigue, secondary traumatic stress, and vicarious trauma (Figley, 1995; Stamm, 1999; McCann & Pearlman, 1990). While these terms are not often used specifically when addressing the mental health impacts of disasters on relief workers, these constructs seem appropriate in describing the negative mental health impacts that relief workers may experience. Of these terms, *secondary traumatic stress* is used most often in the literature to describe these negative mental health impacts.

The American Red Cross (ARC) is a disaster relief organization that provides disaster relief services to survivors of natural and human-caused disasters. Volunteers respond at the local, national, and international level. The ARC estimates that it responds to 70,000 disasters in the United States (U.S.) each year, including hurricanes, floods, earthquakes, tornadoes, hazardous material spills, transportation accidents, fires, and explosions (The American National Red Cross, 2015). Volunteers and staff provide food, shelter, and clothing to disaster survivors. They also provide medical and mental health services. According to the ARC, 95 percent of their relief workers are volunteers (The American National Red Cross, 2015). While it is difficult to know the number of relief

workers that volunteer with the ARC each year, during Superstorm Sandy in 2012, the largest U.S. disaster in the past five years, there was an estimated 17,000 relief workers from the organization (The American National Red Cross, 2014).

Purpose of the Present Study and Research Questions

The purpose of the present study was to identify risk factors in ARC disaster relief workers that increase the likelihood of the development of secondary traumatic stress. The study also examined protective factors that decrease the likelihood of developing secondary traumatic stress in ARC disaster relief workers, as well as increase their chances of developing posttraumatic growth. The current study used multiple regression models to examine predictors of secondary traumatic stress and predictors of posttraumatic growth in disaster relief responders. In addition, the research compared ARC disaster responders with ARC disaster mental health workers in terms of secondary traumatic stress and posttraumatic growth. Therefore, the research questions that were investigated in this study are:

1) What risk factors with disaster relief workers predict secondary traumatic stress?

2) What protective factors with disaster relief workers predict posttraumatic growth?

3) Are there secondary traumatic stress differences between disaster responders and disaster mental health workers?

4) Are there posttraumatic growth differences between disaster responders and disaster mental health workers?

Because the study was exploratory in nature, there were no proposed hypotheses regarding these research questions.

Rationale for the Present Study

The current study sought to add to the empirical literature in disaster mental health by using validated measures of secondary traumatic stress and posttraumatic growth to determine their impact on disaster relief workers. It also sought to identify the risk and protective factors in the development of secondary traumatic stress and posttraumatic growth, respectively. It is important to have an awareness of these risk and protective factors in order for disaster relief organizations to provide proper training, debriefing, and resources for its disaster relief workers. The study may also provide information regarding volunteer recruitment and determining who might be appropriate volunteers. Finally, there is a dearth of empirical research on secondary traumatic stress and posttraumatic growth in disaster relief workers. The current study sought to add to that literature.

Definition of Terms

Disaster Relief Workers. Disaster relief workers will be used to describe disaster responders and disaster mental health responders together.

Disaster Responders. Disaster responders include any volunteers during a disaster response who are not providing mental health services to survivors. This may include general ARC volunteers such as shelter workers, medical staff, case managers, disaster assessors, and others. Prior research has also included emergency personnel, rescue and recovery units, and firefighters in this definition (Stellman et al., 2008; van

der Velden, van Loon, Benight, & Eckhardt, 2012). For the purposes of this research, only ARC volunteers who provide services to survivors will be considered.

Disaster Mental Health Responders. Disaster mental health responders are defined as those who respond to the mental health needs of the survivors of disasters. Disaster mental health responders as used in this research are licensed mental health professionals such as licensed psychologists, professional counselors, and social workers. Disaster mental health responders volunteer to provide psychological services to survivors of disasters that include psychological first aid, crisis intervention, and grief counseling. They also provide debriefing services to volunteers and staff during disaster relief operations and upon their return home from deployment.

Risk Factors. Risk factors are personal characteristics, previous experiences, or unhealthy coping skills in disaster relief workers that contribute to the development of secondary traumatic stress symptoms after indirect exposure to traumatic events.

Protective Factors. Protective factors are personal characteristics, skills, strengths, resources, supports, or coping strategies in disaster relief workers that help them deal more effectively with stressful work conditions including direct or indirect exposure to traumatic events, and mitigate or eliminate the risk of the development of secondary traumatic stress symptoms. Protective factors may also increase the likelihood of the development of posttraumatic growth.

Secondary Traumatic Stress. Secondary traumatic stress describes the negative mental health impacts that hearing traumatic disaster stories or working with survivors of disasters has on those close to the survivor, including disaster relief workers. Symptoms are in the areas of avoidance, intrusion, and arousal.

Posttraumatic Growth. Posttraumatic growth is the positive impact that indirect exposure to traumatic events can have on disaster relief workers. It is a result of challenges to the workers' beliefs about the world that develop into deeply meaningful and positive experiences that improve psychological functioning (Tedeschi & Calhoun, 2004). Some examples of changes in beliefs include a greater appreciation of life; a changed sense of priorities; warmer, more intimate relationships; a greater sense of personal strength; recognition of new possibilities or paths for one's life; and spiritual development (Tedeschi & Calhoun, 1996).

Summary

In the following chapters, chapter 2 will begin with a description of the development of the terms *secondary traumatic stress* and *posttraumatic growth*. Following these descriptions of the terms, there will be a review of the literature related to secondary traumatic stress in disaster responders and disaster mental health responders. A review of the literature related to posttraumatic growth in disaster responders and disaster mental health responders will follow. Chapter 3 will describe the methods used for the current study, including an explanation of recruitment procedures, psychometric properties of the instruments used, the procedures used in the current study, and a description of the data analyses. Chapter 4 describes the results of the study, including descriptive statistics of the demographic data, as well as predictive variables included in the regression models for risk and protective factors. Comparisons of the means between disaster responders and disaster mental health responders using *t*-tests will follow. The chapter will conclude with the results of the qualitative analysis. Chapter 5 will conclude

with a summary and discussion of the results, recommendations, limitations of the current study, directions for future research, and conclusions.

Chapter 2: Literature Review

The field of disaster mental health is a relatively new area of research in psychology that is gaining greater levels of importance as the number and severity of disasters seem to be increasing in recent years. While the research on secondary traumatic stress and posttraumatic growth among disaster relief workers is moderately small, these concepts have been more intensely researched with other populations, particularly mental health professionals who work with survivors of trauma. This chapter consists of five major sections: 1) a review of research on the development of different terms related to the negative mental health impacts after vicarious exposure to trauma including *compassion fatigue*, *secondary traumatic stress*, and *vicarious traumatization*; 2) a review of the research on secondary traumatic stress in disaster responders and disaster mental health workers; 3) a review of research on the development of the term *posttraumatic growth* as it relates to the positive mental health impacts after vicarious exposure to trauma; 4) a review of the research on posttraumatic growth in disaster responders and disaster mental health workers; and 5) implications of the prior research on secondary traumatic stress and posttraumatic growth in disaster relief workers.

Negative Mental Health Impacts of Secondary Exposure to Trauma

Mental health professionals have long understood that the art of providing therapy can have an impact on clinicians. From Freud's concept of countertransference to the more recent term of secondary traumatic stress, it has been known that the therapeutic relationship can be reciprocal in its impact on both clinicians and clients. Clinicians who work with survivors of trauma seem particularly susceptible to the negative mental health consequences of providing trauma therapy. Compassion fatigue, secondary traumatic

stress, and vicarious traumatization are some terms that have been used to describe these negative mental health impacts to vicarious exposure to trauma.

Compassion fatigue and secondary traumatic stress. Compassion fatigue and secondary traumatic stress are often used synonymously to describe the mental health impacts that hearing traumatic stories has on those close to the survivor, including friends and family of the survivor and mental health professionals. Figley (1995) defines compassion fatigue as "the natural behaviors and emotions that arise from knowing about a traumatizing event experienced by a significant other—the stress resulting from helping or wanting to help a traumatized person" (p. xiv). He describes this phenomenon as a natural result of the "'cost of caring' for others in emotional pain" (Figley, 1995, p. 9). Jenkins and Baird (2002) define secondary traumatic stress as "reactions to the emotional demands on therapists and social network members from exposure to survivors' terrifying, horrifying, and shocking images; strong, chaotic affect; and intrusive traumatic memories" (p. 423). In addition, Stamm (1999) defines secondary traumatic stress as "the potential costs of caring for others. . . Working with people who have been traumatized changes a person—for better or for worse, the others' traumatic material touches the lives of caregivers" (p. xxxiii). Figley (1995) argues that secondary traumatic stress is a result of feeling empathy towards clients; good therapists are able to walk in their clients' shoes, but the cost of this empathy is that therapists can become traumatized themselves by listening to their clients' traumatic experiences. It is a natural result of therapists' engagement with their clients.

Figley (1995) states that compassion fatigue and secondary traumatic stress are identical and equivalent to posttraumatic stress disorder (PTSD), although with PTSD,

symptoms occur when the person directly experiences the traumatic event and with secondary traumatic stress, symptoms occur when the person experiences the traumatic event indirectly. The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed., *DSM-5*; American Psychiatric Association, 2013) clearly identifies that it is possible for people to develop PTSD symptoms without actually being harmed or threatened themselves, defining a traumatic event as:

> Exposure to actual or threatened death, serious injury, or sexual violence in one or more of the following ways: 1) directly experiencing the event(s); 2) witnessing, in person, the event(s) as it occurred to others; *3) learning that the traumatic event(s) occurred to a close family member or close friend; or 4) experiencing repeated or extreme exposure to aversive details of the traumatic event (e.g. first responders collecting human remains; police officers repeatedly exposed to details of child abuse)* [emphasis added; Criteria A; p. 271).

Diagnostically, it is possible for someone to develop PTSD after indirect exposure to a traumatic event. However, the indirect exposure in the *DSM-5* is only limited to close relatives, close friends, first responders, or emergency personnel who work repeatedly with survivors of traumatic events as part of their jobs. Disaster workers were not included in the list of examples, and it is unclear if disaster relief volunteers, who work with survivors of disasters typically for a short period of time and often only once or twice per year, are included in the definition.

While the *DSM-5* does not provide specific diagnostic criteria for secondary traumatic stress, research has shown that secondary traumatic stress can occur with mental health workers. Figley (1995) identified symptoms of secondary traumatic stress

as identical to those of PTSD, including avoidance, arousal, and re-experiencing, with the main distinction being that those who develop PTSD are directly connected to the traumatic event; that is, they are the survivors of the traumatic event. However, with secondary traumatic stress, the traumatic event is experienced by someone close to the person, not experienced directly. Other researchers have also found that secondary traumatic stress reactions include symptoms similar to PTSD, such as intrusive recollections, avoidance, and arousal (Devilly, Wright, & Varker, 2009). Stamm (1999) identifies several symptoms of secondary traumatic stress that mirror those of PTSD including recurrent and intrusive recollections and dreams; flashbacks; psychological distress at exposure or reminders of the event or the client; and physiological symptoms such as difficulty with sleep, irritability, and difficulty concentrating. In addition, people indirectly exposed to traumatic events may experience symptoms of depression and dissociation (Dass-Brailsford, 2010).

Dutton and Rubinstein (1995) identified several categories of symptoms for secondary traumatic stress including indicators of psychological distress or dysfunction, cognitive shifts, and relational disturbances. These categories were determined based on an analysis of the secondary traumatization literature. Indicators of psychological distress or dysfunction included symptoms such as distressing emotions (sadness or grief, depression, anxiety, dread or horror, and shame); intrusive imagery of the client's traumatic experience (nightmares, flooding, and flashbacks); numbing or avoidance of working on the traumatic material with the client (dissociation); somatic complaints (sleep difficulty, headaches, gastrointestinal problems, and heart palpitations); addictive or compulsive behaviors (substance abuse, "workaholism", and compulsive eating);

physiological arousal; and impairment in daily functioning (missed appointments, decreased use of supervision, chronic lateness, decreased ability to engage in self-care activities, and feelings of isolation, alienation, or lack of appreciation). Symptoms in the cognitive shifts category included "changes in beliefs, expectations, and assumptions that therapists hold" (Dutton & Rubinstein, 1995, p. 85-86). These shifts may be in therapists' beliefs about dependency/trust, safety, power, independence, esteem, intimacy, and frame of reference. Other cognitive shifts included seeing all clients as victims, "clinician guilt" (an idea similar to bystander guilt), and blaming the victim. Symptoms in the relational disturbances category included problems with personal relationships, difficulties with client relationships such as over-identification (feeling paralyzed by reaction to client's trauma story, taking responsibility for client's life, feelings of helplessness or despair, or rage against offender) or detachment (identification with the offender, victim blaming, boundary violations with clients, judging, labeling or pathologizing clients' reactions, dissociation, being chronically late for appointments or frequently cancelling appointments, or distancing from family, friends, and colleagues). These effects can be seen in mental health professionals working with traumatized clients including those working with people living with HIV/AIDS (Smith, 2007), sexual abuse survivors (VanDeusen & Way, 2006), and sexual violence survivors (Schauben & Frazier, 1995). These effects can also be found in those responding to natural and human-caused disasters (Stellman et al., 2008; Long, Meyer, & Jacobs, 2007; Simons, Gaher, Jacobs, Meyer, & Johnson-Jimenez, 2005; McCaslin, Jacobs, Meyer, Johnson-Jiminez, Metzler, & Marmar, 2005).

Chrestman (1995) conducted a survey study with trauma therapists that assessed for secondary traumatic stress symptoms. She found that trauma therapists reported increased symptoms of intrusion, avoidance, dissociation, and sleep disturbance. None of these symptoms were reported in the clinical range, but were significantly higher for trauma therapists than therapists who did not work with trauma survivors. This research suggests that, while secondary traumatic stress symptoms may mirror those of PTSD, the symptoms may be less intense. Chrestman also found that the distress was more acute in nature. Many of the trauma therapists reported more intense levels of distress that overwhelmed them for a short period of time, but from which they recovered. In addition, there were a few therapists who experienced clinical levels of distress that they did not overcome. This research did not specifically address disaster relief workers, but does provide some evidence that mental health professionals who work with trauma survivors experience secondary traumatic stress.

Bride (2007) examined the prevalence of secondary traumatic stress in social workers. Potential participants included 600 master's level social workers selected randomly from 2,886 licensed social workers located in a southern state. Of the 600 potential participants, 282 surveys were returned and used in the analysis (47% response rate). Participants were given a packet of questionnaires including a demographic questionnaire and the Secondary Traumatic Stress Scale (STSS; Bride, Robinson, Yegidis, & Figley, 2004), which measures symptoms of secondary traumatic stress including intrusion, avoidance, and arousal. In terms of intrusion symptoms, participants reported intrusive thoughts related to work with clients (40.5%), experiencing distress when reminded of work with traumatized clients (19.1%), experiencing physiological

reactions when reminded of work with traumatized clients (12.4%), disturbing dreams (5.8%), and reliving the client's trauma (5.0%). In terms of avoidance symptoms, participants reported avoiding people, places, and things that reminded them of their work (10.9%), avoidance of clients themselves (31.6%), difficulty recalling information related to work with traumatized clients (14.9%), detachment from others (22.3%), diminished interest in activities (25.5%), emotional numbing (25.9%), and a sense of a foreshortened future (28.0%). In terms of arousal symptoms, participants reported irritability (27.7%), difficulty concentrating (27.0%), difficulty sleeping (24.4%), hypervigilance (13.8%), and an exaggerated startle reflex (12.1%). Of the participants, over half reported experiencing at least one of the three secondary traumatic stress symptoms of intrusion, avoidance, and arousal (55%), some experienced two of the symptoms (20%), and some reported experiencing all three symptoms (15.2%). Nearly half did not report any secondary traumatic stress symptoms (45%). While the response rate for this study was fairly high (47%), a limitation of this study and all survey research is that there may be a difference between those who chose to respond to the survey and those who did not. The results also cannot be generalized to others due to certain characteristics of the sample (e.g. only taken from a single state, only used master's level social workers).

Prior research has shown that secondary traumatic stress is correlated with extent and intensity of work with traumatized clients (Brady et al., 1999; Chrestman, 1999; Schauben & Frazier, 1995; Lee, 1995; Arvay & Uhlemann, 1996), as well as co-morbidity between traumatic stress, depression, and anxiety symptoms (Davidson & Fairbank, 1993). Little to no relationship has been found between traumatic stress and

age, ethnicity, or income level (Good, 1996; Knight, 1997; Munroe, 1990; Pearlman & MacIan, 1995). Bride et al. (2004) found that secondary traumatic stress was positively associated with the percentage of traumatized clients on a caseload, the time engaged with trauma issues when working with clients, depression symptoms, and anxiety symptoms.

Vicarious traumatization. Another term used to describe the ways that therapists can be impacted by working with survivors of trauma is vicarious traumatization. McCann and Pearlman (1990) define vicarious traumatization as ”persons who work with victims may experience profound psychological effects, effects that can be disruptive and painful for the helper and can persist for months or years after work with traumatized persons” (p. 133). Pearlman (1995) suggests that empathic engagement with survivors of trauma can lead to positive transformation in the therapists, including personal growth, a deeper connection to clients, a deeper connection to humanity, and greater awareness of all aspects of life. However, empathic engagement can lead to vicarious traumatization, which can impact therapists’ sense of self, world view, spirituality, affect tolerance, interpersonal relationships, and memory. The effects of vicarious traumatization are pervasive and impact all areas of therapists’ lives. They are also cumulative, building off of each other, and may permanently change the belief systems of therapists. McCann and Pearlman (1990) identified seven psychological needs that are impacted by work with survivors of trauma. These include beliefs around safety, dependency/trust, power, esteem, intimacy, independence, and frame of reference (one’s identity, world view, and spirituality). Vicarious trauma has been found to be less severe when there is greater

social support and personal wellness/self-care and more severe for those with a trauma history (Michalopoulos & Aparicio, 2012; Williams, Helm, & Clemens, 2012).

Pearlman and MacIan (1995) explored the construct of vicarious traumatization with trauma therapists. Potential participants were recruited from an international trauma professional organization and received a packet of questionnaires in the mail. The response rate was 32%; participants included 188 self-identified trauma therapists. The questionnaires included a demographics questionnaire; the Traumatic Stress Institute Belief Scale (TSI Belief Scale; Pearlman, 1996), a measure of the disrupted cognitive schemas of safety, trust, intimacy, self-esteem, and power; the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979), a measure of symptoms of PTSD; the Symptoms Checklist-90-Revised (SCL-90-R; Derogatis, 1977), a measure of general distress; and the Marlowe-Crowne Social Desirability Scale (Marlowe-Crowne; Crowne & Marlowe, 1964), a measure of the participants' concern for approval from those in authority. Results from the Marlowe-Crowne indicated that the participants were not engaging in socially desirable responses to the questionnaires. The researchers found that those who had a personal history of trauma had increased scores on the TSI Belief Scale. They also found increased general distress scores for those who had been doing trauma work for a shorter period of time and for those who had a higher percentage of trauma survivors on their caseload.

As part of the same data collection, Pearlman and MacIan (1995) conducted multiple regression analyses to determine the importance of several variables in vicarious trauma including gender, personal trauma history, whether therapists had addressed their trauma work in their own personal therapy, age, length of time doing trauma work,

income, level of education, and work setting. They found that addressing trauma work in therapists' own therapy and trauma history were most predictive of increased scores on the SCL-90 and the TSI Belief Scale, indicating that when therapists address their trauma work in their own therapy and when they have a trauma history, they experience increased distress and vicarious trauma symptoms. A multiple analysis of variance (MANOVA) was conducted to determine differences between those who had a trauma history and those who did not have a trauma history on the measures. They found that those with a personal trauma history had higher scores on the SCL-90 and the TSI Belief Scale than those who did not, and they had less experience working with trauma survivors, moderate exposure to trauma materials, discussed their trauma work in their own personal therapy, were not receiving supervision, and worked in a hospital setting. Among those without a personal trauma history, they found that participants with higher scores on the SCL-90 and the TSI Belief Scale were more likely to have less training, work in a clinic setting, and discuss their trauma work in their own therapy. One strength of this study is that researchers used the Marlowe-Crowne, allowing them to determine that participants were not being influenced by social desirability. Limitations of this study include a moderate to low response rate (32%); those who returned the questionnaires may be statistically different from those who did not return them, impacting the generalizability of the results. Another limitation of this study is that the TSI Belief Scale is not a psychometrically validated scale, although it has since been used in other studies (Jenkins & Baird, 2002; Adams, Matto, & Harrington, 2001).

Jenkins and Baird (2002) examined the difference between two measures of secondary traumatic stress and vicarious trauma to determine whether they are separate

constructs or different versions of the same construct. Researchers used the Compassion Fatigue Self-Test (CFST; Figley, 1995), a measure of secondary traumatic stress with two subscales (compassion fatigue and burnout) that assesses for PTSD-like symptoms; and the TSI Belief Scale, Revision L (TSI-BSL; Pearlman, 1996), a measure of therapists' disruptions in their cognitive schemas of safety, trust, esteem, intimacy, and control. Jenkins and Baird compared the CFST and the TSI-BSL with the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981), a psychometrically validated measure of burnout. Participants included 99 sexual assault/domestic violence agency counselors (both paid staff and volunteers). The response rate was not calculated, although researchers stated that it "appeared high" (p. 426). Questionnaires were distributed at scheduled staff meetings or trainings. In addition to the CFST, the TSI-BSL, and the MBI, participants also completed the Symptoms Checklist-90-Revised (SCL-90-R, Derogatis, 1983) to measure general psychological symptoms and the TSI Life Events Checklist-short form (Pearlman, 1996) to assess for personal trauma histories.

Jenkins and Baird (2002) found that the CFST and the TSI-BSL were strongly correlated. There was a low correlation between the burnout subscale on the CFST and the MBI. They also found that the CFST and the TSI-BSL were moderately correlated with the SCL-90-R. The compassion fatigue subscale on the CFST was moderately correlated with the MBI, while the correlation between the TSI-BSL and the MBI was strong. These correlations suggest that there is concurrent validity between the CFST and the TSI-BSL, as well as with the SCL-90-R and the MBI. The correlations also suggest appropriate discriminant validity between the CFST and the TSI-BSL. Jenkins and Baird concluded that "[secondary traumatic stress and vicarious traumatization] are experienced

both similarly and somewhat differently by trauma therapists" (p. 431). This research is important because it demonstrates that, while they are related, there is a difference between the constructs of secondary traumatic stress and vicarious trauma. The biggest difference was found to be that secondary traumatic stress mirrors symptoms of PTSD and vicarious traumatization causes permanent cognitive shifts in therapists' beliefs. Limitations of this research include the lack of a specific response rate. The response rate was unknown, and there could be differences between those who chose to respond and those who did not. The results are not generalizable beyond the sample. Finally, there were only four male participants, further decreasing the ability to generalize the results.

Summary. While there are several different terms used to describe the symptoms that can occur when therapists are traumatized by their clients' stories (compassion fatigue, secondary traumatic stress, and vicarious traumatization), the terms are often poorly defined and used interchangeably in the research, even though research has demonstrated that they are different constructs (Jenkins & Baird, 2002). This can lead to confusion about what the terms actually mean and how to measure them.

Secondary Traumatic Stress and Disaster Relief Workers

The above research on the negative impacts of secondary exposure to trauma did not examine secondary traumatic stress specifically in disaster relief workers. The next sections will review the research related to secondary traumatic stress in disaster responders and disaster mental health workers.

Secondary traumatic stress and disaster responders. Because of the limited empirical research on mental health impacts of ARC disaster responders specifically, the mental health impacts on first responders will also be reviewed. For this literature review,

disaster responders will include ARC volunteers providing non-mental health services to disaster survivors, emergency personnel, rescue and recovery workers, police officers, and firefighters. Disaster responders often work long hours and interact with survivors of the event. They may also be involved in rescue or recovery efforts, which may increase their exposure to people who have been killed by the disaster. A summary of the research studies on secondary traumatic stress in disaster responders is provided in Table 1.

Table 1. Studies on Secondary Traumatic Stress in Disaster Responders

Source	**Design and Participants**	**Instruments Used**	**Results**
Stellman et al. (2008)	Self-administered clinical examination of 10, 132 rescue and recovery workers (excluding firefighters) to the terrorist attacks of 9/11	PTSD Symptoms Checklist; the Patient Health Questionnaire; the CAGE questionnaire; the Sheehan Disability Scale	Participants met criteria for PTSD (11.1%), major depression (8.8%), and panic disorder (5.0%); had significant stress reactions (45%); displayed problematic alcohol use (17%)
Long, Meyer, & Jacobs (2007)	Mailed surveys to 3055 Red Cross Paid and Volunteer Staff (RCPVS) who were deployed within the first three months of the terrorist attacks of 9/11 (50.5% response rate)	The Impact of Events Scale-Revised; the State-Trait Personality Inventory-form Y	No significant differences between those who had worked directly with survivors of the disaster or were exposed to disaster stimuli and those who had not
Simons, Gaher, Jacobs, Meyer, & Johnson-Jimenez (2005)	Mailed survey to 779 RCPVS who responded to the 9/11 terrorist attacks (50% response rate)	A single question that assessed alcohol use frequency in the past six months; the Modified Daily Drinking Questionnaire; a single question that assessed the perceived change in alcohol use in the one month following the disaster response; the Alcohol Use Disorders Identification Test; the Impact of Events Scale-Revised; a single item that	Problematic alcohol use among the participants was relatively low (only 5% indicated that they engaged in hazardous drinking); PTSD symptoms low

		assessed the work site	
McCaslin, Jacobs, Meyer, Johnson-Jiminez, Metzler, & Marmar (2005)	Mailed survey to 757 RCPVS who responded to the 9/11 terrorist attacks (50% response rate)	A demographic and disaster work exposure questionnaire; the State-Trait Personality Inventory; the Life Experience Survey; the Impact of Events Scale-Revised	Negative life events fully mediated the relationship between disaster response and state depression, partially mediated the relationship between PTSD and state anxiety; no relationship between PTSD and anger; the greater the exposure, the greater the likelihood that negative life events following the response would be considered more negatively
van der Velden, van Loon, Benight, & Eckhardt (2012)	Surveyed 56 search and rescue workers of the Haiti earthquake before deployment (100% response rate) and 3 months after deployment (91% response rate)	The Symptoms Checklist-90; questions related to smoking and alcohol consumption; questions about current use of mental health services or the perceived need of mental health services; a questionnaire designed for this study to assess participants' work and experience in Haiti; the Coping Self-Efficacy List (only at follow-up)	No differences between baseline and follow-up on the SCL-90 and the IES, although depression and interpersonal sensitivity decreased at follow-up; no difference between baseline and follow-up on smoking and alcohol use or use of mental health services; all respondents indicated high coping self-efficacy three months after deployment as indicated by their scores on the CSE

Most of the research in this area focuses on the mental health impacts among disaster responders after the United States terrorist attacks of September 11, 2001 (9/11). Stellman et al. (2008) examined the psychological impacts on World Trade Center rescue and recovery workers, including the prevalence of PTSD, major depression, and panic disorder over a 5-year period; psychiatric comorbidity; and symptomology in recovery workers who do not meet diagnostic criteria for these disorders. In addition, impairment in functioning was examined including problems with alcohol and disruption in social functioning both at work and with friends and family. Participants included 10,132 rescue and recovery workers (excluding firefighters) who provided services as part of the rescue, recovery, restoration, or clean-up phases in Manhattan for at least 24 hours during September 11-30, 2001 or for greater than 80 hours during September 11 through December 31, 2001. They were recruited as part of a medical and mental health monitoring program for 9/11 rescue and recovery workers. Participants completed a self-administered clinical examination including a mental health screening questionnaire that used the PTSD Symptom Checklist (PCL; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996); the Patient Health Questionnaire (PHQ; Spitzer, Kroenke, & Williams, 1999) that assessed for depression, anxiety, and panic; the CAGE questionnaire (Ewing, 1984) to assess for alcohol abuse; and the Sheehan Disability Scale (Leon, Olfson, Portera, Farber, & Sheehan, 1997) to estimate disruptions in social functioning in the areas of work, social life, and family/home life. Stellman and colleagues (2008) found that 11.1% of respondents met criteria for PTSD, 8.8% met criteria for major depression, and 5.0% met criteria for panic disorder. They also found that although they did not meet the full diagnostic criteria for PTSD, major depression, or panic disorder,

nearly half of respondents (45%) experienced significant stress reactions. Over 17% of the respondents reported problems with alcohol use. Of those classified as having PTSD, about half were also classified as having either major depression, panic disorder, or both; had more than double the risk of alcohol problems; and had a 17-fold risk of social impairment. A major strength of this study is the large sample size. However, there was no information provided about response rates, so it is uncertain if there are people who did not respond to the packet and how they may differ from those who did respond. Also, the study used the PCL, a measure of PTSD, rather than a measure of secondary traumatic stress.

Another study by Long, Meyer, and Jacobs (2007) examined distress levels in ARC workers responding to the terrorist attacks on 9/11. Participants included 3055 Red Cross Paid and Volunteer Staff (RCPVS) who were deployed within the first three months of the terrorist attacks of 9/11. The ARC provided a mailing list of all paid and volunteer staff who responded to 9/11. People on the list were randomly assigned to receive one of four survey packets in early September of 2002 (50.5% response rate). The survey packet for this study included a demographic survey; the Impact of Events Scale-Revised (IES-R; Weiss & Marmar, 1996), which measures symptoms of intrusion, avoidance, and arousal; and the State-Trait Personality Inventory-form Y (STPI-Y; Spielberger, 1995), which measures trait levels of anxiety, depression, anger, and curiosity. Long and colleagues found no significant difference in psychological distress and posttraumatic stress symptoms between those whose function included working directly with survivors (Direct Services) and those whose function did not include direct contact with survivors of disasters (Management, Internal and External Support

Services). There was also no significant difference in symptoms between those who were exposed to disaster stimuli (reported exposure to the crash site, rescuers, survivors or their families) and those who were not. The researchers hypothesized that this may be due to ARC workers being more psychologically healthy and better able to cope with physical and psychological stressors.

In another study of ARC workers responding to 9/11, Simons, Gaher, Jacobs, Meyer, and Johnson-Jimenez (2005) examined alcohol use and PTSD. The participants were pulled from the same mailing list as in the Long et al. (2007) study. Participants included 779 RCPVS (50% response rate) who responded to the 9/11 terrorist attacks. For this study, the survey packet included the following questionnaires: a single question that assessed alcohol use frequency in the past six months using a 9-point Likert scale ranging from 0 (*not at all*) to 8 (*more than once a day*); the Modified Daily Drinking Questionnaire (Dimeff, Baer, Kivlahan, & Marlatt, 1999) to assess alcohol consumption in the past six months; a single question that assessed the perceived change in alcohol use in the one month following the disaster response using a 3-point Likert scale with 1 = Decreased, 2 = No Change, and 3 = Increased; the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993) to assess hazardous alcohol use including alcohol consumption, drinking behavior, and alcohol problems in the last year; the Impact of Events Scale-Revised (IES-R; Weiss & Marmar, 1997) to assess for PTSD symptoms; and a single item that assessed the work site (ground zero/World Trade Center, the Pentagon, or the Pennsylvania crash site).

Simons and colleagues (2005) found that posttraumatic stress symptoms were positively associated with weekly consumption, hazardous consumption, and changes in

consumption. They also found that of the posttraumatic stress symptoms, arousal symptoms were most closely associated with alcohol use variables. Intrusion symptoms were associated with hazardous drinking among younger respondents. It is important to note that problematic alcohol use among the participants was relatively low (only 5% indicated that they engaged in hazardous drinking) and posttraumatic stress symptoms were low as well, indicating that most of the participants did not experience adverse stress reactions as a result of the disaster response.

Another study of ARC relief workers who responded to the terrorist attacks of 9/11 examined the impact of negative life events on emotional distress (McCaslin, Jacobs, Meyer, Johnson-Jiminez, Metzler, & Marmar, 2005). Again, participants were pulled from the same mailing list as in the Long et al. (2007) study. Participants included 757 RCPVS (50% response rate) who responded to the terrorist attacks of 9/11 within the first three months following the attacks. The survey packet for this study included the following measures: a demographic and disaster work exposure questionnaire; the State-Trait Personality Inventory (STPI, Form Y; Spielberger et al., 1996) that assessed for trait anxiety, anger, depression, and curiosity; the Life Experience Survey (LES; Sarason, Johnson, & Siegel, 1978) that assessed for significant life experiences that occurred in the past year; and the Impact of Events Scale-Revised (IES-R; Weiss & Marmar, 1997) that measured posttraumatic stress symptoms. McCaslin and colleagues found that negative life events that occurred within one year of the disaster response fully mediated the relationship between disaster response and state depression. However, when looking at state anxiety and PTSD symptoms, the relationship with negative life events was partially mediated and when looking at state anger, there was no significant relationship. The

researchers also found that the greater the exposure, the greater the likelihood that negative life events following the response would be considered more negatively.

The previous studies had several strengths, including the adequate response rates and the use of ARC disaster responders as participants. However, the results of the previous three studies should be examined with some caution. A primary limitation is that the response to the surveys was completely by self-report, which may impact the results as participants may have underestimated the impacts or engaged in socially desirable responses. The studies were all cross-sectional; therefore the directions of the observed relationships cannot be determined. Correlations among the different variables may have been impacted due to the difference in group sizes. In addition, while the response rates for the three studies were moderate (around 50%), there may be statistical differences between those who returned the surveys and those who did not. Perhaps those who are having more psychological impacts are more or less likely to return the surveys. Also, the research only examined the psychological impacts in ARC relief workers who responded to 9/11. Relief workers who respond to other disasters may have different experiences and impacts. Finally, the IES-R was used as a measure of PTSD. Questionnaires that assessed for secondary traumatic stress were not used.

van der Velden, van Loon, Benight, and Eckhardt (2012) examined the mental health impact among search and rescue workers during the Haiti earthquake in 2010 using a longitudinal approach. Participants included a team of firefighters, police officers, nurses, a surgeon, and communication personnel with the Dutch Urban Search and Rescue (N = 56). Before deployment, participants were asked to fill out the questionnaires (response rate 100%). Three months later, they were asked to complete the

follow-up questionnaires (response rate 91%). Demographic information was collected before deployment (age, gender, years in the Dutch Urban Search and Rescue, and work on previous disasters). Questionnaires used both before deployment and at the three month follow-up included the Symptoms Checklist-90 (SCL-90; Derogatis, 1983) to assess for mental health symptoms in the past seven days; questions related to smoking and alcohol consumption; questions about current use of mental health services or the perceived need of mental health services; and a questionnaire designed for this study to assess participants' work and experiences in Haiti. The Coping Self-Efficacy List (CSE; Benight et al., 2004) was used at follow-up to determine participants' feelings about how they were coping since the earthquake.

van der Velden and colleagues (2012) found that there was no difference between baseline and follow-up on the SCL-90 and the IES, although depression and interpersonal sensitivity decreased at follow-up. There was no difference between baseline and follow-up on smoking and alcohol use or use of mental health services. In terms of their experiences during and after the work, participants reported finding the work tiring (35%), found the work to be mentally burdensome (30%), and felt frustrated that they could not do more (20%). Most reported feeling satisfied with their work (95%) and felt they received recognition for their work (98%). However, they did report that it was an adjustment to return to their normal work routine after deployment (65%). Finally, all respondents indicated high coping self-efficacy three months after deployment as indicated by their scores on the CSE. Results suggest that the participants did not experience negative mental health symptoms as a result of their work during deployment. The major strength of this study is the pre-post design that allowed researchers to

determine whether any negative mental health symptoms were pre-existing or a result of the search and rescue work. The high response rates (100% at baseline, 91% at follow-up) were also a strength of the study, and attrition was low. While a strength of the study is that the researchers conducted pre- and post- deployment questionnaires, it may have been helpful to collect the data at more intervals than just at three months. To expand on the research, it may have been helpful to assess at one month or even at times after the three month period to determine if there are greater mental health impacts earlier after deployment or later. Another limitation is that the questionnaires were all self-report in nature; participants may have given answers based on social desirability rather than their true feelings.

There are several stressors that make it more likely for disaster responders to have negative mental health impacts. According to Dass-Brailsford (2010), some of these stressors include lack of structure, lack of resources, changing leadership, directly experiencing traumatic events related to the disaster, lack of rewards, and personal challenges. A lack of structure, lack of resources, and changing leadership all contribute to the chaotic conditions of disasters. Working long hours, experiencing dangerous or adverse conditions, having an overwhelming number of people who need services when there are too few services available, lack of sleep and proper nutrition, lack of regular social support networks, and constant instability and adaptation to new leadership figures can all contribute to negative psychological impacts. In addition, disaster responders can be victims of trauma by witnessing dead bodies or other traumatic images, or sometimes, if they live in the affected area, being survivors of the disaster themselves. Disaster responders may begin to develop feelings of hopelessness, which may lead to a

questioning of their efficacy and decreased motivation. Finally, any stressors in their personal lives may contribute to increased mental health symptoms in disaster responders.

Secondary traumatic stress and disaster mental health responders. Some of the relief workers that respond to disasters are disaster mental health workers. These include licensed psychologists, mental health counselors, and social workers. Disaster mental health workers provide psychological services to survivors of disasters that include psychological first aid, crisis intervention, and grief counseling. Because of their contact with survivors of disasters, they may be especially susceptible to secondary traumatic stress symptoms. A summary of the research studies on secondary traumatic stress in disaster mental health workers is provided in Table 2.

Table 2. Studies on Secondary Traumatic Stress in Disaster Mental Health Workers

Source	**Design and Participants**	**Instruments Used**	**Results**
Special issue of *Professional Psychology: Research and Practice* (Akin-Little & Little, 2008; Simon Rosser, 2008; Levy, 2008; Jones, Immel, Moore, & Hadder, 2008; Haskett, Smith Scott, Nears, & Grimmet, 2008).	Anecdotal descriptions of several disaster mental health workers' personal experiences when volunteering for Hurricane Katrina	None	Identification of several stressors including lack of training in disaster mental health work; secondary exposure to trauma through the stories of the survivors; the limits of working within a bureaucracy; working long hours with few breaks; fatigue; feelings of helplessness, futility, and incompetence; guilt at not doing more; burnout by doing too much; difficulties working on a team; feelings of disappointment; feeling undervalued; being overwhelmed; daily changes in assignments; and dangerous conditions
Campbell (2007)	Anecdotal description of the author's experiences of U.S. Hurricanes Ivan and Katrina	None	Identified having an "empathic response" with the disaster survivors and other disaster relief workers; descriptions of secondary traumatic stress symptoms including difficulty sleeping, re-experiencing traumatic stories, increased arousal, difficulty with short-term memory and concentration,

			intrusive memories, and increased frustration and agitation
Berah, Jones, & Valent (1984)	Surveyed 19 members of a mental health team who responded to the 1983 Ash Wednesday bushfires in Australia four weeks after they ended services	A questionnaire created for this study including items regarding demographics, helper motivation, goals, expectations and observations, initial emotional and physical reactions, later emotional and physical reactions, fantasies and evoked memories, evaluation of the services provided, and evaluation of the experience itself	Relevant themes included emotional reactions (shock/bewilderment, dependency/need for team support, confusion/uncertainty, depression/sadness, helplessness, anxiety/distress, euphoria/excitement, and anger/rage); physical reactions (fatigue, disturbed sleep, increased tension, physical sickness, and changed eating and drinking patterns); fantasies and thoughts (images of selves in the fire and the reactivation of previous traumas)
Pulido (2007)	Qualitative interviews of 50 social workers involved in the recovery efforts after the terrorist attacks of 9/11	Interviews	Relevant trends included lack of preparation; metal health symptoms including difficulty listening to clients' traumatic stories, feelings of anger and irritability, distress, re-experiencing the trauma of 9/11 when listening to clients' stories, flashbacks of clients' stories, intrusive symptoms such as smells or sights that reminded them of the day, feelings of

			denial or numbness, and fear regarding travel and safety; feeling overwhelmed with the needs of their clients, an inability to do enough, and physical and mental exhaustion
Adams, Figley, & Boscarino (2008)	Mailed surveys to 236 social workers (39% response rate) with New York City addresses after the terrorist attacks of 9/11	The Compassion Fatigue Scale-Revised; the General Health Questionnaire; questions regarding exposure to stressful events; questions regarding exposure to traumatic events; questions regarding exposure to survivors of the terrorist attacks of 9/11; a social support scale that was not identified; a sense of mastery scale that was not identified; work environment measures	Participants who reported more negative life events and greater involvement in the response to the terrorist attacks had more symptoms of secondary traumatic stress; those who scored higher on the CFS-R also had higher scores on job burnout and poorer psychological well-being
Eidelson, D'Alessio, & Eidelson (2003)	Mailed survey to 712 psychologists (15% response rate) in Connecticut, New Jersey, New York, and Pennsylvania 14 weeks after the terrorist attacks of 9/11	A questionnaire including items regarding the impact of the attacks on the psychologists; engagement in new work related to 9/11; their psychological experience of work after 9/11; changes in their professional and personal lives including heightened	Greater distress was related to proximity to Ground Zero; reports of negative feelings including a sense of inadequacy, helplessness, and burnout or exhaustion; reports of positive feelings including an increased sense of personal meaning and satisfaction, a renewed sense of purpose, and greater connection

		personal fears; the proportion of treated clients who were severely impacted by the attack; and demographic data	to clients
Creamer & Liddle (2005)	Mailed survey between December of 2001 and February of 2002 to 80 disaster mental health workers (80% response rate) who responded to the terrorist attacks of 9/11	The Impact of Events Scale; the Life Events Checklist; a questionnaire that assessed preexisting therapist factors and assignment variables	Personal trauma history did not increase the risk of secondary traumatic stress symptoms; there was a significant positive correlation between secondary traumatic stress symptoms and number of hours working with trauma survivors, number of days on assignment, and percentage of time working with clients who discussed morbid details of their experience; higher secondary traumatic stress symptoms among those who worked with children and firefighters
Dass-Brailsford & Thomley (2012)	Surveys given prior to deployment and at follow-up to 25 mental health volunteers after Hurricane Katrina	The Professional Quality of Life Scale	No significant changes in reported compassion satisfaction, compassion fatigue/vicarious traumatization, and burnout from before and after deployment
Beckmann (2012)	Interviewed six disaster mental health volunteers with the ARC	Semi-structured interviews	Relevant domains included physical stressors (preexisting health conditions, demands of the physical environment, diet,

			financial concerns, exhaustion, illness, and disorganization within the ARC as an organization) and psychological stressors (feeling they do not have enough resources to be helpful, feelings of distress, exposure to traumatic events, organizational problems, the unpredictability of disaster settings, the impact that the disaster work can have on interpersonal relationships, and the politics of working with a large organization)

As an example, several psychologists shared their personal experiences responding to Hurricane Katrina (U.S.) in a special issue of *Professional Psychology: Research and Practice* (Akin-Little & Little, 2008; Simon Rosser, 2008; Levy, 2008; Jones, Immel, Moore, & Hadder, 2008; Haskett, Smith Scott, Nears, & Grimmet, 2008). They described several stressors of the work including lack of training in disaster mental health work; secondary exposure to trauma through the stories of the survivors; the limits of working within a bureaucracy; working long hours with few breaks; fatigue; feelings of helplessness, futility, and incompetence; guilt at not doing more; burnout by doing too much; difficulties working on a team; feelings of disappointment; feeling undervalued; being overwhelmed; daily changes in assignments; and dangerous conditions.

Another paper outside of this journal anecdotally discussed mental health symptoms in disaster mental health workers. Campbell (2007) described her personal experiences in the U.S. Hurricanes Ivan and Katrina. She described how she was exposed to the suffering and devastation of the hurricanes, her concern for the survivors, and her ability to empathize with the survivors, having thoughts such as “This could be me” (p. 166). She also experienced an empathic response when working with other volunteers, worker detachment as other volunteers became overwhelmed with the tasks and number of survivors who needed help, and a sense of satisfaction when able to help others. Campbell described how her prolonged exposure to the hurricanes, exposure to survivors’ traumatic memories, and other life demands contributed to symptoms of compassion fatigue, such as difficulty sleeping, re-experiencing traumatic stories, increased arousal, difficulty with short-term memory and concentration, intrusive memories, and increased frustration and agitation. She engaged in several activities upon return home that allowed

her to decrease these symptoms, and she did not have any long-term effects of compassion fatigue.

The previous articles describe the mental health impacts on disaster mental health workers and provide insight into the mental health impacts that disaster mental health workers experience. However, they are anecdotal in nature and do not provide empirical evidence as to the actual mental health impacts or the severity of the symptoms. Several empirically based studies will be reviewed in the paragraphs below.

Berah, Jones, and Valent (1984) were one of the first researchers to examine the negative mental health impacts of disaster work on mental health workers. Participants included 19 members of a mental health team who responded to the 1983 Ash Wednesday bushfires in Australia. They were given an anonymous questionnaire four weeks after they had stopped providing services. The questionnaire included items regarding demographics, helper motivation, goals, expectations and observations, initial emotional and physical reactions, later emotional and physical reactions, fantasies and evoked memories, evaluation of the services provided, and evaluation of the experience itself.

It is unclear how the data were analyzed, but there were several themes that were discussed. In terms of what motivated them to join the disaster mental health team, participants discussed feeling compassion towards the survivors, having an interest in crisis intervention, having an interest in learning about disasters, and a personal need to accept responsibility for psychiatric stress. In terms of therapeutic goals, participants discussed helping survivors to process their feelings, provide support, prevent future psychiatric distress, and identify survivors who needed more psychiatric help. In terms of

expectations and observations, participants discussed the disaster causing greater devastation than expected and expectations around observing survivors experiencing shock, grief, sadness, depression, and distress. In terms of emotional reactions, participants reported experiencing shock/bewilderment, dependency/need for team support, confusion/uncertainty, depression/sadness, helplessness, anxiety/distress, euphoria/excitement, and anger/rage. In terms of physical reactions, participants discussed fatigue, disturbed sleep, increased tension, physical sickness, and changed eating and drinking patterns. In terms of fantasies and thoughts, participants reported images of selves in the fire and the reactivation of previous traumas. In terms of their evaluation of the services provided, participants felt the services were helpful to survivors, especially empathic listening, but that there was some difficulty coordinating services with other relief organizations. In terms of personal evaluation, participants found the experience to be valuable, but also stressful, frustrating, and depressing. They reported learning more about disasters and stress counseling, gaining insight into their professional work, and gaining insight into their own personalities. A primary strength of this study was the high response rate (100%). However, the sample size was small (N = 19), which makes it difficult to generalize the results. It is also unclear as to how the results were analyzed or whether the questionnaire was a validated measure.

Pulido (2007) interviewed 50 social workers involved in the recovery efforts after the terrorist attacks of 9/11. While she did not systematically analyze the interviews, she reported several trends that she saw among the social workers. She reported that many of the social workers were unprepared and untrained to handle the psychological needs of the survivors. She also reported several mental health symptoms among the social

workers including difficulty listening to clients' traumatic stories, feelings of anger and irritability, distress, re-experiencing the trauma of 9/11 when listening to clients' stories, flashbacks of clients' stories, intrusive symptoms such as smells or sights that reminded them of the day, feelings of denial or numbness, and fear regarding travel and safety. In addition, the social workers reported feeling overwhelmed with the needs of their clients, an inability to do enough, and physical and mental exhaustion. While these observations are a helpful start in learning more about the psychological impacts in disaster mental health workers, more systematic research needs to be conducted.

Adams, Figley, and Boscarino (2008) examined factors that increase or decrease secondary traumatic stress symptoms in social workers after the terrorist attacks of 9/11. Participants included 236 social workers (39% response rate) with New York City addresses. Social workers were mailed questionnaires in May of 2003. The questionnaires included in the study were the Compassion Fatigue Scale-Revised (CFS-R; Gentry, Baranowsky, & Dunning, 2002) which assessed for secondary trauma and burnout; the General Health Questionnaire (GHQ-12; Goldberg & Huxley, 1992) which measured general psychological distress; a demographics questionnaire; questions regarding exposure to stressful events including eight negative life events; questions regarding exposure to traumatic events; questions regarding exposure to survivors of the terrorist attacks of 9/11; a social support scale that was not identified; a sense of mastery scale that was not identified; and work environment measures that included work information, social support among colleagues, and work obligations. The researchers found that social workers who reported more negative life events and greater involvement in the response to the terrorist attacks had more symptoms of secondary traumatic stress.

Those who scored higher on the CFS-R also had higher scores on job burnout and poorer psychological well-being. One strength of this study is the use of a validated measure of secondary traumatic stress. However, the response rate was moderate, and there could be a significant difference between those who chose to respond and those who did not. The study was self-report in nature and participants may have responded in a socially desirable manner or underestimated their symptoms. In addition, the data were collected almost two years after the event, which may have resulted in a lower report of symptoms.

Eidelson, D'Alessio, and Eidelson (2003) examined the psychological impact of the 9/11 terrorist attacks on psychologists in Connecticut, New Jersey, New York, and Pennsylvania. Participants included 712 psychologists (15% response rate) who returned a mailed questionnaire. The questionnaire included items regarding the impact of the attacks on the psychologists; engagement in new work related to 9/11; their psychological experience of work after 9/11; changes in their professional and personal lives including heightened personal fears; the proportion of treated clients who were severely impacted by the attack; and demographic data. The questionnaire was mailed 14 weeks after the attacks. The researchers found that greater distress in the psychologists was related to their proximity to Ground Zero; however, only a small percentage of those working at Ground Zero reported their work stress as greatly increased. Those psychologists working near Ground Zero reported greater feelings of unpreparedness, greater demands on their professional time, and more feelings of personal fear. In open-ended comments, psychologists described an increase in positive feelings such as a sense of personal meaning and satisfaction, a renewed sense of purpose, and greater connection to clients. Some descriptions of negative feelings included a sense of inadequacy, helplessness, and

burnout or exhaustion. One strength of this study is that the data were collected soon after the participants engaged in the work. Another major strength of this study is the large sample size. However, the response rate was low (15%) and there could be a systematic difference between those who chose to respond and those who did not. The measures used were not empirically validated measures but were created for the purposes of the study. Details about the analysis of the open-ended comments were not described.

Another study by Creamer and Liddle (2005) examined risk factors for secondary traumatic stress symptoms in disaster mental health workers who responded to the terrorist attacks of 9/11. Participants included 80 disaster mental health workers who lived greater than 15 miles away from the attacks and had no family members or close friends within the vicinity of the attacks. Participants were mailed a single survey (80% response rate) between December of 2001 and February of 2002. Included in the survey were the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979) used to measure secondary traumatic stress symptoms; the Life Events Checklist (LES; Blake et al., 1998) to assess for a personal trauma history; and a questionnaire that assessed preexisting therapist factors (gender, age, education, occupation, years of mental health experience, prior treatment of trauma survivors, and involvement in personal therapy) and assignment variables (length and timing of assignment, frequency of conveying news of tragedy, time spent with clients sharing morbid content, toxic exposure, and client populations). Researchers found that personal trauma history did not increase the risk of secondary traumatic stress symptoms. However, there was a significant positive correlation between secondary traumatic stress symptoms and number of hours working with trauma survivors, number of days on assignment, and percentage of time working

with clients who discussed morbid details of their experience. There were also higher secondary traumatic stress symptoms among those who worked with children and firefighters. A primary strength of this study was the high response rate (80%). However, the researchers used the IES, which is a measure of PTSD rather than secondary traumatic stress. Because it was a survey study, this study has the limitation of being self-report in nature, which can result in participants answering in a socially desirable manner or underestimating their responses. Despite having a high response rate, there could still be systematic differences in those who chose to respond and those who did not.

Dass-Brailsford and Thomley (2012) investigated secondary traumatic stress symptoms in mental health volunteers after Hurricane Katrina (U.S.). Participants included 25 mental health volunteers who traveled to New Orleans for five days and worked in a walk-in counseling format where they were exposed to many clients in a short amount of time who shared their stories of loss and trauma after the hurricane. Participants were given the Professional Quality of Life Scale (ProQOL; Stamm, 2003) to measure compassion satisfaction, compassion fatigue/vicarious traumatization, and burnout, both before and after they provided services. Researchers found that there were no significant changes in reported compassion satisfaction, compassion fatigue/vicarious traumatization, and burnout from before and after providing services. The researchers hypothesized as to why there was no change. They felt that participants were adequately screened before leaving for New Orleans and attended a thorough orientation before beginning the work. They also were paired with more experienced professionals upon arrival, receiving supervision and debriefing throughout their stay. In addition, participants were engaged in self-care and social activities with other volunteers. The

shorter length of time volunteering may have contributed to the lack of change as well. Finally, researchers hypothesized that participants may have felt a strong purpose and sense of altruism in providing services; they were highly motivated to engage in the work, which may have helped them cope with any negative mental health impacts in a healthy way. One strength of this study is the high response rate; all participants completed the measure. Another strength of the study is the use of a baseline measure; participants were given the measure both before and after deployment, which provides greater evidence that any changes seen were a result of the disaster work rather than pre-existing conditions. A limitation of the study is the small sample size, which reduces the generalizability. The study was self-report in nature, with the possibility that participants responded in a socially desirable way.

Beckmann (2012) conducted a qualitative study on the physical and psychological stressors of disaster mental health workers in the ARC, as well as coping strategies used by the volunteers. Participants included six disaster mental health volunteers with the ARC who had worked on a variety of local, national, and international disasters. The participants completed individual 25-65 minute semi-structured interviews. The interviews were analyzed using the qualitative method of consensual qualitative research (CQR; Hill, Thompson, & Nutt Williams, 1997). Domains and categories were developed from the data. Several of the domains were of particular interest. Domain 4 was motivation for volunteering, and included the following categories: the occurrence of a precipitating event, receiving an invitation to become involved, the thrill of disaster work, feeling a sense of duty to help, and values such as their upbringing, professional values, and altruism. Domain 6 was benefits and included the following categories: an increased

awareness of social justice issues, an increased sense of making a difference in the lives of people, making interpersonal connections, enjoyment of the work, experiencing adventures, benefits from working with the ARC, and learning many new things at the personal and professional level, as well as about the ARC. Domain 7 was physical stressors and included preexisting health conditions, demands of the physical environment, diet, financial concerns, exhaustion, illness, and disorganization within the ARC as an organization. Domain 8 was psychological stressors including feeling they do not have enough resources to be helpful, feelings of distress, exposure to traumatic events, organizational problems, the unpredictability of disaster settings, the impact that the disaster work can have on interpersonal relationships, and the politics of working with a large organization. Domain 9 was coping during the event, and included the following categories: keeping busy, maintaining a support system, taking care of their physical needs, setting limits, taking breaks, reading and journaling, being flexible, and having a resilient personality. Domain 10 was coping after return, and included taking a break, taking care of themselves physically, resuming their regular routine, reading, and receiving support from others.

While some of the stressors mentioned by the participants could be classified as symptoms of secondary traumatic stress, particularly the distress and exposure to trauma categories, it seemed that all of the participants were coping well and did not have long-term effects from the work. This may be due to their coping strategies. It may also be a result of their motivation and perceived benefits of the work, which may have acted as a buffer against any stressors. A primary strength of this study is in the in-depth dialogue about the volunteers' experiences as disaster mental health responders. In addition, the

data, though qualitative in nature, were analyzed in a systematic way to avoid bias. However, the sample size was small, which may not have allowed the data to reach saturation. It may be helpful in future studies to use a mixed methods approach to determine the mental health impacts with both quantitative and qualitative methods in order to increase generalizability and gain more in-depth insight into volunteers' experience.

Summary. The previous research examined the negative impacts of disaster work on disaster responders and disaster mental health workers. One strength of the previous research with disaster responders is the moderate to high response rates with returned surveys. In some cases, all of the participants responded. Another strength of the previous studies is the large sample sizes. Many of the studies included hundreds to thousands of participants. However, a large limitation of the studies is that they were self-report in nature. Participants may have answered the questionnaires by choosing socially desirable answers, underestimating their responses, or overestimating their responses. In addition, there may have been statistically significant differences between those who chose to respond to the surveys and those who did not, making it difficult to generalize the results. Also, many of the studies examined the mental health impacts on disaster responders after the disaster. Only one study examined pre- and post- deployment mental health symptoms. Without the baseline measure, it is difficult to determine whether the effects were due to the disaster response or if they were present beforehand. Finally, none of the studies with disaster responders used validated measures of secondary traumatic stress. They used measures of PTSD or general mental health instead. While these instruments

are valid measures, it is questionable whether they measure the construct of secondary traumatic stress.

Currently there is a dearth of empirical research related to secondary traumatic stress in disaster mental health workers. Many of the articles examining secondary traumatic stress in disaster mental health workers were anecdotal in nature, expressing participants' own reflections on the work. Others were qualitative in nature, but did not describe the analysis of the data, making it uncertain from where the themes were developed. Most of the studies did not use psychometrically validated instruments of secondary traumatic stress. Only four studies quantitatively examined the construct of secondary traumatic stress in disaster mental health workers; of those, only two used psychometrically validated measures of secondary trauma. Strengths of those two studies include a high response rate (80-100%). Additionally, one of the studies used a longitudinal approach and examined secondary traumatic stress both before and after deployment, allowing any changes to be attributable to the deployment. However, in both of the empirical studies, the sample sizes were small, making it difficult to generalize the results. In addition, all of the studies were self-report, and participants may have responded in a socially desirable manner.

Positive Mental Health Impacts of Secondary Exposure to Trauma

In disaster mental health and trauma work in general, there is often a focus on negative mental health symptoms. More recently, however, the focus has begun to shift towards the positive mental health impacts on vicarious exposure to trauma. Clinicians and disaster relief workers can experience great satisfaction in their work. Posttraumatic growth is one term that has been used to describe these positive mental health effects.

Posttraumatic growth. The idea that meaning can be found in tragedy is not a new one. The positive impacts of traumatic events can be found throughout religious traditions and ancient philosophy. Viktor Frankl (1984) addressed the idea of suffering producing meaning in *Man's Search for Meaning*: "What is to give light must endure burning" (p. 1). However, systematically researching the positive impacts of traumatic events is relatively new. Tedeschi and Calhoun (1996) were the first to identify the concept of posttraumatic growth. They described it as a cognitive process that occurs after a traumatic event. The traumatic event disrupts one's basic assumptions about the world and causes anxiety and pain. In some cases, people are able to rebuild their lives in a way they would consider to be superior, by creating more meaning in their lives, appreciating their strength, and with a greater ability to cope with traumatic events. Survivors of traumatic events "…develop beyond their previous level of adaptation, psychological functioning, or life awareness, that is, they have grown" (Tedeschi, Park, & Calhoun, 1998, p. 3). People can develop this growth, even while feeling distress, and as such, PTSD and posttraumatic growth are often related and can occur together. Indeed, posttraumatic growth may not occur without some symptoms of PTSD; however, as posttraumatic growth increases, PTSD symptoms tend to decrease (Dyregrov, Kristoffersen, & Gjestad, 1996; Linley & Joseph, 2006; Bhushan & Kumar, 2012; James, Noel, & Jean-Pierre, 2014).

Calhoun and Tedeschi (2006) identified five domains of posttraumatic growth: personal strength, new possibilities, relating to others, appreciation of life, and spiritual change. For personal strength, people tend to find that they are stronger than they had previously believed. They identified that they had survived a major life challenge, were

tested by the event, and able to overcome it. Included with an increased sense of strength is an increased sense of vulnerability in the world. The assumption that the world is a safe place is disrupted and people who experience traumatic events tend to view the world as dangerous and unpredictable. Yet, despite the increased vulnerability, people feel that they are strong enough to cope with the danger. Within the new possibilities domain, there is an indication that people tend to develop new interests, new activities, or even new careers as a result of the traumatic event. For example, someone who experienced a natural disaster may begin to volunteer with the American Red Cross. For the relating to others domain, survivors of traumatic events may feel a greater sense of compassion and connectedness towards other people, especially other people who have suffered. This may lead to an increase in altruistic acts. Survivors of traumatic events may also feel a greater sense of freedom to be themselves, disclosing information about themselves that may be socially undesirable. This may lead to a greater sense of intimacy or closeness to others. In terms of the appreciation of life domain, survivors of trauma may become more appreciative of the small things in life. Priorities change and a greater sense of gratitude ensues. People may value priorities that are intrinsically important, such as relationships, rather than priorities that are extrinsically important, such as making a lot of money. For the spiritual change domain, some survivors of trauma experience existential or spiritual changes. The traumatic event may lead to the answers of existential questions and deeply meaningful spiritual elements; although for some people it leads to a loss of spirituality or a sense of despair.

Posttraumatic growth has been described as one aspect of resilience. Lepore and Revenson (2006) identified three facets of resilience: recovery, resistance, and

reconfiguration. Recovery is defined as the resumption of normal functioning; the more resilient that survivors of a traumatic event are, the more quickly they will resume their normal functioning. Resistance is described as those who maintain normal functioning before the traumatic event, during the event, and after the event; that is, they do not exhibit distress due to the traumatic event. The authors maintain that this is a resiliency, not a pathological way to cope, as is commonly believed. Reconfiguration is most closely related to posttraumatic growth. This aspect of resilience is described as not only resuming normal functioning after a traumatic event, but adapting due to the event. Changes may be found in beliefs, cognitions, and behaviors. While posttraumatic growth is identified as positive changes as a result of traumatic events, reconfiguration can lead to both negative and positive changes. Other researchers have identified that posttraumatic growth is distinct from resilience, in that resilience is defined as a return to prior levels of functioning, whereas posttraumatic growth is described as increased healthy levels of functioning (Clay, Knibbs, & Joseph, 2009).

Posttraumatic growth has been found in survivors of many traumatic events including people receiving a cancer diagnosis (Stanton, Bower, & Low, 2006); bereavement (Znoj, 2006); civilian survivors of war (Rosner & Powell, 2006); receiving an HIV/AIDS diagnosis (Milam, 2006); Holocaust survivors (Lev-Wiesel & Amir, 2006); and adverse events affecting children (Kilmer, 2006). There is also evidence of posttraumatic growth after childbirth (Sawyer et al., 2012); with parents of children with chronic illnesses (Hungerbuehler, Vollrath, & Landolt, 2011); men with a history of childhood sexual abuse (Easton et al., 2013); refugees (Ssenyonga, Owens, & Olema, 2013; Kroo & Nagy, 2011; Hussain & Bhushan, 2011); individuals with infertility

difficulties (Paul et al., 2010); and urban female adolescents who experienced traumatic events in their lives (Ickovics et al., 2006). There is some evidence that posttraumatic growth can be experienced vicariously as well, including among wives of Vietnam veterans (McCormack, Hagger, & Joseph, 2011); funeral workers (Linley & Joseph, 2005); and interpreters working with refugees in a therapeutic setting (Splevins et al., 2010; Miller et al., 2005).

Vicarious posttraumatic growth has been found among mental health workers. Mental health workers at a residential treatment facility for traumatized children and adolescents reported changes in their self-perception, interpersonal relationships, and philosophy of life as a result of their work; however, many participants also described the negative effects of their work (Hyatt-Burkhart, 2013). Trauma therapists with higher cumulative levels of vicarious trauma exposure, sense of coherence (one's view of the world as a manageable and meaningful place), and empathy reported higher levels of posttraumatic growth (Brockhouse, Msetfi, Cohen, & Joseph, 2011; Linley & Joseph, 2007). Therapists working with war and torture survivors reported small to moderate levels of posttraumatic growth, with many who had experienced prior traumas reporting an increased ability to find meaning in the traumatic experiences of their clients (Kjellenberg, Nilsson, Daukantaite, & Cardena, 2014). Social workers who felt that their work was valued by others in the workplace, society, or the media reported increased levels of posttraumatic growth, as well as higher levels of job satisfaction and lower levels of burnout (Gibbons, Murphy, & Joseph, 2011).

A metasynthesis of qualitative articles by Cohen and Collens (2013) found four themes related to how trauma workers experienced vicarious trauma reactions including:

1) emotional and somatic reactions to trauma work (sadness, anger, helplessness, fear, numbness, nausea, detachment, etc.); 2) coping with the emotional impact of trauma work (managing workload, diversifying work to include various roles, peer support, supervision, social support from family and friends, self-care activities, personal therapy, spirituality, seeing work as meaningful, optimism, humor, etc.); 3) the impact of trauma work-related changes to schemas and behavior (engaging in existential meaning-making processes, questioning themselves and their identities, both positive and negative changes in beliefs and attitudes about the world, changes in views about the safety of the world, mistrust of others, increased beliefs in the resilience of people, increased appreciation of life, increased compassion and acceptance of others, increased humility, increased value of their profession, both positive and negative changes in their family life and roles as parents, both positive and negative changes in their social relationships, etc.); and 4) the process of schematic change and relating factors (witnessing their clients' growth facilitated therapist growth, increased experience and time led to less distress, positive changes occurring alongside distress, etc.). Trauma workers have been found to experience negative reactions including intrusive thoughts and images of clients' trauma; sadness; anger; fear; avoidance; physical exhaustion or pain; and concerns about their effectiveness as therapists, as well as positive reactions including changes in personality such as increased sensitivity, compassion, insight, tolerance, and empathy; increased appreciation for human resiliency; increased optimism; increased motivation to live a fuller life; and positive changes to spirituality (Arnold, Calhoun, Tedeschi, & Cann, 2005).

Several factors have been identified as being important in increasing vicarious posttraumatic growth in therapists. Increased posttraumatic growth was found when therapists engaged in their own personal therapy, participated in supervision, had a personal trauma history, were women, identified their theoretical orientation as transpersonal or humanistic rather than cognitive-behavioral, had spent less time working as a therapist, and had a greater number of hours per week spent with clients (Linley & Joseph, 2007). Therapists also reported greater posttraumatic growth when they demonstrated greater empathy, had a stronger therapeutic bond, and increased social support (Linley & Joseph, 2007).

Personality factors that seem to facilitate posttraumatic growth include having an internal locus of control, cognitive and self-complexity, dispositional optimism, dispositional hope, and personality traits such as extroversion and openness to experience (Tennen & Affleck, 1998). An internal locus of control is defined as finding rewards for one's behavior that are from internal sources, such as one's own resiliency or strength during a traumatic event. Those with an internal locus of control may be able to more quickly gain meaning from traumatic events. Cognitive complexity is defined as the ability to pursue alternative goals and maintain flexibility when faced with adverse events. People who have cognitive complexity tend to redefine traumatic events as opportunities. Self-complexity is defined as the number of discrete identity roles people have in their self-representation. It has been found that those with a high number of positive identity roles tend to report greater psychological adjustment after a traumatic event (Tennen & Affleck, 1998).

Dispositional optimism is another factor that increases the development of posttraumatic growth. It is defined as "[T]he generalized expectancy for positive outcomes" (Tennen & Affleck, 1998, p. 68). People who use dispositional optimism tend to use more positive coping strategies such as positive reframing, finding benefits in the traumatic situation, and being more active problem-solvers. It has also been found that people who are higher in optimism tend to be more flexible in their coping strategies (Prati & Pietrantoni, 2009). Dispositional hope is similar to dispositional optimism in that they both are defined by the expectancy that one's goals can be achieved; however, dispositional hope also includes the idea that one is able to imagine ways of attaining those goals.

There has been some evidence that the Big Five personality traits (Costa & McCrae, 1992) also contribute to posttraumatic growth. Tedeschi and Calhoun (1996) examined personality characteristics as they related to posttraumatic growth and found that higher scores in extroversion, openness, agreeableness, and conscientiousness correlated with higher levels of posttraumatic growth. Extroversion in particular was found to be the biggest predictor of posttraumatic growth due to an increased ability of those high in extroversion to find benefits in adverse situations, as well as improved relationships. Those higher in openness tended to score higher in areas related to new possibilities after adverse events.

Social support has also been shown to be an important component of posttraumatic growth. Research has shown that those who are in committed relationships or married are more likely to experience posttraumatic growth (Ho et al., 2011). Breast cancer survivors found support by participating in a Dragon boating team with other

breast cancer survivors, which contributed to an increased sense of posttraumatic growth (McDonough, Sabiston, & Ullrich-French, 2011). Secure attachment styles have been found to be positively associated with posttraumatic growth in cancer survivors and political prisoners due to the increased ability of those with secure attachment styles to engage in coping strategies such as positive reframing and religion (Schmidt, Blank, Bellizzi, & Park, 2012; Salo, Qouta, & Punamaki, 2005). It has been shown that social support and seeking social support is important in posttraumatic growth due to greater support leading to increased meaning-making, more use of coping skills, and higher levels of spirituality (Prati & Pietrantoni, 2009). However, the results of the impact of social support on posttraumatic growth are mixed (Linley & Joseph, 2004).

The relationship between religiosity and spirituality has been found to be important in posttraumatic growth. A meta-analysis determined that religious coping and positive reappraisal coping were strongly associated with posttraumatic growth, while spirituality was moderately associated with posttraumatic growth (Prati & Pietrantoni, 2009). Gerber, Boals, and Schuettler (2011) found that positive religious coping was positively associated with posttraumatic growth, while negative religious coping was associated with posttraumatic stress disorder. Positive religious coping is associated with increased meaning-making after traumatic events and includes activities such as seeking religious/spiritual support and benevolent reappraisal. Negative religious coping includes demonic reappraisal, spiritual discontent, blaming God, and a questioning of God, justice, and life purpose. Negative religious coping strategies can lead to increased meaning-making if people are able to create new life philosophies as a result of the questioning. Religion and spirituality have been found to be important in forgiveness of perpetrators,

particularly in the Relating to Others scale (Schultz, Tallman, & Altmaier, 2010); that is, forgiveness was mediated by spirituality in terms of posttraumatic growth. Benevolence towards the perpetrator in particular was related to increased posttraumatic growth on the Relating to Others subscale.

Several variables such as gender and race have been shown to have an impact on posttraumatic growth. Researchers examined gender differences in posttraumatic growth and found a moderate difference, with females reporting more posttraumatic growth than males (Vishnevsky, Cann, Calhoun, Tedeschi, & Demakis, 2010; Schuettler & Boals, 2011). Race is also important in posttraumatic growth, with those in minority racial groups reporting greater posttraumatic growth than Whites, perhaps due to a greater exposure to adverse events or differences among racial groups in how they perceive posttraumatic growth (Helgeson, Reynolds, & Tomich, 2006). African Americans tended to report increased levels of posttraumatic growth compared to Whites (Schuettler & Boals, 2011). Marital status, age, and socioeconomic status have been inconsistently related to posttraumatic growth (Linley & Joseph, 2004; Stanton et al., 2006).

Some characteristics of the traumatic event have been indicated in posttraumatic growth, including time since the event, perceived threat, and the centrality of the traumatic event. Posttraumatic growth occurs more frequently when a longer period of time has elapsed since the event (Helgeson, Reynolds, & Tomich, 2006). This is due to an increased amount of time for people to process the events and in turn, create new cognitive appraisals of the event, which is an important aspect of posttraumatic growth. In addition, there has been some evidence that the greater the perceived threat of the traumatic event, the greater the posttraumatic growth due to a greater challenge to an

individual's beliefs about the world that require reappraisal after the event (Calhoun & Tedeschi, 2006). Centrality of event, defined as "the degree to which an individual believes a negative event has become a core part of their [sic] identity" (Boals, 2010, p. 107) has also been found to be mixed in its impact on posttraumatic growth. Groleau et al. (2013) found that centrality of events predicted posttraumatic distress, but not posttraumatic growth; whereas other researchers have found centrality of events to be predictive of both PTSD and posttraumatic growth, depending on the coping style used (Schuettler & Boals, 2011; Boals & Schuettler, 2011).

Posttraumatic Growth and Disaster Relief Workers

The above research on the positive impacts of secondary exposure to trauma did not examine posttraumatic growth specifically in disaster relief workers. The next sections will review the research related to posttraumatic growth in disaster responders and disaster mental health workers.

Posttraumatic growth in disaster responders. Although there is a dearth of research related to the negative mental health impacts on disaster relief workers, there is even less research devoted to the positive mental health impacts on disaster relief workers. The following research will look at disaster responders including rescue and recovery workers, professional responders, and volunteer responders. A summary of the research studies on posttraumatic growth in disaster responders is summarized in Table 3.

Table 3. Studies on Posttraumatic Growth in Disaster Responders

Source	**Design and Participants**	**Instruments Used**	**Results**
Raphael, Singh, Bradbury, & Lambert (1983-1984)	Survey given to 96 responders of a commuter train accident in Australia immediately after the response; 13 responders were interviewed at a one year follow-up	A questionnaire created for the study with questions including the occurrence of unhappy memories caused by the disaster, worrying memories of the disaster, bad dreams, and other effects of the disaster; ratings of their amount of strain and whether the effects were experienced in the short term (less than one week) or long term (up to a month); at follow-up were interviewed regarding any mental health consequences and completed the General Health Questionnaire	35% of participants reported feeling more positive about their own lives as a result of the response; they reported several negative mental health impacts such as feelings of helplessness, shock at the magnitude of the disaster, horror at the death and injuries they saw, sympathy towards and identification with the victims or relatives of the victims, depression, anxiety, sleep disturbances, and feelings of stress due to the need to work quickly so that they could save the lives
Dyregrov, Kristoffersen, & Gjestad (1996)	Questionnaires given to voluntary and professional responders of a bus accident in Norway both at one month after the incident (N = 56) and thirteen months follow-up (N = 50)	At one month: a demographics questionnaire; questions related to disaster work history; questions related to reactions following the disaster; the Impact of Events Scale At 13 months: an evaluation of the help they received after the disaster; questions about length of time before returning to normal; difficulties functioning; changes in their view of life following the disaster; a list of coping statements; the Impact of Events Scale; the General Health	The majority of disaster responders felt greater strain in the work than they had experienced in the past; however, the majority of the responders also felt that they had fully recovered from the work within one week of the disaster; identified several symptoms of secondary traumatic stress at one month and 13 months; identified posttraumatic growth symptoms of good cooperation among the responders at one month and an increased need to be close to loved ones and a discovery of strengths

		Questionnaire	in oneself at 13 months; negative reactions tended to be greater in voluntary versus professional responders; the long-term impact of the event for both groups was low
Linley & Joseph (2006)	Questionnaires given to 56 disaster responders who were employed part time by a British disaster management company and 6 months later (*N* = 31)	All questionnaires were given initially and at follow-up and included questions related to their occupational death exposure; the Death Attitudes Profile-Revised; their subjective appraisal of feelings of fear, horror, and helplessness; the Crisis Support Scale; the Posttraumatic Growth Inventory; the Changes in Outlook Questionnaire	Posttraumatic growth was tied to increased levels of fear, horror, helplessness, and intrusion symptoms; relationship between fewer negative impacts and increased levels of social support, having a neutral death attitude, and not having a death avoidant attitude
Bhushan & Kumar (2012)	Questionnaires given to 20 female relief volunteers working for one year in the coastal area of India four years after the Indian Ocean tsunami in 2004	Demographic information; the Impact of Events Scale; the Posttraumatic Growth Inventory; the Proactive Coping Inventory; the Dissociative Experiences Scale; three questions related to counterfactual thoughts	Dissociative symptoms and proactive coping played a role in posttraumatic growth; symptoms of posttraumatic stress and posttraumatic growth were concordant, and high levels of distress did not negate the effects of posttraumatic growth

Raphael, Singh, Bradbury, and Lambert (1983-1984) examined the negative mental health impacts of responders working on the Granville rail disaster in Australia wherein a commuter train derailed and was crushed by an overhead bridge. Participants in the study included 96 responders to the disaster in the areas of rescue and organization, support, and medical. Participants were asked to fill out a questionnaire created for the study that included questions regarding the occurrence of unhappy memories caused by the disaster, worrying memories of the disaster, bad dreams, and other effects of the disaster. Participants rated their amount of strain on a scale of 0 (*no strain*) to 3 (*extreme strain*). They also rated whether the effects were experienced in the short term (less than one week) or long term (up to a month). One year after the disaster, 13 participants were further interviewed regarding the mental health consequences of the disaster response, as well as asked to complete the General Health Questionnaire (GHQ; Goldberg, 1978).

While the participants described several negative mental health impacts from the disaster response such as feelings of helplessness, shock at the magnitude of the disaster, horror at the death and injuries they saw, sympathy towards and identification with the victims or relatives of the victims, depression, anxiety, sleep disturbances, and feelings of stress due to the need to work quickly to save lives, 35% of participants reported feeling more positive about their own lives as a result of the response, indicating that they experienced some posttraumatic growth. A primary strength of this study is that it included several different types of disaster responders including areas of rescue and organization, support, and medical. It is also one of the first research studies to investigate the mental health impacts of disaster responders and identify that a positive change can occur. However, there were several limitations of the study. The researchers

did not specifically address posttraumatic growth or use validated measures to examine posttraumatic growth or symptoms of secondary traumatic stress. The questionnaire used in the study was developed for the study and no psychometric data was available. The study was also conducted using self-report methods, which reduces the generalizability of the results. Participants self-selected to take part in the study and those who self-selected may be statistically different from those who chose to participate. In addition, the researchers estimated a 50% response rate, but were unable to give the exact response rate.

Another research study examined differences in mental health symptoms between professional disaster responders and voluntary disaster responders, hypothesizing that there would be less negative mental health impacts for those who are professionals as they are more likely to have had formal training in disaster response (Dyregrov, Kristoffersen, & Gjestad, 1996). This research examined the mental health impacts of professional and voluntary disaster responders following a bus accident in Norway where several people were killed and injured. Participants completed questionnaires one month following the incident and thirteen months following the disaster. Fifty-seven participants completed the questionnaires at one month, with questionnaires including a demographics questionnaire, questions related to their disaster work history, questions related to their reactions following the disaster, and the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979) to assess for symptoms of posttraumatic stress disorder. Fifty participants completed the follow-up questionnaires 13 months post-disaster, with questionnaires including an evaluation of the help they received after the disaster; questions about length of time before returning to normal; difficulties

functioning; changes in their view of life following the disaster; a list of coping statements; the IES; and the General Health Questionnaire (GHQ; Goldberg, 1978). The IES was the only instrument that was completed both at one month and at 13 months.

Results showed that the majority of disaster responders felt greater strain in the work than they had experienced in the past (81% voluntary responders, 56% of professional responders); however, the majority of the responders also felt that they had fully recovered from the work within one week of the disaster (54% voluntary responders, 90% professional responders). One month after the disaster, the responders identified many negative feelings experienced during the disaster, including irritation at the media, helplessness, hopelessness, frustration caused by waiting, unreality, restlessness and worry, exhaustion, difficulties making decisions, concentration difficulties, and fear/anxiety, as well as the positive experience of good cooperation among the responders. Thirteen months following the disaster, the responders identified several negative feelings including worry about family, general worry, sadness, fear of travelling by bus, crying/wanting to cry, difficulties stopping talking about the disaster, expectations of a new disaster, unexpressed reactions, sleep disturbances, increased startle response, concentration difficulties, and difficulties with their family not understanding, as well as positive outcomes of an increased need to be close to loved ones and a discovery of strengths in oneself. In general, negative reactions tended to be greater in voluntary versus professional responders. Voluntary responders also tended to have increased reports of posttraumatic stress symptoms of intrusion and avoidance at one month, though only avoidance symptoms were higher at 13 months. Both groups reported decreased posttraumatic stress symptoms at 13 months than at 1 month. The

GHQ also indicated that the long-term impact of the event for both groups was low. A major strength of this study is that it was the first to examine differences between voluntary responders and professional responders. It also had a relatively high response rate, with many participants responding both at one month and at follow-up 13 months later. In addition, the researchers used a longitudinal approach which allowed for an examination of symptoms over time. A limitation of this study is the self-report nature of the research, which may lead to socially desirable responses. Participants who self-selected to participate in the study may score significantly different on the measures than those who chose not to participate. Also, while the study was longitudinal, it did not assess the participants prior to the response; therefore, it is difficult to conclude that the impacts were a result of the disaster response or pre-existing conditions. In addition, this study did not use psychometrically sound instruments to measure posttraumatic growth or secondary traumatic stress. Indeed, the study seemed to examine negative mental health reactions of responders, and the result of responders experiencing increased strength after the disaster is vague and without great detail.

Linley and Joseph (2006) examined both positive and negative effects of disaster work on disaster responders. Participants included 56 disaster responders who were employed part time by a British disaster management company. Participants were asked questions related to their occupational death exposure that assessed their exposure to dead bodies and professional work with the deceased; the Death Attitudes Profile-Revised (DAP-R; Wong et al., 1994) to assess for approach acceptance, fear of death, death avoidance, escape acceptance, and neutral acceptance; their subjective appraisal of feelings of fear, horror, and helplessness; the Impact of Events Scale (IES; Horowitz,

Wilner, & Alvarez, 1979) to measure symptoms of posttraumatic stress disorder including intrusion and avoidance; the Crisis Support Scale (CSS; Joseph, Andrews, Williams, & Yule, 1992) to assess for social support (practical and emotional); the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) to measure posttraumatic growth; and the Changes in Outlook Questionnaire (CiOQ; Joseph, Williams, & Yule, 1993) to address positive and negative changes in outlook following the disaster response. Thirty-one responders completed follow-up questionnaires six months later. Results indicated that posttraumatic growth was tied to increased levels of fear, horror, helplessness, and intrusion symptoms, providing evidence that the greater the distress, the greater the levels of posttraumatic growth. Researchers also found a relationship between fewer negative impacts over time and increased levels of social support, having a neutral death attitude, and not having a death avoidant attitude. One strength of this study is that it is the first to examine posttraumatic growth as a variable in and of itself, rather than as an adjunct to assessment of negative impacts. It also is the first to use the PTGI, a psychometrically sound inventory, to assess for posttraumatic growth in disaster responders. In addition, this study used a longitudinal methodology that is helpful in determining changes in posttraumatic growth over time. One limitation of the study is the small sample size and self-selection into the study, both of which reduces the generalizability of the results and the statistical power. In addition, the study used self-reported measures, which may be influenced by social desirability. While the study is longitudinal in nature, data were not collected until after the response, making it difficult to attribute the reactions to the disaster response instead of pre-existing conditions.

Most recently, researchers examined posttraumatic stress and posttraumatic growth in relief volunteers after the Indian Ocean tsunami in 2004 (Bhushan & Kumar, 2012). Participants included 20 female relief volunteers working for one year with nongovernmental organizations and charitable trusts operating in the coastal area of India. Data were collected four years after the tsunami. Participants completed questionnaires including demographic information, the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979) to assess for posttraumatic stress symptoms; the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) to assess for posttraumatic growth; the Proactive Coping Inventory (PCI; Greenglass, Schwarzer, & Taubert, 1999) to assess for proactive coping; and the Dissociative Experiences Scale (DES-II; Carlson & Putnam, 1993) to measure dissociative experiences. In addition, the participants were asked three questions related to counterfactual thoughts (White & Lehman, 2005), described as the interpretation of "painful events in a way that is easier to accept" (Bhushan & Kumar, 2012, p. 114) and found to be a factor in symptoms of posttraumatic stress (El Leithy, Brown, & Robbins, 2006). Results indicated that dissociative symptoms play a role in posttraumatic growth. They also showed that proactive coping was important in posttraumatic growth. In addition, the study showed that symptoms of posttraumatic stress and posttraumatic growth are concordant, and high levels of distress do not negate the effects of posttraumatic growth. Indeed, distress appears to be a necessary component of posttraumatic growth. One strength of this study is that it examined posttraumatic growth using psychometrically sound measures. Some limitations of the study include the small sample size, which reduces generalizability, and the long period of time between the occurrence of the disaster and the data collection.

The participants self-selected to participate in the study, and those who chose to participate may be statistically different from those who did not.

Posttraumatic growth in disaster mental health workers. Many studies have examined the negative mental health impacts on disaster mental health workers (e.g. Berah, Jones, & Valent, 1984; Eidelson, D'Alessio, & Eidelson, 2003; Dass-Brailsford & Thomley, 2012). In more recent years, researchers have begun to look at the positive mental health impacts in disaster mental health workers. A summary of the research studies on posttraumatic growth in disaster mental health workers is summarized in Table 4.

Table 4. Studies on Posttraumatic Growth in Disaster Mental Health Workers

Source	**Design and Participants**	**Instruments Used**	**Results**
Lambert and Lawson (2013)	Surveyed 125 disaster mental health workers in the American Counseling Association (ACA) who responded to Hurricanes Katrina, Rita, Ike, and Gustov and compared results with general members of the ACA	The Professional Quality of Life Scale Revision III; the Posttraumatic Growth Inventory; the K6+; a brief self-care assessment; a demographics questionnaire	0.9% of respondents scored above the cutoff for severe mental illness; 10.4% of respondents reported symptoms of moderate mental illness; 9.2% of participants no longer felt satisfaction with their work; 9.9% reported a higher risk of burnout that was affecting their work; 22% of participants reported decreased empathy for their clients or increased PTSD symptoms; compassion fatigue was more than double for the disaster mental health workers than for general ACA members; more posttraumatic growth was found with those who were both survivors and responders of the hurricanes than those who were only responders; participants who reported engaging in fewer self-care practices reported increased nonspecific mental illness
James, Noel, & Jean Pierre (2014)	Surveyed 8 lay mental health workers after the earthquake in Haiti in 2010; participants were assessed 4 to 6 times during their 18 months of work, as well as	The Harvard Trauma Questionnaire (completed 6 times); the Professional Quality of Life Scale Version 5 (completed 5	Symptoms of posttraumatic stress disorder decreased over time; high compassion satisfaction, low burnout, and high posttraumatic growth scores

	prior to training	times); the Posttraumatic Growth Inventory (completed 4 times); an open-ended, 10-item questionnaire that assessed for emotional and psychological effects of the disaster work	
Bauwens and Tosone (2010)	Mailed surveys to 481 clinicians (38% response rate) who lived and worked in New York City 6 years following the terrorist attacks of 9/11	Demographic questions; two open-ended questions	Six themes of clinicians' experiences of September 11, including negative changes in clinicians' experiences following 9/11; past trauma that impacted clinicians' experiences of 9/11; trauma responses; blurred roles; professional and clinical growth; professional pain that occurred when thinking about 9/11

Lambert and Lawson (2013) focused on the potential positive mental health impacts of disaster mental health work including posttraumatic growth. Participants included those who were identified by the American Counseling Association (ACA) as having responded to hurricanes in the U.S. including Hurricanes Katrina, Rita, Ike, and Gustov, along with those who were members of the ACA trauma-interest network and those who lived in Texas, Louisiana, and Mississippi. Participants (N = 125) completed an online survey that included five questionnaires: the Professional Quality of Life Scale Revision III (ProQOL-R-III; Stamm, 2005) which measures compassion satisfaction, burnout, and compassion fatigue/vicarious traumatization; the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) which measures the positive outcomes of a traumatic event; the K6+ (Kessler et al., 2003) which measures nonspecific psychological distress and screens for mood disorders and severe mental illness; a brief self-care assessment that was not identified; and a demographics questionnaire. Researchers then compared the results of these questionnaires with other national studies that used the same questionnaires.

The researchers found that 0.9% of respondents scored above the cutoff for severe mental illness and 10.4% of respondents reported symptoms of moderate mental illness. These percentages were found to be comparable to survivors of Hurricane Katrina. They also found that on the Compassion Satisfaction Scale, 9.2% of participants no longer felt satisfaction with their work. On the Burnout Scale, 9.9% reported a higher risk of burnout that was affecting their work. On the Compassion Fatigue/Vicarious Traumatization Scale, 22% of participants reported decreased empathy for their clients or increased PTSD symptoms. The percentages on the Compassion Satisfaction and Burnout Scales

were comparable to those found in ACA members in general. However, the rates on the Compassion Fatigue/Vicarious Traumatization Scale were more than double for the disaster mental health workers than for general ACA members, which was a statistically significant difference. In terms of posttraumatic growth, there was a statistically significant difference between those who were both survivors and responders of the hurricanes and those who were only responders, with those who were both survivors and responders reporting higher posttraumatic growth scores. Finally, there was a modest positive relationship between self-care and compassion satisfaction and a modest negative relationship between self-care and burnout. Participants who reported engaging in fewer self-care practices also reported increased nonspecific mental illness. Strengths of this study include the use of validated measures of secondary traumatic stress and posttraumatic growth. However, the study did not provide a response rate, and participants self-selected into the study, which reduces the generalizability. The researchers did not name the self-care assessment that they used. It is also unclear how the data were collected for the comparison group of general ACA workers.

Another study researched the mental health impacts on Haitian lay mental health providers after the earthquake in Haiti in 2010 (James, Noel, & Jean Pierre, 2014). These mental health providers had no prior mental health training or experience, but rather were trained to implement psychological interventions by professional mental health workers in the aftermath of the disaster. Participants were eight lay mental health workers who were asked to complete three inventories including the Harvard Trauma Questionnaire (HTQ; Mollica et al., 1992) to assess for posttraumatic stress disorder symptoms; the Professional Quality of Life Scale Version 5 (ProQOL-5; Stamm, 2009) to assess for

compassion fatigue, compassion satisfaction, and burnout; and the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) to assess for positive mental health outcomes; as well as an open-ended, 10-item questionnaire that assessed for emotional and psychological effects of the disaster work. They completed the HTQ six times during 18 months of work, the ProQOL-5 five times, and the PTGI four times. Results indicated that symptoms of posttraumatic stress disorder decreased over time. They also showed high compassion satisfaction, low burnout, and high posttraumatic growth scores. A strength of this study was in the longitudinal approach. Participants were assessed four to six times during an 18 month period, as well as prior to their training. This allows for some inference of causality. However, the sample size was very small, allowing for little ability to generalize the results. The participants were also Haitian survivors of the disaster themselves, which may have impacted the results. Additionally, the instruments were not validated for use with the Haitian population.

Bauwens and Tosone (2010) also examined posttraumatic growth in clinicians working in New York City after the terrorist attacks of 9/11. Participants included 481 clinicians (38% response rate) who lived and worked in New York City following the terrorist attacks of 9/11. Participants were asked to respond to mailed in surveys including demographic questions and two open-ended questions, one of which was the focus of the study. Using qualitative methodology, researchers identified six themes of clinicians' experiences of September 11, including negative changes in clinicians' experiences following 9/11; past trauma that impacted clinicians' experiences of 9/11; trauma responses; blurred roles; professional and clinical growth; and professional pain that occurred when thinking about 9/11. Results suggested that the events of 9/11 caused

a mix of secondary traumatic stress symptoms and posttraumatic growth symptoms, “a paradoxical experience where growth and pain coexist” (p. 511). One strength of this study was in the use of a primary coder who was blind to the quantitative results of the study, thus decreasing the bias in the qualitative analysis. One major limitation of this study is that it did not use qualitative methods that allowed for data saturation. There were only two coders who may have been biased as to the results, and they did not use an auditor. In addition, the response rate was low (38%), and there may be statistical differences between those who chose to respond to the survey and those who did not. The data for the study were collected 6 years after the disaster, which may also have impacted the results. In addition, the clinicians were not technically disaster mental health volunteers, but rather were mental health clinicians working in New York after the attacks. Thus, they were also survivors of the disaster, which may have impacted the results.

Summary. Research in the area of posttraumatic growth in disaster responders is a relatively new area of study. Some strengths of the studies using disaster responders include the examination of secondary traumatic stress and posttraumatic growth together, as well as the use of longitudinal methods that allow for the examination of symptoms over time. In some of the research, posttraumatic growth had to be inferred from the results, as a validated measure of posttraumatic growth was not used. However, more recent research has begun to examine posttraumatic growth using validated measures. One major limitation of the research, as with all survey research, is the self-selection of participants who might be statistically different from those who chose not to respond, as well as the possibility of participants responding in a socially desirable manner.

The quantitative and qualitative research on posttraumatic growth in disaster mental health workers is almost non-existent. Of the research that is available, only one study uses actual disaster mental health volunteers who were deployed on a disaster. The other studies used participants who were both survivors of the disaster and mental health providers to survivors.

Implications of Secondary Traumatic Stress and Posttraumatic Growth Literature

The prior research has shown that both secondary traumatic stress and posttraumatic growth can occur in disaster relief workers. In terms of secondary traumatic stress, it has been shown to be a concept similar to posttraumatic stress disorder, but with less intense symptoms that last for a shorter duration of time (Chrestman, 1995). Secondary traumatic stress has also been shown to be a concept related to, but distinctly different from vicarious traumatization, which addresses changes in cognitive beliefs rather than the posttraumatic stress symptoms of avoidance, intrusion, and arousal (Jenkins & Baird, 2002).

Several factors have been shown to be important in increased secondary traumatic stress including less social support and less self-care (Michalopoulos & Aparicio, 2012); less training or supervision (Williams, Helm, & Clemens, 2012; Pulido, 2007; Eidelson, D'Alessio, & Eidelson, 2003); and co-morbid mental health issues including depression, anxiety, panic, and alcohol use (Stellman et al., 2008; Simons et al., 2005; Davidson & Fairbank, 1993). The evidence for increased secondary traumatic stress in those with a personal trauma history has been mixed (Williams, Helm, & Clemens, 2012; Creamer & Liddle, 2005). The majority of studies have shown that increased exposure to trauma survivors leads to increased levels of secondary traumatic stress (Williams, Helm, &

Clemens, 2012; Bride et al., 2004; Brady et al., 1999; Chrestman, 1999; Schauben & Frazier, 1995; Lee, 1995; Arvay & Uhlemann, 1996). However, in the disaster context, the results of increased exposure to disaster survivors have been mixed, with some studies indicating little differences between those working with disaster survivors and those not working with disaster survivors (Long, Meyer, & Jacobs, 2007) and some studies showing increased exposure to survivors, more days on assignment, and percentage of time spent talking about the disaster with survivors leading to increased secondary traumatic stress (Adams, Figley, & Boscarino, 2008; Creamer & Liddle, 2005). There is some evidence that there is increased distress when disaster responders are working closer to the disaster site (Eidelson, D'Alessio, & Eidelson, 2003). There has been little to no evidence that age, ethnicity, or income levels are associated with secondary traumatic stress (Good, 1996; Knight, 1997; Munroe, 1990; Pearlman & MacIan, 1995). In the majority of studies with disaster relief workers, the incidence of secondary traumatic stress has been relatively small (Simons et al., 2005; van der Veldon et al., 2012; Dass-Brailsford & Thomley, 2012; Beckmann, 2012; Dyregrov et al., 1996).

In terms of posttraumatic growth, it has been shown that increased exposure to trauma survivors, a greater perceived threat, and increased distress all lead to increased posttraumatic growth (Brockhouse et al., 2011; Joseph & Linley, 2007; Linley & Joseph, 2007; Calhoun & Tedeschi, 2006; Linley & Joseph, 2006; Bauwens & Tosone, 2010). These results provide evidence that posttraumatic growth and secondary traumatic stress co-occur; indeed, it appears that in order for posttraumatic growth to occur, there must be distress, and the greater the distress, the greater the impact of the cognitive reappraisals necessary for posttraumatic growth. Providing further evidence for this idea, research has

shown that those with a personal trauma history have increased levels of posttraumatic growth (Linley & Joseph, 2007; Kjellenberg et al., 2014). Other factors that have been found to lead to increased posttraumatic growth are being female (Linley & Joseph, 2007; Vishnersky et al., 2010; Scheuttler & Boals, 2011); being in a committed relationship or married (Ho et al., 2011); positive religious coping/spirituality (Prati & Pietrantoni, 2009; Gerber, Boals, & Schuettler, 2011); and being in a minority racial group (Helgeson, Reynolds, & Tomich, 2006). The evidence for increased levels of social support leading to posttraumatic growth has been mixed (Linley & Joseph, 2007; Linley & Joseph, 2004; Prati & Pietrantoni, 2009; Linley & Joseph, 2006). Increased posttraumatic growth has been found to occur when the time since the disaster is greater (Helgeson et al., 2006). Self-care has been found to have a modest association with posttraumatic growth (Lambert & Lawson, 2013), and proactive coping strategies were found to lead to increased posttraumatic growth (Bhushan & Kumar, 2012).

Chapter 3: Methodology

Participant Recruitment

Upon approval from the University of Minnesota (UM) review board (see Appendix A), the recruitment process began. In April of 2014, an email was sent to the Disaster Program Officer or Volunteer Services Coordinator of 39 American Red Cross (ARC) regions or chapters across the United States requesting their willingness to recruit volunteers from their regions to participate in the study. Sixteen regions expressed an interest in forwarding the recruitment letter to volunteers in their region or chapter. On August 25, 2014, an email was sent to those contacts including the recruitment letter (see Appendix B). Contacts were asked to forward the recruitment letter to their volunteers via email. On September 15, 2014, another email was sent to the 39 regions or chapters asking them either to participate in the study or forward a follow-up recruitment letter to their volunteers (see Appendix C). On October 8, 2014, another round of recruitment emails was sent to an additional 88 ARC regions or chapters across the country. During the recruitment process, contact was made with one of the administrators of the ARC volunteer page on Facebook, which has over 1400 members. She agreed to post the recruitment letter on the Facebook page. Contact was also made with two Disaster Mental Health staff members at the ARC National Headquarters to further connect with volunteers; however, there was no response from these contacts about forwarding the recruitment letter. Because of the low number of responses by disaster mental health volunteers from these avenues, a Change in Protocol request was sent to and approved by the UM Institutional Review Board to broaden the recruitment process on November 4, 2014. The recruitment letters were posted on two listservs on November 11, 2014. The

first listserv was the American Psychological Association Division 56 Trauma listserv and the second was the American Counseling Association Traumatology Interest Network listserv. The recruitment process was broadened to these two groups because, when looking at the initial data, there were much fewer disaster mental health volunteers than disaster responders who completed the survey. The hope was that by focusing on these psychological organizations' listservs, this would increase the respondents in the disaster mental health area. The survey and data collection was closed on January 5, 2015.

The eligibility criteria for study participation included 1) being volunteers with the American Red Cross, 2) participation in a national disaster within the past five years, and 3) if a disaster mental health volunteer, they must be a licensed mental health professional. National disasters were defined as large disasters that exceed the resources of the local ARC chapter, and its volunteers are managed and supported by the ARC at a national level. The recruitment letter sent to participants included a description of the study, eligibility criteria for participation in the study, and a link to the survey, which was developed using an online survey tool (Qualtrics) that ensured participant anonymity (http://surveys.umn.edu/qualtrics-u-of-m). A summary of the recruitment and study participation can be found in Table 5.

Table 5. Recruitment and Participation

Started Survey	**Completed Survey**	**Met Inclusion Criteria/Survey Sample**
N = 141 participants *n* = 125 disaster responders *n* = 16 disaster mental health volunteers	*N* = 101 participants *n* = 87 disaster responders *n* = 14 disaster mental health volunteers	*N* = 92 participants *n* = 78 disaster responders *n* = 14 disaster mental health volunteers

Disaster Responders. Eighty-seven disaster responders (51 females, 36 males) completed the survey. Of those, nine disaster responders were excluded because they had not volunteered for a national disaster in the past five years.

Disaster Mental Health Responders. Fourteen disaster mental health responders (10 females, 4 males) completed the survey. Of those, no disaster mental health volunteers were excluded because they had not volunteered for a national disaster in the past five years.

Demographic Characteristics of Survey Respondents

One-hundred-one individuals completed the online survey. Nine were excluded because they had not volunteered for a national disaster in the past five years, for a total sample of 92 respondents. It is not possible to determine with certainty the number of volunteers who received a request to participate in the study, although there were respondents from 13 different states. It is also difficult to determine how many ARC volunteers have responded to national disasters in the past five years. It was estimated that there were 17,000 relief workers with the ARC during Superstorm Sandy in 2012, the largest American disaster in the past five years (The American National Red Cross, 2014). In terms of the two listservs, the American Psychological Association Division 56 Trauma listserv had 1,065 members in 2014 (American Psychological Association, 2014). Data regarding the number of members of the American Counseling Association Traumatology Interests Network were unavailable. Demographic data for the survey respondents are summarized in Table 6 and reported in Chapter 4.

Instrumentation

An online survey was created using a demographics questionnaire, five standardized measures, a Self-Care Assessment, and one qualitative question. The standardized measures included the Secondary Traumatic Stress Scale (STSS; Bride, Robinson, Yegidis, & Figley, 2004); the Professional Quality of Life Scale Version 5 (ProQOL-5; Stamm, 2009); the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996); the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985); and the Flourishing Scale (FS; Diener et al., 2010). The Self-Care Assessment was adapted by the primary investigator of this study from the work of Saakvitne, Pearlman, and the Staff of the Traumatic Stress Institute/Center for Adult and Adolescent Psychotherapy's (1996) self-assessment measure.

Demographics Questionnaire. The primary investigator for this study created a demographics questionnaire that assessed age, sex, race, relationship status, education level, occupation, employment status, geographical location, exposure to traumatic events in participants' professional and personal lives, disaster response history, and history of volunteering with the ARC. The volunteer history included questions related to participants' roles in the ARC, whether they have been involved in a leadership position in the ARC, and how long they have been a volunteer with the ARC. The disaster response history included questions related to the types of disasters responded to, the number of disaster responses they participated in, whether participants were deployed during the response, the average length of deployment, and the length of time since their last disaster response. In addition, questions were asked related to the amount of training they received from the ARC, whether they felt supported by the ARC when deployed, whether they engaged in self-care activities during deployment, and whether the ARC

provided follow-up services immediately after their deployment and upon their return home (see Appendix D).

Secondary Traumatic Stress Scale (STSS). The Secondary Traumatic Stress Scale (STSS; Bride, Robinson, Yegidis, & Figley, 2004) was developed to measure secondary traumatic stress symptoms following indirect exposure to a traumatic event when working with traumatized clients. The STSS measures intrusive symptoms, avoidance symptoms, and arousal symptoms based on Criteria B, C, and E from the *DSM-5*. The STSS is a self-report instrument that has 17 items that measure the frequency of intrusion, avoidance, and arousal symptoms (see Appendix E). The items are rated on a Likert scale from 1 (*never*) to 5 (*very often*) that assesses the frequency of secondary traumatic stress symptoms in the past seven days. The STSS has three subscales based on posttraumatic stress symptomology: Intrusion (items: 2, 3, 6, 10, 13), Avoidance (items: 1, 5, 7, 9, 12, 14, 17), and Arousal (items: 4, 8, 11, 15, 16), as well as a Total score. Scores for each of the subscales as well as the Total score are obtained by summing the items associated with each subscale. Bride and Jones (2006) determined that scores on the STSS Total greater than 38 were indicative of secondary traumatic stress and scores below 38 indicated no secondary traumatic stress. The STSS has been found to reflect internal consistency, indicating that the items reflect a common construct. Means, standard deviations, and alpha levels for the scales were found to be the following: Total (M = 29.49, SD = 10.76, α = .93), Intrusion (M = 8.11, SD = 3.03, α = .80), Avoidance (M = 12.49, SD = 5.00, α = .87), and Arousal (M = 8.89, SD = 3.57, α = .83; Bride et al., 2004). Additional research has found the internal consistency reliabilities

for the scales to be the following: Total (α = .94), Intrusion (α = .79), Avoidance (α = .85), and Arousal (α = .87; Ting, Jacobson, Sanders, Bride, & Harrington, 2005).

The STSS has also demonstrated convergent and discriminant validity. Prior research has shown that secondary traumatic stress is correlated with extent and intensity of work with traumatized clients (Brady et al., 1999; Chrestman, 1999; Schauben & Frazier, 1995; Lee, 1995; Arvay & Uhlemann, 1996), as well as co-morbidity between traumatic stress, depression, and anxiety symptoms (Davidson & Fairbank, 1993). Little to no relationship has been found between traumatic stress and age, ethnicity, or income level (Good, 1996; Knight, 1997; Munroe, 1990; Pearlman & MacIan, 1995). Bride et al. (2004) found that the STSS correlated with the percentage of traumatized clients on a caseload (M = 3.19, SD = .87, r = .260), the time engaged with trauma issues when working with clients (M = 3.49, SD = .93, r = .232), depression symptoms (M = 1.74, SD = .79, r = .502), and anxiety symptoms (M = .88, SD = .85, r = .553). Researchers did not find correlations between traumatic stress and age (r = -.093), ethnicity (r = -.026), or income (r = -.095; Bride et al., 2004).

Confirmatory factor analysis has shown that the subscales are highly correlated with each other (Intrusion/Avoidance r = .87, Intrusion/Arousal r = .94, Avoidance/Arousal r = .97; Bride et al., 2004; Intrusion/Avoidance r = .96, Intrusion/Arousal r = .96, Avoidance/Arousal r = 1.0; Ting, Jacobson, Sanders, Bride, & Harrington, 2005). This may indicate that the STSS should be used as a unidimensional scale rather than having three distinct constructs.

Professional Quality of Life Scale Version 5 (ProQOL-5). The Professional Quality of Life Scale Version 5 (ProQOL-5; Stamm, 2009) measures the positive and

negative aspects of doing one's job as a helper. The measure was originally developed as the Compassion Fatigue Self Test (Figley, 1995) and is now in its fifth revision. The ProQOL-5 was developed to address psychometric difficulties with the Compassion Fatigue Self Test (Figley, 1995) and also evaluates the positive aspects of helping. The ProQOL-5 measures compassion satisfaction and two aspects of compassion fatigue including burnout and secondary traumatic stress (See Appendix F).

The ProQOL-5 is a 30-item measure with three discrete scales: Compassion Satisfaction (items: 3, 6, 12, 16, 18, 20, 22, 24, 27, 30) which measures satisfaction in an individual's own effectiveness as a helper; Burnout (items: 1, 4, 8, 10, 15, 17, 19, 21, 26, 29) which assesses feelings of hopelessness or dissatisfaction in an individual's lack of effectiveness as a helper; and Secondary Traumatic Stress (items: 2, 5, 7, 9, 11, 13, 14, 23, 25, 28) which measures symptoms of PTSD related to secondary exposure to a traumatic event. Higher scores indicate higher rates of the construct. There is no composite score. Items are rated using a Likert scale ranging from 1 (*never*) to 5 (*very often*) that assesses the frequency of symptoms in the past 30 days. Items 1, 4, 15, 17, and 29 are reverse-scored (1=5, 2=4, 3=3, 4=2, 5=1). Raw scores are then converted to *Z*-scores and then to *T*-scores with a mean of 50 and a standard deviation of 10 for all of the scales.

Stamm (2010) reported the following psychometric properties and cut-off scores for each of the scales. The average score for the Compassion Satisfaction scale is 50 (*SD* = 10) with a score below 43 indicating dissatisfaction with one's job and a score above 57 indicating high satisfaction. The average score for the Burnout scale is 50 (*SD* = 10) with a score below 43 indicating positive feelings about one's ability to be effective in one's

work and a score above 57 indicating feelings of ineffectiveness around work. The average score for the Secondary Traumatic Stress scale is 50 (*SD* = 10) with a score below 43 indicating few symptoms of secondary traumatic stress and a score above 57 indicating more symptoms of secondary traumatic stress. Cut-off scores were made at the 25th and 75th percentiles.

The ProQOL-5 has been found to reflect internal consistency, indicating that the items for each scale reflect a common construct. Alpha levels for the scales were found to be the following: Compassion Satisfaction (α = .88), Burnout (α = .75), and Secondary Traumatic Stress (α = .81; Stamm, 2010). Additional research has also demonstrated internal consistency including Compassion Satisfaction (α = .89), Burnout (α = .81), and Secondary Traumatic Stress (α = .86; Lambert & Lawson, 2013).

The ProQOL-IV scales have demonstrated convergent and discriminant validity. The intercorrelations and shared variance between the three ProQOL-IV scales indicate that the scales are measuring separate constructs and were found to be the following: Compassion Satisfaction/Burnout (r = -.23, co-σ = 5%), Compassion Satisfaction/Secondary Traumatic Stress (r = -.15, co-σ = 2%), and Secondary Traumatic Stress/Burnout (r = -.46, co-σ = 21%; Stamm, 2005). More recent research has shown the intercorrelations and co-variances between the three ProQOL-5 scales to be the following: Compassion Satisfaction/Burnout (r = -.23, co-σ = 5%), Compassion Satisfaction/Secondary Traumatic Stress (r = -.14, co-σ = 2%), and Secondary Traumatic Stress/Burnout (r = .58, co-σ = 34%; Stamm, 2010). The high co-variance between Burnout and Secondary Traumatic Stress is thought to be due to the distress common to both constructs.

Posttraumatic Growth Inventory (PTGI). The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) is a 21-item self-report measure that examines perceived benefits experienced by survivors of traumatic events. Items are measured on a 6-point Likert scale ranging from 0 (*I did not experience this change as a result of my crisis*) to 5 (*I experienced this change to a very great degree as a result of my crisis*). Items for each factor are summed and include the following factors: New Possibilities, Relating to Others, Personal Strength, Spiritual Change, and Appreciation of Life (see Appendix G).

The PTGI and its factors have demonstrated internal consistency, including Total (α = .90, New Possibilities (α = .84), Relating to Others (α = .85), Personal Strength (α = .72), Spiritual Change (α = .85), and Appreciation of Life (α = .67; Tedeschi & Calhoun, 1996). Additional research has found similar findings (Bates, Trajstman, & Jackson, 2004; Lee, Luxton, Reger, & Gahm, 2010; Lambert & Lawson, 2013). Intercorrelations among the factors suggest that the factors represent separate constructs (ranged from r = .27 to r = .52; Tedeschi & Calhoun, 1996). The PTGI has also demonstrated adequate test-retest reliability (r = .71; Tedeschi & Calhoun, 1996; r = .78; Bates, Trajstman, & Jackson, 2004). Confirmatory factor analysis has shown that the constructs fit the model and a higher-order factor of Total posttraumatic growth is appropriate (Lee, Luxton, Reger, & Gahm, 2010).

The PTGI has demonstrated convergent and discriminant validity. It has been demonstrated to be related to concepts that encourage growth by survivors of traumatic events, such as optimism (r = .23) and high religious activity (r = .25; Tedeschi & Calhoun, 1996). Personality characteristics have also been shown to be related to

posttraumatic growth, including extraversion (r = .29), openness (r = .21), agreeableness (r = .18), and conscientiousness (r = .16; Tedeschi & Calhoun, 1996). The PTGI has been shown to demonstrate discriminant validity by being unrelated to social desirability and negatively correlated with neuroticism (Tedeschi & Calhoun, 1996). Construct validity was demonstrated by showing that those who experienced a more severe history of trauma reported greater posttraumatic growth (M = 83.16, SD = 19.27) than those with no trauma history (M = 69.75, SD = 20.47; $F(1,113) = 12.33$, $p < .001$; Tedeschi & Calhoun, 1996). Content validity of the PTGI has been supported through qualitative research (Shakespeare-Finch, Martinek, Tedeschi, & Calhoun, 2013). In their study, participants were interviewed and asked to explain their interpretations of items on the PTGI that they rated high or low. A latent theme was identified as "questions were consistently understood," indicating that participants understood the questions on the PTGI in the way they were intended to be understood by the test developers.

Satisfaction with Life Scale (SWLS). The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item self-report scale that measures life satisfaction, defined as a judgmental process people engage in when they compare their lives to their own subjective ideal (see Appendix H). The SWLS uses a 7-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Responses are totaled with scores above 20 indicating satisfaction (21-25 = Slightly satisfied; 26-30 = Satisfied; 31-35 = Extremely satisfied) and scores below 20 indicating dissatisfaction (15-19 = Slightly dissatisfied; 10-14 = Dissatisfied; 5-9 = Extremely dissatisfied; Diener, Emmons, Larsen, & Griffin, 1985).

The SWLS has demonstrated internal consistency (α = .87; Diener, Emmons, Larsen, & Griffin, 1985). It has been found to measure a single factor that accounts for 66% of the variance (Diener, Emmons, Larsen, & Griffin, 1985). Test-retest reliability has been shown to be good (*r* = .82; Diener, Emmons, Larsen, & Griffin, 1985). In addition, there is evidence for convergent and discriminant validity. The SWLS has been shown to have moderate to strong correlations with other measures of subjective well-being (Diener, Emmons, Larsen, & Griffin, 1985; Pavot, Diener, Colvin, & Sandvik, 1991), such as the Life Satisfaction Index-A (*r* = .82; LSI-A; Neugarten et al., 1961), the wellbeing scale on the Differential Personality Questionnaire (*r* = .68; Tellegen, 1979), and the Affect Balance Scale (PAS: *r* = .50, .51; NAS: *r* = -.37, -.32; Bradburn, 1969). The SWLS was also positively correlated with self-esteem (*r* = .54) and sociability (*r* = .20; Diener, Emmons, Larsen, & Griffin, 1985). It has been shown to have no correlation with social desirability (Diener, Emmons, Larsen, & Griffin, 1985), as well as discriminant validity by having no correlation or negative correlations with mental health symptoms (*r* = -.41), neuroticism (*r* = -.48), emotionality (*r* = -.25), and impulsivity (*r* = -.03; Diener, Emmons, Larsen, & Griffin, 1985).

Flourishing Scale (FS). The Flourishing Scale (FS; Diener et al., 2010) is an 8-item scale that measures universal psychological needs. Items address social relationships, having a purposeful and meaningful life, being engaged in one's activities, self-respect and optimism, and competence (see Appendix I). The FS uses a 7-point Likert scale that ranges from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The items are summed with high scores indicating someone with many psychological strengths and low scores indicating someone with less psychological strengths.

The FS has demonstrated adequate internal consistency (*M* = 44.97, *SD* = 6.56, α = .87) as well as test-retest reliability (*r* = .71; Diener et al., 2010). Factor analysis has indicated that the FS measures a single factor accounting for 53% of the variance of the items. The FS has demonstrated convergent validity with other scales of competency, relatedness, mastery, growth, purpose, self-acceptance, optimism, and satisfaction with life (Diener et al., 2010). Additional research with samples in Portugal and Japan has demonstrated internal consistency and convergent validity with life satisfaction, happiness, and optimism (Silva & Caetano, 2013; Sumi, 2014).

Self-Care Assessment. The Self-Care Assessment was adapted by the primary investigator of this study from Saakvitne, Pearlman, and the Staff of the Traumatic Stress Institute/Center for Adult and Adolescent Psychotherapy's (1996) Self-Care Assessment measure. It was originally designed as a self-reflective exercise for mental health practitioners, not for use in research. Because it was designed as a self-assessment instrument, there are no studies addressing the psychometric properties of the instrument. In this study, participants were asked to rate their self-care activities both while deployed for a disaster and as part of their regular routine. They were asked to rate each activity on a 5-point Likert scale ranging from 1 (*It never occurred to me*) to 5 (*Frequently*). The self-care activities measured included physical self-care, psychological self-care, emotional self-care, spiritual self-care, workplace or professional self-care, and balance. For the purposes of this research, the Self-Care Assessment was used to determine which self-care activities participants engage in and how engagement in self-care influences secondary traumatic stress and posttraumatic growth (See Appendix J).

Qualitative Question. One qualitative question was asked to gain further information about participants' experiences. The question was the following: "After reflecting on your responses to these questions, what else would you like to share about your experiences as a disaster responder?"

Procedure

After recruitment processes, interested participants completed an online survey that included the above measures. A cover letter described the purpose and importance of the study, assured anonymity, discussed the risks and benefits of the study, and was used to obtain informed consent. The survey was completed anonymously online using Qualtrics. Participants had the opportunity to have their name entered into a drawing to win one of two $50 Amazon gift cards. Contact information for the drawing was separated from the data. Data were collected between August 25, 2014 and January 5, 2015.

Data Analysis

Demographics. The demographic data were examined using descriptive statistics including frequencies. Demographic variables were also used in the multiple regression models to determine which variables contribute to variance in secondary traumatic stress and which variables contribute to variance in posttraumatic growth.

Quantitative Measures. Means and standard deviations were calculated for responses to survey items. Frequencies for the Self-Care Assessment items were calculated. Multiple regression analyses were completed in order to determine variables that contribute to secondary traumatic stress and posttraumatic growth. The predictor variables used in this study included sex, age, relationship status, employment status,

work with trauma survivors in their professional careers, personal survivors of either a disaster and/or traumatic event, whether the ARC provided debriefing services, whether the participants engaged in self-care during the response, the amount of time since their last disaster response, and the number of disaster responses they participated in within the past five years. The criterion variables used in this study included the Secondary Traumatic Stress Scale Total, as well as the subscales of Avoidance, Intrusion, and Arousal; the Professional Quality of Life scales of Burnout, Secondary Trauma, and Compassion Satisfaction; the Posttraumatic Growth Inventory Total, as well as subscales of Relating to Others, Spiritual Growth, New Possibilities, Personal Strength, and Appreciation of Life; the Satisfaction With Life Scale; and the Flourishing Scale. Comparisons of means using *t*-tests were completed to examine differences between disaster responders and disaster mental health workers on the different measures. For all quantitative analyses, a *p*-value of less than .05 was used to determine significant results.

Qualitative Question. The data collected consisted of 60 written responses to one qualitative question. The qualitative question was analyzed using a modified consensual qualitative research approach (CQR; Hill, Thompson, & Williams, 1997). CQR is a method that uses multiple researchers to engage in a process of reaching consensus. A team made up of the primary investigator and one reviewer analyzed the data. The reviewer had prior experience in analyzing qualitative research. At each of the levels of analysis, the team reached consensus. Analysis began with the development of domains, or topic areas. Each member of the team read the responses to the qualitative question and assigned each block of data to a domain. The team then reached a consensus regarding the coding of the data into domains. After the data were coded into domains,

each member of the team individually clustered the data into categories and subcategories. They then reached consensus on the categories and sub-categories. The domains and categories were audited by a researcher not on the team who had experience in qualitative research. She gave feedback regarding domain titles and whether the category labels fit the essence of the data. She also provided feedback regarding whether data blocks belonged in each category. The results of the qualitative analysis were then compared to the results of the quantitative analysis.

Chapter 4: Results

This chapter begins by analyzing the frequencies of the demographic characteristics of the survey respondents. The power analyses for both multiple regression and *t*-tests, as well as the reliability of the measurements, are then described. Afterwards, the multiple regression models for each of the criterion variables are defined. The frequencies of the Self-Care Assessment items are then discussed. Comparisons of the means for each of the criterion variables are examined between disaster responders and disaster mental health workers. A description of the qualitative research, including the domains, categories, and sub-categories is then explained. The chapter concludes with a summary of the relationship of the results to the research questions of the study.

Demographic Characteristics of Survey Respondents

One-hundred-one individuals completed the online survey. Nine were excluded because they had not volunteered for a national disaster in the past five years, for a total sample of 92 respondents. Demographic data for the survey respondents are summarized in Table 6.

Table 6. Demographic Characteristics of Survey Respondents

Variables	Relief Workers (*N* = 92)	
	n	%
Sex		
Female	55	59.8
Male	37	40.2
Age		
18-24	2	2.2
25-34	12	13.0
35-44	3	3.3
45-54	12	13.0
55-64	30	32.6
65-74	27	29.3
75 or older	6	6.5
Race		
Caucasian	87	94.6
Hispanic/Latino	3	3.3
Asian/Pacific Islander	1	1.1
More than one race	1	1.1
Relationship Status		
Single	14	15.2
Married/Domestic Partnership	62	67.4
Serious Relationship	6	6.5
Widowed	5	5.4
Divorced	5	5.4
Level of Education		
High School Diploma	3	3.3
Some College	11	12.0
Trade/Vocational School	2	2.2
Associate's Degree	11	12.0
Bachelor's Degree	26	28.3
Master's Degree	26	28.3
Doctoral Degree	11	12.0
Professional Degree	2	2.2
Employment Status		
Full time	32	34.8
Part time	9	9.8
Retired	48	52.2
Unemployed	3	3.3
Geographical Region (United States)		
West	7	7.6
Southwest	24	26.1
Midwest	53	57.6
Northeast	4	4.3
Southeast	3	3.3

No response	1	1.1
Licensure (for Disaster Mental Health volunteers)		
Licensed Psychologist	5	5.4
Licensed Social Worker	7	7.6
Other (LMFT, CISM Counselor, FNP-C)	3	3.3
Mental health professional not licensed	1	1.1
Not a Disaster Mental Health volunteer	68	73.9
No response	8	8.7
Work with Trauma in Professional Work		
Yes	43	46.7
No	46	50.0
No response	3	3.3
Survivor of Natural Disaster		
Yes	31	33.7
No	58	63.0
No response	3	3.3
Survivor of Trauma		
Yes	45	48.9
No	47	51.1
Role in the American Red Cross		
Disaster Health Services	12	13.0
Disaster Mental Health Services	14	15.2
Disaster Welfare Information	1	1.1
Family Services	8	8.7
Mass Care	21	22.8
Damage Assessment	8	8.7
Logistics	5	5.4
Other	23	25.0
Leadership Role in the American Red Cross		
Yes	61	66.3
No	31	33.7
Years in the American Red Cross		
0-5	40	43.5
6-10	25	27.2
11-15	14	15.2
16-20	6	6.5
21-25	4	4.3
26 or more	2	2.2
No response	1	1.1
Types of Disaster Responses (participants chose all that applied)		
Hurricanes	55	N/A
Tornadoes	56	
Fires	55	
Floods	72	
Earthquakes	6	

Superstorm Sandy	37	
Wildfires	33	
9/11	16	
Acts of terrorism	5	
Other	20	
International Disasters	4	
Number of Disaster Responses		
1-3	55	59.8
4-6	19	20.7
7-9	5	5.4
10-12	5	5.4
13-15	4	4.3
16 or more	2	2.2
No response	2	2.2
Length of Time Since Last Response		
Less than 3 months	9	9.8
4-6 months	22	23.9
7-12 months	28	30.4
13-24 months	24	26.1
Greater than 2 years	3	3.3
No response	6	6.5
Deployed for Disaster Away From Home		
Yes	76	82.6
No	15	16.3
No response	1	1.1
Average Length of Time Deployed		
Less than 7 days	5	5.4
7-14 days	39	42.4
15-21 days	20	21.7
22-30 days	3	3.3
31-60 days	2	2.2
61-90 days	4	4.3
Greater than 90 days	3	3.3
No response	2	2.2
Did not deploy	14	15.2
American Red Cross Training Provided		
Yes	85	92.4
No	7	7.6
Preparedness After Training		
Yes	84	91.3
No	2	2.2
No response	2	2.2
Did not receive training	4	4.3

As shown in this table, the majority of respondents were female (*n* = 55, 59.8%), Caucasian (*n* = 87, 94.6%), were from the Midwest (*n* = 53, 57.6%), and married (*n* = 62, 67.4%). Most reported that they were aged between 55 and 74 (*n* = 57, 62.0%). In terms of education and employment status, a majority reported receiving either a bachelor's (*n* = 26, 28.3%) or a master's degree (*n* = 26, 28.3%) and indicated that they were either retired (*n* = 48, 52.2%) or working full time (*n* = 32, 34.8%). Half of the sample reported that they do not work with survivors of trauma in their professional work (*n* = 46, 50%). A majority also had not survived a natural disaster (*n* = 58, 63.0%) or a traumatic event (*n* = 47, 51.1%) in their personal lives. Of the disaster mental health volunteers (*n* = 14), most were licensed as social workers (*n* = 7, 50%) or licensed psychologists (*n* = 5, 35.7%).

Regarding participants' volunteer history, most were involved in Mass Care such as sheltering, food and clothing distribution, and provision of resources (*n* = 21, 22.8%) or endorsed the Other category for their role in the ARC (*n* = 23, 25.0%). A majority had volunteered for the ARC for 0-5 years (*n* = 40, 43.5%), responded to between 1 and 6 national disasters in the past five years (*n* = 74, 80.4%), and volunteered for their last disaster response within the past two years (*n* = 83, 90.2%). Most had participated as leaders in the ARC either in the past or present (*n* = 61, 66.3%). Participants had responded to a variety of disasters including hurricanes (*n* =55), tornadoes (*n* = 56), fires (*n* = 55), floods (*n* = 72), earthquakes (*n* = 6), Superstorm Sandy (*n* = 37), the terrorist attacks of 9/11 (*n* = 16), other terrorist attacks (*n* = 5), wildfires (*n* = 33), international disasters (*n* = 4), and a variety of other disasters such as mud slides/landslides (*n* = 3), gas explosions (*n* = 7), bus accidents (*n* = 1), bridge collapses (*n* = 2), typhoons (*n* = 1),

airline disasters (*n* = 1), school shootings (*n* = 2), hazmat accidents (*n* = 1), blizzards (*n* = 1), and other storms (*n* = 1). A majority of respondents indicated that they were deployed away from home when responding to a disaster (*n* = 76, 82.6%) for an average of one to three weeks at a time (*n* = 59, 64.1%). Most reported receiving training from the ARC (*n* = 85, 92.4%) and felt prepared for the disaster response because of that training (*n* = 84, 91.3%).

Power Analysis

A power analysis was conducted using an online power calculator (Soper, 2015) to help determine the sample size needed for small, medium, and large effect sizes for multiple regression analyses. To detect a small effect size for 11 predictors, power of .95, alpha level of .05, and effect size of .02, the sample size would need to be 1,273. To detect a medium effect size for 11 predictors, power of .95, alpha level of .05, and effect size of .15, the sample size would need to be 179. To detect a large effect size for 11 predictors, power of .95, alpha level of .05, and effect size of .35, the sample size would need to be 83. Based on these results, the regression analyses in this study using a sample size of 92 would indicate a large effect size. A power analysis was also conducted to help determine the sample size needed for small, medium, and large effect sizes for the *t*-tests (Soper, 2015). To detect a small effect size with a power of .95, alpha level of .05, and effect size of .2, the sample size would need to be 1,302. To detect a medium effect size with a power of .95, alpha level of .05, and effect size of .5, the sample size would need to be 212. To detect a large effect size with a power of .95, alpha level of .05, and effect size of .8, the sample size would need to be 84. Again, for this study using a sample size of 92 there is a large effect size.

Prior to conducting the analyses, the data were tested to ensure that they met the assumptions of multiple regression including independence, linearity, homogeneity of variance, and normality. The assumption of independence of residuals is assumed for all of the measures because the data are not longitudinal and there is no expectation that the participants are related. All of the measures met the assumptions of homogeneity of variance and linearity by examining scatterplots between the predicted values and the residuals. All of the measures met the assumption of linearity through examination of Q-Q plots and measures of kurtosis and skewness. All outliers were included in the analyses as they were all found to be legitimate outliers.

For this study, a *p*-value equal to or less than .05 was used to determine significant results. The predictor variables used in this study included sex, age, relationship status, employment status, work with trauma survivors in their professional careers, personal survivors of either a disaster and/or traumatic event, whether the ARC provided debriefing services, whether the participants engaged in self-care during the response, the amount of time since their last disaster response, and the number of disaster responses they participated in within the past five years. Because all of the predictor variables were categorical in nature, they were coded into dummy variables. The criterion variables used in this study included the Secondary Traumatic Stress Scale Total, as well as the subscales of Avoidance, Intrusion, and Arousal; the Professional Quality of Life scales of Burnout, Secondary Trauma, and Compassion Satisfaction; the Posttraumatic Growth Inventory Total, as well as subscales of Relating to Others, Spiritual Growth, New Possibilities, Personal Strength, and Appreciation of Life; the Satisfaction With Life Scale; and the Flourishing Scale.

Reliability

Internal consistency was calculated for each of the criterion variables: STSS Total (α = .912); STSS Avoidance (α = .822); STSS Intrusion (α = .744); STSS Arousal (α = .843); ProQOL Burnout (α = .789); ProQOL Secondary Trauma (α = .819); ProQOL Compassion Satisfaction (α = .860); PTGI Total (α = .955); PTGI Appreciation of Life (α = .826); PTGI Relating to Others (α = .903); PTGI New Possibilities (α = .846); PTGI Personal Strength (α = .882); PTGI Spiritual Change (α = .772); SWLS (α = .941); and Flourishing Scale (α = .903). Following George and Mallery's (2003) guidelines for interpreting Cronbach's alpha, STSS Total, PTGI Total, the PTGI Relating to Others subscale, the SWLS, and the Flourishing Scale all have excellent reliability. The STSS Avoidance subscale, the STSS Arousal subscale, the ProQOL Secondary Trauma scale, the ProQOL Compassion Satisfaction scale, the PTGI Appreciation of Life subscale, the PTGI New Possibilities subscale, and the PTGI Personal Strength subscale showed good reliability. The STSS Intrusion scale, the ProQOL Burnout scale, and the PTGI Spiritual Change subscale all demonstrated acceptable reliability.

Secondary Traumatic Stress Scale (STSS) Multiple Regression

Using the STSS scores as the criterion variables, a multiple regression analysis was conducted to examine the effects of the predictor variables on secondary traumatic stress. A separate multiple regression model was run using the criterion variables of STSS Total, Avoidance, Intrusion, and Arousal.

STSS Total. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The

model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = 1.132, kurtosis = 1.696). The mean for STSS total was 28.34 with a standard deviation of 9.36. Due to incomplete surveys, data from 81 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between STSS Total and the predictor variables. Table 7 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .403$, $F(23, 57) = 1.670$, $p = .060$. The model itself was not significant, indicating that the predictor variables do not adequately predict STSS Total. As can be seen in Table 7, none of the predictor variables were significant. The final model for STSS Total including all of the predictor variables explained 40.3% of the variance.

Table 7. Results of Multiple Regression Analysis for the Secondary Traumatic Stress Scale Total Score

Variables	All participants (*n* = 81)	
	B	*SE*
Sex[1]	3.716	2.369
Age		
Young Adult (18-34)	5.430	4.033
Middle Adult (35-54)	2.362	3.322
Older Adult (55+)	C	C
Relationship Status		
Single	.847	2.821
Married/In Serious Relationship	C	C
No Longer Married	-2.939	3.379
Level of Education		
High School	-5.575	7.571
Some College/Associate's Degree	-2.312	2.697
Bachelor's Degree	C	C
Master's Degree	-2.125	2.915
Professional/Doctoral Degree	-3.080	3.536
Employment Status		
Full Time	C	C
Part Time	1.435	4.291
Unemployed	-8.254	5.710
Retired	-.890	2.978
Work With Trauma Survivors[2]	-3.940	2.405
Survivor of Trauma and/or Disaster[2]	-1.390	2.248
Number of Disaster Responses		
1-3	C	C
4-6	.236	2.888
7+	2.980	3.420
Time Since Last Disaster Response		
Less than 3 months	-4.400	4.269
4-6 months	-.566	3.065
7-12 months	3.253	2.751
13+ months	C	C

Engagement in Self-Care		
Always	-5.948	3.824
Sometimes	.550	4.123
Never	C	C
ARC Follow-Up		
Always	4.395	4.264
Sometimes	5.178	3.915
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

STSS Avoidance Subscale. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values of skewness between -2 and +2; although there is some indication of a distribution with more values in the tails (skewness = 1.683, kurtosis = 2.941). The mean for the STSS Avoidance subscale was 11.06 with a standard deviation of 3.95. Due to incomplete surveys, data from 87 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between STSS Avoidance and the predictor variables. Table 8 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .318$, $F(23, 58) = 1.176$, $p = .302$. The model itself was not significant, indicating that the predictor variables do not adequately predict STSS Avoidance. As can be seen in Table 8, none of the predictor variables were significant. The final model for STSS Avoidance including all of the predictor variables explained 31.8% of the variance.

Table 8. Results of Multiple Regression Analysis for the Secondary Traumatic Stress Scale Avoidance Subscale

Variables	All participants (*n* = 87)	
	B	*SE*
Sex[1]	1.556	.999
Age		
Young Adult (18-34)	1.310	1.769
Middle Adult (35-54)	-.113	1.461
Older Adult (55+)	C	C
Relationship Status		
Single	.452	1.239
Married/In Serious Relationship	C	C
No Longer Married	-.664	1.486
Level of Education		
High School	-3.513	3.321
Some College/Associate's Degree	-1.053	1.186
Bachelor's Degree	C	C
Master's Degree	.094	1.275
Professional/Doctoral Degree	-.327	1.554
Employment Status		
Full Time	C	C
Part Time	-.138	1.887
Unemployed	-1.914	2.502
Retired	-1.147	1.307
Work With Trauma Survivors[2]	-1.622	1.037
Survivor of Trauma and/or Disaster[2]	-.269	.984
Number of Disaster Responses		
1-3	C	C
4-6	.582	1.268
7+	1.395	1.488
Time Since Last Disaster Response		
Less than 3 months	-1.437	1.877
4-6 months	.781	1.340
7-12 months	1.653	1.186
13+ months	C	C

Engagement in Self-Care		
Always	-2.167	1.682
Sometimes	-.221	1.799
Never	C	C
ARC Follow-Up		
Always	2.097	1.875
Sometimes	2.136	1.719
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

STSS Intrusion Subscale. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = .773, kurtosis = .179). The mean for the STSS Intrusion subscale was 8.80 with a standard deviation of 3.12. Due to incomplete surveys, data from 85 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between STSS Intrusion and the predictor variables. Table 9 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .375$, $F(23, 61) = 1.590$, $p = .077$. The model itself was not significant, indicating that the predictor variables do not adequately predict STSS Intrusion. As can be seen in Table 9, work with trauma survivors and time since the last disaster response were significant predictor variables. Those who work with trauma survivors were found to have less STSS Intrusion symptoms than those who do not work with trauma survivors. In terms of time since the disaster response, those who reported their last disaster response as being 7-12 months ago reported more STSS Intrusion symptoms than those whose last disaster response was greater than 13 months ago. There was no significant difference between those who responded in the past 6 months and those who responded more than 13 months ago. The final model for STSS Intrusion including all of the predictor variables explained 37.5% of the variance.

Table 9. Results of Multiple Regression Analysis for the Secondary Traumatic Stress Scale Intrusion Subscale

Variables	All participants (*n* = 85)	
	B	*SE*
Sex[1]	.988	.767
Age		
Young Adult (18-34)	1.978	1.322
Middle Adult (35-54)	1.510	1.105
Older Adult (55+)	C	C
Relationship Status		
Single	-1.023	.954
Married/In Serious Relationship	C	C
No Longer Married	-1.607	1.140
Level of Education		
High School	-.871	2.578
Some College/Associate's Degree	-1.294	.913
Bachelor's Degree	C	C
Master's Degree	-1.856	.973
Professional/Doctoral Degree	-1.899	1.204
Employment Status		
Full Time	C	C
Part Time	-.073	1.434
Unemployed	-2.657	1.931
Retired	.558	.924
Work With Trauma Survivors[2]	-1.732*	.786
Survivor of Trauma and/or Disaster[2]	-.233	.755
Number of Disaster Responses		
1-3	C	C
4-6	-1.040	.908
7+	.355	1.145
Time Since Last Disaster Response		
Less than 3 months	-.434	1.445
4-6 months	-.523	1.027
7-12 months	1.783*	.904
13+ months	C	C

Engagement in Self-Care		
Always	-1.102	1.300
Sometimes	.554	1.393
Never	C	C
ARC Follow-Up		
Always	.378	1.418
Sometimes	1.601	1.327
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

STSS Arousal Subscale. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = .851, kurtosis = .314). The mean for the STSS Arousal subscale was 8.36 with a standard deviation of 3.24. Due to incomplete surveys, data from 84 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between STSS Arousal and the predictor variables. Table 10 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .449$, $F(23, 60) = 2.125$, $p < .01$. The model itself was significant, suggesting that the predictor variables do predict STSS Arousal. As can be seen in Table 10, employment status was the only significant predictor of STSS Arousal. Those who were unemployed reported significantly less STSS Arousal symptoms than those who work full time. The final model for STSS Arousal including all of the predictor variables explained 44.9% of the variance.

Table 10. Results of Multiple Regression Analysis for the Secondary Traumatic Stress Scale Arousal Subscale

Variables	All participants (*n* = 84)	
	B	*SE*
Sex[1]	1.017	.793
Age		
Young Adult (18-34)	2.504	1.317
Middle Adult (35-54)	1.166	1.099
Older Adult (55+)	C	C
Relationship Status		
Single	1.354	.950
Married/In Serious Relationship	C	C
No Longer Married	-.662	1.133
Level of Education		
High School	-1.787	2.569
Some College/Associate's Degree	-.400	.907
Bachelor's Degree	C	C
Master's Degree	-.258	.971
Professional/Doctoral Degree	-.581	1.198
Employment Status		
Full Time	C	C
Part Time	.733	1.425
Unemployed	-4.376*	1.926
Retired	-.315	.922
Work With Trauma Survivors[2]	-1.133	.795
Survivor of Trauma and/or Disaster[2]	-.551	.755
Number of Disaster Responses		
1-3	C	C
4-6	.422	.975
7+	.988	1.149
Time Since Last Disaster Response		
Less than 3 months	-1.167	1.438
4-6 months	.037	1.028
7-12 months	1.267	.919
13+ months	C	C

Engagement in Self-Care		
Always	-2.020	1.292
Sometimes	-.227	1.395
Never	C	C
ARC Follow-Up		
Always	1.370	1.410
Sometimes	1.991	1.321
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

Professional Quality of Life Scale – Version 5 (ProQOL-5) Multiple Regression

Using the ProQOL-5 scores as the criterion variables, a multiple regression analysis was conducted to examine the effects of the predictor variables on professional quality of life. A separate multiple regression model was run using the criterion variables of Burnout, Secondary Trauma, and Compassion Satisfaction.

ProQOL Burnout. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = .689, kurtosis = .836). The mean for the ProQOL Burnout scale was 50.08 with a standard deviation of 10.04. Due to incomplete surveys, data from 87 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between ProQOL Burnout and the predictor variables. Table 11 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .489$, $F(23, 63) = 2.623$, $p < .001$. The model itself was significant, suggesting that the predictor variables do predict ProQOL Burnout. As can be seen in Table 11, age, relationship status, level of education, and engagement in self-care were significant predictors of ProQOL Burnout. In terms of age, those who were young adults reported more burnout than older adults. In terms of relationship status, those were single reported more burnout than those who were married or in a significant relationship. In terms of education level, those who had master's degrees reported more burnout than those with a bachelor's degree. In terms of engagement in

self-care, those who reported sometimes or always engaging in self-care reported less burnout than those who never engaged in self-care. The final model for ProQOL Burnout including all of the predictor variables explained 48.9% of the variance.

Table 11. Results of Multiple Regression Analysis for the Professional Quality of Life Burnout Scale

Variables	All participants (*n* = 87)	
	B	*SE*
Sex[1]	.770	2.219
Age		
Young Adult (18-34)	10.329**	3.883
Middle Adult (35-54)	.653	3.152
Older Adult (55+)	C	C
Relationship Status		
Single	6.391*	2.798
Married/In Serious Relationship	C	C
No Longer Married	-.996	3.342
Level of Education		
High School	-5.707	6.474
Some College/Associate's Degree	1.853	2.660
Bachelor's Degree	C	C
Master's Degree	5.814*	2.851
Professional/Doctoral Degree	6.636	3.519
Employment Status		
Full Time	C	C
Part Time	-1.412	4.184
Unemployed	-1.184	5.669
Retired	-3.263	2.708
Work With Trauma Survivors[2]	-1.173	2.281
Survivor of Trauma and/or Disaster[2]	-2.186	2.197
Number of Disaster Responses		
1-3	C	C
4-6	4.049	2.871
7+	.257	3.265
Time Since Last Disaster Response		
Less than 3 months	2.660	4.220
4-6 months	2.417	2.986
7-12 months	4.650	2.660
13+ months	C	C

Engagement in Self-Care		
Always	-8.343*	3.744
Sometimes	-8.041*	4.037
Never	C	C
ARC Follow-Up		
Always	-2.757	4.073
Sometimes	1.077	3.744
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

ProQOL Secondary Trauma. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = 1.072, kurtosis = 1.649). The mean for the ProQOL Secondary Trauma scale was 50.08 with a standard deviation of 10.04. Due to incomplete surveys, data from 85 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between ProQOL Secondary Trauma and the predictor variables. Table 12 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .313$, $F(23, 61) = 1.207$, $p = .274$. The model itself was not significant, suggesting that the predictor variables do not adequately predict ProQOL Secondary Trauma. As can be seen in Table 12, none of the predictor variables were significant in the model. The final model for ProQOL Secondary Trauma including all of the predictor variables explained 31.3% of the variance.

Table 12. Results of Multiple Regression Analysis for the Professional Quality of Life Secondary Trauma Scale

Variables	All participants (*n* = 85)	
	B	*SE*
Sex[1]	2.876	2.608
Age		
Young Adult (18-34)	6.178	4.551
Middle Adult (35-54)	-.371	3.830
Older Adult (55+)	C	C
Relationship Status		
Single	.766	3.284
Married/In Serious Relationship	C	C
No Longer Married	-2.134	3.920
Level of Education		
High School	-8.443	7.643
Some College/Associate's Degree	-2.285	3.141
Bachelor's Degree	C	C
Master's Degree	1.393	3.347
Professional/Doctoral Degree	-1.281	4.262
Employment Status		
Full Time	C	C
Part Time	1.563	4.965
Unemployed	-5.256	6.666
Retired	-2.698	3.186
Work With Trauma Survivors[2]	-2.617	2.716
Survivor of Trauma and/or Disaster[2]	-.595	2.619
Number of Disaster Responses		
1-3	C	C
4-6	.065	3.391
7+	6.391	3.896
Time Since Last Disaster Response		
Less than 3 months	1.114	5.325
4-6 months	1.264	3.514
7-12 months	4.405	3.160
13+ months	C	C

Engagement in Self-Care		
Always	-5.183	4.403
Sometimes	-2.324	4.731
Never	C	C
ARC Follow-Up		
Always	3.103	4.771
Sometimes	6.678	4.393
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

ProQOL Compassion Satisfaction. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = -.919, kurtosis = 1.005). The mean for the ProQOL Compassion Satisfaction scale was 50.10 with a standard deviation of 10.05. Due to incomplete surveys, data from 84 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between ProQOL Compassion Satisfaction and the predictor variables. Table 13 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .384$, $F(23, 60) = 1.627$, $p = .068$. The model itself was not significant, suggesting that the predictor variables do not adequately predict ProQOL Compassion Satisfaction. As can be seen in Table 13, engagement in self-care was the only significant predictor of ProQOL Compassion Satisfaction, with those who always engage in self-care reporting more compassion satisfaction than those who never engage in self-care. The final model for ProQOL Compassion Satisfaction including all of the predictor variables explained 38.4% of the variance.

Table 13. Results of Multiple Regression Analysis for the Professional Quality of Life Compassion Satisfaction Scale

Variables	All participants (*n* = 84)	
	B	*SE*
Sex[1]	-1.115	2.494
Age		
Young Adult (18-34)	-5.414	4.490
Middle Adult (35-54)	1.311	3.559
Older Adult (55+)	C	C
Relationship Status		
Single	-3.115	3.122
Married/In Serious Relationship	C	C
No Longer Married	3.749	3.737
Level of Education		
High School	7.063	7.199
Some College/Associate's Degree	-1.505	3.013
Bachelor's Degree	C	C
Master's Degree	-2.867	3.171
Professional/Doctoral Degree	-5.229	4.127
Employment Status		
Full Time	C	C
Part Time	-.218	4.655
Unemployed	2.215	6.309
Retired	5.759	3.092
Work With Trauma Survivors[2]	-1.358	2.619
Survivor of Trauma and/or Disaster[2]	2.517	2.476
Number of Disaster Responses		
1-3	C	C
4-6	-1.054	3.234
7+	2.845	3.647
Time Since Last Disaster Response		
Less than 3 months	.781	4.712
4-6 months	-4.513	3.372
7-12 months	-.096	2.980
13+ months	C	C

Engagement in Self-Care		
Always	9.128*	4.445
Sometimes	5.726	4.695
Never	C	C
ARC Follow-Up		
Always	-.613	4.950
Sometimes	-1.201	4.410
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

Posttraumatic Growth Inventory (PTGI) Multiple Regression

Using the PTGI scores as the criterion variables, a multiple regression analysis was conducted to examine the effects of the predictor variables on posttraumatic growth. A separate multiple regression model was run using the criterion variables of PTGI Total, Appreciation of Life, Relating to Others, Personal Strength, New Possibilities, and Spiritual Change.

PTGI Total. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = -.313, kurtosis = -.783). The mean for PTGI Total was 44.16 with a standard deviation of 21.80. Due to incomplete surveys, data from 83 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between PTGI Total and the predictor variables. Table 14 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .398$, $F(23, 59) = 1.697$, $p < .05$. The model itself was significant, suggesting that the predictor variables adequately predict PTGI Total. As can be seen in Table 14, age, level of education, employment status, number of disaster responses, and time since last disaster response were significant predictors of PTGI Total. In terms of age, middle-aged adults reported significantly less posttraumatic growth than older adults. In terms of level of education, those with professional or doctorate degrees reported less posttraumatic growth than those with bachelor's degrees.

In terms of employment status, those who worked part time indicated higher levels of posttraumatic growth than those working full time. In terms of number of disasters, those who reported seven or more disaster responses in the past five years experienced greater posttraumatic growth than those who responded to one to six disasters in the past five years. In terms of time since last disaster response, those whose last disaster response was 6 months or less ago indicated less posttraumatic growth than those whose last disaster response was greater than 13 months ago. The final model for PTGI Total including all of the predictor variables explained 39.8% of the variance.

Table 14. Results of Multiple Regression Analysis for the Posttraumatic Growth Inventory Total Score

Variables	All participants (*n* = 83)	
	B	*SE*
Sex[1]	10.554	5.493
Age		
Young Adult (18-34)	2.033	9.410
Middle Adult (35-54)	-16.087*	7.744
Older Adult (55+)	C	C
Relationship Status		
Single	-2.311	7.043
Married/In Serious Relationship	C	C
No Longer Married	-10.255	8.198
Level of Education		
High School	-8.007	15.473
Some College/Associate's Degree	-1.848	6.554
Bachelor's Degree	C	C
Master's Degree	-3.915	6.926
Professional/Doctoral Degree	-17.699*	8.398
Employment Status		
Full Time	C	C
Part Time	22.720*	9.976
Unemployed	1.763	13.626
Retired	.941	6.768
Work With Trauma Survivors[2]	-5.058	5.696
Survivor of Trauma and/or Disaster[2]	8.261	5.349
Number of Disaster Responses		
1-3	C	C
4-6	10.693	7.013
7+	26.572**	8.850
Time Since Last Disaster Response		
Less than 3 months	-29.798**	10.685
4-6 months	-14.759*	7.424
7-12 months	-9.478	6.698
13+ months	C	C

Engagement in Self-Care		
Always	5.719	8.918
Sometimes	14.240	9.616
Never	C	C
ARC Follow-Up		
Always	.902	9.838
Sometimes	1.187	8.948
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

PTGI Appreciation of Life Subscale. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = -.258, kurtosis = -.763). The mean for the PTGI Appreciation of Life subscale was 7.07 with a standard deviation of 3.69. Due to incomplete surveys, data from 86 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between the PTGI Appreciation of Life subscale and the predictor variables. Table 15 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .312$, $F(23, 62) = 1.225$, $p = .259$. The model itself was not significant, suggesting that the predictor variables do not adequately predict PTGI Appreciation of Life. As can be seen in Table 15, level of education, employment status, number of disaster responses, and time since last disaster response were significant predictors of the PTGI Appreciation of Life subscale. In terms of level of education, those with professional or doctoral degrees reported less appreciation of life than those with bachelor's degrees. In terms of employment status, those who worked part time indicated higher levels of appreciation of life than those working full time. In terms of number of disasters, those who reported seven or more disaster responses in the past five years experienced greater appreciation of life than those who responded to one to six disasters in the past five years. In terms of time since last disaster response, those whose last disaster response was 3 months or less ago indicated less appreciation of life than those whose last disaster response was greater than

13 months ago. The final model for the PTGI Appreciation of Life subscale including all of the predictor variables explained 31.2% of the variance.

Table 15. Results of Multiple Regression Analysis for the Posttraumatic Growth Inventory Appreciation of Life Subscale

Variables	All participants (*n* = 86)	
	B	*SE*
Sex[1]	1.547	.956
Age		
Young Adult (18-34)	1.082	1.678
Middle Adult (35-54)	-1.968	1.372
Older Adult (55+)	C	C
Relationship Status		
Single	-1.640	1.197
Married/In Serious Relationship	C	C
No Longer Married	-.327	1.441
Level of Education		
High School	-2.485	2.767
Some College/Associate's Degree	.116	1.146
Bachelor's Degree	C	C
Master's Degree	-1.974	1.220
Professional/Doctoral Degree	-3.132*	1.506
Employment Status		
Full Time	C	C
Part Time	3.803*	1.792
Unemployed	-1.248	2.430
Retired	.185	1.189
Work With Trauma Survivors[2]	-.833	.980
Survivor of Trauma and/or Disaster[2]	.277	.945
Number of Disaster Responses		
1-3	C	C
4-6	1.802	1.230
7+	3.448*	1.398
Time Since Last Disaster Response		
Less than 3 months	-4.517*	1.809
4-6 months	-1.782	1.277
7-12 months	-.941	1.144
13+ months	C	C

Engagement in Self-Care		
Always	.587	1.602
Sometimes	2.216	1.727
Never	C	C
ARC Follow-Up		
Always	-.671	1.754
Sometimes	-1.046	1.600
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

PTGI Relating to Others Subscale. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = .025, kurtosis = -.655). The mean for the PTGI Relating to Others subscale was 13.46 with a standard deviation of 7.71. Due to incomplete surveys, data from 87 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between the PTGI Relating to Others subscale and the predictor variables. Table 16 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .273$, $F(23, 63) = 1.031$, $p = .444$. The model itself was not significant, suggesting that the predictor variables do not adequately predict PTGI Relating to Others. As can be seen in Table 16, employment status, number of disaster responses, and time since last disaster response were significant predictors of the PTGI Relating to Others subscale. In terms of employment status, those who worked part time indicated higher levels of relating than those working full time. In terms of number of disasters, those who reported seven or more disaster responses in the past five years experienced greater relating than those who responded to one to six disasters in the past five years. In terms of time since last disaster response, those whose last disaster response was 3 months or less ago indicated less relating than those whose last disaster response was greater than 13 months ago. The final model for the PTGI Relating to Others subscale including all of the predictor variables explained 27.3% of the variance.

Table 16. Results of Multiple Regression Analysis for the Posttraumatic Growth Inventory Relating to Others Subscale

Variables	All participants (*n* = 87)	
	B	*SE*
Sex[1]	1.643	2.033
Age		
Young Adult (18-34)	.848	3.557
Middle Adult (35-54)	-3.893	2.888
Older Adult (55+)	C	C
Relationship Status		
Single	-.566	2.563
Married/In Serious Relationship	C	C
No Longer Married	-2.106	3.062
Level of Education		
High School	-2.885	5.931
Some College/Associate's Degree	-1.842	2.436
Bachelor's Degree	C	C
Master's Degree	-.721	2.612
Professional/Doctoral Degree	-6.152	3.224
Employment Status		
Full Time	C	C
Part Time	9.747*	3.833
Unemployed	4.465	5.193
Retired	1.768	2.481
Work With Trauma Survivors[2]	-.190	2.090
Survivor of Trauma and/or Disaster[2]	1.665	2.013
Number of Disaster Responses		
1-3	C	C
4-6	1.666	2.630
7+	6.728*	2.991
Time Since Last Disaster Response		
Less than 3 months	-8.184*	3.866
4-6 months	-3.520	2.735
7-12 months	-2.509	2.437

13+ months	C	C
Engagement in Self-Care		
Always	.348	3.430
Sometimes	3.031	3.698
Never	C	C
ARC Follow-Up		
Always	-.331	3.731
Sometimes	-.824	3.430
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

PTGI Personal Strength Subscale. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = -.257, kurtosis = -.879). The mean for the PTGI Personal Strength subscale was 9.00 with a standard deviation of 5.15. Due to incomplete surveys, data from 87 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between the PTGI Personal Strength subscale and the predictor variables. Table 17 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .363$, $F(23, 63) = 1.561$, $p = .084$. The model itself was not significant, suggesting that the predictor variables do not adequately predict PTGI Personal Strength. As can be seen in Table 17, number of disaster responses was the only significant predictor of the PTGI Personal Strength subscale. Those who reported more than seven disaster responses in the past five years experienced greater personal strength than those who responded to one to six disasters in the past five years. The final model for the PTGI Personal Strength subscale including all of the predictor variables explained 36.3% of the variance.

Table 17. Results of Multiple Regression Analysis for the Posttraumatic Growth Inventory Personal Strength Subscale

Variables	All participants (*n* = 87)	
	B	*SE*
Sex[1]	2.225	1.271
Age		
Young Adult (18-34)	1.662	2.225
Middle Adult (35-54)	-2.926	1.806
Older Adult (55+)	C	C
Relationship Status		
Single	-2.156	1.603
Married/In Serious Relationship	C	C
No Longer Married	-1.842	1.915
Level of Education		
High School	-.945	3.710
Some College/Associate's Degree	-.590	1.524
Bachelor's Degree	C	C
Master's Degree	-.621	1.633
Professional/Doctoral Degree	-3.753	2.016
Employment Status		
Full Time	C	C
Part Time	3.530	2.398
Unemployed	.257	3.248
Retired	.040	1.552
Work With Trauma Survivors[2]	-.696	1.307
Survivor of Trauma and/or Disaster[2]	.705	1.259
Number of Disaster Responses		
1-3	C	C
4-6	2.119	1.645
7+	5.681**	1.871
Time Since Last Disaster Response		
Less than 3 months	-4.420	2.418
4-6 months	-2.915	1.711
7-12 months	-.933	1.524
13+ months	C	C

Engagement in Self-Care		
Always	1.083	2.145
Sometimes	2.876	2.313
Never	C	C
ARC Follow-Up		
Always	-1.431	2.334
Sometimes	-.298	2.145
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

PTGI New Possibilities Subscale. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = -.284, kurtosis = -.711). The mean for the PTGI New Possibilities subscale was 11.02 with a standard deviation of 5.74. Due to incomplete surveys, data from 86 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between the PTGI New Possibilities subscale and the predictor variables. Table 18 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .365$, $F(23, 62) = 1.552$, $p = .087$. The model itself was not significant, suggesting that the predictor variables do not adequately predict PTGI New Possibilities. As can be seen in Table 18, number of disaster responses was the only significant predictor of the PTGI New Possibilities subscale. Those who reported more than seven disaster responses in the past five years experienced greater new possibilities than those who responded to one to six disasters in the past five years. The final model for the PTGI New Possibilities subscale including all of the predictor variables explained 36.5% of the variance.

Table 18. Results of Multiple Regression Analysis for the Posttraumatic Growth Inventory New Possibilities Subscale

Variables	All participants (*n* = 86)	
	B	*SE*
Sex[1]	2.233	1.442
Age		
Young Adult (18-34)	2.231	2.482
Middle Adult (35-54)	-2.926	2.055
Older Adult (55+)	C	C
Relationship Status		
Single	-1.117	1.791
Married/In Serious Relationship	C	C
No Longer Married	-1.057	2.163
Level of Education		
High School	-.328	4.151
Some College/Associate's Degree	1.018	1.711
Bachelor's Degree	C	C
Master's Degree	1.439	1.822
Professional/Doctoral Degree	-.396	2.247
Employment Status		
Full Time	C	C
Part Time	3.986	2.671
Unemployed	-1.235	3.620
Retired	-.517	1.739
Work With Trauma Survivors[2]	-.376	1.500
Survivor of Trauma and/or Disaster[2]	2.042	1.407
Number of Disaster Responses		
1-3	C	C
4-6	3.223	1.851
7+	6.622**	2.342
Time Since Last Disaster Response		
Less than 3 months	-5.411	2.828
4-6 months	-2.285	1.975
7-12 months	-1.597	1.725
13+ months	C	C

Engagement in Self-Care		
Always	2.324	2.391
Sometimes	2.693	2.579
Never	C	C
ARC Follow-Up		
Always	.446	2.611
Sometimes	2.003	2.400
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

PTGI Spiritual Change Subscale. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = .337, kurtosis = -1.171). The mean for the PTGI Spiritual Change subscale was 2.91 with a standard deviation of 2.52. Due to incomplete surveys, data from 85 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between the PTGI Spiritual Change subscale and the predictor variables. Table 19 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .451$, $F(23, 61) = 2.181$, $p < .01$. The model itself was significant, suggesting that the predictor variables adequately predict PTGI Spiritual Change. As can be seen in Table 19, level of education, employment status, number of disaster responses, time since last disaster response, and engagement in self-care were significant predictors of the PTGI Spiritual Change subscale. In terms of level of education, those with some college and those with a professional or doctoral degree reported less spiritual change than those with bachelor's degrees. In terms of employment status, those who worked part time indicated higher levels of spiritual change than those working full time. In terms of number of disasters, those who reported more than seven disaster responses in the past five years experienced greater spiritual change than those who responded to one to six disasters in the past five years. In terms of time since last disaster response, those whose last disaster response was 12 months or less ago indicated less spiritual change than those whose last disaster

response was greater than 13 months ago. The final model for PTGI Spiritual Change including all of the predictor variables explained 45.1% of the variance.

Table 19. Results of Multiple Regression Analysis for the Posttraumatic Growth Inventory Spiritual Change Subscale

Variables	All participants (*n* = 85)	
	B	*SE*
Sex[1]	.065	.587
Age		
Young Adult (18-34)	-1.403	1.022
Middle Adult (35-54)	-1.340	.824
Older Adult (55+)	C	C
Relationship Status		
Single	.124	.769
Married/In Serious Relationship	C	C
No Longer Married	-1.135	.876
Level of Education		
High School	-1.109	1.693
Some College/Associate's Degree	-1.892**	.704
Bachelor's Degree	C	C
Master's Degree	-1.283	.760
Professional/Doctoral Degree	-3.405***	.922
Employment Status		
Full Time	C	C
Part Time	2.497*	1.094
Unemployed	2.133	1.493
Retired	1.329	.714
Work With Trauma Survivors[2]	-.293	.601
Survivor of Trauma and/or Disaster[2]	.674	.582
Number of Disaster Responses		
1-3	C	C
4-6	1.029	.758
7+	1.978*	.853
Time Since Last Disaster Response		
Less than 3 months	-2.726*	1.108
4-6 months	-1.869*	.784
7-12 months	-1.422*	.714
13+ months	C	C

Engagement in Self-Care		
Always	1.022	.979
Sometimes	2.278*	1.055
Never	C	C
ARC Follow-Up		
Always	.347	1.065
Sometimes	.403	.979
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

Satisfaction With Life Scale Multiple Regression

Using the Satisfaction With Life Scale scores as the criterion variable, a multiple regression analysis was conducted to examine the effects of the predictor variables on well-being. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = -1.059, kurtosis = .628). The mean for the Satisfaction With Life Scale was 26.84 with a standard deviation of 6.51. Due to incomplete surveys, data from 86 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between the Satisfaction With Life Scale and the predictor variables. Table 20 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .423$, $F(23, 62) = 1.975$, $p < .01$. The model itself was significant, suggesting that the predictor variables adequately predict Satisfaction With Life Scale. As can be seen in Table 20, relationship status was the only significant predictor of the Satisfaction With Life Scale. Those who reported being single had less satisfaction with life than those who were married or in a serious relationship. The final model for Satisfaction With Life Scale including all of the predictor variables explained 42.3% of the variance.

Table 20. Results of Multiple Regression Analysis for the Satisfaction With Life Scale

Variables	All participants (*n* = 86)	
	B	*SE*
Sex[1]	-.669	1.535
Age		
Young Adult (18-34)	-3.999	2.684
Middle Adult (35-54)	-1.851	2.182
Older Adult (55+)	C	C
Relationship Status		
Single	-5.506**	1.934
Married/In Serious Relationship	C	C
No Longer Married	-.906	2.311
Level of Education		
High School	-5.518	4.475
Some College/Associate's Degree	-3.073	1.850
Bachelor's Degree	C	C
Master's Degree	-3.228	1.972
Professional/Doctoral Degree	-3.970	2.436
Employment Status		
Full Time	C	C
Part Time	2.656	2.893
Unemployed	1.976	3.918
Retired	2.676	1.878
Work With Trauma Survivors[2]	1.177	1.599
Survivor of Trauma and/or Disaster[2]	-1.203	1.536
Number of Disaster Responses		
1-3	C	C
4-6	-1.575	1.985
7+	1.037	2.258
Time Since Last Disaster Response		
Less than 3 months	-3.476	2.918
4-6 months	-2.067	2.070
7-12 months	-3.368	1.841

13+ months	C	C
Engagement in Self-Care		
Always	3.690	2.591
Sometimes	5.058	2.790
Never	C	C
ARC Follow-Up		
Always	-1.290	2.815
Sometimes	-3.783	2.589
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

Flourishing Scale Multiple Regression

Using the Flourishing Scale scores as the criterion variable, a multiple regression analysis was conducted to examine the effects of the predictor variables on psychological well-being. Multicollinearity was examined among the predictor variables by examining the variance inflation factor (VIF). The VIF for each of the correlations was less than the cutoff of 10, indicating that there are no issues of multicollinearity. The model also met the assumption of linearity, with appropriate values between -2 and +2 for skewness and kurtosis (skewness = -.999, kurtosis = 1.298). The mean for the Flourishing Scale was 49.65 with a standard deviation of 5.36. Due to incomplete surveys, data from 86 participants were used in the analysis.

Multiple regression analyses were conducted to examine the relationship between the Flourishing Scale and the predictor variables. Table 21 summarizes the analysis results, including the correlation coefficients and the standard errors. The multiple regression model with all 11 predictors produced $R^2 = .502$, $F(23, 62) = 2.713$, $p < .001$. The model itself was significant, suggesting that the predictor variables adequately predict Flourishing Scale. As can be seen in Table 21, age, relationship status, level of education, and engagement in self-care were significant predictors of the Flourishing Scale. In terms of age, young adults reported less flourishing than older adults. In terms of relationship status, those who reported being single had less flourishing than those who were married or in a serious relationship. In terms of level of education, those with some college and those with master's degrees reported less flourishing than those with bachelor's degrees. In terms of engagement in self-care, those who reported always or sometimes engaging in self-care had more flourishing than those who never engaged in

self-care. The final model for Flourishing Scale including all of the predictor variables explained 50.2% of the variance.

Table 21. Results of Multiple Regression Analysis for the Flourishing Scale

Variables	All participants (*n* = 86)	
	B	*SE*
Sex[1]	.887	1.175
Age		
Young Adult (18-34)	-4.508*	2.052
Middle Adult (35-54)	-.538	1.724
Older Adult (55+)	C	C
Relationship Status		
Single	-3.634*	1.482
Married/In Serious Relationship	C	C
No Longer Married	.900	1.767
Level of Education		
High School	4.085	3.447
Some College/Associate's Degree	-2.818*	1.408
Bachelor's Degree	C	C
Master's Degree	-3.770*	1.509
Professional/Doctoral Degree	-2.499	1.919
Employment Status		
Full Time	C	C
Part Time	.239	2.239
Unemployed	-.704	3.007
Retired	2.278	1.432
Work With Trauma Survivors[2]	1.503	1.208
Survivor of Trauma and/or Disaster[2]	.457	1.168
Number of Disaster Responses		
1-3	C	C
4-6	-2.853	1.529
7+	.241	1.757
Time Since Last Disaster Response		
Less than 3 months	1.069	2.399
4-6 months	-2.710	1.580
7-12 months	-1.645	1.124
13+ months	C	C

Engagement in Self-Care		
Always	4.723*	1.983
Sometimes	6.161**	2.134
Never	C	C
ARC Follow-Up		
Always	-.577	2.152
Sometimes	-2.852	1.981
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

Self-Care Assessment

The Self-Care Assessment results were analyzed using the frequencies of the items. The results are summarized in Table 22. When examining self-care activities while on deployment, more than half of participants reported occasionally or frequently eating regularly, eating healthily, sleeping enough, wearing clothes they like, engaging in self-reflection, noticing their inner experience, minimizing stress, being curious, contacting others, giving self-affirmations, laughing, engaging in spiritual reflection, being open to inspiration, feeling optimism or hope, being aware of nonmaterial things, being open to not knowing, finding meaning in life, feeling awe, contributing, emailing or writing letters, allowing others to help, enlarging their social circle, asking for help, taking breaks, sharing with co-workers, taking quiet time to complete work tasks, identifying exciting tasks, setting limits, balancing their caseload, arranging a comfortable work space, receiving supervision, engaging with a peer support group, striving for balance at work, and striving for balance at home. More than half of the participants reported rarely or never exercising, receiving regular medical care, taking time off when sick, receiving a massage, engaging in fun physical activities, taking a vacation, engaging in therapy or debriefing, journaling, reading, engaging their intelligence, saying no, engaging in favorite activities, being in nature, meditating, praying, singing, finding inspiration, going on dates with a partner, engaging in activities with children, seeing friends, seeing relatives, seeing pets, contacting faraway friends, and negotiating for needs. When examining self-care activities as part of their daily routine, more than half of participants reported occasionally or frequently eating regularly, eating healthily, exercising, receiving regular medical care, taking time off when sick, engaging in fun physical

activities, sleeping regularly, wearing clothes they like, taking vacations, engaging in self-reflection, noticing their inner experience, reading, minimizing stress, engaging their intelligence, being curious, saying no, contacting others, giving self-affirmations, engaging in favorite activities, seeking comforting things, allowing self to cry, laughing, engaging in spiritual reflection, being in nature, being open to inspiration, feeling optimism or hope, being aware of nonmaterial things, being open to not knowing, finding meaning in life, praying, feeling awe, contributing, going on dates with a significant other, seeing friends, seeing relatives, being with pets, contacting faraway friends, emailing or writing letters, allowing others to help, enlarging their social circle, asking for help, sharing, taking breaks, sharing with co-workers, giving themselves quiet time to complete work tasks, identifying exciting work tasks, setting limits, balancing their caseloads, arranging a comfortable workspace, receiving supervision, engaging with a peer support group, striving for work balance, and striving for home balance. More than half of the participants reported rarely or never getting a massage, engaging in therapy or debriefing, journaling, meditating, and negotiating for their needs.

Table 22. Frequencies of Self-Care Assessment Items

	On Deployment	Regular Routine
Eat Regularly		
Never/NA	1 (1.1)	0 (0.0)
Rarely	11 (12.0)	6 (6.5)
Occasionally	42 (45.7)	26 (28.3)
Frequently	36 (29.1)	57 (62.0)
No Response	2 (2.2)	3 (3.3)
Eat Healthily		
Never/NA	2 (2.2)	0 (0.0)
Rarely	23 (25.0)	1 (1.1)
Occasionally	54 (58.7)	43 (46.7)
Frequently	11 (12.0)	45 (48.9)
No Response	2 (2.2)	3 (3.3)
Exercise		
Never/NA	15 (16.3)	0 (0.0)
Rarely	41 (44.6)	12 (13.0)
Occasionally	27 (29.3)	35 (38.0)
Frequently	7 (7.6)	42 (45.7)
No Response	2 (2.2)	3 (3.3)
Regular Medical Care		
Never/NA	26 (28.3)	2 (2.2)
Rarely	22 (23.9)	11 (12.0)
Occasionally	24 (26.1)	22 (23.9)
Frequently	17 (18.5)	54 (58.7)
No Response	3 (3.3)	3 (3.3)
Take Time Off When Sick		
Never/NA	20 (21.7)	3 (3.3)
Rarely	30 (32.6)	25 (27.2)
Occasionally	24 (26.1)	36 (39.1)
Frequently	16 (17.4)	25 (27.2)
No Response	2 (2.2)	3 (3.3)
Massage		
Never/NA	71 (77.2)	48 (52.2)
Rarely	12 (13.0)	19 (20.7)
Occasionally	5 (5.4)	15 (16.3)
Frequently	2 (2.2)	7 (7.6)
No Response	2 (2.2)	3 (3.3)
Engage in Fun Physical		
Activities	38 (41.3)	6 (6.5)
Never/NA	35 (38.0)	10 (10.9)
Rarely	15 (16.3)	44 (47.8)
Occasionally	2 (2.2)	29 (31.5)
Frequently	2 (2.2)	3 (3.3)
No Response		

Sleep		
Never/NA	6 (6.5)	0 (0.0)
Rarely	24 (26.1)	5 (5.4)
Occasionally	46 (50.0)	39 (42.4)
Frequently	14 (15.2)	45 (48.9)
No Response	2 (2.2)	3 (3.3)
Wear Clothes Like		
Never/NA	2 (2.2)	0 (0.0)
Rarely	9 (9.8)	1 (1.1)
Occasionally	37 (40.2)	27 (29.3)
Frequently	42 (45.7)	61 (66.3)
No Response	2 (2.2)	3 (3.3)
Vacation		
Never/NA	53 (57.6)	0 (0.0)
Rarely	21 (22.8)	18 (19.6)
Occasionally	10 (10.9)	34 (37.0)
Frequently	5 (5.4)	37 (40.2)
No Response	3 (3.3)	3 (3.3)
Engage in Self-Reflection		
Never/NA	11 (12.0)	5 (5.4)
Rarely	26 (28.3)	18 (19.6)
Occasionally	39 (42.4)	32 (34.8)
Frequently	14 (15.2)	34 (37.0)
No Response	2 (2.2)	3 (3.3)
Notice Inner Experience		
Never/NA	2 (2.2)	0 (0.0)
Rarely	19 (20.7)	13 (14.1)
Occasionally	46 (50.0)	40 (43.5)
Frequently	23 (25.0)	36 (39.1)
No Response	2 (2.2)	3 (3.3)
Engage in Therapy or Debriefing	46 (50.0)	43 (46.7)
Never/NA	21 (22.8)	26 (28.3)
Rarely	15 (16.3)	15 (16.3)
Occasionally	8 (8.7)	5 (5.4)
Frequently	2 (2.2)	3 (3.3)
No Response		
Journal		
Never/NA	55 (59.8)	55 (59.8)
Rarely	17 (18.5)	21 (22.8)
Occasionally	13 (14.1)	7 (7.6)
Frequently	5 (5.4)	5 (5.4)
No Response	2 (2.2)	4 (4.3)
Read		
Never/NA	22 (23.9)	3 (3.3)
Rarely	27 (29.3)	6 (6.5)

Occasionally	19 (20.7)	32 (34.8)
Frequently	22 (23.9)	48 (52.2)
No Response	2 (2.2)	3 (3.3)
Minimize Stress		
Never/NA	10 (10.9)	3 (3.3)
Rarely	15 (16.3)	10 (10.9)
Occasionally	46 (50.0)	40 (43.5)
Frequently	17 (18.5)	36 (39.1)
No Response	4 (4.3)	3 (3.3)
Engage Intelligence		
Never/NA	41 (44.6)	6 (6.5)
Rarely	34 (37.0)	14 (15.2)
Occasionally	9 (9.8)	34 (37.0)
Frequently	5 (5.4)	35 (38.0)
No Response	3 (3.3)	3 (3.3)
Be Curious		
Never/NA	2 (2.2)	2 (2.2)
Rarely	8 (8.7)	2 (2.2)
Occasionally	29 (31.5)	23 (25.0)
Frequently	50 (54.3)	62 (67.4)
No Response	3 (3.3)	3 (3.3)
Say No		
Never/NA	16 (17.4)	7 (7.6)
Rarely	31 (33.7)	28 (30.4)
Occasionally	32 (34.8)	35 (38.0)
Frequently	9 (9.8)	18 (19.6)
No Response	4 (4.3)	4 (4.3)
Contact Others		
Never/NA	5 (5.4)	1 (1.1)
Rarely	19 (20.7)	2 (2.2)
Occasionally	29 (31.5)	39 (42.4)
Frequently	35 (38.0)	46 (50.0)
No Response	4 (4.3)	4 (4.3)
Affirmations		
Never/NA	13 (14.1)	9 (9.8)
Rarely	29 (31.5)	30 (32.6)
Occasionally	34 (37.0)	33 (35.9)
Frequently	12 (13.0)	16 (17.4)
No Response	4 (4.3)	4 (4.3)
Engage in Favorite		
Activities	45 (48.9)	10 (10.9)
Never/NA	26 (28.3)	18 (19.6)
Rarely	15 (16.3)	48 (52.2)
Occasionally	2 (2.2)	12 (13.0)
Frequently	4 (4.3)	4 (4.3)
No Response		

Seek Comforting Things		
Never/NA	8 (8.7)	1 (1.1)
Rarely	37 (40.2)	5 (5.4)
Occasionally	33 (35.9)	50 (54.3)
Frequently	10 (10.9)	32 (34.8)
No Response	4 (4.3)	4 (4.3)
Allow Self to Cry		
Never/NA	19 (20.7)	10 (10.9)
Rarely	30 (32.6)	32 (34.8)
Occasionally	28 (30.4)	34 (37.0)
Frequently	11 (12.0)	12 (13.0)
No Response	4 (4.3)	4 (4.3)
Laugh		
Never/NA	6 (6.5)	0 (0.0)
Rarely	15 (16.3)	9 (9.8)
Occasionally	29 (31.5)	31 (33.7)
Frequently	38 (41.3)	48 (52.2)
No Response	4 (4.3)	4 (4.3)
Spiritual Reflection		
Never/NA	18 (19.6)	10 (10.9)
Rarely	20 (21.7)	18 (19.6)
Occasionally	28 (30.4)	29 (31.5)
Frequently	22 (23.9)	31 (33.7)
No Response	4 (4.3)	4 (4.3)
Nature		
Never/NA	18 (19.6)	2 (2.2)
Rarely	37 (40.2)	5 (5.4)
Occasionally	26 (28.3)	39 (42.4)
Frequently	7 (7.6)	42 (45.7)
No Response	4 (4.3)	4 (4.3)
Be Open to Inspiration		
Never/NA	1 (1.1)	1 (1.1)
Rarely	18 (19.6)	7 (7.6)
Occasionally	47 (51.1)	44 (47.8)
Frequently	22 (23.9)	36 (39.1)
No Response	4 (4.3)	4 (4.3)
Feel Optimism or Hope		
Never/NA	3 (3.3)	3 (3.3)
Rarely	13 (14.1)	7 (7.6)
Occasionally	39 (42.4)	40 (43.5)
Frequently	32 (34.8)	37 (40.2)
No Response	5 (5.4)	5 (5.4)
Be Aware of Nonmaterial Things	2 (2.2)	0 (0.0)
Never/NA	9 (9.8)	8 (8.7)
Rarely	27 (29.3)	32 (34.8)

Occasionally	50 (54.3)	48 (52.2)
Frequently	4 (4.3)	4 (4.3)
No Response		
Be Open to Not Knowing		
Never/NA	2 (2.2)	0 (0.0)
Rarely	11 (12.0)	11 (12.0)
Occasionally	36 (39.1)	36 (39.1)
Frequently	39 (42.4)	40 (43.5)
No Response	4 (4.3)	5 (5.4)
Find Meaning in Life		
Never/NA	2 (2.2)	0 (0.0)
Rarely	15 (16.3)	4 (4.3)
Occasionally	41 (44.6)	42 (45.7)
Frequently	30 (32.6)	42 (45.7)
No Response	4 (4.3)	4 (4.3)
Meditate		
Never/NA	42 (45.7)	31 (33.7)
Rarely	24 (26.1)	25 (27.2)
Occasionally	17 (18.5)	20 (21.7)
Frequently	5 (5.4)	12 (13.0)
No Response	4 (4.3)	4 (4.3)
Pray		
Never/NA	28 (30.4)	25 (27.2)
Rarely	18 (19.6)	15 (16.3)
Occasionally	21 (22.8)	22 (23.9)
Frequently	21 (22.8)	26 (28.3)
No Response	4 (4.3)	4 (4.3)
Sing		
Never/NA	27 (29.3)	16 (17.4)
Rarely	36 (39.1)	29 (31.5)
Occasionally	20 (21.7)	28 (30.4)
Frequently	5 (5.4)	15 (16.3)
No Response	4 (4.3)	4 (4.3)
Feel Awe		
Never/NA	7 (7.6)	4 (4.3)
Rarely	19 (20.7)	15 (16.3)
Occasionally	40 (43.5)	44 (47.8)
Frequently	22 (23.9)	25 (27.2)
No Response	4 (4.3)	4 (4.3)
Contribute		
Never/NA	10 (10.9)	1 (1.1)
Rarely	9 (9.8)	1 (1.1)
Occasionally	28 (30.4)	32 (34.8)
Frequently	41 (44.6)	54 (58.7)
No Response	4 (4.3)	4 (4.3)
Find Inspiration		

Never/NA	37 (40.2)	19 (20.7)
Rarely	30 (32.6)	25 (27.2)
Occasionally	18 (19.6)	31 (33.7)
Frequently	3 (3.3)	13 (14.1)
No Response	4 (4.3)	4 (4.3)
Dates with Partner		
Never/NA	58 (63.0)	22 (23.9)
Rarely	15 (16.3)	6 (6.5)
Occasionally	10 (10.9)	31 (33.7)
Frequently	5 (5.4)	29 (31.5)
No Response	4 (4.3)	4 (4.3)
Activities with Children		
Never/NA	63 (68.5)	28 (30.4)
Rarely	12 (13.0)	7 (7.6)
Occasionally	6 (6.5)	28 (30.4)
Frequently	4 (4.3)	22 (23.9)
No Response	7 (7.6)	7 (7.6)
See Friends		
Never/NA	39 (42.4)	5 (5.4)
Rarely	23 (25.0)	4 (4.3)
Occasionally	20 (21.7)	43 (46.7)
Frequently	6 (6.5)	36 (39.1)
No Response	4 (4.3)	4 (4.3)
See Relatives		
Never/NA	23 (25.0)	3 (3.3)
Rarely	36 (39.1)	14 (15.2)
Occasionally	25 (27.2)	38 (41.3)
Frequently	4 (4.3)	33 (35.9)
No Response	4 (4.3)	4 (4.3)
Pets		
Never/NA	68 (73.9)	39 (42.4)
Rarely	6 (6.5)	2 (2.2)
Occasionally	7 (7.6)	8 (8.7)
Frequently	6 (6.5)	39 (42.4)
No Response	5 (5.4)	4 (4.3)
Contact Faraway Friends		
Never/NA	33 (35.9)	4 (4.3)
Rarely	38 (41.3)	20 (21.7)
Occasionally	16 (17.4)	52 (56.5)
Frequently	1 (1.1)	12 (13.0)
No Response	4 (4.3)	4 (4.3)
Email/Write Letters		
Never/NA	9 (9.8)	1 (1.1)
Rarely	23 (25.0)	4 (4.3)
Occasionally	31 (33.7)	28 (30.4)
Frequently	25 (27.2)	55 (59.8)

No Response	4 (4.3)	4 (4.3)
Allow Others to Help		
Never/NA	9 (9.8)	5 (5.4)
Rarely	32 (34.8)	28 (30.4)
Occasionally	36 (39.1)	41 (44.6)
Frequently	11 (12.0)	14 (15.2)
No Response	4 (4.3)	4 (4.3)
Enlarge Social Circle		
Never/NA	13 (14.1)	6 (6.5)
Rarely	17 (18.5)	16 (17.4)
Occasionally	40 (43.5)	48 (52.2)
Frequently	18 (19.6)	18 (19.6)
No Response	4 (4.3)	4 (4.3)
Ask for Help		
Never/NA	3 (3.3)	2 (2.2)
Rarely	14 (15.2)	22 (23.9)
Occasionally	37 (40.2)	41 (44.6)
Frequently	34 (37.0)	23 (25.0)
No Response	4 (4.3)	4 (4.3)
Share		
Never/NA	18 (19.6)	6 (6.5)
Rarely	26 (28.3)	19 (20.7)
Occasionally	32 (34.8)	40 (43.5)
Frequently	12 (13.0)	23 (25.0)
No Response	4 (4.3)	4 (4.3)
Take Breaks		
Never/NA	8 (8.7)	1 (1.1)
Rarely	24 (26.1)	9 (9.8)
Occasionally	39 (42.4)	42 (45.7)
Frequently	17 (18.5)	36 (39.1)
No Response	4 (4.3)	4 (4.3)
Share with Co-Workers		
Never/NA	1 (1.1)	4 (4.3)
Rarely	8 (8.7)	6 (6.5)
Occasionally	40 (43.5)	42 (45.7)
Frequently	38 (41.3)	35 (38.0)
No Response	5 (5.4)	5 (5.4)
Quiet Time to Complete Tasks At Work		
Never/NA	5 (5.4)	2 (2.2)
Rarely	30 (32.6)	8 (8.7)
Occasionally	38 (41.3)	40 (43.5)
Frequently	14 (15.2)	37 (40.2)
No Response	5 (5.4)	5 (5.4)
Identify Exciting Tasks		
Never/NA	9 (9.8)	1 (1.1)

Rarely	15 (16.3)	6 (6.5)
Occasionally	47 (51.1)	47 (51.1)
Frequently	16 (17.4)	33 (35.9)
No Response	5 (5.4)	5 (5.4)
Set Limits		
Never/NA	2 (2.2)	2 (2.2)
Rarely	15 (16.3)	8 (8.7)
Occasionally	48 (52.2)	48 (52.2)
Frequently	22 (23.9)	29 (31.5)
No Response	5 (5.4)	5 (5.4)
Balance Caseload		
Never/NA	5 (5.4)	3 (3.3)
Rarely	28 (30.4)	8 (8.7)
Occasionally	42 (45.7)	48 (52.2)
Frequently	12 (13.0)	28 (30.4)
No Response	5 (5.4)	5 (5.4)
Arrange Comfortable Workspace	8 (8.7)	2 (2.2)
Never/NA	26 (28.3)	8 (8.7)
Rarely	32 (34.8)	29 (31.5)
Occasionally	20 (21.7)	48 (52.2)
Frequently	6 (6.5)	5 (5.4)
No Response		
Supervision		
Never/NA	1 (1.1)	4 (4.3)
Rarely	12 (13.0)	21 (22.8)
Occasionally	48 (52.2)	41 (44.6)
Frequently	26 (28.3)	21 (22.8)
No Response	5 (5.4)	5 (5.4)
Negotiate for Needs		
Never/NA	44 (47.8)	23 (25.0)
Rarely	22 (23.9)	33 (35.9)
Occasionally	17 (18.5)	21 (22.8)
Frequently	4 (4.3)	10 (10.9)
No Response	5 (5.4)	5 (5.4)
Peer Support Group		
Never/NA	19 (20.7)	16 (17.4)
Rarely	17 (18.5)	11 (12.0)
Occasionally	31 (33.7)	31 (33.7)
Frequently	20 (21.7)	29 (31.5)
No Response	5 (5.4)	5 (5.4)
Strive for Work Balance		
Never/NA	6 (6.5)	5 (5.4)
Rarely	29 (31.5)	5 (5.4)
Occasionally	40 (43.5)	45 (48.9)
Frequently	12 (13.0)	31 (33.7)

No Response	5 (5.4)	6 (6.5)
Strive for Home Balance		
Never/NA	12 (13.0)	2 (2.2)
Rarely	28 (30.4)	5 (5.4)
Occasionally	32 (34.8)	35 (38.0)
Frequently	15 (16.3)	45 (48.9)
No Response	5 (5.4)	5 (5.4)

Percentiles in parentheses.

Comparisons of Means

Independent sample *t*-tests were completed to analyze differences between disaster responders and disaster mental health responders in terms of the criterion variables. The only significant difference found between disaster responders and disaster mental health responders was for STSS Intrusion ($t = -2.475$, $p < .05$), with disaster responders ($M = 9.059$, $SD = 3.273$) reporting more intrusion symptoms than disaster mental health responders ($M = 7.500$, $SD = 1.829$). See Table 23 for a list of the means, standard deviations, and *t*-test statistics for each of the criterion variables.

Table 23. Comparisons of Means between Disaster Responders and Disaster Mental Health Responders

Criterion Variables	Disaster Responders		Disaster Mental Health Responders		
	M	*SD*	*M*	*SD*	*t*
STSS Total	28.818	9.635	25.500	6.525	-1.573
STSS Avoidance	11.149	3.893	10.143	3.325	-.998
STSS Intrusion	9.059	3.273	7.500	1.829	-2.475*
STSS Arousal	8.597	3.367	7.857	2.598	-.917
ProQOL					
Burnout	50.229	10.270	50.971	8.763	.280
Secondary Trauma	50.399	11.011	48.421	5.478	-.981
Compassion Satisfaction	50.699	10.518	46.934	8.889	-1.394
PTGI Total	43.776	21.464	45.000	19.034	.214
PTGI Appreciation of Life	6.900	3.707	7.000	2.828	.114
PTGI Relating to Others	13.729	7.108	13.429	6.947	-.147
PTGI Personal Strength	8.886	4.951	9.786	4.693	.649
PTGI New Possibilities	11.044	5.756	11.643	4.781	.412
PTGI Spiritual Change	2.897	2.540	3.143	2.033	.394
Satisfaction with Life Scale	26.246	6.689	27.571	6.047	.734
Flourishing Scale	49.186	5.797	50.769	3.419	1.348

* $p < .05$, ** $p < .01$, *** $p < .001$

Summary of Quantitative Results

The results of the multiple regression analyses are summarized in Table 24.

Table 24. Summary of Multiple Regression Analyses

Criterion Variables	*R*	*F*
STSS Total	.403	1.670
STSS Avoidance	.318	1.176
STSS Intrusion	.375	1.590
STSS Arousal	.449	2.125**
ProQOL		
Burnout	.489	2.623***
Secondary Trauma	.313	1.207
Compassion Satisfaction	.384	1.627
PTGI Total	.398	1.697*
PTGI Appreciation of Life	.312	1.225
PTGI Relating to Others	.273	1.031
PTGI Personal Strength	.363	1.561
PTGI New Possibilities	.365	1.552
PTGI Spiritual Change	.451	2.181**
Satisfaction with Life Scale	.423	1.975**
Flourishing Scale	.502	2.713***

* $p < .05$, ** $p < .01$, *** $p < .001$

Qualitative Analysis

The one qualitative question asked of the participants was, “After reflecting on your responses to these questions, what else would you like to share about your experiences as a disaster responder?” From the 60 written responses to the qualitative question, six domains were created based on the data. Table 25 includes a list of the domains with their categories and sub-categories.

Domain 1: Negative Experiences. Participants described several negative experiences of their disaster relief work, including the work being hard, the experience of trauma, descriptions of a lack of help, and miscellaneous comments.

Category 1: Hard Work. The participants shared that they felt the work was difficult and exhausting. “[The work is] very tiresome and difficult” (Respondent 52, male, young adult). They identified that they felt it was stressful and challenging. “This can be a tough job (Respondent 5, male, young adult).

Category 2: Trauma. This category was further divided into the following sub-categories: Exposure to Trauma, Symptoms, and Recovery Timeline. In terms of exposure to trauma, two participants noted this as a difficulty. One participant reported increased exposure due to being a personal survivor of the disaster as well as a responder. The other participant described exposure as a result of working with the disaster survivors. “My volunteer job puts me right into the front lines of the action. Therefore we see very, very traumatized people, sometimes within hours of their disaster” (Respondent 83, male, older adult).

In terms of traumatic stress symptoms, participants reported avoidance and arousal symptoms. In terms of avoidance symptoms, one participant commented, “I do

know that I do not like to be reminded of that day even now" (Respondent 15, female, older adult). In terms of arousal symptoms, one participant identified symptoms such as "…feelings of anger, guilt, lethargy, detachment, sadness, and inability to relate to others" (Respondent 64, female, young adult). One participant noted "I become more callous" (Participant 83, male, older adult).

Some participants indicated that there was a timeline to their recovery from the traumatic symptoms. This timeline varied across participants, and most of them reported that the symptoms lasted for several days. "The first few days are very stressful" (Respondent 43, female, older adult). "[It] takes several days to decompress" (Respondent 83, male, older adult). Some participants reported a greater length of time: "It took over two years before I began to feel better" (Respondent 51, female, middle-aged adult). One participant acknowledged that the amount of time it took to recover varied:

> There are different phases of the 'coming home' process. I'm not sure if the phases are the
>
> same for everyone …These emotions don't always come all at once, and vary in severity. For me, I can tell I have begun letting go of the experience when I'm able to hold conversations with others, have enough energy to get through a project or task, and find humor/joy in the little things in life. (Respondent 64, female, young adult)

This participant identified that the recovery process is different among responders. The participant also noted that the recovery process for her was different depending on the disaster response as well.

Category 3: Lack of Help. Some participants identified their struggles with getting help for their trauma symptoms. The struggle was both in the absence of help from the ARC ("We used to have follow-up calls by mental health folks but the last 3 deployments no one has called. It makes me have to crawl into myself, because there is no one to talk to" (Respondent 83, male, older adult) and personally ("I could not afford to hire a therapist to help me deal with the post-traumatic symptoms" (Respondent 51, female, middle-aged adult)).

Category 4: Miscellaneous. The miscellaneous item described difficulties that the participant saw in other responders in terms of their coping.

Domain 2: Positive Experiences. Participants identified several positive experiences from their disaster relief work including satisfaction with the work, increased connections in their disaster work as well as personal life, disaster relief work fitting their personal values, personal changes such as growth and increased appreciation of life, and miscellaneous comments.

Category 1: Satisfaction. The participants identified that they found disaster work rewarding and enjoyable. "Responding to disasters and helping people are some of the best experiences I've ever had" (Respondent 65, female, young adult). "This is one of the most rewarding direct personal activities I have ever engaged in over a long period" (Respondent 66, female, young adult). They identified altruistic tendencies as well. "I truly enjoy the opportunity to help others in their time of need" (Respondent 40, female, older adult). "It is really a good feeling to know that you have done something to relieve the suffering of others" (Respondent 4, female, older adult).

Category 2: Connections. Participants reported developing new relationships with other responders through their disaster work. “You meet people that relate to you and the work you do with [the] Red Cross and make new friends when you meet volunteers from other areas of the country” (Respondent 4, female, older adult). They also discussed strengthening their old relationships as a result of their disaster work. “My husband and I volunteer with the Red Cross together. This experience has brought us closer together” (Respondent 30, female, older adult). “I have become … a better wife and mother and friend” (Respondent 40, female, older adult).

Category 3: Values. Some participants commented on how disaster work with the ARC matches their personal values. They described the work as “worthwhile” (Respondent 71, female, older adult) and “valuable” (Respondent 87, female, older adult).

Category 4: Personal Change. Many participants reported positive personal changes. They were able to describe how they have grown from their disaster work. “Volunteering gives me pride and self-worth” (Respondent 19, male, older adult). “I have become a more flexible, less arrogant leader…a more decent person” (Respondent 40, female, older adult). They also described a greater appreciation for life.

> Working with the Red Cross has enabled me to accept what is real instead of wishing for what is ideal. Sloshing through disasters has made me laugh more loudly at the chaos and absurdity of life and appreciate the good things…Bottom line: I am so lucky--my life is good. Short-term trauma work with Red Cross adds meaning and value to that good, lucky life. (Respondent 55, female, older adult)

This participant was able to express gratitude for her good fortune in life.

Category 5: Miscellaneous. The miscellaneous comments included one remark about "missing" disaster work when not deployed (Respondent 74, female, older adult). There was also a comment about how volunteering in disaster relief led the participant to explore a career with the ARC (Respondent 52, male, young adult).

Domain 3: Coping. Participants provided several responses related to coping, including social support, a lack of self-care, spirituality, cognitive coping, prior experiences, recharging at home, and miscellaneous comments.

Category 1: Social Support. Participants noted support from the ARC as being important in terms of their coping. "[B]eing surrounded by others who do this work helps" (Respondent 5, male, young adult). "Follow-up is imperative to reduce trauma after the disaster "(Respondent 51, female, middle-aged adult). They also described the importance of their personal support networks in their coping. "[My husband and I] are a great source of comfort to each other during these disasters" (Respondent 30, female, older adult). "I call my husband every day to stay grounded" (Respondent 36, female, older adult).

Category 2: Lack of Self-Care. Several participants reported an inability to engage in self-care while out on deployment. "I guess I do not do enough to care for myself during a deployment but often there just isn't time" (Respondent 71, female, older adult). They identified that "victims needs often come first" (Respondent 9, female, older adult).

Category 3: Spirituality. Many participants identified the importance of their spiritual life in their personal coping. "I believe in God the Father, God the Son, and God

the Holy Spirit. If I run into a problem while on deployment, I know who I can call upon" (Respondent 68, female, older adult). "I am a Christian, and my faith gives me strength to handle any situation I am placed in" (Respondent 75, male, older adult).

Category 4: Cognitive Coping. Participants identified ways of reframing their disaster relief work to help them better cope. One participant identified personal reflection as important for his coping:

> When it is all over I like to reflect on what I did that was good and what I could have done that should be improved upon and try and take these as life lessons in the way I treat other people. (Respondent 56, male, older adult)

Another participant identified focusing on the clients: "I try to keep in mind that my actions help clients and my co-disaster responders" (Respondent 34, male, older adult). Another reported "I give 100% when there! And then let it all go" (Respondent 36, female, older adult).

Category 5: Prior Experience. Several participants reported that their prior experiences have helped to prepare them for disaster work. One participant noted how her work on local disasters prepared her for larger, national disasters (Respondent 57, female, older adult). They also identified prior work experiences in areas such as disaster nursing, practicing law, being an EMT, and being a retired Deputy Sheriff that were important in giving them necessary coping skills to work on disasters.

Category 6: Recharging at Home. Some participants identified the importance of recovering while at home. "As for coping with my own stress, well, that is what the peace and quiet that I get at home does for me" (Respondent 47, female, older adult). They noted that the disaster responses were difficult, but they could manage in the short-term.

“I don't mind making sacrifices and living an unbalanced, 15-hour workday for 2 weeks because I can quickly regain balance when I get home” (Respondent 55, female, older adult).

Category 7: Miscellaneous. Some items in the miscellaneous category included doing extra research on disasters to stay engaged, only responding to one large disaster per year to avoid burnout, and the importance of balance.

Domain 4: Organizational Issues. The Organizational Issues domain includes positive aspects of the ARC, negative aspects of the ARC, and the role of volunteers in the ARC.

Category 1: Positive. Some of the participants reported positive feelings towards the ARC. “I love the R[ed] C[ross] and everyone that works within the organization” (Respondent 23, female, middle-aged adult). One participant noted an appreciation of debriefing services (Respondent 15, female, older adult), and one participant indicated that there have been “…a lot of very good changes over the years” (Respondent 37, female, middle-aged adult).

Category 2: Negative. Participants described negative aspects of the ARC including not feeling heard by the leadership, the unavailability of help, and miscellaneous comments. In terms of not being heard, participants indicated the distress and frustration caused by not feeling that they have a voice.

> [I] get terribly frustrated in that supervisors tend not to listen to the complaints or suggestions or information coming from the person who is actually out working in the disaster. We are out there; we see what is happening, not sitting at a desk

> making judgments that will affect not only our clients but us with no regard for our input. (Respondent 28, female, older adult)

Another respondent reported frustration as well:

> What the survey did not capture: How much stress is caused by the bureaucracy which constantly sends out mandates from removed urban centers and fails to provide a voice to volunteers on the ground. The sense of powerlessness can lead to irritability and depression. At least some of [the] symptoms experienced by volunteers are not created by exposure to traumatic events but the failure of the Red Cross to establish a supportive environment where contributions are appreciated and feel meaningful. (Respondent 41, female, older adult)

The frustration of the respondents indicated the idea that there was "poor leadership" in the ARC (Respondent 83, male, older adult).

In terms of the unavailability of help, two participants reported a lack of mental health resources:

> I responded to a major disaster and received very little assistance from the Red Cross. I met a couple times with a mental health volunteer who provided no aide. I requested more help but none was provided. I had to work so I could not attend the daytime support group meetings … I want to continue to volunteer but need to be supported by the Red Cross, too. (Respondent 51, female, middle-aged adult)

Another respondent described disaster mental health services as an "afterthought" (Respondent 70, male, middle-aged adult).

Some miscellaneous comments included disappointment with the ARC and the difficulty of moving from place to place and having to share a room when out on deployment.

Domain 5: Comments about the Survey. Several respondents reported on how the questions did not apply to their experience on deployment (Category 1). “Many things you do as a disaster worker do not fit into a number (1 to 5) or a check mark on a form” (Respondent 14, male, older adult). Some participants described an increased awareness of the mental health impacts and their own self-care on disaster responses (Category 2). There were several miscellaneous comments about the survey as well (Category 3).

Domain 6: Miscellaneous. The final category included miscellaneous comments that did not fit into the other domains.

Table 25. Qualitative Domains, Categories, and Sub-Categories

Domain 1: Negative Experiences Category 1: Hard Work Category 2: Trauma Sub-Category 1: Exposure to Trauma Sub-Category 2: Symptoms Sub-Category 3: Recovery Timeline Category 3: Lack of Help Category 4:Miscellaneous
Domain 2: Positive Experiences Category 1: Satisfaction Category 2: Connections Sub-Category 1: Building New Relationships Sub-Category 2: Strengthening Old Relationships Category 3: Values Category 4: Personal Change Sub-Category 1: Growth Sub-Category 2: Appreciation Category 5: Miscellaneous
Domain 3: Coping Category 1: Social Support Sub-Category 1: Organizational Sub-Category 2: Personal Category 2: Lack of Self-Care Category 3: Spirituality Category 4: Cognitive Coping Category 5: Prior Experience Category 6: Recharging at Home Category 7: Miscellaneous
Domain 4: Organizational Issues Category 1: Positive Category 2: Negative Sub-Category 1: Not Being Heard Sub-Category 2: Help Not Available Sub-Category 3: Miscellaneous Category 3: Roles
Domain 5: Comments about the Survey Category 1: Questions Do Not Apply Category 2: Increased Awareness Category 3: Miscellaneous
Domain 6: Miscellaneous

Summary of Results

The regression models that were significant included the STSS Arousal subscale, the ProQOL Burnout scale, PTGI Total, the PTGI Spiritual Change subscale, the SWLS, and the Flourishing Scale. In terms of STSS Arousal, those were unemployed reported less arousal than those who work full time. In terms of the ProQOL Burnout scale, young adults, those who are single, and those with master's degrees reported more burnout symptoms. Those who reported always or sometimes engaging in self-care reported less burnout than those who never engage in self-care. In terms of PTGI Total, middle-aged adults and those with a professional or doctoral degrees reported less posttraumatic growth. Those who had responded to seven or more disasters in the past five years, and those whose disaster response was over 13 months ago reported increased posttraumatic growth. In terms of the PTGI Spiritual Change subscale, those who reported some college or a professional or doctoral degree experienced less spiritual change. Those who worked part time, had participated in seven or more disasters in the past five years, and those whose last disaster response was greater than 13 months ago reported more spiritual change. In terms of the SWLS, those who were single reported less satisfaction with life than those who were married or in a significant relationship. In terms of the Flourishing Scale, those who were young adults, single, and had either some college or a master's degree reported less psychological strengths. Those who reported always or sometimes engaging in self-care reported greater psychological strengths than those who never engage in self-care. The only difference between disaster responders and disaster mental health responders on the scales was in the STSS Intrusion subscale. In terms of the qualitative question, participants reported both positive and negative experiences while

on disasters. More participants reported positive experiences than negative experiences. Several participants also reported coping strategies that they use when deployed, while some also reported the difficulties of engaging in self-care while on deployment.

Research questions. The research questions for this study included: 1) What risk factors with disaster relief workers predict secondary traumatic stress? 2) What protective factors with disaster relief workers predict posttraumatic growth? 3) Are there secondary traumatic stress differences between disaster responders and disaster mental health workers? and 4) Are there posttraumatic growth differences between disaster responders and disaster mental health workers? No hypotheses were proposed at this time due to the exploratory nature of the study. The results of this study suggest several risk and protective factors for secondary traumatic stress as well as several factors that increase the likelihood of posttraumatic growth. Risk factors for secondary traumatic stress and burnout included those whose disaster response was 7-12 months ago, being a young adult, being single, and having a master's degree. Protective factors that decreased the risk of secondary traumatic stress in disaster relief workers included those who work with trauma survivors outside of their volunteer work, those who are unemployed, and those who always or sometimes engage in self-care. Factors that contribute to posttraumatic growth include working part time, being involved in a greater number of disaster responses in the past five years, and having greater than 13 months of time since the last disaster response. Factors that decrease the likelihood of developing posttraumatic growth include being a middle-aged adult, having a professional or doctoral degree, and having some college. In terms of the measures of satisfaction with life and psychological strengths, factors that contribute to greater satisfaction include always or sometimes

engaging in self-care. Factors that lead to decreased satisfaction include being single, being in young adulthood, having some college, and having a master's degree. When examining the differences between disaster responders and disaster mental health workers, the only significant difference in secondary traumatic stress symptoms was in intrusion symptoms, with disaster responders reporting more intrusion symptoms than disaster mental health responders. There were no significant differences between the two groups in posttraumatic growth or life satisfaction.

Chapter 5: Summary, Discussion, and Conclusions

Summary

The occurrence of natural and human-caused disasters greatly impacts those who have survived the disaster. As the damage and impact from these disasters increase, there is a greater need for disaster relief organizations such as the America Red Cross (ARC) to provide services to survivors. Prior research on secondary traumatic stress has shown that those who respond to disasters can be negatively impacted by working with survivors of the disasters, even if they have not directly experienced the disasters (e.g. Stellman et al., 2008; McCaslin, Jacobs, Meyer, Johnson-Jiminez, Metzler, & Marmar, 2005; Akin-Little & Little, 2008; Simon Rosser, 2008; Levy, 2008; Jones, Immel, Moore, & Hadder, 2008; Haskett, Smith Scott, Nears, & Grimmet, 2008; Adams, Figley, & Boscarino, 2008; Eidelson, D'Alessio, & Eidelson, 2003; Creamer & Liddle, 2005) . There is also some evidence that disaster relief workers can experience positive psychological impacts as well (Dyregrov, Kristoffersen, & Gjestad, 1996; Linley & Joseph, 2006; Bhushan & Kumar, 2012; Lambert and Lawson, 2013; James, Noel, & Jean Pierre, 2014; Bauwens and Tosone, 2010). The current study used a mixed methods approach to examine risk factors for secondary traumatic stress in disaster relief workers as well as protective factors that may contribute to posttraumatic growth. Furthermore, this study sought to examine differences in secondary traumatic stress and posttraumatic growth between disaster responders and disaster mental health responders.

Participants were recruited through staff at the ARC and asked to participate in an online survey including a demographics questionnaire, the Secondary Traumatic Stress Scale (STSS), the Professional Quality of Life Scale-Version 5 (ProQOL-5), the

Posttraumatic Growth Inventory (PTGI), the Satisfaction with Life Scale (SWLS), the Flourishing Scale (FS), a Self-Care Assessment, and one qualitative question. Ninety-two participants completed the survey. Multiple regression analyses were conducted for each of the criterion variables (STSS Total plus Avoidance, Intrusion, and Arousal subscales, ProQOL-5 with Burnout, Secondary Trauma, and Compassion Satisfaction scales, PTGI Total with Appreciation of Life, Relating to Others, New Possibilities, Personal Strength, and Spiritual Change subscales, SWLS, and FS) and 11 predictor variables (sex, age, relationship status, level of education, employment status, whether they work with trauma survivors outside of the ARC, whether they are personal survivors of trauma and/or disasters, number of disaster responses in the past five years, time since last disaster response, engagement in self-care, and follow-up by the ARC). Frequencies for the items on the Self-Care Assessment were analyzed. Comparisons of the means between disaster responders and disaster mental health workers were examined using each of the criterion variables as dependent variables and completing *t*-tests. The qualitative question was examined using a modified consensual qualitative research approach (CQR; Hill, Thompson, & Williams, 1997) wherein the primary investigator and one other researcher coded the responses into domains, and then categories and subcategories. These results were then compared to the quantitative analyses. In the following section, the results are discussed, recommendations for future research areas explored, limitations of the study are examined, and conclusions of the study are described.

Discussion

The literature regarding the negative psychological impacts on disaster relief workers is scarce, and the literature on the positive psychological impacts on relief

workers is even scarcer. Much of the prior research is anecdotal (Akin-Little & Little, 2008; Simon Rosser, 2008; Levy, 2008; Jones, Immel, Moore, & Hadder, 2008; Haskett, Smith Scott, Nears, & Grimmet, 2008; Campbell, 2007) or uses instruments that have not been validated or are validated as measures of PTSD rather than secondary traumatic stress (Stellman et al., 2008; Long, Meyer, & Jacobs, 2007; Simons, Gaher, Jacobs, Meyer, & Johnson-Jimenez, 2005; McCaslin, Jacobs, Meyer, Johnson-Jiminez, Metzler, & Marmar, 2005; Creamer & Liddle, 2005; Bhushan & Kumar, 2012). It is questionable whether these instruments are sensitive enough to detect differences for those who are secondarily exposed to traumatic events, such as helping professionals. In addition, these measures have not been validated or normed for those exposed to secondary traumatic events. One strength of the current study is the use of these validated measures of secondary traumatic stress, such as the STSS and the ProQOL-5, as well as posttraumatic growth, such as the PTGI. This study also examined secondary traumatic stress and posttraumatic growth using a mixed methods approach. By comparing the analyses from quantitative and qualitative data, there is greater evidence that disaster relief workers experience both secondary traumatic stress and posttraumatic growth. Insignificant regression models were interpreted due to this being one of the first studies to examine these variables and the lack of research in this area.

Secondary Traumatic Stress. Secondary traumatic stress was examined using the STSS, the ProQOL-5 Secondary Trauma and Burnout scales, and the qualitative question. Correlations were assessed to determine any relationships between the predictor variables and the criterion variables (See Appendix K). Multiple regression analyses examined predictors that increased the risk of secondary traumatic stress. Differences

between disaster responders and disaster mental health responders were examined using these scales. In addition, the frequency of participants who scored above or below the cut-off scores for these scales was examined.

STSS. Significant positive correlations were found between STSS Total and the following predictor variables: being a young adult, being married or in a significant relationship, sometimes engaging in self-care, and sometimes receiving follow-up from the ARC. Significant negative correlations were found between STSS Total and the following variables: being retired and always engaging in self-care. Significant positive correlations were found between the STSS Avoidance subscale and the following predictor variables: being a young adult, having the last disaster response 7-12 months ago, and sometimes engaging in self-care. Significant negative correlations were found between the STSS Avoidance subscale and the following variables: being retired and always engaging in self-care. Significant positive correlations were found between the STSS Intrusion subscale and the following predictor variables: being a young adult, sometimes engaging in self-care, and sometimes receiving follow-up from the ARC. Significant negative correlations were found between the STSS Intrusion subscale and the following variables: having a professional or doctoral degree and always engaging in self-care. Significant positive correlations were found between the STSS Arousal subscale and the following predictor variables: being a young adult, being single, having the last disaster response 7-12 months ago, sometimes engaging in self-care, and sometimes receiving follow-up from the ARC. Significant negative correlations were found between the STSS Arousal subscale and the following variables: being retired and always engaging in self-care.

When examining the regression models for the STSS and its subscales, STSS Total, STSS Avoidance, and STSS Intrusion models were not significant, indicating that the predictor variables do not adequately predict secondary traumatic stress. However, even though the STSS Intrusion model was not significant, two of the predictor variables were significant. Those who work with trauma survivors reported less intrusion symptoms than those who do not work with disaster survivors. Prior research examining this variable has been mixed, with some studies indicating no difference between those who work directly with trauma survivors and those who do not (Long, Meyer, & Jacobs, 2007), although most research indicates that the greater the exposure to trauma survivors, the greater the symptoms of secondary traumatic stress (Williams, Helm, & Clemens, 2012; Creamer & Liddle, 2005; Brady et al., 1999; Chrestman, 1999; Schauben & Frazier, 1995; Lee, 1995; Arvay & Uhlemann, 1996; Bride et al., 2004). Perhaps those who have worked with trauma survivors in the past have developed the necessary coping skills to manage any intrusive symptomology. The other significant predictor of the STSS Intrusion subscale was that those whose last disaster response was 7-12 months ago reported more intrusion symptoms than those whose disaster response was 13 months or greater ago; whereas those whose last response was less than 7 months ago did not identify greater intrusive symptoms than those whose last disaster response was over 13 months ago. It is unclear why this might be the case. Perhaps it takes some time after the response for responders to identify intrusive symptoms. The STSS Arousal regression model was found to be statistically significant, indicating that the model adequately predicts arousal symptoms. It was found that those who were unemployed had less arousal symptoms than those who were working full time. This seems somewhat

contradictory to what one would expect. It does not appear that this is simply a result of those who are not working having more time to engage in self-care after disaster responses without having to quickly return to work before they are ready, as the results for those who are retired did not indicate a decrease in symptoms. Interestingly, while research on this variable has been mixed in the past (Williams, Helm, & Clemens, 2012; Creamer & Liddle, 2005), for this study, those who were survivors of trauma and/or disasters did not identify increased secondary traumatic stress symptoms. As with prior research, age did not predict secondary traumatic stress (Good, 1996; Knight, 1997; Munroe, 1990; Pearlman and MacIan, 1995).

Prior research has not examined the differences between disaster responders and disaster mental health responders in terms of secondary traumatic stress. Disaster mental health responders may experience less secondary traumatic stress due to their roles as mental health clinicians and developing self-care in their daily practice. On the other hand, disaster mental health responders may experience more secondary traumatic stress due to their repeated exposure to the traumatic stories of the disaster survivors, whereas other roles in the ARC may not experience this exposure. The results of this research do not indicate any differences in secondary traumatic stress between the two groups other than intrusion symptoms. Those who were disaster responders reported more intrusion symptoms than those who were disaster mental health responders.

When examining the results of the research for STSS Total, 11.63% of respondents (n = 10) had scores above the cut-off score of 38, with the highest score a 61. This is an indication that these participants are experiencing significant symptoms of secondary traumatic stress. While it appears that the majority of disaster relief workers do

not experience secondary traumatic stress as a result of their disaster work, secondary traumatic stress is still impacting relief workers.

Pro-QOL-5 Secondary Trauma. Significant positive correlations were found between the Pro-QOL-5 Secondary Trauma scale and the following predictor variables: being a young adult, sometimes engaging in self-care, and sometimes receiving follow-up from the ARC. Significant negative correlations were found between the Pro-QOL-5 Secondary Trauma scale and the following variables: being retired and always engaging in self-care.

When examining the regression models for the Pro-QOL-5 Secondary Trauma scale, the model was not found to be significant and there were no significant predictors. In addition, there were no statistically significant differences between disaster responders and disaster mental health workers on this scale. A minority of respondents (21.11%, n = 19) had scores above the cut-off score of 57, with the highest score being 86. This is an indication that they are experiencing significant symptoms of secondary traumatic stress. A slightly larger group of respondents reported few symptoms of secondary traumatic stress (23.33%, n = 21). This percentage is consistent with that reported in prior research (22%; Lambert & Lawson, 2013). While it appears that the majority of disaster relief workers do not experience high levels of secondary traumatic stress as a result of their disaster work, most also do not report few symptoms of secondary traumatic stress. It seems that the majority of relief workers experience at least some symptoms of secondary traumatic stress.

ProQOL-5 Burnout. Significant positive correlations were found between the Pro-QOL-5 Burnout scale and the following predictor variables: being a young adult,

being single, participating in 4-6 disaster responses, and having the last disaster response 7-12 months ago. Significant negative correlations were found between the Pro-QOL-5 Burnout scale and the following variables: being retired and always engaging in self-care.

The regression model for Pro-QOL-5 Burnout scale was found to be significant, with several significant predictors including age, relationship status, level of education, and engagement in self-care. Those who were young adults reported more burnout than older adults. These results are contradictory to prior research that has suggested little to no relationship between secondary traumatic stress and age (Good, 1996; Knight, 1997; Munroe, 1990; Pearlman & MacIan, 1995). In terms of relationship status, it was found that those who were single experienced more burnout than those who were married or in a significant relationship. Relationship status has not been directly examined in the literature; however, there is some indication that those who have greater social support experience less secondary traumatic stress (Michalopoulos & Aparicio, 2012). In terms of level of education, those with a master's degree reported greater burnout than those with a bachelor's degree. There were no other differences between those who reported a higher level of education and those who reported a lower level of education. Prior research has not examined this variable, and it is unclear why this might be the case. In terms of engagement in self-care, those who reported always or sometimes engaging in self-care reported less burnout than those who never engaged in self-care. This result is consistent with prior research (Michalopoulos & Aparicio, 2012). It makes sense that those who engage in self-care both while on deployment and when they return home would experience less symptoms of burnout.

There were no statistically significant differences between disaster responders and disaster mental health workers on this scale. When examining the frequency of respondents who reported high symptoms of burnout, 25% (n = 23) reported symptoms greater than the cut-off score of 57, indicating that they feel ineffective in their work. These numbers are higher than those reported by prior research on disaster mental health workers alone, where it was reported that 9.9% of respondents reported burnout (Lambert & Lawson, 2013). A slightly greater group of respondents (28.26%; n = 26) reported positive feelings about their effectiveness at their work, with scores below 43. These results again indicate that, while the majority of responders do not report symptoms of burnout, a significant minority does experience high feelings of burnout, and a majority of others experience at least some symptoms of burnout.

Qualitative Question. One of the domains that resulted from the qualitative question was negative experiences. Participants shared how difficult and challenging they found the work. They also identified that it was exhausting. Some participants discussed specific trauma symptoms such as avoidance and arousal responses. Participants noted a variable length of time for them to recover from these symptoms, ranging from several days to over two years. Participants also struggled with the lack of help available, not knowing where to turn for help in reducing their traumatic symptoms, or being unable to get the help that they need due to financial reasons.

Within the Coping domain, participants identified the difficulties of engaging in self-care while out on a disaster response. Many noted that the clients' needs came before their own. Within the ARC domain, they also noted difficulties with feeling unheard within the organization and a lack of mental health resources available to responders.

Only a few participants noted negative experiences with their disaster work, which is consistent with the quantitative results. However, the participants who noted these secondary trauma symptoms appeared to be experiencing a great deal of distress from them. These participants did not feel that they had the resources available to help them manage these symptoms, which further increased the negative effects.

Posttraumatic Growth. Posttraumatic growth was examined using the PTGI and its subscales, the ProQOL-5 Compassion Satisfaction scale, the Satisfaction With Life Scale, the Flourishing Scale, and the qualitative question. Multiple regression analyses examined predictors that increased the chances of experiencing posttraumatic growth. Differences between disaster responders and disaster mental health responders were examined using these scales. In addition, the frequency of participants who scored above or below the cut-off scores for these scales was examined.

PTGI. Significant positive correlations were found between PTGI Total and the following predictor variables: sex, being employed part time, participating in seven or more disasters, sometimes engaging in self-care, and sometimes receiving follow-up from the ARC. Significant positive correlations were found between the PTGI Appreciation of Life subscale and the following predictor variables: sex and always engaging in self-care. Significant positive correlations were found between the PTGI Relating to Others subscale and the following predictor variables: having a Master's degree and being employed part time. Significant positive correlations were found between the PTGI Personal Strength subscale and the following predictor variables: sex, participating in seven or more disasters, sometimes engaging in self-care, and sometimes receiving follow-up from the ARC. Significant negative correlations were found between the PTGI

Personal Strength subscale and the following variables: having a professional or doctoral degree, always engaging in self-care, and always receiving follow-up from the ARC. Significant positive correlations were found between the PTGI New Possibilities subscale and the following predictor variables: being employed part time, working with trauma survivors in their professional work, personally being a survivor of a traumatic event and/or disaster, participating in seven or more disasters, and sometimes receiving follow-up from the ARC. Significant negative correlations were found between the PTGI New Possibilities subscale and always receiving follow-up from the ARC. Significant positive correlations were found between the PTGI Spiritual Change subscale and the following predictor variables: having a master's degree, being retired, and sometimes engaging in self-care. Significant negative correlations were found between the PTGI Spiritual Change subscale and the following variables: having some college and having a professional or doctoral degree.

When examining the regression models for the PTGI and its subscales, the PTGI Total score and the Spiritual Change subscale models were both significant, indicating that the predictor variables adequately predict posttraumatic growth and spiritual change. In terms of PTGI Total, significant predictors included age, level of education, employment status, number of disasters, and time since the last disaster response. In terms of age, those who were in middle adulthood experienced less posttraumatic growth than older adults. Prior research has not identified age as a factor in posttraumatic growth. In this case, perhaps older adults have experienced more traumatic events in their lives or developed better self-care strategies than those in middle adulthood. However, this does not explain why there was no difference between young adults and older adults. Middle

adulthood may be an especially stressful time for people as they are starting families and careers, which may lead to less time to engage in the cognitive processing necessary for posttraumatic growth. In terms of level of education, those with professional or doctoral degrees reported less posttraumatic growth than those with a bachelor's degree. In terms of employment status, those who worked part time reported more posttraumatic growth than those who work full time. Again, these variables have not been examined in prior research, and it is unclear why this might be the case. As with age, perhaps people who have an advanced degree or work full time have less time to engage in the cognitive reflection needed to experience posttraumatic growth. In terms of number of disasters, those who reported responding to seven or more disasters in the past five years experienced greater posttraumatic growth than those who responded to less than seven disasters. As for time since the last disaster response, those whose last disaster response was six months or less ago experienced less posttraumatic growth than those whose last disaster response was greater than 13 months ago. Both of these findings are consistent with prior research which shows that the greater the exposure to trauma, the greater the posttraumatic growth (Linley & Joseph, 2006; Brockhouse et al., 2011; Joseph & Linley, 2007). In addition, it has been shown that sufficient time has to pass for people to experience posttraumatic growth due to the time needed for people to engage in the cognitive reflections (James, Noel, & Jean-Pierre, 2014; Helgeson et al., 2006). This research did not find that sex or relationship status were predictors of posttraumatic growth, which is inconsistent with prior research (Ho et al., 2011; Vishnevsky et al., 2010; Scheutter & Boals, 2011; Linley & Joseph, 2004; Stanton et al., 2006). The research also did not find that those working with trauma survivors and those who are

themselves survivors of trauma and/or disasters were predictors of posttraumatic growth, which is inconsistent with prior research indicating that a prior history of trauma and increased exposure to trauma are important in the development of posttraumatic growth (Kjellenberg et al., 2014; Linley & Joseph, 2007).

The Spiritual Change subscale model was also significant, with level of education, employment status, number of disaster responses, and time since the last disaster response being significant predictors. In terms of level of education, those with some college or professional/doctoral degrees reported less spiritual change than those with bachelor's degrees. In terms of employment status, those who worked part time reported more spiritual change than those working full time. In terms of the number of disaster responses, those who reported seven or more disaster responses in the past five years reported more spiritual change than those who responded to less than seven disasters. In terms of time since the last disaster response, those who reported 12 months or less since their last disaster response experienced less posttraumatic growth than those who reported 13 months or more. Prior research has not specifically examined these predictors with regards to this subscale. However, it appears that spiritual change is more likely to occur with greater exposure to trauma and with a greater amount of time after the exposure, which is consistent with posttraumatic growth in general. It is unclear why level of education and employment status were important in spiritual change.

The Appreciation of Life, Relating to Others, Personal Strength, and New Possibilities models were not significant, indicating that the predictor variables do not adequately predict these aspects of posttraumatic growth. However, even though these models were not significant, they all had at least one significant predictor variable. For

the Appreciation of Life subscale, level of education, employment status, number of disaster responses, and time since the last disaster response were all significant predictors. Those with a professional or doctoral degree reported less appreciation of life than those with a bachelor's degree. Those who worked part time reported more appreciation of life than those working full time. Those with seven or more disaster responses in the past five years reported more appreciation of life than who responded to less than seven disasters. Those whose last disaster response was less than 3 months ago reported less appreciation of life than those whose last disaster response was greater than 13 months ago. The results from these models are similar to the predictors of posttraumatic growth and may be explained in a similar way. It is unclear why level of education or employment status have been found to be important in this subscale; however, the results regarding the number of disaster responses and time since the last disaster response have been consistent throughout the PTGI and its subscales, as well as with prior research (Linley & Joseph, 2006; Brockhouse et al., 2011; Joseph & Linley, 2007; James, Noel, & Jean-Pierre, 2014; Helgeson et al., 2006).

For the Relating to Others subscale, significant predictors included employment status, number of disasters, and time since last disaster response. In terms of employment status, those who worked part time reported greater relating than those who work full time. In terms of number of disasters, those with seven or more disaster responses in the past five years reported more relating than who responded to less than seven disasters. Those whose last disaster response was less than 3 months ago reported less relating than those whose last disaster response was greater than 13 months ago. The results from these models are similar to the predictors of posttraumatic growth and may be explained in a

similar way. Again, it is unclear why employment status has been found to be important in Relating to Others; however, the results regarding the number of disaster responses and time since the last disaster response have been consistent throughout the PTGI and its subscales and prior research (Linley & Joseph, 2006; Brockhouse et al., 2011; Joseph & Linley, 2007; James, Noel, & Jean-Pierre, 2014; Helgeson et al., 2006). In terms of the Personal Strength and New Possibilities subscales, though the models themselves were not significant, the number of disaster responses was significant for both. Those with seven or more disaster responses in the past five years reported more personal strength and new possibilities than who responded to less than seven disasters, which is consistent with the previous results and prior research (Brockhouse et al., 2011; Joseph & Linley, 2007).

There were no statistically significant differences between disaster responders and disaster mental health workers on the PTGI or its subscales. No cut-off scores have been identified for the PTGI. In this study, the mean score for PTGI Total was 44.65. Fourteen participants reported scores of 20 or below, with the lowest score equaling zero. Sixteen participants reported scores of 65 or greater, with the highest score equaling 82.

ProQOL-5 Compassion Satisfaction. Significant positive correlations were found between the Pro-QOL-5 Compassion Satisfaction scale and the following predictor variables: being divorced or widowed, being retired, and always receiving follow-up from the ARC. Significant negative correlations were found between the Pro-QOL-5 Compassion Satisfaction scale and the following variables: being a young adult, being single, working with trauma survivors in their professional work, and sometimes receiving follow-up from the ARC.

When examining the regression model for the ProQOL-5 Compassion Satisfaction scale, the model was not found to be significant, indicating that the predictors do not adequately predict compassion satisfaction. Even though the model was not significant, engagement in self-care was found to be a significant predictor, with those who reported always engaging in self-care having more compassion satisfaction than those who never engage in self-care. This is consistent with prior research that suggests self-care is important in compassion satisfaction (Lambert & Lawson, 2013).

There were no statistically significant differences between disaster responders and disaster mental health workers on this scale. Twenty-two participants (24.72%) reported ProQOL-5 Compassion Satisfaction scores greater than the cut-off score of 57, indicating high satisfaction with their job. Twenty-five participants (28.09%) reported scores below 43, indicating dissatisfaction with their job. The majority of respondents had scores in between 43 and 57, indicating moderate satisfaction with their job.

Satisfaction With Life Scale and Flourishing Scale. Significant positive correlations were found between the SWLS and the following predictor variables: being retired. Significant negative correlations were found between the SWLS and the following variables: being a young adult, being single, and having the last disaster response 7-12 months ago. Significant positive correlations were found between the FS and the following predictor variables: being retired. Significant negative correlations were found between the FS and the following variables: being a young adult, being single, participating in 4-6 disaster responses, having the last disaster response 7-12 months ago, and sometimes receiving follow-up from the ARC.

When examining the regression models for the SWLS and FS, both models were significant, indicating that the predictor variables adequately predict satisfaction with life and psychological well-being, respectively. In terms of the SWLS, there was only one significant predictor: relationship status. Single people reported less satisfaction with life than those who were married or in a significant relationship. In terms of the FS, significant predictors included age, relationship status, level of education, and engagement in self-care. Those who were young adults reported less well-being than older adults. Those who were single reported less well-being than those who were married or in a significant relationship. Those with some college or a master's degree reported less well-being than those with a bachelor's degree. Those who reported always or sometimes engaging in self-care reported greater well-being than those who never engage in self-care. These scales have never been used in prior research on posttraumatic growth; however, there is some evidence that self-care and marital status are important in posttraumatic growth (Lambert & Lawson, 2013; Linley & Joseph, 2004).

There were no statistically significant differences between disaster responders and disaster mental health workers on the SWLS and the FS. In terms of the SWLS, seventy-seven respondents (84.62%) reported at least some satisfaction with their lives, with 33 (36.26%) reporting high satisfaction. Eleven respondents (12.09%) reported at least slight dissatisfaction with their lives, with two (2.20%) reporting being extremely dissatisfied. No cut-off scores have been determined for the FS. In this study, the mean for the FS was 49.66. The maximum score on the FS is 56, which indicates that many of the respondents reported greater psychological well-being. Fifty-seven participants (62.64%)

reported scores at or above the mean. There were four scores below 40, with the lowest being 29.

Qualitative Question. Many participants described their experiences working in disaster relief as positive. They described the work as rewarding, enjoyable, and meaningful. Increased connections, gratitude for the good things in their lives, and personal growth were some of the benefits they gained from volunteering. Participants discussed several different coping strategies that they used both when deployed and when returning from deployment. They also shared the support that they have received from the American Red Cross. These results are consistent with the quantitative results indicating that more people experience their disaster work as positive and are able to cope well. The work may be challenging, but participants were able to manage in the short-term, as well as gain increased life meaning and purpose from their involvement in the work.

Recommendations

There is currently a dearth of empirical literature on the positive and negative mental health impacts on disaster relief workers. Future research should continue to examine secondary traumatic stress and posttraumatic growth in disaster relief workers by using empirically validated measures such as the STSS, the ProQOL-5, and the PTGI. Future research could also include different validated measures of coping to determine how it impacts secondary traumatic stress and posttraumatic growth. Larger sample sizes with more diverse participants would be helpful in determining the importance of different risk and protective factors. Important variables to consider would be sex, race, age, level of education, employment status, personal exposure to trauma including disasters, training and debriefing services available, number of disaster responses, and

time since the last disaster response. Not all of these variables were found to be significant predictors in this study, but they have been found to be important in the past. More research is needed to gain a better understanding of how these variables influence secondary traumatic stress and posttraumatic growth.

An important area that would greatly improve this area of study would be to use longitudinal methods with both baseline measurements and measurements across time. This would help to rule out any pre-existing conditions that participants may have, allowing for the impacts from the disaster response to be seen. Longitudinal methods would allow for follow-up over time to determine if symptoms of secondary traumatic stress persist in the population over time or if they are likely to remit without further treatment. In addition, changes in posttraumatic growth could be examined across time. Perhaps as part of a pre-deployment check-in, disaster relief organizations could ask relief workers to complete these or other inventories, not only for data collection purposes, but also to identify relief workers with whom it would be important to follow-up with after the disaster response. Recruitment could be done by contacting leadership in the national ARC headquarters and setting up a partnership with them to allow for these procedures to occur as part of the training process for new volunteers, as well as just prior to returning home and at scheduled follow-ups. Contact could also be made with other disaster relief organizations such as the Salvation Army and the Volunteers of America, as well as mental health organizations such as the American Psychological Association and the American Counseling Association, both of which have networks of disaster responders. The more that these organizations can endorse and promote research in this area, the greater the response rate of participants will be.

One measure that was not helpful in the analysis was the Self-Care Assessment. This measure was lengthy and time-consuming in nature and may have impacted the return rate of completed surveys. A shorter measure of self-care may increase the completion rate of the surveys. In addition, the Satisfaction with Life Scale and the Flourishing Scale did not add to the results of this study, as they have not been used in prior research in disaster mental health and were not specifically measuring aspects of posttraumatic growth. The addition of these instruments increased the number of variables analyzed and may have led to Type I errors. Future research should utilize measurements that are specific to the research questions and are psychometrically valid and reliable.

Limitations

One limitation of the study is the small sample size (N = 92), which was sufficient to detect only large effect sizes. This means that differences had to be great in order for them to be detected and reach significance. Another limitation in the study was the large difference in sample size between disaster responders (n =78) and disaster mental health responders (n = 14). The large difference in sample sizes between these two groups may have made it difficult to detect any statistical differences when comparing them. Additionally, because of the large number of ARC volunteers across the United States, it was difficult to determine a response rate. Because it is unclear how many volunteers chose to respond to the survey and those who did not, it is difficult to generalize these results beyond the sample in this study.

Another limitation of this study is in the cross-sectional methodology. Ideally researchers would want to collect baseline data just prior to deployment in order to

determine whether there are underlying issues or if the results can be attributable to the volunteer's response to a disaster. Participants may be experiencing mental health symptoms before they engage in disaster work, and this could confound the data. For some participants, the data were collected years after their disaster response, which leads to a confound of time. Symptoms may reduce across time, or participants may not be able to recall aspects of the disaster and their symptoms after so much time has lapsed. In terms of this study, volunteers were invited to participate if they had engaged in a national disaster within the past five years, which is a long time to remember participants' feelings or reactions to a disaster response. Ongoing longitudinal research would be helpful in reducing these methodological problems; however, because disasters are unpredictable, it is difficult to conduct this longitudinal research.

Another limitation of this study, which also limits generalizability, was the self-selection of participants and the self-report nature. There is no way to tell if there were significant differences between the participants who chose to complete the survey and those who did not. Participants completing the surveys may also have responded in a socially desirable manner or they may have over- or underestimated their responses. Anecdotally, the primary investigator received an email during the data collection by a respondent who stated that, when she completed the survey, she did not think she experienced any negative mental health impacts from her disaster response. However, after taking the survey, she realized that she did have some avoidance reactions. These likely did not show up in her survey, as only upon reflecting after taking the survey did she realize this.

Finally, a limitation of this study may be in the inclusion criteria for participation in the study. Participants were required to have volunteered for a national disaster, defined as large disasters that exceed the resources of the local ARC chapter, and its volunteers are managed and supported by the ARC at a national level. This limited the number of participants who could respond. In addition, it may be more likely that volunteers respond to local disasters more frequently than national disasters, and there could be differences between volunteers who participate in local disasters and national disasters. By limiting the participation in this study to only national disasters, a large number of volunteers and their experiences may have been left out.

Conclusions

Research should continue to examine the mental health impacts of disasters on relief workers. More research could be longitudinal in nature, with baseline measures, as well immediately after the disaster response and even up to one year following the disaster. It may also be important to consider many different aspects of relief workers, such as comparisons between disaster mental health workers and disaster responders; across different types of disasters; differences between those who respond locally, nationally, and internationally; and differences in reactions with natural versus human-caused disasters, particularly terrorist events.

This study examined risk and protective factors in the development of secondary traumatic stress in disaster relief workers, as well as factors that lead to the development of posttraumatic growth. The results of the study indicate that the majority of participants do not experience substantial symptoms of secondary traumatic stress; however, many experience at least some symptoms, and in some cases, almost 25% reported difficulties

with secondary traumatic stress symptoms and/or burnout. This is a significant number of relief workers, and it is apparent that disaster relief organizations need to be more prepared to assess for the risk as well as provide support to those who do struggle.

One way that disaster relief organizations can be helpful is by providing appropriate support and preparation to its volunteers. These organizations could develop training to address any risk factors and focus on developing posttraumatic growth. In addition, knowing the risk factors for secondary traumatic stress may be helpful in the recruitment of volunteers. Some people may be better suited to disaster relief work than others. Finally, these results support the importance of debriefing services being available to volunteers. The importance of checking in with volunteers upon their return home, assessing for any secondary traumatic stress symptoms, and providing additional support is imperative to assure the psychological health of the volunteers. As disasters seem to be increasing in severity, it will be important for disaster relief organizations such as the American Red Cross to provide supportive services to its volunteers to help manage potential negative mental health impacts.

Appendix A: IRB Approval Letter

The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #2 SURVEYS/INTERVIEWS; STANDARDIZED EDUCATIONAL TESTS; OBSERVATION OF PUBLIC BEHAVIOR.

Study Number: 1405E51023

Principal Investigator: Sarah Beckmann

Title(s):
Secondary Traumatic Stress and Posttraumatic Growth: Risk and Protective Factors among Disaster Responders and Disaster Mental Health Workers

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This e-mail confirmation is your official University of Minnesota HRPP notification of exemption from full committee review. You will not receive a hard copy or letter.

This secure electronic notification between password protected authentications has been deemed by the University of Minnesota to constitute a legal signature.

The study number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

Research that involves observation can be approved under this category without obtaining consent.

SURVEY OR INTERVIEW RESEARCH APPROVED AS EXEMPT UNDER THIS CATEGORY IS LIMITED TO ADULT SUBJECTS.

This exemption is valid for five years from the date of this correspondence and will be filed inactive at that time. You will receive a notification prior to inactivation. If this research will extend beyond five years, you must submit a new application to the IRB before the study's expiration date.

Upon receipt of this email, you may begin your research. If you have questions, please call the IRB office at (612) 626-5654.

You may go to the View Completed section of eResearch Central at http://eresearch.umn.edu/ to view further details on your study.

The IRB wishes you success with this research.

We value your feedback. We have created a short survey that will only take a couple of minutes to complete. The questions are basic, but your responses will provide us with insight regarding what we do well and areas that may need improvement. Thanks in advance for completing the survey. http://tinyurl.com/exempt-survey

Appendix B: Recruitment Letter

August 25, 2014

I am writing to let you know about an opportunity to participate in a research study about risk and protective factors in disaster relief volunteers. This study is being conducted by Sarah Beckmann, MA, doctoral candidate in Counseling Psychology, Department of Educational Psychology, at the University of Minnesota in fulfillment of her doctoral dissertation requirement. The thesis is under the direction of Dr. John L. Romano, PhD, LP, Department of Educational Psychology, at the University of Minnesota. The purpose of this study is to examine risks for secondary traumatic stress and protective factors that result in posttraumatic growth in disaster relief workers. This field of research is relatively new, and we believe that results of the study will assist in the preparation and training of disaster responders.

Secondary traumatic stress is the potential negative impact that hearing traumatic stories and working with survivors of disasters may have on disaster responders. Posttraumatic growth is the potential positive impact that exposure to traumatic events can have on disaster relief workers, including a greater appreciation of life, a changed sense of priorities, more intimate relationships, a greater sense of personal strength, and increased spiritual development.

We are contacting you through staff at your local America Red Cross chapter or region who have agreed to pass on this opportunity to you. In order to participate in this study, you must have volunteered for a national disaster through the American Red Cross Disaster Services Human Resources (DSHR) in the past five years. National disasters are defined as large disasters that exceed the resources of the local chapter, and its volunteers are managed and supported by the American Red Cross at a national level. If you are a Disaster Mental Health volunteer, you must be a licensed mental health professional. The survey will be taken online by participants, and require about 20-25 minutes to complete. The survey is anonymous and voluntary. You will have the opportunity to participate in a drawing for one of two $50 Amazon gift cards.

You may access the survey at the following link:

https://umn.qualtrics.com/SE/?SID=SV_78TvJPkILdGqBrD

If you would like additional information about this study, please contact Sarah Beckmann at chamb169@umn.edu

Thank you again for considering this research opportunity.

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Appendix C: Follow-Up Recruitment Letter

September 15, 2014

This is a follow up letter requesting your participation in a research study examining risk and protective factors in disaster relief volunteers. If you have already completed the survey, thank you for your time! If you have not, please consider participating in this important research.

This study is being conducted by Sarah Beckmann, MA, doctoral candidate in Counseling Psychology, Department of Educational Psychology, at the University of Minnesota in fulfillment of her doctoral dissertation requirement. The thesis is under the direction of Dr. John L. Romano, PhD, LP, Department of Educational Psychology, at the University of Minnesota. The purpose of this study is to examine risks for secondary traumatic stress and protective factors that result in posttraumatic growth in disaster relief workers. This field of research is relatively new, and we believe that results of the study will assist in the preparation and training of disaster responders.

Secondary traumatic stress is the potential negative impact that hearing traumatic stories and working with survivors of disasters may have on disaster responders. Posttraumatic growth is the potential positive impact that exposure to traumatic events can have on disaster relief workers, including a greater appreciation of life, a changed sense of priorities, more intimate relationships, a greater sense of personal strength, and increased spiritual development.

We are contacting you through staff at your local chapter or region who have agreed to pass on this opportunity to you. In order to participate in this study, you must have volunteered for a national disaster through the American Red Cross Disaster Services Human Services (DSHR) in the past five years. National disasters are defined as large disasters that exceed the resources of the local chapter and its volunteers are managed and supported by the American Red Cross at a national level. If you are a Disaster Mental Health volunteer, you must be a licensed mental health professional. The survey will be taken online by participants, and require about 20-25 minutes to complete. The survey is anonymous and voluntary. You will have the opportunity to participate in a drawing for one of two $50 Amazon gift cards.

You may access the survey at the following link:

https://umn.qualtrics.com/SE/?SID=SV_78TvJPkILdGqBrD

If you would like additional information about this study, please contact Sarah Beckmann at chamb169@umn.edu

Thank you again for considering this research opportunity.

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Appendix D: Demographics Questionnaire

1. Sex: (Male, Female, Other: _____)

2. Age: (18-24 years old, 25-34 years old, 35-44 years old, 45-54 years old, 55-64 years old, 65-74 years old, 75 years or older)

3. Ethnic/racial background: (African-American/African/Black/Caribbean, Asian/Pacific Islander, Caucasian-Non Hispanic, Hispanic/Latino, Native American/Alaska Native, More than one race, Other: _____, Unknown, Decline to answer)

4. Relationship status: (Single, not in a serious relationship, In a serious relationship but not married, Married or domestic partnership, Widowed, Divorced, Separated, Other:_____)

5. Education (*If currently enrolled, highest degree received):* (High school diploma, Some college credit but no degree, Trade/technical/vocational training, Associate's degree, Bachelor's degree, Master's degree, Professional degree, Doctorate degree)

6. Employment: (Full time, Part time, Unemployed, Retired)

7. Occupation (*If retired or unemployed, list your occupation prior to retirement or unemployment):* _____

8. If you are a Disaster Mental Health Worker, what is your license? (Licensed Psychologist, Licensed Professional Counselor, Licensed Social Worker, Licensed School Counselor, Other: _____), I am not a Disaster Mental Health Worker)

9. Do you work with survivors of traumatic events in your professional work? (Y/N)

10. Outside of disaster relief work, have you ever personally survived a natural/human-caused disaster? (Y/N) Please describe: _____

11. Are you a survivor of a traumatic event other than a natural/human-caused disaster? Examples of traumatic events might be direct exposure or in-person witnessing of death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence. (Y/N)

12. What is your role as an American Red Cross (ARC) volunteer? (Disaster Health Services, Disaster Mental Health Services, Disaster Welfare Information, Family Services, Mass Care, Communications, Damage Assessment, Logistics, Other: _____)

13. What state do you live in? _____

14. Are you or have you been in an ARC leadership position while volunteering for disasters, such as overseeing other volunteers? (Y/N)

15. How many years have you been volunteering in disaster work with the ARC? _____

16. What types of national disasters with the ARC have you responded to since you began volunteering? National disasters are defined as large disasters that exceed the resources of the local chapter, and its volunteers are managed and supported by the American Red Cross at a national level. (Check all that apply: Hurricanes, Tornadoes, Wildfires, Floods, Earthquakes, 9/11, Superstorm Sandy, Other: _____)

17. How many national disasters with the American Red Cross have you responded to in the last five years? _____

18. What was the last national disaster you responded to with the American Red Cross? _____

19. Have you been deployed outside of your home when responding to national disasters with the American Red Cross?

If yes, on average, how many days have you been deployed when volunteering for disaster work? _____

20. How long has it been since you last responded to a national disaster? _____

21. Did the ARC provide disaster training before deployment? (Y/N)

22. How many hours of training did the ARC provide for you? _____

23. Did you feel that your training had prepared you for ARC disaster work? (Y/N/n/a)

24. Did you engage in self-care while deployed on a national disaster? (Always, Sometimes, Never)

25. Did the ARC provide debriefing services after you finished your deployment but before you returned home from a disaster? (Always, Sometimes, Never)

26. Did the ARC provide follow-up services for you upon return from a disaster? (Always, Sometimes, Never)

Appendix E: The Secondary Traumatic Stress Scale (STSS).

SECONDARY TRAUMATIC STRESS SCALE

The following is a list of statements made by persons who have been impacted by their work with traumatized clients. Read each statement then indicate how frequently the statement was true for you in the past **seven (7) days** by circling the corresponding number next to the statement.

NOTE: *"Client" is used to indicate persons with whom you have been engaged in a helping relationship. You may substitute another noun that better represents your work such as consumer, patient, recipient, etc.*

	Never	**Rarely**	**Occasionally**	**Often**	**Very Often**
1. I felt emotionally numb…….…..	1	2	3	4	5
2. My heart started pounding when I thought about my work with clients…….….	1	2	3	4	5
3. It seemed as if I was reliving the trauma(s) experienced by my client(s)……...	1	2	3	4	5
4. I had trouble sleeping……...	1	2	3	4	5
5. I felt discouraged about the future…….…..	1	2	3	4	5
6. Reminders of my work with clients upset me……..	1	2	3	4	5
7. I had little interest in being around others…….…..	1	2	3	4	5
8. I felt jumpy…….….	1	2	3	4	5
9. I was less active than usual…….….	1	2	3	4	5
10. I thought about my work with clients when I didn't intend to…….	1	2	3	4	5
11. I had trouble concentrating……..	1	2	3	4	5
12. I avoided people, places, or things that reminded me of my work with clients…….	1	2	3	4	5
13. I had disturbing dreams about my work with clients……...	1	2	3	4	5
14. I wanted to avoid working with some clients……..	1	2	3	4	5
15. I was easily annoyed…….....	1	2	3	4	5
16. I expected something bad to happen…….....	1	2	3	4	5
17. I noticed gaps in my memory about client sessions…….	1	2	3	4	5

Intrusion Subscale (add items 2, 3, 6, 10, 13)	Intrusion Score	_____
Avoidance Subscale (add items 1, 5, 7, 9, 12, 14, 17)	Avoidance Score	_____
Arousal Subscale (add items 4, 8, 11, 15, 16)	Arousal Score	_____

TOTAL (add Intrusion, Arousal, and Avoidance Scores) Total Score _____

Citation: Bride, B.E., Robinson, M.R., Yegidis, B., & Figley, C.R. (2004). Development and validation of the Secondary Traumatic Stress Scale. *Research on Social Work Practice, 14,* 27-35.

Appendix F: The Professional Quality of Life Scale Version 5 (ProQOL-5)

Professional Quality of Life Scale (ProQOL)

Compassion Satisfaction and Compassion Fatigue
(ProQOL) Version 5 (2009)

When you *[help]* people you have direct contact with their lives. As you may have found, your compassion for those you *[help]* can affect you in positive and negative ways. Below are some questions about your experiences, both positive and negative, as a *[helper]*. Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the *last 30 days*.

1=Never	2=Rarely	3=Sometimes	4=Often	5=Very Often

1. I am happy.
2. I am preoccupied with more than one person I *[help]*.
3. I get satisfaction from being able to *[help]* people.
4. I feel connected to others.
5. I jump or am startled by unexpected sounds.
6. I feel invigorated after working with those I *[help]*.
7. I find it difficult to separate my personal life from my life as a *[helper]*.
8. I am not as productive at work because I am losing sleep over traumatic experiences of a person I *[help]*.
9. I think that I might have been affected by the traumatic stress of those I *[help]*.
10. I feel trapped by my job as a *[helper]*.
11. Because of my *[helping]*, I have felt "on edge" about various things.
12. I like my work as a *[helper]*.
13. I feel depressed because of the traumatic experiences of the people I *[help]*.
14. I feel as though I am experiencing the trauma of someone I have *[helped]*.
15. I have beliefs that sustain me.
16. I am pleased with how I am able to keep up with *[helping]* techniques and protocols.
17. I am the person I always wanted to be.
18. My work makes me feel satisfied.
19. I feel worn out because of my work as a *[helper]*.
20. I have happy thoughts and feelings about those I *[help]* and how I could help them.
21. I feel overwhelmed because my case [work] load seems endless.

_____
_____
_____
_____
_____

22. I believe I can make a difference through my work.
23. I avoid certain activities or situations because they remind me of frightening experiences of the people I *[help]*.
24. I am proud of what I can do to *[help]*.
25. As a result of my *[helping]*, I have intrusive, frightening thoughts.
26. I feel "bogged down" by the system.
27. I have thoughts that I am a "success" as a *[helper]*.
28. I can't recall important parts of my work with trauma victims.
29. I am a very caring person.
30. I am happy that I chose to do this work.

Appendix G: The Posttraumatic Growth Inventory (PTGI)

Posttraumatic Growth Inventory

Indicate for each of the statements below the degree to which this change occurred in your life as a result of your crisis [**or researcher inserts specific descriptor here**], using the following scale.

> **Note to investigators – you will need to format the items so that participants have a way of responding to each one. The procedure we recommend is to place the numerical values of the scale after each item.**
>
> **In addition, the Roman numeral codes for the factors should also be removed.**

0= I did not experience this change as a result of my crisis.
1= I experienced this change to a very small degree as a result of my crisis.
2= I experienced this change to a small degree as a result of my crisis.
3= I experienced this change to a moderate degree as a result of my crisis.
4= I experienced this change to a great degree as a result of my crisis.
5= I experienced this change to a very great degree as a result of my crisis.

1. I changed my priorities about what is important in life. (V)
2. I have a greater appreciation for the value of my own life. (V)
3. I developed new interests. (II)
4. I have a greater feeling of self-reliance. (III)
5. I have a better understanding of spiritual matters. (IV)
6. I more clearly see that I can count on people in times of trouble. (I)
7. I established a new path for my life. (II)
8. I have a greater sense of closeness with others. (I)
9. I am more willing to express my emotions. (I)
10. I know better that I can handle difficulties. (III)
11. I am able to do better things with my life. (II)
12. I am better able to accept the way things work out. (III)
13. I can better appreciate each day. (V)
14. New opportunities are available which wouldn't have been otherwise. (II)
15. I have more compassion for others. (I)
16. I put more effort into my relationships. (I)
17. I am more likely to try to change things which need changing. (II)
18. I have a stronger religious faith. (IV)
19. I discovered that I'm stronger than I thought I was. (III)
20. I learned a great deal about how wonderful people are. (I)
21. I better accept needing others. (I)

Note: Scale is scored by adding all responses. Factors are scored by adding responses to items on each factor. Items to which factors belong are not listed on form administered to participants.

PTGI Factors

Factor I: Relating to Others
Factor II: New Possibilities
Factor III: Personal Strength
Factor IV: Spiritual Change
Factor V: Appreciation of Life

Appendix H: The Satisfaction with Life Scale (SWLS)

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

____ In most ways my life is close to my ideal.

____ The conditions of my life are excellent.

____ I am satisfied with my life.

____ So far I have gotten the important things I want in life.

____ If I could live my life over, I would change almost nothing.

- 31 - 35 Extremely satisfied
- 26 - 30 Satisfied
- 21 - 25 Slightly satisfied
- 20 Neutral
- 15 - 19 Slightly dissatisfied
- 10 - 14 Dissatisfied
- 5 - 9 Extremely dissatisfied

Appendix I: The Flourishing Scale (FS)

Below are 8 statements with which you may agree or disagree. Using the 1–7 scale below,
indicate your agreement with each item by indicating that response for each statement.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

____ I lead a purposeful and meaningful life

____ My social relationships are supportive and rewarding

____ I am engaged and interested in my daily activities

____ I actively contribute to the happiness and well-being of others

____ I am competent and capable in the activities that are important to me

____ I am a good person and live a good life

____ I am optimistic about my future

____ People respect me

Scoring:
Add the responses, varying from 1 to 7, for all eight items. The possible range of scores is from 8 (lowest possible) to 56 (highest PWB possible). A high score represents a person with
many psychological resources and strengths

Appendix J: Self-Care Assessment

Behavioral Self-Care Checklist

Adapted from Saakvitne, Pearlman, & Staff of TSI/CAAP (1996). *Transforming the pain: A workbook on vicarious traumatization*. Norton.

Please rate yourself on how often and how well you are taking care of yourself when you are deployed on a national disaster and your regular self-care routine. Some of these may not fit as well when you are deployed. You may then choose 0.

Rate the following areas according to how well you think you are doing:

3 = I do this well (e.g., frequently)
2 = I do this okay (e.g., occasionally)
1 = I barely or rarely do this
0 = I never do this

During Deployment	Regular Routine	
Physical Self-Care		
		Eat regularly (e.g. breakfast, lunch, and dinner)
		Eat healthily
		Exercise
		Get regular medical care for prevention
		Take time off when sick
		Get massages
		Dance, swim, walk, run, play sports, sing, or do some other fun physical activity
		Take time to be sexual – with myself, with a partner
		Get enough sleep
		Wear clothes I like
		Take vacations
		Other:
Psychological Self-Care		
		Take day trips or mini-vacations
		Take time away from telephones, email, and the Internet
		Make time for self-reflection
		Notice my inner experience – listen to my thoughts, beliefs, attitudes, feelings
		Have my own personal psychotherapy / Contact someone from Disaster Mental Health to talk
		Write in a journal
		Read literature that is unrelated to work
		Do something at which I am not expert or in charge
		Attend to minimizing stress in my life
		Engage my intelligence in a new area, e.g., go to an art show, sports event, theater

		Be curious
		Say no to extra responsibilities sometimes
		Other:
Emotional Self-Care		
		Spend time with others whose company I enjoy
		Stay in contact with important people in my life
		Give myself affirmations, praise myself
		Love myself
		Re-read favorite books, re-watch favorite movies
		Identify comforting activities, objects, people, places, and seek them out
		Allow myself to cry
		Find things that make me laugh
		Express my outrage through social action, letters, donations, marches, protests
		Other:
Spiritual Self-Care		
		Make time for reflection
		Spend time in nature
		Find a spiritual connection or community
		Be open to inspiration
		Cherish my optimism and hope
		Be aware of non-material aspects of life
		Try at times not to be in charge or the expert
		Be open to not knowing
		Identify what is meaningful to me and notice its place in my life
		Meditate
		Pray
		Sing
		Have experiences of awe
		Contribute to causes in which I believe
		Read inspirational literature or listen to inspirational talks, music
		Other:
Relationship Self-Care		
		Schedule regular dates with my partner or spouse
		Schedule regular activities with my children
		Make time to see friends
		Call, check on, or visit my relatives
		Spend time with my pets
		Stay in contact with faraway friends
		Make time to reply to personal emails and letters, send holiday cards
		Allow others to do things for me
		Enlarge my social circle
		Ask for help when I need it

		Share a fear, hope, or secret with someone I trust
		Other:
Workplace or Professional Self-Care		
		Take a break during the workday (e.g., lunch)
		Take time to chat with co-workers
		Make quiet time to complete tasks
		Identify projects or tasks that are exciting and rewarding
		Set limits with clients and colleagues
		Balance my caseload / work so that no one day or part of a day is “too much”
		Arrange work space so it is comfortable and comforting
		Get regular supervision or consultation
		Negotiate for my needs (benefits, pay raise)
		Have a peer support group
Overall Balance		
		Strive for balance within my work-life and work day
		Strive for balance among work, family, relationships, play, and rest
Other Areas of Self-Care that are Relevant to You		
		Other:
		Other:

Appendix K: Correlations Between Predictor and Criterion Variables

Variables	STSS Total	STSS Avoidance	STSS Intrusion	STSS Arousal
Sex[1]	.166	.150	.122	.125
Age				
Young Adult (18-34)	.258**	.216*	.194*	.298**
Middle Adult (35-54)	.073	.008	.100	.116
Older Adult (55+)	C	C	C	C
Relationship Status				
Single	.189*	.155	.058	.307**
Married/In Serious Relationship	C	C	C	C
No Longer Married	-.044	.009	-.065	-.052
Level of Education				
High School	-.013	-.064	.064	-.017
Some College/ Associate's Degree	-.042	-.098	.000	-.035
Bachelor's Degree	C	C	C	C
Master's Degree	.032	.085	-.064	.036
Professional/Doctoral Degree	-.166	-.075	-.232*	-.130
Employment Status				
Full Time	C	C	C	C
Part Time	-.006	-.001	-.033	.033
Unemployed	-.063	-.001	-.005	-.161
Retired	-.202*	-.200*	-.099	-.229*
Work With Trauma Survivors[2]	-.034	-.049	-.132	.032
Survivor of Trauma and/or Disaster[2]	-.053	-.005	-.091	-.042
Number of Disaster Responses				
1-3	C	C	C	C
4-6	.082	.114	-.018	.134
7+	.004	.015	-.001	.016
Time Since Last Disaster				

Response				
Less than 3 months	-.019	-.036	-.003	.007
4-6 months	-.038	.006	-.050	-.040
7-12 months	.180	.199*	.158	.196*
13+ months	C	C	C	C
Engagement in Self-Care				
Always	-.476***	-.396***	-.358***	-.456***
Sometimes	.430***	.359***	.308**	.412***
Never	C	C	C	C
ARC Follow-Up				
Always	-.103	-.059	-.173	-.148
Sometimes	.208*	.157	.238**	.242*
Never	C	C	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

Variables	ProQOL Burnout	ProQOL Secondary Trauma	ProQOL Compassion Satisfaction
Sex[1]	-.008	.086	-.098
Age			
Young Adult (18-34)	.439***	.296**	-.357***
Middle Adult (35-54)	-.011	-.025	-.006
Older Adult (55+)	C	C	C
Relationship Status			
Single	.346***	.155	-.234*
Married/In Serious Relationship	C	C	C
No Longer Married	-.135	-.043	.238*
Level of Education			
High School	-.105	-.064	.120
Some College/ Associate's Degree	-.054	-.084	.070
Bachelor's Degree	C	C	C
Master's Degree	.070	.132	.011
Professional/Doctoral Degree	.058	-.098	-.128
Employment Status			
Full Time	C	C	C
Part Time	.038	.074	-.076
Unemployed	.047	.000	-.052
Retired	-.358***	-.226*	.368***
Work With Trauma Survivors[2]	.159	.069	-.193*
Survivor of Trauma and/or Disaster[2]	-.008	.013	.055
Number of Disaster Responses			
1-3	C	C	C
4-6	.212*	.014	-.117
7+	-.083	.169	.173

Time Since Last Disaster Response			
Less than 3 months	.039	.112	.044
4-6 months	-.081	-.050	-.056
7-12 months	.288**	.174	-.060
13+ months	C	C	C
Engagement in Self-Care			
Always	-.292**	-.307**	.271
Sometimes	.216	.295**	-.233
Never	C	C	C
ARC Follow-Up			
Always	-.158	-.121	.134**
Sometimes	.169	.243*	-.136*
Never	C	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

Variables	PTGI Total	PTGI Appreciation of Life	PTGI Relating to Others	PTGI Personal Strength	PTGI New Possibilities	PTGI Spiritual Change
Sex[1]	.212*	.204*	.115	.217*	.171	.066
Age						
Young Adult (18-34)	.086	.077	.051	.134	.120	-.141
Middle Adult (35-54)	-.161	-.077	-.116	-.122	-.116	-.110
Older Adult (55+)	C	C	C	C	C	C
Relationship Status						
Single	-.066	-.146	-.059	-.104	-.057	-.079
Married/In Serious Relationship	C	C	C	C	C	C
No Longer Married	.025	.132	-.017	.021	.043	.028
Level of Education						
High School	.022	-.004	.046	.049	-.012	.033
Some College/ Associate's Degree	-.061	.096	-.128	-.030	-.030	-.237*
Bachelor's Degree	C	C	C	C	C	C
Master's Degree	.161	-.061	.177*	.139	.168	.180*
Professional/Doctoral Degree	-.156	-.145	-.133	-.182*	-.008	-.201*
Employment Status						
Full Time	C	C	C	C	C	C
Part Time	.184*	.118	.206*	.125	.218*	.089
Unemployed	.064	.014	.095	.086	.010	.084
Retired	-.041	-.032	-.013	-.067	-.098	.198*
Work With Trauma Survivors[2]	.051	-.019	.050	.063	.180*	-.077
Survivor of Trauma and/or Disaster[2]	.129	.014	.112	.033	.188*	.022
Number of Disaster Responses						
1-3	C	C	C	C	C	C
4-6	.016	.113	-.040	.029	.077	-.006
7+	.188*	.108	.159	.220*	.241*	.153
Time Since Last Disaster Response						
Less than 3 months	-.080	-.098	-.078	-.025	-.046	-.057
4-6 months	-.036	.013	-.010	-.043	-.017	-.014
7-12 months	-.010	.000	-.009	.024	.041	-.116
13+ months	C	C	C	C	C	C
Engagement in Self-Care						
Always	-.126	-.145	-.088	-.175*	-.053	-.076
Sometimes	.227*	.201*	.142	.254**	.165	.194*
Never	C	C	C	C	C	C

ARC Follow-Up						
Always	-.177	-.137	-.112	-.249**	-.202*	-.107
Sometimes	.251*	.160	.157	.298**	.303**	.161
Never	C	C	C	C	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

Variables	SWLS	FS
Sex[1]	.002	.114
Age		
Young Adult (18-34)	-.315**	-.367***
Middle Adult (35-54)	-.091	-.039
Older Adult (55+)	C	C
Relationship Status		
Single	-.368***	-.284**
Married/In Serious Relationship	C	C
No Longer Married	.054	.133
Level of Education		
High School	-.064	.108
Some College/Associate's Degree	-.127	-.100
Bachelor's Degree	C	C
Master's Degree	.032	-.025
Professional/Doctoral Degree	.020	.019
Employment Status		
Full Time	C	C
Part Time	-.044	-.062
Unemployed	.005	-.095
Retired	.334***	.360***
Work With Trauma Survivors[2]	-.084	-.064
Survivor of Trauma and/or Disaster[2]	-.136	-.056
Number of Disaster Responses		
1-3	C	C
4-6	-.136	-.206*
7+	.040	.134
Time Since Last Disaster Response		
Less than 3 months	-.045	.138
4-6 months	.078	-.007
7-12 months	-.289**	-.267**
13+ months	C	C
Engagement in Self-Care		
Always	.146	.138
Sometimes	-.054	-.015

Never	C	C
ARC Follow-Up		
Always	.088	.141
Sometimes	-.151	-.201*
Never	C	C

* $p < .05$, ** $p < .01$, *** $p < .001$

[1] Males were coded as 0, Females were coded as 1

[2] No was coded as 0, Yes was coded as 1

C indicates the variable was used as the comparison variable and was not included in the analysis

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