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Contexts Of Recovery: Community Resilience Capacity As A Predictor Of Trauma Symptoms

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CONTEXTS OF RECOVERY: COMMUNITY RESILIENCE CAPACITY AS A
PREDICTOR OF TRAUMA SYMPTOMS

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ABSTRACT

In October 2015, the state of South Carolina was devastated by effects related to hurricane Joaquin. The event set new state records for rainfall totals. Contemporary research highlights the need to increase community resilience so that populations can better adapt to the unique stressors presented by natural disasters. Using the framework provided by Norris et al. (2008) we measure four “capacities” of community resilience: Economic Development, Social Capital, Information and Communication, and Social Trust to determine their relationship to the development of PTSD symptoms and feelings of hope. Results revealed that overall perceived community resilience was a significant predictor of hope and PTSD symptoms. Community capacities of Social Capital and Social Trust were found to be significant predictors of PTSD symptoms and hope, respectively. These results can be used by communities in preparation for natural disasters and to promote psychological well-being before, during, and after these events.

Keywords: Community Resilience, Natural Disasters, PTSD, Trauma, Hope

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LIST OF ABBREVIATIONS

AHS.....	Adult Hope Scale
APA.....	American Psychological Association
CCRAM.....	Conjoint Community Resilience Assessment Measure
CISD.....	Critical Incident Stress Debriefing
DSM.....	Diagnostic and Statistical Manual of Psychiatric Disorders
FEMA.....	Federal Emergency Management Agency
IES.....	Impact of Event Scale
ISEL.....	Interpersonal Support Evaluation Measure
PTSD.....	Post-Traumatic Stress Disorder

CHAPTER 1: INTRODUCTION

In October 2015, the state of South Carolina was devastated by effects related to hurricane Joaquin. Although the storm never made direct landfall, the storm's trajectory drew in moisture from the Atlantic Ocean, creating a vortex that caused thunderstorms to repeatedly lash areas of the state for the next five days (Halverson, 2015). This phenomenon led to flash floods and historic amounts of rainfall. Over a five-day period, 5.2 trillion gallons of water fell across the state, enough to fill approximately 78 million Olympic-sized swimming pools (Ferris, 2015; Rice, 2015). The event set new state records for 24-hour, two-day, three-day, and five-day rainfall totals. The sustained rain led to excessive flooding across the state, with reported flooding up to 27 inches in some areas. The flooding also caused catastrophic damage to local communities and infrastructure. Over 400,000 people were displaced from their homes. South Carolina declared a state of emergency and the National Guard dispatched over 5000 troops to the state. The Federal Emergency Management Agency (FEMA) declared twenty-two of the 46 counties in the state as disaster areas (Wiltgen, 2015). Eighteen dams across South Carolina ruptured, and 250 more suffered significant damage. This exacerbated the effects of the storm and added to the already high level of floodwaters (Chappell, 2015). As a result, most cities lost clean running water, and outages lasted up to a week in some areas. Up to 26,000 households lost electricity. Flood-related effects were attributed to the destruction of 300 roads and 166 bridges in the state (Chappell, 2015). Many interstates were submerged entirely underwater or destroyed completely. The total cost of

damages for the entirety of South Carolina was estimated to be over \$1 billion. Individual rehabilitation efforts were complicated due to the low number of residents that carried flood insurance policies. Of about 2.2 million homes in the state, only 200,000 homeowners were estimated to have flooding insurance at the time. Most of the damage to residential areas was estimated to be uninsured (Berkowitz, 2015). Flooding of this magnitude is so rare that meteorologists have classified these events as “1000-year floods” (Drew, 2015). Statistically, these events have a 0.1% chance of occurring in any given year.

The state capital of Columbia was especially devastated. Columbia is the second-largest city in the state with an estimated population over 130,000 (U.S. Census Bureau, 2006). It sits at the conjunction of the Saluda and Broad rivers, forming the Congaree River. Columbia is the primary city of the state’s Midlands region and is the seat of a major metropolitan area including Richland County and the neighboring Lexington, Fairfield, and Kershaw counties, totaling an estimated population of over 800,000 people. Economically, Columbia is on the lower end of the middle class. As defined by the Pew Research Center (2016), middle class income is two-thirds to double the national median income of \$55,775 in 2016. The median household income for Columbia was \$42,875 as of 2017, and the median value of owner-occupied homes was \$164,000. In 2017, Less than half of all residents owned their housing unit, at a rate of 42%. For renters, the median gross rent was \$843 in 2016 (U.S. Census Bureau, 2006). A large majority of residents, 87.6%, aged 25 or older, had earned at least a high school diploma or higher, and slightly less than half of adults 25 or older, 41% had earned a bachelor’s degree or higher. The city is home to the state’s flagship university, major United States Army and

Air Force National Guard installations and consists of an estimated 13,000 businesses and 45,000 households. Following the historic flooding, Richland County issued a complete shutdown of the city for a week. Estimated damages for the county were expected to be in the millions (Ferris, 2015). In the aftermath of the event, citizens turned to local non-profit agencies such as the United Way of the Midlands, Helping Hearts & Hands, the St. Bernard project, as well as friends and family for continued support following the conclusion of FEMA assistance.

More than 16 inches of rain fell across the county, which led to excessive flooding throughout Columbia and the immediately surrounding residential areas (Wiltgen, 2015). Each of the residential areas of Columbia are vastly different in their makeup. The Forest Acres area (Pop. 10,361) is a major suburb characterized by a large contingent of first time home-owners and retirees. The mean age for residents, 44.5, is slightly older than South Carolina's mean age of 39.1 (Data USA, 2018). Forest Acres also includes several wealthy neighborhoods. The median household income for this area was estimated to be \$58,714 and the estimated median property value of owner-occupied homes was \$186,900. Forest Acres is centered around Gills Creek, a major watershed which empties into the Congaree River. With the advent of the historic rainfall, five dams in the area failed, leading to massive flooding from Gills Creek which caused severe damage to homes and roadways in the area. In contrast, Lower Richland County (Pop. 12,528) is a more rural, low-income area, with a large population of ethnic minorities. The towns in this area include smaller localities located within close vicinity to the Congaree River. The flooding experienced in these areas also led to dam breaches and destroyed nearly 30 roadways, including parts of the primary roadway that led to these

cities (Trainor, 2015). The local high-school in the area was used as the primary shelter for several surrounding cities including Hopkins, Eastover, and Gadsen. On the western reaches of Columbia, smaller suburbs of Chapin, Ballentine, and Irmo (Pop. 11,097), mainly consist of middle-class family residences centered around the massive Lake Murray, measuring 40 miles long and 15 miles wide. These areas were similarly affected. See Figure 1 for a geographic layout of Columbia and range of affected areas.

Although the various communities in Columbia experienced similar effects from the historic flooding, community responses to relief efforts varied. Residents expressed dissatisfaction with recovery efforts provided by the state and government agencies such as FEMA. Complaints included superficial assessments of property damage, price gouging from outside repair companies and failure to address post-flooding mosquito infestation. In particular, residents in Lower Richland County expressed concerns that the local government had abandoned them as they awaited repairs to roadways and local infrastructure (Trainor, 2015). For the state of South Carolina, recovering from this “1000-year flood” became an unexpected disaster that taxed the resources of its residents, neighborhoods, and institutional systems.

These mixed outcomes to a collectively experienced event warrant investigation into the factors that can facilitate or impede successful recovery after a natural disaster. Currently, the aspects that make communities resilient to disasters is unknown. Furthermore, there is not yet a clear understanding of how disaster-related impacts on a community impacts its community members. As similar disasters occur in Louisiana, Texas, and Oklahoma, these once rare phenomena may signal a new normal that

communities need to prepare for as scientists predict an increased frequency and intensity of extreme weather events in the future. (Bolstad, 2016).

The present study examines the relationship between community resilience factors and trauma symptoms following a natural disaster using a social ecology perspective. Using the framework provided by Norris, Stevens, Pfefferbaum, Wyche and Pfefferbaum (2008) we measure four “capacities” of community resilience: Economic Development, Social Capital, Information and Communication, and Social Trust to determine their relationship to subjective experiences of distress and feelings of hope on community members. These capacities will be examined alongside interpersonal support, a commonly examined individual resilience capacity. Results gleaned from this research will assist communities in developing effective risk management policies that will successfully allow their residents to return to functioning following exposure to a disaster. In constructing a conceptual framework for the study, this paper will: (1) review common stressors and outcomes of natural disasters, (2) discuss the concept of community resilience as a set of capacities, and (3) determine the relationship between community resilience capacities and the development of trauma-induced distress symptoms.

CHAPTER 2: LITERATURE REVIEW

Outcomes of Natural Disasters

Each year 564 million people are affected by natural disasters such as hurricanes, floods, and earthquakes (López-Ibor, Christodoulou, Maj, Sartorius & Okasha, 2005). Researchers predict the occurrence and intensity of natural disasters will increase as environmental pollution and climate change continue (Drew, 2015). Extreme natural disasters have continued to increase in frequency each year since 1950. The “1000-year” flooding event experienced by South Carolina was the sixth of its kind since 2010 (Drew, 2015). As the frequency of natural disasters increase, their effects on populations continues to be a major concern. So far, research has revealed that natural disasters have a significant impact on psychological health and well-being.

Research into outcomes following natural disasters reveals that nearly two-thirds of people exposed to natural disasters show some level of psychological distress following initial exposure (Kaniasty & Norris, 2009). Affected individuals may experience depression, anxiety, grief, sleep disturbance or exacerbation of pre-existing physical illnesses in addition to any injuries sustained during the event (House, 1981). However, most people only experience distress briefly and then return to pre-disaster levels of functioning (Schultz, Neria, Allen & Espinel, 2013). Only about 25% of affected people (typically those with more exposure to the event) continue to show long-term distress (Harville, Jacobs, & Boynton-Jarrett, 2015). Follow-up studies have found elevated levels of distress symptoms over a year following exposure to the event, and an

even smaller minority of affected people that continued to experience symptoms up to 5-10 years after the event (García, Cova, Rincón, Vázquez, & Páez, 2016). The experience of continued distress long after the conclusion of exposure has led to the classification of natural disasters as traumatic experiences. These traumatic experiences are negative outcomes that can severely affect individual well-being.

Psychological Trauma

Definitions of trauma vary. Conceptualizations of the term have continued to shift since it was first officially included in the third edition of the *Diagnostic and Statistical Manual of Psychiatric Disorders – III* (DSM-III). Early descriptions from psychologist Sigmund Freud initially defined trauma as stimulation from a non-ordinary event that exceeded the protections of defense mechanisms. Behaviorists then shifted focus to identifiable antecedents and extreme outcome behaviors following an event. Contemporary theories now declare that trauma can be understood as a relationship between the individual, environment and perceived available coping resources (Hobfoll, 1991b; Folkman et al., 1984).

From the DSM-III definition, trauma includes: “a stressor that would evoke significant symptoms of distress in nearly everyone, such as a threat to life, a sudden loss, or a witness to serious injury or death.” (American Psychiatric Association, 1987). A diagnosis of trauma also required a specific cognitive assessment from the individual that the situation was indeed stressful for them as measured by an emotional response that “changed the direction of life” and marked a clear before and after point of the experience. Subsequent editions of the DSM tweaked the identifiers of the stressful event

and emotional response. As written in the current DSM-5, the definition of trauma is “an experience of a stressful event and the specific cognitive or emotional reactions to such events.” (American Psychiatric Association, 2013, p.274). Although the definitions of trauma have shifted over the years, the underlying dynamic has remained relatively unchanged; a two-pronged experience of a stressor and the associated reactions to that stressor. Negative reactions to traumatic events are typically measured by the manifestation of Post-Traumatic Stress Disorder (PTSD). This paper will use the experience of distress symptoms to identify PTSD as an outcome of the flooding.

Post-Traumatic Stress Disorder (PTSD)

Post-Traumatic Stress Disorder (PTSD) is a clinical disorder marked by continued distress symptoms for a period of at least one month after exposure to a stressful or traumatic event. The distress symptoms must cause clinically significant distress such that it leads to impaired functioning (American Psychiatric Association, 2013). The distress symptoms of PTSD are characterized by intrusion (e.g., flashbacks, ruminating thoughts), avoidance (e.g., evasion of trauma-related stimuli, blunted affect, denial) and hyperarousal (e.g., irritability, hypervigilance, attention difficulties). Long-term experience of PTSD is associated with physical conditions such as immune system dysfunction and affective disorders such as depression and anxiety (House, 1981). While exposure to traumatic events is common, the development of PTSD symptoms is relatively rare. Lifetime prevalence rates of traumatic exposure are estimated to be approximately 60% for men and 50% for women. Of those people exposure to traumatic events, only 5-12% are expected to develop PTSD symptoms, with a lifetime prevalence

rate of approximately 10% (López-Ibor, 2005). Risk factors for the development of PTSD symptoms include perceptions of controllability, recursion of the event, and lack of predictability (American Psychiatric Association, 2013; López-Ibor, 2005). Negative stress reactions to natural disasters were not officially considered until the publication of the DSM-IV. This edition removed the requirement that stress reactions must come from unexpected, non-ordinary events. It was only recently that researchers considered natural disasters bring a bevy of traumatic stressors that can lead to the prolonged experience of distress.

Stressors – Exposure, Loss, and Change

The development of distress symptoms vary based on two variables of exposure: the type of stressor experienced and the intensity of stressors, or dosage. The types of stressors can be described in three dimensions: (a) exposure, (b) loss, and (c) change. Likewise, the dosage of a stressor can be measured in (a) magnitude, (b) duration, (c) frequency, (d) proximity, and (e) scope (Schultz, 2013).

Stressor type. Stressors presented by exposure to natural disasters are consistent across the type of natural disaster (i.e., flood, hurricane, earthquake) and the specific event itself (e.g., Hurricane Katrina, Hurricane Harvey). The threat of a natural disaster can also become a stressor, even if the event fails to occur (Schultz, 2013). In a review, Harville et al. (2015) highlighted exposure variables such as real or threatened injury or death, distance from the source of the phenomena, and development/exacerbation of illness as common stressors endorsed by survivors.

Natural disasters are notable in that they include an element of exposure that is widespread and simultaneously experienced by many populations, which have led them to be characterized as a “community trauma” (Watson & Hamblen, 2017). While some individuals will undoubtedly be impacted by the physical hazards of natural disasters, a larger contingent of survivors are impacted by psychological effects. Effects of natural disasters can impact even those not directly in the path of the event. These indirect victims far outnumber the amount of direct disaster victims, yet both groups experience similar post-traumatic distress symptoms (Schultz, 2013). Smith et. al (2014) describe natural disasters as a communal experience in which multiple populations are impacted and share negative outcomes. Evaluations of response personnel, including police officers, firefighters, therapists, and volunteers have indicated the experience of some distress following the event (Birnbaum, 2008; Everly, Bole, & Lating, 1999). Other indirect victims include family members, friends, colleagues, and even people who witness the disaster through media coverage. Also consider indirect victims such as Haitian communities throughout the United States during the 2010 earthquake in the Haiti capital of Port Au Prince (Schultz, 2013).

Additionally, natural disasters create stress due to the loss of resources. Hobfoll’s (1991b) Conservation of Resources theory is a perfect encapsulation of this concept. Throughout the lifespan, people strive to accumulate as many resources as possible. These resources include object resources (e.g., homes, cars, physical property), condition resources (e.g., transportation, employment, social connections), personal characteristic resources (e.g., feeling vulnerable, helplessness), and energy resources (e.g., time, money). The actual or perceived loss of these resources have shown to be a salient form

of stress (Hobfoll, 1991b). Furthermore, the inability to obtain new resources following the expenditure or loss of accumulated resources is another avenue for distress to develop. These resources are important in considering the rebuilding and recovery efforts needed following natural disasters.

Finally, there is a temporal aspect to restoring quality of life and adapting to change in the aftermath of natural disasters that can create additional stress (Cavera, 2015). The average time spent rebuilding physical infrastructure can take between 9-12 months, and repairs may take anywhere from 15 months to 6 years in more extreme cases (Amberg, Johannesson, & Michel, 2013; Parker et al., 2016; Suar, Das, Alat, & Suar, 2016; Wickes, Zhanow, Taylor & Piquero, 2015). Survivors may lose possessions that have emotional significance and cannot be easily replaced, such as photographs and mementos. Cultural factors further complicate the type of stress experienced. Take for example the cultural value in owning a home in the United States. For many, homeownership is an important personal achievement and represents security, privacy, and accomplishment (Sherrieb, Norris & Galea, 2010). The destruction of one's home may lead to the perceived loss of independence and empowerment (Inés et. al, 2005). Additionally, the changes required due to displacement from employment, family and friends has also been cited as a major stressor in evaluations of post-disaster recovery as it weakens social networks and reduces available social support (Velasquez, Riveria-Holguin & Morote, 2017). Closures and destruction of community infrastructure, such as schools and local businesses, public utilities, and social services induce similar distress patterns. Changes to the environment are also of concern. For example, in Lower

Richland County, individuals complained of a new mosquito infestation as result of standing floodwater (Trainor, 2016).

Dosage. Schultz (2013) highlighted elements of natural disaster exposure that can determine the strength of experienced stressors, or dosage. These elements, along with the type of stressor experienced entwine to determine the duration and severity of distress symptoms. First, *intensity* measures the magnitude of damage caused by the disaster. Norris, Friedman and Watson (2002) noted that many disasters do not produce large number of victims with pronounced trauma. Those disasters that produce widespread trauma typically include widespread physical damage, large numbers of deaths, and disruption of social networks. Second, *duration of stressors*, measures the length of time one is exposed to stressors. Longer exposure to stressors are associated with more intense distress (Harville et al., 2015). *Frequency* concerns the amount of times one is exposed to a particular stressor. Repeated exposure to a stressor increases the risk of developing distress symptoms. The dangers of repeated exposure to a stressor is consistent throughout other forms of stress such as the rigors of homelessness and adverse childhood experiences (Kloos, et al., 2009). *Proximity* measures how close one was to the destruction caused by the disaster. Evaluations of disaster survivors have revealed increased levels of distress closer to the epicenter of events and decreased levels of distress as the distance from the event increases (Suar et al., 2002). Finally, *Geographic scope* considers the span of the region affected by the disaster as well as the number of people affected. As mentioned previously, more widespread destruction is associated with greater severity of symptoms.

Reactions and Risk Factors

Reactions to the stressors presented above can occur at any time during the disaster cycle. Schultz (2013) identified three major phases: (a) the pre-impact phase, (b) the disaster impact phase, and (c) the post-disaster phase.

In the pre-impact phase, there are vulnerabilities that place some populations at more risk for developing distress symptoms than others. People with prior histories of trauma, the elderly, female gender, low socioeconomic status, and people with few social supports have all been identified as groups with the highest risk for negative outcomes after a disaster (Schultz 2013; Watson & Hamblen, 2017). However, people without pre-existing risk factors experience stress during the disaster as well. The variability and unpredictability of stressors at the disaster impact and post-disaster phases then creates a new population of people at risk for traumatic distress, a population that is more difficult to account for than populations in the pre-impact phase. As such, planning for potential disasters has recently been framed as a matter of managing the risk of potential stressors encountered during the disaster impact and post disaster phases of the event. (Velasquez et al., 2017). These pre-existing risk factors are taken into account when analyzing individual level outcomes of the historic flooding experience in this paper.

There are several trajectories of psychological response following the experience of stressors at these phases: (a) resistance, (b) distress, and (c) resilience. The rarest trajectory is *resistance*, in which victims show no disruption to their psychological functioning at all. In this case, resources or supports are theorized to be efficient enough as to completely block the harmful effects of stressors. This trajectory is only thought to occur in cases where stressors can be reliably predicted and planned for, which is not the

case for natural disasters (Norris et al., 2008). More commonly, individuals encounter stressors, experience some disruption in their psychological functioning, and then return to pre-impact levels of behavioral and psychological functioning within a few weeks to month (López-Ibor, 2005; Schultz, 2013; Watson & Hamblen, 2017). The process of experiencing a stressor, reacting, and then returning to effective functioning is termed *resilience*. (Norris et al., 2008). However, for a small minority the stressors experienced are so distressing that behavioral and psychological changes continue to occur long past the conclusion of the event. This *traumatic distress* is manifested as the symptoms of PTSD. As resistance to stressors is unlikely, and traumatic distress is debilitating, resilience is the goal for most people affected by natural disasters. We expect that individuals exposed to the historic flooding will show at least some level of distress, regardless of the resilience factors available to them.

Individual Resilience

Resilience is a term that finds use in many disciplines, from the physical sciences (e.g., the rate at which a system returns to equilibrium after displacement), sociology (e.g., ability to function following shocks to social infrastructure), psychology (e.g., ability to recover after experiencing stress or negative life events), and public health (e.g., the ability of communities to mitigate hazards and contain adverse outcomes) (Leykin, Lahad, Cohen, Golderberg & Aharonson-Daniel, 2013). This paper defines resilience based on work completed by Masten (2004, 2007): *resilience refers to the capacity to adapt successfully to changes, trauma, and disturbances that threaten the functioning or development of a system or individual*. Norris et al. (2008) noted that resilience is a

process rather than an outcome. As stated previously, distress is expected following exposure to a traumatic or stressful event. Individual resilience then refers to the ability of a person to experience distress, return quickly to previous levels of functioning, and be free of any long-term impairment such as PTSD. This return does not have to be exactly to the functioning that occurred before the exposure. Schultz et al. (2013) identified the notion of “posttraumatic growth” whereby experiencing a distressing event leads to the development of new coping skills and adaptation strategies. This is also a marker of resilience. Furthermore, any systemic or behavioral changes made that help a person prevent or reduce the impact from stressors in the future are also markers of resilience. This is encapsulated by the concept of the “new normal”. Following disasters such as terrorist attacks, new policies, procedures, and behaviors can be adopted to prevent further terrorist attacks (Norris et al., 2008; Watson & Hamblen, 2017). Resilience, posttraumatic growth, and the creation of a new normal serve to help individuals and communities respond to a wider variety of stressors that they may encounter in the future.

Natural Disasters and Community Resilience

Extreme weather events stress the physical, mental, and social resources of a *population* and become *disasters* when they exceed the ability of communities to respond to them (Velasquez et al., 2017). Reviews in the APA Handbooks of Trauma Psychology and Community Psychology have since highlighted the need to increase the ability of communities and institutions to be more able to adapt to the unique stressors presented by natural disasters. (Watson & Hamblen, 2017; Velasquez et al., 2017). That is, to be more *resilient* to stressors. As such, a community’s resilience to natural disasters has recently

been framed as the ability “bounce forward” after experiencing extreme weather events and prevent disruptions in the social framework of the community (Norris et al., 2008; Velasquez et al., 2017).

However, the term “community resilience” cannot be discussed without the proper understanding of community. Communities are typically defined by a locality, such as neighborhoods, cities, or towns. These localities include combinations of social networks, organizations, groups, and systemic forces such as government institutions. Furthermore, Kloos, Hill, Thomas, Wandersman and Elias (2012) identified communities not by the sum of its residents, but rather the connections, histories, and culture that are shared by groups within these locations. Similarly, Norris et al. (2008) noted that community resilience cannot be conceptualized by the collection of individual responses, but rather by the unified response to challenges faced by the community. Other researchers have posited similar models which highlight the importance of community factors such as social connections and empathy, empowerment and agency of community members as critical factors (Houston, Spialek, First, Stevens & First, 2017). As with individual resilience, community resilience is also viewed as a process rather an outcome. Based on community vulnerabilities and strengths, different stressors and events have different outcomes on the community. The community must leverage its resources and community members to ensure that society is able to function following the experience of a traumatic event. As such, the ability for communities to respond to natural disasters cannot be understood without first considering preexisting psychosocial and economic capacities of the individuals, social networks, and political systems within them (Watson & Hamblen, 2017). Thus we use an adapted version of the definition of community

resilience presented by Norris et al., (2008): “*The ability of a community to link available adaptive capacities to a positive trajectory of functioning and adaptation in populations after a disturbance*” (p. 131). Adaptive capacities are “the characteristics of communities that affect their ability to identify mobilize and address social and public health problems” and “the cultivation and use of transferrable knowledge, skills, systems, and resources that affect community and individual level changes and outcomes” (Gunderson et al., 1998, as cited in Norris et al., 2008, p. 44). This definition of community resilience focuses on the pre-existing resources in the community and how these resources are utilized to prevent social breakdown following the experience of a natural disaster.

Capacity as a Measure of Resilience

So how do we measure resilience and the ability to respond to stressors? At the individual level, resilience is typically measured by the amount of available interpersonal social support sources. Social supports are tangible benefits or emotional aid available due to connections with people, groups or the community that can assist in recovering from stress-inducing events (Malecki & Demaray, 2003). Theoretical models have categorized social support into different dimensions that are suggested to reduce the impact of stressors or facilitate the coping process; emotional support (empathy), informational support (indirect assistance such as referrals or case management), and instrumental support (material goods, money) (House, 1981). Social support has been proven to be effective in addressing the trauma experienced from sexual assault, death of a loved one, interpersonal violence, war exposure, and serious injury (Bauman, Haaga, Kaltman, & Dutton, 2012; Harville et al., 2015; Platt, Keyes, & Koenen, 2014). We use

perceived interpersonal social support as a measure of individual resilience capacity for this paper.

At the community level, Norris et. al (2008) suggested analyzing the various adaptive capacities that exist within the community. As mentioned, these include pre-existing resources and the social forces that govern their use. Norris et al. (2008) have identified four capacities at the community level; (1) Economic Development, (2) Information & Communication, (3) Social Capital and (4) Community Competence. We examine each of these capacities below, and then discuss the mechanisms by which these resources contribute to resilience. These capacities will serve as measures of community resilience in our analysis.

Economic development. The first adaptive capacity in the community resilience model provided by Norris et al. (2008 is economic development. Economic development covers the infrastructure, economic and monetary resources, emergency personnel, and the competence required to utilize these sources. Economic development is made up of three key factors; availability of resources, diversity of resources, and equal distribution of resources (Sherrieb, Norris & Galea 2010).

Availability of resources is one marker of economic development. Natural disasters may occur anywhere but have the greatest toll on communities without sufficient economic and institutional resources (Rhodes et al., 2010). As mentioned previously, capacity for communities to respond to natural disasters cannot be understood without first considering preexisting psychosocial and economic factors of the individuals, communities, and political systems affected by them (Watson & Hamblen, 2017). Natural

disasters highlight the vulnerabilities of a community such as lack of infrastructure, absence of information, poor risk management, social inequalities, and disorganized institutions (Watson & Hamblen, 2017). Comparisons reveal that higher income countries experience less loss of life than lower income countries, despite similar impact from natural disasters (Watson & Hamblen, 2017). Similar effects were found after Hurricane Katrina – the prevalence of PTSD symptoms doubled in low-income populations (Rhodes et al., 2010). Vulnerabilities in physical structure and resources also influence recovery efforts. Communication systems, number of emergency vehicles, access to safe water, and agricultural supplies have been noted as influential factors (Sherrieb et al., 2010). Communities that depend on one industry for income (e.g., mining, fishing, farming) may be especially devastated if these markets are compromised or otherwise destroyed (Watson & Hamblen, 2017). Diversity in response resources must be considered in an analysis of economic development.

The distribution of resources post-disaster can also contribute to the strength or weakness of this capacity. The Social Deterioration Theory presented by Kanaisty and Norris (1993) posited that following a disaster, economic resources are usually readily available. However, as time passes, the availability of resource dwindles, leaving some without adequate support and in fact may induce more stress on the individual. Time and budget concerns may limit the amount or type of resources provided. The perception of inaccessibility or inadequate amounts of resources can be stressful for individuals (Hobfoll, 1991b). Criticisms of include government agencies providing resources in a paternalistic manner. Government officials hand down eligibility requirements and allocation of funds in a top-down manner that removes the decisions and autonomy from

local community members (Inés et al., 2005). People that are more vulnerable, such as individuals with lower income, education, disabilities, ethnic minorities, and the elderly are at greater risk for unequal access and provision of these resources (Mishr, Mazumbara & Suar, 2010).

The culmination of these factors is the measure of the *preparedness* of the community to respond to a variety of stressors (Leykin et al., 2013). Preparedness also includes the community's familiarity with emergency situations and their plans for post-disaster recovery.

Social capital. Social capital is defined as the resources available due to social connections and social networks. Specifically, social capital is “the aggregate of the actual or potential resources that are linked to possession of a durable network of relationships” (Bourdieu 1985, as cited in Norris et al., 2008). Additionally, Norris noted that people invest time, resources, and social interest into their community in order to obtain resources in the future. This capacity is measured by place attachment and social trust (Leykin et al., 2013). Place attachment concerns the emotional connections people have to their home and neighborhood. As people invest into their neighborhoods, they show greater involvement in the outcome of the community (Leykin et al, 2013). Research have revealed that greater levels of place attachment are associated with greater recovery and rebuilding efforts. Place attachment is considered the reason why displacement following natural disasters is such a stressful experience (Watson & Hamblen, 2017). Displacement leads to the rupturing to available interpersonal social support and quality of life. Even small changes, such as commutes to work and closures

of local businesses are associated with increased stress levels (Sherrieb et al., 2009). As a factor of social capital, place attachment also takes into consideration the networks and organizations present in the community. Social groups such as churches, libraries and community centers provide additional sources of social support and add to the strength of place attachment.

Social trust is the belief that neighborhood and community resources will be able to assist members during an emergency. These include perceptions that community members are willing and able to support one another during disasters. The perception of these social connections, or social climate (quality perceptions of belonging, safety and security) is also a crucial factor in the strength of this capacity (Norris et al., 2008).

Utilizing social capital to respond to natural disasters has been effective as evidenced by studies such as Kloos, Flory, Hankin, Cheely, and Segal (2009). Researchers discovered that interventions utilizing neighborhood resources and social connections, such as tying displaced disaster survivors with an established community partner, expanding available shelter options to hotels and apartments, and streamlining institutional access to support through a one-stop point of entry were associated with positive mental health outcomes. For this study, we will focus on *place attachment* and *social trust* as measurements of this community resilience capacity.

Information and communication. Information and communication are concerned with the ability to share ideas, needs, and information. Communication of emergency procedures, protocols and dangers are required to maintain a functioning community. Researchers have argued that natural disasters are a public health issue and

propose that government and systemic institutions are responsible for informing community members of the current situation and plans for response. This knowledge leads to a sense of safety, information, creating hope and reducing fears of the population (Cheung et al., 2017). Resources such as 211 information lines, community meetings, and transparency of planned recovery efforts contribute to resilience and rapid return to post-disaster functioning (Norris et al., 2006). Education about typical effects of the disaster, including psychoeducation has also been found to be helpful. Media outlets and their coverage can either provide reassurance or instill dread for the situation. Perceptions of the disaster have also been shown to be a critical factor of this capacity. Shared community narratives may shape how residents view the effectiveness or trajectory of recovering from the disaster. Absent or vague information has been understood as a form of neglect for affected people (Alkon, 2004). Perceptions of the event can also impact the well-being of individuals after natural disasters. The meaning, or narrative that people place on the event play a crucial part in shaping these perceptions. Beliefs about the cause of the event, as well as potential actions that should of or could have been undertaken all matter. Individuals may engage in self-blame about their role in the actions of the event. Researchers have termed negative interpretation of one's participation in disasters and emergencies "survivors guilt" (Benight & Bandura, 2004).

Community leaders are responsible for shaping the narrative of recovery and providing information to residents about the damage and recovery plans. Faith in the ability of leaders and institutions to provide transparency and deliver resources fairly affect the strength of this capacity (Leykin, et al., 2013). As mentioned before, failure to adequately disseminate information may lead to increased panic and feelings of

hopelessness among community members. Thus, we will measure perceptions of *leadership* when examining this capacity.

Community competence. Community competence describes the decision-making and recovery plans of the community. For this capacity to be effective, community members must believe that the actions of the community are done in the best interest of its residents, that these plans are feasible and will show favorable outcomes. This is captured by the concept of collective efficacy and is based on the concept of self-efficacy. Self-efficacy is an individual's belief in their ability to act and achieve desired outcomes (Ryan & Deci, 2000). Self-efficacy is related to feelings of autonomy and competence. Self-efficacy is associated with feelings of hope and positive mental health outcomes (Ryan & Deci, 2000). Alternatively, those without high levels of self-efficacy feel hopeless that they will be able to achieve their goals, and may lack motivation to change or adapt, affecting recovery. Higher levels of self-efficacy are associated with outcomes of hope (Benight & Bandura, 2004). As defined by Snyder (2002a), hope is the perceived capacity to find solutions to problems and the motivation to utilize those problems. Individuals confident in their ability to handle challenges have shown better outcomes even when presented with stressors from chronic illnesses (Everson et al., 1996).

Likewise, community members must feel a sense that community has agency and the ability to address challenges experienced by its community members, or collective efficacy (Leykin et al., 2013). These include positive assessments of community leaders, community organizations, and the recovery efforts undertaken. Interventions using social

ecology have focused on assessing and increasing resident agency and self-organizing to respond to disasters (Berkes & Ross, 2013). These interventions allow community members to advocate for personal and community needs, assist other community members, and participate in the rebuilding process. This community competence has been shown to bolster already standing social support resources and help to create new networks and collaborations between individuals, groups, and organizations (Norris et al., 2008). Communities confident in their community ability to respond to natural disasters may show greater motivation and hope in confronting stressors and engaging in problem-solving. We measure *collective efficacy* when measuring this community resilience capacity.

Capacity Characteristics

Finally, these capacities are only effective when they contain three aspects of effective resources as outlined by Bruneau et al. (2003): (a) Robustness, (b) Redundancy and (c) Rapidity. Robustness concerns the ability of resources to be used to combat a diverse number of stressors. Additionally, these resources must be durable and available to use repeatedly. They must stand up to the challenges of natural disasters and not be destroyed easily. As cited by Hobfoll (1991), the loss of resources is stressful, so resources that are long-lasting are effective in facilitating adaptability and resilience. Redundancy concerns the variability of the resource to combat a particular stressor. Large social networks, contingency plans, and multiple copies of resources are examples of redundancy (Norris et al., 2008). Reliance on one resource for recovery may be devastating if that resource fails. Finally, rapidity is the ability of these resources to be

accessed quickly in response to an emergency. Issues of accessibility, organization structure, and ease of use characterize rapidity. Resources should be able to rapidly respond to stressors presented by natural disasters and allow individuals and communities to return to post-disaster functioning as soon as possible.

Individual Well-being and Resilience

The outcome of a resilient community is the successful adaptation of its members to stressors and a return to effective functioning. As natural disasters are traumatic events that cause psychological distress, this paper defines wellness and psychological well-being as the absence of post-traumatic distress symptoms. However, individual well-being also includes positive components such as hope (Kloos et al., 2012). Measures of positive outcomes following disasters have also focused on hope for the future (Benight and Bandura, 2004). Higher levels of hope are associated with greater motivation to find solutions and engage in problem-solving behavior. Hope has also been shown to be an outcome that predicts long-term effective functioning following traumatic experiences such as war and chronic illnesses (Eshel & Kimhi, 2016; Snyder, 2002a). Individuals and communities with higher levels of hope are less affected by stressors as they perceive they can handle and adapt to the challenges presented to them (Ryan & Deci, 2002). Through community psychology principles of individual empowerment, equality, inclusion, and community participation, community members can have an active role in facilitating their recovery by finding solutions to the unique challenges they face on an individual level. (Velasquez et al., 2017). Thus, we focus on the experience of distress symptoms and hope as outcomes in this study.

Individual and Community Level Interventions

Individual-level interventions have not been supported as being associated with lower levels of distress post-disaster. The earliest intervention, Critical Incident Stress Debriefing (CISD) was developed in the 1980s and its efficacy was quickly debunked (Bryant & Litz, 2009). CISD focuses on deploying intervention rapidly after the disaster, typically within 48 hours. Participants are given brief psychoeducation about typical responses to traumatic events and then are coerced into describing the most traumatic elements of the event along with emotional and physical reactions to the disaster (Schultz et al., 2013). Evaluations of this intervention have revealed no difference in PTSD symptoms between treatment and control groups (Bryant & Litz, 2009). Furthermore, critics noted that this intervention may actually retraumatize victims and lead to an increase in PTSD symptoms due to the early intervention timeframe, recounting potentially traumatic experiences, and hearing traumatic experiences of others (Schultz, 2013). Psychological first aid, a more contemporary post-disaster intervention has also failed to gain support as an effective method to reduce distress. Psychological first aid is based on five principles used in other early intervention research: (a) safety, (b) calming, (c) connectedness, (d) self-efficacy, and (e) hope (Hobfoll, 2007). Psychological first aid aims to promote *safety* by the provision of emergency resources and basic needs, *connectedness* by keeping families intact during recovery efforts, *self-efficacy* in empowering citizens to care for themselves, *calming* by distributing factual information and facilitating communication, and *hope* by facilitating individual resilience factors such as social connections (Schultz et al., 2013). This theory has not picked up traction as a widely used intervention and lacks empirical evidence in post-disaster usage (Shultz et

al., 2013). In fact, the creators specifically provided the disclaimer that psychological first aid should not be expected to reduce PTSD symptoms and rather should be used to promote adaptive coping and reducing distress levels (Bryant & Litz, 2009). While the principles of psychological first aid are commendable, they may not consider the context in which these principles are applied. Previous examples were given in the discussion of measuring community capacities. Communities that lack basic resources may not be able to promote safety. Paternalistic forms of government may determine the manner in which recovery resources are allocated, disenfranchising citizens and reducing their self-efficacy. Insufficient shelter facilities may lead to families being split up. Ines et al. (2005) highlighted an example during recovery efforts following an earthquake in Peru in which shelters were designated by gender and age. This led to the detachment of families, further increasing distress. Issues in communication and information, along with negative opinions of public officials may inspire more fear than calm.

Researchers in the field of community psychology have provided evidence that the environment plays a critical role in fostering effective functioning. In fact, the interactions between the individual and their environment may better explain outcomes than individual traits alone. The Social Ecology theory put forward by Insel and Moos (1974) stated: “The climate of environments in which people function relates to their satisfaction, mood, self-esteem, and personal worth” (pg. 3). In conceptualizing Social Ecological Theory, Kloos et al., (2012) described the interaction between the environment and the individual as a series of Russian nesting dolls (See Figure 2.) In this model, the individual is acted upon, and interacts with interpersonal contexts (i.e. friends and family members), community or neighborhood level contexts (i.e., neighbors, social

groups, churches), and systemic level contexts (i.e., local laws, national policies, cultural norms). The contexts further away from the individual are less likely to be controllable by the individual, but still exert influence upon the individual's life. The interaction between each of these levels determines the outcome of the individual's behavior. Kloos and Shah (2009) used a social ecology theory to analyze adaptive functioning for people with mental illness. The researchers shifted focus from individual risk factors to an individual's ability to function in the environment and discovered that physical elements of housing, neighborhood social climate and interpersonal relationships were essential parts of community integration and effective functioning. Similarly, environmental experiences and perceptions were found to be associated with distress symptoms for people with a mental illness (Kloos & Townley, 2011).

Barbara Dohrenwend (1978) similarly theorized about the role of environmental factors in both exacerbating and preventing stress. Dohrenwend however focused on the perception of environmental factors. In the presence of a stressor, people individually assess and appraise the stressor based on the resources available to them. Appraisal of the stressor relative to the availability and accessibility then determines the individual's reaction. If the stressor is assessed to exceed available resources, this can create distress; otherwise, otherwise, the person will have a generally favorable reaction (Hobfoll, 1991b). Furthermore, the perception of available resources has found to be helpful in reducing stress even if the resources are not utilized (Platt, Keyes, & Koenen, 2014). In measuring aspects of positive social climates, Insel and Moos (1974) advised "the social stimuli associated with the relationship dimensions of support, cohesion, and affiliation generally have positive effects" (pg. 5). Positively perceived environmental climates

have been found to have a significant effect on distress, well-being, behavior, and other individual outcomes such as academic achievement, employment, and crime, and recovery from mental illness (Shinn & Toohey, 2003). Perceptions of supportive social climates have been shown to be effective in reducing workplace stress, substance abuse, attrition in treatment settings, and improving educational achievement (Cohen & Wills, 1985; El-Bassel, Guterman, & Bargal, 1998; House 1981; Norris et al., 2008).

Kaniasty and Norris (1995) noted that following natural disasters, individuals attempt to gather resources from as many sources as possible. Communities provide additional forms of support that may not be feasible at the individual level such as advocacy efforts, identifying vulnerable community members, and dissemination of emergency protocols and procedures (Velasquez et al., 2017). Considering the widespread effects of these events on the community as well, disruption of the community will undoubtedly have negative effects on the residents within. Thus, researchers have warned that communities must also show resilience and be able to withstand the stressors of natural disasters and quickly return to operating functionally (Norris et al., 2009; Velasquez et al., 2017).

The Current Study

The current study examines the metropolitan area of Columbia, South Carolina. In this study, we examine the outcomes of a sample from this population following the exposure to a historic natural flooding disaster. We attempt to determine the resilience of this community by measuring perceived capacities in four domains: economic development, social capital, communication and information, and community

competence. Furthermore, we expect capacities of community resilience to be a better predictor of well-being than the individual capacity of interpersonal social support due to the communal experience of the disaster, widespread loss of a variety of resources, and challenges in restoring those resources and quality of life. Well-being in this study is measured by the experience of fewer PTSD symptoms and greater levels of hope. We expect members of communities with a strong capacity for community resilience to experience higher levels of hope, a positive outcome, and lower levels of distress, a negative outcome, due to the variety of resources each of these capacities can provide.

Specifically, the hypotheses are as follows:

- (1) In a bivariate correlational analysis, hope (i.e. AHS score) will be negatively correlated with post-traumatic stress symptoms (i.e, IES score).

- (2) In a hierarchal regression model predicting PTSD scores, as measured by the Impact of Event Scale, community resilience, as measured by the CCRAM-28, will account for more variance in post-traumatic stress (i.e., IES score) than perceived social support, measured by the ISEL, after controlling for demographic variables.

- (3) In a hierarchal regression model predicting hope scores, as measured by the Adult Hope Scale, community resilience, as measured by the CCRAM-28, will account for more variance in hope (i.e., AHS score) than perceived social support, measured by the ISEL, after controlling for demographic variables.

(4) In a multiple linear regression model predicting PTSD scores (i.e, IES), at least one community resilience capacity (i.e., leadership, collective efficacy, preparedness, place attachment, social trust), as measured by subscales on the CCRAM-28 will explain variance in post-traumatic stress symptoms (i.e, IES score).

(5) In a multiple linear regression model predicting hope scores (i.e., AHS), at least one community resilience capacity (i.e., leadership, collective efficacy, preparedness, place attachment, social trust), as measured by subscales on the CCRAM-28 will explain the variance in hope (i.e, AHS score).

CHAPTER 3: METHOD

Participants

Data were collected beginning in May of 2016, approximately six months following the historic flooding, and continuing until May 2017. Participants included 84 adults (18+) with home addresses located within the City of Columbia, South Carolina, Richland or Lexington counties during the October 2015 flooding event. Participants were recruited through outreach to local social service organizations providing post-flood relief, community reconstruction meetings, and posts in online community support groups. The participants included 30 males and 54 females. The demographic makeup of the sample was 36 White (42.9%), 37 Black (44%), 3 Hispanic (3.6%), and 6 Asian (7.1%). There were two participants who did not disclose race. Average age of participants was 32, with a range of 18 to 80. A power analysis determined that for a multiple regression using six predictors (five subscales of community resilience, one scale of individual resilience) would require 83 participants to detect an effect at the same level. A hierarchical regression using 2 predictors would require 66 participants at these same levels.

Procedure

Semi-structured interviews and online surveys were used with the participants. These measures included 55 items describing perceptions of interpersonal support sources, community resilience capacities, and subjective endorsement of distress

symptomology. These questions were taken from a larger protocol measuring different experiences during the flooding event. Interviews took approximately 30 to 45 minutes to administer. Participants were given the option of completing the survey online or in person. Online surveys contained the same measures and answer choices as the paper surveys and were delivered using a unique link for each survey to ensure confidentiality. The online surveys included a webpage that provided informed consent and a link to opt out of the study if desired. Interviews were performed in-person at local restaurants, libraries and community centers. Participants that selected to complete the measures in-person were given the option of an interview or written survey. Trained undergraduate and graduate research assistants read the measures aloud to participants if requested. Informed consent was given describing the aims of the study, a description of questions used in the interview and a commitment to confidentiality. Participants were compensated \$20 in cash for their participation in the study. The protocol for the study was approved by the University of South Carolina institutional review board.

Measures

Individual Resilience Indicators

Interpersonal Support Evaluation List. The *Interpersonal Support Evaluation List (ISEL)* (See Appendix A) is an instrument that measures an individual's perceived social support and an assessment of resources available from these identified supports. The ISEL is administered as an interview and includes global self-report assessments of sources of social support from various sources such as friends, family and neighbors. The measure consists of 12 questions rated on a 4-point Likert scale, ranging from "Definitely

False” to “Definitely True”. The ISEL is divided into an equal number of positive and negative statements (“I feel that there is no one I can share my most private worries with”, “If I were sick, I could easily find someone to help me with my chores”). The negative statements are reverse coded. Higher scores of the ISEL represent higher levels of perceived available social supports. Scores range from 12 to 48 with a score of 24 representing typical social support availability (Bauman et al., 2012). Sample items from the ISEL include “When I need suggestions on how to deal with a personal problem, I know someone I can turn to” and “I don’t often get invited to do things with others”. Test-retest reliability for the measure was found to range from .70 to .81 from surveys conducted with populations including battered women, people experiencing homelessness, and community samples. Reliability of the scale has been shown to range from .80 to .91 (Bauman et al., 2012). The ISEL-12 has been used to determine general stress-buffering capacity in PTSD, physical illness, grief, social adjustment, and domestic violence (Platt, Keyes & Koenen, 2014; Stenson & Connolly, 2016; Cooper, Ziegler, Nelsen & Dimsdale, 2009; Ghesquiere et al., 2017). Reliability in this sample was found to be .85.

Community Resilience Indicators

Conjoint Community Resiliency Assessment Measure. The *Conjoint Community Assessment Measure (CCRAM-28)* (See Appendix B) is an instrument that measures perceived community capacity to deal with emergencies and crises (Leykin et al., 2013). The CCRAM-28 is based on five factors of community resiliency after a crisis; leadership, collective efficacy, preparedness, place attachment, and social trust. Questions

in the CCRAM-28 are based on individual assessment of the capability of local service providers such as the fire department, police officers, and lawmakers to respond effectively to the needs of the community. The CCRAM-28 is a self-report measure that is conducted by interview. It is composed of 20 questions and is rated on a 5-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree”. Sample items from the scale include “There are people in my town who can assist in coping with an emergency” and “I have faith in the decision makers in my town”. Initial testing on this model with a population of $n=1052$ yielded a reliability of .85 (Leykin et al., 2013). Reliability of this measure in the sample was .95. The CCRAM-28 has previously been used to determine perceived ability of communities to address emergencies related to war (Eshel & Kimhi, 2016).

The CCRAM-28 includes 5 subscales of perceived community resilience: Preparedness, Leadership, Collective Efficacy, Place Attachment and Social Trust. We use these subscales to measure the four community resilience capacities as outlined by Norris et al., (2008).

Preparedness. Economic Development capacity is measured by the preparedness subscale of the CCRAM-28. This subscale consists of four items that measure perceived preparation of the community to respond to emergencies. It also includes perceptions of personal and community understanding of community systems. Reliability for this subscale is estimated to be .80 (Leykin et al., 2013).

Leadership. Information and Communication capacity is measured by the leadership subscale of the CCRAM-28. This subscale is comprised of 6 questions that

measure faith in community leaders to ensure community functioning, safety, and fairness of service delivery. Reliability of this subscale is estimated to be .91.

Social trust and place attachment. Social Capital is measured by the social trust and place attachment subscales of the CCRAM-28. The place attachment subscale includes four items measuring emotional attachment to one's community, community pride, sense of belonging, and identification with ideological norms. The reliability of this scale is .75. The Social Trust subscale consists of two items that measure perceived quality of relationships in the community, and faith that post-disaster plans are in the best interest of the community. Reliability for this subscale is .85.

Collective efficacy. Community Competence is measured by the collective efficacy subscale. This subscale is composed of five questions that measure individual agency, community participation, and perceived mutual support. Reliability of this subscale is estimated to be .83.

Outcome Measures

Trauma

Impact of Event Scale - Revised. The Impact of Event Scale - Revised (IES-R) (See Appendix C) is an instrument that measures subjective experiences of distress following exposure to a traumatic event (Beck et al., 2008; Horowitz, Wilner, & Alvarez, 1979). The IES-R consists of 12 questions that measure three constructs central to traumatic experiences; avoidance, intrusion, and hyperarousal as well as global assessments of stress. The IES-R has been used to measure levels of trauma and Post-Traumatic Stress Disorder (PTSD) on individuals that have experienced natural disasters,

car accidents, terrorism and sexual assault (Beck et al., 2008; Platt, Keyes, & Koenen, 2014). The IES-R is administered as an interview and includes self-report assessments of thoughts and feelings in the past seven days. Higher scores on the IES-R indicate higher occurrence of PTSD symptoms. A score of 33 or higher on this measure has been shown to be an accurate predictor of PTSD as described in the DSM-IV (Beck et al., 2008). A cutoff score of 24 indicates that the participant is likely to have experienced at least some distress symptoms resembling PTSD. Sample items include “Any reminder about the event brought back feelings about it” and “I stayed away from reminders of it”. The IES-R has been found to have an overall reliability of .94 (Beck et al., 2008; Joseph, 2000). The reliability for this measure in the current sample was found to be .96.

Hope

Adult Hope Scale. An adapted version of the *Adult Hope Scale (AHS)* (See Appendix D) was used to measure respondents’ motivation to solve problems and identification of problem-solving plans. The measure consists of 6 questions and is divided into two subscales: Agency and Pathways. The items ask participants to choose answers that best describe how often statements are accurate to them. Questions include “I can think of many ways to get things that are most important to me” and “Even when others want to quit, I know that I can find ways to solve the problem” Questions are answered using a six-point Likert scale ranging from “None of the time” to “All of the time”. The AHS has been used in studies measuring the hope of individuals diagnosed with cancer, survivors of heart attacks, workplace stress, and academic stress (Avey, Luthans, & Jensen, 2009; Snyder, 2002a, Snyder, 2002b). Psychometric analysis has

revealed that the measure has consistent reliability across various populations (Babyak, Snyder & Yoshinobu, 1993). Reliability of the sample in this measure was .88.

CHAPTER 4: RESULTS

Sample Outcomes

Sample Demographics. Of the sample, 92.9% had earned at least a high-school diploma or higher, and 35.8% of participants had completed a four-year degree equivalent or higher. About 32% of the sample were homeowners, and a remaining 64% were renting their current residence. Only 4% of the population were currently living in a place as a temporary arrangement. Average annual income levels of the sample were \$28,000. Each of these sample demographics, except income, are representative of the population of Columbia, South Carolina. Race and gender demographics, as presented in the participant description, are also representative of the population of Columbia.

Distress. Exposure to the effects from the 2015 floods caused significant distress in the sample. The mean sum on the IES for the sample was 29.82 ($SD = 17.35$) out of a possible score of 88. Scores in the sample ranged from 0 to 86. This mean sum is just under the cutoff score of 33 for probable diagnosis of PTSD, however it is over the cutoff score of 24 signifying that the affected individuals are likely to have experienced at least some symptoms of distress resembling PTSD.

Hope. The sample had moderately high levels of hope. Participants recorded a mean sum of 25.17 (SD=6.37) on the AHS out of the highest possible score of 36, signifying the greatest amount of hope. There was a large range of scores in the sample, with a minimum score of 6 and a maximum score of 36.

Interpersonal Support. Additionally, participants in the sample identified moderately high levels of perceived interpersonal support as measured by the ISEL-12. The sample achieved a mean sum of 25.82 (SD = 7.06) out of a possible score of 36, signifying higher perceived support. Again, there was a large range in the scores, with a minimum score of 8 and a maximum score of 36.

Community Resilience. Perceptions of the community's resilience to disasters was fairly average. The mean sum on the CCRAM-28 was 65.80 (SD = 17.19). This was out of a possible score of 105, signifying greater perceived resilience of the community. Scores on this measure also varied widely, with a minimum score of 24 and a maximum score of 105.

Hypothesis 1

Relationship Between Distress and Hope

Relationships between the study variables are shown in Table 4.1. Bivariate correlations revealed that total scores on the CCRAM-28 had significant correlations with both PTSD symptoms and hope. Community resilience as measured by the CCRAM-28 was positively correlated with hope as measured by the AHS and trauma measured by the IES. Lower scores on the CCRAM-28 were correlated with higher scores on the IES. Surprisingly, perceived interpersonal support was only significantly correlated with hope,

and did not show any significant correlations with PTSD symptoms measured by the IES. Finally, the AHS and the IES were not significantly correlated at all. These results do not support Hypothesis 1, which predicted a negative relationship between number of distress symptoms and hope scores on a self-report measure.

Hypothesis 2 & Hypothesis 3

Relationship of Resilience Capacities to Distress and Hope

We first conducted a hierarchical regression to determine the associations of perceived individual social support and community resilience to trauma and hope. In order to control for socioeconomic vulnerabilities as such as age, gender, and race, we included these variables as covariates entered into Step 1. We also included the time (in days) passed since the initial flooding event on October 1st, 2015 and the date the participant completed the survey measures in this step. The predictor measures, the ISEL-12 and CCRAM-28, were entered into Step 2. Table 4.3 shows the results of these analyses. In Model 1, with the ISEL-12 and CCRAM-28 predicting PTSD symptoms, only the demographic variable of age and the CCRAM-28 were significant predictors of scores on the IES. In Model 2, measuring hope, both the ISEL-12 and CCRAM-28 were significant predictors of hope. None of the demographic covariates were significant in this model. These results support hypothesis 2, which predicted that perceptions of community resilience would be associated with fewer endorsements of psychological distress symptoms rather than individual perceptions of available interpersonal support. Hypothesis 3 was also supported by these results; perceived community resilience

capacity was associated with higher scores on a self-report measure of hope, whereas perceived interpersonal support was not.

Table 4.1
Bivariate Correlations for Study Variables

Variables	IES	AHS	ISEL	CCRAM
Trauma (IES)	--	.15	-.09	-.30**
Hope (AHS)		--	.45**	.32**
Interpersonal Support (ISEL)			--	.18
Community Resilience (CCRAM)				--

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

Hypothesis 4 & Hypothesis 5

Relationship of Community Resilience Capacities to Distress and Hope

After observing the CCRAM-28 was a significant predictor of both PTSD symptoms and hope, we used the subscales (leadership, collective efficacy, preparedness, place attachment, and social trust) to determine which scales would be the strongest predictor of these outcome measures. Table 4.2 shows bivariate correlations between each of the subscales and the outcome measures. Each of the subscales, excluding preparation, were significantly associated with both hope and PTSD symptoms. Social trust and collective efficacy revealed the strongest correlations. In examining the mean scores on the subscales, scores on the preparedness subscale were the lowest with a mean

score of 11.8 (SD = 3.9), out of a possible score of 20. Leadership (M= 18.5, SD = 5.1, out of 30), collective efficacy (M= 16.6, SD = 4.6, out of 25), and social trust (M = 6.4, SD = 2.00, out of 10) were highly rated. Place attachment (M = 12.5, SD = 3.8, out of 20) were moderately rated. These results only partially support hypothesis 4 & 5, which predicted that each of the community resilience capacity subscales would be associated with distress symptoms and hope scores. Each of the subscales were associated with distress and hope scores expect for the preparedness subscale.

Table 4.2
Bivariate Correlations of Community Resilience Subscales

Variables	1.	2.	3.	4.	5.	6.	7.
1. Leadership	--	.83**	.73**	.67**	.67**	.30**	-.27*
2. Collective Efficacy		--	.78**	.76**	.73**	.29**	-.32*
3. Preparedness			--	.61**	.61**	.20	-.17
4. Place Attachment				--	.72**	.30**	-.26*
5. Social Trust					--	.36**	-.33**
6. Hope						--	-.16
7. Trauma (IES)							--

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

Using a multiple linear regression, we entered in each of the subscales in a backwards method to predict PTSD symptoms and hope. In this method, all subscales were first entered into the regression equation and then removed if they did not

significantly contribute to the equation. Table 4.4 shows the results of these analyses. As shown in the table, in Model 1 predicting PTSD symptoms, after removing all nonsignificant variables, collective efficacy was the only subscale that was a significant predictor. Consequently, when predicting hope, social trust was the only subscale that remained as a significant predictor. These results support hypothesis 4, which predicted that the collective efficacy subscale would show the strongest association to distress symptoms. However, these results only partially support hypothesis 5, which predicted that the collective efficacy subscale would show the strongest association to distress symptoms. Social trust was found to have the strongest association.

Table 4.3

Regression Parameters for Relating Interpersonal Support and Community Resilience to Psychological Distress and Hope

Parameter	B	SE	β	F	R²
Model 1: Predicting PTSD				F (6, 82) = 2.816*	.182
Sex	5.77	.15	.161		
Age	.251*	3.98	.159		
Race	-1.46	1.73	-.090		
Time	.018	.012	.178		
ISEL	-.204	.268	-.083		
CCRAM	-.420*	.110	-.237		
Model 2: Predicting Hope				F(6, 82) = 4.621*	.267
Sex	-1.452	1.361	-.109		
Age	.016	.043	.035		
Race	.782	.593	.131		
Time	.001	.004	.033		
ISEL	.358**	.092	.397		
CCRAM	.092*	.037	.247		

*Note. *p < .05,
**p < .01*

Table 4.4
Regression Parameters for Relating Community Resilience Subscales to Psychological Distress and Hope

Parameter	B	SE	β	F	R²
Model 1: Predicting PTSD				F (1, 83) = 9.549**	.104
Leadership	.023	.663	.007		
Place Attachment	.204	.790	.045		
Social Trust	-1.987	-1.479	-.225		
Preparedness	1.066	.771	.240		
Collective Efficacy	-1.210**	.392	-.323		
Model 2: Predicting Hope				F(1, 83) = 9.716**	.106
Leadership	.230	.245	.185		
Place Attachment	.172	.292	.103		
Social Trust	.617**	.548	.190		
Preparedness	-.236	.285	-.145		
Collective Efficacy	.049	.337	.035		

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

CHAPTER 5: DISCUSSION

Community and Individual Resilience Capacity

This paper examined perceived individual and community resilience capacities and their relationship to subjective experiences of distress and levels of hope. From our results, we identified that higher perceived community resilience is associated with higher levels of hope and lower perceived community resilience is significantly associated with more experienced trauma. Community resilience appears to be more robust measure of post-disaster outcomes than individual measures of resilience, such as perceived social support, which was only significantly associated with hope.

Perceived Community Resilience

Participants that perceived their community was adequately prepared to respond to disasters endorsed fewer PTSD symptoms and greater levels of hope. These results highlight the fact that post-disaster, many people look to external sources of support for recovery resources. The perception of availability or access to these resources appears to be a major factor in determining post-disaster experiences for survivors. Acquiring resources for recovery can be an added stressor that creates distress when attempting to restore one's quality of life. The results support Hobfoll's (1991b) theory that conservation and acquisition of resources is a salient stressor. Based on our results, perceived community resilience was a stronger indicator of functioning post disaster than

demographic factors such as race, gender, or income, suggesting that post-disaster distress can affect anyone, regardless of socioeconomic status. Developing positive perceptions of the community's ability to respond to disasters must be a primary concern for facilitating the well-being of its members. The community resilience capacities measured by the CCRAM-28 serve to highlight specific areas where communities can focus on increasing positive perceptions.

Community Resilience Capacities

Collective efficacy was the subscale with the strongest association to distress symptoms. Collective efficacy measures the perception that the community is able and willing to take action in response to the disaster. Collectively, communities that feel confident in their abilities to recover from the stressors presented by disasters appear to have better outcomes following the actual experience of the disaster. Collective efficacy is the population-level measure of self-efficacy, which has previously been shown to have a major impact on treatment outcomes, perseverance, and autonomy (Ryan & Deci, 2002). Perceived lack of autonomy in responding to the disaster has been shown to have negative outcomes. Previous studies have focused on increasing the agency of community members to be able to identify community needs and develop personalized solutions that benefit fellow community members. For example, a study conducted by Ines et al. (2005) examining rebuilding efforts in Peru. The researchers noted that paternalistic rebuilding strategies by government and state agencies dictate the recovery process and did not consider the needs and requests of community members. These types of decisions remove the agency and sense of control from community members and may

do more harm than good. The researchers also highlighted an example in which men and women were designated to specific housing areas, splitting up families and causing even more distress for victims.

Social trust was the community resilience subscale that had the strongest association with hope. Perceived trust in community members to support each other and develop problem-solving plans aligns with the problem-identification and problem-solving aspects of hope. Strongly established community connections between community members can be a major source of support, assistance and resources. Our experience in collecting participants is supported by this finding. Many of the participants included in the sample were recruited through connections with community groups, community meetings, and word-of-mouth from other community members. Non-profit organizations that assisted with rebuilding efforts were also helpful in the recruitment of participants as well as the provision of information and recovery resources to community members themselves.

Perceived Individual Resilience

Perceived social support was strongly associated with feelings of hope, even more so than perceived community resilience. Social support provided by friends and family can be helpful in identifying problem-solving solutions and enacting those solutions. Interpersonal dyads of social support typically provide emotional assistance in times of need (Malecki & Demary, 2003). Interpersonal social support may fill in the gaps of needed support where community resilience sources may not. Interpersonal social support appears to be an effective resource for recovery post-disaster but does not appear

to be an effective measure of resilience. While the perception of available resources may be helpful in identifying or achieving solutions, it appears that different outcomes are associated with the perception of different resilience capacities. These results suggest that the wide variety of stressors presented by natural disasters requires a robust set of support sources, perhaps even recovery sources not available from friends and family

Individual Well-Being

When analyzing the outcomes of the sample, we found that levels of hope and PTSD symptoms are not significantly correlated with each other. The sample endorsed moderate symptoms of trauma, which helped to illustrate that community members were experiencing at least some form of distress. However, they also endorsed high levels of hope, identified a moderately high level of interpersonal social support, and perceived a moderate level of community resilience. These data support our argument that wellness is not simply the absence of symptoms. Wellness also includes positive aspects of life. Despite experiences of distress, as most of our sample endorsed, many participants still perceived that they were able to seek out solutions and have confidence in their ability to overcome challenges presented to them. In fact, hope has been theorized to be the process through which people search for solutions to the distress experienced during natural disasters. Hope may not be affected by the negative effects of natural disasters but may serve to facilitate other methods of recovery post-disaster. Glass et al. (2009) discovered that hope moderates the relationship between coping mechanisms and psychological distress. In fact, people who displayed greater hope in the success of their coping strategy, experienced lower levels of distress, regardless of whichever strategy they used.

Implications for Capacity Building

The CCRAM-28 appears to be a useful assessment tool for measuring different aspects of community resilience. Community leaders may consider using this tool to determine their community's ability to respond to emergencies as well as highlighting any weaknesses or vulnerabilities that may exist. Each of the subscales on the CCRAM-28, excluding preparation, were significantly associated with both hope and lower occurrence of PTSD symptoms. The lack of findings for the preparedness scale is interesting, as it appears economic and physical infrastructure do not play as much of a role in determining resilience as previously expected. Each of the other subscales includes some social component and strengthening the social aspects of communities should be a major aspect of capacity building. Next, we highlight some implications for community leaders when considering methods to increase their community resilience capacities.

Community leaders should focus on strengthening community perceptions of leadership, collective efficacy, place attachment, and social trust. During the recovery process, leaders should be expected to provide information, promote calm and guide the recovery process. Accessible and trustworthy leadership are essential parts of this capacity. Community leaders should ensure they are familiar with the emergency process of the community and are prepared to interact and shape the narrative of the recovery process through accurate dissemination of information. Visible leaders that community members can identify with and trust are key for this capacity. Strengthening collective efficacy includes involving community members in the recovery process. Holding community meetings where members can voice concerns about the types of support they

require in the rebuilding process and allowing community members to take part as volunteers in repairing their community are both recommended. For place attachment, minimizing the displacement caused by either the natural disaster itself or the recovery process is suggested. Having resource and support centers within the community and close to community members will strengthen place attachment. Communities have used local churches and schools as temporary shelters and food banks during the recovery process to help communities. Kloos et al. (2009) highlighted a community recovery effort that utilized local hotels as a resource center and shelter following Hurricane Katrina. Finally, in regard to increasing social trust, community members can be utilized to assist fellow community members in the recovery process. Pairing victims with people from their community or neighborhood. This process ensures that victims and support providers share similar goals and may bring together individuals with shared experiences. This may increase empathy and emotional support needed to recover from the negative effects of the natural disaster.

Finally, the results gathered from this study can help to inform future recovery efforts. As community resilience was found to have significant associations with both distress and hope, future recovery efforts should focus their efforts into the community. Providing community groups, community members, and community leadership with resources to determine local areas of need and empowering community members to take part in the recovery process appears to be an effective method of increasing well-being and reducing negative outcomes. Redirecting decisions and resources from systemic institutions such as FEMA to local organizations may help to facilitate greater positive outcomes.

Limitations

There are a few limitations to this study. First, this was a pilot study using the CCRAM-28 as an assessment tool to measure community resilience. As such, we used a cross-sectional design to generate hypotheses and build upon previous theories of community resilience. The results provided only provide a snapshot of recovery during the period in which the data were collected. A longitudinal study would allow researchers to follow-up on participants to determine any changes in hope, distress symptoms, or perceived interpersonal or community supports throughout the recovery process as well as determine causality between any of the predictor and outcome variables. In our analysis, time was not a significant predictor of either hope or distress symptoms, but follow-up studies over time may reveal duration to be a significant aspect of the recovery process.

Community resilience is a developing concept and researchers are still attempting to establish variables that serve as markers of community resilience. Furthermore, the effect of resilience on outcomes has continued to be point of contention. Researchers such as Cohen and Wills (1985) have suggested that resilience works as a buffer, protecting individuals from experiencing any negative effects at all. As revealed in this study, the mean average of the sample displayed at least some distress symptoms. However, despite experiences of distress, the sample still had moderately high levels of hope. These findings support a competing view of resilience, the “main effects” model. In this model, everyone will experience some type of negative effect; however, the level of this negative effect will be directly influenced by resilience factors such as interpersonal support sources and community resilience capacities. Further research into the effects of

community resilience capacities are needed to truly understand the mechanisms by which these capacities are effective. Furthermore, the CCRAM-28 was only recently developed as an assessment tool. Other measures of community resilience, with different subscales and measures of community resilience exist also exist. While Leykin et al. (2013) have provided valid statistical data proving the effectiveness of the measure, there is scant literature in which the CCRAM-28 is used as the primary assessment tool. We hope this study and future research will continue to prove the merits of the CCRAM-28 as a reliable assessment tool.

Additionally, our sample was representative of the Columbia, South Carolina population in all demographics except for income. This may be due to the large contingent of college students included in the study. Further analysis of income, household value, and neighborhood demographics, such as GIS data, would assist in developing a clearer picture of how outcomes may vary by socioeconomic status. Our sample size was also rather low. When collecting participants, we found it difficult to obtain people who were willing to talk about the events of the flooding, even during the 12-month period in which data was collected. Individuals may have still been in the recovery process the effects of the flooding or may not have been ready to share their story. For individuals that did participate, completing interviews appeared to be therapeutic. Participants were able to share their story about their experience, typically for the first time. Participants shared additional helpful information about their challenges that were not captured by measures of community resilience, psychological distress, or interpersonal support. Qualitative measures would have been a helpful tool to better capture experiences with the historic flooding. Furthermore, this study was conducted in

a smaller southeastern capital city. Columbia, South Carolina may enjoy certain privileges due its status as the capital of the state in regard to garnering disaster support and resources and having pre-existing infrastructure and emergency protocols in place. Future studies in other locations, such as more rural areas would provide support to the results found in this study. It would also be interesting to compare perceptions of community resilience in communities that experience many natural disasters to communities such as Columbia, SC which experience few natural disasters.

Conclusion

After conducting this study, we were able to find evidence that perceived community resilience capacity is an important factor to consider in disaster preparation and recovery. Most people exposed to natural disasters will experience at least some distress following the event. In order to bounce forward and return to effective pre-disaster levels of functioning, communities must have robust resources to assist community members with the various stressors encountered during the event. In addition, communities must ensure the agency of their community members by including their needs and requests during the recovery process. Community members must feel as though leadership will allocate resources fairly and provide information and support that will allow community members to make sense of the situation and feel as though there are effective solutions for rebuilding. The perceived availability of support, whether in the community or from interpersonal sources allows individuals to locate solutions and have confidence in their ability to obtain them. By building the capacity for communities

to respond to disasters, communities may be able to reduce the impact of natural disasters when they inevitably occur and protect the well-being of their citizens and neighbors.

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APPENDIX A

INTERPERSONAL SUPPORT EVALUATION LIST (ISEL)

	Definitely False	Probably False	Probably True	Definitely True
<p>ISEL1</p> <p>If I wanted to go on a trip for a day (for example, to the park or the lake), I would have a hard time finding someone to go with me.</p>	1	2	3	4
<p>ISEL2</p> <p>I feel that there is no one I can share my most private worries and fears with.</p>	1	2	3	4
<p>ISEL3</p> <p>If I were sick, I could easily find someone to help me with my daily chores.</p>	1	2	3	4
<p>ISEL4</p> <p>There is someone I can turn to for advice about problems with my family.</p>	1	2	3	4

<p>ISEL5</p> <p>If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.</p>	1	2	3	4
<p>ISEL6</p> <p>When I need suggestions on how to deal with a personal problem, I know someone I can turn to.</p>	1	2	3	4
<p>ISEL7</p> <p>I don't often get invited to do things with others.</p>	1	2	3	4
<p>ISEL8</p> <p>If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, etc.).</p>	1	2	3	4
<p>ISEL9</p> <p>If I wanted to have lunch with someone, I could easily find someone to join me.</p>	1	2	3	4

<p>ISEL10</p> <p>I was stranded from home (too far to walk), there is someone I could call who could come and get me.</p>	1	2	3	4
<p>ISEL11</p> <p>If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.</p>	1	2	3	4
<p>ISEL12</p> <p>If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.</p>	1	2	3	4

APPENDIX B
 CONJOINT COMMUNITY RESILIENCE ASSESSMENT MEASURE
 (CCRAM-28)

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
CCRAM1 The municipal authority (regional counsel) of my town functions well.	1	2	3	4	5
CCRAM2 There is mutual assistance and concern for others in my town.	1	2	3	4	5
CCRAM3 My town is organized for emergency situations.	1	2	3	4	5
CCRAM4 I am proud to tell others where I live.	1	2	3	4	5

CCRAM5					
The relations between the various groups in my town are good.	1	2	3	4	5
CCRAM6					
I have faith in the decision makers in the municipal authority (regional counsel).	1	2	3	4	5
CCRAM7					
I can depend on people in my town to come to my assistance in a crisis.	1	2	3	4	5
CCRAM8					
The residents of my town are acquainted with their role is in an emergency situation.	1	2	3	4	5
CCRAM9					
I feel a sense of belonging to my town.	1	2	3	4	5
CCRAM10					
There is trust among the residents of my town.	1	2	3	4	5

CCRAM11 In my town, appropriate attention is given to the needs of children.	1	2	3	4	5
CCRAM12 There are people in my town who can assist in coping with an emergency.	1	2	3	4	5
CCRAM13 In my town, there are sufficient public protection facilities (such as shelters).	1	2	3	4	5
CCRAM14 I remain in this town for ideological reasons.	1	2	3	4	5
CCRAM15 I have faith in the ability of the elected/nominated head of my town to lead the transit from routine to emergency management of the town.	1	2	3	4	5

CCRAM16 I believe in the ability of my community to overcome an emergency situation.	1	2	3	4	5
CCRAM17 My family and I are acquainted with the emergency system of my town (to be activated in times of emergency).	1	2	3	4	5
CCRAM18 I would be sorry to leave the town where I live.	1	2	3	4	5
CCRAM19 The municipal authority (regional council) provides its services in fairness.	1	2	3	4	5
CCRAM20 The residents of my town are greatly involved in what is happening in the community.	1	2	3	4	5
CCRAM21 The residents of my town will continue to receive municipal services during an emergency situation.	1	2	3	4	5

APPENDIX C

IMPACT OF EVENT SCALE – REVISED (IES-R)

	Not at all	A little bit	Moderate	Quite a bit	Extreme
IES1 Any reminder brought back feelings about it	0	1	2	3	4
IES2 I had trouble staying asleep	0	1	2	3	4
IES3 Other things kept making me think about it	0	1	2	3	4
IES4 I felt irritable and angry	0	1	2	3	4
IES5 I avoided letting myself get upset when I thought about it or was reminded of it	0	1	2	3	4
IES6 I thought about it when I didn't mean to	0	1	2	3	4
IES7 I felt as if it hadn't happened or wasn't real	0	1	2	3	4

IES8 I stayed away from reminders about it	0	1	2	3	4
IES9 Pictures about it popped into my mind	0	1	2	3	4
IES10 I was jumpy and easily startled	0	1	2	3	4
IES11 I tried not to think about it	0	1	2	3	4
IES12 I was aware that I still had a lot of feelings about it, but I didn't deal with them	0	1	2	3	4
IES13 My feelings about it were kind of numb	0	1	2	3	4
IES14 I found myself acting or feeling as though I was back at that time	0	1	2	3	4
IES15 I had trouble falling asleep	0	1	2	3	4
IES16 I had waves of strong feelings about it	0	1	2	3	4
IES17 I tried to remove it from my memory	0	1	2	3	4
IES18 I had trouble concentrating	0	1	2	3	4

IES19 Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart	0	1	2	3	4
IES20 I had dreams about it	0	1	2	3	4
IES21 I felt watchful or on-guard	0	1	2	3	4
IES22 I tried not to talk about it	0	1	2	3	4

APPENDIX D
ADULT HOPE SCALE (AHS)

	None of the time	A little of the time	Some of the time	A lot of the time	Most of the time	All of the time
HOPE36 P-36. I think I am doing pretty well.	1	2	3	4	5	6
HOPE37 P-37. I can think of many ways to get the things that are most important to me.	1	2	3	4	5	6
HOPE38 P-38. I am doing just as well as other people my age.	1	2	3	4	5	6
HOPE39 P-39. When I have a problem, I can come up with lots of ways to solve it.	1	2	3	4	5	6

HOPE40						
P-40. I think the things I have done in the past will help me in the future.	1	2	3	4	5	6
HOPE41						
P-41. Even when others want to quit, I know that I can find ways to solve the problem.	1	2	3	4	5	6