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Physical Distress and Psychological Outcomes: An Examination of Hurricane Katrina Rebuilders

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This is to certify that the doctoral dissertation by

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Abstract

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by

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MPH, Walden University, 2012

MSW, Tulane University, New Orleans, 1982

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Dissertation Submitted in Partial fulfillment of the

Requirements for the Degree of Doctor of Philosophy

Public Health

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Abstract

Hurricane Katrina made land fall in New Orleans on August 29, 2005. When Hurricane Katrina came ashore at the mouth of the Mississippi River it struck with such vengeance that the protective levees surrounding the New Orleans area were breached. The purpose of this quantitative research is to broaden the understanding the relationship between two phenomena: physical distress and posttraumatic growth among Hurricane Katrina rebuilders who rebuilt their lives 15 years following a natural disaster along the Gulf Coast. The Conservation of Resources and Self-Efficacy Theory were the theoretical framework for this study. The research questions examined if statistically significant relationships existed between the most prevalent factor of the Posttraumatic Growth Inventory (PTGI) and the top medical/health manifestations of the Perseverance & Behavioral Health Screen (PBHS) in Hurricane Katrine survivors. All of the survivors who responded to surveys were 18 years or older when Hurricane Katrina came ashore. The final analysis of data used 347 surveys although 457 were collected. Data was analyzed using The Statistical Package for the Social Sciences (SPSS) version 25. The statistical tests used were regression, frequency, and correlation chi squared. Findings showed there was no significant relationship between the medical manifestations and PTGI variable are relating to others, new possibilities, personal strength, spiritual change, and appreciation of life, and trauma experiences of loss of property and personal tragedy. The anticipated social change implications of this study will involve assistance to communities and governments to improve their disaster recovery model. Citizens, community leaders, and governmental leaders could use the research for future disaster planning.

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Dedication

I would like to dedicate this research to all the Hurricane Katrina survivors that keep it moving no matter what. Through the fight with FEMA, insurance companies, the City of New Orleans, and all the visitors that keep coming to New Orleans. They know why we had to come back.

Secondly, I dedicate this research to the social workers of America and the world that have a lot to say but do not because they are always busy taking care of someone else. To the social workers who do research despite it not being the norm for social workers, I dedicate this to you as well.

Finally, I want to dedicate this dissertation to those that provided me with the moral support that I needed throughout this process. The ones that kept telling me to do as much as I could daily and to not give up. The group that I missed social or cultural activities with because I had schoolwork. I missed a lot, but they did not mind, and they would always ask, "How's it going with the dissertation Muse?"

Lastly, I want to dedicate this dissertation to my partner, Delecia Brister.

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Chapter 1: Introduction to the Study

Introduction

When Hurricane Katrina came ashore at the mouth of the Mississippi river in 2005 it struck with such vengeance that the protective levees surrounding the New Orleans area were breached. This research on physical distress and psychological outcomes of posttraumatic growth was the first conducted on community residents who rebuilt their lives 15 years following a natural disaster along the Gulf Coast. Hurricane Katrina survivors are the population for this study. The independent variable is psychological response to trauma that are measured by PTGI. Medical and health manifestations are the dependent variable which was measured by PBHS. The gap in the literature is the length of time between disaster and physical and psychological distress. The research in the literature was conducted within 6 months or 3 years after Hurricane Katrina came ashore. This research was conducted 15 years after Hurricane Katrina came ashore. My research enhances the medical and mental health service delivery mechanisms that follow a natural disaster. This research compliments and contributes to enhancing the community resources for future disaster planning as well as additional planning for disaster aftermath.

The concept of posttraumatic growth as a positive psychological change experienced because of highly challenging life circumstances was developed by Tedeschi and Calhoun (1996, 2004). Tedeschi and Calhoun's (2004) notion of posttraumatic growth implies an outcome (growth) and a process (struggle through stress after traumatic event). Posttraumatic growth is the process where one's perception of stressful situations garner personal growth (Chan & Rhodes, 2013). In this examination of Hurricane Katrina rebuilders' posttraumatic growth,

several studies noted limitations worth mentioning. Chan et al. (2015) examined the long-term mental health of Hurricane Katrina's low-income survivors. Study limitations were the lack of data collection and tangible support services accessibility during the post disaster periods. Cook, et al. (2013) investigated resources loss, religiousness, health, and posttraumatic growth after Hurricane Katrina. They stated that two study limitations were data collection at a single point in time and may have been collected too close to the actual disaster. Cook et al. suggested that a longer period following a disaster allows for rebuilders deliberately and intentionally process personal losses and experiences. Their research on posttraumatic stress and posttraumatic growth was conducted within a 5 year period following natural disasters. Bouwens and Tosone (2014). Harville, et.al (2009) examined pregnant and postpartum women after Hurricane Katrina. Their results indicated that women grew and benefited from their trauma.

Wortman (2004) provided a commentary on posttraumatic growth. Wortman interprets posttraumatic growth as encouraging psychological modification experienced following challenging life circumstance. Wortman credit Tedeschi and Calhoun with providing a programmatic baseline of how posttraumatic growth should be measured and the development of a scale. Wortman stated that Tedeschi and Calhoun believe that for posttraumatic growth to happen, cognitive processing disclosure must occur. Wortman believes that cognitive processing does not have to occur; however, disclosure is a must. Wortman believed that Tedeschi and Calhoun were too confident in assuming that people would respond to disclosures of distress with compassion and worry. Wortman believes that communities are a long way from demonstrating psychological growth by its members. Wortman stated disseminating the notion that everyone will have psychological growth may have an argumentative effect on persons that

experience trauma. The trauma of a natural disaster on a community and an individual can be measured in the resiliently of that individual and community. Individuals had numerous interactions with federal government agencies, employers, and state and city systems. Individuals started to experience relief that "I completed that task of finding work or receiving a Federal Emergency Management Agency (FEMA) settlement. Some of the worry was gone. I do not think many rebuilders gave posttraumatic growth much thought. They were putting one foot in front of the other every day.

Background

Hurricane Katrina hit New Orleans on August 29, 2005. The residents of New Orleans were under a mandatory evacuation order executed by then Mayor Ray Nagan. The levees were breached allowing Hurricane Katrina's storm surge to flood the New Orleans area creating devastating and tragic circumstances and rendering 80% of the entire city engulfed with waters (CDC, 2006). Those who did not evacuate the city had to be rescued by boats, helicopter, and transported to the Louisiana Superdome, the Morial Convention Center, or other parts of Louisiana and the country. The Coast Guard and the first responders handled the movement of those requiring rescue assistance (Mack, Brantley, & Bell, 2007). Residents were denied return to the city immediately following Katrina's landfall without identification as essential personnel.

Voelker (2005), reported that the American Psychiatric Association, the American Red Cross, the state psychiatric associations in Louisiana and Mississippi helped countless hurricanes survivors. Physician-led teams went into shelters to identify people who needed mental health treatment. At the, time Katrina was different from other US disasters by the vast geographic distance of distribution and the movement of hundreds of thousands of people. Post the medical

director for Capitol Area Human Services District in Baton Rouge stated that mental health repercussions had yet to be seen.

The United States Governmental Accountability Office reported that New Orleans lost 80% of its hospital beds and 75% of its clinics (Caldwell, S. L. 2006). With this substantial loss of medical and emergency care, access was practically nonexistent. Jiao, Z et al. (2012) examined the incidence of Acute Myocardial Infraction (AMI) in the New Orleans area three years after Hurricane Katrina. The study was conducted at Tulane University Health Science Center (TUHSC) in New Orleans and found an increase of AMI during that time. Jiao et al, suggested that the behavioral struggles and socioeconomic stressors may have contributed to the increase rates of AMI.

Ronald Kessler (n.d.) reported on behalf of the Hurricane Katrina Community Advisory Group that rebuilders had their chronic disease treatment disrupted by Hurricane Katrina. Transportation (23.3%), medication (32.5%), insurance/financial ((29.3%), time to go to the doctor (10.9%) and accessing a physician (41.1%) were reasons he stated for care disruption. Kessler went on to recommend that disaster management plans forecast the need for primary care services and address those structural determinants to treatment. FEMA authorized semi-permanent travel trailer parks communities where an internally displaced person (IDP) could reside for up to 2 years. Shehab, Anastanio, and Lawry (2008) evaluated heath care access of residents living in trailer parks in Mississippi. Their findings indicated a decline in residents' mental health, increases in chronic disease and obstruction to health care access because of displacement.

Natural disasters are known to generate the human psychological response of posttraumatic stress disorder (PTSD). Hurricane Katrina was one such disaster with rebuilders projected to demonstrate posttraumatic growth as a positive psychological change. The use of Tedeschi and Calhoun's (2004) PTGI for retrospectively examining posttraumatic growth among Hurricane Katrina rebuilders allowed me to ascertain the level of psychological development experienced through overcoming the numerous challenges of rebuilding their individual lives and that of their respective communities. In their examination of posttraumatic growth rebuilders, several studies noted limitations worth mentioning. Chan et al. (2015) examined the long-term mental health of Hurricane Katrina low-income survivors. A study limitation was the lack of enough data collected on support services availability during post disaster periods. Cook et al. (2013) investigated the loss of resources, religiousness, health, and posttraumatic growth after Hurricane Katrina. They stated that two study limitations were that the data was collected at a single point in time and that it may have been collected too soon after the actual disaster.

Bishop and Thornby (2009) addressed the attitudes of clinical activities and the post operational attitudes of mental health professionals responding emergently to a mass urban evacuation. The researchers attempted to profile, in quantitative terms the clinical efforts of psychiatrists and mental health professionals as consultants to a medical reception team in a large-scale evacuation. The results represent an effort to characterize the clinical activity of mental health providers (primary psychiatrist) as early responders to mass urban evacuation of sick or injured disaster victims. Nine of 11 providers returned the questionnaire. This study provided data obtained from psychiatrist and mental health professionals that participated in one of the principal medical evacuation reception centers, in Ellington Field, a former Air Force base

near Houston Texas. In major disasters, psychiatric consultants are likely to play a critical role in providing emergency mental health services for both medical evacuees and evacuated medical professionals. The questionnaire used in the survey had not been used or validated in prior studies. The survey was designed for this event. Another limitation was the anonymity of the participants. The survey cannot be regarded as anonymous because some portions of the survey did not apply to certain disciplines.

VanDevanter et al. (2010) questioned the role of public health emergency responder in a natural disaster. The role is evolving, and many challenges remain, in particular, a clear articulation of the public health role in emergency response, the integration of the public health and emergency responder culture, identification of the scope of training needs and strategies to maintain new public health emergency responses skills, and closer collaboration with emergency response agencies. The limitations are that oral histories are subject to the failings of the participant's memory, self-serving motives, differences in intension, inaccurate perceptions and the power relationships between the interviewer and the participant. The findings cannot be generalized, the data provided insights and suggestions for strategies to strengthen emergency response competencies among public health workers.

Vu and Vanlandingham (2011) analyzed the physical and mental health consequences of Hurricane Katrina on Vietnamese immigrants in New Orleans. According to the U. S. Census Bureau 12,000 Vietnamese - Americans lived in the New Orleans area pre-Hurricane Katrina. The Vietnamese were the largest immigrant population affected by Hurricane Katrina in New Orleans. Vu and Vanlandingham, administrated the SF-36 to 128 Vietnamese in New Orleans. The SF-36 was administrated in three waves: summer 2005, before Hurricane Katrina; fall 2006,

near the first anniversary of the disaster; and fall 2007, near the second anniversary date. Vu and Vanlandingham constructed for mental health and physical health and physical trauma dimensions from 36 questions of the SF-36. The mental health dimensions are general mental health, social functioning, role limitations due to emotional problems, and vitality. General health perception, physical functioning, role limitation due to physical health problems, and body pain are the physical health dimensions. Mental health components summaries and physical health summaries for the Vietnamese communities showed a decline during the first-year post - Katrina. In the second anniversary, the health recovery of the population where eight of the Mental Health Components Summaries and Physical Health Summaries were statistically indistinguishable from the pre-Katrina averages. Vu and Vanlandingham, report low prevalence of PTSD and quick rebound in mental and physical health at 2-years post disaster. The resilience among the Vietnamese Americans could be related to the history of Vietnamese dislocations. Furthermore, Vietnamese have a strong tie to other Vietnamese communities outside the New Orleans area.

Chan and Rhodes (2013) probed individual religiosity relative to coping with posttraumatic stress, psychological distress, and posttraumatic growth among female survivors 4 years after Hurricane Katrina. The limitations indicated that religious affiliation was associated with posttraumatic growth although the authors did not use all the religious items in the inventory. Cook et al. (2013) suggested that a longer time following a disaster allows for rebuilders to process losses and experiences. Cook et al. also suggested that future research examining long term posttraumatic growth following Hurricane Katrina is warranted.

Purpose of Study

The purpose of this explorative quantitative study was to broaden the understanding of the relationship between two phenomena: physical distress and posttraumatic growth among Hurricane Katrina rebuilders. This research on persons who experienced Hurricane Katrina and the relationship of physical distress and the psychological outcomes of posttraumatic growth was the first conducted on communities rebuilt 14 years following a natural disaster along the Gulf Coast of the United States. Physical distress and psychological distress can be endangered by a natural disaster. Posttraumatic Growth has been identified by Tedeschi and Calhoun (2004) as a positive psychological change resulting from the struggles associated with highly challenging life circumstances. This research project focused on Hurricane Katrina rebuilders self-identified as pre-Katrina New Orleans' residents who were 18 years of age or older when Katrina came ashore, returned to the city within four years post-Katrina and have reestablished residence within the city limits. Psychological responses to trauma was the independent variable as measured by PTGI and physical manifestations was the dependent variable as measured by PBHS. The study subjects were Hurricane Katrina survivors. To measure the capacity of an individual and community to take advantage of resources that were available following Katrina, PBHS and PTGI was administered. The PBHS (Appendix I) and the PTGI (Appendix II) was provided to community planners and disaster management teams with tools to target interventions for rebuilding. A modified version of the PBHS and the PTGI was administered to 300 or more of these rebuilders to ascertain levels of physical distress, their medical manifestations and psychological development experienced through overcoming the numerous challenges of rebuilding their individual lives and that of their respective communities.

Research Questions

RQ1: For those that experienced Hurricane Katrina is there a statistically significant relationship exist between the most prevalent factor of the PTSI and the top five medical/health manifestations of the PBHS in Hurricane Katrine survivors?

Ha1: For those that experienced Hurricane Katrina there is a relationship between the factors of PTSI and the medical manifestations of the PBHS in Hurricane Katrina survivors.

H01: For those that experienced Hurricane Katrina there is not a relationship between the factors of PTSI and the medical manifestations of the PBHS in Hurricane Katrina Survivors.

RQ2: For those that experienced Hurricane Katrina there is a statistically significant relationship exist between the top five medical /health manifestations and the highest rated group of traumatic experiences on the PBHS in Hurricane Katrina survivors?

Ha2: For those that experienced Hurricane Katrina there is a relationship between medical manifestations and the traumatic experiences identified on the PBHS in Hurricane Katrina survivors.

H02: For those that experienced Hurricane Katrina there is not a relationship between medical manifestations and the traumatic experiences identified on the PBHS in Hurricane Katrina survivors.

RQ3: For those that experienced Hurricane Katrina there is a statistically significant relationship among the three groups of variables: #1 rated factor of the PTSI, the top five

medical/health manifestations and the #1 rated group of traumatic experiences on the PBHS identified by Hurricane Katrina survivors?

Ha3: For those that experienced Hurricane Katrina there is a statistically significant relationship between the #1 rated factor of PTSI, the top five medical manifestations of the PBHS and the #1 rated group of traumatic experiences of the PBHS in Hurricane Katrina survivors.

H03: For those that experienced Hurricane Katrina there is not significant relationship between the #1 rated factor of PTSI, the top five medical manifestations of the PBHS and the #1 rated group of traumatic experiences of the PBHS in Hurricane Katrina survivors.

The statistical test include association (correlation –chi-squared) to determine strength and direction of association; the hypothesis testing multi regression analysis to determine significance of the relationships between predictors and outcome variables with a unit change in predictor variables (Bata-coefficients).

Theoretical Framework

Hurricane Katrina rebuilders have lived with loss of family, homes, communities, and jobs. The challenges experienced by Katrina rebuilders manifested into stress levels that was examined through the utilization of several theoretical frameworks. The Conservation of Resources (COR) theory assumes that loss is the key component of stress. (Hobfoll et al. 1996,). The application of principles of COR undergird the examination of loss in this research project.

The principle is: resource loss is more powerful than resource gain and resources must be invested to gain resources or prevent their loss.

Self-Efficacy Theory (Bandura, 1977) was used to describe Hurricane Katrina rebuilders ability to master community development and achieve a positive outcome. Bandura, there are three factors that influence self-efficacy: environment, behaviors, and personal/cognitive factors (Bandura, 1977). These factors are influenced by the availability of resources before and after a natural disaster.

Chan & Rhodes (2013) measured the degree of exposure severity in the study of the impact of natural disasters. Chan & Rhodes examined the incomplete and inconsistent measurement of exposure limits the internal and external validity of disaster studies. A meta-analysis was done of eight studies that measured both exposure severity and posttraumatic stress. The second study an integrative data analysis of five independent samples of hurricane Katrina survivors, compared the impact of specific disaster-related stressors on mental health. The meta-analysis used eight studies. The second study requested raw data from 21 independent research groups. They did receive raw data from nine research groups. All the studies used survivors of Hurricane Katrina over the age of 18. In the meta-analysis, it was confirmed that there was a small to medium positive relationship between exposure severity and posttraumatic stress. The in between studies homogeneity in the magnitude of this relationship was partially explained by two samples and study factors, namely the number of minority participants and number of questions asked about disaster related stress (DRS). The meta-analysis number of eight was a limitation. The generalizability of the results is limited by the narrow scope of the inclusion criteria (Hurricane Katrina). Finally, all the authors of the eight studies primary studies

created a composite score with the various DRS. In the second study, the lack of between study overlap in stressor inclusion and outcome measures made it challenging to conduct meaningful cross-study comparison. Also, the second study only used DRS and omitted secondary and chronic ones, such as financial, occupational, and marital stressors. Finally, the last limitation was the integrative data analysis (IDA) were cross sectional in design.

Harbin, (2015), investigated bioethics and psychiatric ethics regarding the substantial field of qualitative and quantitative research into posttraumatic growth. There were two ethical concerns about this account of posttraumatic growth and the practice of growth-oriented therapy. The first concern is the status and effects of the idea of posttraumatic health implicit in their account and the second concern about the ethical implications of the clinical recommendations for the post-trauma patient.

Harris, Erbes, Engdahl, Tedeschi, Olson, Winskowski, and McMahill, (2010) identified specific prayers functions related to PTG while considering differences due to types of trauma experienced. Participants were trauma survivors from diverse, Midwestern Christian churches (N=327). Participants completed questionnaires assessing trauma history, prayer coping functions, and PTG. Multiple linear regression analyses found that praying for calm and focus was independently related to higher levels of PTG. The findings suggested that contemplative approaches to prayer coping, such as medication, reflection, and self-disclosure to the Deity, can facilitate posttraumatic growth

Nature of Study

The nature of this study was an exploratory and quantitative design. This research on persons who experienced Hurricane Katrina and the relationship of physical distress and the

psychological outcomes of posttraumatic growth was the first conducted on community residents who rebuilt their lives 15 years after a natural disaster along the Gulf Coast of the United States. Physical distress and psychological distress can be prompted by a natural disaster. Participants who experienced Hurricane Katrina are examined in this study. Psychological responses to trauma are the independent variable as measured by PTGI. Medical and health manifestations are the dependent variable as measured by PBHS. The participants provided an exploratory retrospective self-reported examination of the five factors of the PTGI and a modified version of the PBHS. The PTGI and PBHS were administrated to convenience samples of several independent populations in New Orleans. One such population selected was graduate and undergraduate students at Southern University in New Orleans. Southern University in New Orleans has a history of educating non-traditional students, including full-time workers and older people. There is a sizable number of middle-age and older students in under-graduate programs. The participants represent several departments on campus (social work, substance abuse, education, and criminal justice). Another selected population were churches in New Orleans. I received permission from my pastor to use the snowball sampling on his associates. There were s over 300 subjects recruited and screened for participation from the current population of the city of New Orleans. The participants were self-reported as 18 years of age and older when Hurricane Katrina made landfall. Hurricane Katrina is the independent variable. Participant's response to the PTGI and a modified version of the PBHS were the dependent variables. The Institutional Review Board (IRB) of Walden University approved and monitored this research to completion. The IRB of Southern University in New Orleans also approved and monitored this research.

Significance

This study will influence community resources and governmental emergency preparedness pre- and post-natural disaster. The amount of perceived loss and actual loss by a community determines the effectiveness of resources provided by social and governmental agencies. August 29, 2019 marked the 15th anniversary of Hurricane Katrina. Physical and psychological distress can result from a natural disaster. In the Morbidity and Mortality Weekly report, rebuilders returning to New Orleans after Hurricane Katrina faced physical, mental, and social obstacles. Sastry and Gregory (2012), examined the effects of Hurricane Katrina on health disparities in New Orleans. Several previous studies used the PTGI (Appendix II) to examine the phenomenon of posttraumatic growth. Cook, Aten, Moore, Hook and Davis (2013) examined posttraumatic growth among 189 students at the University of Southern Mississippi four months following Hurricane Katrina. Lowe, Monroe, and Rhodes (2013) also studied posttraumatic growth among 386 low-income gulf coast mothers in the first- and third-years following Hurricane Katrina.

This research project was the first examination of physical health and posttraumatic growth 15 years following any natural disaster in the Gulf South and more specifically Hurricane Katrina among New Orleans rebuilders using Tedeschi and Calhoun's 1997 PTGI. The rebuilders, self-identified using a modified version of the PBHS as a screening tool (Appendix I) to determine eligibility for participation. The PBHS and PTGI are retrospective self-reported instruments. Benight, & McFarlane (2007) offered disaster research recommendations for planning and implementing disaster mental health studies. Natural disaster recovery is a process

by which humans adapt to tragedy. This article also gave theories to use for investigation. My research questions were developed around etiology and adaptation.

Possible Types and Sources of Data

Demographic and other pertinent data were collected using the modified PBHS (Appendix I). The PBHS provided demographic information (age, gender identification, race, parish, current zip code, and previous residence before Hurricane Katrina, and experiences in the aftermath of Hurricane Katrina (property, injury, disruption of education, need for rescuing, separation from family or friends, death of family members, friends or pets, and cohabitation by necessity). Medical distress symptoms and diagnoses (high blood pressure, skin irritation, diabetes, heart illness and reproductive health) are addressed in the PBHS.

The PTGI is a self-administered questionnaire that asked participants to rate their experiences in five domains (relating to others, new possibilities, personal strength, spiritual change, and appreciation of life) while rebuilding their lives after the traumatic experience. PTGI has 21 questions measuring posttraumatic growth on a Likert Scale from 0 = did not experience this change to 5 = 1 experienced this change to a very great degree. Richard Tedeschi, the developer of the PTGI, gave permission to use the inventory for this research (Appendix 1).

The elements of PBHS are loss of property, personal tragedy, and location. These factors allowed for relationship analysis with the medical conditions (Appendix 1). A bivariate analysis was used to determine any relationship between PBHS factors and the medical information. Correlational coefficient was used to measure the strength and the direction of the association between the categories.

The PTGI has five factors (referring to others, new possibilities, personal strength, spiritual change, and appreciation of life) in rebuilding lives after a traumatic experience. The relationships between the PTGI factors and the top five medical manifestations was determined through bivariate analysis. Bivariate distribution was used to compare the medians to determine any association between the variables (Frandfort-Nachmian & Nachmias, 2008. The PTGI correlation coefficient was to measure the strength and the direction of the association between five of the medical/health manifestations.

The level of data collected was nominal, ordinal, interval, and ratio on each instrument. Multiple regression analysis was used to assess relationship among the three groups of variables: #1 rated factor of the PTGI, the top five medical/health manifestations and the #1 rated group of traumatic experiences on the PBHS identified by the participants.

Summary

In this chapter, I presented information on physical distress and psychological outcomes following a natural disaster. I also presented a theoretical lens through which physical distress and psychological outcomes can be addressed. In the next chapter, I examine literature and identify gaps in knowledge. Some of the areas I discussed posttraumatic growth, conservation of resources, and self-efficacy.

Chapter 2: Literature Review

Introduction

This research on physical distress and the psychological outcomes of posttraumatic growth was the first conducted on community residents who rebuilt their lives 15 years following a natural disaster along the Gulf Coast of the United States. Physical distress and mental health can be facilitated by a natural disaster. The research will serve to enhance medical and mental health service delivery mechanisms after a natural disaster. This research complimented work on the types and levels of community resources required for disaster planning.

This research project was the first examination of physical health and posttraumatic growth, 15 years following any natural disaster in the Gulf South of the United States. This literature review begins with the examination blueprint I used for finding literature. I present physical distress, psychological distress, and the posttraumatic growth model as the theoretical framework and supporting studies. Next, a literature search on the key concepts of physical distress, psychological distress, and posttraumatic growth is conducted. My goal was to answer questions regarding the study of physical and psychological distress in disaster survivors.

Literature Search Strategy

The literature search began December 2018. My approach comprised of assessing key words in Walden University Library Health Sciences Research databases. The databases inquiry included MEDLINE with Full Text, Elsevier with Full Text, CINAHL Plus with Full Text, ProQuest Nursing & Allied Health Source, PubMed, and Science Direct. I narrowed the search to primary peer-review articles published between 2008 and 2019, unless an original article

added context to the review. Furthermore, a Thoreau multidata base search was conducted. The search topics were *hurricane, natural disaster, Hurricane Katrina, posttraumatic syndrome, posttraumatic growth inventory, physical distress, primary health care during a natural disaster, and primary health care during hurricane Katrina.* I excluded articles that focused on children, youth or young adults that were not 18 when Hurricane Katrina came ashore.

Theoretical Foundation

Conservation of Resources

Hurricane Katrina rebuilders have lived with loss of family, homes, communities, and jobs. The challenges experienced by Katrina rebuilders manifested into stress levels that was examined through the utilization of two theoretical frameworks. COR Theory advances that citizens that are already lacking in resources are vulnerable to loss spirals, and citizens with abundant assets will have more opportunity for assets gains. The theory is that citizens struggle to attain and protect their resources at all times (Morelli and Cunningham, 2012,). Hobfoll and Schumm, offered a framework for executing public health promotion strategies by spotlighting the resources of the communities and individuals (2002). According to Hobfoll and Schumm (2002), COR was developed in response to the need to consolidate both the objective and perceived environment into the process of coping with stress. The application of principles of COR was undergird the examination of loss in this research project. The principle is: resource loss is more powerful than resource gain and resources must be invested to gain resources or prevent their loss. Cook, Aten, Moore, Hook and Davis (2013) reported that individuals affected by Hurricane Katrina suffered large scale losses and stress, and which likely led to diminished ability to cope and elevated risk of health. Cook et al. (2013) suggested that additional research

should investigate a wider spectrum of health feedback to resources loss following disasters and at varying time intervals.

Weisaeth, Dyb, and Heir (2007) published a commentary on the "Five Essential elements of Immediate and Mid-Term Trauma Intervention: provided empirical evidence' by Hobfoll, Watson et al. It examined the five intervention principles that are said to promote a sense of safety, calming, efficacy connectedness, and hope (2007). Weisaeth et al. supported the approach with the five principals to achieve consensus in a field that has controversy. Weisaeth et al. agreed that the natural resilience of citizens can be explored by using "psychological first aid". To lessen the gap in psychological disaster interventions, mental health professionals have become more involved in offering interventions. However, evidence of efficacy of their work is lacking.

Morelli and Cunningham (2012) tested the proposition that perceived importance of ones resources is a function of personal values. The study investigated the possible connection between COR, value systems and stress coping responses (Morelli & Cunningham, 2012). The purpose of this study was to determine whether values act as a mechanism that determines the value or importance attached to psychosocial resources. It was hypothesized that resource-importance assessment could influence citizens choice of coping strategy or behavior (Morelli & Cunningham, 2012). Data were collected from two sources: students, and workers. Morelli and Cunningham administrated the Shortened Schwartz Value Survey (SSVS; 1994). According to Morelli and Cunningham, this tool has the ability to summarize the value dimensions and it is an accessible tool. Limitations of the study were measurement limitations, resource ranking, and a cumbersome value scale. There was also homogeneity of the samples of subjects (Morelli &

Cunningham, 2012). Finally, data collection at times was skewed (Morelli & Cunningham, 2012). Morelli and Cunningham determined that the importance of resources is perceived differently as a result of personal value systems that influence coping outcomes.

In Conservation of Resources Evaluation, Hobfoll, Johnson, Ennis, and Jackson (2003), studied 714 inner city women to examine how women's psychosocial resources are impacted by economic stress. The study specifically examined (1) how change in maternal loss influences the psychological resources of mastery and social support, (2) how loss and gain of mastery and social support resources impact depressive mood and anger, and (3) the extent that the impact of material loss on depressive mood and anger is mediated by change in mastery and social support. Participants were between the ages of 16 and 29, and 54% (n = 383) were African American, while 42% (n= 297) were European American; the others did not report an ethnic group. Participants reported having no children 39%, one child 33%, two children 17%, or more than two children 5%. Income was also reported. The annual income reported by 28% of the sample was under $10.000, 21% reported income between $10,000 and $15,000, 12% reported income between $15,001 and $25,000, and 14% reported income above $25,000 annually. Participants were recruited from two community health clinics. A female interviewer explained the study and informed them of the incentives ($15 for the initial interview and $20 for the follow up interview) and that their participation was voluntary and would not affect their medical care. The second interview was 9 months later, either at the clinic or their home. The instruments used measured social support, depressive mood, anger, material loss, measure of mastery, and demographic information. The results indicated that resources loss was associated with increased emotional distress in anger and depressive mood and resources gain resulted in

decreased emotional destress. Also, increased material loss resulted in increased depressive mood and anger. Increased material loss was associated with diminished mastery and social support resources. Finally, the larger the impact of loss of mastery and social support resources and increase material loss will affect anger and depressive mood. Limitations of the study were, self – report measure, focused on single, inner city women, and depressive mood and anger may lead to negative cognitive set that amplifies the associations. The study offered robust sustenance for the natural resource change and change in levels of maternal loss in the stress process and for the creed of COR theory. Finally, it is suggested that interventions should target coping resources and preservation resources once loss spirals begin. Additional research on COR is listed below.

Review of Literature: Conservation of Resources

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Freedy, Saladin, Kilpatrick, Resnick, And Saunders (1994)	-resources loss was positively associated with psychological distress. -resources loss predicted psychological distress when other predictors were statistically controlled. -resources loss was associated with mild to moderate elevations in psychological distress	-229 adults who were impacted by the Sierra Madre earthquake in 1991	-a structural telephone interview contained sections designed to assess pre-earthquake, within earthquake and post-earthquake characteristics	-moderate sized natural disaster were associated with higher risk to experience elevated psychological distress. -the higher level of loss was associated with mild to moderate elevations in psychological distress	-the use of retrospective measures suggested the possibility of memory distortion -the cross-sectional design of the study precludes deterring causal relationships among variables

Self-Efficacy Theory

Self-Efficacy Theory (Bandura, 1977) was used to describe Hurricane Katrina rebuilder's ability to master community development and achieve a positive outcome. Bandura reports there are three factors that influence self-efficacy: environment, behaviors, and personal/cognitive factors (Bandura, 1977) and these factors are influenced by the availability of resources to recover before and after a natural disaster. Morelli and Cunningham (2012) acknowledged that

resources as self-efficacy and internal locus of control are established as positively associated with active forms of coping.

Bandura (1977), reports that self-efficacy deals with the capacity of an individual to organize cognitive, social, and behavioral skills into integrated courses of action. In this manner self-efficacy judgement can produce adverse consequences or considerable functional value (Bandura 1977). People sidestep events that surpass their coping capabilities; however, they will perform tasks when they assume, they will excel. Self-efficacy determines the amount of time and effort people expend when faced with impediments. Mastery of a challenge will likewise increase self-efficacy. Furthermore, persons with strong self-efficacy will work to solve difficult circumstances. Self-efficacy is rooted in collective efficacy according to Bandura (1977). Collective efficacy is the ability to solve group problems and improve multiple lives through individual efforts.

Benight and Bandura (2004), analyzed several studies were perceived coping self-efficacy in recovery of traumatic experiences. The traumatic experiences were natural disasters, terrorist attacks, military combat, sexual and criminal assaults, and technological catastrophes. Benight and Bandura report that people who take a strong hand in their recovery will not allow their lives to be dictated by adverse circumstances. Self-efficacy affects whether people reason in self-enhancing and self-debilitating ways. Appendix III has additional resources on self-efficacy.

In natural disasters, the researcher evaluated the massive destruction left by Hurricane Andrew on 1 million victims in Florida. Benight and Bandura (2004) developed a model that clarified the degree of loss (dwelling, automobiles, pets, furnishings, sentimental possessions, and missed work) experienced by residents. The use of Coping Self-Efficacy Scale was used to

measure self-efficacy after the disaster. The Coping Self-Efficacy Scale was tailored for a natural disaster. The scale assumed that a person could navigate the taxing problems of recovery including, employment, social assistance, negotiating insurance and federal claims, dealing with contractors, restoring everyday life routines, regulating emotional states of anger, anxiety, and depression. The results and impact of resources lost did influence perceived self-efficacy. Additional self-efficacy resources are listed below.

Review of Literature: Self-efficacy Theory

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Cieslak, Benight, Lehman (2008)	That coping self-efficacy would operate as a mediator between negative cognitions and posttraumatic distress	Study 1- 66 adult female victims of sexual abuse indicated that coping self-efficacy medication the efforts of negative cogitations about self and about world on posttraumatic distress. Study 2- 70 survivors of motor vehicles accidents	Study 1-(PTCI) Posttraumatic Cognition Inventory -Sexual abuse coping Self-Efficacy Scale -Posttraumatic distress-The Input of Event Scale Revised -Study 2-(PTCI) Posttraumatic Cognition Inventory - Posttraumatic distress-The Input of Event Scale Revised (DES-R) _Coping Self-Efficacy- Motor Vehicle Accidents Coping Self Efficacy Measures (MVACSE)	Barron and Kenny's Procedure was employed to test medicating effect of CSE. -In the Relation between negative cognitions and posttraumatic distress	Both studies Self-blame was not related to posttraumatic distress and the effect of self-blame on posttraumatic distress was not medicated by coping self-efficacy	Generalization of the results to other types of trauma should be made with caution -Research did not cover a broad spectrum of negative cogitations that may appear after a traumatic event.

Review of Literature: Self-efficacy Theory

Cieslak, Benight, Schmidt, Luszczynska, Curtin, Clark Kissinger	Posttraumatic recovery may be predicted directly by coping self-efficacy (CSE) And indirectly by social support. -Investigated the relationship among PTG, PTSD symptoms, CSE, and received social support among HIV positive individual who survived Hurricane Katrina	90 Patients with HIV Reinitiated came in the HIV Outpatient Clinic in New Orleans within one year after Hurricane Katrina came ashore. All patients were at least 18 years of age, had a clinic visit within one year before Hurricane Katrina, were 57 Men or (63.3%) 30 Women or (33.3%)	100 Respondents were approached approximately 14 months after the hurricane. 10 people refused participate. - Trained interviewers conducted face to face semi structural interviews. 30 to 45 minutes. -Intensity of PTSD symptoms. PTSD Check List (PLL – S) -Copying Self-Efficiency (LSE)	Separate regression analyses were conducted for each index covariate values were centered. - Computations were done with using Macros developed	Higher CSE was related to higher PTG among survivors who had intense PTSD symptoms. -Social Support was directly related to only one index of PTG relativity to others -There was significant relationship between social support and CSE	Casual Conclusion and attributions are hindered by a cross-sectional design. -Relying on mere on self-respect measures and excluding objective measures -Due to the cross sectional design the results cannot be generalized in terms of explaining longitudinal processes influencing PTG and its transitions

Review of Literature: Self-efficacy Theory

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Hirschel and Schulenberg (2009)	Purpose was to examine the relationship of self-efficacy to PTSD. Prevalence and severity after hurricane. The study also examined the association with respect to age, sex and hurricane impact.	Participant were 399 Residents from Mississippi (Gulf Coast/Hancock and Harris Counties) when Hurricane Katrina could do the most damage. The study was conducted 5 months after Hurricane Katrina made landfall	The PTSD check list (PCC) and Generalized Self -Efficacy Scale (GSE) were administered a survey team was trained on the study procedures and potential mental health-related concerns working with disaster affected population. -Representative blocks were selected from the larger study using cluster samplings Houses that appeared vacant and homes that were inhabitable due to damage were not included in the study	Regression Analysis were conducted to further explore the relationship between PTSD and the expected prediction variables of hurricane impact, sex, age and general self-efficacy Hierarchal Multiple Regression was used to predict PTSD severity.	-General self-efficacy was correlated with both PTSD, Prevalence and Severity, and that the association held. When examine separately by sex females reported significantly higher PTSD severity then males, but no difference was found in terms of PTSD prevalence.	A limitation was the way data was collected. -Another limitation relate to the correlation design of the study, which hinders determining case and effect.

Review of Literature: Self-Efficacy

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Luszczynska, Benight Cieslak Kissinger, Reilly, And Clark	The belief about ability to deal with Posttraumatic adversities, Self-efficacy will mediate the relationship between pre- and post-traumatic for Factors and Mental Health	50 Hurricane Katrina Survivors infected with HIV two years after -70 Survivors of motor vehicles accidents testing the mediating effect of self -efficacy in the relationship between stressful life events and PTSD symptom severity	-Disaster Exposure self-efficacy, loss of resources, Intensity of PTSD symptoms, BECK Depression Inventory BECK Anxiety Inventory -Study 2 A motor vehicle accident coping self-efficacy positive and negative life events and Posttraumatic Diagnostic Scale	-The influence of positive beliefs actually explains the effect of pathogenic factors on survivors and their overall health. -Fostering beliefs about the ability to successfully manage demands and obstacles may promote mental health and the period of recovery after traumatic exposure.	-The samples were small - The number of drop outs was relatively large -The use of a mediator was assessed at the same point as the independent variables

Review of Literature: Self-efficacy Theory

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Munson, Davis, Gillis - Taquechel Zlomke (2010)	The effects of Hurricane Katina with these with pre-existing storm fear	31 participants all females with a strong fear of storms, 31 matched on the variables of age and who did not report any specific fear	Phobia screening questionnaires Traumatic Exposure Severity Scale (TESS) Hurricane Coping Self Efficacy (HCSE) Fear Survey Schedule-II (FSS-II) Impact of Event Scale -Revised (IES-R) Demographic Questionnaire	Multivariate Analyses of Variance (MANDVA) examined the occurrence and distress scale of the Tess -The second and third examined the MANDVA examined the subscale of TESS Finally, meditational analyses were to determine. Potential relationship between subscales and storms fear and to test the hypothesis that higher distress scores were mediated by lower levels of coping self.	Individuals with storm fear experience more distress from the hurricane then those without storm fear, despite no differences on the overall reported occurrence of traumatic events. -Phobic individuals have also been shown to have increased danger expectancies to stimuli: -Being afraid of storms was a significant predictor in determining who would experience distress from the hurricane	- The sample utilized. -the results may not be generalize to males with storm fears. -The small sample size does not yield enough power to detect difference in meditational analyses. -participants responded to self-report measures rather than completing diagnostic interviews.

Literature review key concepts

New Orleans

August 29, 2019 marked the 15th year anniversary of the landfall of Hurricane Katrina. In the Morbidity and Mortality Weekly report (MMWR), rebuilders returning to New Orleans after Hurricane Katrina faced several physical, mental, and social obstacles. The residents of New Orleans were under a mandatory evacuation order executed by then Mayor Ray Nagan. New Orleans is a part of the Atlantic Basin. The Atlantic Basin consists of Gulf of Mexico [Gulf Coast of United States of America (Florida, Texas, Louisiana, Alabama, and Mississippi)], Atlantic Ocean, and Caribbean Sea. The Atlantic Hurricane Season is also a part of the Atlantic Basin. The Atlantic Hurricane Season is measured from June 1st to November 31st of any given year according to the National Hurricane Center. The National Oceanic and Atmospheric Administration (NOAA) in 2005 from their climate prediction center stated there would be a 70% chance of an above normal hurricane season (2018). The Climate Prediction Center called for:

Table I

Hurricane forecast for the Gulf Coast

2005	2004
12-15 tropical storms	***14 tropical storms***
7-9 becoming hurricanes	***9 became hurricanes***
3-5 becoming major hurricanes	***6 became major hurricanes (NOAA, 2005)***

The NOAA revealed that the Atlantic Hurricane Season was truly an above average season with:

28 tropical storms	***$180,400,000,000 in damage USD***
15 became hurricanes	
7 became major hurricanes	

2,280 deaths (in 5 states, Alabama, Florida, Georgia, Mississippi, and Louisiana). According to the Louisiana Department of Health and Hospitals there are 135 citizens remain as missing in Louisiana (2012). According to the National Oceanic and Atmospheric Administration (NOAA), there were 27 named storms in the 2005 season (State of the Climate, 2006). 14 hurricanes formed during the same season (2006). Eight major hurricanes formed during the season (2006). Three category 5 hurricanes formed during the 2005 season (2006). Seven named storms made United States landfall during 2005 (2006). At the time, the 2005 hurricane season was the most destructive, damages estimated at $100 billion dollars (2006).

The National Weather Service predicted that "most if not all of the Gulf Coast would be uninhabitable for weeks if not longer" (History staff, 2009). The levees were breached allowing Hurricane Katrina's storm surge to flood the New Orleans area creating devastating and tragic circumstances and rendering 80% of the entire city engulfed with gulf waters (CDC, 2006). The residents of New Orleans were under a mandatory evacuation order executed by then Mayor Ray Nagan. The residents did not leave because they did not have a way out, physically, or economically. Dr. Napoli with College of Physicians and Surgeons of Columbia University suggests that people don't adhere to warning because:

"I can take care of my stuff"

"The storm isn't that bad"

"I left last time for nothing"

"I have gone through worst thangs" and

"I don't have that kind of money, I must have someplace for these children to sleep and eat at night" (Palazzolo, 2005).

The residents who did not evacuate the city and visiting tourist had to be rescued by boat, helicopter, etc. and transported to the Louisiana Superdome and/or the Morial Convention Center, to other parts of Louisiana and various parts of the country. The coast guard and the first responders handled the movement of those requiring rescue assistance (Mack, Brantley, & Bell, 2007). Residents were denied return to the city immediately following Katrina's landfall without identification as essential personnel. Others could not return to look for loved ones or assess their property damage without clearance by city officials and the National Guard who assisted the local police in maintaining a police state in the city and southeast region of the state. Caldwell, S., L. (2006). Coast Guard report discusses the activities taken by the Coast Guard as well as the challenges and lessons learned because of the agency's efforts. The task of the Coast Guard during Hurricane Katrina was search and rescue, marine pollution response, and management of maritime commerce. The Coast Guard rescued over 33,500 from rooftops and flooded homes. Additional source on how New Orleans prepares for hurricane Katrina is below.

Review of Literature: Preparedness

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
McCabe, Perry, Azur, Taylor, Gwon, Mosley, Semon, Links (2013)	Develop evaluate a model of disaster mental health preparedness planning involving a partnership among key stakeholders in the public health system	178 community residents from the eastern northern and mid-shore region of Maryland	Partners were four local health departments (CHD), 100 faith based organizations (FBO), one academic health center (AHC), provide the participants with guided preparedness planning (GPP)	Leaders of health departments, faith communities and academic health centers can work effectively to execute an approach that has the potential for being a personal effective, and widely applicable model of capacity building at multiple levels in public health emergency planning.	-The outcomes may not be generalizable to community populations living in urban or suburban settings, practicing different faiths. -The imbalance of women to women to men in the study.

The topology of the city is likened to a bowl with the highest points near the levees and the lowest part at its geographic center. Eighty percent of the city and its housing stock was covered by an average of approximately 15 feet of water for at least 20 days. On August 28, 2005 than Mayor, Ray Nagin issued a mandatory evacuation order. The superdome was listed as a shelter of last result for people who could not and did not leave the city. Communities that housed the poor and underserved were below sea level and were at a greater risk for flooding (History staff, 2009).

An assessment of health-related needs after Hurricane Katrina and Rita in Orleans and Jefferson Parishes was done by Morbidity and Mortality Report seven weeks after Hurricane

Katrina made landfall. State and local public health, mental health and CDC conducted the assessment of the returning citizens. The survey was conducted by teams October 17 – 22, 2005 in Orleans Parish, 45 census blocks were selected for the assessment. There were 224 persons interviewed in Orleans and Jefferson Parishes. Morbidity and Mortality Report states that in Orleans Parish, more than 50% of housing units lacked running water and working toilets, more than 60% lacked electricity and garbage removal services and more than 70% lacked gas and telephone services. However, in Jefferson Parish, 23% of the homes lacked telephone services and 16.1% lacked working toilets, there was not a lack of water services. There were households (57%) that reported at least one person in the home that had a preexisting chronic health condition (39). It was also noted that at least one person in the household (52.5) became ill, within 7-8 weeks after Hurricane Katrina. All the households reported a problem with obtaining medical care and obtaining medication for their illness. The respondents also identified emotional concerns: feeling isolated (42.8%), feeling crowded (38.1%), feeling overwhelmed as a parent (23.6%), and family conflicts (18.4%). The limitations of the assessment are no stable population estimates existed; heavily damaged areas were not damaged; vacant homes were replaced by households with a person present. The results were given to the office of mental health and were used to provide medical, social, and mental health services.

Kessler (n.d.), reported that rebuilders had their chronic disease treatment disrupted by Hurricane Katrina. Transportation (23.3%), medication (32.5%), insurance/financial ((29.3%), time to go to the doctor (10.9%) and accessing a physician (41.1%) were reasons he stated for care disruption. Kessler (n.d.) went on to suggest and recommend that disaster management plans must forecast the need for primary care services and address those structural determinants

to treatment. Federal emergency Management Agency (FEMA) authorized semi-permanent travel trailer parks communities where an internally displaced person (IDP) could reside for up to two years. Shehab, Anastanio, and Lawry (2008) evaluated the heath care access of residents living in trailer parks in Mississippi. Their findings indicated a decline in residents' mental health, increases in chronic disease and obstruction to health care access because of displacement. Physical distress and mental health can be endangered by a natural disaster. Hurricane Katrina rebuilders have lived with loss of family, homes, communities, and jobs.

Physical Distress

The MMWR, rebuilders returning to New Orleans after Hurricane Katrina faced several physical, mental, and social obstacles. The United States Governmental Accountability Office (GAO) reported that New Orleans lost 80% of its hospital beds and 75% of its clinics (Caldwell, SL, 2006). With this substantial loss of medical and emergency care, access was practically nonexistence. Sastry and Gregory (2012), examined the effects of Hurricane Katrina on health and health disparities in New Orleans. Ronald Kessler (n.d.) on behalf of the Hurricane Katrina Community Advisory Group reported that rebuilders had their chronic disease treatment disrupted by Hurricane Katrina. Transportation 23.3%, medication 32.5%, insurance/financial 29.3%, time to go to the doctor10.9% and accessing a physician 41.1% were reasons he stated for care disruption. Kessler (n.d.) went on to recommend that disaster management plans must forecast the need for primary care services and address those structural determinants to treatment. FEMA authorized semi-permanent travel trailer parks communities where an internally displaced person (IDP) could reside for up to two years.

Hurricane Katrina's impact on the care of survivors with chronic medical conditions was conducted by Kessler (n.d.). Kessler (n. d.) examined to what extent which Hurricane Katrina disrupted treatment is not known but would-be useful information for further disaster planning. A telephone sampling was done through a random digit dial (RDD) of households listed in telephone banks from eligible parishes or counties before the hurricane. The second sampling frame was done through cellular and land-based telephone numbers on approximately 1.4 million families throughout the country that applied for American Red Cross (ARC) assistance after Hurricane Katrina. Between January 19 and March 31, 2006, a total of 1,043 respondents participated in the survey, the percentage of eligible households that could be reached by telephone was 64% was lower than in some household surveys. This may be due to the massive geographic dislocation of the post geographic post Katrina population and the attendant difficulties tracing and contacting people in it. (Many displaced people were traceable because they were able to forward calls made to their pre-hurricane numbers). There were English speaking survivors ages 18 or older, who resided in the affected areas before the hurricane. Those numbers reached one thousand forty-three displaced and non-displaced citizens. Most (73.9%) Katrina survivors had one (1) or more chronic conditions in the year before the hurricane: of these 20% cut back or terminated their treatment because of the disaster. Disruptions in treatment were significantly more common among the non-elderly, uninsured, socially isolated, those with housing needs, or for conditions remaining relatively asymptomatic but still dangerous if untreated. Frequent reasons for disrupted care included problems assessing physicians 41.1%, medications 32.5%, insurance/financial means 29.3%, transportation 23.2%, or competing demands on time 10.9%. Further disaster management plans should anticipate and

address such chronic care needs, with timely reestablishment of primary care services, access to medication, and means to address financial and structural barriers to treatment. The survey excluded people unreachable by telephone and unwilling to participate. Not all chronic conditions were assessed and some with chronic illnesses may underreport to never have been diagnosed. Some with chronic conditions may never have been treated or underreport terminating or cutting back, leading to an underestimation of unmet need for care. Lack of information on condition severity and the survey's cross-sectional nature of the team from concluding that the observed predictors and reasons given by respondents were causally related to disruption in treatment. The survivors lacked detailed information on length and extent of treatment cutbacks and unable to examine the clinical outcomes that result from them.

Evaluation of the heath care access of residents living in trailer parks in Mississippi was conducted by Shehab, Anastanio, and Lawry (2008). Their findings indicated a decline in residents' mental health, increases in chronic disease and obstruction to health care access because of displacement Jiao et al. (2012), examined the incidence of AMI in the New Orleans area three years after Hurricane Katrina. The study was conducted at Tulane University Health Science Center in New Orleans and found an increase of AMI during that time. Jiao et al, suggested that the behavioral struggles and socioeconomic stressors may have contributed to the increase rates of AMI.

Protecting the health and well-being of populations from disasters; health and health care in The Sendai Framework for Disaster Risk Reduction 2015-2030 by Aitsi-Selmi, A., and Murry, V. (2016). The Sendai Framework for Disaster Reduction (DRR) 2015-2030 is the first of three United Nations (UN) landmark agreements to develop a global policy coherence with explicit

reference to health, economic development, and climate change. The multiple efforts of the health community in the policy development process, including safe schools and hospitals, helped to put people's mental health and physical health, resilience, and well-being back on track. If successful and monitored, the policy integration could result in measurable improvements in health outcomes from disasters in the next 15 years.

Risk factors for psychological and physical health problems after a man-made disaster: Prospective study by Anja, Linda, Van Der Velden, and Yzerman (2006). Few prospective studies on risk factors for health problems after disaster in which actual pre-disaster data is available. To examine whether survivors' personal characteristics, and pre-disaster psychological problems, and disaster related variables, are related to their post disaster health. Two studies were combined: a longitudinal survey using the electronic medical records of survivors' general practitioners from one year before to one year after the disaster, and a survey in which questionnaires were filled in by survivors, three weeks, and 18 months after the disaster. The surveys and electronic medical records were available for 994 survivors. After adjustment for demographic and disaster-related variables, pre-existing psychological problems were significantly associated with post-disaster self-reported health problems and post-disaster problems presented to the GP. This association was found for both psychological and physical post-disaster problems. In trying to prevent long term health consequences after disaster, early attention to survivors with preexisting psychological problems, and to those survivors who are forced to relocate or are exposed to many stressors during the disaster, appears appropriate. A limitation of the study is the lack of data from a control group of unexposed persons. Another concern is the representativeness of the study sample. Another remark is the fact that no

structured clinical interviews, which are generally considered the gold standard, were used to assess mental health and/or physical health problems. Instead, self-reports and GP-diagnosed problems were used.

Deeg, Huizink, Comijs, & Smid, T, (2005) long term health consequences of disasters have not been studied extensively. This study focused on the areoplane crash on an Amsterdam suburb. The Longitudinal Aging Study Amsterdam (LASA) has on pre-disaster and several post-disaster observations, making it possible to study changes in health, taking pre-disaster health characteristics into account. The hypothesis was tested that more negative changes in health over time are found in persons living closest to the crash area, when compared to persons living in areas at further distance from the crash site. The LASA is based on a nationally representative cohort, initial ages 55-85, with oversampling of men and older-old. The sample was recruited in 1992, 62.3% (n=3805). The current study had an older person's population living in Amsterdam (n=1,066). All the subjects were interviewed before the disaster, October 4, 1992. Ten months after the disaster the participants were approached to participate in the LASA first cycle, (1992-1993 T1, 1028, 96.4%). Of the survivors 865 subjects (84.4%) took part. The second LASA cycle (1995-1996 T2), 13.9% of T1 participants had died. Of the 745 survivor participants 699 (93.8%) were interviewed. The study showed older people are likely to experience negative health changes in the wake of disaster, over and above the negative health changes that occur normally with aging. For cognitive functioning, a temporary improvement was seen following the disaster. Post-disaster morbidity was significantly decreased as compared to pre-disaster mobility in those living nearest to the site of the disaster. A similar decrease was not observed for self-rated health and self-reported ability to perform daily

activities. The available exposure measure, residential distance from the disaster, is used as a proxy for actual experience of the disaster. The subsample of living nearest to the site of the disaster was small. The study was necessarily based on the general health indicators that are available both at the pre-disaster and post-disaster collection site.

The proportions of survivors with chronic illnesses in the 12 months increased. English speaking adults who were 18 or over that resided a year before in a parish or county that Federal Emergency Management Agency (FEMA) subsequently defined as eligible for assistance after Hurricane Katrina. The respondents were recruited from a random-digit dial (RDD). A total of 1,043 respondents participated in the survey. Katrina survivors were burdened by chronic disease had their treatment disrupted by disaster. Disruptions in treatment were significantly more common among the non-elderly, uninsured, socially isolated, those with housing needs, or for conditions remaining relatively asymptomatic but still dangerous if untreated. Frequent reasons for disrupted care included problems accessing physicians 41.1%, medications 32.5%, insurance/financial means 29.3%, transportation 23.2%, or competing demands on time 10.9%. The survey excluded people unreachable by telephone and unwilling to participate. Not all chronic conditions were assessed and some with chronic illnesses may underreport or never have been diagnosed, all resulting in underestimation of illness burdens. Lack of detailed information on length and extent of treatment cutbacks caused surveyors to be unable to examine the clinical outcomes that resulted for them.

Role of health in prediction moves to poor neighbors among Hurricane Katrina survivors was examined by Arcaya, Subramanian, Rhodes, and Waters (2014). These are studies that investigated the neighborhood effects on health, but few studies have examined health as a

determinant of neighborhood attainment. A study was done on 569 poor, predominantly African American Hurricane Katrina survivors to examine the extent to which health problems predicted subsequent neighborhood poverty. Baseline health problems were predictive of living in poorer neighborhoods four to five years after Katrina. There was insight into the temporal dimension of health selection into neighborhoods, showing that sorting processes not detectable by 7-19 months postdisaster were evident 4-5 years following Hurricane Katrina. There is the inability to distinguish endogeneity from causal effects of health on neighborhood outcomes.

Banerjee, (2015) hypothesis that deficits in health in the events of a disaster may overlap with deficits in achieved and ascribed social status at the time of the disaster event. Can socioeconomic status explain the way health is affected from exposure to disaster conditions?

Flood in Bangladesh in 1998, it was from early July to mid-September. Data was collected by IFPRI in mid-October to mid-November. The data collected presented information on 4,242 individuals for 757 households, selected in a random manner from 126 villages in the country. The key results report that ill health in times of disasters is not merely a matter of extraneous environmental factors but are alleviated or exacerbated by the ability of individuals to access resources (such as clean water, nutrition, toilet facilities, shelter from natural elements, medicines, nursing, and convalescence time), or absence thereof, to adopt preventive and curative measures. Conventional approaches to public health post that disaster mortality and mobility are caused, either by exposure shocks, or due to mismanagement of disaster relief shocks. There is an additional resource on physical distress below and in Appendix C.

Review of Literature: Physical Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Howard, Zhang, Huang, and Kutner (2012)	The impact of Hurricane Katrina on hospitalization rates among dialysis patients	Patients in 103 clinics that experienced service disruption during Hurricane Katrina	Data from United States Rena Data System (USRDS), used to identify patients receiving dialysis from January 1, 2001 to August 29, 2005 at clinics that experienced disruptions during Hurricane Katrina	Patients death and hospitalizations were identified using the 2008 Patient and Hospitalization Standard Analytical Files (SAF)	Hospitalizations rates among dialysis patients increased in the months following Hurricane Katrina, suggesting that patients and providers were not adequately prepared for large scale disasters	The reason for admissions was not available -Few people started dialysis

Review of Literature: Physical Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Jian, Karoulides, Moscona, Whittier, Srivastav, Delafontaine, Irimpen (2012)	The long-term increase in the accidence of AMI after Hurricane Katrina	Admitted to Tulane University 2 years before N=150 -3 years after Hurricane Katrina N=48	A single center retrospective study performed at Tulane University Health Science Center -A chart review was done by one of the investigators and a medical professional experienced in chart review.	Significant associations between socioeconomic difficulty and AMI -The use of behavioral cardiology which calls for the psychological risk factor screening. Referring at risk patients to mental health specialist	Not including data from other hospitals in New Orleans -Could not adjust for the number of local hospitals closed after Hurricane Katrina -The study was not of a single fixed population.

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Jhung, Shehab, Rohr-Allegrini, Pollock, Shabchez, Guerra, And Jernigan (2007)	Are medication requirements and the extent to which these needs were met by federal disaster relief teams and local retail pharmacies	18,000 evacuees relocated to San Antonio TX after Hurricane Katrina	Medication dispensing records were collected from disaster relief teams and local pharmacies serving evacuees	There were 4229 health care encounters, 634 (11%) were for chronic medical condition -68% of all medication was for chronic disease -39% for cardiovascular medication -78% of medication was dispensed by retail pharmacies	Only 11% of the retail pharmacy perceptions were available for complete analysis -There was no method to categorize medications exclusively into acute and chronic classes	Monitoring pharmaceutical use among evacuees can be combined with traditional disease surveillance to help develop health priorities.

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Kessler (N. D)	What extent did Hurricane Katrina disrupt medical treatment	1043 displaced and non-displaced English speaking Hurricane Katrina survivors ages 18 and older who resided in affected areas before the hurricane	A telephone survey conducted between January 19, and March 31, 2006. -National Health Interview Survey were used to assess chronic medical conditions	Many Katrina survivors burdened by chronic disease had their treatment disrupted by the disorder -Future disaster management plans should anticipate and address such chronic care services access to medication, and means to address financial and structural barriers to treatment	The survey excluded people unreachable by telephone and unwilling to participate -Not all chronic conditions were accessed and some with chronic illness may under report or never been diagnosed - Some with chronic conditions may never have been treated or under reported terminating or cutting back -Lack of information or condition severity

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Larrance, Anastario, Lawry (2007)	To what extent the health and basic needs of internally displaced persons in Federal Emergency Management Agency (FEMA) travel parks needs being met	Randomized survey of 366 internally displaced persons	Structured questionnaires from commercial and group travel trailer parks in Louisiana and Mississippi -The questionnaire was written in English and administered verbally	Shelter (52%), Public Safety (43%), and Transportat ion were the most commonly reported problems	The results can not be generalized to the entire hurricane (85,000) affected internally displaced population

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Logue, Hansen, Struening (1979)	To investigate the long-term effects of the agnes flood on health and other domains during the recovery and post-recovery period	Questionnaires were mailed to women of the household 21 years or older. -Women were chosen to complement Melick's survey of men. -N-748 that did flood N-755 in adjoin towns that did not flood -396 households in the flood group -116 households in the non-flood group	A retrospective cohort design I which physical and mental health status during the 5 years after the flood were completed. -105 questions related to disaster experiences major life events, recovery experiences, demographic characteristic, health status	There was an increased use of alcohol and family tension. -There was a total on extremely severe destruction of property -In two-thirds of the families a member became sick -44% of the flood group reported having difficulties in getting regular medical checkups -35 % control group also reported that receiving medical attention for specific issue was a concern	The respondent's memory of the recovery period could be "contaminated" because of recall issues.

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Lowe, Willis, Rhodes (N.D.)	The influence of disaster exposure and mental health in shaping three common physical health problems (migraines, back problems, and digestive problems)	334 mother who had completed all other four waves of data collection	Four years after the hurricane between March 2009 and June 2010 -A trained researcher administrated an followed up survey over the phone to 720 respondents (70.7%of 1019)	All data analysis was completed using state/SE 12.1 -Multiple Imputation by Chained Equations (MIRE) -Fixed effect (FE) used to focus on changes in health outcomes	Disasters take a short term tell on survivor' physical health -Bereavement due to disaster and increases in psychological distress seem to be key factors underlying the increase incidence of problems -This study findings provide support for past disaster practices that connect survivors with comprehensive medical care that address both physical and mental health symptoms	The participants are not representative of the entire population affected by the Hurricane Katrina -Limited to the health measures that were included in the ongoing pre-disaster study -Although there were 4 waves of data collection, some participants did not complete all four waves for reasons unknown

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Lu	To assess the probability of worsening physical health among a population that experienced a traumatic dislocation -Evaluate a model predicting physical health in cases involving special conditions	321 interviews from February to April 2007 in ten trailer parks covered from New Orleans to Lake Charles	Louisiana Trailer Park Survey (LTPS)	Health decline is likely among evacuates and lived in the trailer park over six months. -Worsening health is twice as likely to occur among evacuees who lost full-time employment	Self-assessed change in health status -The sample was not randomly selected

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Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Ruggiero, Amstadter, Acierno, Kilpatrick, Resnick, Tracy, and Galea (2009)	Long term health status after a disaster me be associated with long-term morbidity and mortality	1452 adult age 18 and older, residing in the 33 Florida counties that were in the direct path of one of the 2004 hurricanes (Charley, Ivan, Frances, Jeanne)	Random digit dial methods were used to screen to use holds for eligible -Landline telephone interviews were conducted between April 5 and June 12, 2005 -The interview average 26.5 minutes in length study instruments measured Hurricane exposure traumatic event history, social support, PTSD, Generalized Anxiety Disorder (GAD), Major Depression Episode (MDE), Substance use, self-related health	Four separate logistic regression analysis were conducted to identify variables within each predictor set that were associated with self-rated health	The relation between depression and self-rated health was particularly -Strong respondents with post hurricane depression were five times more likely to endorse poor overall health status than their non-depressed counter	Findings were based on retrospective self-report data -The interviews were necessarily brief because a lengthy interview would have last prohibitive -Participants were only interviewed once _Generalizability of the findings to communities affected by different types of disasters is unclear -Data is not available to characterize the pre-disaster functioning of the sample

Veenema, Rains, Casey-Lockyer, Springer and Kowal (2015) addressed the quality and nature of healthcare services rendered in disaster and emergency shelters. Veenema et al. (2015)

objective was to measure the capacity and quality of health care services rendered to disaster shelters and to describe the health outcomes experienced by shelter residents. Veenema et al. (2015) combined a review of English – language literature pertaining to the assessment, evaluation, and systematic measurement of health care quality and patient outcomes in disaster and emergency shelters was embarked upon. Some limitations of the study are; the small number and the availability of studies that exist that address the topic of the study, generalizability to international disaster settings may be limited because the majority of the studies were from the United States and the internal validity of review of the literature is always subject to both selections and publication bias. The result indicate there is limited literature pertaining to quality of health care in disaster shelters and emergency shelters.

Psychological Distress

Cepeda, Saint Onge, Kaplan, C, Valdez, & Cepeda, et al. (2010) examined the relationship between disasters related experiences and mental health outcomes. The analysis included a descripted univariate analysis of social demographic factors, pre- and post-disaster factors, disaster related experiences and current mental health outcomes. Pairwise Pierson correlation coefficients were calculated to examine the correlations between the mental health outcomes scores and the disaster-related experiences variables. All analysis was conducted using STATA 9.0. Data collected from 350 African American hurricane Katrina evacuees who had used illicit substances prior to relocating in Houston, Texas, in the period from July 2006 until May 2007. Respondents were drawn from twenty-six Houston apartments complexes participating in the Housing Voucher Program that were randomly selected from 171 complexes located within two geographic regions determined to have the highest concentration of evacuees.

The results indicated that the disaster related experiences including negative life changes, disaster exposure post-disaster stressors, and resources loss, have unique, inverse relationships with mental health.

Chan, C., and Rhodes, J. (2013) investigated religious coping, posttraumatic stress, psychological distress, and posttraumatic growth among female survivors four years after Hurricane Katrina. Chan & Rhodes examine religious coping strategies and their relationship with self-reported posttraumatic stress (PTS), general psychological distress (GPD), and posttraumatic growth (PTG) four years after Hurricane Katrina. Secondary data analysis with three waves of data from a larger multivalve longitudinal study of Hurricane Katrina survivors was analyzed. The participants were enrolled in an education a program called "Opening Doors" prior the Hurricane Katrina in two community colleges. Means, standard deviations, and bivariate correlations of all variables prior to multiple imputation were reported. All latent factors, along with the measured covariates –age, number of children, exposure severity was freely correlated. A structure regression model predicting Wave 3 PTS, CPD, and PTG with positive and negative religious coping was tested. Results indicated that positive religious coping partially explained the relationship between two predisaster religiousness variables and PTG, but not GPD and PTS. The study found no association between religious coping and longer-term PTS after for controlling for baseline GPD and other covariate. Positive religious coping was associated with PTG after Hurricane Katrina above and beyond the protective effects of social support and optimism. PTG was positively associated with PTS but not with GPD. PTG was also associated with level of exposure to hurricane related stressors. Reliance on self-reported measures rendered findings susceptible to subjective biases. Religiousness was

measured with two global, single item questions. Findings might be limited to members of organized religions who participate in church-based activities.

In Exposure to Hurricane-Related Stressors and Mental Illness After Hurricane Katrina, estimated the prevalence and association between DSM-IV anxiety-mood disorders and hurricane related stressors separately among pre-hurricane residents of New Orleans area and Alabama, Louisiana and Mississippi affected by Katrina (Galea, Brewin, Gruber, Jones, King, McNally, Ursano, Petukhova, Kessler, 2007). Galea, et al. (2007), conducted a telephone survey with a sample of 1043 English speaking pre-hurricane residents of the areas affected by Hurricane Katrina between January 19 and March 31, 2006 [New Orleans metro n=594, remainder sample n=449 (Mississippi, Alabama, Louisiana)], K6 screening scale of anxiety-mood disorders and the Trauma Screening Questionnaire for posttraumatic stress disorder (PTSD). The stressors considered to have played a critical role in the high prevalence of hurricane related anxiety mood disorder. Also, the estimated prevalence of DSM-IV anxiety and mood disorders in New Orleans metro was substantially higher than typically found in US-population based surveys of mental health illness after natural disasters. Mental disorders were estimated with scales rather than clinical interviews. The survey response was low, and the sampling frame excluded people who were unreachable by telephone, resulting in underrepresentation of the most marginalized and perhaps the most seriously ill people in the population. It is possible that pre-hurricane history of psychopathology that influenced both stressors exposure and post hurricane mental illness influenced the observed association. The assessment of disaster related stressors was necessary retrospective, raising concerns about recall bias related to current mental illness. Finally, no attempt was made to tease apart the effect of

stressors exposure to Hurricane Katrina vs Hurricane Rita although some of the responds were affected by Hurricane Rita in the mist of Hurricane Katrina. Additional psychological distress resources are listed below and in Appendix C.

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Cerda', Bordelois, Galea, Norris, Tracy, and Koenen (2012)	To compare the influence of acute hurricane related exposures and ongoing post hurricane exposures on the short and long-term course of posttraumatic stress symptoms (CPTSS) and functional impairments (FI).	Random sample of adults (N= 658) from Galveston and Chambers Counties Texas	Interviewed 2 to 6 months after Hurricane Ike and 3 more times over a 18 month time period	Acute hurricane related stressors were associated with a higher rate of increase in FI over time. -Ongoing post hurricane daily stressors were not associated within initial PTSD and FI, but were associated with PTS and FI at the second and third interviews	Immediate post disaster interventions may influence short-term mental health investments the prevention of ongoing stressors may be instrumental to manage long-term mental health status	A small sample size -The complex nature of the models -Ike resulted in a lower rate of exposure to traumatic events such as injuries or death

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Claver, Dobalian, Flickel, Ricci, Mallers	A comprehensive examination of the health community's response to disaster for the Veterans Health Administration (VHA) and nursing homes (VANHS)	VHA Nursing homes administration and clinical staff New Orleans, Gulfport, Ms., Biloxi, Ms., Houston, TX., 13 respondents	60 – 90 minutes semi-structures key interviews conducted by telephone. -All interviews were conducted at least two members of the research team	Computer software ATLAS. Ti5.2 designed specifically for narrative interviews and field notes to organize the synthesis and analysis of the transcribed, textual interviews, data, analytic tasks also included defending concepts, mapping the range, attend and phenomena, findings associations, seeing explanations and developing new ideas, theories and strategies	Additional research is needed to encourage nursing home administrators and staff to adopt plan that meet the needs of frail elders in nursing homes	Respondents perceptions may not generalize or may not accurately reflect what occurred -This study about this special population may not be widely generalized due to the study design

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Kessler, Galea, Jones, Parker (2006) (On behalf of the Hurricane Katrina Community Advisory Group)	To estimate the impact of Hurricane Katrina on mental illness and suicidality by comparing results of a post-Katrina survey with those of an earlier survey	1043 adults who lived in the same area before Hurricane Katrina survivors -The National Comorbidity Survey Replication (NCSR) conducted between February 2001 and February 2003, - 826 adult baseline	Identified questions were asked to both groups about mental illness and suicidality -The K6 scale of non-specific psychological distress was used to screen for anxiety and mood disorders	The estimated prevalence of mental illness and suicidality were compared between the NCS-R and the post-Katrina baseline advisory group survey -Logistic Regression Coefficients and their standard errors were exponentiated to create odds Ratios (ORs) and their 95% confidence ratio	Respondents to the post Katrina survey had a significantly higher estimated prevalence of serious mental health illness that respondents to the earlier survey -The lower prevalence of suicidality was stronger related to two dimensions of personal growth after trauma -Faith is one's ability to rebuild one's life and realization of inner strength	A limitation was the use of the K-6. It is good for clinical interviews although it is not an clinical interviews -The interviews has to be conducted by telephone and not face to face

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Lemieux, Plummer, Richardson, Simon, Al, (2010)	Examined mental health symptomology substance use and adaptive coping among social work students following Hurricane Katrina	416 Social work students following Hurricane Katrina	A questionnaire survey was administrated to participate enrolled in four public universities in the Gulf Coast area during the fall 2005 sessions. Spiritual Support, 10 item Spiritual Scale -Altruism 20 item self-report Altruism Scale -Optimism 8 item life Orientation Test -Per traumatic emotional responses 12 items -Total volunteer activities 16 item check list developed by the researchers -Sociopolitical reaction 10 item sociopolitical reaction to Attacks of Internal Terrorism	Descriptive Statistical were used to summarize data -Chi-square was used to examine the co-occurrence of substance use with clinical levels of depression and PTSD -ANOVA was used to determine whether there was a significant difference in outcomes across all four sites	Students in the field after an disaster would benefit from support, close supervision and information to understand austheaumatic distress and how it affects their work and to address issues of vulnerability impairment and to maximize resilience	This was a sample of convince -The cross-sectional design was limitation -The use of self-report rather than an interview to assess participants mental health and substance use

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
			-Substance use a subscale of the Brief Cope			

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Lieberman, Cribbin, Liv, Schneider, Schwartz, Taioli (2017)	Assess the Concordance in self-reported and FEMA -Food exposure after hurricane safety and determine the associations between flooding and anxiety, depression, and post-traumatic stress-disaster (PTSD)	New York and Long Island residents (n=1,230)	Population derives from two studies conducted in New York City/Lone Island (NYC/LI) to assess the impact of Hurricane Sandy -The leaders in Gathering Hope Together (LIGHT) Project (1-24-2013 to 2-25-2015) and Project Restoration (PR 6-5-2014 to 1-09-2016)	Multivariate analysis of food exposure and mental health	Anxiety was statistically associated with dichotomous self-reported flood exposure but with FEMA flood exposure -Depression was statistically associated with dichotomous but not with continuous self-reported flood exposure, no association was found with either FEMA flood exposure measure -PTSD symptoms were statistically significantly associated with dichotomous and continuous self-reported flood exposures as well as dichotomous continuous FEMA flood exposure	The use of a convenience sample -Financial incentives for completing the questionnaire could have also influence the participation from low socioeconomic communities to participate -Allowing for potential sampling for potential sampling bias and skewed estimated of mental health conditions

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Lowe, Rhodes (2013)	Investigated trajectories of psychological distress among low-income, primary not married and African-American women who survived Hurricane Katrina	N = 386 -1 and 3 years after Hurricane Katrine came ashore. -Using Latent Class Growth Analysis	The participants were administrated the Latent Class Growth Analysis (LCGA). -There were 1, 2, and 3-year intervals after Hurricane Katrina	The results of the t-test and chi-square test found no difference between the participants who completed both assessments	Half of the participants were in trajectory consistent with resilience. -The other trajectories reflected a psychological response to disasters and indicated that predisaster functioning had a major influence on post disaster psychological outcomes	Selecting what LCGA model to use was subjective. -Use different samples to replicate the results. -The results could not be generalized -The participants were college students -They were not able to explore predictors of change within each group. - Self reporting is a limitation.

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings
McLaughlin, Berglund, Gruber, Kessler, Sampson, Zaslavsky (2011)	Patterns and correlates of speed of recovery of estimate PTSD among people who developed PTSD in the wake of Hurricane Katrina	7-19 months N= 723, 31% cooperative rate -24-27 months N=1,322, 32% cooperate rate	A probability sample of pre hurricane residents of areas affected by Hurricane Katrina was administrated a telephone survey 7 - 19 months following the hurricane and again 27 – 27 months post hurricane	A high estimated prevalence of PTSD among adults exposed to hurricane Katrina and a more persistent course of illness than found in others U.S. disaster exposed population

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
McLeish and Ben (2008)	Evaluate symptoms of depression and PTSDin an outpatient psychiatric population before and after Hurricane Katrina	156 patients 76 a month before Hurricane Katrina made landfall 80 a month after Hurricane Katrina made landfall	A chart review was carried out to obtain demographic information (age, psychiatric diagnosis, current medication regimen) -Center for Epidemiologic Studies-Depressed mood scale -Posttraumatic Stress Disorder Checklist Civilian version	Depression scores were significantly higher in the months following the hurricane. But PTSD scores were not significantly different	The sample was small -There were also many variables that were not assessed (social support, lone term symptom) -Self reported measures used as the primary assessment methodology -It is not known what, if any effect hurricane displacement had on the sample

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Paxson, Fussell, Rhodes, Waters (2012)	Examination of long-run mental health mothers who lived in New Orleans at the time of the hurricane	Low-income parents in New Orleans. Part of Opening Doors Study. November 2003 and February 2005. 942 women and 77 men, when they registered for courses at one of three campuses in New Orleans -Follow up study March 2006 and March 2007 667 of the original (942 female responses by telephone (70.8%) -Second follow up survey March 2009 and April 2010 568 women (60.3%) completed both follow up surveys	Sample drawn from the Opening Door Study, which was a multisite national study of performance in community college among low-income adults	The effects of exposure to traumatic events during the hurricane on mental health have not faded over time and in some cases have gotten worse -Pre-hurricane socioeconomic status played a small role in protecting individuals from chronic mental health problems with low-income sample	The outcomes they assessed were based on screening tool rather than clinical interviews -The non-representativeness of the sample which could influence the results in unknown ways, and the use of self-report screenings scales for PTSS rather than clinical diagnosis of mental illness

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Rhodes, Chan, Paxson, Rouse, Water, Fussell (2010)	What are the changes in mental health and physical health on African American single mothers	392 low-income parents exposed to Hurricane Katrina	Participants were part of a low-income parents who had enrolled in two community colleges in New Orleans in 2004-2005 -A 12-month survey was given in May 2006 to March 2007 and they were survey over the telephone	The prevalence the probable serious mental illness doubled -Half of the respondents exhibited probable PTSD -Long-term health and mental health services are needed for low-income disaster survivors	The participants were not representative of the entire populations -The index of social support did not distinguish among types of perceived social support -Self report measures reliance on a screening tool of nonspecific distress further limits the scope of the study

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Lowe, Tracy, Cerda' Norris, Galea (2013)	Assessment in the difference in the determinate of PTSD and depression after Hurricane Iris	658 adults who were living in Galveston and Chambers counties in Texas the month before Hurricane Ike were interviewed 2 -5 months after Hurricane Ike	A computer assisted interview 88% via telephone 12% conducted in person -November 7, 2008 to March 14, 2009 -Oral informed consent was obtained for participants	PTSD is indeed a disorder of event exposure, whereas risk of depression is more clearly driven by personal vulnerability and exposure to stressors	Absent of pre-disaster baseline -present assessment of psychopathology among participants -there was a concern that the sample was not a representation of those persons who experienced the hurricane -Absent is a clinical assessment that could not diagnosis psychopathology and were cautious in interpreting reports of both PTSD and depression is warranted

Review of Literature: Psychological Distress

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Wang, Gruber, Powers, Schoenbaum, Speier, Wells, Kessler (2007)	The use of mental health services among survivors of Hurricane Katrina to improve understanding of the impact of disasters on persons with mental disorders	1,043 English speaking displaced and non-displaced, age 18 and older	Telephone geographically representative survey January 19 and March 31, 2006	Few Katrina survivors with mental illness received adequate care, including those with serious mood or anxiety disorders -Financial structural and attitudinal barriers prevented many survivors from obtaining needed treatment	The cross-sectional nature parents then from concluding that the observed correlated and reasons are causally related to mental health services -The people that were not reachable by phone may have led to a under representation of the most disadvantaged and possibly most severely ill people -Only survivors with active psychopathy after Katrina were considered

Posttraumatic Growth

Tedeschi and Calhoun (1996, 2004) researched and developed the concept of posttraumatic growth as a positive psychological change experienced because of highly challenging life circumstances. Tedeschi and Calhoun's (2004) posttraumatic growth theory implied an outcome (growth) and a process (struggle through stress after traumatic event). Posttraumatic Growth is the process where one's perception of stressful situations garner personal growth (Chan & Rhodes, 2013). In this examination of Hurricane Katrina rebuilders' posttraumatic growth, several studies noted limitations worth mentioning.

Chan et al. (2015) examined the long-term mental health of Hurricane Katrina's low-income survivors. Study limitations were the lack of data collection and tangible support services accessibility during the post disaster periods. Cook et al. investigated resources loss, religiousness, health, and posttraumatic growth after Hurricane Katrina. They stated that two study limitations were data collection at a single point in time and may have been collected too close to the actual disaster. Cook et al. suggested that a longer period following a disaster allows for rebuilders to process personal losses and experiences deliberately and intentionally. Their research on posttraumatic stress and posttraumatic growth was conducted within a five-year period following natural disasters. Bouwens and Tosone (2014) and Harville, Xing, Buekens, Pridjian, and Hirsch (2009) examined pregnant and postpartum women after Hurricane Katrina. Their results indicated women were resilient from mental health consequences of disaster. Several previous studies utilized the PTGI (Appendix II) to examine the phenomenon of posttraumatic growth. Cook, Aten, Moore, Hook and Davis (2013) examined PTG among 189 students at the University of Southern Mississippi four months following Hurricane Katrina.

Lowe, Monroe and Rhodes (2013) also studied posttraumatic growth among 386 low-income gulf coast mothers in years one and three following Hurricane Katrina.

Chan, et al examined the long-term mental health of Hurricane Katrina low-income survivors. The study limitation was the lack of sufficient data collected on support services availability during post disaster periods. Cook et al. investigated the loss of resources, religiousness, health, and posttraumatic growth after Hurricane Katrina. They stated that two study limitations were that the data were collected at a single point in time and that it may have been collected too soon after the actual disaster. Chan and Rhodes (2013) probed individual religiosity relative to coping with posttraumatic stress, psychological distress, and posttraumatic growth among female survivors four years after Hurricane Katrina. The limitations indicated that religious affiliation was associated with posttraumatic growth although the authors did not use all the religious items in the inventory. Cook et al. suggested that a longer time following a disaster allows for rebuilders to deliberately and intentionally process personal losses and experiences. Cook et al. also suggested that future research examining long term posttraumatic growth following Hurricane Katrina is warranted.

Cavanagh, Wilson, Kavanagh, & Caputi (2013) in Future-proofing our community for natural disaster required more attention on men, suggested that women have a small but significantly increased risk of PTSD from trauma exposure. Such a difference in self-reported distress may reflect a differential emotional awareness, and men may also have increased risk of other trauma responses such as substance misuse. Furthermore, men are less likely to seek help for psychiatric disorders including PTSD. An opportunity exists, for primary care mental health clinicians. When men appear for medical consultations after disaster exposure, opportunistic

screening for any behavioral or emotional changes may increase changes of them receiving appropriate treatment.

Bouwens & Tosone, (2014), hypotheses that a greater number of traumatic life events will be related to primary trauma; greater traumatic life events will be related to secondary trauma; greater traumatic life events will be related to posttraumatic growth; primary trauma will be related to posttraumatic growth; secondary trauma will be related to posttraumatic growth. Alumni list for schools of Social Work at Tulane University, Louisiana State University, and University of Southern Mississippi a list-serve based in New Orleans initiated and maintained for the purposes of keeping the clinical community informed following Hurricane Katrina. A total of 244 surveys were available for review based on inclusion and exclusion critical, representing a response rate of 48% (based on visits only). The results from this study suggested that trauma history is a potential risk that can heighten both primary and secondary traumatic stress. The findings also suggested that trauma symptoms can be related to an attribute of growth despite lingering re-experiencing symptoms. Some limitations were inherent in design, method, and the sample. The study occurred five years after Hurricane Katrina. The study is restricted by the method used to implement the investigation, a web survey. All the participants included in this study were self-selected and solicited from alumni and professional lists that were managed by gatekeepers.

Lowe, Sarah, Manove, Emily, and Rhodes, Jean (2013) explored the relationship between PTS and PTG after Hurricane Katrina and the role of demographics, pre-disaster psychological distress, hurricane related stressors, and psychological resources (optimism and purpose) in predicting each. Participants were 334 low-income mother who completed a survey one year

before Hurricane Katrina, also one and three years after Hurricane Katrina. The participants are low-income parents who were enrolled in three community colleges in New Orleans in 2004-2005. The participants had to be between 18 and 34, have one minor child under 19, have household income under 200% of the federal poverty level; and have a high school diploma. When Hurricane Katrina and Rita made land fall there were 492 participants that were enrolled long enough to complete a 12-month pre-disaster survey. They found that PTS, assessed at both 1 and 3 years after Hurricane Katrina, was significantly and positively associated with PTG assessed at 3-year post disaster. Survivors with consistently high levels of PTS total and symptom clusters, reported significantly high levels of PTG. The results suggested that experiencing higher levels of PYST, whether in the more immediate or longer-term aftermath of disaster, is associated with higher PTG. PTG was not measured at the first post disaster assessment. The first post disaster assessment did not occur until 12 months after Hurricane Katrina. The results did not capture psychological functioning to provide insight into whether self-reported PYG was functional or illusory. There was also no pre-disaster psychological functioning assessment. The measure did not capture other elements of Hurricane Katrina that could have made the women prone to PTS or PTG. The results cannot be generalized to other populations. Additional literature review for Posttraumatic Growth is below and in Appendix C.

Review of Literature: Posttraumatic Growth:

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings
Cepeda and Kaplan	What is the relationship between disasters related experiences and mental health outcomes among a sample of drug using African American Katrina evacuees?	350 African Americans Hurricane Katrina evacuees who used illicit substances prior to relocating to Houston. Over 18 but not older than 65.	Hour and half semi-structured interview, face to face predisaster and post disaster. Characteristic of the interviews: socio-demographic, process of hurricane Katrina evacuation, lifetime traumatic event, exposure, self-regulated health, resources, loss, disaster related exposure, negative life event changes, and post Katrina stressors. Post Katrina Stressors: mental health outcomes, psychological distress, Post-traumatic stress disorder (PTSD), anxiety, severe depression, somatic	Univariate Analysis of social emergency factors, ore and post disaster factors, disaster related experiences, and current mental health. Pairwise Pierson correlation Coefficients were calculated to examine the correlation between the mental health outcomes scores and disaster-related experiences variables.	Disaster exposure does not have a clear and consistent relationship with mental health outcomes. Also suggested that disaster related are uniquely related experiences are uniquely linked to various mental health outcomes. There is a heightened psychological vulnerability among those without suitable resources

Review of Literature: Posttraumatic Growth

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Cook, Aten, Moore, Hook, Davis (2013)	Examined association among resources loss, religiousness, PTG, physical and mental health	189 introductory psychology students at University of Southern Mississippi	Four months after Hurricane Katrina came ashore -general religiousness was assessed by the five-item Duke Religion Index IDRI), -Religion comfort and Strain Scale (RCSS), - RAND 36 item health survey10.0 (sf-36: RAND corporation) -Posttraumatic Growth Inventory (PTGI) -Resources loss assessed by 18-item measured by Sattler	Cronbach's Alpha Coefficient assessing the internal consistency for scale scores, measures standards deviations.	PTGI scores were lower than means among college students. -Women in comparison to men reported more religiousness, more PTG, and more religious control	Self -report measures were utilized -Data was only collected at one point in time after the disaster -Research study may have been conducted too soon after the actual disaster -The findings applicability and generalization of findings may not be generalized to community members, especially for disadvantaged community members

Review of Literature: Posttraumatic Growth

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Dunn, Solevieft, Lowe, Gallagher, Chaponis, Rosand, Koenen, Waters, Rhodes, and Smoller (2014)	Great-environment interaction (GxE) studies could offer new incite in to the factors underlying variability in past disaster psychological responses	205 low income non -Hispanic Black parents residing in New Orleans prior to and following Hurricane Katrina	Data taken from the New Orleans site of the opening Doors Study (2010). -A saliva sample was taken to measure genomic analysis	Multiple linear regression analysis	RGS2 (Regulator of G-Protein Signaling 2 modulated neurotransmitter play a role in PTG	Findings may not be generalized to other populations or groups experiencing other natural disasters -Not all participants invited to participate in the Genetic Study provided saliva.

Review of Literature: Posttraumatic Growth

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings
Gruebner, Lowe, Sampson, Galea (2015)	What is the geographic distribution of psychological resilience and associated mental health outcomes after a manmade disaster	418 adults in New York City communities	Cross sectional telephone survey data was collected 13 to 16 months post disaster. -The Posttraumatic stress check list for DSM-5 (PCL-5). -Patient Health Questionnaire (PHQ-9).	Mental Health problems clustered pronominally in neighborhoods that were geographically more exposed to the ocean -Being employed and married were resilience factors for symptoms in Manhattan and Staten Island. -Race/ethnicity (being Asian or non-Hispanic Black) and disaster related stressors were vulnerability factors for mental health symptoms in Queens -Parental status was a vulnerability factor in Brooklyn and a resilience factor in the Bronx

Review of Literature: Posttraumatic Growth

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Harris, Erbes, Engdahl, Tedeschi, Olson, Winskowski, and McMahill (2010)	Prayer and PTG is there a relationship?	327 trauma survivor participants: 225 females, 95 males 1 transgender -Midwestern individuals from diverse Christian churches	Verbal announcements were made in several churches requesting that individuals who had experienced trauma complete a survey about their rise of religion coping -Church member was asked to stay after service and complete consent forms and survey forms, and they were provided with lunch and $10.	There is the importance of consistency multidimensional aspects of religion and the positive and negative relationship between religiosity and mental health. -There is a spiritual practice is related to PTG -There are useful implications for counseling trauma survivors who pray.	Generalizations of the findings to another religious community could not be done.

Review of Literature: Posttraumatic Growth

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Manove, Preston, Lowe, Bonumwezi, Waters, and Rhodes (2019)	Examine whether Posttraumatic Growth (PTG) was evident in the post disaster content in a low-income urban population of Black mothers, and if so what was that PTG experience like -To explore the extent to which experiences of PTG in a postdisaster content as described by qualitative interviews, quantitative scores on the Posttraumatic Growth Inventory (PTGI) and it subscales	32 members from a large multiwave study of low-income students' parents in two community colleges in New Orleans in 2004-2005	Face to face interviews July and August 2009 Administrated the Posttraumatic Growth Inventory	Qualitative analysis was performed using SPSS Version 24 software. - Qualitative analysis was conducted using NVivo Version 11.4 software -transcripts were coded using the matic analysis	26 of 32 participants described expecting PTG within the 5 domains of the PTGI	The results may not be generalized to the experiences of all low-income Black mothers who lived through Hurricane Katrina -The qualitative protocol included questions on post disaster recovery and resilience, it was not designed to elicit various PTGI domains -The interview questions were only asked at one point in time -The PTGI was not administered simultaneously when the interviews were conducted, but rather six months window later

Review of Literature: Posttraumatic Growth

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Morris, Shakespeare, Finch, Rieke, and Newbery (2005)	Examine the multidimensional nature of PTG, as measured by the PTGI	Austrian undergraduate students (N=219)	Participants were given questionnaire to answer on demographic information, nature of the traumatic event, the PTGI and the Impact of Event Scale-revised (IES-R)	Analysis were performed using the SPSS (version 11).	Trauma severity was found to significantly predict PTG to a positive correlation between PTG and negative posttraumatic effects	The inclusion of both positive and negative indicators of traumatic experience preludes this study from the limitations of traditional trauma research

Review of Literature: Posttraumatic Growth

Author Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Rhodes, Chan, Paxson, Rouse, Waters, Fussel (2010)	This study examined the consequences of Hurricane Katrina on the physical and mental health of a vulnerable group of survivors- low-income, single mothers, and African Americans	392 low-income parents exposed to Hurricane Katrina -A pre-Katrina (2004-2005) of low-income parents enrolled in two community colleges in New Orleans	Baseline demographic and health information was collected for all the participants -Economic status was measured by total income in the household in the previous month. -Car ownership was used as a measure of wealth. -Social support used eight items from the social provisions scale.	Mental and physical illness were elevated sharply among participants and it remained elevated for at least one year following Hurricane Katrina -nearly half (47.7%) had probable PTSD	Responses relied on self-reported measures -Clinician interviews would have been preferable to screening scales of mental disorders -index of social support did not distinguish among types of perceived social support -additional descriptive composition of participants social networks

Review of Literature: Posttraumatic Growth

Author Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Tosone, Bauwens and Glassman (2016)	Establish an instrument offering psychometrically sound measurement of primary and secondary trauma	244 mental health workers who lived and worked in New Orleans during Hurricane Katrina.	Shared Trauma and Professional Posttraumatic Growth Inventory (STPPG).	STPPG suggests that personal traumatic experiences can impact professional practice and client traumatic influences one's personal trauma	Most of the subjects were females -There is no way to know about this aspect of the generalizability of the STPPG factor

Review of Literature: Posttraumatic Growth

Author/ Date	Problem statement or research question	Demographic	Methodology	Findings	Limitations
Vishinski, Cann, Calhoun, Tedeschi, and Demakis (2010).	Examine the direction and magnitude of gender differences in self-report on posttraumatic growth	70 studies (n=16,076) participants	Meta-analysis of 70 studies	The meta-analysis clarified there is a small to moderate differences in posttraumatic growth with women reporting greater levels of posttraumatic growth than men.	Analysis was limited by the types of moderator variables available across multiple studies -The analysis represents findings from cross sectional data

Review of Literature: Posttraumatic Growth

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Wadsworth, Santiago, and Einhorn (2009)	Examine the symptoms trajectories of displaced survivors of Hurricane Katrina. -Identify fractions that distinguish among the four PTS and four depression groups. -Test tenets of COR Theory suggesting that resources and preserved results will guide coping efforts. -Explore influences of age, gender, and ethnicity among the four PTS and depression trajectories.	93 displaced adult survivors of Hurricane Katrina -there were 39.8 males, 58.1 female 34.4 Caucasians 61.3 African - Americans 2.2 Hispanic	Interviewed within six months of the Hurricane Katrina and their arrival in Colorado. -another interview was done at 9-12 months in Colorado	Resources loss, life Events, Questionnaire (LEQ), - Displacement stress Qualitative Interview, using a 11-point Likert type scale. -Coping efficacy used the Response to Stress Questionnaire (RSQ) -Religious coping (RCOPE)	The study findings show the levels of psychological distress were high following Hurricane Katrina and remained high for many if one year past hurricane Katrina. -Support and monitoring of older adults in the wake of disaster is important as loss of friends and family puts them at risk of being depressed.	No pre-hurricane symptoms -unequal sample size among the trajectory group. -Small sample of evacuees that would live in Colorado -The results are not generalizable beyond these residents.

Summary

In this chapter, I presented actual literature and identified gaps in the literature on physical distress, psychological distress, and posttraumatic growth. Theoretical foundations were also presented in this chapter. In the following chapter, I presented research questions and further expound study variables and how these variables were measured.

Chapter 3: Research Method

Introduction

When Hurricane Katrina came ashore at the mouth of the Mississippi River in 2005 it struck with such vengeance that the protective levees surrounding the New Orleans area were breached. This research on persons who experienced Hurricane Katrina and the relationship of physical distress and the psychological outcomes of posttraumatic growth was the first conducted on community residents who rebuilt their lives thirteen years following a natural disaster along the Gulf Coast of the United States. Physical health and psychological health can be endangered by a natural disaster. The research did serve to enhance medical and mental health service delivery mechanisms after a natural disaster. This research did both compliment and contribute to enhancing the types and levels of community resources for future disaster planning as well as additional planning for disaster aftermath.

Through the literature review I learned the following: there was extraordinarily little pre-Hurricane Katrina data on the same subjects, data that was collected was collected 6 months to 19 months after the natural disaster, and there has been no data collected 10 years past Hurricane Katrina on the survivors of the disaster that live in New Orleans. This chapter is divided into sections that cover research design and rational, population studied, study design, sample and sampling procedure, research questions and hypotheses and how the population was recruited. I also discuss data handling, procedure for recruitment and threats to internal and external validity.

Research Design and Rationale

The research on physical distress and the psychological outcomes of posttraumatic growth was the first conducted on community residents who rebuilt their lives 15 years following a natural disaster along the Gulf Coast. The research served to enhance medical and mental health service delivery mechanisms after a natural disaster. The nature of this study was quantitative design. The participants provided a retrospective self-reported examination to a modified version of the PBHS (Appendix I) and the five factors of the PTGI (Appendix II). Hurricane Katrina was the independent variable. Participant's response to the modified version of the PBHS and PTGI is the dependent variables.

Methodology

The PBHS and PTGI was administrated at multiple locations to a convenience sample of several independent communities in New Orleans. Convenience sample were participants that are selected on their availability to the survey team. This sample procedure limits the time and cost involved in smaller scale surveys and it can result in increased response rates (Pazzaglia, Stafford, & Rodriguez 2016). IRB approval from Walden University was granted on December 05, 2019 (approval number -2019.12.05 16:27:29-06'00') This procedure indicated that sample estimates are less likely to be generalize to a larger community. One such population selected was graduate and undergraduate students at Southern University in New Orleans. The other Historic Black Colleges and Universities in New Orleans have a population of students that are not from New Orleans and they are a younger student population. Approval from IRB of Southern University in New Orleans was given. The participants represented several departments

on campus (social work, substance abuse, education, and criminal justice). Another selected population was churches in New Orleans. I received permission from my pastor to obtain snowball sampling of his associates. The sample size was over 300 subjects recruited and screened for participation from the current population of the city of New Orleans. The participants were self-reported as 18 or older when Hurricane Katrina made landfall. Hurricane Katrina was the independent variable. Participant's response to the PTGI and a modified version of the PBHS were the dependent variables.

Sampling and Sampling Procedures

Volunteers for this study were recruited through flyers. The criteria for the participants was to have been over 18 or older when Hurricane Katrina came ashore, lived in New Orleans before Hurricane Katrina, and returned to New Orleans within the last 10 years. The sample size was calculated by size of population New Orleans census population is 344,000; (United States Census April 2010). Check Market calculated sample size, margin of error, and confidence level. The margin of error was estimated at 5%. The confidence level was 95%. This research on persons who experienced Hurricane Katrina and the relationship of physical distress and the psychological outcomes of posttraumatic growth was the first conducted on community residents who rebuilt their lives 15 years following a natural disaster along the Gulf Coast of the United States. The participants provided a retrospective exploratory self-reported examination to a modified version of the PBHS and the five factors of the PTGI. The IRB of Walden University and the IRB of Southern University in New Orleans.

Research Questions and Hypotheses

RQ1: For those that experienced Hurricane Katrina is there a statistically significant relationship between the most prevalent factor of the PTSI and the top five medical/health manifestations of the PBHS of Hurricane Katrina survivors?

Ha1: For those that experienced Hurricane Katrina there is a relationship between the factors of PTSI and the medical manifestations of the PBHS of Hurricane Katrina survivors.

H01: For those that experienced Hurricane Katrina there is not a relationship between the factors of PTSI and the medical manifestations of the PBHS of Hurricane Katrina survivors.

RQ2: For those that experienced Hurricane Katrina there is a statistically significant relationship between the top five medical /health manifestations and the highest rated group of traumatic experiences on the PBHS of Hurricane Katrina survivors?

Ha2: For those that experienced Hurricane Katrina there is a relationship between medical manifestations and the traumatic experiences identified on the PBHS of Hurricane Katrina survivors.

H02: For those that experienced Hurricane Katrina there is not a relationship between medical manifestations and the traumatic experiences identified on the PBHS of Hurricane Katrina survivors.

RQ3: For those that experienced Hurricane Katrina is there a statistically significant relationship among the three groups of variables: #1 rated factor of the PTSI, the top five

medical/health manifestations and the #1 rated group of traumatic experiences on the PBHS identified by Hurricane Katrina survivors.

Ha3: For those that experienced Hurricane Katrina there is a statistically significant relationship between the #1 rated factor of PTSI, the top five medical manifestations of the PBHS and the #1 rated group of traumatic experiences of the PBHS of Hurricane Katrina survivors.

H03: For those that experienced Hurricane Katrina there is not a statistically significant relationship between the #1 rated factor of PTSD, the top five medical manifestations of the PBHS and the#1 rated group of traumatic experiences of the PBHS of Hurricane Katrina survivors.

The statistical test included association (correlation –chi-squared) to determine strength and direction of association. Then hypothesis testing multi regression analysis was conducted to determine the significance of the relationships between predictors and outcome variables with a unit change in predictor variables.

Instrumentation and Operationalization of Constructs

Demographic and other pertinent data was collected using the modified PBHS (Appendix I). The PBHS provided demographic information (age, gender identification, race, current parish of residence, current zip code of residence, what parish did you live in before Hurricane Katrina, what zip code did you live in before Hurricane Katrina) and several different experiences in the aftermath of Hurricane Katrina (house damaged, injured, disruption of education, had to be rescued, separation from family members and or friends, death of family members, friends or pets, lived with others because of Hurricane Katrina). Medical distress symptoms and diagnosis

(high blood pressure, skin irritation, heart illness and reproductive health) was addressed in the PBHS.

The elements of PBHS are categorized by loss of property, personal tragedy, and where do you live. The factors did allow for relationship analysis with the medical conditions (Appendix 1). A bivariate analysis was used to determine any relationship between PBHS factors and the medical/health manifestations information. Correlational coefficient was used to measure the strength and the direction of the association between the categories. The PBHS is a self-reported instrument. I received verbal and written permission from Dr. Tonya C. Hansel, PhD, DSW Program Director at Tulane University School of Social Work to use a version of her PBHS. Dr. Hansel stated the PBHS is a combination of several scales that comprise the questionnaire. The name and validity of the scales are:

Type of scale	Name of scale	Purpose of scale	Psychometrics properties
Anxiety	The General Anxiety Disorder Scale (GDA-7)	Effectively measures anxiety symptoms in the general population and is helpful in monitoring symptoms severity across time	GAD-7 has good reliability and validity
Resilience and self-efficacy sub-domain	The Connor-Davidson Resilience Scale (CD-RISC)	Measures the multidimensional characteristics of resilience	CD-RISC has sound psychometric properties and have been found to have sensitivity when evaluating treatment outcomes
Quality of life	World Health Organization Quality of Life Assessment (WHOQOL-100)	WHOQOL-100 is a cross-culturally valid assessment of general well being	WHOQOL-100 has good variability and reliability
General Psychological Distress	The Kessler Psychological Distress Scale (K8)	K8 screens for psychological distress in a brief format	K8 has a strong psychometrics property and the ability to identify DSM-IV disorders

Type of scale	Name of scale	Purpose of scale	Psychometrics properties
Post-traumatic stress	The Short PTSD Rating Interview (SPRINT)	The SPRINT assess the core symptoms of PTSD as well as complaints distress from stressful events and interference in daily activities and relationship	SPRINT shows strong psychometrics properties and responsiveness to symptoms change across time periods.
Post-traumatic stress	The Post-Traumatic Stress Disorder Checklist (PCL)	The PCL measures symptoms of PTSD from the DSM-IV	PCL has shown good relationship and validity and demonstrated sensitivity to assessing treatment outcomes
Depression	The Center for Epidemiologic Studies Depression Scale (LES-D)	The LES-D measures frequency and severity of depressive symptoms experienced by the respondent	LES-D tends to have good psychometrics properties

The PTGI is a self-administered questionnaire that asks participants to rate their experiences in five domains (relating to others, new possibilities, personal strength, spiritual change, and appreciation of life) w hile rebuilding their lives after the traumatic experience. PTGI has 21 questions measuring posttraumatic growth on a Likert Scale from 0 = did not experience this change to 5 = I experienced this change to a very great degree. Richard Tedeschi, the developer of the posttraumatic growth inventory, gave permission to use the inventory (Appendix II) for this research. Tedeschi and Calhoun (1996) reported the internal consistency of a 21-item PTGI is α =.90; Internal consistency of New Possibilities (α =.84); Relating to Others (α = .85); Personal Strength (α = .72); Spiritual Change (α = .85); and Appreciation of Life (α = .67). The test-retest reliability of the 21-item scale was acceptable r = .71 according to Tedeschi and Calhoun (1996). Furthermore, Tedeschi and Calhoun reported that the PTGI has good internal consistency, acceptable test-retest reliability, and that the scores on the scales are normally distributed.

The PTGI has five factors (referring to others, new possibilities, personal strength, spiritual change, and appreciation of life) in rebuilding their lives after the traumatic experience. The relationships between the PTGI factors and the top five medical/health manifestations will be determined through bivariate analysis. Bivariate distribution was used to compare the medians to determine any association between the variables (Frandfort-Nachmian and Nachmias, 2008, 457). In the PTGI correlation coefficient was used to measure the strength and the direction of the association between five of the medical/health manifestations. Dr. R. G. Tedeschi did give me permission to use the Posttraumatic Growth Inventory.

Data Handling

The completed surveys did not have any identifying information on the form. Each survey does have a unique number attached to the survey. Survivors did not have the opportunity to have identical number. Once completed the surveys were collected and kept in the possession of the investigator. The data was downloaded onto a personal laptop, coded, and entered to SPSS. Multiple regression analysis was used to assess relationship between among the three groups of variables: #1rated factor of the PTGI, the top five medical/health manifestations and the #1 rated group of traumatic experiences on the PBHS identified by the participants. Chi-square test of independence will be conducted. Two-tailed independent t-test to address research questions was conducted to also address research questions. To analyze age and physical distress an ANCOVA will be conducted.

Threats to Internal Validity

I received written permission to use the survey. According to Dr. Hansel, the PBHS is a merger of several health scales, those scales are:

Type of scale	Name of scale	Purpose of scale	Psychometrics properties
Anxiety	The General Anxiety Disorder Scale (GDA-7)	Effectively measures anxiety symptoms in the general population and is helpful in monitoring symptoms severity across time	GAD-7 has good reliability and validity
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Validity and reliability of Post-Traumatic Stress Disorder Checklist (PCL) was done by Bahani, Alwi, Ahmad and Saiboon translated the PCL-C to Malay language to be used in the

Malaysian population. The MPCL-C was administrated to persons who presented at the emergency department for motor vehicle accidents. The reliability is good as measured by Cronbach's alpha values of 0.90, 0.77, 0.75, and 0.74 for the full scale. These results of reliability are consistent with other studies that PCL-C was translated (Chilean, Portuguese, Brazilian, and Spanish) versions of the questionnaire (211).

The validity of military screening for mental health problems diagnostic accuracy of the Post-traumatic Stress Disorder Checklist (PCL), Kessler Psychological Disorder Scale (K10) and Alcohol Use Disorder Identification Test (AUDIT) was conducted on a large sample of currently serving Australian Defense Force (ADF) by Searle, Van Hooff, McFarlane, Davis, Fairweather … et al (2015). These scales were used as a cost-effective and clinically useful means of screening personnel for disorders. The military wanted to screen military personnel after experiencing deployment -related trauma like direct combat and witnessing atrocities can be significantly associated with mental health disorders (depression, alcohol use disorder, and post-traumatic stress disorder). The AUDIT demonstrated high internal consistency, factorial convergent and criterion validity. Internal consistency was excellent in the sample for the PCL. The ADF used a screening cut off of eight, with scores above 20 results in comprehensive assessment and referral to drug/alcohol services. The screening cutoff by ADF of 30, with scores above 50 triggering automatic referral. Internal consistency was excellent for the K10 in the sample. The screening cutoff of 20 was used for following up and potential referrals (38).

The psychometric properties of the Turkish Posttraumatic Stress Disorder (PTSD)-Short Scale by Evren, Dalbudak, Aydemir, Koroglu, Evren, Ozen, and Coskun (2016) on 415 Turkish University students. There were 351 final participants that reported trauma and were evaluated

with the PTSD-SS and PTSD Checklist Civilian (PCL-C). The PTSD-SS was found to be psychometrically sound with convergent validity when compared with PCL-C (t=0.79) and Cronbach's alpha of 0.87. PTSD-SS showed good discriminate validity as it significantly differentiated students with high risk of PTSD from those with low risk PTSD (298).

The Generalized Anxiety Disorder – 7 (GAD-7) scale was translated to Urdu, for use in a Pakistan primary health care setup. There were 285 volunteers in this study. This was a pilot study to obtain user feedback on the construct of the scale. Ahmad, Hussain, Shah and Akhtar (2017) determined the GAD-7 translated in Urdu had a good level of convergent and discriminate validity (1540). Reliability was Cronbach's alpha for the scale was 0.92 and split – half reliability was 0.82, revealing a good level of reliability (1540).

A validation of the Dutch web-based GAD-7, GAD-2, GAD-SI, by Donker, van Straten, Marks and Cuijpers (2011) on 502 participants to respond to internet -based demographic questions, GAD-7, CES-D, and HADS (Hospital Anxiety and Depression Scale). The reliability (Cronbach's alpha) for the GAD-7 was 0.86 (59). Also, Convergent validity of the GAD-7 compared to the HADS anxiety scale was good [$R=0.82$, $p<0.001$] (60).

Generalized Anxiety Disorder Scale (GAD-7) psychometric properties were conducted on a sample of Finish adolescents by Tiirikainen, Haraniori, Ranta, and Kaltiala-Heino (2019). The sample included 111,171 adolescents, aged 14-18 (29). Tiirikainen et al, reported the psychometric features of the GAD-7 in the population of Finish adolescents were significantly like those reported among adults from various countries (30). Cronbach's alpha was at least 0.90 for the total sample. The internal consistency of the GAD-7 was supported among adolescents as

well reported by Tiirikainen et al (2019). Tiirikainen et al (2019), also reported the convergent validity for the GAD-7 was high, but it was slightly lower than for discriminant validity (33).

A psychometric analysis of the World Health Organization quality of Life-Brief questionnaire by deMol, Visser, Aerts, Lodder, DeVries, and Oudsten (2018) was given to lung cancer and mesothelioma patients. The participants for the study (n-153) over 18, had a cytological or histological confirmed diagnosis of non-squamous non-small cell lung carcinoma (NSDLC) and started treatment with pemetrexed monotherapy or in combination with a platinum compound. The Cronbach's alpha was higher than 0.70 in measuring internal consistency. Construct validity was evaluated by correlating the WHOQOL-BRIF domains of EDRTC QLQ-C30 (European Organization from Research and Treatment of Cancer Quality of Life Questionnaire Core 30) using Person's Correlation coefficient (1176). deMol et al (2018) did demonstrate that the WHOQOL-BREF has satisfactory reliability in patients diagnosed with advanced disease lung cancer (1188).

The psychometric properties of the Bulgarian version of the Center for Epidemiologic Studies Depression Scale (CES-DC) were assessed by Tcocheva, Uzun, and Essau (2018) was used to measure depressive symptoms in children and adolescents. There were 700 participants in this study. The CES-DC had good internal consistency with Cronbach alpha of 0.89 (59). Validity of the scale, convergent validifies were established by calculating a Person correlation coefficient between SDQ Scores, the SCAS (Spence Child Anxiety Scale) and the CES-DL Scores (159). There was a high conversation and positive correlation was found between the SDQ and the CES-DC scores ($r=.61$; $p<01$) suggesting participants with a high depression score tended to obtain high scores on the SDQ (Strength and Difficulties Questionnaire). Tsocheva, et

al, did conclude that the Bulgarian CES-DE scores did have preliminary validity and reliability for Bulgarian adolescents, although refinement of the scale could continue.

The Center for Epidemiologic Studies Depression Scale (LES-D) was used by Jiang, Wang, Zhang, Wu, Li, Wu, & Tao (2019) on Chinese University Students. The final sample included 1,920 university students. There are several universities are in a region called Guangzhoc, in southeastern China (316). Participants were administrated the LES-D, the Beck Depression Inventory-II (BDI-II), and The Positive and Negative Affect Schedule (PARAS) (319-317). According to Jiang et al. (2019) the LES-D has been validated in a variety of Chinese samples. Furthermore, good reliability was demonstrated in suicidal attempters and residents with Cronbach's alpha values of 0.940 and 0.895, and a three-factor with 14 items was the best fit. The Chinese version of BDI-II had been validated in university students in mainland China and Taiwan with Cronbach's alpha of 0.85 and 0.88 respectively. The Chinese version of PANAS has been validated in residents from community with Cronbach's alpha for positive and negative affect of 0.85 and 083 respectfully (Jiang et al. 2019).

The psychometric analysis of Connor-Davidson resilience Scale (CD-RISC) was done by Sills and Stein (2007), on 511 undergraduates from San Diego State University (SDSU) in 2004-2005. The validity analyses were conducted with the subsample (n-131) that completed the CTQ-SFF and BSI. Furthermore, internal consistency of 10-item CD-RISC was evaluated by calculating Cronbach's alpha, the alpha value is .85 (Stills and Stein, 2007). Stills and Stein (2007) did conclude that the 10-item CD-RISC displays excellent psychometric properties and allow for efficient measurement of resilience.

Shin, Choi, Jeong, Mia, Aha, & Kim (2018), investigated the psychometric properties of the 10-item Conner-Davidson Resilience Scale in South Korea toxic chemical- exposed workers. The workers were exposed to hydrofluoric acid (HF). There were 991 participants in the study. According to Shin et al, 2018, the CD-RICE scale demonstrated good internal consistency [Cronbach's alpha – 0.95] (55). The conclusion of Shin et al (2018), the K-CD-RICE has a good psychometric propertied and its applicable for victims exposed to noxious chemical such as hydrofluoric acid (56).

Kessler's Psychological Distress Scales (K10) was validated in a sample of patients that were admitted to French emergency department for alcohol related disorders by Arnaus, Malet, Teissedre, Izaute, et al (2010). There were 71 participants in the study. Hospital Anxiety and Depression Scale (HADS) and the Hamilton depression Rating Scale (HDRS) were used to measure converge validity (1235). The internal consistency and factor structure were also examined (1235). The Cronbach coefficients for K6 is 0.76 and K10 is 0.84 indicating a satisfactory level of reliability (1038). Arnaud et al (2010), confirm the good psychometric characteristics of Kessler's Psychological Distress Scale (1241). Sampasa-Kanyinga, Zamorski and Colman (2018), evaluated the (K10) on Canadian military personnel. The participants were 6700 regular forces personal who completed the 2013 Canadian Forces Mental Health Survey. Cronbach's alpha (0.88) indicated a high level of internal consistency of the K10 (14).

Dr. R. G. Tedeschi gave me permission to use the Posttraumatic Growth Inventory. Cann, A., Calhoun, L., Tedeschi, R., Taku, K., Vishnevsky, T., Triplett, K., & Danhauer, S. (2010), a short form of the Posttraumatic Growth Inventory. Anxiety Stress and Coping, Cann et al (2010) decrease the number of items on the PTGI to 10. It was to develop with two items associated

with each factor of the five domains. The PTGI-SF can be used as alternative to the full PTGI when a brief instrument is necessary. The 10-item scale had internal reliability only very slightly lower than the full form PTGI, and the reliability of the total score was generally in the range of .90 across a variety of samples. None of the studies from which data were obtained employed a longitudinal framework in which growth was assessed at multiple points in time. PTGI-SF should only be used when a single total score for growth is desired. The cross-cultural appropriateness of the PTGI-SF should not be assumed since the original scale has been found to produce the same factor structure when used with other cultures.

Taku, Cann, Calhoun, Tedeschi (2008) investigated the dimensionality of the Posttraumatic Growth Inventory (PTGI). Tedeschi and Calhoun (1996) used orthogonal rotation to develop the PTGI that recognize the acknowledged relationships among the factors. Taku et al (2008), stated the PTGI has good constructs validity of factors structures and they supported the assumption that posttraumatic growth (PTG) is a multidimensional measure.

Horswill, Desgagne', Parkerson, Carleton, and Asmundison (2016) assessed the good-to-fit of five different Posttraumatic Growth Inventory (PTGI) models. The models were, 10-item – five factor, 18-item six factor, 18-item five factor, original (21-item five factor), and 25-item 6 factors. Horswill et al (2016), report that there is a strong internal consistency for total scale scores, ranging from .93 to .97. The internal consistency subscale scores were also generally strong, ranging from .81 to .94. It was suggested that the use of the 18 item six factor or 18-item five factor are important if researchers using the PTGI are interested in focusing on subscale scores (Horswill et al, 2016, 443). Horswill et al (2016), further stated that the original PTGI (21-

item) and 25-item, six factors are appropriate for identifying clinical posttraumatic growth targets and measuring clinical outcomes.

Internal consistency and sex differences were examined by Bates, Trajstman and Jackson (2004), on an Australian community of men and women who had experienced serious traumatic events. The Posttraumatic Growth Inventory (PTGI) was administrated one month after the traumatic event. As Bates, et al (2004), discovered there was no sex differences from the dimension of perception of new possibilities in life. Furthermore, Bates et al (2004), reported women scored higher than men on the dimension of relating to others personal strength, spiritual change and an appreciation of life (ps <.05). Finally, Bates et al, (2004), chronicled internal consistency was high (Cronbach a=.91). The inventory is reliable index of positive change in Australians for the general community after serious trauma (Bates, et al, 2004, 795). The overall sex differences were replicated of Tedeschi and Calhoun (1996).

Morris, Shakespeare-Finch, Rieck, & Newbery (2005), explored the factors structures of PTGI items to substantiate the multidimensional nature of PTG. Morris, et al. (2005) used undergraduate students in an Australian university. Morris et al. (2005) explored the relationship between positive and negative outcomes of the traumatic experience. They also examined the characteristic of the nature of traumatic event being explored as a possible predictor of PTG. The results of Morris et al. (2005) corroborated the applicability of the PTGI to measure the multidimensional nature of positive PTG.

Shakespeare-Finch and Enders (2008) validated the PTGI, by enlisting undergraduate students and their significant other from different departments across a college campus in Austria. Each participant was given demographic information to complete along with a PTGI.

The validity of the PTGI was supported by the correlation showing self-reported positive change and that change was correlation by significant other who knows the survivor before the traumatic experience.

Tedeschi, Calhoun, Sheikh & Marotta, reexamined the component structure of scores on the Posttraumatic Growth Inventory (PTGI) by using a study population that was significantly different from the original validation sample. The participants in this study were 124 individuals with a history of cardiovascular disease. The findings show that all five –subscales were significantly related with each other and with the total score (Tedeschi et al. 2005).

Principal Types of Data

Demographic and other pertinent data was collected utilizing the modified PBHS (Appendix I). The PBHS provided demographic information (age, gender identification, race, current parish of residence, current zip code of residence, what parish did you live in before Hurricane Katrina, what zip code did you live in before Hurricane Katrina) and several different experiences in the aftermath of Hurricane Katrina (house damaged, injured, disruption of education, had to be rescued, separation from family members and or friends, death of family members, friends or pets, lived with others because of Hurricane Katrina). Medical distress symptoms and diagnosis (high blood pressure, skin irritation, heart illness and reproductive health) was addressed in the PBHS.

The PTGI has five factors (referring to others, new possibilities, personal strength, spiritual change, and appreciation of life) in rebuilding their lives after the traumatic experience. The relationships between the PTGI factors and the top five medical/health manifestations was determined through bivariate analysis. Bivariate distribution was used to compare the medians

to determine any association between the variables (Frankfort-Nachmian and Nachmias, 2008). In the PTGI correlation coefficient was used to measure the strength and the direction of the association between five of the medical/health manifestations.

Protection of Human Subjects

The participants and community stakeholders were offered a copy of the results. The participants were asked to provide feedback on how the items of the survey made them feel. If items made them feel awkward or emotional the item was revised using the suggestions from participants. Anonymity cannot be guaranteed, so there exists a risk of identifying a participant. Anyone experiencing any type of discomfort or distress because of participation should contact me immediately.

The time was convenient to the participant, the location was in a secured private area with no unauthorized entry, group participation occurs only when individuals agreeing to participate in the room or in the area 15 minutes before and after the survey period, participants did not have to identify any identifying information other than general demographic necessary for the study, alphanumeric coding was assigned as participants are given a survey.

Summary

This chapter was divided into sections that cover research design and rational, population studied, study design, sample and sampling procedures, research questions and hypotheses and how the population was recruited. Data handling, and threats to validity were discussed.

Chapter 4: Results

Introduction

This research on physical distress and the psychological outcomes of posttraumatic growth was the first conducted on community residents who rebuilt their lives 15 years following a natural disaster along the Gulf Coast of the United States. The research was served to enhance medical and mental health service delivery mechanisms after a natural disaster. I presented physical distress, psychological distress and posttraumatic growth model, theoretical framework and supporting studies. My goal was to fill in any further questions or gaps regarding the study of posttraumatic growth, physical and psychological distress in disaster survivors.

IRB approval from Walden University was granted on December 05, 2019 (approval number -2019.12.05 16:27:29-06'00') and IRB approval from Southern University in New Orleans on January 08, 2020 (Appendix V).

Research Question and Hypothesis

RQ1: For those that experienced Hurricane Katrina is there a statistically significant relationships between the most prevalent factor of the PTGI and the top five medical/health manifestations of the PBHS of Hurricane Katrina survivors?

Ha1: For those that experienced Hurricane Katrina there is a relationship between the factors of PTGI and the medical manifestations of the PBHS of Hurricane Katrina survivors.

H01: For those that experienced Hurricane Katrina there is not a relationship between the factors of PTGI and the medical manifestations of the PBHS of Hurricane Katrina survivors.

RQ2: For those that experienced Hurricane Katrina is there a statistically significant relationship between the top five medical /health manifestations and the highest rated group of traumatic experiences on the PBHS of Hurricane Katrina survivors?

Ha2: For those that experienced Hurricane Katrina there is a relationship between medical manifestations and the traumatic experiences identified on the PBHS of Hurricane Katrina survivors.

H02: For those that experienced Hurricane Katrina there is not a relationship between medical manifestations and the traumatic experiences identified on the PBHS of Hurricane Katrina survivors.

RQ3: For those that experienced Hurricane Katrina is there a statistically significant relationship among the three groups of variables: #1 rated factor of the PTGI, the top five medical/health manifestations and the #1 rated group of traumatic experiences on the PBHS identified by Hurricane Katrina survivors.

Ha3: For those that experienced Hurricane Katrina there is a statistically significant relationship between the #1 rated factor of PTGI, the top five medical manifestations of the PBHS and the #1 rated group of traumatic experiences of the PBHS of Hurricane Katrina survivors.

H03: For those that experienced Hurricane Katrina there is not a statistically significant relationship between the #1 rated factor of PTSD, the top

five medical manifestations of the PBHS and the#1 rated group of traumatic experiences of the PBHS of Hurricane Katrina survivors.

Inclusion/Exclusion Criteria

Inclusion criteria was that participant were18 years old or older when Hurricane Katrina came ashore. The PTGI and PBHS was administrated to convenience samples of several independent communities in New Orleans. One such population selected was graduate and undergraduate students at Southern University in New Orleans; another selected population was churches in New Orleans. Participants from churches were recruited by emailing church members and pastors. Research partners were selected by referrals from pastor Dr. Torin Sanders. Dr. Sanders referred me to other pastors and some pastors, some of whom I knew. The pastors allowed me to recruit from their congregation. There was cooperative participation agreement between SUNO, church ministers (Appendix V) and I. SUNO was selected because of its substantial population of non-traditional students. I received IRB permission from SUNO (Appendix V). The pastors and deans of SUNO (School of Addictive Behaviors Counseling and Prevention and School of Social Work) provided me with a time and space to administer the survives.

Types of Data

Demographic and other pertinent data was collected using the PBHS (Appendix I). The PBHS provided demographic information (age, gender identification, race, current parish of residence, current zip code of residence, what parish did you live in before Hurricane Katrina, what zip code did you live in before Hurricane Katrina) using nominal and ordinal variables and several different experiences in the aftermath of Hurricane Katrina (house damaged, injured,

disruption of education, had to be rescued, separation from family members and or friends, death of family members, friends or pets, lived with others because of Hurricane Katrina) using dichotomous variables (yes, no). Physical distress symptoms and diagnosis (high blood pressure, skin irritation, heart illness and reproductive health) were addressed in the PBHS using dichotomous variables (yes, no).

The PTGI (Appendix II) has five factors (referring to others, new possibilities, personal strength, spiritual change, and appreciation of life) in rebuilding their lives after the traumatic experience. The PTGI uses a Likert scale (0 to 5). The relationships between the PTGI factors and the top five medical/health manifestations was determined through bivariate analysis. Bivariate distribution was used to compare the medians to determine any association between the variables (Frankfort-Nachmian & Nachmias, 2008). In the PTGI, correlation coefficient was used to measure the strength and the direction of the association between five of the medical/health manifestations.

Data Collection

The completed surveys did not have any identifying information on the form. Each survey did have a unique number attached to the survey. Survivors did not have the opportunity to have identical number. Once completed the surveys was collected and kept in the possession of the investigator. The data were downloaded onto a personal laptop, coded, and entered SPSS. Multiple regression analysis was used to assess relationship between among the three groups of variables: #1rated factor of the PTGI, the top five medical/health manifestations and the #1 rated group of traumatic experiences on the PBHS identified by the participants. Chi-square test of

independence was conducted. Two-tailed independent was conducted to address research questions. To analyze age and physical distress an ANCOVA was conducted.

Data Analysis

PBHS (Appendix A) and PTGI (Appendix B) were administrated to present residents of New Orleans, Louisiana. The surveys were administered from December 13, 2019 to March 16, 2020. The total number of surveys completed was 457, by participants from research partners (Appendix V), which is 1.6% of the expected total population. The Statistical Package for the Social Sciences (SPSS) was used to analyze PBHS and PTGI variables. Descriptive analysis of each variable was conducted. Frequency analysis of PBHS (Appendix VI) and PTGI (Appendix VII) are performance. The frequency analysis of PBHS had some responses above the 70% in positive trauma experiences ("yes" responses) as a survivor of Hurricane Katrina. The frequency analysis of the PTGI did not have any outstanding differences among the responses for the variables. Although there were 457 completed surveys 19.9% were not residents of Orleans Parish and did not have an Orleans zip code after Hurricane Katrina. Therefore, 347 surveys were used in the data set. All the participants were 18 or older when Hurricane Katrina came ashore (Appendix D). 100% of the participants lived in New Orleans before and after Hurricane Katrina (Appendix D).

The sex of the participants are men 38.9% (135), women are 57.3% (199), and transgender are 3.7% (13) of the participants (Appendix D).

Table 2

Gender Frequencies

	Frequency	Precent	Valid	Cumulative

			Percent	Percent
Male	135	38.9	38.9	38.9
Female	199	57.3	57.3	96.3
Transgender	13	3.7	3.7	100.0
Total	347	100.0	100.0	

The participant ethnicity was African American 76.1% (264), Hispanic/Latino 4% (14), Asian .3% (1), White/Caucasian 18.7% (65), Middle Eastern .6% (2), and American Indian .3 (1) (Appendix IV).

Table 3

Ethnicity Frequencies

	Frequency	Percent	Valid Percent	Cumulative Percent
Black/African American	264	76.1	76.1	76.1
Hispanic/Latino	14	4.0	4.0	80.1
Asian	1	.3	.3	80.4
White/Caucasian	65	18.7	18.7	99.1
Middle Eastern	2	.6	.6	99.7
American Indian	1	.3	.3	100.0
Total	347	100.0	100.0	

In the CDC Health Disparities and Inequalities report (MMWR, 2013) asthma, high blood pressure, diabetes and heart disease are cited as health disparities in Black communities. These illnesses are a part of PBFS (Appendix I). The frequency analysis of PTGI does not have any outstanding differences among the responses for the variables (Appendix VII).

Multiple linear regression was conducted to access an association between age (mean age 41.19, median age 42.00, minimum age 18, maximum age 72) when Katrina came ashore

(dependent variable) and medical manifestations (asthma, high blood pressure, diabetes, and heart disease).

Table 4

Linear Regression to Assess Association Between Age When Hurricane Katrina Came Ashore and Medical Manifestations

ANOVA[a]

Model	Sum of Squares	df	Mean Square	f	Sig
Regression	6002.869	4	1500.717	10.968	.000[b]
Residual	46658.094	341	136.827		
Total	52660.962	345			

a. Dependent Variable: AGE WHEN HURRICANE KARTINA CAME A SHORE
b. Predictors: (Constant), DIABETES, ASTHMA, HIGH BLOOD PRESSURE, HEART DISEASE

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	48.396	1.933		25.038	.000
Asthma	2.940	1.566	.099	1.877	.061
High blood pressure	-4.991	1.339	-.202	-3.728	.000
Heart disease	-8.157	1.892	-.234	-4.312	.000
Diabetes	.015	1.512	.001	.010	.992

a. Dependent Variable: AGE WHEN HURRICANE KARTINA CAME A SHORE

The model was weak with a correlation of 33% (R=.33), with only 11% variance explained (R square=.10), the model was not significant at .05 level.

The alternative hypothesis 1stated that survivors that experienced Hurricane Katrina there a relationship between the variables of PTGI and the medical manifestations of the PBHS in Hurricane Katrina survivors. The medical manifestations were chosen because they are a part of the Center for Disease Control's Health Disparities Inequalities report (MMWR Nov 2013). The PTGI variable of "I more clearly see that I can count on people in times of trouble" as the independent variable. The frequency analysis of the Posttraumatic Growth Inventory did not have any outstanding differences among the responses for the variables. The PTGI variables were chosen randomly.

Table 5

Regression of Medical Manifestations and PTGI Variable--Asthma

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	3.760	.160		23.513	.000
Asthma	-.057	.181	-.017	-.317	.751

…….

Table 6

Regression of Medical Manifestations and PTGI Variable—Heart Disease

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig

(Constant)	3.388	.197		17.202	.000
Heart Disease	.382	.213	.097	1.795	.074

a. Dependent Variable: I MORE CLEARLY SEE THAT I CAN COUNT ON PEOPLE IN TIMES OF TROUBLE

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Table 7

Regression of Medical Manifestations and PTGI Variable –High Blood Pressure

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	3.744	.106		35.461	.000
High Blood Pressure	-.058	.149	-.021	-.389	.697

a. Dependent Variable: I MORE CLEARLY SEE THAT I CAN COUNT ON PEOPLE IN TIMES OF TROUBLE

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Table 8

Regression of Medical Manifestations and PTGI Variable –Diabetes

Coefficient[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	3.784	.141		26.913	.000
Diabetes	-.101	.166	-.033	-.606	.545

a. Dependent Variable: I MORE CLEARLY SEE THAT I CAN COUNT ON PEOPLE IN TIMES OF TROUBLE

The regression for asthma model was weak with the correlation of 17% (R=.17), the model was not significant at the .05 level (p=.75). The regression for high blood pressure model is also found to be weak with a correlation of 21% (R=.21), the model was not significant at the .5 level (p=.50). The regression for diabetes was weak with a correlation of 33% (R=.33), with 1% pf variance explained (R-square = -.02), the model was not significant at the .05 level (p<.05: p=.45). However, the regression for heart disease model was strong with a correlation of 97% (R=.97) but only explained 9% variance explained (R-square=.09), the model was not significant at the .05 level but it is significant at the .10 level (p*≤10: p=.097). There was a significant correlation between heart disease and "I more clearly see that I can count on people in times of trouble". There was the possibility the survivors had heart disease before Hurricane Katrina. The weakness of the associations exhibited that medical manifestations did not influence PTGI variable of "I more clearly see that I can count on people in times of trouble". The null hypothesis "for those that experienced Hurricane Katrina there is not a relationship between the factors of PTGI and the medical manifestations of the PBHS in Hurricane Katrina Survivors".

Another variable of the PTGI was also analyzed. The variable "I have stronger religious faith" as the independent variable. The regression for asthma was weak with the correlation of 41% (R = .041), the model was not significant at the .5 level (p=.45). The regression model for high blood pressure was weak with a correlation of 10% (R=.10), the model was not significant at the .5 level (p=.49). The regression model for diabetes is weak with the correlation of 85% (R=.85) with 7% of variance explained (R-square .07), the model was not significant at the .5 level, but is significant at the .10 level (p*≤.10:p=.85). The regression model for heart disease was weak with a correlation of 41% (R-.41) with 2% variance explained (R square - .02), the

model is not significant at the .05 level. The null hypothesis 1"for those that experienced Hurricane Katrina there is not a relationship between the factors of PTGI and the medical manifestations of the PBHS in Hurricane Katrina Survivors". The weakness of the association could mean that a survivor's medical illness diagnosis did not influence "I have stronger religious faith". Survivors could have had "I have stronger religious faith" without a medical distress issue.

Additional regression analysis was completed on medical manifestations that are not listed in the CDC Health and Disparities and Inequalities report. The medical variables respiratory and skin irritation was used to assess an association to PTGI ("I more clearly see that I can count on people in times of trouble" and I have stronger religious faith"). In the frequency analysis of the PTGI variables there was not a statistically significant difference between the variables. Therefore, the variables were put on a single piece of paper and put in a container and drawn to make the selection random. The medical manifestations were the dependent variable and the PTGI is the independent variable. The PTGI variable "I more clearly see that I can count on people in times of trouble" was the independent variable.

The regression model for respiratory model is strong with a correlation of 93% (R=.93), the model was not significant at the .05 level.

Table 9

Regression of Medical Manifestation that was not CDC Health Disparities and PTGI

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.093	.009	.006	.431

a Predictors: (Constant), I MORE CLEARLY SEE THAT I CAN COUNT ON PEOPLE IN TIMES OF TROUBLE

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Consant)	.860	.067		12.880	.000
I More Clearly See That I Can Count on People In Times of Trouble	-.029	.017	-.093	-1.725	.085

a. Dependent Variable: RESPIRATORY

The regression was model for skin irritation was weak with a correlation of 8% (R=.08), the model is not significant at the .05 level (p=.43). The PTGI variable "I have stronger religious faith" is the independent variable. The regression model for respiratory was strong with a correlation of 92% (R=.92) with 9% variance explained (R square =.09), the model was not significant at the .05 level. The strong correlation between respiratory and the PTGI variable does confirm some reports from survivors of "having breathing problems, and chest hurt". The regression model for skin irritation was weak with a correlation of 23% (R=.23) with 1% of variance explained (R-square -.01), the model is not significant at the .05 level (p=.23). The model was weak for the medical manifestations that were not a part of the CDC's Health Disparities and Inequalities report—U. S. 2013 (MMWR Nov 2013), which cold imply there was no association with medical distress and PTGI variables.

The second research question asked if there is not a statistically significant relationship between medical manifestations and traumatic experiences identified on the PBHS in Hurricane

Katrina survivors. The medical manifestations sited in the CDC's Health Disparities and Inequalities report—U. S. 2013 (MMWR Nov 2013), asthma, high blood pressure, diabetes and heart disease were cited as heath disparities in black (African Americans) communities and these illnesses are a part of the PBFS (Appendix I). Multiple linear regression was conducted to assess an association between medical illness (dependent variable) and traumatic experiences identified on the PBHS (independent variable) in Hurricane Katrina survivors. The frequency analysis of PBHS had some responses above the 70% in positive trauma experiences ("yes" responses) as a survivor of Hurricane Katrina. The trauma experiences are house damaged (78.4%), displaced while you tried to return home (77.5), and loss of personal property other than house (70%).

Table 10

Regression of Medical Manifestations and Trauma Experiences—Diabetes

ANOVA[a]

Model	Sum of Squares	df	Means Square	f	Sig
Regression	.854	3	.285	1. 412	.239
Residual	68.952	342	.202		
Total	68.806	345			

a. Dependent Variable: DIABETES
b. Predictors: (Constant), LOSS OF PERSONAL PROPERTY OTHER THAN HOUSE, HOUSE DAMAGED, DISPLACED WHILE YOU TRIED TO RETURN HOME

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	.497	.034		14.540	.000
House Damaged Displaced While you Tried to Return Home	-.078	.068	-.064	-.143	.254
Loss of Personal Property Other Than House	-.049	.072	-.041	-.687	.493
	.110	.066	.100	1.676	.095

a. Dependent Variable: DIABETES

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Table 11

Regression of Medical Manifestations and Trauma Experiences -High Blood Pressure

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.103[a]	.011	.002	.500

a. Predictors: (Constant), LOSS OF PERSONAL PROPERTY OTHER THAN HOUSE, HOUSE DAMAGED, DISPLACED WHILE YOU TRIED TO RETURN HOME

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig

(Constant)	.497	.034		14.540	.000
House Damaged	-.078	.068	-.064	-1.143	.254
Displaced While You Tried to Returned Home	-.049	.072	-.041	-.687	.493
Loss of Personal Property Other Than House	.110	.066	.100	1.676	.095

a. Dependent Variable: HIGH BLOOD PRESSURE

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Table 12

Regression of Medical Manifestations and Trauma Experiences-- Heart Disease

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.049[a]	.002	-.006	.356

a. Predictors: (Constant), LOSS OF PERSONAL PROPERTY OTHER THAN HOUSE, HOUSE DAMAGED, DISPLACED WHILE YOU TRIED TO RETURN HOME

Coefficient

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	.855	.024		35.190	.000
House Damaged	.023	.049	.026	.465	.642
Displaced While You Tried to Returned Home	.020	.051	.023	.383	.702
Loss of Personal Property	-.038	.047	-.049	-.818	.414
Other Than House					

a Dependent Variable: HEART DISEASE

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Table 13

Regression of Medical Manifestations and Trauma Experiences -- Asthma

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.211[a]	.044	.036	.409

a Predictors: (Constant), LOSS OF PERSONAL PROPERTY OTHER THAN HOUSE, HOUSE DAMAGED, DISPLACED WHILE YOU TRIED TO RETURN HOME

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	.719	.028		25.759	.000
House Damaged	.077	.056	.076	1.385	.167
Displaced While You Tried to Returned Home	-.047	.059	-.047	-.798	.425
Loss of Personal Property	.179	.054	.197	3.338	.001
Other Than House					

a Dependent Variable: ASTHMA

The analysis does not indicate an association with medical manifestations and trauma experiences which is the null hypothesis. The null hypothesis "for those that experienced Hurricane Katrina there is not a relationship between the trauma factors of PBHS and the medical manifestations of the PBHS in Hurricane Katrina Survivors", the traumatic events would have occurred regardless of the medical manifestations of a survivor. The traumatic event occurred to 80% of the city land and population.

Alternative hypothesis three stated that survivors that experienced Hurricane Katrina, there is a statistically significant relationship between factors of PTGI, the five medical manifestations (asthma, high blood pressure, diabetes, and heart disease) of PBHS, and group traumatic experiences of the PBHS in Hurricane Katrina survivors. Asthma, high blood pressure,

diabetes, and heart disease are dependent variables. The independent variables of PTGI had "I have stronger religious faith", and "I more clearly see that I can count on people in trouble times". The traumatic experiences had "house damaged" and "I more clearly see that I can count on people in times of trouble" (PBHS).

The regression model for diabetes (dependent variable) and "I more clearly see that I can count on people in trouble times" and "house damaged" (independent variable) was strong with a correlation of 61% (R=.61) with 4% variance explained (R square = -.02), and the model was not significant at the .05 level (p = .45). The regression for heart disease model was strong with a correlation of 99% (R = .99), with 10% variance explained (R square =.10), and the model was not significant at .05 level (p=.34). The regression model for asthma was weak with a correlation of 12% (R = .12), with 15% variance explained (R square =.15), and the model was not significant at .05 level (p = .41). The regression model for high blood pressure was strong with a correlation of 62% (R = .62), with 4% variance explained (R = .04) and the model was not significant at the .05 level (p = .50). There was a strong correlation of diabetes and heart disease and the trauma experiences and PTGI. The survivors may have had the medical manifestations before Hurricane Katrina, or the sample had many survivors that had diabetes and heart disease.

The regression model for asthma (dependent variable) and "I have stronger religious faith" and "house damaged" (independent variable) was weak with a correlation of 11% (R = .11), with 8% variance explained (R – square =.14), and the model was not significant at the .05 level (p = .41).

Table 14

Regression of Medical Manifestations, Trauma Event and PTGI—High Blood Pressure

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.109	.012	.006	.499

a Predictors: (Constant), I HAVE STRONGER RELIGIOUS FAITH, HOUSE DAMAGED

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	.669	.088		7.584	.000
House Damaged	-.053	.066	-.044	-.815	.417
I have Stronger Religious Faith	-.038	.021	-.100	-1.864	.063

a. Dependent Variable: HIGH BLOOD PRESSURE

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Table 15

Regression of medical manifestations, Trauma Event and PTGI –Diabetes

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.093[a]	.009	.003	.449

a Predictors: (Constant), I HAVE STRONGER RELIGIOUS FAITH, HOUSE DAMAGED

Coefficients

Model	Unstandardized B	Coefficient Standard	Standardized Coefficients	t	Sig

		Error	Beta		
(Constant)	.845	.079		10.728	.000
House Damaged	-.041	.059	-.037	-.657	.492
I have Stronger Religious Faith	-.029	.018	-.085	-1.578	.116

a Dependent Variable: DIABETES

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Table 16

Regression of Medical Manifestations, Trauma Event and PTGI—Heart Disease

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.045[a]	.002	-.004	.357

a Predictors: (Constant), I HAVE STRONGER RELIGIOUS FAITH, HOUSE DAMAGED

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	.804	.063		12.845	.000
House Damaged	.017	.047	.020	.367	.040
I have Stronger Religious Faith	-.013	.017	-.039	-.733	-.464

a. Dependent Variable: HEART DISEASE

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Table 17

Regression of Medical Manifestations, Trauma Event and PTGI—Asthma

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.118[a]	.014	.008	.416

a Predictors: (Constant), I HAVE STRONGER RELIGIOUS FAITH, HOUSE DAMAGED

Coefficients[a]

Model	Unstandardized B	Coefficient Standard Error	Standardized Coefficients Beta	t	Sig
(Constant)	.802	.073		10.996	.000
House Damaged	.113	.055	.111	2.062	.040
I Have Stronger Religious Faith	-.013	.017	-.039	-.733	.464

a Dependent Variable: ASTHMA

The regression model for diabetes is strong with a correlation of 93% (R = .93), but only 9% variance explained (R-square =.3) and the model was not significant at the .05 level (p<.05:p = .44). The regression model high blood pressure was weak with a correlation of 10% (R = .10), with 12% variance explained (R-square =.06), and the model was not significant at the .05 level (p<.05:p=.49). The regression model for heart disease was weak with a correlation of 45% (R=.45), with 4% variance explained (R-square=0.2), and the model was not significant at the .05 level. The null hypothesis "for those that experienced Hurricane Katrina there was not significant relationship between #1 rated factor of PTGI, the top five medical manifestations of

the PBHS and the #1 rated group of traumatic experiences of the PBHS in Hurricane Katrina survivors" was retained.

There was no significant relationship between the medical manifestations and #1 rated factor of the PTGI and #1rated group of traumatic experiences on the PBHS. There was a strong correlation between diabetes and asthma and PTGI and the trauma experience although the models are not significant.

The regression model for diabetes (dependent variable) and "I more clearly see that I can count on people in times of trouble" and "displaced while you tried to return home" (independent variables) was strong with the correlation of 87%(R=.87) with 8% variance experienced (R-square=.02) and the model is not significant at .05 ($p<.05$: $p=.44$). The regression model for high blood pressure was weak with the correlation of 23% (R=.023), with 1% variance explained (R-square=.01) and the model was not significant at the .05 level ($p<.05$: $p=.50$). The regression model for heart disease was weak with the correlation of 10% (R=.10), with 10% variance explained (R-square=.04), and the model was not significant at the .05 level ($p<.05$: $p=.34$). The regression model for asthma is weak with the correlation of 49% (R=.49), with 2% variance explained (R-square =-.03) and the model is not significant at the .05 level ($p<.05$: $p=.41$). The regression model for diabetes was weak with the correlation of 50% (R=.50), with 3% variance explained (R-square-.03) and the model was not significant at .05 level ($p<.05$: $p=.45$). The null hypothesis "for those that experienced Hurricane Katrina there was not a significant relationship between the #1 rated factor of PTGI, the top five medical manifestations of the PBHS and the #1 rated of traumatic experiences of the PBHS in Hurricane Katrina survivors" was retained. However, there is a strong correlation between diabetes and "I more clearly see that I can count

on people in times of trouble" and "displaced while you tried to return home". Again, in the sample there is a large representation of survivors that are diagnosed with diabetes.

Summary

This chapter demonstrated the data collection and data analysis of the independent and dependent variables. Demographic data was collected and analyzed. nominal, ordinal and Likert scale data was collected. Multiple linear regressions were done for assessment of association of relationships between PTGI, medical manifestations, and traumatic experiences (PBHS). The results of the regression models did produce some correlations of variables, but no association that was statistically significant. In chapter 5, I consider the implications for social change and areas of future research.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This research on persons who experienced Hurricane Katrina and the relationship of physical distress and the psychological outcomes of posttraumatic growth was the first conducted on community residents who rebuilt their lives thirteen years following a natural disaster along the Gulf Coast of the United States. Physical health and psychological health can be endangered by a natural disaster. The research enhanced medical and mental health service delivery mechanisms after a natural disaster.

Research Questions and Hypotheses

RQ1: For those that experienced Hurricane Katrina is there a statistically significant relationship between the most prevalent factor of the PTGI and the top five medical/health manifestations of the PBHS of Hurricane Katrina survivors?

Ha1: For those that experienced Hurricane Katrina there is a relationship between the factors of PTGI and the medical manifestations of the PBHS of Hurricane Katrina survivors.

H01: For those that experienced Hurricane Katrina there is not a relationship between the factors of PTGI and the medical manifestations of the PBHS of Hurricane Katrina survivors.

RQ2: For those that experienced Hurricane Katrina there is a statistically significant relationship between the top five medical /health manifestations and the highest rated group of traumatic experiences on the PBHS of Hurricane Katrina survivors?

Ha2: For those that experienced Hurricane Katrina there is a relationship between medical manifestations and the traumatic experiences identified on the PBHS of Hurricane Katrina survivors.

H02: For those that experienced Hurricane Katrina there is not a relationship between medical manifestations and the traumatic experiences identified on the PBHS of Hurricane Katrina survivors.

RQ3: For those that experienced Hurricane Katrina is there a statistically significant relationship among the three groups of variables: #1 rated factor of the PTGI, the top five medical/health manifestations and the #1 rated group of traumatic experiences on the PBHS identified by Hurricane Katrina survivors.

Ha3: For those that experienced Hurricane Katrina there is a statistically significant relationship between the #1 rated factor of PTGI, the top five medical manifestations of the PBHS and the #1 rated group of traumatic experiences of the PBHS of Hurricane Katrina survivors.

H03: For those that experienced Hurricane Katrina there is not a statistically significant relationship between the #1 rated factor of PTSD, the top five medical manifestations of the PBHS and the#1 rated group of traumatic experiences of the PBHS of Hurricane Katrina survivors.

Interpretation of Findings

This study addressed the physical and psychological outcomes of posttraumatic growth of Gulf Coast residents rebuilding their lives 15 years after Hurricane Katrina. There were three research questions posed. The following interpretations reflect how the data and analysis

answered each questions and hypotheses. There was a statistically significant association between age and high blood pressure and heart disease. This is also true in the general population. The frequency analysis of the PTGI did not have any outstanding differences among the responses for the variables. The analysis does not indicate an association with medical manifestations and trauma experiences. There is no significant relationship between the medical manifestations and PTGI variable and trauma experience.

The residents of New Orleans were cooperative in completing the survey 15 years after Hurricane Katrina. Through the research partners, 457 survivors completed the survey. Some of the survivors did not live in New Orleans before Hurricane Katrina (Gretna, Jefferson Harvey, and St. Tammany). Those cities are a part of the Orleans Parish. The survivors were a part of a convenience sample. All of the survivors were 18 years or older when Hurricane Katrina came ashore. The final analysis of data used 347 completed surveys. I surveyed women 199 (57%), men 135 (38.9%), and 13 (3.7%) transgender survivors. The survivor's ethnicity is African American (75.1%), Hispanic/ Latina (4%), Asian (.3%), White/Caucasian (18.7%), Middle Eastern (.6%), and American Indian 1 (.3%). In exploring their concerns about the relevance of their life post Hurricane Katrina, the survivors stated the remarks in the open-ended question of the PBHS as shown in Table 18:

Table 18

Responses from Survivors About Their Traumatic Experience with Hurricane Katrina

Survey Number	Percent of Respondents	Survivors Concern
362	.028%	I learned very life lesions …how to live, how to respect and treat others,

			how to grow, how to pray different environment, what is needed and what may not be needed and how to survive. Most importantly, GOD was with me the whole entire time and still in. I am BLESSED.
286		.042%	anxiety and breathing Concerns
304		.007%	so I lost my wife and Business
158		.007%	Working on financial stability. Having to replace items I lost after Katrina put me in dept.
163		.028%	Hurricane Katrina changed my life forever. PTSD know I know the time meaning, not knowing if I would see my support system (family) some here, some there, the loss of my older love one's months after, my kids worry about me, them father
212	.042%		Since Katrina I am unable to cope with a lot of life problems.
193	.028%		I am terrified of all mentions of bad weather
130	.007%		It was an eye opener to my degree of adaptability. I am grateful for my faith. It was my sustaining grace
105	.028%		My child is still afraid of storms
38	.042%		loss of weights, drug use, depression

49	.042%	headaches, depression, lightheaded
50	.042%	I became ill with high blood Pressure
328	.028%	Katrina will ring in minds of people forever. Trauma of Katrina effective my life and my health. Thank "GOD" for strong praying family
193	.028%	I am terrifying of all mention of bad weather
137	.042%	depressed and cannot sleep

The CDC Health Disparities Report site asthma, high blood pressure, asthma, heart disease, and diabetes as health disparities in black (African American) communities. These medical manifestations are in the PBFS among with trauma experiences. Multiple regression was used to analyze PBFS trauma experiences, PTGI, and medical manifestations to determine if an association exists between the variables. The variables for psychological distress of traumatic experiences were identified on the PBHS (independent variable) in Hurricane Katrina survivors. The frequency analysis of PBHS had some responses above the 70% in positive trauma experiences ("yes" responses) as a survivor of Hurricane Katrina. The trauma experiences were house damaged (78.4%), displaced while you tried to return home (77.5), and loss of personal property other than house (70%). The frequency analysis of the Posttraumatic Growth Inventory does not have any outstanding differences among the responses for the variables (Appendix VII).

As with Manove, Preston, Lowe, Bonumwezi, Waters and Rhodes (2019) survivors experienced PTG within all the domains of the PTGI. The use of churches as a research partner

was an asset to survivors as in Harris, Erbes, Engdahl, Tedeschi, Olson, Win Skowski and McMahill, (2010). Cook, Aten, Moore, Kook, Davis (2013) more women completed the survey than men and that may be related to the religious partners. The respondents answered the open-ended question in the PBHS with: “gratitude for GOD”, Thank GOD for their family”, “I am blessed”, and “God was with me the whole entire time”. As with Cepeda and Kaplan the disaster related experiences were uniquely limited to various mental health outcomes, there is also a heightened psychological vulnerability among those without suitable resources.

In Paxson, Fussell, Rhodes, Water (2012), the effects of exposure to traumatic events during Hurricane Katrina on the survivor’s mental health has not faded 15 years later, in some cases it has gotten worst, the survivors reported. The respondents answered the open -ended questions in the PBHS with: “I have nightmares when it is raining at night”, “anxiety and breathing concerns”, “I get nervous and can not sleep when a storm is coming”, and “I am afraid to stay here during hurricane season”.

Lowe, Willis, Rhodes (N. D.) report there was a need to connect survivors with comprehensive medical care that address both physical and mental health symptoms. In this study of the survivors from Hurricane Katrina there is a strong correlation between diabetes and “I more clearly see that I can count on people in times of trouble” and “displaced while you tried to return home”. The participants did not have access to medical resources after the Hurricane and they were displaced. The participants relied on word of mouth to resources to receive services. Some participants report talking others mental health medication.

Limitations of Study

The limitations of the study are several, there was no before Hurricane Katrina medical information. This was a problem because we could not determine if the associations were due to Hurricane Katrina. The racial makeup of the sample was one sided. The researcher did not have access to additional racial and ethnic groups. Another limitation can be found in the content and format of the surveys (PBFS and PTGI). The PBFS did not have cancer listed as aa medical manifestation. The participants should have provided a medical manifestation list before Hurricane Katrina. There also should have be given the option of "other" as a choice, in medical manifestation. The PTGI was not formatted corrected. In the survey the Likert scale was not the same as the directions on the form. It was a problem because the researcher had to answer multiple questions about the possible answers to the questions. The items did not have to be recorded for the analysis.

Implications for Social Change

This research did confirm the types and levels of community resources for future disaster planning as well as additional planning for disaster aftermath. Implications for social change can be found in policy development for disaster survivors. Future disaster response policy should improve access to medical services and medication management when a community is not assessable. The community should be informed of the policies well in advance of any disaster or hurricane season. Physicians should have electronic records so they can be mobile. Physicians should also have a crisis number as a part of their disaster plan for the office, to give to their patients. Drug stores should also have an electronic prescription history of hurricane survivors.

City and state government should have a data base of participants that used the emergency help system (211 or 311) for additional services of hurricane survivors.

FEMA resource centers established for survivors within 48 hours of danger ceasing. City and state governments should have policies that keep the public informed of status of disaster, with recommendations for safe and self-care.

Conclusion

The findings of the study showed that Hurricane Katrina survivors demonstrated a significant association between age, high blood pressure, and heart disease. The weakness of the association demonstrates that medical manifestations were not found to influence PTGI variables in this study. However, there was a strong correlation between respiratory illness and PTGI variable "I have strong religious faith". No statistically significant relationship between the trauma variables and medical manifestations of the PBHS were found in this study. The traumatic variables of this study were significantly associated with house damaged, loss of personal property and displaced while you tried to return home. It is unclear whether the medical conditions would have occurred without the traumatic experience. The traumatic event occurred to 80% of the city's land and population. However, there is a strong correlation between diabetes and "I more clearly see that I can count on people in times of trouble" and "displaced while you tried to return home", those are trauma experiences.

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Appendix A: Prevalence & Behavioral Health Screen (PBHS)

Releases to use surveys from developers

I contacted Dr. Tonya Cross Hansel, DSW Program Director at Tulane University School of Social Work, the developer of the Perseverance and Behavior Health Survey (PBHS). I have received written permission on April 18, 2019 to use the survey. According to Dr. Hansel, the PBHS is a merger of several health scales.

Perseverance & Behavioral Health Screen

Today's Date: _____ Number: _____ Age when Katrina came ashore: _____

---

1. Did you live in Orleans Parish before Hurricane Katrina? ◯ Yes ◯ No

2. What zip code did you live in before Hurricane Katrina? _____

3. Do you presently live in Orleans Parish? ◯ Yes ◯ No

4. What zip code did you live in after Hurricane Katrina? _____

5. Gender:

◯ Male
◯ Female
◯ American
◯ Other: _____

6. Ethnicity/Race: (**Mark all that apply**)

◯ Black/African American ◯ Hispanic/Latino ◯ Asian
◯ White/Caucasian ◯ Middle Eastern
◯ Indian ◯ Transgender

Medical History

Have you experienced, or have been diagnosed with any of the following medical conditions?

	Yes	No		Yes	No
a. Respiratory	◯	◯	f. Fatigue	◯	◯
b. Gastrointestinal	◯	◯	g. High Blood Pressure	◯	◯
c. Asthma	◯	◯	h. Diabetes	◯	◯
d. Headaches	◯	◯	i. Skin Irritation	◯	◯
e. Heart Disease	◯	◯	j. Reproductive Health Issues	◯	◯

7. Please indicate any of the following you experienced in the aftermath of Hurricane Katrina.

	Yes	No		Yes	No
a. House destroyed	◯	◯	l. Family members/friends died	◯	◯
b. House damaged	◯	◯	m. Family member's/friend's house destroyed/damaged	◯	◯
c. Displaced – while you /your family tried to return	◯	◯	n. Attempted suicide of family members/friends	◯	◯

Home					
d. Loss of personal property other than house	◯	◯	o. Participated in recovery of others	◯	◯
e. Loss of personal property other than house	◯	◯	p. Lived with others because of Katrina	◯	◯
f. Victimized (i.e. robbed, physically, assaulted)	◯	◯	q. Housed others because of Katrina	◯	◯
g. Loss of income or parental unemployment	◯	◯	r. Separation from/death of family pet	◯	◯
h. Family members/friends injured	◯	◯	s. Disruption in education	◯	◯
i. Had to be rescued	◯	◯	t. Transferred schools	◯	◯
j. Family members/friends killed	◯	◯	u. Suicide of family members /friends	◯	◯
k. Became seriously ill	◯	◯			

Physical & Psychological Findings of Katrina

8. Please read each question carefully and ***circle the number*** that best represents your situation.

	Not at all	**Mildly**	**Moderately**	**Markedly**	**Extremely**
a. Hurricane Katrina disrupted your work/school	0	1	2	3	4
b. Hurricane Katrina disrupted your social life/leisure activities	0	1	2	3	4
c. Hurricane Katrina disrupted your family life/home responsibilities	0	1	2	3	4

9. Do you feel you are still experiencing problems BECAUSE of the aftermath of Katrina?

◯ YES ◯ NO

10. Please write any other information that you may feel is relevant in your life regarding Hurricane Katrina.

Thank you very much for taking the time to complete the survey!

Elements of PBHS

Element I: Loss of property

House destroyed

House damaged

Loss of personal property other than house

Element II: Personal Tragedy

Loss of personal property other than house

Victimized (i.e. robbed, physically, assaulted)

Family members/friends died

Had to be rescued

Became seriously ill

Family member's/friend's house destroyed/damaged

Attempted suicide of family members/friends

Suicide of family members /friend

Transferred schools

Element III: Where do you live?

Displaced – while you your family tried to return home

Loss of income or parental

Housed others because of Katrina

Separation from/death of family pet

Disruption in education

Lived with others because of Katrina

Family members/friends killed

Appendix B: Posttraumatic Growth Inventory (PTGI)

Releases to Use Surveys From Developers

There is no charge for use of the PTGI in not-for-profit research. However, the inventory is not to be reproduced for any kind of general distribution, and it may not be used in for-profit enterprises.

In reciprocation for its use in your work, please send us a gratis copy of any manuscripts, theses, dissertations, research reports, preprints, and publications you prepare in which our materials, or any version of them, is used.

Both L. G. Calhoun and R. G. Tedeschi can be contacted at: Department of Psychology - UNC Charlotte - Charlotte, NC 28223 USA

November 23, 2017, Dr. R. G. Tedeschi did give me permission to use the Posttraumatic Growth Inventory for a profit educational institution if I was not receiving any compensation for its use.

Posttraumatic Growth Inventory

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

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

	A. Not at all	**B. Very small degree**	**C. Small degree**	**D. Moderate Degree**	**E. Great degree**	**F. Very great degree**
I changed my priorities about what is important in life						
I have a greater appreciation for the value of my own life						
I developed new interests						
I have a greater feeling of self-reliance						
I have a better understanding of spiritual matters						
I more clearly see that I can count on people in times of trouble						
I established a new path for my life						
I have a greater sense of closeness with others						
I am more willing to express my emotions						
I know better that I can handle difficulties						
I am able to do better things with my life						
I am better able to accept the way things work out						
I can better appreciate each day						
New opportunities are available which wouldn't have been otherwise						
I have more compassion for others						

I put more effort into my relationships						
I am more likely to try to change things which need changing						
I have stronger religious faith						
I discover that I'm stronger that I thought I was						
I learned a great deal about how wonderful people are						
I better accept needing others						

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

PTGI Factors

Factor I: Relating to Others

I better accept needing others.

I learned a great deal about how wonderful people are.

I have more compassion for others.

I put more effort into my relationships.

I have a greater sense of closeness with others.

I am more willing to express my emotions.

I more clearly see that I can count on people in times of trouble.

Factor II: New Possibilities

I am more likely to try to change things which need changing.

New opportunities are available which wouldn't have been otherwise.

I am able to do better things with my life.

I established a new path for my life.

I developed new interests.

Factor III: Personal Strength

I discovered that I'm stronger than I thought I was.

I am better able to accept the way things work out.

I know better that I can handle difficulties.

I have a greater feeling of self-reliance.

Factor IV: Spiritual Change

I have a stronger religious faith.

I have a better understanding of spiritual matters.

Factor V: Appreciation of Life

I can better appreciate each day.

I changed my priorities about what is important in life.

I have a greater appreciation for the value of my own life

Appendix C: Review of Literature

Review of literature: Self-efficacy Theory

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Benight, Harper, Benight, Harper (2002)	The purpose of this study was to investigate the mediational influence of coping self-efficacy (CSE) -Perceptions on the relationship between acute stress response (ASR) and subsequent psychological distress following two natural distresses	46 residents completed questionnaires. -In May 1996 A 12,000-acre fire ravaged a small mountain community in Colorado. July 1996 a flash flood killed two individuals and destroyed the communities' fire station water supply, phone service, electricity. -And major transportation routes in and out of the city anywhere from 2 days to 60 days	3 to 8 weeks after the 2nd disaster and 1 year and 8 days the participants were given the same set of questionnaires. Stanford Acute Stress Reaction Questionaries' (SARSRQ) -Natural Disaster coping self-efficacy scale (HDLSE) Brief Symptom Inventory of Event Scale (IES) -Demographic assessment Time 1- The data was collected in person and participants were paid $20.00. -Time 2- The participant were given the option of mailing completed questionnaires to the University or a researcher could pick the completed	Means, standard deviations, and bivariate correlation for the study variables were completed -A hierarchical regression conducted	The results of this study suggest that ASR and time CSE are important cross – sectional predictions of distress shortly after the disaster the best predictor of Time 2 outcomes appear to be Time 1 distress levels -The findings also indicate that shortly after a trauma an individual is retrospective ASR and perceived CSE perception will be strongly related to their psychological outcomes at that time. -A clinical implication would be	- The sample was of convenience - Explanation of the data was restricted. -Data was restricted -The different proceed for collecting data lecture. Time 1 and Time 2 -The sample size small -the ambiguity resulting from bidirectional relationship between ASR and CSE

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
			questionnaire from their home. - Participants were also paid $20.00 and debriefed		incorporating cognitive behavioral techniques specifically tied to CSE perception could be assigned to help effected people increase their major experiences in dealing with logistical nightmares, material losses, emotional distress and other major recovery challenges.	

Review of Literature: Self-Efficacy

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Benight, Irousa Carver, Wyings, Burnett, Greenwood, Klebe (1999)	The importance of: Lost Resources, Coping Self-Efficacy	Hurricane Andrew 180 participants southern county 1-4 months post hurricane 135-8-12 months post hurricane	The Hurricane coping self - efficacy measure -used to assess perceptions of (CSE) follow the hurricane. -- The measure included: threat of looting, insurance company difficulties obtain shelter, controlling emotional reaction. -Questions were answered on a seven-point scale. -Conservation of resources evaluation. (lor-e) – 42: items with a mixture of material resources. 5 points like - type scale used to assess the degree of loss -Psychological Distress: Symptom Checklist. 90 item self-report used to investigate emotional reactions to traumatic events.	The analyzed relationships among the variables several path models were tested against one another utilizing Lisrel Covariate structured analysis CLi2 analysis CLi2 Goodness of index(GFI) Adjusted goodness of Git Root mean square residual goodness -of – GIT index (RMSR) Root Means Square Error Approximation (RMSEA) Parsing Index	Demographics 81% some college or vocational training 13% indicating very little damage 27% apart of extreme damage. -No differences were found on any of the demographic variables between the point 2 participants. -GFI and AGFI were close to 1. The (RMSR) and the (RMSA) were close to 0. - The Parsing Index did not suggest the full model was better due to the increase in the number of variables in the model. -More resources lost was related to greater reported levels of active and avoidant	Provide tangible resources to disaster victims quickly as possible. - Disaster intervention teams could efforts directly at individual perceptions of CSE. -The combination of handled objective resource allocation combined with strategies bolstering individual CSE perceptions might enhance already occurring active coping mechanism

Author/ Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
			-Coping Behaviors – a modified versing COPE 60-item measure of different coping behaviors 28- Item were utilized from the original scale.		coping behavior. -Coping self-efficacy perception should significant paths to psychological distress at Time 1 and Time 2 with greater levels of CSE lead to lower levels of distress.	

Review of Literature: Physical Distress

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Sastry and Gregory (2013)	The effects of Hurricane Katrina on disability related measures of health among adults from New Orleans a year after the hurricane came ashore	3525-pre-Hurricane Katrina -2784 post Hurricane Katrina	Data from American Community Survey (ACS) to compare disability rates between the pre-Katrina population of New Orleans and the same population in a year after Hurricane Katrina	Propensity weighs were used to comparability between the pre and post Hurricane Katrina samples	A significant decline in health for the adult population from New Orleans in the year after the hurricane -The disability rate rising from 20.6% to 24.6%. -The increase is concentrated among young and middle aged Black females	The study only examined outcomes in the year after Hurricane Katrina, and did not capture longer-term disability - related outcomes -The ACS disability questions do not identify specific health conditions -They do not capture the extent to which social and environmental factors contribute to or ameliorate a person's disability -Disability reports may be affected by mode of interview and by obtaining property reports rather than self -reports -The post Katrina sample may not adequately capture individuals who were institutionalized and may be

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
						mortality section

Review of Literature: Psychological Distress

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Kessler, Galea, Gruber, Sampson, Wessely (2008)	Study Patterson's-Correlates of recovery from hurricane related post-traumatic stress disorder (PTSD), broader anxiety, mood disorders and suicidality	Representative sample of 815 pre hurricane residents in the area affected by Hurricane Karina. -The residents were interviewed 5-8 months after the hurricane and again one year later	Anxiety-Mood disorder was measured by the K6 scale of non-specific psychological distress -Suicidality was assessed with questions about occurrence of suicidal ideation, plans and attempts within 12 months (Trauma Screening Questionnaires)	Cross tabulations were used to examine patterns of onset recovery and persistence of estimated DSM-IV anxiety - mood disorders that qualify for the designations of SMI and MMI of suicidal ideation, plans and attempts	High prevalence of hurricane related mental illness remains widely distributed in the population nearly two years after the hurricane -hurricane related stress clearly is playing a critical role in the high prevalence of hurricane related anxiety mood disorders in this population -The association between these stresses and the mental health outcomes were stronger among affected people from areas other than New	Mental health disorders were measured with screaming scales rather than clinical interviews _The sampling frame excluded people who were unreachable by telephone which made the CAG response rate low -The ratings of hurricane related stress were retrospective and subjective _It is possible that in measured common causes influenced the observed association (pre hurricane history of psychopathology

					Orleans Metro Area -The adverse effects are only weakly related to social-demographic variables means that efforts to address the needs for mental health treatment in this population need to deal with all segments of the population rather than high-risk population segments

Review of literature: Psychological Distress

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Harville, Xiong, Buekens, Pridjian, Elkind, Hirsch (2010)	To examine demographic and hurricane related predictors of resilience and posttraumatic growth	222 pregnant southern Louisiana women 292 postpartum women completed interviews at delivery and 8 weeks later	Women were recruited by a research assistance during a routine prenatal visit -All were recruited between January 2006 and May 2007 -Pregnant participants completed a questionnaire and were interviewed during their regular office visit _Postpartum women completed a questionnaire recruitment and a telephone interview at approximately, eight weeks postpartum -Resistance - The Edinburgh Postnatal Depression Scale -Social Support- Social Support Behaviors Inventory from the Perianal Psychological Profile Demographics- age, race, parity, marital	Cross-tabulations and chi-square test were used to examine the relationship among the predictors, mental health outcomes -Perceived benefit and Hurricane Experience	Many pregnant women and post-partum women are resistant from mental health consequences of disaster and perceived benefits after a traumatic experience	Women who were evacuated further than Baton Rouge and were unable to return to New Orleans were not included in the sample

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
			status, income, and highest grade were self-reported -Perceived benefit – face to face interview and asked did they have any good outcome from the disaster			

Review of Literature: Psychological Distress

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Chan, Lowe, Weber, Rhodes (2015)	The impact of pre and post disaster social support on longer term mental health – both psychological distress and post-traumatic stress	Four years after Hurricane Katrina wave 3- April 2009 to March 10, 2009 N=348)	General psychological Distress K6 scale, Posttraumatic Stress was measured with the Impact of Event Scale Revised (IES-R) -Perceives social support was measured with an abbreviated for of the Social Provisions Scale (SPS) -Hurricane exposure was measured by 12 self-report questions LAVAAN Loss and Resources during Hurricane Katrina and /or Rita	Social support from Wave 1 to Wave 3 were assessed using paired sample t-test -A multivariate Regression Analysis were performed to examine the effects of waves 2 and 3 controlling for age, and number of children -At wave 3, a medication analysis with boot strapping resampling procedure was conducted with LAVAAN package	Pre-Disaster social support has a broad and long-term influence on post disaster mental health outcomes -Higher levels of post disaster perceives social support continued to be associated with lower levels of GPD four years after the disaster	The instrument used to measure psychological was limited to posttraumatic stress (PTS) and general psychological distress (GPD) -The measure of perceived social support did not differentiate between emotional instrumental and tangible supported data was not collected on actual support received -The external validity of the study was limited both by the specific disaster context of Hurricane Katrina -They did not collect detailed information on the frequency and severity of each

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
						hurricane related stressors.

Review of Literature: Posttraumatic Growth

Author Date	Problem statement or research question	Demographic	Methodology	Analysis	Findings	Limitations
Rhodes and Tran (2012)	The impact of demographic factors and severity of stress	Adult survivors of Hurricane Katrina Black (n=265) White (n=715)	Data was obtained through the Interuniversity consortium for Political and Social research form the Baseline Survey of the Hurricane Katrina community Advisory group Survey (Kessler, 2009)	Hierarchical Linear Regression	Being Black, older, having lower educational attainment, and experiencing greater perceived stress and loss during Hurricane Katrina positively predicted greater posttraumatic growth. -being female living below the poverty line, and experiencing greater perceived stress and loss positively predicted past traumatic stress symptoms. -females and Black survivors has higher posttraumatic growth compared to men and white survivors. -Individuals with lower	Discrimination was not asked about directly. -The sample may not be representative of Katrina survivors at large given that survivors with higher threat exposure and distress severity were less likely to participate. -The ability to generalizability pf this data to Katrina survivors at large. -The use of secondary data was limited to the availability and quality of the measures in the data set. -All measures were self-reported - Six months past disaster is a relative short time frame for assessing the stability of psychological outcomes.

				income and lower levels of educational attainment were associated with greater posttraumatic growth.

Appendix D: Demographic Statistics

FREQUENCY OF PARTICIPANT'S AGE WHEN HURRICANE KARTINA CAME A SHORE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18	8	2.3	2.3	2.3
	19	1	.3	.3	2.6
	20	2	.6	.6	3.2
	21	6	1.7	1.7	4.9
	22	2	.6	.6	5.5
	23	1	.3	.3	5.8
	24	14	4.0	4.0	9.8
	25	8	2.3	2.3	12.1
	26	4	1.2	1.2	13.3
	27	8	2.3	2.3	15.6
	28	3	.9	.9	16.4
	29	16	4.6	4.6	21.0
	30	9	2.6	2.6	23.6
	31	12	3.5	3.5	27.1
	32	5	1.4	1.4	28.5
	33	6	1.7	1.7	30.3
	34	6	1.7	1.7	32.0
	35	16	4.6	4.6	36.6
	36	6	1.7	1.7	38.3
	37	7	2.0	2.0	40.3
	38	2	.6	.6	40.9
	39	8	2.3	2.3	43.2
	40	13	3.7	3.7	47.0
	41	10	2.9	2.9	49.9
	42	15	4.3	4.3	54.2
	43	11	3.2	3.2	57.3
	44	8	2.3	2.3	59.7
	45	14	4.0	4.0	63.7
	46	7	2.0	2.0	65.7
	47	8	2.3	2.3	68.0

	48	11	3.2	3.2	71.2
	49	12	3.5	3.5	74.6
	50	11	3.2	3.2	77.8
	51	6	1.7	1.7	79.5
	52	9	2.6	2.6	82.1
	53	7	2.0	2.0	84.1
	54	5	1.4	1.4	85.6
	55	3	.9	.9	86.5
	56	2	.6	.6	87.0
	57	2	.6	.6	87.6
	58	5	1.4	1.4	89.0
	59	4	1.2	1.2	90.2
	60	8	2.3	2.3	92.5
	61	3	.9	.9	93.4
	62	6	1.7	1.7	95.1
	63	4	1.2	1.2	96.3
	64	3	.9	.9	97.1
	65	3	.9	.9	98.0
	66	2	.6	.6	98.6
	68	2	.6	.6	99.1
	70	2	.6	.6	99.7
	72	1	.3	.3	100.0
	Total	347	100.0	100.0	

Frequency of zip-codes after Hurricane Katrina

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES ORLEANS PARISH RESIDENT	347	100.0	100.0	100.0

Statistics

		Zip-codes after Hurricane Katrina	LIVED IN ORLEANS PARISH AFTER HURRICANE KATRINA
N	Valid	347	347
	Missing	0	0

GENDER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	135	38.9	38.9	38.9
	Female	199	57.3	57.3	96.3
	Transgender	13	3.7	3.7	100.0
	Total	347	100.0	100.0	

ETHNICITY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BLACK/AFRICAN AMERICAN	264	76.1	76.1	76.1
	HISPANIC/LATION	14	4.0	4.0	80.1
	ASIAN	1	.3	.3	80.4
	WHITE/CAUCASIN	65	18.7	18.7	99.1
	MIDDLE ESTERN	2	.6	.6	99.7
	AMERICAN INDIAN	1	.3	.3	100.0
	Total	347	100.0	100.0	

APPENDIX E: Cooperation from Research Partners

Cooperative Research Partner Name

Dear Danita M. Muse,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Physical and Psychological findings of Hurricane Katrina within the (Location of partner). As part of this study, I authorize you to administer your survey for data collection. Individual participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include "a set time to administer the survey, permission to put flyers out to tell your congregation when and where I am going to administer the survey, and a space to administer the survey. We reserve the right to withdraw from the study at any time if our circumstance change.

As the student I will be responsible for complying with our site's research policies and requirements.

I understand that I will not be naming your organization in the doctoral project report that is published in ProQuest.

I confirm that I am authorized to approved research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising facility/staff without permission from the Walden University IRB.

Sincerely,

Research Partner's Name
Research Partner's agency

Cooperation from a Research Partner

Else Pedersen
Bridge House/Grace House
Chief Executive Officer
4150 Badhart Blvd
New Orleans, La.70125

Dear Danita M. Muse.

Based on my review of your research proposal, I give permission for you to conduct the study entitled Physical and Psychological findings of Hurricane Katrina within the ~~Christian Unity Baptist~~ Bridge House/ Grace House ~~Church~~. As part of this study, I authorize you to administer your survey for data collection. Individual participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include "a set time to administer the survey, permission to put flyers out to tell your congregation when and where I am going to administer the survey, and a space to administer the survey.. We reserve the right to withdraw from the study at any time if our circumstance change.

As the student I will be responsible for complying with our site's research policies and requirements.

I understand that I will not be naming your organization in the doctoral project report that is published in Proquest.

I confirm that I am authorized to approved research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising facility/staff without permission from the Walden University IRB.

Sincerely,

Else Pedersen

Else Pedersen
Bridge House/Grace House
Chief Executive Officer

Cooperation from a Research Partner

Rev. Alfred Jordan
GAZA Missionary Baptist Church
7258 Ransom St.
New Orleans, La. 70126

Dear Danita M. Muse,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Physical and Psychological findings of Hurricane Katrina within the GAZA Missionary Baptist Church. As part of this study, I authorize you to administer your survey for data collection. Individual participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include "a set time to administer the survey, permission to put flyers out to tell your congregation when and where I am going to administer the survey, and a space to administer the survey.. We reserve the right to withdraw from the study at any time if our circumstance change.

As the student I will be responsible for complying with our site's research policies and requirements.

I understand that I will not be naming your organization in the doctoral project report that is published in Proquest.

I confirm that I am authorized to approved research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising facility/staff without permission from the Walden University IRB.

Sincerely,

Rev. Alfred Jordan
GAZA Missionary Baptist Church

Cooperation from a Research Partner

Rev C. J. Arvie
St. Mark Missionary Baptist Church
3219 Danneel Street
New Orleans, La. 70115

Dear Danita M. Muse,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Physical and Psychological findings of Hurricane Katrina within the St. Mark Missionary Baptist Church. As part of this study, I authorize you to administer your survey for data collection. Individual participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include "a set time to administer the survey, permission to put flyers out to tell your congregation when and where I am going to administer the survey, and a space to administer the survey.. We reserve the right to withdraw from the study at any time if our circumstance change.

As the student I will be responsible for complying with our site's research policies and requirements.

I understand that I will not be naming your organization in the doctoral project report that is published in Proquest.

I confirm that I am authorized to approved research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising facility/staff without permission from the Walden University IRB.

Sincerely,

Rev. Christopher J. Arvie

Rev C. J. Arvie
St. Mark Missionary Baptist Church

SOUTHERN UNIVERSITY AT NEW ORLEANS
6400 PRESS DRIVE
Leonard S. Washington Memorial Library
NEW ORLEANS, LOUISIANA 70126
(504) 286-5225 or 286-5227

Leonard S. Washington Memorial Library

Wednesday, January 8, 2020

To: Danita Muse,
Doctoral Student
College of Health Science
Walden University

From: Shatiqua Mosby-Wilson, Chair
SUNO Human Subjects Committee

Re: IRB Application for Human Subjects Approval -
Physical Distress and Psychological Outcomes: An examination of Hurricane Katrina Rebuilders

cc: SUNO IRB Human Subjects Committee Members
Dr. Sonya Gao, English
Dr. David Alijani, Computer Information Science
Dr. Mostafa Elaasar, Physics
Rev. Aubrey Watson, Pastor, Holy Cross Luther
Shatiqua Mosby-Wilson, JD, Director SUNO Library
Dr. Gayle T. Wykle, Social Work (retired)
Dr. Raymond Delaney, Criminal Justice

This is to advise you that your application with all necessary supporting documents was received December 8, 2019 and reviewed as an expedited application January 7, 2020. A review of your application and supporting documents show that you have adequate provisions to protect human subjects in your study.

Your Project is approved by the SUNO IRB Human Subjects Committee. Please understand that this approval is for the exact protocol presented in the application and accompanying materials and is valid for one year. This approval expires January 7, 2021. At mid-year, federal requirements direct that there be an interim review. We will contact you in May regarding the mid-year review.

A copy of this letter with the IRB Application and attachments is being sent to Dr. Adegboye who has final authority in IRB matters. If his office has questions or concerns they may revoke this approval at any time by sending you written notice. In addition, as per requirements stated in the Code of Federal Regulations, CFR, that Committee Members must be informed of expedited review decisions, a copy of this letter is being sent to the Committee.

Best wishes in your research.

Cooperation from a Research Partner

Dr. Rebecca A. Chiasson,
Dean of School of Social Work
Southern University in New Orleans
6400 Dress Drive
NOLA., 70126

Dear Danita M. Muse,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Physical and Psychological findings of Hurricane Katrina within the GAZA Missionary Baptist Church. As part of this study, I authorize you to administer your survey for data collection. Individual participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include "a set time to administer the survey, permission to put flyers out to tell your congregation when and where I am going to administer the survey, and a space to administer the survey.. We reserve the right to withdraw from the study at any time if our circumstance change.

As the student I will be responsible for complying with our site's research policies and requirements.

I understand that I will not be naming your organization in the doctoral project report that is published in Proquest.

I confirm that I am authorized to approved research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising facility/staff without permission from the Walden University IRB.

Sincerely,

Rebecca Chiasson

Dr. Rebecca A. Chiasson,
Dean of School of Social Work

Cooperation from a Research Partner

Deon E. Haywood, Executive Director
Women With A Vision, Inc
1226 N. Broad St.
New Orleans, La. 70119

Dear Danita M. Muse,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Physical and Psychological findings of Hurricane Katrina within the Women With A Vision, Inc., service community. As part of this study, I authorize you to administer your survey for data collection. Individual participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include "a set time to administer the survey, permission to put flyers out to tell your congregation when and where I am going to administer the survey, and a space to administer the survey.. We reserve the right to withdraw from the study at any time if our circumstance change.

As the student I will be responsible for complying with our site's research policies and requirements.

I understand that I will not be naming your organization in the doctoral project report that is published in Proquest.

I confirm that I am authorized to approved research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising facility/staff without permission from the Walden University IRB.

Sincerely,

Deon E. Haywood, Executive Director
Women With A Vision, Inc

Appendix F: Frequency of PBHC Variables

RESPIRATORY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	86	24.8	24.9	24.9
	no	260	74.9	75.1	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

GASTROINTESTINAL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	68	19.6	19.6	19.6
	NO	279	80.4	80.4	100.0
	Total	347	100.0	100.0	

ASTHMA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	77	22.2	22.2	22.2
	NO	270	77.8	77.8	100.0
	Total	347	100.0	100.0	

HEADACHES

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	73	21.0	21.0	21.0
	NO	273	78.7	78.7	99.7
	11	1	.3	.3	100.0

	Total	347	100.0	100.0	

HEART DISEASE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	51	14.7	14.7	14.7
	NO	296	85.3	85.3	100.0
	Total	347	100.0	100.0	

FITIGUE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	79	22.8	22.9	22.9
	NO	266	76.7	77.1	100.0
	Total	345	99.4	100.0	
Missing	System	2	.6		
Total		347	100.0		

HIGH BLOOD PRESSURE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	173	49.9	49.9	49.9
	NO	174	50.1	50.1	100.0
	Total	347	100.0	100.0	

DIABETES

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	YES	97	28.0	28.0	28.0
	NO	249	71.8	72.0	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

SKIN IRRITATION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	48	13.8	13.8	13.8
	NO	299	86.2	86.2	100.0
	Total	347	100.0	100.0	

REPRODUCTIVE HEALTH ISSUES

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	29	8.4	8.4	8.4
	NO	318	91.6	91.6	100.0
	Total	347	100.0	100.0	

HOUSE DESTROYED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	193	55.6	55.8	55.8
	NO	153	44.1	44.2	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

HOUSE DAMAGED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	272	78.4	78.4	78.4
	NO	75	21.6	21.6	100.0
	Total	347	100.0	100.0	

DISPLACED WHILE YOU TRIED TO RETURN HOME

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	269	77.5	77.5	77.5
	NO	78	22.5	22.5	100.0
	Total	347	100.0	100.0	

SEPERATION FROM PARENTS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	173	49.9	50.0	50.0
	NO	173	49.9	50.0	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

LOSS OF PERSONAL PROPERTY OTHER THAN HOUSE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	244	70.3	70.3	70.3
	NO	103	29.7	29.7	100.0
	Total	347	100.0	100.0	

HAD TO BE RESCUED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	82	23.6	23.7	23.7
	NO	264	76.1	76.3	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

FAMILY AND FRIENDS KILLED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	67	19.3	19.4	19.4
	NO	279	80.4	80.6	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

BECAME SERIOUSLY ILL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	63	18.2	18.2	18.2
	NO	283	81.6	81.8	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

FAMILY MEMBERS/FRIENDS DIED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	116	33.4	33.4	33.4
	NO	231	66.6	66.6	100.0
	Total	347	100.0	100.0	

FAMILY MEMBER/FRIEND/ HOUSE DESTRO/DAMAGED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	208	59.9	59.9	59.9
	NO	139	40.1	40.1	100.0
	Total	347	100.0	100.0	

ATTEMPTED SUICIDE OF FAMILY/FRIENDS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	67	19.3	19.3	19.3
	NO	280	80.7	80.7	100.0
	Total	347	100.0	100.0	

PARTICIPATED IN RECOVERY OF OTHERS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	149	42.9	42.9	42.9
	NO	198	57.1	57.1	100.0
	Total	347	100.0	100.0	

LIVED WITH OTHERS BECAUSE OF KATRINA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	225	64.8	64.8	64.8
	NO	121	34.9	34.9	99.7
	4	1	.3	.3	100.0
	Total	347	100.0	100.0	

HOUSED OTHERS BECAUSE OF HURRICANE KATRINA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	126	36.3	36.4	36.4
	NO	218	62.8	63.0	99.4
	3	1	.3	.3	99.7
	4	1	.3	.3	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

SEPERATION FROM DEATH OF FAMILY PET

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	63	18.2	18.3	18.3
	NO	279	80.4	80.9	99.1
	4	3	.9	.9	100.0
	Total	345	99.4	100.0	
Missing	System	2	.6		
Total		347	100.0		

DISRUPTION IN EDUCATION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	92	26.5	26.7	26.7
	NO	250	72.0	72.7	99.4
	3	1	.3	.3	99.7
	4	1	.3	.3	100.0
	Total	344	99.1	100.0	
Missing	System	3	.9		
Total		347	100.0		

TRANSFERRED SCHOOL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	71	20.5	20.6	20.6
	NO	270	77.8	78.5	99.1
	4	2	.6	.6	99.7
	5	1	.3	.3	100.0
	Total	344	99.1	100.0	
Missing	System	3	.9		
Total		347	100.0		

SUICIDE OF FAMILY MEMBERS FRIENDS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	46	13.3	13.4	13.4
	NO	287	82.7	83.7	97.1
	2	1	.3	.3	97.4
	3	1	.3	.3	97.7
	4	7	2.0	2.0	99.7
	5	1	.3	.3	100.0
	Total	343	98.8	100.0	
Missing	System	4	1.2		
Total		347	100.0		

HURRICANE KATRINA DISRUPTED YOUR WORK/SCHOOL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	48	13.8	13.8	13.8
	MILDLY	45	13.0	13.0	26.8
	MODERATELY	23	6.6	6.6	33.4
	MARKEDLY	47	13.5	13.5	47.0
	EXTREMELY	183	52.7	52.7	99.7
	5	1	.3	.3	100.0
	Total	347	100.0	100.0	

DO YOU FEEL YOU ARE STILL EXPERIENCING PROBLEMS BECAUSE OF HURRICANE KATRINA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	161	46.4	46.5	46.5
	NO	167	48.1	48.3	94.8
	2	4	1.2	1.2	96.0
	3	7	2.0	2.0	98.0
	4	5	1.4	1.4	99.4
	5	2	.6	.6	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

APPENDIX G: Frequencies of PTGI Variables

I CHANGE MY PROTORIES ABOUT WHAT IS IMPORTANT IN LIFE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	30	8.6	8.7	8.7
	VERY SMALL DEGREE	15	4.3	4.4	13.1
	SMALL DEGREE	21	6.1	6.1	19.2
	MODERATE DEGREE	50	14.4	14.5	33.7
	GREAT DEGREE	90	25.9	26.2	59.9
	VERY GREAT DEGREE	137	39.5	39.8	99.7
	7	1	.3	.3	100.0
	Total	344	99.1	100.0	
Missing	System	3	.9		
Total		347	100.0		

I HAVE A GREATER APPRECIATION FOR THE VALUE OF MY OWN LIFE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	24	6.9	7.0	7.0
	VERY SMALL DEGREE	14	4.0	4.1	11.0
	SMALL DEGREE	8	2.3	2.3	13.4
	MODERATE DEGREE	38	11.0	11.0	24.4
	GREAT DEGREE	102	29.4	29.7	54.1
	VERY GEAT DEGREE	157	45.2	45.6	99.7
	7	1	.3	.3	100.0
	Total	344	99.1	100.0	
Missing	System	3	.9		
Total		347	100.0		

I DEVELOPED NEW INTEREST

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	24	6.9	7.0	7.0
	VERY SMALL DEGREE	15	4.3	4.4	11.4
	SMALL DEGREE	31	8.9	9.0	20.4
	MODERATE DEGREE	59	17.0	17.2	37.6
	GREAT DEGREE	107	30.8	31.2	68.8
	VERY GEAT DEGREE	106	30.5	30.9	99.7
	7	1	.3	.3	100.0
	Total	343	98.8	100.0	
Missing	System	4	1.2		
Total		347	100.0		

I HAVE A GREATER FEELING OF SELF-RELIANCE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	22	6.3	6.4	6.4
	VERY SMALL DEGREE	8	2.3	2.3	8.7
	SMALL DEGREE	22	6.3	6.4	15.2
	MODERATE DEGREE	58	16.7	16.9	32.1
	GREAT DEGREE	101	29.1	29.4	61.5
	VERY GEAT DEGREE	131	37.8	38.2	99.7
	7	1	.3	.3	100.0
	Total	343	98.8	100.0	
Missing	System	4	1.2		
Total		347	100.0		

I HAVE A BETTER UNDERSTANDING OF SPIRITUAL MATTERS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	19	5.5	5.5	5.5
	VERY SMALL DEGREE	14	4.0	4.0	9.5
	SMALL DEGREE	16	4.6	4.6	14.2
	MODERATE DEGREE	48	13.8	13.9	28.0
	GREAT DEGREE	89	25.6	25.7	53.8
	VERY GEAT DEGREE	159	45.8	46.0	99.7
	7	1	.3	.3	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

I MORE CLEARLY SEE THAT I CAN COUNT ON PEOPLE IN TIMES OF TROUBLE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	16	4.6	4.7	4.7
	VERY SMALL DEGREE	13	3.7	3.8	8.4
	SMALL DEGREE	26	7.5	7.6	16.0
	MODERATE DEGREE	72	20.7	20.9	36.9
	GREAT DEGREE	90	25.9	26.2	63.1
	VERY GEAT DEGREE	126	36.3	36.6	99.7
	7	1	.3	.3	100.0
	Total	344	99.1	100.0	
Missing	System	3	.9		
Total		347	100.0		

I HAVE A GREATER SENSE OF CLOSENESS WITH OTHERS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	19	5.5	5.5	5.5
	VERY SMALL DEGREE	15	4.3	4.3	9.9
	SMALL DEGREE	33	9.5	9.6	19.4
	MODERATE DEGREE	72	20.7	20.9	40.3
	GREAT DEGREE	92	26.5	26.7	67.0
	VERY GEAT DEGREE	114	32.9	33.0	100.0
	Total	345	99.4	100.0	
Missing	System	2	.6		
Total		347	100.0		

I AM MORE WILLING TO EXPRESS MY EMOTIONS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	26	7.5	7.6	7.6
	VERY SMALL DEGREE	11	3.2	3.2	10.8
	SMALL DEGREE	34	9.8	9.9	20.7
	MODERATE DEGREE	67	19.3	19.5	40.2
	GREAT DEGREE	94	27.1	27.4	67.6
	VERY GEAT DEGREE	111	32.0	32.4	100.0
	Total	343	98.8	100.0	
Missing	System	4	1.2		
Total		347	100.0		

I KNOW BETTER THAT I CAN HANDLE DIFFICULTIES

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	14	4.0	4.1	4.1
	VERY SMALL DEGREE	14	4.0	4.1	8.1
	SMALL DEGREE	21	6.1	6.1	14.2
	MODERATE DEGREE	50	14.4	14.5	28.8
	GREAT DEGREE	105	30.3	30.5	59.3

	VERY GEAT DEGREE	140	40.3	40.7	100.0
	Total	344	99.1	100.0	
Missing	System	3	.9		
Total		347	100.0		

I CAN BETTER APPREICIATE EACH DAY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	14	4.0	4.0	4.0
	VERY SMALL DEGREE	10	2.9	2.9	6.9
	SMALL DEGREE	15	4.3	4.3	11.3
	MODERATE DEGREE	52	15.0	15.0	26.3
	GREAT DEGREE	89	25.6	25.7	52.0
	VERY GEAT DEGREE	166	47.8	48.0	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

NEW OPPORTUNTIES ARE AVAILABLE WIHICH WOULDN'T HAVE BEEN OTHERWISE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	21	6.1	6.1	6.1
	VERY SMALL DEGREE	11	3.2	3.2	9.2
	SMALL DEGREE	34	9.8	9.8	19.1
	MODERATE DEGREE	65	18.7	18.8	37.9
	GREAT DEGREE	83	23.9	24.0	61.8
	VERY GEAT DEGREE	132	38.0	38.2	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

I PUT MORE EFFORT INTO MY RELATIONSHHHIPS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	13	3.7	3.8	3.8
	VERY SMALL DEGREE	15	4.3	4.4	8.2
	SMALL DEGREE	22	6.3	6.4	14.6
	MODERATE DEGREE	64	18.4	18.7	33.2
	GREAT DEGREE	95	27.4	27.7	60.9
	VERY GEAT DEGREE	134	38.6	39.1	100.0
	Total	343	98.8	100.0	
Missing	System	4	1.2		
Total		347	100.0		

I AM MORE LIKELY TO TRY TO CHANGE THINGS WHICH NEED CHANGING

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	17	4.9	4.9	4.9
	VERY SMALL DEGREE	13	3.7	3.7	8.6
	SMALL DEGREE	20	5.8	5.8	14.4
	MODERATE DEGREE	66	19.0	19.0	33.4
	GREAT DEGREE	97	28.0	28.0	61.4
	VERY GEAT DEGREE	134	38.6	38.6	100.0
	Total	347	100.0	100.0	

I HAVE STRONGER RELIGIOUS FAITH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	17	4.9	4.9	4.9
	VERY SMALL DEGREE	6	1.7	1.7	6.7
	SMALL DEGREE	14	4.0	4.1	10.8
	MODERATE DEGREE	49	14.1	14.2	25.0
	GREAT DEGREE	98	28.2	28.5	53.5
	VERY GEAT DEGREE	160	46.1	46.5	100.0
	Total	344	99.1	100.0	

Missing	System	3	.9		
Total		347	100.0		

I DISCOVER THAT I'M STRONGER THAT I THOUGHT I WAS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	12	3.5	3.5	3.5
	VERY SMALL DEGREE	7	2.0	2.0	5.5
	SMALL DEGREE	9	2.6	2.6	8.1
	MODERATE DEGREE	45	13.0	13.0	21.1
	GREAT DEGREE	105	30.3	30.3	51.4
	VERY GEAT DEGREE	168	48.4	48.6	100.0
	Total	346	99.7	100.0	
Missing	System	1	.3		
Total		347	100.0		

I LEARNED A GREAT DEAL ABOUT HOW WONDERFUL PEOPLE ARE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	14	4.0	4.1	4.1
	VERY SMALL DEGREE	8	2.3	2.3	6.4
	SMALL DEGREE	17	4.9	4.9	11.3
	MODERATE DEGREE	56	16.1	16.2	27.5
	GREAT DEGREE	100	28.8	29.0	56.5
	VERY GEAT DEGREE	150	43.2	43.5	100.0
	Total	345	99.4	100.0	
Missing	System	2	.6		
Total		347	100.0		

I BETTER ACCEPT NEEDING OTHERS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT AT ALL	12	3.5	3.5	3.5
	VERY SMALL DEGREE	6	1.7	1.7	5.2
	SMALL DEGREE	26	7.5	7.6	12.8
	MODERATE DEGREE	73	21.0	21.3	34.1
	GREAT DEGREE	95	27.4	27.7	61.8
	VERY GEAT DEGREE	131	37.8	38.2	100.0
	Total	343	98.8	100.0	
Missing	System	4	1.2		
Total		347	100.0		