THE PSYCHOLOGICAL IMPACT OF DISASTER RELIEF WORK ON DISASTER RELIEF VOLUNTEERS IN NORTH AMERICA

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Department of Community Care and Counseling, Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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Abstract

This study investigated the psychological effects that disaster relief work has on disaster relief volunteers in North America. It provided the necessary framework for research that was conducted to examine if disaster relief volunteers are more vulnerable to developing posttraumatic stress disorder (PTSD) after they volunteer in disaster relief or if they become more resilient and develop posttraumatic growth (PTG) instead. This quantitative study also provided research questions and hypotheses and is a road map for future research. Disaster relief volunteers provide many wonderful services to the field of disaster relief. Understanding how disaster relief volunteers are impacted by the trauma they witness strengthens the research field. It allows for adjustments to be made so that disaster relief volunteers are trained and cared for so that they will have the desire to volunteer for future relief efforts. While other studies have researched similar impacts that disaster relief work has on volunteers, few have focused on volunteers serving in relief efforts in North America. Finally, this dissertation exposed the research gap and explained why this research is relevant to the field and what next steps should be taken.

Keywords: disaster relief, volunteers, posttraumatic growth, posttraumatic stress disorder

Copyright Page

Dedication

This dissertation is dedicated to Sheila Elizabeth Rynbrandt. She has been a source of spiritual strength and encouragement for so many years of my life. She is a rock who did not give up on me and provided me with unwavering strength. Her unrivaled compassion and understanding have been a beacon of hope for me when the waves of life would come crashing down. She was always rooting for me during this process, and I am a better person because of the influence she has had on my life. I will forever be grateful for you, Sheila!

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To my friend, mentor, and former professor, Dr. Ed Hindson. Thank you for the recommendation to pursue a doctorate. I did not know what God had planned when I began, but I can see how He was carefully crafting every step. You saw life's circumstances as an opportunity for God to guide me. Thank you for believing in me and providing Godly advice and wisdom. I will continue to hold to your constant reminder that no matter what I face in life, my answer is to "Keep Looking Up" and to respond by saying "Yes, Lord." And I will always push to win one more soul for Christ.

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List of Abbreviations

Cognitive Behavioral Therapy (CBT)

Communities Advancing Resilience Toolkit (CART)

Connor-Davidson Resilience Scale (CD-RISC)

Davidson Trauma Scale (DTS)

Eye Movement Desensitization and Reprocessing (EMDR)

Faith-based organization (FBO)

Humanitarian Assistance Programs (HAP)

Institutional Review Board (IRB)

Impact of Events Scale (IES)

Multi-Health Systems (MHS)

Non-government organizations (NGOs)

North American Mission Board (NAMB)

Perceived Stress Scale (PSS)

Posttraumatic Growth (PTG)

Posttraumatic Growth Inventory-Expanded (PTGI-X)

Posttraumatic Stress Disorder (PTSD)

Psychological First Aid (PFA)

Secondary Traumatic Stress (STS)

Sheehan Disability Scale (SDS)

Southern Baptist Disaster Relief (SBDR)

Statistical Package for the Social Science (SPSS)

Student Volunteer Army (SVA)

Trauma Recovery Networks (TRN)

Vicarious Trauma (VT)

World Health Organization (WHO)

10 Factor Resilience Behavioral Scale (10FRBS)

CHAPTER ONE: INTRODUCTION

Overview

Disaster relief volunteers provide many benefits to an area after being damaged by a disaster. These disaster relief volunteers expose themselves to traumatic sites, experiences, and traumatic stories from the disaster survivors. Trauma like this can have a psychological impact on the disaster relief volunteers, which can often lead to PTSD, but at times can also lead to PTG development instead. For instance, Lee et al. (2017) found that relief volunteers often have signs of PTSD after volunteering. From their research about the Sewol ferry disaster in Korea, PTSD had developed in 19.7% of the citizens who volunteered for the relief effort (Lee et al., 2017). Conversely, Kaye-Kauderer et al. (2019) discovered that PTG could be more prominent in disaster relief volunteers in Japan. There have been many studies about disaster relief. Still, few focus on the psychological impact disaster relief work has on disaster relief volunteers who work at North American relief efforts that take place in North America.

Background

When looking at recent studies of how PTSD develops within disaster relief volunteers after serving in disaster relief, Lee et al. (2017) discovered that the closer the disaster relief volunteers work with disaster survivors, the more prevalent the PTSD. Their study suggested that this could be due to secondary traumatic stress (STS) or vicarious trauma (VT), as the disaster relief volunteers are exposed to the traumatic stores shared by the disaster survivors. However, not every study reveals that disaster relief volunteers only develop PTSD, as other studies have shown that instead of PTSD, PTG can develop within disaster relief volunteers (Kaye-Kauderer et al., 2019). One must wonder, what is making the difference within the volunteers, for one to develop PTG as compared to PTSD. Other studies found that utilizing military veterans in

disaster relief can be highly effective due to their experience with traumatic environments (Weiss et al., 2020). These military veterans, as a result, end up feeling useful through volunteering in disaster relief, as it helps them mentally, and these veterans view this as a way to contribute to society (Kranke et al., 2017). Examples like these add to the need to research this topic further to better understand the whole picture.

One common thread that is known is the desire for disaster relief organizations to continue to learn from previous disasters and try to make improvements (Weiner et al., 2011). This is a constant theme, where disaster relief organizations always want to make an improvement in how they operate to be safe and efficient. Looking at the Hurricane Katrina relief effort, many found that there needed to be more priority placed on the care that children who survived this natural disaster received (Sirbaugh, 2011). The destruction that a hurricane causes often dwarfs the small number of trained individuals who show up to help (Archer et al., 2011). This is a reminder of how vast a disaster relief organization should be in training as many volunteers as possible. The results of this study can first show how disasters like Hurricane Katrina can be used as learning experiences and allow disaster relief organizations to be more prepared for future disasters (Weiner et al., 2011).

While this is a good thing, it often comes down to having more services for the survivors; but if that is the case, it would also mean more volunteers would be needed to provide these services. In 2003 there was an earthquake in Iran, and more than 60 countries contributed to the relief effort (Archer et al., 2011). Having this many countries assisting is great, but there would also need to be a way for all volunteers to get organized and work together. While there are short-term and long-term goals in a relief effort, both types of goals are crucial in helping disaster survivors recover from any losses they have suffered (Casagrande et al., 2015).

Something like this would mean that the disaster relief volunteers should be trained for any type of situation when working with disaster survivors to understand how to help them no matter what types of trauma the disaster survivors have experienced. Being prepared is undoubtedly helpful, but being proactive in caring for survivors and disaster relief volunteers might be able to make a more significant difference in the realm of disaster relief. As one can see, these studies previously mentioned along with Kaye-Kauderer et al. (2019) and Lee et al. (2017) have researched different aspects of disaster relief which has allowed researchers to better understand the psychological impact that it has on those who work in the relief effort.

Weiner et al. (2011), reported that the length of time that someone works at a disaster relief effort and the severity of the trauma they are exposed to during this time can have a direct impact on them psychologically. This is because the amount of time that a disaster relief volunteer serves in a relief effort and the severity of the trauma exposure from a disaster directly impact PTG and PTSD development (Weiner et al., 2011). Any relationship between the length of time and severity of the trauma exposure and the development of PTG and PTSD, should be studied and considered on how it impacts disaster relief volunteers. Thormar et al. (2016) demonstrated that it is essential to understand if disaster relief volunteers were previously dealing with PTSD symptoms or PTG prior to volunteering.

Understanding how PTSD, PTG, and disaster relief are connected would have a significant impact on this study since it could help determine if volunteering for disaster relief leads to the increase of or the development of PTSD or PTG. While this will be discussed later in this study, others recently found that disasters, being either manmade or natural, can affect how a community rebuilds (Riaz et al., 2015). This, too, would be something to focus on, as it could show how volunteers and a community re-build from both types of disaster (Riaz et al., 2015).

As recently discussed, Lee et al. (2017) found that PTSD was quite common with those who volunteered in disaster relief from the ferry disaster in South Korea. At the same time, Kaye-Kauderer et al. (2019) found that PTG was common in many volunteers who served in the triple disaster relief effort (earthquake, tsunami and nuclear accident) in Japan.

Studies like the triple disaster in Japan help craft the next step for research and help shape theories about disaster relief (Kaye-Kauderer et al., 2019). Especially when looking at those who volunteer in relief efforts in North America, this dissertation brought attention and research to the idea that PTG and PTSD are both outcomes that disaster relief volunteers can develop. There have been many instances where it is known that disaster relief work does have an impact on those serving at a relief effort. Many have worked to make changes in their relief efforts so that they can be more successful.

Archer et al. (2011) provides an example of this when review the relief effort for the 7.0 magnitude earthquake that took place in Haiti on January 12, 2010. Healthcare workers arrived to assist in the relief effort, but the inadequate amount of training was evident as they were not able to be as successful as they had hoped (Archer et al., 2011). This resulted in disaster survivors not getting the care they needed as quickly as possible (Archer et al., 2011). The medical care workers who volunteered, would have been exposed to the trauma from the disaster and even from the disaster survivors.

In addition to this, these medical workers would also have been if trying to manage the stress of not being fully equipped to complete their tasks. Those leading the relief effort realized that it was not just enough to have a training manual, but real-world training in different countries would help diversify their training efforts. After this disaster, some healthcare workers are now part of a global rotation where they can train in different countries, to be better prepared

for what they might face when serving in another relief effort. Although this article did not directly address the feelings of failure or disappointment by the relief team, that fact that changes were made to be more prepared for future relief efforts demonstrates the relief team's disappointment (Archer et al., 2011).

An idea that will be reviewed in this dissertation is how emotions work to influence PTG. The goal of this dissertation was to fully understand the psychological impact of disaster relief work. This dissertation even attempts to expose what are the keys to building resiliency within someone. In their research, Hobfoll et al. (2007) looked to see if the loss of processions, finances, or loss of social support could be a factor in someone developing PTG rather than PTSD. They discovered that people are different in what they seek for security and stability (Hobfoll et al., 2007). Understanding this helps when working with disaster survivors, as these survivors all could be different in their needs and in what can help them become more resilient and not develop PTSD. Another thought to consider is how the more confident relief workers are in the treatments they are given to help other disaster survivors, the more it might impact the relief workers as well (Lee et al., 2017). Even after the Lushan earthquake in 2013, changes were made to be better prepared to rescue those missing in a future disaster (Xu et al., 2016). This further continues to illustrate how disaster relief continues to improve from previous relief efforts (Xu et al., 2016).

Still, all this preparation and knowledge still leads to the idea that disasters are inevitable, and volunteers will put themselves in potentially dangerous situations to care for the disaster survivors while exposing themselves to possible trauma. There are many thoughts and ideas stemming from previous research, but some of the main themes come from the development of PTG or PTSD after working in disaster relief. This type of data is gleaned from studies that were

conducted worldwide, which creates a problem and purpose for this dissertation. But this is because there is not much research about disaster relief volunteers in North America; this dissertation hoped to add to this group of research to see how disaster relief work psychologically impacts those who volunteer in North American disaster relief efforts.

Problem Statement

Research has shown how disaster relief volunteers are psychologically impacted by disaster relief work, and one example of this is the Korean Sewol ferry disaster. From this disaster, 19.7% of those who volunteered developed PTSD (Lee et al., 2017). When Thormar et al. (2016) researched the 449 Indonesian Red Cross volunteers who served in 2006 at the Yogyakarta earthquake relief effort, 28.5% showed signs of PTSD 6-months after the relief effort, 24.2% showed signs of PTSD 12-months after the relief effort, and 21.0% showed signs of PTSD 18-months after the relief effort. Findings such at these also indicates resiliency within the volunteers as the levels of PTSD continue to decrease (Thormar et al., 2016). Kaye-Kauderer et al. (2019) found many positive correlations between resiliency and PTG development within those who volunteered in the relief effort for the March 2011 Japan triple disaster. Taku et al. (2018) also researched this triple disaster, and their findings were similar in seeing PTG within those who volunteered. Their research reveals that although the disaster negatively impacted these volunteers, they still developed PTG and resiliency through serving in the relief effort (Taku et al., 2018).

Others who volunteered to fight fires in Australia faced high levels of fatigue, leading to mental health issues (Dawson et al., 2015). Another discovery was that after a typhoon hit the Philippines, the disaster relief volunteers were suffering from compassion fatigue, burnout, and negative religious coping strategies (Captari et al., 2018). These are signs that disaster relief

workers are psychologically impacted by disaster relief work. Even with these different types of studies, the research still reveals an alarming gap that there is very little data regarding disaster relief volunteers working in North America. While there are studies about disaster relief efforts in North America, their primary focus was not about disaster relief volunteers. Instead, many articles focused on disaster survivors, a community's resilience, and even how to learn from past mistakes made in previous relief efforts (Horney et al., 2019).

Although it is essential to learn of the damage that North American disasters like hurricanes cause, it is just as important to learn about the impact disaster relief work has on volunteers. Looking at this gap in the research, with there not being a lot of research about disaster relief volunteers who have served in relief efforts within North America, one must consider thoroughly researching this area. This dissertation has directly addressed this gap. Results from this dissertation lead to future research that enhances the field of disaster relief and thus encouraging disaster relief volunteers to keep volunteering in future relief efforts. The problem is, disaster relief volunteers are at risk of developing mental health issues due to the trauma they are exposed to during relief efforts in North America, but without studies to research this and inform practice, these volunteers could go unnoticed and suffer from this trauma

Purpose Statement

The purpose of this study was to understand the psychological impact that disaster relief work has on disaster relief volunteers who worked in relief efforts within North America. This was done to determine if disaster relief volunteers develop PTSD, PTG, or resiliency after volunteering. Since there are both natural and man-made disasters, this can often alter how people react to them, so it was essential to identify the type of disaster during this study (Riaz et al., 2015). To fill the gap in the research, this dissertation surveyed and researched disaster relief

volunteers who worked in relief efforts that took place within North America. This dissertation also answered specific research questions that provided input on how to best work with disaster relief volunteers. Questions about the severity of trauma exposure that a disaster relief volunteer faces were investigated as well as learning about their relief training and how to best care for their mental health. The independent variables in this dissertation were, the severity of the trauma experienced by the disaster relief volunteers, the type of training received, and treatment for PTSD received prior to volunteering at a relief effort. The dependent variables in this dissertation were PTSD symptoms, PTG, and resiliency.

Significance of the Study

While disasters have the power to negatively change an individual's life forever, disaster relief efforts have an opportunity to make a positive life-changing impact on the disaster survivors. If the relief effort is properly conducted where disaster relief volunteers and disaster survivors are also cared for during and after the relief effort, this can often help reverse the negative impact that a disaster causes. Adding a study to the research field that focuses on disaster relief volunteers working in relief efforts in North America creates a better understanding of how disaster relief volunteers are psychologically impacted by serving in disaster relief. This dissertation can reveal that trauma from disaster relief work is not limited by geographics or a specific region.

The findings from this dissertation benefits the disaster relief organizations that allow their disaster relief volunteers to participate in the study. This is because the findings will be provided to these organizations. By doing this, the organizations can make any necessary changes from an evidence-based approach based on the findings from the dissertation. The findings from this dissertation could even help the participating disaster relief organizations

understand how to increase the retention rate of disaster relief volunteers. Those who participated in this dissertation also benefited from the study, maybe not directly, but the findings from this dissertation can add more knowledge about any connection between PTSD, PTG, and volunteering in disaster relief. This can help enhance a disaster relief organization's ability to train volunteers for future disaster relief efforts.

The findings from this dissertation can uncover areas for future research and provide insight to assist when making decisions about changes in the way volunteers are trained prior to volunteering and determining what types of care disaster relief volunteers might need after they conclude their time volunteering. For instance, Lee et al. (2017) found how beneficial it is to observe disaster relief volunteers during a relief effort so that they can be navigated through any traumatic situations that could lead to PTSD development. When it was discovered that the medical students volunteering in disaster relief developed PTG, one must ask why this happened and look for ways to help disaster relief volunteers in future relief efforts develop PTG and become more resilient (Kaye-Kauderer et al., 2019). Even in a similar study of the same disaster in Japan, Anderson et al. (2016), it was also found that PTG was evident within the volunteers. This dissertation continued to examine how resiliency plays a role in a disaster relief volunteer to reduce PTSD development with disaster relief (Thormar et al., 2016).

Now that dissertation has concluded and the data has been analyzed, disaster relief organizations both in North America and around the world are able to have access to the findings. Finally, this study built upon Kaye-Kauderer's (2019) research as it followed a similar format with many of the same scales. However, this dissertation addressed the gap in Kaye-Kauderer's research, which was the psychological impact that disaster relief work has on those who volunteer in North American relief efforts.

Research Questions

RQ1: Is severity of the disaster relief work associated with increased symptoms of PTSD?

RQ2: Is the type of disaster relief training associated with PTG and resiliency?

RQ3: Is treatment for PTSD associated with PTG and resiliency among disaster relief volunteers?

Definitions

Coping – How someone chooses to process and come to terms with the trauma they were exposed to, especially after a disaster (Hoeberichts, 2012).

Disaster – A disaster can be from natural or man-made causes (Riaz et al., 2015). There are also technological disasters such as oil spills (Fuchs et al., 2021). A natural disaster would be an earthquake, hurricane, tornados, wildfires, flood, heatwaves, and landslides. A man-made disaster can be riots, war, and transportation accidents (Aten & Boan, 2016). Even a terrorist attack such as 9/11 would be considered man-made disaster (Shaw et al., 2020). Disasters of any kind can create a significant financial burden on an area as they try to recover and rebuild (Zhang et al., 2012).

Disaster Ministry – Disaster relief services provided by churches and faith-based organizations to allow churches to get involved with disaster relief to serve their community. The ultimate goal of disaster ministry is to share the gospel and love of Christ as the ministry cares for disaster survivors (Aten & Boan, 2016).

Disaster Relief Organization – Consisting of a large volunteer base, these organizations can quickly provide humanitarian, psychological, and physical care to areas after being struck by a

disaster. Their goal is to be prepared to provide supplies such as food, water, and medicine to disaster-ridden areas so that they have a chance to recover (Thormar et al., 2013).

Disaster Relief Volunteers – An individual who takes time out of their lives and jobs to volunteer and help disaster survivors. (Agarwal & Buzzanell, 2015). Disaster relief volunteers are trained and equipped by disaster relief organizations to care for the survivors and are even trained to care for themselves (Thormar et al., 2013). Due to working in traumatic environments, these volunteers may need mental health assistance to process what they experienced (Aten & Boan, 2016).

Disaster Survivor – Someone who survived a disaster but is now left with the devastation of the disaster and must rebuild and restart their lives (Viswanath et al., 2012). Although they survive the disaster, they often face an uphill battle in dealing with psychological disorders (Zhang et al., 2015).

Longevity – The length of time a disaster relief volunteer worked at a specific relief effort (Weiner et al., 2011). The longer volunteers are exposed to a traumatic environment, the greater the chances that their mental health could decline (Thormar et al., 2013).

Posttraumatic Stress Disorder – A mental health disorder developed by those who were directly or indirectly exposed to some form of trauma. This can cause emotional detachment, the constant need to avoid environments, and specific activities can trigger flashbacks to the traumatic event (American Psychiatric Association, 2013).

Posttraumatic Growth – While being faced with difficult and often traumatic experiences, PTG is the ability to push through a trial while positively shifting one's thought process (Kaye-Kauderer et al., 2019). Tedeschi et al. (2017) describe PTG as psychologically growing in a positive way, even when being face-to-face with a negative traumatic experience. This positivity

is seen as the individual now places a higher value on relationships and often has a greater appreciation for life and a renewed sense of purpose (Tedeschi & Calhoun, 2004).

Relief Effort – The action of cleaning up after a disaster, searching for disaster survivors, and caring for them, to help disaster survivors heal from the trauma experienced (Weiner et al., 2011). Many times, a relief effort can begin within 24 hours after a disaster (Elrod, 2021).

Resiliency – The ability to handle stress without giving up or falling into fear or depression. This is similar to a bend don't break mentality and can be developed as a result of the effect of the stress or a response to the stress that one is facing (Connor & Davidson, 2003).

Secondary traumatic Stress (STS) – Feeling similar traumatic thoughts and emotions as a result of listing to traumatized survivors (Figley, 1995). It is the result of hearing about a traumatic event from a traumatized individual who experienced the event (Figley, 1993). For this dissertation, it would be the disaster relief volunteers who hear the about the traumatic disaster from the disaster survivors.

Severity – The intensity of the trauma experienced while serving in a relief effort. Studies have shown that varying levels of severity can be present amongst those who served in the same relief (Lee et al., 2017). This was measured by the Davidson Trauma Scale (DTS) to see the severity of PTSD that someone is dealing with, resulting from the trauma experienced (Davidson, n.d.).

Southern Baptist Disaster Relief (SBDR) – A Christian organization that shares the love of Christ through its ability to provide disaster relief to areas in need. It was founded in 1967 in Texas and offers disaster relief services from repairing homes, providing meals, and cleaning up debris while sharing the Gospel. They have now expanded throughout the United States, allowing them to enhance their effectiveness in disaster relief. The SBDR has been involved in relief efforts, including Hurricane Sandy, 09/11, and Hurricane Matthew (Wolford & Beachum, 2017).

Vicarious Trauma (VT) –Those who work with individuals who have been traumatized hear their traumatic stories, and these stories can be difficult to forget and will often traumatize the workers for months and years to come (McCann & Pearlman, 1990). This is considered repeated secondary exposure to these traumatic stories (Norman & Flanagan, 2014).

Treatment – After an individual is diagnosed with PTSD by a mental health professional, they also begin receiving any form of care from the mental health professional to reduce the PTSD (Weiss et al., 2020).

Summary

When living in a world where disasters happen unexpectantly, it should not be uncommon to have a desire to enhance the ability to protect individuals and families from being harmed. Especially for volunteers, those who have the best intentions to serve in disaster relief to assist those in need, end up putting their mental health on the line for the sake of others. This dissertation addressed the problem of understanding the psychological impact that disaster relief work has on disaster relief volunteers. This dissertation also examined disaster relief volunteers to see if they have developed PTSD, PTG, or resiliency after volunteering at a relief effort. Due to the gap in the research, this dissertation's purpose looked directly at the psychological impact that disaster relief work has on disaster relief volunteers who worked in relief efforts within North America.

CHAPTER TWO: LITERATURE REVIEW

Overview

When considering the topic of disaster relief, there are a lot of thoughts that come to mind. Often, many conjure images of truckloads of supplies, bottles of water, and busloads of volunteers, eagerly arriving to assist with the cleanup and help survivors get back up on their feet. However, many often forget that disaster relief volunteers are heading into areas that a disaster has ravaged. Disaster relief volunteers might not be fully prepared for the sights and environments they are going to experience. One example of this is seen when looking into the Korean Sewol ferry disaster, where it was discovered that posttraumatic stress disorder (PTSD) was found in 19.7% of the citizens who volunteered to clean it up (Lee et al., 2017).

Additionally, the closer volunteers worked with survivors, the more evident the PTSD was within them. Data such as this reveals how both the survivors and the volunteers can be traumatized by the same disaster (Lee et al., 2017). Volunteers enter a relief effort with the correct attitude and hearts ready to serve, and then they end up suffering from PTSD. A pattern like this can discourage disaster relief volunteers from no longer volunteering, and it can also create a more significant issue since they would now have to seek treatment for PTSD (Lee et al., 2017). This means that while initially serving others, the volunteering put the disaster relief volunteers in a vulnerable position and could end up psychologically impacting them in a negative way.

It has also been discovered that some relief volunteers were developing posttraumatic growth (PTG) after they assisted in the disaster cleanup of from the Japan triple disaster in March 2011(Kaye-Kauderer et al., 2019). Data like this helps show both sides of a story and makes one wonder how some could develop PTG while others develop PTSD. These findings

reveal more about the volunteers' training and helped to determine which volunteers are adequately trained and prepared for disaster relief. However, if there are ways to treat the volunteers or create better ways to train them, this research has shed light on this issue. Even pre-screening the volunteers for PTSD before volunteering will positively impact the relief effort (Thormar et al., 2016). However, even with the intention of assisting those in need, the volunteers put their mental health on the line.

Often, many disaster relief volunteers need an outlet to help them process what was experienced. If disaster relief volunteers are not taken care of, they could end up being less effective, and their lives can end up suffering, too, as they would now be dealing with PTSD. Even when looking at forest fires in Sweden, the volunteers were simply volunteers. Those placed in charge of the relief effort were volunteers. The volunteers fighting the fires did not have training in disaster relief, but they just wanted to help others (Johansson et al., 2018). Zhang et al. (2015) reported that from their study of approximately 360 participants from disaster survivors who experienced the Wenchuan earthquake in China, 59.2% said being in danger of being harmed or killed by the disaster, and 51.1% witnessed someone being killed by the disaster. 89.7% were even fearful that their family members would be injured or killed (Zhang et al., 2015).

These percentages might be able to explain how PTSD could develop within many disaster survivors. However, the survivors' guilt for surviving when others did not was a significant factor in those who developed PTSD. This means that if relief volunteers went into this area, they would now be working with these disaster survivors and now need to know how to help them dealing with this survivor guilt. It would also explain the need for post-disaster

psychological assessments that could be used with the survivors to better understand how to treat them (Zhang et al., 2015).

Additionally, a tsunami destroyed parts of India, and people here also dealt with survivor guilt, displacement disorder, and panic disorder, which could mean the volunteers would have to know how to treat them (Viswanath et al., 2012). These aspects could be traumatizing to disaster relief volunteers, especially if they are not trained to handle PTSD in survivors. The Lushan earthquake in 2013 exposed many weaknesses in how the relief effort took place. Both the Lushan earthquake in 2013 and the Wenchuan earthquake in 2008 proved how devastating earthquakes along the Longmen Shan Fault could be as well. The focus has now turned into simplifying the plan of doing things in a relief effort (Xu et al., 2016). This was done to correct the past mistakes of wasting time, materials, and finances (Xu et al., 2016).

As a result of learning from these disasters, disaster relief for this region is more prepared in how to search for those who might be missing or trapped and know that other aspects of disaster relief, such as cleaning up debris, need to be done in an orderly, timely manner (Xu et al., 2016). The disaster cleanup in March 2011 in Japan consisted of a tsunami earthquake and a nuclear accident. The findings from this article have been able to assist the field of disaster relief (Kaye-Kauderer et al., 2019). There are many other studies about this topic, including disasters that take place worldwide. Still, not much research has been conducted on disaster relief volunteers cleaning up disasters in North America. This dissertations data was needed to better understand if PTSD is common among volunteers anywhere in the world and with any kind of disaster.

It would also be helpful to understand why some volunteers develop PTSD, but others build resiliency and PTG while volunteering and, as a result, and continue to volunteer for other

relief efforts (Kaye-Kauderer et al., 2019). Much of the data from Kaye-Kauderer et al. (2019), will be discussed later in this review. Additionally, veterans flourish during disaster relief work as they view it as a way to give back to the community, and their prior military training and experience prepared them for what they might see (Weiss et al., 2020). One can develop a conclusion about the psychological effects of disaster relief on disaster relief volunteers now that the data from this dissertation was gathered, when looking at many aspects of disaster relief volunteers.

During the Ebola breakout in 2014, those on the frontlines of treating people expressed the need to be better prepared (Shrivastava et al., 2017). This lack of preparedness slowed down the effort to stop the spread and treat patients. A medical outbreak like this can create a lot of unnecessary panic, and it could be avoided if areas with better preparedness (Shrivastava et al., 2017). At some point, one must not just look at a past disaster and make tweaks to the current plan. Disaster relief needs to be proactive in the approach it takes to being prepared. Shrivastava et al. (2017) discovered that individuals might even lose faith in those who come to help in the disaster. Disaster relief organizations losing credibility might lead to more people being harmed by the disaster, as disaster survivors and the community hit by the disaster might choose not to listen to what the relief team and authorities are saying.

Disasters affect more than a place that gets destroyed by a hurricane, and volunteers clean it up and rebuild the houses. The lives of humans, families, and businesses are also impacted. Due to the earthquake in Gujarat on January 1, 2001, there were considerable numbers of losses in many areas. Over 19 million people died, more than 20 million were hospitalized, and over 21 million animals died. 166,061,136,048 people were injured, and more than 20 million people were put into the hospital (Shah, 2013). This would cost a lot of money to repair and rebuild. In

addition, it would also mean that all those hospitalized would have hospital bills and might even be out of work due to the injury, which could be financially crippling to many individuals.

After several hurricanes ripped through Florida in 2004, the United States government specifically designated funds to help victims with mental health issues (Scheeringa et al., 2014). This was a welcomed change, as many have seen it where the United States government would give billions of dollars to rebuild but would not designate funds for mental health (Scheeringa et al., 2014). The sooner the funds can get to the survivors, the better their chances of healing and not developing additional mental health issues (Scheeringa et al., 2014). This is an excellent example of meeting the physical needs of the people, and perhaps it does clear the way for others to provide mental health treatment.

Rudner (2019) researched how after a recent disaster in Puerto Rico, disaster survivors were moved to Orlando for care and treatment. An action like this might traumatize a town if the town was not prepared for treating disaster survivors. As a result, the impact of the disaster would be in two places rather than just one. However, some Orlando citizens may have been inspired by what they saw, which could motivate them to serve again. Thankfully, for the city of Orlando, these citizens were ready to act fast to help the survivors (Rudner, 2019). This was an excellent service by the city of Orlando, and it serves as a reminder to be prepared for unexpected disasters.

These survivors even needed assistance with getting refills on their prescriptions, and a city like Orlando could have many people volunteer to care for the survivors in this way. As a result, it could have a very positive outcome for the survivors and volunteers (Rudner, 2019). The disaster relief volunteers could find it rewarding to help after a disaster and might choose to volunteer for future relief efforts (Rudner, 2019). However, they could also be at risk for

developing STS and VT as they work with the trauma survivors. In addition, considering the socioeconomic status of an area can help when making plans of how to help during disaster relief (Rudner, 2019). Once this is understood, disaster relief volunteers can put all their energy into meeting the people's needs rather than guessing what is needed.

As one can see, disasters can come in many different forms, from hurricanes to pandemics; a disaster relief plan can help a community be more resilient when disaster strikes (Avchen et al., 2019). Studies have been conducted about utilizing veterans in disaster relief work (Avchen et al., 2019). The results have been overwhelmingly positive and that doing so has proved to help veterans integrate back into society and feel more connected with the community (Avchen et al., 2019). When a disaster takes place, individuals have the choice of how to view it and respond. One could either view it as a disaster or view it as chance to review what areas could be improved on with the relief effort. Studies have found that some of these areas provide more care for children and continue to recruit volunteers (Avchen et al., 2019).

Yamashita and Kudo (2014) explained how child abuse had been seen on the rise in areas recovering from a disaster, too, and as a result of this data, changes were made to care for the children. Improvements were made to the point of even incorporating midwives into disaster relief because of their skillset (Hays & Prepas, 2015). This is a great idea to follow and should be implemented into more disaster relief efforts. If disaster relief organizations are going to make improvements in areas of being more prepared or providing more services for different types of people, then they need to consider adjusting and improving when it comes to working with their disaster relief volunteers.

Disasters leave many people at risk, even after the disaster relief effort concludes. This is especially seen with how children are some of the most vulnerable individuals in a disaster

setting. In their recent study, Fuchs et al. (2021) found that children are at risk of turning to substance abuse to cope with PTSD and depression that developed after being exposed to the different kinds of traumatic scenes from the disaster. That is why the need for disaster relief volunteers, especially ones that can assist with caring for children, cannot go unnoticed. Children react differently to disasters, and an example of this is how a teen's performance in school and their social health usually are impacted the most from a disaster (Brown & Laitner, 2014). PTSD is also found in teens who have survived a disaster (Brown & Laitner, 2014). This also explains why disaster relief volunteers must be fully prepared for whatever they might face (Brown & Laitner, 2014).

Johnston et al. (2018) discussed how there are efforts to work with teens and parents to build up their self-esteem and better understand each other. A ministry from the Kansas United Methodist Church called Madeline's Ministry, which works to help children with disabilities and to help them get associated with other children, and it even brings them to Sunday School. Such efforts address social, mental, and spiritual health (Johnston et al., 2018). Schruba et al. (2018) had discussed the need for church leaders and volunteers to be better prepared for dealing with disaster mental health.

Schruba et al.'s (2018) research expressed the importance of understanding how credible and valuable Psychological First Aid (PFA) can be since it can be extremely useful for working with disaster survivors. And there have also been reports about increased amounts of volunteers wanting to be trained in PFA so that they can use it with disaster survivors (Lee et al., 2017a). Additionally, the Maryland Medical Reserve Corps has been transitioning from using health care professionals and training volunteers in PFA (McCabe et al., 2014). While reports about the training and popularity of PFA are encouraging, it also reveals that now disaster relief volunteers

would be exposed to potentially more trauma as they work with disaster survivors, and this is another aspect that should be included for disaster relief volunteers training.

After the Nepal earthquake in April 2015, it was found that men and women had different feelings about how successful the rebuild effort was. Those who were able to receive more support from their families also had a better chance to recover. It was also discovered that those who had jobs as farmers and laborers type work had a more difficult time during the relief effort as compared to teachers and healthcare workers (Song et al., 2020). Steigenberger (2016) found that stress can complicate the thought process and coordination of relief workers. This breakdown can be what causes more problems during disaster relief. Disaster relief volunteers need to be aware of their stress levels and find ways to reduce their stress so they can be as effective as possible. In the same way, disaster relief volunteers would also want to do this to care for themselves so that they do not endanger themselves or others.

Treatments such as PFA or trauma-focused cognitive behavioral therapy (CBT) psychological first aid approach might be helpful to maintain resiliency within disaster survivors. While it is true that many try to avoid tragedies like disasters, the truth is that disasters will continue to happen, but being mentally prepared for them is a successful way to remain resilient (Rosenblum et al., 2017). Being culturally aware when treating a survivor can also impact how disaster relief efforts work. For instance, if a volunteer is trained in PFA or disaster relief but does not consider the context and culture in which they are working, then the treatment might not be as successful (Sim & Wang, 2021).

Akoury-Dirani et al. (2015) researched the effectiveness of PFA when dealing with the Syrian refugee crisis. There they found that training mental health workers in how to use PFA was highly successful in providing care to families and child refugees. Not only did it help the

survivors, but it built up confidence within the workers, as they were now more prepared to handle the crisis (Akoury-Dirani et al., 2015). A recent survey on Hurricanes Katrina and Rita, which included 532 participants, was recently conducted. A vast majority of those who worked with crisis counselors found treatments like PFA to be very effective (Bellamy et al., 2019). There is one side of the disaster relief argument that looks at data and says, look, a treatment. However, the other side says, yes, a treatment, but crisis counselors are putting themselves in harm's way to deliver the treatment. This reinforces the idea of the need to place a priority on the disaster relief volunteers' mental health. All this information points to individuals knowing that PTSD is a real thing after a disaster, for those who experience the disaster and those who work at the relief effort.

Approaching disaster relief work, knowing that volunteers are exposed to trauma, disaster relief organizations might want to investigate options of how to be prepared for disasters and how to train volunteers. One of these options would be training relief workers in PFA since this focuses on helping many people cope with the stress and even trauma they experience. Disaster relief volunteers could also be taught how to use it to cope with what they witnessed during their relief work. Using PFA in this way could also have a long-lasting positive impact on volunteers (Birkhead & Vermeulen, 2018). This is just one way that disaster relief volunteers could be protected and taken care of so that they do not continue to develop PTSD. This might also allow them not to get discouraged and choose to continuously volunteer.

McCabe et al. (2014a) researched disaster relief and found that when workers are trained, they could be very impactful in the relief effort. They also found that it is possible to train the workers with the mental health techniques and other aspects of disaster relief so that they are more effective at a disaster site. It was also suggested of practicing disaster relief efforts to

enhance their skills (McCabe et al., 2014a). Gelbach (2014), discussed how there are Humanitarian Assistance Programs (HAP) where clinical volunteers will work with disaster survivors to recover from a disaster. These HAP volunteers are trained in eye movement desensitization and reprocessing (EMDR) and train local clinicians in EMDR, at disaster-stricken areas (Gelbach, 2014). This is done since the local clinicians will continue to live in this location months and even years after the disaster and would be able to provide EMDR to treat the disaster survivors. EMDR was used to assist survivors of the Indonesian and Bangladesh flooding (Gelbach, 2014). Those chosen to be trained in EMDR also engage in practice and other ways to be prepared (Gelbach, 2014). The more training, the better, and while the training is helping, it also is evidence that disaster relief volunteers will be exposed to many traumatic stories, which they will have to process through and may cause STS or VT.

Creating a type of process that would help disaster relief organizations and volunteers be able to discern the best plan of action. One idea about this would be to consider what aspects of disaster relief could create problems and then coming up with solutions to those problems (Blackstone et al., 2017). Working in this way will allow people to be more prepared and less surprised when the relief effort turns chaotic due to the trauma. The need for proper management for a disaster relief organization could also play a factor in how a relief effort goes (Isidro & Calleja, 2020).

For this dissertation, some items that needed to be researched consisted of understanding the size of the disaster relief team, how many people quit or come back to volunteer for another relief effort, and what kinds of complications disaster relief volunteers face while serving in disaster relief (Hambrick et al., 2014). Some might argue that these are just volunteers, and if disaster relief volunteers choose not to come back, there will always be more people to fill those

spots. Therefore, there would not be a need to look into PTSD connections with volunteering in a relief effort. However, one thing to consider is that volunteers are why disaster-ridden areas can rebuild and are a considerable benefit economically. The volunteers meet a lot of the needs of the people, but perhaps a need that is not talked about too much is how much volunteers do to reduce the economic burden on a disaster-ridden area (Van Nostrand et al., 2018). There are so many different types of volunteers too, all of whom have unique skillsets that can meet the needs of the people and relief organizations in many ways. For instance, nurses have been getting more involved in disaster relief, and have placed a focus on ensuring they are trained and ready for future disasters (Öztekin et al., 2015).

One of the few articles found about North American disasters dealt with the idea that there is a significant desire by those who served in disaster relief efforts to be trained better. This was seen after September 11, 2001, since 75% of the nurse participants in a study reported not feeling prepared to handle the situation (Öztekin et al., 2015). One can imagine that if this group of nurses acknowledged the need to be trained better, there could be other volunteers who feel the same way. Therefore, research needed to be conducted to fill the gap and provide more data about relief workers and volunteers serving in North American relief efforts. Disaster relief efforts and studies about them have been seen in so many different relief efforts across the globe, but the one area that did not have much research about it was in North America.

There was even a typhoon in the Philippines where burnout and negative religious coping strategies were common among the survivors and volunteers. This shows that the trauma experienced and seen while enduring a disaster or doing relief work leads people to search for a way to cope with what took place. It continues to point to the idea that, while it is very wise to have volunteers help in disaster relief, there is a lot of training disaster relief volunteers should

undergo copious training to prepare for what they will see. In addition to this, the fact that disaster relief volunteers turned to negative religious coping habits is also a sign that they did not know how to properly handle the situation (Captari et al., 2018). One must ask why this is and wonder how to teach them how to cope with trauma from disasters.

In Australia, a study tried to understand how fatigue played a role in a volunteer firefighter's mental health. The study was aimed at the idea of understanding how a volunteer firefighter could recognize their fatigue and then how they respond as a result. The fatigue was a result of the effort to put out wildfires, but fatigue would also hinder their ability to perform their tasks and make the best decisions while in a stressful environment. This is a prime example of how volunteers can be trained when dealing with disaster and disaster relief. The more fatigue experienced, the greater the safety risk, which could mean more individuals could be harmed, potentially due to mental lapses and clouded judgment from the fatigue (Dawson et al., 2015). In the same way, disaster relief volunteers and disaster relief organizations need to be aware of the very real effects of fatigue. If disaster relief volunteers are physically fatigued, that might also mean that they are mentally fatigued, which could make them more susceptible to being discouraged by the trauma around them.

Understanding how volunteers coped with the trauma after the bushfire in Australia was also studied (Eriksen, 2019). These volunteers were asked why they wanted to work in disaster relief and about the training received. These volunteers were also asked how they coped with the stress and trauma. Eriksen (2019), found that the worldview some of these volunteers believe, was what propelled them to volunteer and continue to volunteer. Although they were exposed to the trauma, these volunteers expressed their sense of purpose when serving in the relief effort. This was one of the driving forces that prevented them from being discouraged and to keep

working as well. It was not so much a religious type of view; instead, those volunteering just had the heart to serve those directly impacted by the disaster (Eriksen, 2019).

Bearman and Bremner (2013) concluded in their study that people react to trauma differently. This article looked at volunteer and on-staff firefighters to see how each handles the job's stress and how they function as a team. Firefighters on staff are already at the station, and roles can be assigned quickly, whereas volunteer firefighters are at a disadvantage since they first have to make sure things are safe at their homes and then drive to the station. Those in charge of the unit also have to be on the lookout for errors that are made and be able to adjust to the errors (Bearman & Bremner, 2013).

In the same way, while dealing with this kind of disaster, a disaster relief team also needs to be aware of errors that might be made and then make adjustments accordingly. However, looking at the idea of making an error is important to consider, since one might just think a simple error. Disaster relief volunteers might forget to take into account that the error could mean life or death for someone in a disaster. If disaster relief volunteers make a mistake and it ends up costing someone their life, then the disaster relief volunteer will have to process through that mentally, and if not trained how to do this, the disaster relief volunteer might develop PTSD, get discouraged, and quit volunteering.

In their research, Cheek et al. (2015) reviewed disaster relief volunteers who were 55 years of age or older and discovered some helpful knowledge about volunteering. To begin, the disaster relief volunteers were even reporting that their previous experience volunteering in disaster relief prepared them for the next disaster relief effort. The disaster relief volunteers also revealed that working at multiple relief efforts helped them develop and become better at it. Cheek et al. (2015) also found that disaster relief volunteers were more capable of managing

their emotions and began to understand the importance of adapting when things did not go as planned. This is something that was incorporated into this dissertation to learn if, over time, more volunteers can learn as this group did (Cheek et al., 2015).

Rather than getting discouraged, one would have to wonder how and why some choose to come back and serve again? As seen throughout this dissertation, these studies continue to show a relationship between disaster and trauma. The results from this dissertation revealed that volunteers working in North American disasters have similar responses to trauma compared to those volunteering in disaster relief efforts around the world. It also meant that future research could be conducted and to better understand the value of how volunteers are trained.

The manager needs to be able to bring volunteers and workers together as a united front to assist in the disaster (Isidro & Calleja, 2020). Research is a crucial idea for disaster relief managers, as they need to fully understand how to keep their workers safe while serving in disaster relief roles (Isidro & Calleja, 2020). McNamara et al. (2021) discovered how impactful the female market vendors from Vanuatu were in aiding with disaster relief. There the women used social networks to gather and motivate volunteers. Due to their familiarity of the needs of Vanuatu, these women were able to gather the correct people for the correct jobs in disaster relief (McNamara et al., 2021).

Reports on a relief effort in Haiti revealed mass amounts of volunteers being in direct contact with the traumatic environment (Babcock et al., 2012). Babcock et al. (2012) found that the volunteers chosen for this were picked based on their talent and abilities. The staff selected were also selected from those with the most seniority (Babcock et al., 2012). This approach would provide a team that might be able to handle the trauma witnessed. Around 300 disaster survivors needed significant types of surgery, and the volunteers cared for more than 2,000

survivors (Babcock et al., 2012). While this study did not focus on PTSD, it is evident that the disaster relief organization was selective in who they chose, which shows that they learned from the past of taking the correct staff and volunteers (Babcock et al., 2012). But without the data to know how these volunteers reacted to the trauma, one must acknowledge that this is a limit to this study and look to collect this data (Babcock et al., 2012).

One study revealed that some portions of disaster relief planning did not allow the volunteers to help with the planning (Barbour & Manly, 2016). Many of these volunteers could have valuable experience with disaster relief, and their knowledge could help a relief effort be more effective. Preparation could also help a relief team not make the same mistakes. Therefore, it would prove to be helpful if experienced volunteers were included in decision-making. Studies have shown that volunteers and coordinators appear to have different visions for the relief effort. Something like this can be detrimental to the success of a relief effort (Barbour & Manly, 2016). Additionally, volunteers could also get discouraged if their input is not valued. Sometimes relief groups have their own way of doing things (Barbour & Manly, 2016). During times of disaster relief, groups need to come together and work quickly and efficiently to make sure that the cleanup effort is not prolonged.

Each disaster comes with a set of different issues. However, disaster relief organizations and even trauma recovery networks (TRN) can still create a plan of how much time they will devote to each disaster (Alter-Reid et al., 2014). TRNs in the United States have volunteers who will coordinate their networking and preparedness. TRNs worked with Hurricanes Katrina and Rita survivors for three months compared to the six months devoted to 09/11/2001 survivors (Alter-Reid et al., 2014). Faith-based organizations (FBO) are another excellent avenue for disaster relief. Sometimes the services FBOs provide are different as compared to those coming

from a more clinical mental health approach (McCabe et al., 2012). FBOs could bring an aspect that other organizations do not possess.

Decision-making is such a large part of disaster relief work, and the research reveals that the more equipped someone is to make decisions, the better the recovery effort can be (Brooks et al., 2020). When making these decisions during disaster relief, confirmation bias can sometimes get in the way. This could be a problem, especially if people are unwilling to change because of their bias (Brooks et al., 2020). Those involved with the cleanup must work more as a team, as there will already be a good amount of stress, they are faced with during the relief effort. Allowing bias to get in the way would continue to add more stress to disaster relief volunteers and those helping in the relief effort.

The Communities Advancing Resilience Toolkit (CART) focuses on the needs of those working in disaster relief and focuses on providing financial support and psychological assistance. CART also looks at how many people trust public officials. Based on the rating of trust, individuals could adjust build rapport with those in the community. It also investigates the best ways to build a resilient community (Pfefferbaum et al., 2015). Adding something like this to a disaster relief effort could help the disaster relief volunteers while they work with the community.

Dalmida et al. (2016), discovered that nurses are very versatile when it comes to helping in long-term and short-term disaster relief, and the need for nurses to assist in disaster relief continues to grow. However, the number of nurses and even midwives in disaster relief has been rapidly declining (Dalmida et al., 2016). This needs to change because they have proved to be very useful. There is also a focus on making sure the resources are distributed evenly so that all areas have a chance to recover from disasters (Dalmida et al., 2016). This action is very wise, but

one would caution that each area should have the correct number of resources in order to recover based on the needs of the area, rather than just even discernment, as this could set an area up to be able to rebuild faster.

When it comes to nurses and their resilience, this is a huge benefit as they are able to handle the traumatic scenarios that they face, possibly easier than others. However, it does make one curious as to what caused this group of nurses to be so resilient. Nurses like this are highly valued in disaster relief, and if they can share their techniques of how to handle the pressures of disaster relief with other nurses, then it can enhance the ability for more nurses to make a greater impact. This would include learning how they coped with the trauma and not get physically exhausted. The more resilient nurses can be the more they can help others as well and be more effective in the relief effort (Xue et al., 2020).

As recently mentioned, utilizing Military veterans in disaster relief continues to be a great effective idea. The veterans' experience with trauma is very helpful, and they could even teach other volunteers how to process through the trauma that was witnessed. Amazingly, working in disaster relief helps a veteran in this way, and how it allows them to heal from the trauma, they experienced while in the service (Der-Martirosian et al., 2019). Studies like this continue to reinforce the idea of the importance of taking care of volunteers and that there are many traumatic experiences that volunteers will interact with during a relief effort.

While the initial belief is that disaster relief volunteers need to be connected with disaster relief organizations so that they can be utilized to the best of their ability, there are some in Europe and Germany who have used social media to organize and coordinate (Max, 2021). After Hurricane Katrina, a disaster relief effort in Waveland, Mississippi, consisting of volunteers, was not allowed to work with the Red Cross. As a result, the volunteers organized and were able to

provide supplies and services to those impacted by the disaster. This was done through the use of social networking and just asking the survivors what their needs were (Gardner, 2013).

There are spontaneous volunteers who can provide a massive benefit to disaster relief. However, their previous experience can vary, and if not adequately trained, these spontaneous volunteers could be more at risk of getting harmed while volunteering. More effort should be placed on incorporating these volunteers into disaster relief (Nielsen, 2019). Individuals can be motivated to volunteer for many different reasons. In a recent study, two groups of participants watched a nonrestorative and a restorative version of a video about someone who recovered from a disaster. The participants watching the restorative version responded more positively to the willingness to volunteer. But when the nonrestorative version was shown, the participants were not as quick to say they would volunteer, since they saw the negative impact PTSD has on an individual (Menninghaus et al., 2017).

Once the dust settled after the Great East Japan Earthquake, many disaster survivors dealt with the grief of having lost a family member and dealing with near-death experiences. Many disaster survivors had to be relocated until their homes were rebuilt and even wondered if they would get rebuilt (Sakuma et al., 2020). This could put stress on their work, as the disaster survivors could still have to perform their daily tasks but now have the burden of the loss or trying to figure out where they would live. Eventually, fatigue could settle in and cause them not to be as effective in their jobs (Sakuma et al., 2020). Especially in Japan, with their culture, some parents would go to the gravesite and place a certificate next to it if the child was a student who did not have the chance to finish school. The grief that the parents would be dealing with at this point must have been staggering, and although this was part of the culture, it still would be difficult (Saito et al., 2016). A disaster relief volunteer might not know how to adapt and react to

this in a scenario like this. As a result, it could also traumatize the disaster relief volunteers as they might be filled with grief when listening to the disaster survivor's stories.

A finding that helps drive some of the thought processes of this dissertation is that disaster relief volunteers sometimes become motivated by a relief effort. The volunteers from working in the Ghana relief effort chose to keep pursuing their degrees in the medical field, although having been exposed to such horrific (Quarshie et al., 2018). The results can still add to the research field details about how volunteers are impacted after working in disaster relief. Sometimes volunteering reveals how many want to reach out and help those in need, and that can be an overwhelming reason why volunteers push past the trauma to assist in a relief effort. It is amazing to see how people care so much about others, especially individuals that they do not know. Conducting an interview will help better understand a volunteer and asking about their motivation to volunteer and their reason to keep volunteering (Quarshie et al., 2018). It might even explain why these students continued to pursue their medical degrees after being exposed to the disaster (Kaye-Kauderer et al., 2019).

A ministry called the Volunteer Organizations Active in Disasters is a ministry consisting of many denominations which focuses specific aspects of disaster relief, such as having a group of men remove the fallen debris with chainsaws (Ellor & Mayo, 2018). Again, the argument is that if this group of men begin cleaning up the area with their chainsaws, they could expose themselves to the traumatic sites of the disaster. There is a mix of humanitarian logistics and disaster response that should be considered in disaster relief. The humanitarian logistics side focuses on providing food and supplies to disaster-ridden areas. The disaster response side looks at how to clean up an area and looks into ways to rescue and protect more survivors (Rueede & Kreutzer, 2015).

Non-government organizations (NGOs) were able to help find survivors new places to live after a volcanic eruption in 2006. The NGOs planned to make sure there was a steady stream of products and other food items to put the community back on its feet (Faas, 2017). There is also a skill in learning from past and previous disasters. Some disaster relief organizations are good at learning from previously made mistakes. This is seen by the humanitarian and civic assistance (HCA). The HCA's idea is to access databases about a previous disaster and to see where improvements could be made (Baxter & Beadling, 2013). Analyzing data in this way could help reduce how many disaster relief volunteers develop PTSD once it is figured out what kinds of training or treatment they need.

Another disaster dealing with the Knysna Fire communication was a problem between the government and some groups working in the relief effort. News networks and social media were involved, and it was found that communication was crucial (Le Roux & Van Niekerk, 2020). Sometimes the lack of communication could be problematic in a relief effort, which could lead to more deaths and more individuals developing PTSD. Although a disaster can mess up the flow of a community and everyday life, some have found that the best thing to do is unite together to clean up from the disaster. A community working together like this has the chance to build resilience within the community, and it allows each member to feel as if they are doing their part. Another aspect would be that the community would know how to relate to each other since they are in the cleanup effort together (O'Sullivan et al., 2015).

In 2017, Hurricane Harvey destroyed houses for roughly 6.7 million residents. It was said that Hurricane Harvey cost around 180 billion dollars, destroyed homes, and there was up to 18 inches of flooding. Many volunteers helped rescue those impacted by it, too. However, this also exposed them to the traumatic sites of the disaster and the damage it caused (Horney et al.,

2019). Research should be conducted to see how disaster relief volunteers cope with all they experienced. Agarwal and Buzzanell (2015) reported that it is essential to keep the volunteers encouraged and find ways to build resilience within their volunteer group.

This is an excellent idea to consider since that would mean that the volunteers could have each other as a support group to help them process through the trauma. After a tsunami hit Sri Lanka on December 26, 2004, many counselors tried to help those impacted by the disaster. Those impacted would sit in a circle and pass a stone around so that whoever was holding it had the opportunity to share their feelings about the disaster (Hoeberichts, 2012). The fact that this was made available to the survivors to express their feelings about the disaster shows how deep an impact a disaster can make on someone psychologically (Hoeberichts, 2012).

Disasters like pandemics can also be areas where preparedness is just not where it should be. Sometimes it is financial support that is lacking in order to be better prepared. Haitian survivors learned the importance of community-based organizations, and due to their preparedness, these organizations were able to provide services to Haitian survivors from the 2010 earthquakes and even during the wildfires in California and Oregon (Pixley et al., 2021). It is disturbing that finances could stand in the way of places being more prepared for a disaster. The sooner a relief organization can act, the better the chances of reducing the casualties.

On August 07, 2009, Taiwan was hit by Typhoon Morakot, and this brought 2,500 mm of rain over the length of only three days. There was a mixture of religious groups, international agencies, and even non-government organizations that were involved in the rebuild. This relief effort revealed how vulnerable disaster management could be and the importance of accountability. This could mean that while a vast number of groups were working in the relief effort, they needed to properly communicate with each other and work together to clean up the

disaster-ridden area (Hsu et al., 2015). Trust can be difficult to come by, but the more volunteers can trust the organizations they are working for, the better the relief effort can be (Tang & Wang, 2020).

However, a community also needs to be able to trust the volunteers and the relief organization. A lack of trust could add to the stress already present in a relief effort. Cooperation also plays a key role during disaster relief, and research has found that partnerships between organizations do not always last. Something like this could negatively impact a volunteer, especially if the organizations decide to part ways during the relief effort. These stressors do not need to be present, especially when people are volunteering their time to help a community (Tang & Wang, 2020). Continued research about different kinds of stressors that disaster relief volunteers face will help to shape how they are trained and allow others to see what disaster relief volunteers encounter while volunteering.

Mousavi et al. (2019) discussed that from 1994 to 2013, more than 41 million Iranians had been impacted by natural disasters. In one instance, the survivors of an earthquake were sent into the city to a residential center for better shelter as there were after-shocks taking place (Mousavi et al., 2019). This is an example of how the trauma these individuals experienced could increase as they now had to leave their homes along with having experienced the natural disaster. In addition, now those in the residential center are exposed to learning about this recently experienced trauma (Mousavi et al., 2019). It almost becomes a domino effect with who is impacted by a disaster and thus the need for more training exists.

On August 11, 2014, Detroit, Michigan, received over six inches of rain, causing astronomical amounts of damage. All this rain damaged roughly 33-50% of the homes in the metropolitan area. This directly impacted 2,269 residences, and although FEMA provided

financial support, it cost almost $18 million for repairs and cleanup (O'Donovan, 2019). This again shows the devastating impact of disasters and the need for disaster relief volunteers. An individual's social identity could also impact how successful they are in recovering from a disaster (Ntontis et al., 2021). When learning more about the survivors of Superstorm Sandy, it was discovered that years after the disaster, the disaster survivors found they had more concerns about being homeless than their initial concerns of safety from a future storm (Burger & Gochfeld, 2020).

When switching the focus to PTSD, this happens to deal with the cognitive process of an individual and researching the volunteers can reveal how this develops within them (Quevillon et al., 2016). If this occurs, it might teach researchers the best ways to train and prepare someone going into an area filled with trauma. Or, out of the research, there might be more options on how to cope with PTSD. Another idea to consider would be to consider increasing the use of scientific volunteers, as seen in Nepal, where these volunteers were able to help in disaster relief efforts using technology to help rescue and rebuild (Shrestha et al., 2015).

This means that more technology would be used to locate those who need to be rescued, saving time and lives. It would also allow these volunteers to understand the infrastructure of the disaster-ridden area to know which areas are safe and which areas would not be as structurally sound (Shrestha et al., 2015). This is an excellent example of how to use technology to reduce the exposure of volunteers to dangerous areas that could end up being traumatic for them. Incorporating technology like this can be a great benefit if used correctly. If disaster relief volunteers are able to rescue people faster with it, this could potentially lower the number of casualties. When it comes to using technology in disaster relief, sometimes it can be used in beneficial ways. For instance, from a 2013 disaster, the internet was used to warn people of

where explosions were taking place (Pohl et al., 2016). This provided better response times, and it was also able to clear out the areas that were more at risk of harming individuals. This made it more of a response during the disaster than responding after it took place (Pohl et al., 2016).

Other studies have shown how PTSD and resiliency are impacted based on whether the disaster is man-made or natural (Riaz et al., 2015). Often, it is natural disasters that are easier for individuals to overcome than man-made disasters (Fay-Ramirez et al., 2015). This is because survivors from a man-made disaster might harbor their anger towards the individuals responsible for the disaster (Shaw et al., 2020). People could also process the disasters differently, which could change the approach needed to treat them (Brooks et al., 2020). Once beliefs are changed and shaken based on the type of disaster, it would make it all the more difficult to fully recover as quickly as some might hope (Nobles, 2013). As a result, disaster survivors might harness this anger and focus on the people group from which they deem responsible (Shaw et al., 2020).

This might also apply to when disaster relief volunteers go into a disaster-ridden area; understanding what kind of disaster took place would impact how they approached and worked with the disaster survivors. Therefore, possibly looking at a community's social networks and how the survivors view the disaster can reveal how to proceed further. This was needed after the Queensland cyclone and floods as those impacted would find themselves getting discouraged based on the length of time it took to rebuild from the disaster (Fay-Ramirez et al., 2015).

Perhaps getting the community involved by being more prepared and working together could be the difference maker too, when it comes to recovery time (Burger & Gochfeld, 2020). It is fascinating that the desire to keep recruiting is such a priority. One must begin to ask why there is a constant need to get more volunteers, especially if there are already many volunteers. However, this need for volunteers might also point to the idea that perhaps volunteers choose not

to volunteer continuously, and this kind of decision would need to be better understood. However, learning about the theoretical framework of this dissertation helped shape the focus of the study.

Theoretical Framework

Looking at the theoretical framework for this dissertation, there were several theories that needed to be discussed and examined. The first theory to discuss is that disaster relief volunteers can develop PTG and resiliency rather than PTSD after working at a relief effort (Kaye-Kauderer et al., 2019). This is a fascinating theory because one must ask what is leading to this resiliency when exposed to a traumatic environment. The research from Kaye-Kauderer et al. (2019) describes this in their findings where medical school students volunteered for a relief effort in Japan and developed PTG. These students also continued their education and earned their degrees (Kaye-Kauderer et al., 2019). That is what makes this theory so unique; it is the inverse of what one would think the psychological impact should be when exposed to a traumatic environment. However, it is very encouraging to see that something good like PTG and resiliency can come out of something as traumatic as a disaster.

A second theory considered was that the more time spent working with disaster survivors, the greater the chances of developing PTSD. Lee et al. (2017) discovered that the more time volunteers spent helping and listening to the disaster survivors, the more prevalent the volunteers' PTSD symptoms would be. Exposure of this nature can lead one to develop VT or STS where the volunteers experienced the same trauma and emotional pain that the disaster survivors were feeling based on the traumatic stories heard from the disaster survivors. When exploring this theory further, one can see how something like VT or STS could also be what a disaster relief volunteer develops as disaster relief volunteers hear the stories of loss and grief

from the disaster survivors (Lee et al., 2017). Norman and Flanagan (2014) discussed how VT is connected to the constructivist self-development theory. This theory explains how a trauma survivor in a reactionary response works to protect oneself by finding a purpose for life. The theory also explains how the trauma impacts the individual in ways such as how they process memories and how they view themselves and others (Norman & Flanagan, 2014).

A third theory was that there must be an understanding by disaster relief organizations about how a disaster survivor recovers psychologically from a disaster. Not all disaster survivors and even first and second responders have been exposed to the same types of trauma during the disaster. So, when relief organizations arrive with their volunteers, mistakes could be made if they try to provide the type of care for the entire group of disaster survivors. However, each disaster survivor might have different psychological needs based on their trauma exposure. Disaster relief organizations should even consider incorporating mental health professionals who are ready to work with disaster survivors in their relief effort. Something like this could reduce the disaster relief volunteers' trauma exposure as the mental health professionals treat the psychological needs of the disaster survivors rather than the volunteers (Webber & Mascari, 2017).

A fourth theory was that training for disaster relief leads to a reduction in the number of PTSD symptoms experienced after working at a relief effort. From their work conducted about those who volunteered for the 2004 Asian tsunami operation relief effort, Thormar et al. (2016) found that core volunteers who had more training showed fewer PTSD symptoms than citizens who just chose to volunteer without training (Thormar et al., 2016). This is also true of Military veterans who serve in disaster relief. Their military experience and training of working in traumatic environments cause them to flourish when serving in a relief effort (Weiss et al.,

2020). This theory must be further researched since there has to be a way to learn how to train disaster relief volunteers to be more prepared for what they will face in a relief effort.

Many of these theories revolve around the idea and hope of resiliency within an individual. Norris et al. (2008), found the theory of resiliency to be the idea that people can adjust to the circumstances and the tragedy they face. Additionally, it is not about finding stability but flexing to make ways to move forward and recover (Norris et al., 2008). While resilience is also not a simple theory, there are efforts to see if individuals move from resilient thoughts into start doing resilient actions (Kaye-Kauderer et al., 2019).

Individuals can learn from these theories and even from the disaster relief volunteers who become more resilient while serving in disaster relief. For the field of mental health, this dissertation provided a chance for mental health options for disaster relief volunteers since they are not always initially willing to seek it out for themselves (Kono & Shinew, 2015). Although the results from the hypotheses were not as expected, this dissertation has brought awareness to how people react to the exposure to trauma. This has shed light on the fact that research in other areas of disaster relief should be researched to help find a solution to the ever-growing problem of trauma and disasters. Once one can learn of the theoretical framework, it is beneficial to now focus on any related literature.

Related Literature

Having a better understanding of the impact that disaster relief volunteers make on a disaster relief effort will reveal their value and increase the urgency to fully understand how they are affected by what they see. As previously mentioned, disaster relief volunteers release a huge economic burden off the community they are helping (Van Nostrand et al., 2018). As another example, in a recent disaster relief effort in China, the disaster relief volunteers were not trained

to assist disaster survivors with mental health issues. Instead, the disaster relief volunteers were utilized by working with the disaster survivors and helping them through their day-to-day activities, which meant that the disaster relief volunteers had to quickly learn the culture (Ren et al., 2020). However, the disaster relief volunteers were successful in helping in this way, and it was a great benefit to the relief effort.

These are just several examples of how valuable these volunteers are to disaster relief. While previously mentioned the way disaster relief volunteers can reduce the financial burden in a disaster-ridden area is also incredible since these areas would probably not have the funds to pay for all the work and assistance that volunteers provide (Van Nostrand et al., 2018). This could allow a community to rebuild faster and even allocate resources in ways that they would not be able to before the volunteers arrived. Something that does not get talked about a lot in the literature is how disaster survivors are often inspired when they see disaster relief volunteers show up to help, which builds the community's resiliency (See, 2013). Often, it often feels as if the focus is more on how productive or quick a relief effort can be, and it can be forgotten about how impactful the relief effort can be for the volunteers just being there.

Looking at all the dedication and hard work that relief workers put into the relief effort, it should be noted of how they are often separated from their families during this time. This might have a negative impact on how trauma is processed since their family cannot help comfort them (Quevillon et al., 2016). Agarwal and Buzzanell (2015) discussed how there should be ways to keep disaster relief volunteers and prevent them from becoming discouraged since disaster relief volunteers are so valuable to the relief effort. It might be challenging to do this at first, but there are so many ways to learn about the volunteers. One way would be to understand what has

motivated the volunteers to initially volunteer, as this will help understand how to train and care for them (Agarwal & Buzzanell, 2015).

Taking another step into researching volunteers and learning why the resiliency of some volunteers increases will also be helpful in training volunteers (Kaye-Kauderer et al., 2019). It could come down to even interviewing these volunteers and incorporating their ideas into the training. It could provide clarity to see how they can cope, and perhaps these coping mechanisms could be taught to the other volunteers.

What continues to be fascinating with the literature is learning how veterans excel while working in disaster relief, as studies have shown how they feel empowered (Kranke et al., 2017). It helps them mentally heal since they feel as if they can express their mental health issues. This is important for the study because it shows that not all who work in disaster relief develop PTSD (Kranke et al., 2017). The literature also reveals that some can be trained or taught how to handle traumatic situations. This is because it was found that the veterans' combat experience prepared them for disaster relief (Kranke et al., 2017a). If this is true, then maybe there would be a way to replicate this experience and form it into a type of training that can be used to prepare volunteers. In this way, training methods could be created to train and retain volunteers and not allow them to get burnt out or discouraged.

This dissertation relates to the previous research as it is designed to learn about volunteers and how they respond to trauma. However, this dissertation focuses on those working in disaster relief efforts in North America. Since there is a gap in the data on disaster relief volunteers working in disasters in North America, this study helped fill the gap in the research. Understanding the psychological impact on those volunteering in relief efforts in North America and seeing if they also develop PTSD, PTG and resiliency will help the research field to see if

there is a uniform way volunteers are psychologically impacted by trauma exposure or if it depends on the region in which they are living. Determining this can lead to future research into how volunteers are recruited and trained before volunteering and even what kinds of care and treatments they would require after volunteering.

Kaye-Kauderer et al. (2019) provided a great study and were very organized in tracking this kind of data to understand volunteers and learn about PTG. Some of the methods and scales they created were used in this dissertation. However, since they found volunteers developed PTG and sometimes resiliency, it intrigues one to research why they became resilient (Kaye-Kauderer et al., 2019). This is something that was a driving force behind this dissertation. Identifying the difference between volunteers who develop PTSD and others who become resilient and develop PTG can help researchers understand what kinds of training are necessary. However, it might even come down to having more services for the volunteers after they work in disaster relief, but this might not be known if research is not thoroughly conducted.

This dissertation focused on three research questions and three hypotheses. Each of the three hypotheses drew out significant information that will help to fully understand the psychological impact that disaster relief work has on volunteers. These questions were asked because they build the narrative about the volunteers and what they experience. The presented hypotheses were based on recent research, and it was expected that they would be true. Because of previous research, it has been shown that these can be true. Still, with no direct research on disaster relief volunteers serving in North America, it would not be wise to conclude that there were similar results. Many aspects were reviewed from the Japanese study about the psychological toll disaster relief work had on the volunteers (Taku et al., 2018). Some of the topics studied are their desire to help, inability to support properly, the volunteers' ability to

protect themselves, and even their decisions to participate in activities with other volunteers (Taku et al., 2018).

The work conducted with the Davidson Trauma Scale (DTS) and Posttraumatic Growth Inventory (PTGI-X) led to an encouraging discovery. This is that medical students volunteering for disaster relief work can have a positive experience when volunteering and were able to make a significant impact on the community (Anderson et al., 2016). This dissertation looked at the differences between males and females regarding how they are psychologically impacted by disaster relief work. This possibly could assist with a better understanding of how volunteers are impacted by disaster relief. When data was gathered, and it was determined how each gender reacted to trauma, roles could be handed out to males and females based on how they psychologically respond to disaster relief work (Anderson et al., 2016).

A recent study reviewed the thought patterns that many in the past might have had of how men and women should work different types of jobs, especially when it came to an idea like disaster relief (Godderis & Rossiter, 2013). However, the study found that while it is true that women are great at the caretaker role, it should not be that since they are women, then they should be assigned this role, but rather because they are highly skilled at it (Godderis & Rossiter, 2013). This brings to light the idea of assessing all the volunteers and seeing what skills and abilities they have to use them to their potential. The type of disaster will also be the deciding factor on what kinds of volunteers are needed and what roles they will all be assigned (Godderis & Rossiter, 2013). This is an excellent idea of meeting the needs of the people and working as a team rather than as individuals.

More research about the Great East Japan Earthquake from March 11, 2011, found that PTSD and other psychological distress were evident in those who worked to clean up after the

disaster (Setou et al., 2018). A 62-question cross-sectional survey was mailed to 143 individuals who worked in the relief effort (Setou et al., 2018). This article researched things like the disaster survivors' health and job status to see if there was a sense of loss or other changes in their lives because of experiencing the disaster area (Setou et al., 2018). They even looked at whether disaster survivors could trust others as well. They also researched if the workers were dealing with any form of fatigue, as psychological distress has been known to cause this (Setou et al., 2018).

The connection of one's education and even finances can also impact the resiliency of those who went through a disaster (Ludin et al., 2019). Looking at public health plays a considerable part in developing resiliency and fighting against developing PTSD. Sometimes there need to be more clinical aspects of a recovery or relief effort to defuse PTSD (Pfefferbaum & Shaw, 2013). Avram et al. (2016) discussed that there are limits in the research field since there is no research examining any kind of emotional stress people were experiencing before a disaster.

However, further researching this area can help be a great asset in the fight against PTSD since it could work to stop PTSD before it starts. It could also be true that researching those who have PTSD after a disaster can turn out not to be as productive as researchers have hoped (Avram et al., 2016). In their study, Kane et al. (2018) reviewed 513 participants and found that roughly 20% of those who used alcohol were using excessive amounts to cope with what they experienced after the relief effort. Additionally, a study also found that suicidal thoughts, alcohol abuse, depression, and anxiety within those who responded to the 2015 Nepal earthquake disaster relief effort were very high, which was just within the 12 months following the relief effort (Kane et al., 2018). The percentages for these items exceeded what the World Health

Organization (WHO) estimated (Kane et al., 2018). This is alarming since this should be a trusted organization, but with the low estimates compared to what reality is, it means that there are a lot more relief workers hurting than expected. Something like this would limit what is known, especially if people simply trusted the estimates.

Some research has examined volunteers in the Sichuan Province in China (Ren et al., 2018). As other articles so often do, they look at volunteers serving in disasters outside of North America, which places limits on seeing the entire picture of all disaster relief volunteers. With a gap like this, that is why it is so important to look at volunteers serving in disasters within North America. When a disaster relief volunteer can see that life is fragile after serving in disaster relief, this demonstrates both a positive and negative mindset. On the one hand, it is good for the volunteer to have a new appreciation for life. However, it would appear that the traumatic scenes are beginning to overwhelm the volunteer, and if not handled properly, the volunteer could be at risk of not getting any psychological relief which could then lead to PTSD. A recent study has even shown how volunteers can get discouraged, and when this happens, it can hurt the morale of the disaster relief team, but it is also a sign that volunteers need assistance and someone to support them (Ren et al., 2018).

A recent study observed a direct connection between people choosing to attend religious services after witnessing their community destroyed by a disaster (Bright et al., 2019). It also showed how a community hit by a disaster is more resilient when a strong focus is on the church (Bright et al., 2019). However, the study also revealed how America has become more secularized in the last 50 years (Bright et al., 2019). Something like this could limit the research on what treatments and training are effective. For instance, what might have been effective 10

years ago, might not be as effective today if those trainings were created for someone with a Christian worldview rather than a secular one.

Also, one might expect to see more PTSD in disaster relief volunteers with secular worldviews since they do not attend a church body to find a support group to lean on when struggling with the images from the relief effort. This in mind, it could negatively impact the resiliency of a community after a disaster. There is also a relationship between the number of times someone attends church and how they recover from a disaster (Bright et al., 2019). It would be interesting to see how Christian relief volunteers could impact a community with little to no church attendance during a relief effort. A final limit might be not getting as many participants to respond to the scales and surveys since this could create a smaller amount of data to be analyzed.

Results from this dissertation reinforced the idea that a disaster can be an opportunity to learn, as also seen with Fuchs et al. (2021) and their study on Hurricane Katrina which allowed for disaster relief organizations to be more prepared for future disasters. Fuchs' (2021) study reinforced the idea that volunteers are valuable and need to be taken care of, before, during and after a relief effort. However, it could be used by disaster relief organizations as a tool to review their practices and see where they could make improvements. This way, they could improve before the next disaster, rather than waiting for a disaster to happen and then make improvements.

On a practical level, the study could be an avenue to find better ways to help disaster relief volunteers. A recent discovery was that some disaster relief survivors do not seek any form of mental health help after going through the disaster (Kono & Shinew, 2015). This finding reveals how although people need help and someone to talk to, they are sometimes reluctant to

seek out this help. Even though this was about survivors, one must discuss whether the volunteers chose to seek mental health assistance after serving in disaster relief. Additionally, it is a benefit to the research community in providing more data to the field about the psychological impact that disaster relief work has on volunteers.

The problem being dealt with is that disaster relief organizations need to find ways to train and protect their volunteers so that they do not develop PTSD. This study looked at how the volunteers are directly or indirectly impacted psychologically by the trauma experienced and witnessed during disaster relief. Having a plan and being ready for a disaster can make a huge difference, too. Following that thought, the more research that can be done, the better type of disaster plan can be created. When psychiatric nurses are being used in disaster relief to help the survivors, this provides a good amount of evidence that the volunteers will probably be psychologically impacted by the disaster relief effort as well (Hauserman, 2012).

One cannot stand by and not address ways to help volunteers after seeing the data from a study to show that disaster relief work does make a psychological impact on volunteers. Additionally, disaster relief workers can also be vulnerable to fatigue during their time in the relief effort (Dawson et al., 2015). Kono and Shinew (2015) revealed that having activities to help survivors get their minds off the trauma and not focusing on negative thoughts, such as Tanoshimi-based problem-focused coping was very effective. The same idea could be true for volunteers to provide a way to address problems with the volunteers processing through the trauma (Kono & Shinew, 2015).

Also, using volunteers in positions that fit them can reduce the stress of the volunteers and can maximize the impact they can make (Dawson et al., 2017). As a result, this would allow for more efficiency in the relief effort. More research can show the exact areas that need to be

enhanced and how the volunteers can be equipped for the next disaster. The structure of the dissertation looked at disaster relief efforts that take place in North America. It followed other studies where volunteers were researched anywhere from 6, 12, and even 18 months after the relief effort (Thormar et al., 2016). However, Kaye-Kauderer et al. (2019) chose to study volunteers eight years after volunteering, which provided some eye-opening findings (Kaye-Kauderer et al., 2019).

This dissertation considered the experience level of the volunteers so that a larger spectrum of results can be reported. It also explored to see if there is a lack of trust between relief groups and local governments where the disasters occurred. Often times, this lack of trust causes the relief effort to slow down or not be as productive as possible (Hermansson, 2019). It would be interesting to learn if these tarnished relationships are the reasons for volunteers choosing to no longer volunteer or the cause for potentially being the cause of a more severe PTSD diagnosis. Finally, all these aspects have helped the validity and accuracy of the research on disaster relief volunteers serving in North America.

Summary

As it can be seen, there is research about disaster relief, and the research points to different aspects of it. Some urge the importance of preparedness (Nelson et al., 2013). Others push the idea of pre-screening to see if any volunteers were dealing with PTSD before serving (Thormar et al., 2016). However, when volunteering is more spontaneous rather than organizational, this might be more difficult (Pine et al., 2018). Pre-screening should undoubtedly be considered so that the relief organizations know more about their volunteers and know how to care for them.

Even being more prepared for the next disaster is a great format to follow since there will always be more ways to prepare. Looking for those in the community who might be the most vulnerable and understanding how to protect them when a disaster strikes should be an avenue to pursue. There are even moments when city officials who oversee the preparation for a disaster are limited in their experience, which causes stress on the relief effort. Since almost anything in a community, such as families, nursing homes, and businesses, could be at risk during a disaster, then it would be plausible that disaster preparedness could reduce the number of victims (Nelson et al., 2013). As a result, this could reduce the amount of those traumatized by the disaster.

The volunteers do not have to be the weak link in the disaster relief chain. It would even benefit volunteers if they are trained to process through the things they witness and how to help others cope, which can enhance the effectiveness of a relief effort. If they are properly researched, many things can be learned and improved. Additionally, without a study such as this, the whole picture could not be there to know how to care for the volunteers exactly and how to meet their needs.

Pine et al. (2018) found that volunteering can give individuals a purpose for their life. This incredible discovery could also explain how medical students in Japan became more resilient and developed PTG after volunteering in disaster relief and chose to keep pursuing their medical field degrees (Kaye-Kauderer et al., 2019). That is why researching this gap was so important. It was not to confine volunteers but rather to understand how they are psychologically impacted by disaster relief, so that they can keep serving without psychologically harming themselves. There are many research questions and hypotheses that could be considered; however, the three that were presented earlier in this dissertation have answered a lot of helpful questions when it came to disaster relief volunteers.

Prior to this study being conducted, what was not known was if volunteers who serve in disaster relief efforts in North America respond psychologically the same way to disaster relief as volunteers do in other parts of the world. Addressing the likeliness of volunteers in North America to see if they are more, less, or just as likely to develop mental health issues as disaster relief volunteers in other countries are, is a gap that was addressed. One study even found that volunteers had increased mental health issues due to increased exposure to trauma (Thormar et al., 2013). It is also unknown if some form of pre-deployment screening will help reduce the number of volunteers who develop PTSD after they volunteer to serve in a disaster relief setting (Opie et al., 2020).

One of the main gaps in the literature is that many of the studies focused on places outside of North America. Conducting a similar study of disaster relief volunteers who work with disasters that take place in North America helped fill that gap. Babcock et al. (2012) provide an excellent example of a relief effort in Haiti and analyzing their assets. The relief effort took over four months to complete, and they cared for 270 patients. The relief effort received assistance from the University of Chicago Medical Center Volunteers, and these volunteers were adequately trained. The relief organization was able to analyze how to best use each volunteer (Babcock et al., 2012). Approaching disaster relief in this way allows each volunteer to be used to their potential.

Another gap in the data is fully understanding how to train volunteers to lower their chances of developing PTSD again (Thormar et al., 2013). Although Kaye-Kauderer et al. (2019) demonstrated the impact of disaster relief on disaster relief volunteers, they do not focus on North American relief efforts. A study about the volunteers in North America helped benefit the research field in many ways. Since there is a link between disaster relief volunteers, PTG and

PTSD, no matter where the disaster is located, this opens the door for future research on looking into universal ways to treat, train and care for volunteers.

CHAPTER THREE: METHOD

Overview

While it is known that disaster relief work can psychologically impact disaster relief volunteers and the outcome is often developing PTSD or PTG, this study addressed the gap in the research to fully understand the psychological impact that disaster relief work has on volunteers who worked in relief efforts within North America. This chapter provides a step-by-step process of how the research for this dissertation was conducted and how the results were analyzed. The methods outlined in this study explained how the research questions and hypotheses relate to each other and how participants were selected to ensure the most accurate results. Finally, it discusses the validity of each scale of measurement and addressed the independent and dependent variables.

Design

The main focus of this study was to conduct quantitative research on the psychological impact that disaster relief work has on disaster relief volunteers in North America. The research questions and hypotheses in this dissertation, along with the independent and dependent variables, were crafted from reviewing previous research. More importantly, they were designed to address the gap in the research, focusing on North American relief efforts. The scales and assessments chosen for this dissertation can accurately test these hypotheses and answer the research questions to provide the data to understand what adjustments could be made when working with disaster relief volunteers.

The quantitative data received from these scales was analyzed by Statistical Package for the Social Science (SPSS) software. Since this study was looking at disaster relief volunteers and how volunteering impacts resiliency, PTSD, or PTG development, it needed to consist of time-

tested scales that can be trusted. This is another reason why these specific scales were chosen, as they can accurately assess the impact that trauma exposure has on disaster relief volunteers when looking at resiliency, PTSD, and PTG.

Research Questions

This study asked three research questions that look at different aspects of the psychological impact disaster relief work has on disaster relief volunteers. These research questions are directly connected to the hypotheses, and this will be explained in greater detail in a later section. This dissertation presented the following research questions:

RQ1: Is severity of the disaster relief work associated with increased symptoms of PTSD?

RQ2: Is the type of training associated with PTG and resiliency?

RQ3: Is treatment for PTSD associated with PTG and resiliency among disaster relief volunteers?

Hypotheses

The independent variables in the study were the severity of the trauma they were exposed to, the type of training received, and treatment for PTSD received prior to volunteering. The dependent variables for this dissertation were PTSD symptoms, PTG, and resiliency. The demographic questionnaire, Posttraumatic Growth Inventory-Expanded (PTGI-X), the Davidson Trauma Scale (DTS), Connor-Davidson Resilience Scale (CD-RISC) and the 10 Factor Resilience Behavioral Scale (10FRBS) were used to measure these independent and dependent variables. A covariate in this study was the participants' previous experience serving in the Armed Forces.

This dissertation presented the following hypotheses:

Ha1: There is an association between volunteers' PTSD symptoms and the severity of their trauma exposure. This hypothesis looked to see if a more traumatic experience volunteering in disaster relief leads to PTSD development.

Ha2: There is an association between training and indicators of PTG and resiliency. This hypothesis looked to see if training volunteers will help them be more resilient rather than developing PTSD.

Ha3: Receiving treatment for PTSD before working in disaster relief will be associated with reporting fewer symptoms of PTSD. This hypothesis looked to see if those who were being treated for PTSD before volunteering are more prone to re-developing PTSD if they work in disaster relief.

Research Question One and Hypothesis One examined data to see if the severity of trauma exposure that a disaster relief volunteer experiences at a relief effort has a connection with PTSD. This research question and hypothesis was based on recent data that volunteers can show signs of PTG and resiliency instead of PTSD (from Kaye-Kauderer et al., (2019;) and Lee et al., (2017). Whether natural or man-made, the type of disaster can impact the severity of the trauma one experiences. For instance, sometimes man-made disasters negatively impact individuals in a psychological manner differently than natural disasters (Nobles, 2013). If some of participants volunteered in a relief effort after a natural disaster, and others volunteered in a relief effort after a man-made disaster, their experiences of what they saw might be completely different and would provide different results.

Research Question Two and Hypothesis Two examined the idea to see if the type of training received is associated with PTG and resiliency. This was based on Thormar et al.'s

(2016) and their research about disaster relief volunteers with more training and having fewer PTSD symptoms than those who volunteered without training.

Research Question Three and Hypothesis Three considered the idea if disaster relief volunteers who were being diagnosed with and treated for PTSD by a mental health professional prior to a relief effort show signs of PTG and resiliency from the relief effort. Research Question Three and Hypothesis Three were also based on the idea that veterans do better with their mental health issues while volunteering (Weiss et al., 2020). If it is true that some volunteers show fewer PTSD symptoms after having received PTSD treatment prior to volunteering, then it would be wise to further research these volunteers to understand what is reducing these PTSD symptoms. All the hypotheses and research questions in this dissertation related to one another in many ways.

For instance, these hypotheses and questions related to the research since they were all topics that have been researched and discussed in previous studies, but they have not been specifically applied to disaster relief volunteers who serve in North America. They all dealt with the reality that disaster relief work is dangerous, and volunteers put themselves in harm's way just to care for others. They are also connected since they look at PTSD within a volunteer prior to, during, or after serving in disaster relief. It was essential to understand if someone is dealing with some form of PTSD before they volunteer since this might impact the results of the study.

This study elaborated on these hypotheses and looked at the research questions to see what outcomes were presented. For instance, while veterans who are already dealing with PTSD tend to do well with handling the symptoms during disaster relief, one needed to know if others react the same way (Weiss et al., 2020). There could have been an individual who reports high levels of PTSD after volunteering but was also dealing with PTSD prior to volunteering. This

would mean that more research should be conducted to see if disaster relief work does cause PTSD within volunteers, or does it just increase the PTSD that is already within specific volunteers. Perhaps there was no connection between disaster relief work and the psychological effects that it has on someone, but that is why there was a need for this research.

It will be interesting to see the results of this dissertation to learn about disaster relief volunteers in North America as it related to the question and hypothesis. The findings from this dissertation will help to understand what exactly it is about a traumatic environment that causes PTG and resiliency rather than PTSD in disaster relief volunteers. Understanding any connections from these research questions and hypotheses helped add to the research and reinforce the idea that more can be done to enhance a disaster relief volunteer's ability to be more resilient in disaster relief.

As one can see, these research questions and hypotheses are connected to a study like this because of the theoretical and practical findings that can be and were discovered. On a theoretical level, the results revealed how important it is to be proactive when preparing for a disaster. On a practical level, it gave insight to disaster relief organizations regarding how to be proactive when assisting and training the volunteers. When looking just at the theoretical level, this research was added to what is already in the research community, except this time, the data was from disasters in North America. Proving the hypotheses are true or false acted as the building blocks for more research. This research has been added to similar studies, developing a better understanding of PTSD and disaster relief volunteers.

Participants and Setting

The participants for this study were selected and recruited by reaching out to Samaritan's Purse and the North American Mission Board's (NAMB) Send Relief who have responded to

disasters in North America. The sampling methodology for this study and these participants was convenience sampling as it focuses just on disaster relief volunteers in North America. Convenience sampling is found to be used when researching a population regarding disasters (Stratton, 2021). The disaster relief organizations were contacted through phone and email and were made aware of the timeframe for the study. Some organizations contacted chose not to allow their disaster relief volunteers to participate in the study. However, NAMB agreed to participate and advised the researcher to contact directors from their partnering organization called Southern Baptist Disaster Relief (SBDR). These directors were asked to participate and agreed to allow their volunteers to participate in the study. The SBDR has served in disaster relief work in the United States for more than 50 years (Wolford & Beachum, 2017).

Having participants from different parts of the country and different relief efforts has strengthened the results of the study. It also beneficial to have enough participants that were males and females to see if there was a statistical significance between how each gender responded to trauma and to see if one gender dealt better with trauma than the other. To receive more accurate results, it also helped having participants consisting of various ages. Although having those younger than 18 years old participate in this study would be helpful for the sample size, no one under 18 years old was recruited to participate in the study.

Additionally, participants with varying amounts of experience in disaster relief enhanced the findings of the study. Therefore, the aim for the population was to consist of participants who have volunteered in at least one relief effort in North America but did not place a maximum limit on the number of times a participant responded to a relief effort in North America. If the participants volunteered for more than one relief effort in North America, the survey asked them

to choose just one relief effort they responded to and answer the questions based on that experience.

Another desirable aspect related to the participants would be to have a large sample size, since this would mean it could help the researcher gain a better understanding of disaster relief volunteers who serve in relief efforts in North America. Kaye-Kauderer et al. (2019), found that a large sample size would offer a wide array of results to help understand the psychological impact that disaster relief work has on those who are part of the relief effort. This dissertation was hopeful that there would be many participants for the sample size due to this being a quantitative study. Kaye-Kauderer et al. (2019) had 579 participants in their study, which meant this was a 71.9% response rate, allowing them to see more clearly how the relief effort impacted that specific population (Kaye-Kauderer et al., 2019).

While a sample size is important, a response rate like this would be very welcomed, and it could provide a great representation of the disaster relief volunteer community. Lee et al. (2017) had a response rate of 82.87%, totaling 2,298 participants. A response rate this high would be amazing since a higher response rate could make the results more accurate in their representation of the sample size. This dissertation planned to send the survey to around 6,000 disaster relief volunteers and anticipated 1,800 participants since it would create a large sample size to gain accurate data about disaster relief volunteers.

The participating disaster relief organizations will be informed about the results of the study, after this dissertation has been completed. The researcher made sure that all responses from participants were analyzed and did not focus just on participants who answered a certain way that might favor a specific hypothesis (Heppner et al., 2015). If the study did not reveal the true findings and only presented the data about PTSD development, it could have led to

inaccurate conclusions and even costly decisions. In the event that the analysis yielded any necessary changes that disaster relief organizations should make, this information will be brought to the attention of the relief organization to find better ways to care for and train volunteers.

Instrumentation

Several scales and surveys were used to measure the participants to understand resiliency, PTG, and PTSD and their connection with volunteering in disaster relief work. These consisted of a demographic questionnaire, the PTGI-X, DTS, CD-RISC, and the 10FRBS. These scales were able to test the research questions and hypotheses. In addition to this, the scales complemented each other in what they revealed about the participants, PTG and PTSD. For instance, the 10FRBS was designed to focus on behaviors as compared to how the CD-RISC focuses on emotions (Kaye-Kauderer et al., 2019). The DTS assesses the severity and frequency of the PTSD symptoms within an individual (Davidson, 2002). Finally, the PTGI-X is an excellent tool for understanding the level of PTG within a participant (Tedeschi et al., 2017).

These instruments were also able to test the independent and dependent variables to see how they might also be impacted in disaster relief. The validity of these tests is undoubtedly something that played an essential role in this dissertation. It should also be noted that the instruments, how to use them, and the written permission that the researcher received to use them are all provided in the appendices. Once understanding which scales were used, now one must direct their attention towards the first instrument used in the study.

Demographic Questionnaire

The demographic questionnaire consisted of 17 questions and can be seen in Appendix D. Some of the questions were questions that this researcher planned on asking the participants,

along with several questions from a similar study (Kaye-Kauderer et al., 2019). These questions were designed to learn more about the participants' experiences in disaster relief and understand their roles during the relief effort. One of the main questions was to see if they responded to a relief effort in North America since this directly impacted the gap in the research. The questionnaire also consisted of questions about the training received, the types of disasters they responded to, and if any post-care was received.

It also asked if the participant received a diagnosis or treatment for PTSD prior to volunteering in the relief effort (Weiss et al., 2020). This was not meant to have a negative connotation with seeking treatment; the question was used to better understand the psychological impact disaster relief work has on disaster relief volunteers. In addition to this, the participant was asked their age and gender since understanding more about how various groups of disaster relief volunteers react to traumatic situations can help gain better idea about the psychological impact that disaster relief has on the volunteers. Allen (2017) developed an age demographic that was used in this dissertation. A final question asked participants to identify the organization they worked with for the relief effort.

Posttraumatic Growth Inventory-Expanded

The Posttraumatic Growth Inventory- Expanded (PTGI-X) consists of 25 questions and has an extremely high internal reliability (as these values have shown to be .95, .96, and .97) when tested for reliability (Tedeschi et al., 2017). This means that the scale is very accurate in assessing PTG development. The PTGI-X also asks questions on a scale that ranges from 0-5, where 0 is "I did not experience this change at all as a result of my crisis," and 5 is "I experienced this change to a very great degree as a result of my crisis." From a recent study, when this scale was used in the United States, Cronbach's Alpha (α) was .97 for internal

reliability and .95 when using this scale in Japan (Tedeschi et al., 2017). This still shows that it can maintain high internal reliability and is a scale that can be trusted even though it scores higher in the United States. Sometimes the differences in the scores may vary depending on the country and the belief systems that those in the country have. However, this scale stands out because it can detect PTG in secular and spiritual people (Tedeschi et al., 2017).

It is unique since it can get realistic responses of how people are feeling and about PTG, rather than getting responses from individuals who answer the questions in a certain way to get a better score. In other words, those taking this scale do not feel pressured to provide honest answers to the questions, which helps strengthen the validity of the scale. The concurrent validity of the added section helps strengthen the scale's accuracy and allows it to work well in cultures other than just in the United States. Even this scale's construct and discriminant validity shows that the scale can do what it was created for (Tedeschi & Calhoun, 1996). As it focuses on looking for PTG within an individual, the questions are based on different aspects of an individual's life (Tedeschi et al., 2017).

These categories ask about personal strength, spiritual-existential change and relating to others, new possibilities, and appreciation of life. The questions used for the PTGI-X were formed based on learning about real-life stories where individuals found themselves in traumatic situations. A sample question asked if the participant has a greater sense of harmony with the world. Another sample question is if the participant feels like they could face questions concerning death and life. An individual can score anywhere from 0 to 105, which the lower score indicating less growth and the higher score revealing more growth. The PTGI-X can also be measured by the number of participants who record no growth (Tedeschi et al., 2017).

Davidson Trauma Scale

The Davidson Trauma Scale (DTS) is a 17-item scale asking questions about a traumatic event experienced. It asks questions about the frequency and severity of the PTSD symptoms on a scale of 0-4 scale, with 4 being “extremely distressing” and “0” being “not distressing at all.” Since there are two separate columns for severity and frequency, these categories can be scored either together or separately, which can benefit the user depending on what they are hoping to find. It takes approximately 10 minutes to complete as well. A sample question asks if the participant has recently had distressing dreams or painful thoughts and images about the traumatic event (Davidson, 2002). This scale helps assess participants who might be suffering from many different types of trauma such as natural disasters, near-death experiences, property loss, combat, assault, and bereavement (Davidson et al., 2002).

Kaye-Kauderer et al. (2019) has shown how this scale can be used in combination with the PTGI-X as another way to assess an individual who might be suffering from trauma exposure. The convergent validity of the DTS reveals how well it can work with other scales. For instance, the correlation coefficients were strong with a PTSD Scale at .78 and .64 on the Impact of Events Scale (IES)**.** The divergent validity for the DTS shows that it is not similar to these kinds of scales too. This is important since it indicates that the DTS tracks other aspects of individuals, and it is necessary when working with individuals and PTSD (Carlson & Martin, 2001). The reliability of the DTS coefficient alphas reached .90 with both severity and frequency (Carlson & Martin, 2001). Lastly, it is also strong with internal consistency (Davidson et al., 2002).

Connor-Davidson Resilience Scale

This Connor-Davidson Resilience Scale (CD-RISC) is a 25-item, 5-point scale that ranges from 4 being “true nearly all of the time” and 0 being “not true at all.” It also focuses primarily on how someone is doing over the most recent month regarding suffering from PTSD and from dealing with experiencing a recent traumatic event. Individuals taking the assessment can score anywhere from 0 to 100, and those who received scores closer to 100 are a sign of more resiliency within the individual. Some of the questions asked on the CD-RISC consist of whether the individual felt like they could adapt or felt as if they were in control of their life (Connor & Davidson, 2003).

The CD-RISC has strong internal consistency and reliability measured with Cronbach's α. Using Cronbach’s α to measure this scale usually reaches close to 0.89, making it a very reliable instrument (Connor & Davidson, 2003). Kaye-Kauderer et al. (2019) even received a score of .94 on Cronbach’s α for their study when using the CD-RISC. For discriminant validity, it does not develop significant correlations; however, it is quite strong in convergent validity. The convergent validity of the CD-RISC is that it negatively correlates with stress scales such as the Perceived Stress Scale (PSS) and the Sheehan Disability Scale (SDS). This shows that the scale is accurate in revealing resiliency because in cases where the PSS or SDS reveals a lack of stress, the CD-RISC would show growth in resiliency due to the negative correlation (Connor & Davidson, 2003).

10 Factor Resilience Behavioral Scale

The 10 Factor Resilience Behavioral Scale (10FRBS) is a custom-made scale focusing on the resilient behaviors of those who have been through a traumatic experience. This can be used to see if a more negative experience volunteering could lead to resiliency and a desire to

volunteer again. The creators of this scale were also looking to find common resilient themes among survivors and volunteers after a future disaster. The 10FRBS follows a four-point scale for 4 is “true nearly all of the time,” and 0 is “Not true at all.” The scale asks whether the participant feels anxious, confused, guilty, or angry. It also has excellent internal validity and reliability as Cronbach’s α, which is used to measure it, produces scores ranging from .91 to .95 (Kaye-Kauderer et al., 2019).

Although this is a newer scale, when it comes to validity, it was able to produce accurate results that matched the behaviors of someone developing PTG. There are many applications for this scale as it can be used a month following a disaster and even months after a disaster took place. Due to the design, the 10FRBS can easily pair with the CD-RISC, DTS, and PTGI-X. When paired with the CD-RISC, they can efficiently work together due to the low correlations they have with each other. This makes the 10FRBS unique because while there are similarities, the CD-RISC reveals resilient traits, and the 10FRBS reveals resilient behaviors (Kaye-Kauderer et al., 2019).

Internal Validity

The scales in this study and items used to take measurements have been used in previous studies, which helped with their internal validity. Kaye-Kauderer et al. (2019) used the 10FRBS, DTS, PTGI-X and the CD-RISC in their research, which proved to be accurate in testing their hypotheses when examining PTG and PTSD. The reliability that these scales and measurements offered was another reason for choosing these scales (Kaye-Kauderer et al., 2019). They are also exceptional in generating valuable data for a researcher to be interpreted in a way that provides answers to research questions and hypotheses. They show how the variables interact and how

one aspect of disaster relief impacts another. Sometimes this is seen, but in other instances, the scales reveal connections that are not as apparent (Kaye-Kauderer et al., 2019).

External Validity

For external validity in this dissertation, it was more difficult to control. This is because the amount of time after a disaster relief effort before a disaster relief volunteer took the surveys might reveal different findings. This was seen in the answers that disaster survivors provided in a recent study, where the further away it was from the disaster, the less they cared about the material things they lost. However, their immediate responses to the disaster and the loss differed from their later responses (Burger & Gochfeld, 2020).

In the same way, a disaster relief volunteer might have felt differently about the disaster relief effort a year after the relief effort rather than three months after a relief effort. Also, there was no way to control how many volunteers from different genders and ages choose to respond in terms of statistical validity. This means that instead of having a report consisting of half males and half females, it consisted of more participants from one gender over the other. However, this dissertation worked through any issues faced to ensure the data was analyzed correctly.

Procedures

While working on writing the first three chapters of the dissertation, the researcher began to request permission to use the desired scales in the study. Requesting permission and receiving each scale for the study had different processes. Permission to use the 10FRBS and demographic questionnaire was requested and granted by emailing Dr. Halley Kaye-Kauderer. To receive permission to use and obtain the CD-RISC, this was done by emailing the scale creator. Several forms were then filled out and submitted, along with submitting a $33.00 student fee. After this was completed, the creator emailed the requested versions of the CD-RISC to the researcher. The

PTGI-X is freely available online in a PDF format, and the creators request that a copy of the research be submitted to them after the study is complete.

By contacting Multi-Health Systems (MHS) through their website, the researcher received permission to use the DTS. This email address can be accessed on the DTS scale's website. Then a customer service representative provided several forms that needed to be filled out before gaining permission. A form was filled out to gain permission to purchase and show evidence that this is a valid study.

After gaining permission to use the scales and receiving the scales, the questions were placed in a secure survey program called Qualtrics XM. This survey program uses robust security measures to ensure that participants and the researcher remain protected while completing the survey. It is password protected and only allows the researcher to have login access to the survey and the results. Since the researcher's account is used to create the survey, only the researcher can make edits and updates to the survey. This survey program allows the researcher to place any question into the survey and even create Likert scales. All scales and the demographic questionnaire were placed into one survey. Once the researcher finalized the contents of the survey, the program provided a secure link for participants to click on to take the survey.

While this was being done, the researcher worked on finishing chapters one, two, and three so that they could be submitted for defense. The researcher also worked on filling out the application for the Institutional Review Board (IRB) so that it could be submitted for review. Upon proper defense for the dissertation proposal and IRB approval, the researcher sent the Qualtrics survey link to the disaster relief organizations. To eliminate any chances for the

researcher to be in direct communication with the participants and ensure that the study is anonymous, this secure survey link will first be sent to the disaster relief organization directors.

The researcher's process to gain participants for the study was reaching out to different disaster relief organizations to request permission to have their disaster relief volunteers participate in the research for this dissertation. As recently discussed, the organizations that were contacted were NAMB and Samaritan's Purse. NAMB provided the researcher with contact information for the directors of disaster relief organizations that are part of SBDR. The researcher called and emailed these SBDR directors to see if they were interested in participating in the study and if permission would be granted to allow their disaster relief volunteers to participate in the study. From the eight SBDR organizations asked to participate, five of those organizations participated in this dissertation.

Once the researcher received IRB approval, the directors of disaster relief organizations were able to receive and review the survey link. The directors who approved the survey ensured that their organization emailed the survey link and made it available to their disaster relief volunteers to encourage them to participate in the study. The survey link first had an informed consent page, which explained the nature of the study, and the participants were not able to continue until they read and agreed to the terms of the study. In addition to the informed consent page being included first, the Qualtrics survey link consisted of the demographic questionnaire, DTS, PTGI-X, CD-RISC, and 10FRBS.

Understandably, it took some time to receive the participants' responses, so a deadline was provided to the participants (Agarwal & Buzzanell, 2015). The survey was emailed out on August 01, 2022, a reminder email was sent on August 15, 2022 and the researcher allowed responses from participants to trickle in until August 30, 2022. The disaster relief organizations

were also be informed of this deadline which was also communicated to their disaster relief volunteers. The organizations encouraged their volunteers to participate in survey. Additionally, the survey took approximately 20-30 minutes to complete.

If the participants had difficulty with the survey link, the disaster relief organizations could contact the researcher to help troubleshoot and make sure the participants can access and complete the survey. When a participant completed the survey, the results were automatically and anonymously submitted back to the researcher's secure survey account to be analyzed. Once all data for this dissertation was gathered, it was then analyzed using the SPSS software. The survey results and findings were then written up to be presentable and understandable. Results from the study will also be made available to the disaster relief organizations. The results of the study were able to be analyzed and yielded areas for future research too. Finally, the scales and permissions to use the scales have been included in the appendices and are easily accessible for reference.

Data Analysis

The main goal of this study was to learn about the psychological impact that disaster relief work had on disaster relief volunteers. It focused on disaster relief volunteers who worked at relief efforts in North America. The study looked to see how the development of PTSD or PTG was evident within a volunteer after they worked in disaster relief. It also made efforts to understand if those being treated for PTSD could still work in disaster relief without being triggered. Although the process and time to collect the data from the participants took several months, the results were reviewed to see how the data answered the research questions (Agarwal & Buzzanell, 2015).

This dissertation used SPSS software to analyze the data and review the findings statistically. Pearson's correlation, Spearman's Rank Order correlation (Spearman's correlation), descriptive statistics, Cronbach's α, the Kolmogorov-Smirnov test, *t*-tests, Mann-Whitney U tests, one-way Analysis of Covariance (ANCOVA), and Levene's test for equality of error variances were all used to data analysis. Correlations, *t*-tests and $\chi 2$ tests were some of the statistical tools used to analyze data from Kaye-Kauderer et al. (2019), and since this study was using many of the same scales, such as the 10FRBS, DTS, PTGI-X, and the CD-RISC, that is why many the same statistical tools were a good fit for this dissertation. However, some differences between this dissertation and Kaye-Kauderer et al. (2019) were also taken into consideration when finding the best option to analyze the data.

An ANCOVA was utilized for Hypothesis Two since this hypothesis considered the kind of training that a participant received before volunteering. The covariate was if any participants had previous military experience before volunteering. Although used in Kaye-Kauderer et al. (2019), $\chi 2$ tests were not used in this study, but these are useful when it might be challenging to differentiate between what is expected and what is actual for the results in the data. T-tests were used to examine an independent variable with a dependent variable. This dissertation also analyzed the data to see if the null hypotheses could be rejected. In addition to using SPSS, Microsoft Excel was used to categorize and filter the data received from the surveys.

Since recorded interviews were not part of the study, no recording equipment was necessary. The first hypothesis stated that there was an association between volunteers' PTSD symptoms and the severity of their trauma exposure. The hope for this hypothesis was to see if the more intense the trauma exposure during a relief effort led to more volunteers developing PTSD as compared to a less severe experience volunteering. The DTS was useful for hypothesis

one since it revealed Pearson's correlations between the variables and helped identify the development of PTSD. If the Pearson's correlation was greater than 0.5, this would indicate no statistical significance between the variables, but if the correlation was less than .001, this would indicate that there is a strong statistical significance between the variables and the null hypothesis would be rejected. The DTS also was chosen because of the questions it asks with the goal of learning about post-traumatic stress (Kaye-Kauderer et al., 2019).

Hypothesis Two stated that there is an association between training and indicators of PTG and resiliency. This hypothesis investigated if the type of training that a disaster relief volunteer received could help them become more resilient instead of developing PTSD. One of the surveys chosen for this hypothesis was the PTGI-X for how it can measure the regression of PTSD as one becomes more resilient (Tedeschi et al., 2017). It was also recently used in a study measuring PTG within those who volunteered in disaster relief. If this hypothesis was proven false, the researcher would choose to reject the null hypothesis. The DTS and CD-RISC are commonly used forms of measurement when it comes to dealing with PTSD (Kaye-Kauderer et al., 2019).

Hypothesis Three stated that receiving treatment for PTSD before working in disaster relief was be associated with reporting fewer symptoms of PTSD. This hypothesis examined the idea that if those who were being treated for PTSD before volunteering are more prone to re-developing PTSD if they work in disaster relief. For this hypothesis, the CD-RISC and DTS were used as they have shown to be accurate in measuring PTSD and potential stressors that could cause this. The CD-RISC looks for resiliency and would be able to see if someone was more resilient after volunteering (Kaye-Kauderer et al., 2019). Utilizing the information on the demographic questionnaire, one was able to see if those who were being treated for PTSD were

showing signs of PTG or if the PTSD has gotten more severe. The 10FRBS was used in combination with the DTS and even the CD-RISC to look for resiliency and how their emotions and behaviors changed based on their experience (Kaye-Kauderer et al., 2019). Lastly, histograms of the analyzed data from the analyzed scales can also be presented and provided upon request.

Issues in Research

Many issues could have threatened the study, ranging from extraneous variance, low statistical power, data collection and internal and external validity issues. There was even the possibility that participants may not complete the entire survey, or there could have been a low turnout of those who responded to the survey. This could have created a low statistical power and revealed different findings with fewer participants taking the survey. It would have meant there was less data to analyze and could reduce the chances of obtaining accurate results. However, this dissertation consisted of 186 participants, which created a strong enough sample size to allow the researcher to draw conclusions for the research questions and hypotheses to understand better how disaster relief volunteers are psychologically impacted by relief efforts.

Something that could have happened was that the statistical power could have been impacted by selection bias from the volunteers who chose to participate in the surveys. Selection bias means that the results of the study could end up being one-sided and not as accurate as one would desire due to those who responded to the survey (Pine et al., 2018). For instance, there might have been participants who decided to take the surveys, but their motivations for wanting to participate were based on them having a terrible time volunteering in disaster relief and are psychologically suffering from it as a result. This group of participants would have responded with the motivation to express their dissatisfaction.

In contrast, other participants could have had a great time volunteering in disaster relief but chose not to participate in the survey. To address this, the disaster relief organizations sent the survey out to multitudes of their disaster relief volunteers with the researcher's hope that a vast majority would respond to balance out any selection bias (Pine et al., 2018). Volunteers were also encouraged to participate by the disaster relief directors.

When dealing with threats to the internal validity of this study, several threats could happen. If the survey took a significant amount of time to complete, the participants might get tired, and their answers in the second half of the survey might not have been as accurate as those in the first half. Additionally, some of the scales in the study were incomplete which could have reduced the chances of being able to the most accurate results. A Type II error could result since inaccurate survey responses might reveal relationships between specific variables that are not actual relationships. This was unable to be fully controlled. Still, the researcher made sure that there was not an overabundance of questions in the survey and that the questions were presented in a format that was not fatiguing. The researcher also took the entire survey and reported the amount of time it took to complete. This was be done so that the participants could schedule out the amount of time necessary to complete the survey. Additionally, the scales in this study also worked well together, so if one scale revealed a relationship that should not exist, another scale could help show the accurate relationship.

What is known is that when it comes to volunteering for disaster relief, there is a chance of developing PTSD or PTG. Since it was not known about the psychological impact disaster relief work has on disaster relief volunteers who volunteer in North American relief efforts, receiving data from those who did not respond to a relief effort in North America could threaten the external validity. This could then get one to commit a Type II error and fail to reject the null

hypothesis since it could provide an illusion of the psychological impact that disaster relief has on disaster relief volunteers in North America. To reduce this threat, several steps were taken.

To ensure that all participants served in North American relief efforts, there was a question in the demographic questionnaire specifically about if the participant served in North America. If they answered that they did not serve in North America, then the survey would end and thank the participants for their time and these responses were filtered out and not analyzed. Another step was sending these surveys across the United States and not just one region. This action allowed for a broader base of participants to ensure that the study can be better understand the psychological impact that disaster relief has on disaster relief volunteers in North America.

Extraneous variance was more challenging to control since some participants might have been volunteering at relief efforts when the survey was emailed, and they might not have been able to immediately take the survey. This could either impact their answers based on the stress they are experiencing or delay them in their responses. The participants were given approximately one month to complete the survey and a reminder email was sent out halfway through the month, to address this possible issue. In this way, participants would have been able to finish their time at a relief effort and have the time to take the survey once they returned home. It was also possible that participants could have submitted a partially completed survey or may not have finished the survey by the deadline. To address this, data from the survey was downloaded to be analyzed on the day of the deadline, so that no more responses could be counted. Additionally, if there were any portions of the responses that were partially incomplete, these portions were not included in the analysis. However, besides providing the deadline to the participants and encouraging them to take the surveys, there was little control over whether they would get it submitted on time.

This study addressed any additional issues because the demographic questionnaire as it was designed with questions that filter and organize the responses. This meant that even if there had been issues in the research, the study could still gather data that could be analyzed to produce accurate results. Additionally, all the scales chosen for this had been used in previous studies and are strong in reliability and validity. The study attempted to have as many participants respond as possible, so that the most well-rounded and accurate results could be seen. This way, one could find the most accurate results to understand disaster relief better and look for areas to improve it.

It is always good for a study to have respondents who had a more negative view of their time volunteering, but hearing about the positive experiences, can also demonstrate a lot about PTG and PTSD. It was a top priority that the participants felt safe and felt that they could provide honest, accurate responses. The researcher was mindful of how the participants might get triggered by the surveys and did what was necessary to ensure this does not happen. Also, the scales and questions in the survey were approved by the IRB to confirm that this was an ethical study and that it was safe to administer.

Summary

As it has been presented, the purpose of this study was to examine the psychological impact that disaster relief work has on disaster relief volunteers who serve in North American relief efforts. The study is valuable to the field of disaster relief since the problem is disaster relief volunteers are at risk of developing mental health issues due to the trauma, they are exposed to during relief efforts in North America, but without studies to research this, these volunteers could go unnoticed and suffer from this trauma unnecessarily. This dissertation directly addressed the gap in the research by looking specifically at disaster relief volunteers

serving in North America. The results from this study help one better understand how disaster relief volunteers react to trauma and provide a better picture of how trauma impacts the entire field of disaster relief. The dissertation used accurate scales and surveys to measure this impact which helped answer the research questions and provide answers to the hypotheses. It is also a great addition to the existing research and can be used for future research ideas.

CHAPTER FOUR: FINDINGS

Overview

This study consisted of 186 participants who volunteered in a disaster relief effort in North America. The secure online survey taken by the participants consisted of 94 questions. The first 17 questions were demographic questions and situational-type questions. The remaining 77 questions in the survey consisted of the DTS, the PTGI-X, CD-RISC, and the 10FRBS. The study's design was to determine the psychological impact volunteering for disaster relief had on those who volunteered. In addition, it consisted of three research questions and three hypotheses. Descriptive statistics, Pearson's correlation, Spearman's correlation, the Kolmogorov-Smirnov test, Cronbach's α, ANCOVA, Levene's test for equality of error variances, Mann-Whitney U tests, and *t*-tests were used to analyze the data. The data was also analyzed through SPSS.

Descriptive Statistics

Participants' Demographics

Of the 186 participants in the survey, 133 (71.5%) were male, and 50 (26.9%) were female. One (0.5%) participant was between 18 to 24, five (2.7%) participants were between 25 to 34, six (3.2%) participants were between 35 to 44, 16 (8.6%) participants were between 45 to 54, 55 (29.6%) participants were between 55 to 64, and 101 (54.3%) participants reported being 65 or older. The descriptive statistics from this study are in Table 1 and Table 2. Additionally, only two (1.1%) participants reported having received treatment for PTSD at the time of the relief effort, and 182 (97.8%) participants reported not receiving treatment for PTSD at the time of the relief effort. Forty (21.5%) participants reported having previous experience in the Armed Forces, and 144 (77.4%) participants did not have previous experience in the Armed Forces.

Fifteen (8.1%) participants had volunteered for just one disaster relief effort. Thirty-one (16.7%) participants reported having volunteered for two to four disaster relief efforts, and 138 (74.2%) participants said they had served at five or more disaster relief efforts. For the type of disasters, the participants volunteered for, they were asked to choose one specific disaster to refer to as they answered questions in the survey after the demographic section. Based on the selected type of disaster, 132 (71.0%) participants reported volunteering for disaster relief after a hurricane, and 18 (9.7%) participants volunteered for disaster relief after a tornado. Twenty-four (12.9%) participants volunteered for disaster relief after a rain/flood, five (2.7%) participants volunteered for disaster relief after a wildfire, one (0.5%) participant volunteered for disaster relief after a house/building fire, and four (2.2%) participants volunteered for disaster relief after a terrorist attack.

When asked why the participants responded to the specific disaster relief effort, 136 (73.1%) answered because they volunteered. Forty-six (24.7%) participants said they were asked to respond, and two (1.1%) participants said it was because they did not plan to respond, but there were people in need. Sixty-five (34.9%) participants said they did not directly witness the disaster they responded to. Eighty (43.0%) participants saw the disaster on television, and 39 (21.0%) participants witnessed the disaster in person.

Through multiple-choice, participants could select as many responses as possible that applied when asked to identify the parts of the relief effort they were involved with when they volunteered. Three (1.6%) participants reported clinical volunteering (e.g., supporting or providing healthcare) in shelters, hospitals, or clinics. Nine (4.8%) participants reported non-clinical volunteering (e.g., providing administrative support and distributing food) in shelters, hospitals, or clinics. Eight (4.3%) participants reported disaster survivor evacuation. Thirty-two

(17.2%) participants reported cleaning debris (roads, public areas, or seaside), and 105 (56.5%) participants reported cleaning debris (private homes). Eighty-seven (46.8%) participants said food and necessities distribution, 26 (14.0%) participants reported sorting supplies for relief, and 64 (34.4%) participants reported other.

Table 1

Descriptive Statistics 1

Variable		*n*	Percent
Age			
	18-24	1	0.5
	25-34	5	2.7
	35-44	6	3.2
	45-54	16	8.6
	55-64	55	29.6
	65 or older	101	54.3
Sex			
	Biological Male	133	71.5
	Biological Female	50	26.9
Type of Disaster			
	Tornado	18	9.7
	Hurricane	132	71.0
	Rain/Flood	24	12.9
	Wildfire	5	2.7
	House/Building Fire	1	0.5
	Terrorist Attack	4	2.2
Previous experience in the Armed Forces			
	Yes	40	21.5
	No	144	77.4
At the time of the relief effort, were you receiving treatment for PTSD?			
	Yes	2	1.1
	No	182	97.8
How many relief efforts have you volunteered for/responded to?			
	1	15	8.1
	2-4	31	16.7
	5 or more	138	74.2

Note. Total $N = 186$; some variables were missing data from respondents.

Table 2

Descriptive Statistics 2

Variable		*n*	Percent
Why did you respond to this disaster relief effort?			
	I volunteered	136	73.1
	I was asked to respond	46	24.7
	I did not plan to respond, but there were people in need	2	1.1
Did you directly witness this disaster?			
	No	65	34.9
	Yes, on television	80	43.0
	Yes, in person	39	21.0
What part of the disaster relief effort were you involved in?			
	Clinical volunteering in shelters, hospitals, or clinics	3	1.6
	Non-clinical volunteering in shelters, hospitals, or clinics	9	4.8
	Disaster survivor evacuation	8	4.3
	Cleaning debris (roads, public areas, or seaside)	32	17.2
	Cleaning debris (private homes)	105	56.5
	Food and necessities distribution	87	46.8
	Sorting supplies for relief	26	14.0
	Other	64	34.4

Note. Total $N = 186$; some variables were missing data from respondents. Participants selected all that applied for what part of disaster relief the participant was involved in.

Scoring Reliability

Using scales that were accurate and reliable was a priority for this study. The scales all received Cronbach's α scores higher than .7, indicating the strength of their internal consistency and reliability. The PTGI-X received a Cronbach's α of .97, the 10FRBS received a Cronbach's α of .89, and the CD-RISC received a Cronbach's α of .92. The DTS has several subscales, and each subscale, along with the DTS as an entire scale had strong Cronbach's α scores. The DTS as a whole scale received a Cronbach's α of .94. For the subscales of the DTS, the Severity subscale

received a Cronbach's α of .91, and the Frequency subscale received a Cronbach's α of .89. All scales used in the study were added and totaled to analyze the data thoroughly. Table 3 demonstrates the number (*n*) of how many participants who took each scale in the survey and the Mean (*M*) and Standard Deviation (*SD*) for each scale that was used in the study.

Table 3

Descriptive Statistics of the Dependent Variables

Variable	*Mean*	*SD*	*n*
DTS Total Score	5.02	9.67	176
DTS Frequency	2.53	5.00	176
DTS Severity	2.48	5.18	176
CD-RISC	79.60	12.04	169
10FRBS	27.33	6.87	169
PTGI-X	39.51	29.53	173

Males and Females

The data from the study provided information to compare the scores of males' and females' CD-RISC, 10FRBS, PTGI-X, and DTS to see if there was a difference in how they processed trauma or reacted to traumatic environments. To assist in this process, independent samples *t*-tests were utilized for each scale to analyze the data. No statistical significance was found between the scores from the males and females to conclude if biological sex played a role in how one is impacted by trauma. Scores of each test were analyzed, and *M* and *SD* were produced. A Mann-Whitney U test ($p = .714$) was used to analyze the DTS scores, which revealed that females had a mean rank score of 90.66 and males had a mean rank of 87.67.

These scores indicate that there was no statistical significance between males and females. Levene's test for equality of error variances (p = .676) was applied to the PTGI-X scores showing results of females (M = 6.26, SD = 2.57) and males (M = 5.41, SD = 2.81), which revealed no statistical significance. Levene's test for equality of error variances (p = .714) was also applied to the CD-RISC scores, which also produced no statistical significance between females (M = 78.90, SD = 11.86) and males (M = 79.89, SD = 12.15). When using Levene's test for equality of error variances (p = .890) and applying it to the 10FRBS scores, males (M = 26.91, SD = 6.83) and females (M = 28.35, SD = 6.94) showed no statistical significance between groups.

Correlations

In this study, several correlations were discovered. For instance, Pearson's correlations were used when analyzing variables other than the scores from the DTS. This was due to the DTS total score variable having a non-normality curve compared to a standard bell curve. As a result, Spearman's correlations were used to calculate some of the results from the DTS since it is useful when working with non-normality curves. Another example from this study was that the total score for the DTS was found to be negatively correlated with the CD-RISC with r_s (167) = -.189, $p < .05$.

However, the total score for the DTS was positively correlated with the PTGI-X, with r_s (171) = .220, $p < .01$. Additionally, a positive correlation with biological males and having experience serving in the Armed Forces with r (181) = .295, $p < .01$ was discovered. There was also a positive correlation between the 10FRBS and the CD-RISC associated, r (167) = .672, $p < .01$. This was expected since the 10FRBS was designed to be used alongside the CD-RISC. Table 4 demonstrates the correlations found in the study.

Table 4

Correlation Table

	1	2	3	4	5	6
1. Sex	—					
2. Armed Forces Experience	.295**	—				
3. PTGI-X	-.139	-.071	—			
4. CD-RISC	.038	.119	-.035	—		
5. 10FRBS	-.095	.041	.090	.672**	—	
6. DTS Total Score	-.028	-.004	.220**	-.189*	-.031	—
Mean	—	—	5.65	79.60	27.33	5.02
SD	—	—	2.76	12.04	6.87	9.67

Note. Previous Armed Forces Experience was coded as 0 = *No*, 1 = *Yes*. Sex coded as 0 = *Female*, 1 = *Male.* Due to non-normality, DTS Total Score correlations are Spearman's correlations. PTGI-X is the square root transformed for normality.

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

Results

Findings Related to Hypothesis One

Hypothesis One stated that there is an association between volunteers' PTSD symptoms and the severity of their trauma exposure. This hypothesis considered if a more traumatic experience volunteering in disaster relief leads to PTSD development. Research Question One examined the data to see if the severity of the disaster relief work is associated with increased symptoms of PTSD. The variables and measures used to test this hypothesis were the DTS and the DTS subscales Frequency and Severity.

The data from the variables produced a non-normative and non-parametric curve which required a different kind of correlation than Pearson's. As a result, a decision was made for Spearman's correlation to be used instead, as it would be a better fit for the shape of the curve.

Other actions, such as removing outliers and using a Kolmogorov-Smirnov test, were also applied. The study also found a significant positive correlation between the severity and frequency subscales from the DTS, $r_s(174) = .803$, $p < .01$.

As seen in Table 5, this was revealed by Spearman's correlation, showing that the DTS Severity scores of PTSD symptoms are positively connected to the DTS Frequency scores of PTSD symptoms. However, although the DTS was accurate and consisted of a Cronbach's α score equaling .89, due to the non-normality of the curve, these findings direct one to fail to reject the null hypothesis and conclude that the severity of the trauma exposure for this sample size did not lead to increased symptoms of PTSD. A reason for this could be that since the participants were from a faith-based disaster relief organization with a Christian worldview, their faith could have led to their resiliency.

Table 5

Spearman's Correlation between the DTS Frequency and Severity Subscales

	1	2
1. DTS Frequency	—	
2. DTS Severity	.803**	—
Mean	2.53	2.48
SD	5.00	5.18

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

Findings Related to Hypothesis Two

Hypothesis Two considered the idea that there was an association between training and indicators of PTG and resiliency. This hypothesis examined whether training volunteers would help them be more resilient rather than developing PTSD. Research Question Two asked if the

type of training was associated with PTG and resiliency. An ANCOVA was used as the form of analysis for this research question. The variables and measures used included looking for signs of PTG from participants by having them take the PTGI-X. Additionally, a question in the survey asked participants which training they attended.

The CD-RISC and 10FRBS were also used to measure the participants' resiliency. Resiliency is an indicator that an individual might have developed PTG. The covariate used for Research Question Two was a question on the survey asking if the participants had previously served in the Armed Forces before volunteering for the relief effort. Hypothesis Two and Research Question Two were initially attempting to compare volunteers who had disaster relief training with volunteers who did not have disaster relief training. However, only three participants indicated that they did not receive training, which created a low statistical power. As a result, there was no statistical difference between those who received training and those who did not.

The CD-RISC scores from participants were compared to assess resiliency, and an ANCOVA was used for this analysis. Table 6 displays the results from this portion of the study with the CD-RISC. An outlier was removed, Levene's test for equality of error variances (p = .316) was used, and the analysis met the homogeneity of variance assumption. However, there was no statistical significance between those with training compared to those without training, F (1, 165) = 0.76, p = .385, partial η^2 = .005. Since p was greater than .05, this indicated no statistical significance. Table 7 shows the estimated marginal means for the CD-RSIC while considering the covariate for Hypothesis Two of having served in the Armed Forces.

Table 6

CD-RISC ANCOVA Results

Independent Variable(s)	Type III Sum of Squares	*df*	Mean Square	*F*	*p*	Partial η^2
Corrected Model	682.64	2	341.32	2.51	.085	.029
Intercept	78282.12	1	78282.12	574.50	<.001***	.777
Armed Forces	610.57	1	610.57	4.48	.036*	.026
Training	103.59	1	103.59	.76	.385	.005
Error	22483.27	165	136.26			
Total	1093252.00	168				
Corrected Total	23165.91	167				

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

Table 7

Estimated Marginal Means for CD-RISC amongst Training Statuses

Training Status	Mean	*SE*	*n*
Training	79.70	0.91	165
No Training	85.65	6.76	3

For continued analysis of resiliency among the participants from the disaster relief organizations, the 10FRBS was used. Here, an ANCOVA was also used, with the covariate of having previously served in the Armed Forces. One outlier was removed, and Levene's test for equality of error variances ($p = .656$) was used to assess the data, which met the homogeneity of variance assumption. Table 8 shows results from the 10FRBS, which revealed no statistical differences between the participants from the disaster relief organizations, $F(1, 165) = 2.08$, $p =$

.152, partial η^2 = .012. Having a *p-value* greater than .05, indicated no statistical significance. Table 9 shows the estimated marginal means for 10FRBS while considering the covariate for Hypothesis Two of having served in the Armed Forces.

Table 8

10-FRBS ANCOVA Results

Independent Variable(s)	Type III Sum of Squares	*df*	Mean Square	*F*	*p*	Partial η^2
Corrected Model	136.47	2	68.24	1.52	.222	.018
Intercept	7033.16	1	7033.16	156.46	<.001***	.487
Armed Forces	34.65	1	34.65	0.77	.381	.005
Training	93.31	1	93.31	2.08	.152	.012
Error	7416.93	165	44.95			
Total	134054.00	168				
Corrected Total	7553.41	167				

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

Table 9

Estimated Marginal Means for 10-FRBS amongst Training Statuses

Training Status	Mean	*SE*	*n*
Training	27.54	0.52	165
No Training	21.90	3.88	3

When looking for PTG within the participants from the disaster relief organizations, the PTGI-X scores were reviewed and analyzed. Due to the non-normality of the PTGI-X scores (Kolmogorov-Smirnov test $p < .002$), efforts were made to turn it into a normal curve. A normality curve was produced when using a square root transformation of the PTGI-X

(Kolmogorov-Smirnov test $p > .05$). Levene's test for equality of error variances ($p = .887$) was applied, and the analysis for the homogeneity of variance assumption was met. An ANCOVA was also used to assess the data, and the same covariate of having previously served in the Armed Forces was also applied.

However, as seen in Table 10, the *p-value* for the PTGI-X was greater than .05, which again reveals that there was still no statistical difference among those with training compared to those without training, F (1, 170) = 2.00, $p = .159$, partial $\eta^2 = .012$. No significance was found between those with training and those without training since the *p-values* from all the scales used for this hypothesis were greater than .05. As a result, one can fail to reject the null hypothesis. Table 11 also shows the estimated marginal means for PTGI-X while considering the covariate for Hypothesis Two of having served in the Armed Forces.

Table 10

PTGI-X ANCOVA Results

Independent Variable(s)	Type III Sum of Squares	*df*	Mean Square	*F*	*p*	Partial η^2
Corrected Model	21.83	2	10.92	1.44	.240	.017
Intercept	255.34	1	255.34	33.62	<.001***	.165
Armed Forces	8.07	1	8.07	1.06	.304	.006
Training	15.19	1	15.19	2.00	.159	.012
Error	1291.16	170	7.60			
Total	6835.00	173				
Corrected Total	1312.99	172				

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

Table 11

Estimated Marginal Means for PTGI-X amongst Training Statuses

Training Status	Mean	*SE*	*n*
Training	5.69	0.21	170
No Training	3.41	1.60	3

Findings Related to Hypothesis Three

Hypothesis Three was that receiving treatment for PTSD before working in disaster relief would be associated with reporting fewer symptoms of PTSD. This hypothesis considers if those being treated for PTSD before volunteering are more prone to re-developing PTSD if they work in disaster relief. Research Question Three asked if treatment for PTSD is associated with PTG and resiliency among disaster relief volunteers. The variables and measures used were analyzing DTS scores for PTSD symptoms and asking participants if they were receiving treatment for PTSD prior to volunteering.

A survey question asked participants if they were receiving treatment for PTSD at the time of this relief effort. The DTS total score and the Frequency and Severity scores analyzed PTSD symptoms. To see how DTS scores differed from those being treated for PTSD, the initial plan was to use an independent t-test. However, the results from the study produced a non-parametric curve with non-normative distribution (Kolmogorov-Smirnov test $p < .001$). Efforts were made, outliers were removed, but the curve remained non-normative. Since this was the case, the Mann-Whitney U test was chosen to analyze the data.

Once this independent samples Mann-Whitney U test was conducted on the DTS scores, the analyzed data revealed that there was no statistical significance between those who did not receive treatment (mean rank = 89.07) for PTSD and those who did receive treatment (mean rank

= 39.00) for PTSD before volunteering in the disaster relief effort, $U = 273$, $z = 1.45$, $p = .192$. However, only two (1.1%) participants answered yes to the survey, saying they did receive treatment for PTSD before volunteering for the disaster relief effort. This data is reflected in Table 12, but this 1.1% created a low statistical power for this hypothesis. It does not mean there is no connection between PTSD treatment and volunteering for disaster relief. However, the low statistical power prevents one from being able to accept the hypothesis. Lastly, having a *p-value* of .192 causes one to fail to reject the null hypothesis since this is greater than .05.

Table 12

Descriptive Statistics

Variable		*n*	Percent
At the time of the relief effort, were you receiving treatment for PTSD?			
	Yes	2	1.1
	No	182	97.8

Summary

This study aimed to learn about the psychological impact that disaster relief work had on disaster relief volunteers in North America. The study consisted of 186 participants who had responded to a disaster relief effort in North America. Research Question One revealed no statistical significance between the severity of the trauma experienced and PTSD development among the participants. This is a good sign as it does not deny a connection between the two, but it shows that most participants did not have PTSD due to the relief effort. Research Question Two, which compared the type of training received, also yielded no statistical significance among organizations.

This is a good indication that participants are being trained and prepared for what they are facing with disaster relief. Research Question Three examined if receiving treatment for

PTSD prior to volunteering for disaster relief would lead to the development of PTG. This question showed no statistical significance, which could have been due to the lower statistical power from the number of participants who said they did receive treatment. However, each research question has a story to tell and reveals much about disaster relief. Chapter Five will go into more detail about where to go for future research and how to apply this data to disaster relief.

CHAPTER FIVE: CONCLUSION

Overview

The findings from this study help to answer the study's research questions and hypotheses but also reveal to the researcher many additional areas to research and ideas to discuss. This section will examine each research question and hypothesis, along with evaluating the impact the findings have on the field of disaster relief and other areas as well. It will consider the impact of the study's limitations on the results and discuss the implications of this study's results on disaster relief. Options for future research will also be expressed so that additional research can be conducted about the psychological impact that disaster relief work has on disaster relief volunteers.

Discussion

This study intended to examine the psychological impact of disaster relief work on disaster relief volunteers working in relief efforts within North America. The study consisted of 186 participants who had all volunteered in at least one disaster relief effort in North America. In addition to a demographic questionnaire, the DTS, PTGI-X, CD-RISC, and the 10FRBS were all used to gather anonymous data through a secure online survey to understand the psychological impact of disaster relief work on disaster relief volunteers. Additionally, conclusions related to each hypothesis were made based on the findings from this study.

Conclusions Related to Findings

Conclusions Related to Hypothesis One

Research Question One considered if the severity of the disaster relief work was associated with increased symptoms of PTSD. Hypothesis One stated that there is an association between volunteers' PTSD symptoms and the severity of their trauma exposure. This hypothesis

examined if a more traumatic experience volunteering in disaster relief leads to PTSD development. The results from this study for Hypothesis One were more of a surprise since it was expected that the severity of the trauma experienced would lead to the development of PTSD. However, the analyzed data revealed a different outcome than what was expected.

The data revealed that more participants developed PTG rather than PTSD. This study expected more participants with PTSD, which would have been similar to the findings from Lee et al. (2017), where their participants from the Sewol ferry disaster in South Korea had shown more PTSD development. However, the findings for Hypothesis One were analyzed by data collected from the DTS, which produced a non-normative curve. These results indicated that PTSD symptoms were not strongly prevalent among the participants. This is the opposite of what was expected, but these findings support data from other studies, such as those who served in the relief effort at the Japan triple disaster in 2011 (Kaye-Kauderer et al., 2019).

Kaye-Kauderer et al. (2019) found that many of the relief workers from the triple disaster developed PTG rather than PTSD. The findings from this dissertation are similar in that the severity of the trauma experienced did not lead to PTSD development within the participants. Additionally, this dissertation's findings support one of the theories discussed: disaster relief volunteers can develop PTG and resiliency rather than PTSD after working in a relief effort (Kaye-Kauderer et al., 2019). This is encouraging since the findings are consistent with the idea that some who serve in disaster relief will develop PTG while others develop PTSD. Also, developing PTG and resiliency is a very positive finding for disaster relief volunteers.

Conclusions Related to Hypothesis Two

Hypothesis Two evaluated the association between training and indicators of PTG and resiliency. This hypothesis examined whether training volunteers would help them be more

resilient rather than developing PTSD. Research Question Two assessed the idea of whether the type of training was associated with PTG and resiliency. Only three participants reported not having received training, which would have resulted in a low statistical power that would not allow the research to see a difference between training and no training. Due to this outcome, the decision was made to compare the participants' training from each disaster relief organization.

The participants' mean scores of the PTGI-X were 39.51, 79.60 for the CD-RISC, and 27.33 for the 10FRBS. These scores were used for analysis, and they found no significant difference between the participants in their scores. Since the participants' mean scores from these scales were as high as they were, this indicated signs of PTG and resiliency among the participants. This is the opposite of what was found from the participants' mean scores from the DTS were 5.02, 2.53 from the DTS Frequency subscale, and 2.84 for the DTS Severity as these scores are very low, which indicates small amounts of PTSD symptoms. Because of this, one can conclude that the training the disaster relief volunteers receive from the organizations within the SBDR is very effective. The results also match a theory discussed in this dissertation, which is that training reduces the number of PTSD symptoms after serving in disaster relief.

Findings were also examined among those who volunteered for a tsunami relief effort in 2004 in Asia. From this 2004 tsunami relief effort, those who were trained reported fewer signs of PTSD symptoms than those who were not trained (Thormar et al., 2016). This leads one to understand that training is essential in disaster relief. The findings from this dissertation have also shown how training leads to disaster relief volunteers being better prepared psychologically for the trauma experienced through disaster relief. The findings from Hypotheses Two are excellent findings and what one would hope for when looking at the training received from a disaster relief organization.

This study's findings revealed that even when considering the covariate of those who served in the Armed Forces, there was no statistical significance among the participants. This was seen when the participants' mean scores from different disaster relief organizations showed no statistical significance among the relief organizations. This does not match findings from other studies, which is more of a surprise. Studies such as Weiss et al. (2020) found that veterans' experiences with traumatic environments prepared them for work in disaster relief. However, this dissertation's results found that the Armed Forces experience did not make a difference regarding PTSD or PTG development after serving in disaster relief.

Even though the mean scores from the DTS were low, this still indicates that some of the participants were dealing with PTSD symptoms and these results urge one to always look for ways to improve the training and care disaster relief volunteers receive. Previous studies such as Weiner et al. (2011) showed that those involved in the Hurricane Katrina relief effort wanted to be more prepared for the next hurricane. Other studies have shown that participants desire more preparation after a disaster (Öztekin et al., 2015). While the findings from this study do not directly reveal a need for improvement in training, the scores from the DTS are an indication that some disaster relief volunteers show symptoms of PTSD, meaning there are still areas for improvements needed to lower the number of disaster relief volunteers who develop PTSD symptoms. However, when an organization like the SBDR can provide the training necessary to prepare disaster relief volunteers, this is something to celebrate.

Conclusions Related to Hypothesis Three

Hypothesis Three was that receiving treatment for PTSD before working in disaster relief would be associated with reporting fewer symptoms of PTSD. This hypothesis considered if those treated for PTSD before volunteering would be more or less likely to develop PTSD if they

worked in disaster relief. Research Question Three considered if treatment for PTSD is associated with PTG and resiliency among disaster relief volunteers. The DTS was used to analyze the data for this hypothesis. However, only two participants reported that they had received treatment for PTSD before volunteering for disaster relief; this limited the chances of seeing if it made a difference in one's chances of developing PTSD.

Since only two participants reported receiving treatment for PTSD before volunteering for disaster relief, this created a low statistical power which made it more difficult to detect differences between the two groups of those who did and those who did not receive treatment. It was not entirely expected to have such a small number of participants report that they did receive PTSD treatment before volunteering. However, it is unfortunate since it did not allow for a complete comparison, especially when having the covariate of those who served in the Armed Forces applied to this hypothesis.

Hypothesis Three also directs one to review the theory discussed in this dissertation of how there is a connection between Military veterans excelling in disaster relief work because of their previous experience working in traumatic environments (Weiss et al., 2020). The researcher was also attempting to understand if there was any connection between serving in the Armed Forces and PTSD symptoms when examining at those who received treatment for PTSD before volunteering. However, without a more significant number of participants who did receive treatment for PTSD before volunteering, the results ended up being non-conclusive. When conducting additional research, one should consider finding a population where more participants did receive treatment for PTSD before volunteering for disaster relief. This could create a more substantial statistical power to be then able to compare treatment and no treatment.

Implications

Implications for Practice

The implications for practice can apply to many areas ranging from the field of mental health to ministry and even the field of disaster relief. For those who work with individuals in the mental health field, the results continue to show that people are people, and trauma will impact them. Like in this study, not everyone was the same in their responses, showing variance in how people react to trauma. This study was conducted to learn what areas of disaster relief lead one to develop PTG or PTSD, and the findings can be compared to those of recent studies. Such as the Sewol Ferry disaster, PTSD was prevalent among those who served in the relief effort (Lee et al., 2017). They can even be compared to the study about the triple disaster relief effort in Japan, where it was found that PTG was more prevalent among relief workers (Kaye-Kauderer et al., 2019).

However, the findings from this dissertation saw more participants developing PTG rather than PTSD, which is a very positive outcome. These findings lead one to consider what caused this level of PTG and how it can be replicated in other disaster relief volunteers. Not all disaster relief volunteers were eager to seek assistance when processing trauma (Kono & Shinew, 2015). Additionally, the findings from this dissertation revealed that a vast majority of participants did not desire post-care follow-up. While one could argue that many participants did not want post-care follow-up due to not wanting help, it is non-conclusive for a reason behind this response. The findings of this dissertation continue to allow counselors to have another glimpse of how disaster relief work psychologically impacts disaster relief volunteers.

In the field of disaster relief, there is now a study that shows how disaster relief volunteers serving in relief efforts in North America are psychologically impacted by the relief

work. The findings from this dissertation revealed that one could not assume that working in disaster relief leads to the development of PTSD. These results and this outcome surprised the researcher, as it was expected that PTSD would be more prevalent among the volunteers. However, these results help one understand what areas of disaster relief to research in the future. This study also provides the field of disaster relief with a unique opportunity to compare this study's results with those from other studies that focused on disaster relief volunteers in other parts of the world.

Learning how effective the SBDR training was could have made a difference when it came to processing trauma and the field of disaster relief. The disaster relief organizations who participated can be encouraged since they can now see that their volunteers are well-trained and able to process the trauma experienced. The findings reveal that their training is sufficient and is something that other disaster relief organizations should learn about if their relief volunteers have PTSD. There is always room for improvement, as the mean scores from the DTS revealed that some volunteers are dealing with PTSD symptoms, but the SBDR can see that their training was effective for their volunteers. This is where learning more details about the training that SBDR provides would be necessary to know if it is something that other disaster relief organizations could use when training disaster relief volunteers.

For the ministry, the findings also reinforce the idea of how necessary training is for volunteers. This means that ministries should strongly consider ensuring they have a standardized training program for their volunteers before serving in disaster relief. Even for churches, their disaster relief training program should be designed around training that can help improve their disaster preparedness for when a disaster strikes. This might be where the entire congregation receives disaster relief training to be ready to serve. Because the SBDR was faith-

based disaster relief organizations with a Christian worldview, the volunteers' faith should be considered as a factor that led to their resiliency, as seen by the low DTS scores and the high resiliency scores. However, future research would need to be conducted to consider this as an option comprehensively. This would not apply just to ministry, but perhaps there is something about Christianity that drives one to be more resilient and have hope when faced with trauma. If ministries can train their congregations how these participants were trained, then it is possible that they could be just as effective as the SBDR when it comes to serving in disaster relief.

Implications for Research

The implications for research from the results of this study reinforce the fact that more research needs to be conducted on the psychological impact that disaster relief work has on disaster relief volunteers. Although this study consisted of 186 participants, which provided an ideal population size for the research, it still focused on one disaster relief organization. The study's design, with the scales and questions used, could be used again to focus on disaster relief volunteers from one specific disaster relief effort or a different disaster relief organization. This would be important, especially in the areas of this study where there were not enough responses to conclude when analyzing the data.

Since only 1.1% of participants from this study reported having received treatment for PTSD before volunteering, a similar study with more participants who received treatment for PTSD before volunteering could provide the researcher with a larger population size. A population size with more participants having received treatment for PTSD before volunteering could help detect if there is statistical significance between receiving treatment for PTSD and not receiving treatment for PTSD. More implications from the research are that 54.3% of the

participants reported being 65 or older. This is valuable data to analyze since it was the largest demographic in the study.

However, it would be helpful if more participants from other age brackets responded since it could help better understand the full population size when analyzing the data. Lastly, the mean scores from the scales related to trauma were extremely low, such as the DTS Frequency mean score being 2.53 and the DTS Severity mean score being 2.84, with an overall DTS mean score of 5.02. The mean scores related to resiliency scales were very high, with 79.60 for the CD-RISC, 27.33 for the 10FRBS, and 39.51 for the PTGI-X. These analyzed scores demonstrate that this research population has been more resilient during their time in disaster relief.

Limitations

There were several limitations to the dissertation while conducting this study. Participants for this study were all from the SBDR, a faith-based disaster relief organizations with a Christian worldview. The study's findings showed that the participants were more resilient, which is seen in one of the participants' mean scores of 79.60 for the CD-RISC. In contrast, the participants' mean scores for the DTS, which was used to assess PTSD, were 5.02. This was not expected, and there are many reasons why the results came out this way. However, since these were participants from a faith-based disaster relief organization with a Christian worldview, one would have to consider the possibility that the participants' faith allowed them to cope with the trauma they experienced in disaster relief.

The study did not look for nor did it find conclusive evidence for this, but it should be considered when comparing the results from this study to similar studies. For this study and these participants, as seen in the findings from the hypotheses, one can learn about the many factors that impact how a disaster relief volunteer processes the trauma experienced. This is seen in the

different types of disaster relief efforts the participants volunteered to serve at, ranging from 71.0% serving in hurricane relief, 12.9% serving in rain/flood relief, and even 2.2% serving in disaster relief after a terrorist attack.

These are different relief efforts, from natural to man-made disasters, yet the participants from SBDR continued to be resilient. If one were to conclude that all disaster relief volunteers process trauma the same way because of this study, that would be an incorrect conclusion. This would be a threat to the external validity since the study did not have data on how those from a secular organization respond to trauma. However, this study's focus was on the psychological impact of disaster relief rather than the participants' worldviews.

Having the study purely online in a secure, anonymous format could have been a limitation and threatened the study's external validity. This is because there might have been some participants who wanted to participate but either had difficulty accessing the survey or were not comfortable filling it out online. However, 186 participants created a large sample size that allowed data to be adequately reviewed and analyzed. Providing a presentation for the disaster relief volunteers to encourage them to participate or having paper surveys that could be mailed back to the researcher could address this, but that might also introduce new risks.

Another limitation of this study is found in Hypothesis Two since it deals with the number of those who did not receive training. Only three participants reported not receiving training, creating low statistical power and threatening the study's external validity. Although the low statistical power prevented the researcher from fully viewing the difference between training and no training, the researcher was able to observe the mean scores from the participants from each organization. This allowed for a better understanding of how training from the disaster relief organizations within SBDR functions and prepares their volunteers.

Hypothesis Three was limited due to low statistical power, which could have threatened the data's external validity. This was seen as only two participants reported having been receiving treatment for PTSD before volunteering in disaster relief. With such a small response, it is difficult to draw any conclusion for this hypothesis. There is a possibility that perhaps participants did not want to answer some of the questions or respond in a certain way to a question in the survey. This would have been a threat to external validity if participants did not want to respond to some of the questions on the survey. However, efforts were made for this hypothesis to write the question about PTSD treatment positively since the study's design was to learn about all aspects of disaster relief. The other steps were that the survey questions were submitted to and approved by the IRB to ensure the safety of the participants.

Recommendations for Future Research

There are several areas to consider for future research regarding disaster relief volunteers. One could conduct a study of disaster relief volunteers who are 17 years old and younger. It might also be difficult to gain permission for these individuals to participate in a study since parental consent would be required. However, this dissertation could not collect this type of data, and there are very few studies about 17-year-olds and younger volunteering in disaster relief. Apollo and Mbah (2022) conducted a study about a youth-centered and youth-led effort to care for those impacted by an Ebola outbreak in Sierra Leone. Their research defined youth as between the ages of 15 and 35. One of the youths interviewed expressed how their training gave them the knowledge and the ability to properly serve others, regardless of their obstacles (Apollo & Mbah, 2022).

There is also the Student Volunteer Army (SVA), created by students studying at the University of Canterbury (Carlton et al., 2022). The SVA is volunteer-based and has helped with

relief efforts after fires, terrorist attacks, and earthquakes. They even cared for those in New Zealand during a Covid-19 lockdown (Carlton et al., 2022). While age was not provided for those in the SVA, it still consists of a younger generation wanting to serve those in need. Studies reveal that younger people want to be involved and help when disasters strike. Including this younger population in a study would be a great asset to disaster relief since it would show how disaster relief psychologically impacts volunteers from more age groups, so that one can understand if different age groups process trauma in different ways.

A future study should also be conducted to research the length of time a disaster relief volunteer spent at one specific relief effort. Asking this question would allow one to understand if the longevity of the trauma exposure would lead to PTSD symptoms or have any impact on the volunteer. A theory discussed in this dissertation about the longevity of trauma exposure considered the idea that VT and STS were possible outcomes for disaster relief volunteers as this would elongate if their trauma exposure during a relief effort (Lee et al., 2017). A future study could also look at the combination of the longevity of the trauma exposure and the severity of the disaster relief volunteer's trauma exposure. Something like this would give one a deeper understanding of disaster relief volunteers and their exposure to trauma.

Another recommendation for future research would be to consider comparing the type of training received from a faith-based Christian disaster relief organization to the training from a disaster relief organization with a secular worldview. Due to the findings and the high mean scores on the PTG and resiliency scales, the training from the SBDR was very effective in preparing the disaster relief volunteers. Understanding how disaster relief organizations with secular worldviews train their volunteers and how their volunteers process trauma after receiving the training would greatly benefit the field of disaster relief.

Focusing on just one disaster relief effort could benefit future research too. This study allowed the participants to choose the type of disaster relief effort they volunteered for, which meant that it consisted of a plurality of relief efforts. Some of the participants' responses ranged from 71.0% volunteered for a hurricane relief effort, 0.5% volunteered for a house/building fire relief effort, 2.7% volunteered for a wildfire relief effort, and 9.7% reported having volunteered for a tornado relief effort. Different types of disasters can provide a variance in the experiences that disaster relief volunteers have with disaster relief. This was found in this study as participants' tasks ranged from sorting supplies, disaster survivor evacuation, providing healthcare to those in need, and even debris removal. A study focusing on a singular relief effort could eliminate some of these variances since it would be the same traumatic environment. However, it is possible that the variance of tasks could still be present.

Summary

When the dust settles and the flood waters recede, sometimes it can be broken families dealing with damaged property and loss that remains. The work that disaster relief volunteers accomplish provides hope to disaster survivors. It gives these survivors a fighting chance to rebuild and not be defeated by the circumstances in life. Disaster relief volunteers willingly put themselves in traumatic environments to assist others in need, which, if not properly trained, could increase their risk of developing PTSD. This study aimed to understand the psychological impact of disaster relief work on disaster relief volunteers working in relief efforts within North America. Studies like this can help better understand the world of disaster relief and allow researchers to see what steps could be made so that disaster relief volunteers develop PTG and become more resilient rather than developing PTSD. Making efforts to train and care for disaster

relief volunteers can enable these volunteers to be able to serve in disaster relief for years to come.

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Appendix A

Recruitment Letter

Dear Disaster Relief Volunteer:

As a doctoral candidate in the School of Behavioral Sciences at Liberty University, I am conducting research as part of the requirements for a Doctor of Education (Ed.D.) in Traumatology. The purpose of my research is to better understand the psychological impact of disaster relief work on disaster relief volunteers who work at relief efforts in North America.

Participants must be 18 years of age or older and must have responded to a relief effort in North America. Participants, if willing, will be asked to take a secure anonymous survey from the link provided in this email. It should take approximately 20-30 minutes to complete this procedure. Participation will be completely anonymous, and no personal, identifying information will be collected. **The deadline for participation is 08/22/2022.**

To participate, please click the [redacted]

A consent document is provided as the first page of the survey. The consent document contains additional information about my research. After you have read the consent form, please click the link above to proceed to the survey. Doing so will indicate that you have read the consent information and would like to take part in the survey.

Sincerely,

Zach Williams MDiv '13
Principal Investigator
[redacted] or [redacted]

Appendix B

Informed Consent Form

Consent

Title of the Project: The Psychological Impact of Disaster Relief Work on Disaster Relief Volunteers in North America.
Principal Investigator: Zach Williams, MDiv '13, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18 years of age or older and must have responded to a relief effort in North America. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to better understand the psychological impact that disaster relief work has on disaster relief volunteers who work at relief efforts in North America. This study will examine post-traumatic stress disorder, post traumatic growth and resiliency to better understand the how to work with disaster relief volunteers.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following thing:

1. In one sitting, complete this secure anonymous online survey, which consists of 93 questions, and which can take 20-30 minutes

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society could include an increased public knowledge of how disaster relief work psychologically impacts disaster relief volunteers.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be anonymous.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to

not answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Zach Williams. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [redacted] and/or [redacted] You may also contact the researcher's faculty sponsor, Dr. William Holland, at [redacted]

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at [redacted]

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of the document for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.

Appendix C

IRB Approval Document

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

July 27, 2022

Zachary Williams
William Holland

Re: IRB Exemption - IRB-FY21-22-944 The Psychological Impact of Disaster Relief Work on Disaster Relief Volunteers in North America

Dear Zachary Williams, William Holland,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

Appendix D

Demographic Questionnaire

(1) How old are you?
- 17 and under
- 18–24
- 25–34
- 35–44
- 45–54
- 55–64
- 65 or older

(2) Sex: Biological male/Biological female/Prefer not to answer

(3) Which training did you attend?
- SBC of VA
- Louisiana Baptist Convention
- California Southern Baptist Convention
- Tennessee Baptist Convention
- Oklahoma Baptist Convention
- North Carolina Baptist on Mission
- Kentucky Baptist Convention
- I did not attend training

(4) What types of disasters have you responded to (in North America) (select all that apply)?
- Snow/Ice/Blizzard
- Tornado
- Hurricane
- Rain/Flood
- Wildfire
- House/building Fire?
- Terrorist attack
- Traffic Accident

(5) Did you respond to a disaster in North America (Y/N)?

If no, the survey will end for that participant, thanking them for their time.

"We appreciate your willingness to participate…if in the future we have ___we will solicit your input"

(6) How many relief efforts have you volunteered for (in North America)?
- 1
- 2-4
- 5 or more

(7) For the rest of this survey, pick one disaster relief effort you volunteered for in North America and answer the remaining questions based on the relief effort you chose (Select One)
- Snow/Ice/Blizzard
- Tornado
- Hurricane
- Rain/Flood
- Wildfire

- House/building Fire?
- Terrorist attack
- Traffic Accident

(8) Why did you respond to this disaster relief effort?

- I volunteered
- I was asked to respond
- I did not plan to respond, but there were people in need

(9-11) Questions 9-11 were used with permission but removed to comply with copyright. Please contact Dr. Hailey Kaye-Kauderer at Halley.kaye-kauderer@icahn.mssm.edu to request permission to use questions.

(12) Prior to responding to this relief effort, have you served in any branches of the Armed Forces?
(13) At the time of this relief effort were you receiving treatment for PTSD? (Y/N)
(14) Did you receive post-care follow-up/? (Y/N)
(15) Did you want post-care follow-up? (Y/N/Maybe)
(16) How long has it been since this relief effort?

- 1 month
- 2-6 months
- 7-12 months
- 1-2 years
- 3 or more years

(17) Do you have a desire to volunteer for another relief effort? (Y/N/Maybe)

Appendix E

Davidson Trauma Scale

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Appendix F

Posttraumatic Growth Inventory-Expanded

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Tedeschi, R.G., Cann, A., Taku, K., Senol-Dirak, E., & Calhoun, L.G. (2017). The Posttraumatic Growth Inventory: A revision integrating existential and spiritual change. *Journal of Traumatic Stress, 30 (1),* 11-18.

Appendix G

Connor-Davidson Resiliency Scale

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Appendix H

10 Factor Resilience Behavioral Scale

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