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CASE STUDIES DESCRIBING THE PERCEIVED STRESS AND SELF-IDENTIFIED COPING STRATEGIES OF THREE SAMPLES OF THE NEW ORLEANS POPULATION AFFECTED BY HURRICANE KATRINA

A DISSERTATION

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE OF TULANE UNIVERSITY

FOR THE DEGREE OF DOCTOR OF PUBLIC HEALTH

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I. ABSTRACT

Hurricane Katrina, described as the worst natural disaster ever to hit the United States (U.S.), triggered several levee breaches in New Orleans and flooded over 80% of the city. The survivors were displaced across 48 states. Historically there had never been such a mass internal displacement of thousands of U.S. citizens and residents (a so called Diaspora), so the overall impact on a population is not known.

Methods: This dissertation explored and described themes associated with stress and coping as constructed from the narratives of 99 Hurricane Katrina Survivors from New Orleans interviewed at three, six and ten months post-Katrina. Data were collected through face-to-face interviews using a semi-structured instrument and the interviewer's notes and observations.

Results: The qualitative data revealed that basic life needs such as accommodation/living arrangements, concerns about future levee breaches and separation from family and friends were the major stressors identified by respondents. The respondents turned towards their spirituality through prayers and positive attitudes with the flexibility to adapt to the multi-layered stress associated with post-Katrina living. Lack of control was the overarching stress domain in each of the case studies while adaptability and resilience were the coping domains. The public health implications of the findings are discussed.

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DEDICATION

I dedicate this work to my daughters,

Eyenobasi and *Etta*

For giving me the reasons to live and to be hopeful

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ACKNOWLEDGMENT

The initiation and completion of this research project could not have been possible without the support of my family, friends and well wishers. I will like to thank Dr. Jeanette H. Magnus, for her support and guidance since 1999 when I started my Masters Program at Tulane. I will also like to extend the same gratitude to my Dissertation Committee members; Dr. Carolyn C. Johnson and Dr. Gretchen A. Clum for their patience and taking time from their busy schedules to accommodate my academic needs and to guide me through the completion of my doctoral dissertation.

Special thanks to my father Ntufam Odu Ndep, my mother Nna Yaya Ndep, for laying the foundation that fueled my desire and love for education with a clear commitment to working with community. I thank all my ten brothers and sisters and cousins too numerous to list. I also thank my uncles, Dr. Nchor B. Okorn and his family, Mr. Manyo Ayuk and family, my sister Mrs. Ojong Ndep Klages and brothers Harry Tabi and Douglas Tarh, my sister-in-law Angelique, my other daughter Blessing, my niece, Enorb, Pastors Paul and Iselowo and all my church members for all their prayers, encouragement and help in caring for and supporting me and my daughters through all these years.

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II. BACKGROUND AND SIGNIFICANCE

II.A. Background

Hurricane Katrina, described as the worst disaster ever to hit the United States (U.S.), triggered several levee breaches in New Orleans and flooded over 80% of the city [1]. The severe wind and flood destroyed homes, businesses and family possessions. Evacuation before and after the storm displaced over 780,000 in Louisiana, destroyed about 200,000 housing units and killed over 1600 people in the Greater New Orleans area alone [2-4].

Although a hurricane, the levee breaches that led to severe flooding, loss of property and lives [1, 5] are considered to be a significant man-made disaster [2, 6]. Through voluntary and mandatory evacuations, residents of the greater New Orleans area were scattered across the U.S., with the largest concentration initially sheltered at the Houston Astrodome. These survivors soon were referred to as refugees, displacees, evacuees or Internally Displaced Persons (IDP).

Historically there had never been such a mass internal displacement of U.S. citizens and residents (a so called Diaspora). The prolonged displacement from home due to a combined natural and man-made disaster has never been studied in the U.S. therefore the overall impact of such an experience on a population is not known.

II.B. Significance:

Disasters are strongly associated with psychosocial responses such as stress, depression and post traumatic stress disorders (PTSD). Disaster-related factors that intensify the psychosocial reactions include but are not limited to the direct exposure to

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the disaster event, loss of loved ones and property, and the level of destruction both at the individual and the community levels [7-10]. Without appropriate intervention, disaster related stress may lead to increased morbidity and mortality, increased economic insecurity, and disruption of social ties [9, 11, 12].

After conducting 99 interviews at three distinct post disaster time periods; three, six and ten months post Hurricane Katrina, the author seeks to contribute to the disaster literature and post-Katrina discourse the stories about the disaster's impact from the survivors' point of view. At each time period, the author presents a snap shot of New Orleanians affected by Hurricane Katrina and compares their disaster recovery successes and challenges with established disaster recovery processes within the same time period.

II.B.1. Definitions of Key Terminology Used in this Study

Concepts describing the relationship between disasters, their effects and how people react to them are used throughout this study. It is important to define these concepts to ensure clarity and correct application.

II.B.1.a. Disaster Management: Disaster management refers to efforts at the administrative and organizational levels aimed at implementing policies and coping capacities of the society and communities to lessen the impact of disasters. Disaster management models stress the importance and the appropriateness of the actions required at different time points after a disaster, and one of the illustrative models was developed by Powell and Rayner in 1952 [13]. The disaster time periods identified by them are;

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pre-disaster, warning, impact, inventory, remedy, rescue and recovery. These will be further elaborated upon in the literature review section.

II.B.1.b Stress: Stress is defined as the body's response to confronting environmental demands [14] that may produce adverse health outcomes such as increased depression, hypertension and posttraumatic stress disorders (PTSD) [15]. Stress affects the immune responses of the body and may lead to physiological and/or psychological changes that cause disease [16].

II.B.1.c. Perceived Stress: Perceived stress is defined as the degree to which individuals appraise situations as being stressful [14, 17, 18]. Perceived stress and coping are inversely related; the higher the perceived stress the lower the coping self-efficacy and vise versa [14, 19].

II.B.1.d. Coping: Coping is defined as constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as exceeding an individual's resources [20, 21]. People's ability to cope is related to their resilience, their personal competence, coping self-efficacy, sense of control, availability of resources (social, emotional and physical support) and their pre-event mental health [19, 22-25].

II.B.1.e. Resilience: According to the Merriam Webster dictionary [26], resilience is defined as the ability to recover from or adjust easily to misfortune or

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change [26]. Resilience can also be described as the outcomes associated with successfully applying coping processes in response to stress and adversity [21].

II.B.1.f. Disaster Recovery: Disaster recovery refers to a process which individuals employ different coping mechanisms to return to a pre-disaster state or normalcy. There are six stages of disaster recovery periods. They are; the heroic, tunnel vision, honeymoon, disillusionment, reconstruction/recovery and enhancement/post-traumatic growth stages [27]. These periods will be further described in the literature review section.

II.C. Summary:

Using the definitions above in the current study, the author will describe the perceived stress and ways of coping of three groups of Hurricane Katrina survivors at three different time points after the disaster event; at three months post Katrina data was collected from displaced New Orleans residents in Atlanta Georgia, information from six and ten months post Katrina was collected within the City of New Orleans.

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III. LITERATURE REVIEW

III.A. Introduction

The Center for Research on the Epidemiology of Disasters (CRED), defines a disaster as a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance [28]. Disasters are common occurrences worldwide with two main categories; natural or man-made depending on the cause.

Natural disasters include climate induced disasters such as hurricanes, tornadoes and floods, and geophysical disasters such as volcanic eruptions, landslides, and earthquakes. These disasters are becoming increasingly frequent, affecting large geographical areas and causing severe damage and casualties.

Man-made disasters include deliberate, intentional acts of terrorism, such as the Oklahoma City bombing and the World Trade Center attacks of September 11th, 2001 [29, 30]. Other man-made disasters include but are not limited to wars, vehicular accidents, fires and technological disasters such as chemical spills/explosions, building collapses and gas leaks. Some disasters have both natural and man-made characteristics and are sometimes referred to as mixed disasters [6].

Disasters disrupt people's lives and social support networks, and there is a significant relationship between disasters and psychological wellbeing [24, 29-36]. Disasters can be described as a collective of stressors [37]. Perceived stress; the degree to which an individual appraises a situation to be stressful, is also dependent on the severity of the disaster event, the extent of the damage, the direct experience of the event, personal loss of property or social support systems and pre-disaster mental health [36].

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How survivors perceived the disaster event and associated conditions as stressors varies over time [37]. Adapting to stressful conditions requires several processes known as 'ways of coping' [21]. Some of the common responses to traumatic events include cognitive, emotional, physical and behavioral processes.

III.B. Disasters and Mental Health

In a cross national study of peoples' response to a natural disaster, Sattler and colleagues (2002), reported a significant relationship between resource loss, loss of social support systems and psychological distress among survivors in the US Virgin Islands, Puerto Rico, Dominican Republic and the United States [11]. After studying the effects of Hurricane Mitch on the Tegucigalpa residents of Honduras, Kohn and colleagues, (2005), demonstrated that 10.6% of victims were diagnosed with PTSD [38].

Of all the hurricanes studied before Hurricane Katrina, Hurricane Andrew was listed with the greatest disaster impact due to severe damage and disruption of lives [10]. It was demonstrated that Hurricane Andrew was directly related to high levels of psychological disturbance among survivors [10, 31, 36].

Forced relocation before or after a natural disaster is also associated with poor mental health especially among the elderly. Findings from a study about the effects of Hurricane Andrew on health, show that physical and mental health conditions were exacerbated when people were separated from their key support systems including family, social services and healthcare facilities [39].

Just as with natural disasters, man-made disasters are also directly related to mental health problems among victims and survivors. In a study examining depressive

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symptoms among the victims of Southern Mississippi methyl parathion disaster, Rehner and colleagues, (2000) found that 50% of study participants reported having depressive symptoms. Victims with prolonged exposure to methyl parathion were at a greater risk of depression [40]. Exposure to other man-made disasters such as terrorist attacks is also associated with depressive symptoms. In a survey of New Yorkers after the September 11, 2001 attacks, the most frequent mental health issues identified were depression, post-traumatic stress disorder (PTSD) and acute stress disorder [29, 30, 32, 33].

In 2001, Senator Tom Daschle's office received mail tainted with Bacillus anthracis, popularly known as Anthrax. The events that followed showed gaps in the nation's preparedness in dealing with bioterrorism. Describing postal and Capitol Hill workers response to the attack, Blanchard and colleagues' (2005) found that distrust (of source of information) played a major role in the workers' recovery. The postal workers at Brentwood Post Office that handled the tainted mail complained that the Capitol Hill staff received better treatment. The African American postal workers were especially more suspicious of the government's role in the mitigation process [41].

In response to the delayed testing and treatment of postal workers as compared to the Capitol Hill workers, the African American postal workers assumed that they were being studied to find out the full course of anthrax effects on humans [41]. In summary, Blanchard and colleagues (2005) recommended a participatory approach (community-governmental agency partnerships) to communications during a crisis [41]. They also acknowledged that targeted messages and communication channels may be necessary for diverse populations [41].

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Vicarious stress due to indirect exposure to disasters is becoming more frequent as 'real time' news about disasters is readily available through various forms of electronic and print media. However, those who were directly exposed to a disaster tend to have worse psychological reactions than those who were indirectly exposed through the media or knowing someone who was exposed to the same disaster [42].

In a study comparing people's reactions to stressors associated with natural and man-made disasters, those affected by man-made disasters tended to have worse psychological reactions [10]. This has been attributed to the possibility of survivors/victims having someone or agency to blame as opposed to geophysical and/or climate induced disasters which are sometimes referred to as "acts of nature" [10]. The most common psychological disturbances within the first year after a disaster were depression and PTSD [43] and the rates of PTSD during this period ranged from 3-43 per cent [43, 44].

Closely associated with a diagnosis of depression and PTSD is the perception of high stress. Stress is defined as "the non-specific response of the body to any demand" [45]. Stress can also be regarded as the body's response in order to confront environmental demands [16], that at the end may produce adverse health outcomes such as depression, hypertension and PTSD [46].

There are two different types of stress, acute and chronic stress [16, 46]. Acute stress refers to the reactions to a stressor that occurs suddenly such as an accident, the advent of a natural disaster, loss of employment, or a terrorist attack; etc. Chronic stress refers to an ongoing, prolonged and unmanaged exposure to a stressor for example, being displaced for a prolonged period of time or caring for a chronically ill family member.

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Stress has often been described using both physiological and psychosocial models [47, 48]. The physiological model described the excessive flow of epinephrine and nor epinephrine in response to a physical or emotional stressor and had often been described as the "flight or fight" reaction [47-49]. The psychosocial model on the other hand described one's perception of his/her ability to appraise a given situation as being stressful and then determining the coping resources to employ [45]. Although described separately, these two models are not mutually exclusive. Both physiological and psychological processes occur simultaneously as an individual experiences a stressful event [21, 45, 49].

Some of the common responses to traumatic events include cognitive, emotional, physical and behavioral processes. Cognitive responses include but are not limited to confusion, difficulty making decisions, memory loss and shortened attention span [50]. Examples of emotional responses are numbness, shock, volatile emotions and feeling lost. Some physical responses are fatigue, sleeplessness, headaches, tremors and rapid heart rate. Behavioral responses include arguments with friends and loved ones, withdrawal, excessive silence, inappropriate behavior etc. [49, 50].

People's ability to cope with a stressful condition is related to their resilience, their personal competence, coping self-efficacy, sense of control, availability of resources (social, emotional and physical support) and their pre-event mental health [19, 22-25]. Coping mechanisms can be described as negative or positive, active or avoidant, depending on which of the cognitive, emotional, physical and behavioral processes engaged by the individual. Coping self-efficacy is defined as an individual's appraisal of his/her ability to cope with the demands of a stressful or traumatic situation [17, 25].

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This self-appraisal is greatly influenced by an individual's coping beliefs and sense of control over the situation [25]. Physical and mental response to disasters have been described extensively and disaster response models have been used by social workers and other disaster response teams to help survivors in the aftermath of disasters. Time plays a major role in the disaster management and recovery process.

III.C. Disaster Management and Recovery Timelines

Disaster management models stress the importance and the appropriateness of the actions required at different time points after a disaster, and one of the illustrative models was developed by Powell and Rayner in 1952 [13]. The initial pre-disaster period is followed by the warning period which is characterized by the information of an impending disaster in the not too distant future. The impact period describe when the disaster hits a defined area or community, causing destruction and disruption of lives.

The period between the impact and the arrival of aid to survivors, is the inventory period in which survivors evaluated their loss and make attempts to help themselves [13]. After taking inventory of the situation, rescue and remedy periods followed as the survivors, emergency workers/aid arrive and initiate the often slow work towards recovery in the weeks, months or years to follow [13].

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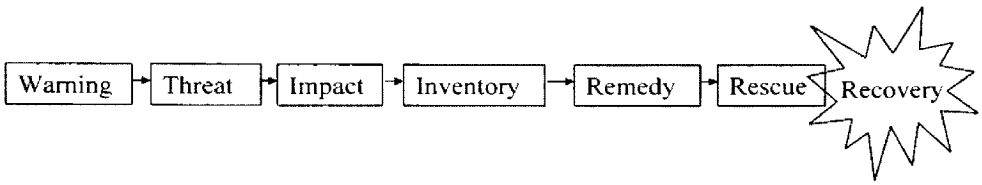

Figure 1: Author's Rendition of Powell and Rayner's Disaster Periods

Traumatic events have psychosocial impacts and studies have shown that most people recover from the effect of a storm between a few weeks to several months later depending on the intensity and duration of the disaster. Some may even take years after the traumatic event for full recovery to be achieved [27, 51, 52].

Disaster recovery periods have been described and are widely used by social workers and other relief workers in disaster zones. They are; the heroic, tunnel vision, honeymoon, disillusionment, reconstruction/recovery and enhancement/post-traumatic growth stages [27].

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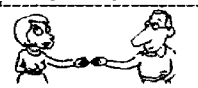
Six Stages of Disaster Recovery

[rev. April 2007]

Phase	Time Frame of Phase	Emotions	Behaviors	Most Important Resources
Heroic	Occurs at time of impact and period immediately afterward.	Altruism. All emotions are strong and direct at this time	Heroic actions. Use of energy to save their own and others' lives and property.	Family groups, neighbors and emergency teams
Tunnel Vision	Overlaps with Heroic, Honeymoon and can extend well into the Disillusionment phase	Mostly detachment or emotional numbing. Strong feelings and intrusive memories tend to be temporarily minimized, denied or pushed aside	Very activity-focused. Continuing attention to taking care of daily tasks and more basic survival needs of self and loved ones	Family, friends, work colleagues, church/prayer, personal self-care (stress release, meditation . . .)
Delayed Responses	***Any time post-trauma***	***Emotions/memories intrude***		
 Honeymoon	From one week to three-six months after the disaster	Strong sense of having shared a catastrophic experience and lived through it; expectations of great assistance from official and government agencies	Victims clear out debris and wreckage buoyed by promises of great help in rebuilding their lives.	Pre-existing community groups and emergent community groups which develop from specific needs caused by disaster.
Delayed Responses	***Any time post-trauma***	***Emotions/memories intrude***		
Disillusionment	Begins as early as 10 days and more commonly around the 3rd week post-disaster or later. Phase closely associated with extent of losses and resources received—typically lasts from months up to two years or longer.	Strong sense of disappointment, anger, resentment and bitterness appear if there are delays, failures or unfulfilled hopes or promises of aid.	People concentrate on rebuilding their own lives and solving individual problems. The feeling of "shared community" is lost.	Many outside agencies may now pull out. Indigenous community agencies may weaken. Alternative resources need to be explored. *(continued)*
Delayed Responses	***Any time post-trauma***	***Emotions/memories intrude***		
Reconstruction/ Recovery	Lasts for several years following the disaster	Victims now realize that they need to solve the problems of rebuilding their lives. Visible recovery efforts serve to reaffirm belief in themselves and the community. If recovery efforts are delayed, emotional problems which appear may be serious and intense	People have assumed the responsibility for their own recovery. New construction programs and plans reaffirm belief in capabilities and ability to recover	Community groups with a long-term investment in the community and its people become key elements in this phase.
Delayed Responses	***Any time post-trauma***	***Emotions/memories intrude***		

North Carolina Cooperative Extension Service, 1999. Adapted from materials originally developed by Kansas State University Extension Service. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Employment and program opportunities are offered to all people regardless of race, color, national origin, sex, age or disability. North Carolina State University, North Carolina A&T State University, U.S. Department of Agriculture and local governments cooperating.

Enhancement/Post-traumatic Growth. This is an additional phase for some survivors. They are able to not only return to the level of functioning that existed prior to the trauma, but are able to "transform" their trauma experience and its aftermath in ways that result in newly discovered or enhanced awareness, growth and functioning. For example, there can be a re-ordering of priorities and discovery or re-affirmation of what is really important in their lives.

Delayed Responses ***Any time post-trauma*** ***Emotions/memories intrude***

Table 1: Stages of Disaster Recovery as prepared by the North Carolina Cooperative Retention Center

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Time wise, these stages sometimes coincide with the disaster time periods described earlier. The heroic stage happens right after the impact period; this stage is characterized by heroic acts of saving self, family and community. The tunnel vision stage overlaps with the heroic stage and both usually occur within the first few hours but may last up to the first three months after impact. Behaviors associated with the tunnel vision stage tend to be activity focused and task oriented.

The tunnel vision stage may overlap with the inventory disaster time period where individuals assess the damage and plan specific actions for clean up, thereby initiating steps towards their own recovery [27]. The honeymoon stage which may start at one week post-disaster and could last for three to six months is characterized by a strong sense of shared catastrophic experience. It may overlap with the inventory and remedy periods and specific actions associated with this stage include clean up of debris in preparation for rebuilding and restoring (See Appendix B-1and B-2).

Just as is the case of the disaster periods described earlier, the disaster recovery stages are not linear in nature, and there is no clear cut transition from one stage to another. Sometimes due to the severity of the trauma and the available support systems, individuals may transition into the disillusionment stage directly from the tunnel vision stage without experiencing the honeymoon stage [27].

About three weeks post disaster; the disillusionment stage may set in. The length of time an individual experiences this stage is directly related to the severity of the disaster, extent of loss, including death of loved ones, and the availability or lack of resources, including social, emotional and physical support. It also depends on the

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protective and risk factors that influence the development of resilience and positive coping skills. The disillusionment stage may last for up to two years post disaster [27].

The reconstruction and recovery stage may last several years post disaster and is characterized by visible rebuilding and recovery efforts. Activities around the recovery tend to serve as motivational props that reaffirm the individual's sense of control and personal competence in rebuilding their own lives after the disaster. Conversely, any delay in the rebuilding process such as lack of resources, funding, information and other social support mechanisms may serve as stressors that may trigger negative coping mechanisms such as avoidance, self doubt and self medication [27, 53].

The final disaster recovery stage is the enhancement/post traumatic growth which a select group of survivors experience. This group of people not only regains their pre-disaster functioning ability but they surpass it. They use their post-traumatic experience to re-organize their priorities and perhaps find a new purpose in life [27].

III.D. Summary of Literature Review

Natural disasters are devastating tragedies that not only affect the physical well-being of a person, but also his or her mental well-being (ATSDR, 2005). Natural disasters expose victims/survivors to stress that may affect them for a lifetime. Disaster research both locally and internationally revealed that survivors face significant physical and psychological health issues. In addition, survivors with historical social isolation and existing vulnerabilities seem to be most affected [54]. Without appropriate intervention, disaster related stress may lead to increased morbidity and mortality, increased economic insecurity, and disruption of social ties.

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Disaster research emphasized that access to resources, or the lack thereof, determines the capacity for coping during evacuation, resettlement, and recovery. The ability to effectively cope also correlates to pre-existing socioeconomic status and stressful life events. Public health response to disasters must be explicitly designed to meet the specific needs of vulnerable populations and to provide support needed for the timely transition from one disaster recovery stage to another.

While a significant number of studies about the effects of disasters on survivors and their families both locally and internationally were identified, few addressed subjects experiencing short-term displacement from their homes. The author could not identify any studies describing whole communities' and their members' experience of more long-term displacement from their homes due to any disaster in the U.S. At the time this study was initiated, the city's residents had been displaced for almost three months. Existing post-disaster management programs were designed for short term displacement of segments of a population, not for a whole city.

Since Hurricane Katrina triggered levee breaches leading to extensive flooding, it was considered a mixed disaster, and very little was known about how the individuals will respond to the loss and trauma associated with it. In addition, it was not known if different neighborhoods will return and/or reorganize after the storm. Therefore the associated psychosocial response to whether or not whole neighborhoods return and rebuild is not known.

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III.D. Rationale of Current Study

The rationale for this study is to contribute to the body of literature about the effects of Hurricane Katrina specifically on the people of the Greater New Orleans area; those directly affected by the unique mixed-disaster characteristic. Additionally, these case studies will add to the resources available for public health workers as they seek to study and understand the psychosocial effects of Hurricane Katrina from the survivors' perspective.

III.E. Purpose of Current Study

The purpose of this study is to document stories about Hurricane Katrina's impact on New Orleans residents at three separate post-disaster time periods and to compare their disaster recovery successes and challenges with established disaster recovery processes within the same time period.

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IV. MATERIALS AND METHODS

IV.A. Sample Selection

Participants in this study were selected using convenience sampling, a non-probability sampling technique. The inclusion criteria for study participants were:

- Residents of the greater New Orleans area before the storm
- Evacuees resulting from Hurricane Katrina
- Residents of a shelter or transitional housing (including Federal Emergency Management Authority (FEMA) - paid hotel rooms/suites) for at least one day after the storm

According to Patton, (2002), non-probability sampling is better suited for qualitative studies because it allows for the inclusion of information-rich cases in the study [55]. Three case studies were developed based on the post-disaster time period in which the data was collected.

- **Case Study 1- Three month post-disaster:** The first group was developed based on the author's displacement to Atlanta Georgia. There were no barriers to access to the shelters because of the author's evacuee status.
- **Case Study 2 – Six months post-disaster:** This group was developed by recruiting participants at Disaster Relief Centers (DRC), set up by the Federal Emergency Management Authority (FEMA). The five centers where participants were recruited for this study are the New Orleans Public Library on Tulane Avenue, the Jewish Community Center, New Orleans East DRC, and Chalmette DRC at Wal-Mart and Airline Drive DRC at Celebration Church. The author was

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not allowed to recruit participants inside the DRCs but was given permission by each center's manager to recruit participants outside the building or tent.

- **Case Study 3 – Ten months post-disaster:** The original intent was to recruit participants living in FEMA trailer villages at nine months post-Katrina. After several attempts to get the necessary permission to access the FEMA trailer villages failed, the author and her advisors decided to recruit participants from community groups and neighborhood gatherings. Data collection started at ten months post-Katrina.

IV.B. The Interview Instrument

The instrument was developed soon after Hurricane Katrina made landfall in the Gulf Coast region. This semi-structured instrument contains a wide range of closed-ended as well as open-ended questions, which gives the respondents a better chance to describe their experiences of post disaster stress and their coping strategies.

IV.C. The Interview

All respondents were recruited and interviewed by the author. After an initial introduction and a comprehensive explanation about the study, the author asked the potential interviewee for verbal consent to be interviewed. After this initial consent, both the interviewer and interviewee picked a comfortable sitting area of the hotel or shelter (Case study 1) or agreed on a date, time and location (Case studies 2 and 3) to meet for the interview. All participants were informed that their participation was voluntary and that their personal data on consent forms would be kept confidential, and that participant responses would be presented anonymously with no link to any identifying information.

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All interviews were audio taped. The research protocol was approved by the Institutional Review Board (IRB) of Tulane University.

IV.C.1. Case Study 1- Three Months Post-Disaster

The author conducted interviews at shelters in Atlanta Metro Area. Within the first three months after Katrina, 26 interviews were conducted. Of these 26 interviews, 21 respondents completed the entire interview session, and the results for this case study were based on these 21 interviews. The five respondents who did not complete the interview had no personal transportation; they had hitched rides with family or friends and had to leave when their driver left.

IV.C.2. Case Study 2- Six Months Post-Disaster

A total of 44 interviews were conducted at Disaster Relief Centers (DRC) in New Orleans, approaching visitors during the time the interviewer was present at each site. The DRC was a one-stop-shop for disaster relief information and applications to numerous agencies for help. Both governmental and non governmental organizations were concentrated in each DRC.

At these sites, returned Hurricane Katrina survivors could apply for disaster assistance from the American Red Cross, apply to the Federal Emergency Management Authority (FEMA) for trailers or accommodation vouchers, get copies of previous year's tax returns from the Internal Revenue Service (IRS), and apply for benefits and/or replacement social security cards from the Social Security Administration.

The five centers were identified as the Public Library, the Jewish Community Center, New Orleans East DRC, and Chalmette DRC at Wal-Mart and Airline Drive

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DRC at Celebration Church. The potential participants were approached and recruited prior to entering the building or tent. If the individual agreed to be interviewed, they were given the option of being interviewed prior to or after conducting their business at the DRC.

IV.C.3. Case Study 3-Ten Months Post-Disaster

A total of 37 interviews were conducted at community or neighborhood organizing and re-development meetings. Neighborhood residents across the Greater New Orleans area had organized community groups to plan and prepare for re-construction and redevelopment. At ten months post-Katrina, flyers and roadside signs were commonly used to announce meeting times and to invite the residents and the public. These announcements guided the author to various locations for interviews. Of all the participants recruited for Case Study 3, only three were actually interviewed at meeting locations immediately after the meetings. Most interviews were conducted in trailers (parked in front of private homes), homes, hotel rooms and lobbies or at community centers, depending on the respondent's availability and at their convenience.

IV.D. Data Analysis

IV.D.1. Qualitative Data Analysis:

All interviews for the case studies were transcribed verbatim by graduate students trained by the author. Throughout the data collection periods, the author kept notes that were uploaded into Atlas ti [56] as memos. The memos were constantly revised as more information was gathered and became an integral part of the axial coding as described below. The Word document containing all interviews for each of the case studies was uploaded and stored using Atlas ti software version 5.2 [56]. Open, in vivo and axial

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coding methods were used to name codes through the Atlas ti software [56]. Open coding describes a process in which codes were named by a coder based on the content in the text. In vivo coding used a section of the passage or text as a code or naming codes using a code from an existing list. Axial coding allowed the researcher to begin to make sense of the information contained in the data by identifying emerging concepts and interrelationships between them. The coding patterns and categories were continuously 'tested' between and within transcripts within each case study.

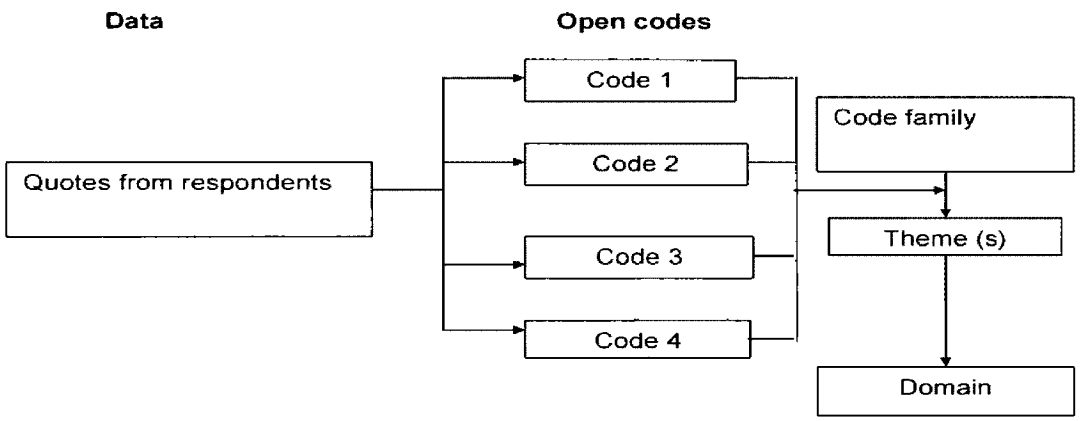

Figure 2: Sample Coding Scheme developed for current study

Themes and sub-themes were organized and eventually used to construct what respondents presented as their post-disaster physical, social and psychological reality and the experiences that helped shape it. This constant comparative approach to analysis served as the foundation to theory building.

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According to Byrne (2000), through this continuous testing, a core of the proposition or theory begins to form. Some of the characteristics of this core include the following: recurs frequently, links various data, has an explanatory function, has an implication for formal theory and becomes more detailed [57]. A total of 332 codes were originally generated after the open coding sessions of the 99 interview transcripts that constituted these three case studies. Revision and recoding sessions helped "clean" the code list to reduce redundancy.

The codes were then sorted and grouped into families. These code families were further sorted and analyzed for inter- and intra-family relationship using the code family manager function of Atlas ti [56]. Finally, after the author finished coding and interpreting the data, a comprehensive review of each case study was written.

IV.C.2. Quantitative Data Analysis

The quantitative analysis was limited to Univariate descriptive statistics, such as means, medians and frequencies generated to characterize the individuals who participated in the case studies. The analyses were conducted in SPSS for Windows version 15.0 [58].

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V. RESULTS

V.A. Case Study 1-Three Months Post-Katrina

V.A.1. New Orleans at Three Months Post-Katrina

At three months post-Katrina in the city of New Orleans, there were still visible signs with thousand of tons of debris and waste scattered across the city. The physical destruction and damage to the city's neighborhoods essentially turned New Orleans into a conglomeration of ghost towns [5]. According to a technical report by McCarthy et al, (2006), the estimated Greater New Orleans area population in November 2005, was approximately 91,000, with over 785,000 displaced [59]. Approximately 43% of displaced New Orleanians were in Texas and about 9% were in Georgia [60].

V.A.2. Characteristics of Respondents

A majority of the respondents (n=21), range 18-79, years interviewed at shelters in Atlanta, Georgia, were young, mean (± SD) age 35.5 ± 16 years with a median age of 29 years. About 85% were African American and more than half of the sample reported an annual income below $25,000 prior to Hurricane Katrina. About 62% of the sample were female and about 76% had a high school education or higher (Table 1).

About two thirds resided in Orleans Parish (County) before Hurricane Katrina and almost 43% were home owners. More than 80% owned a car and 57% said they had never evacuated the city due to any hurricane before Hurricane Katrina. Forty five percent said that more than five generations of their families lived in New Orleans and 81% planned to return to New Orleans as soon as it was safe to do so. Due to statistical rounding some of the values do not total 100% (Table 1).

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Table 2: Case Study 1 - Three Months Post-Hurricane Katrina Demographic Information (n= 21)		
	n	%
Age		
<39	16	76.2
40 - 49	2	9.5
50 and older	3	14.3
Gender		
Male	8	38.1
Female	13	61.9
Race		
African American	18	85.7
Other	3	14.3
Marital Status		
Single	7	33.3
Married	9	42.9
Divorced	3	14.3
Widow	2	9.5
Employment Status		
Full time	13	61.9
Part time	2	9.5
Retired	2	9.5
Not employed	4	19.0
Education		
<high school	5	23.8
High school/GED	3	14.3
Some college	7	33.3
Junior college	2	9.5
Undergraduate degree	2	9.5
Graduate degree +	2	9.5
Income Level		
< 25,000.00	14	66.7
25,000.00 - < 50,000.00	7	33.3
Parish (County)		
Orleans	14	66.7
Jefferson	3	14.3
St. Charles	3	14.3
Other	1	4.8
Home Ownership		
Owns	9	42.9
Rents	2	57.1
Information Source		
Television	18	85.7
Radio	2	9.5
Family/Friend	1	4.8
Intent to Return to New Orleans		
Plan to return	17	81.0
Do not plan to return	4	19.0
Evacuation History		
Never Evacuated	12	57.1
Evacuated at least one time before Hurricane Katrina	9	42.9
# of Generations in New Orleans		
< 5	11	55.0
5 and above	10	45.0
Head of Household		
Yes	12	57.1
No	9	42.9
Transportation (Own car)		
Yes	18	85.7
No	3	14.3

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V.A.2. Initial Exposure and Response

All the respondents in Case Study 1 affirmed that they heard the mandatory evacuation orders from New Orleans Mayor, C. Ray Nagin, yet 19 % of them did not evacuate before Hurricane Katrina made landfall.

> *"Well it's a normal story, its something we live through year by year. When the hurricane season comes, we evacuate! So it was like one of the same old story, we might evacuate and then it doesn't hit, and then we come back to our city. But this time it was different. I thought it was going to be the same thing like evacuating and coming back to meet our city the way it was when we left it."* [26 year old African American male]

What is considered normal in the context of hurricanes and evacuation in New Orleans as described by the respondents above, was to evacuate and come back a few days after the storm has passed through or by the city. On further analysis of the text, *"but this time it wasn't so"* seems to mean there was a certain expectation, a behavior pattern that had developed over the years that now was disrupted. Another expectation was that *"we would come back and meet our city the way we left it"*. With such expectation comes the disappointment of not being able to come back right away, but also the realization that the city would not be the same.

While all the respondents were yearning for information about possible return dates into the city, there was a clear distinction between those who were born in New Orleans and those who were not. Long-term residents and native New Orleanians seemed to be more attached to the city than others.

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"I have lived in New Orleans all my life, I never left New Orleans for nothing. I never visited nowhere else or nothing, (this is) my first time". [29 year old African American male]

This respondent lifted his chin up and slapped his chest when he made the statement above. Declarations such as: all my life, life-long resident, as represented by this respondent, was repeated by others as well. Of the 21 respondents interviewed at 3 months post-Katrina, 57% were life-long residents of New Orleans. The statements describe their attachment, sense of community and deep roots in the city.

Respondents who were life-long residents of New Orleans had formed an intricate network of family and friends who both supported each other and regularly shared/spent time with one another. Life in displacement in unfamiliar cities was considered more of a stressor if the family was not displaced within the same geographic area. This challenged their sense of belonging. The overall data revealed a clear attachment to family, which created a strong desire to reunite with family and friends, even in displacement.

Reuniting with family while displaced required several steps. First, current information about displaced family and friends was needed. This was a crucial and emotional step because it also established whether the family member survived the storm. After the initial emotional reunion, typically by telephone, family members or friends exchanged information about resources available for evacuees at their respective locations. Finally, an analysis of what each of the locations had to offer the respondents was made. Transportation played a crucial role during this period in the respondent's life. A decision was then made in favor of the location with the most resources or support systems for the respondents. Then they put their relocation plans into effect. All

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the respondents who relocated while in displacement consistently talked about living in more places within this three month period than they have lived in their whole life. This relocation while in displacement is presented here as multi-city evacuation. And the main reason for multi-city evacuation was to reunite with family and friends.

> *"Well I've been to, apart from the superdome, I've been to Houston, some other towns that I don't even know the name but I've been to Tyler Texas, I've been to Dallas Fort Worth."* [21 year old African American male]

> *"I've been to Beaumont, Texas, Silvie, Texas, Timpson, Texas, San Antonio, Texas, Hemphill, Texas, Garrison, Texas and Jackson, Mississippi in shelters"*. [26 year old African American male]

Having lived or spent at least one night in several cities, some of which they *"don't know the name of"*, some of the respondents were consistently talking about their intent to return to New Orleans. Respondents, who had lived more than half of their lives in New Orleans, seemed to be more eager to return to the city.

> *"Yes I am and I'm going to help rebuild in every way that I can. I've been there 60 years and I'm gong to die in New Orleans. I don't care if another storm come, that's my home and I'm just going to have to die. But that is my home. Just like some people I met, they from Georgia,*

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this is Georgia and this is their home, but Louisiana is my home." [60 year old African American female]

"Well, I mean, home is home; so that's sentimental....there's some value in that, so definitely I plan on going home." [24 year old African American female]

In addition to regretting their decisions not to evacuate before the hurricane made landfall, respondents lamented the loss of lives associated with *"riding out"* the storm.

"If we was told to evacuate soon[er] that would have at least spared a lot of other peoples lives after the hurricane, the aftermath of it that would have prevented a lot of death."[29 year old African American male]

"Riding out the storm" is a local slang meaning staying home, the opposite of evacuation. Some respondents said it was a family tradition to move away from the lower-lying areas of the city such as the lower 9th ward, and move in with family and friends on higher ground. Those who acknowledged the urgency of the situation and potential severity of the storm but did not evacuate, cited other factors, such as transportation and/or traffic congestion as reasons for not evacuating before the storm.

"I had no decision whether to stay or go since I did not really know anywhere to go, in-short my decision was that maybe I will go to the superdome and stay there because I did not really have anywhere to

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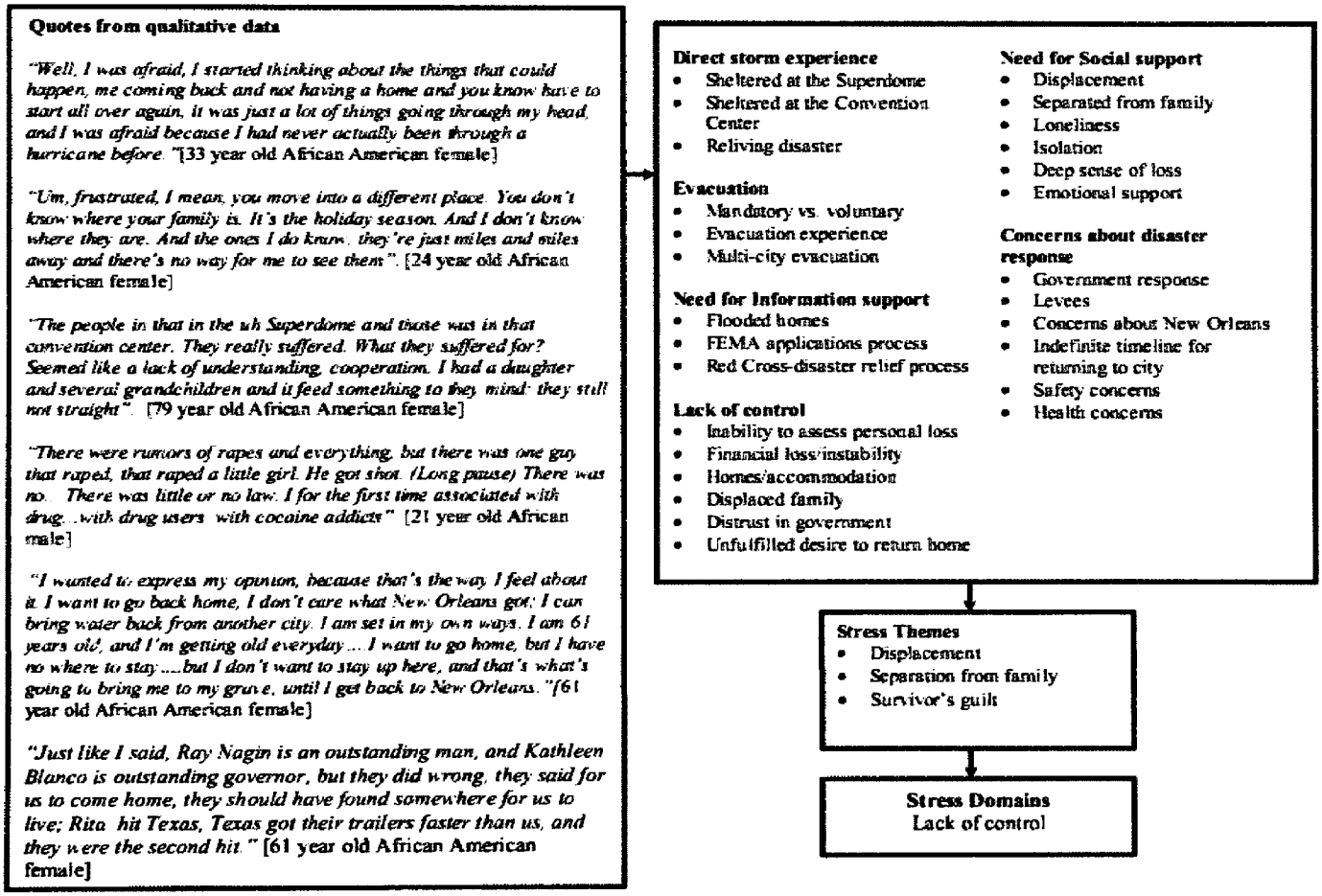
go and more to that we did not have a car, I was scared."[27 year old African female]

V.A.4. Perceived Stress at Three Months Post-Katrina.

Figure 3: Summary of Perceived Stress at Three Months Post-Katrina



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V.A.4.a. Stress Theme 1: Displacement

Respondents' displacement to an unfamiliar city among complete strangers was a major source of stress. It was especially hard for parents with young children.

> *"It has been really hard and stressful, because the kids have to get used to what we're doing ya know, they have to adjust to their new surroundings, we here in Georgia and it's a lot with living in a one room hotel, four people and I do appreciate that FEMA has been taking care of the room, the payments, I am appreciative of that, but at the same time, there is still so much more that we need, it would be better if it was just adults, but you know you have to explain it to kids, and its bad enough that they adjust from what we went through".* [33 year old African American female]

> *"I'm a single parent of four so I knew about it but it was worrying me because I have four children"* [35 year old African American female]

Both home owners and renters were concerned about the situation back at home because of their inability to personally assess the effects of the storm on their homes and the fear and uncertainty associated with that.

> *"Well, I was afraid, I started thinking about the things that could happen, me coming back and not having a home and you know have to start all over again, it was just a lot of things going through my head,*

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and I was afraid because I had never actually been through a hurricane before."[33 year old African American female]

Displacement and living in other parts of the United States for an extended period of time under self-described sub-optimal conditions for the most part played a role in how people perceived their own stress after the storm.

V.A.4.b. Stress theme 2: Separation from Family

Part of the uncertainty associated with displacement was being separated from family and friends, the social support system that was available prior to Katrina. The people that made up that support system were themselves scattered all over the 50 states and the District of Columbia (DC). When asked the question, "Do you know where your family is?" The following quote is representative of the responses

"Um, a few of them, um, not my distant cousins, I don't know if they are dead or alive. You know I haven't been there you know...I don't know if they, some of them went out of town. I don't, I haven't heard."[23 year old African American male]

Large and extended families were the norm rather than the exception among respondents who described themselves as native New Orleanians. And the larger the family, the more likely they were to be dispersed across several states.

"My mama has about fifty-nine grandchildren and some great. Right now I have forty-four grandchildren and sixty-two great" [79 year old African American female]

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"I have 5 kids, 13-14 grandchildren living in New Orleans" [69 year old African American male]

"Its nine of us, my mamma had nine children by the same daddy and mamma...it's was five boys, four girls." [23 year old African American male]

Further probing determined that being separated from family caused emotional reactions such as frustration, anger, fear of the unknown, sense of loss and sadness related to loneliness during the upcoming holiday season (interviews were conducted in October 2005).

An example is Missy,* a 24 year old African American New Orleans native who evacuated with some of her family to Douglasville; a suburb of Atlanta, Georgia. Missy*had a good job at a local New Orleans bank pre-Katrina. Missy* and her family had not intend to evacuate but were strongly encouraged by a family member who lived in another state. She told the author that her parents were offered free accommodation in South Carolina and her sister-in-law had evacuated to California. Her younger brother was "somewhere" in Illinois and her baby sister had to move with her parents to South Carolina. None of Missy's cousins had been located by the time of this interview. The only close family with her was her husband. For a family that goes back several generations in New Orleans, Missy* could not imagine the upcoming holiday season with

*Fictitious name

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everyone scattered across the United States. Missy's* comment when questioned how she felt about her current situation was:

> *"Um, frustrated, I mean, you move into a different place. You don't know where your family is. It's the holiday season. And I don't know where they are. And the ones I do know, they're just miles and miles away and there's no way for me to see them".* [24 year old African American female]

Family closeness was a vital part of the respondents' lives and being displaced and separated from family was considered to be stressful. Frustration was the feeling most respondents mentioned and their reason was the inability to visit with family as frequently as done in New Orleans, prior to Hurricane Katrina. With displacement came anger, fear and loneliness. Loneliness and frustration for many were major stressors because they were used to having large extended family, especially during the holiday season.

V.A.4.c. Stress Theme 3: Survivor's guilt

The majority of the respondents were "glued" to television sets to get the most updated news about what was happening back home. The images on television, of those left behind and the suffering that followed, created an atmosphere of concern for others and led to feelings associated with survivor's guilt. Indirect exposure to the disaster through the media was a source of stress for those already in displacement.

For example, Ms. Brie* was visibly concerned partly because of the images on television and also because she heard that one of her daughters and some of her grandchildren were at the Superdome for three days. Ms. Brie's* indirect disaster

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experience through the media and also through the family members who had been sheltered at the Superdome resulted in the following:

> *"The people in that in the uh Superdome and those was in that convention center. They really suffered. What they suffered for? Seemed like a lack of understanding, cooperation. I had a daughter and several grandchildren and it feed something to they mind; they still not straight".* [79 year old African American female]

Although Ms Brie* suffered loss of property and disruption of her social support system, she felt fortunate that she had evacuated and had not have the horrific experience at the Superdome as narrated by her daughter and grandchildren. After hearing her daughter's experience at the Superdome, she seemed to have a deeper understanding of the survivors' suffering. The phrases, *"...it feed something to they mind"* and *"they still not straight"*, was her way of expressing the continued mental effects on her daughter and grand children. From the stories she heard from her family, Ms. Brie* concluded that if her own family were mentally bruised due to their stay at the Superdome, then certainly, whoever spent time at the Superdome or the Convention Center during or after the storm may have suffered some lasting mental problems as well.

A younger respondent Johnny,* did not evacuate, therefore he experienced the storm and was among the second wave of evacuees that arrived at Atlanta, Georgia, after the storm. He was devastated by the loss of lives that he witnessed and was willing to talk to the author.

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"I was down during the whole hurricane and the hurricane had passed us. I only had like a foot of water, but when we went to sleep that morning, the water just started rising and they say that the levee board broke. But come to find out, I'm hearing that the people opened the levee board up, they broke the levee board." [23 year old African American male]

"*Opened the levee board up*" and *"broke the levee board"* was Johnny's description of what he perceived happened to the levees.[1] Johnny* expressed feeling powerless in protecting his family against an unanticipated flood.

"Yeah sometimes and then I had so much stress when I got to Douglassville. This is so messed up me and my father-in-law, cause he had, my mother-in-law and them had left before me and they had left, but I took my wife and stayed in New Orleans. I said well we're not leaving, we're going to go and stay in the projects cause its higher, just in case the water get higher. [23 year old African American male]

As a result of his insistence on staying within the city and riding out the storm, he was accused of being irresponsible by his father-in-law. An accusation that became worse when he finally and safely evacuated to Douglasville, Georgia to be with his parents-in-law. Johnny* could not convince his father-in-law that he and his family

[1] *The conspiracy theories were presented here as part of the themes associated with respondents' perceived stress, not as facts. The author does not validate these theories.*

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were safe until the levee breaches caused the flood. The argument led to a physical fight and both men were arrested and detained in the Atlanta county jail.

The shelter where Johnny* was recruited to participate in this study was a distribution center for food and clothing for Hurricane Katrina survivors. Johnny* had just been released from the Atlanta county jail due to the domestic dispute, yet he quickly brushed his problems aside and lamented about others who he said, got it worse than he. Johnny acknowledged being stressed not only from direct experience of the storm but also due to pre-Katrina stressful life events.

> *I just buried my baby brother. He wasn't nothin', but 17, his birthday coming up, he was born in 1987; December 11th 1987. I was messed up all the way. I've been messed up for like six months. I still don't think my mind is in coordination right now* [23 year old African American male].

After sharing his personal stories of loss, anger and the family conflicts since the storm, he continued with a blank stare in his eyes and spoke almost in a whisper:

> *"If we was told to evacuate soon[er] that would have at least spared a lot of other peoples lives after the hurricane, the aftermath of it that would have prevented a lot of death"*[23 year old African American male].

To Johnny*, having lived through the storm and successfully evacuated with his family afterwards, was reward enough. Those who lost their lives, some of which he

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stated to have seen the floating corpses of; in his opinion were lives that could have been saved.

While the respondents in this case study agreed that Hurricane Katrina and its aftermath was a very devastating event, those who evacuated after the hurricane made landfall were traumatized by their direct exposure to the storm and their experience within the city before, during and immediately after the flood.

> *"But the hurricane wasn't that bad, the hurricane passed us. When the levee broke that's when the water came. To tell you the truth, it's a hurtin' feeling for what it had done."*[23 year old African American male]

The '*hurtin' feeling*' phrase said by Johnny*, who was visibly shaken and reportedly traumatized by his personal experience, yet, his main concern was for those who died. He wished something could have been done differently and the outcomes would have been different for these victims. In addition to concerns about those who lost their lives, there were health concerns for those who were exposed to the flood waters.

> *"The people, the people that's there, it's not 100% bacteria free out there ..... The water, is infested with all types of bodily (fluids), it's very complicated to explain it"* [29 year old African American female]

> *"Oh, we were very upset watching the news, watching those people suffer like that."*[35 year old African American female]

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For those who experienced the flood and life in the Superdome, they described the horrors and the depths within which humans fell during the crisis and the panic and disorder was reported to be very disturbing. Josh*[ii] recounted how dehumanizing his Superdome experience was. He talked about how some people sheltered at the Superdome were stealing clothing and food as part of their survival tactics. He also mentioned police brutality that was allegedly used to keep the rest of the storm-stranded people in check. Among the many ills of living in the Superdome, crime and punishment Josh* said, took on a whole new significance.

> *"There were rumors of rapes and everything, but there was one guy that (*allegedly*) raped, a little girl. He got shot. (*Long pause*) There was no... There was little or no law"*. [21 year old African male]

Josh* said he applied his Nursing Assistant skills to help deliver babies. He said

> *"Babies were like popping out, premature babies born by very young mothers"*. [21 year old African male]*

He (Josh*) stated to have been part of the emergency team which had given him the privilege of being removed from the general open floor to one of the rooms in the upper floors of the Superdome. Josh* quickly adopted a tourist family that was stranded in New Orleans and ended up in the Superdome during the disaster. He believed that by

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[ii] **Disclaimer:** *The author does not validate stories of murders, homicides or rapes as reported in this thesis. These stories were presented as told by respondents and were considered as possible contributors to respondents' perceived stress.*

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moving with his newly adopted family to the upper floors, protected them from experiencing further trauma while they awaited evacuation.

The desire to return to the city of New Orleans as soon as possible to assess their loss was another focus of the respondents' concerns. The urge to return home was expressed by all the respondents regardless of their age or number of years lived in the city. The urgency to return home however, seemed to be expressed predominantly by the older respondents.

The author met Ms. Pat* in a Day's Inn in Douglasville, Georgia. She kept herself busy by cleaning the breakfast area of the motel. She was always muttering something to herself while cleaning. Her cleaning habit was very random and obsessive. She was not an employee of the hotel but she assumed the position of house keeper in charge of the breakfast room. When the author approached Ms. Pat* for an interview, she indicated that she was not ready to talk yet. After several hours in the hotel lobby, Ms. Pat finally beckoned on the author and chose a sit by the window closest to the street, where she can watch cars drive by. When she finally sat down to talk, she was angry, crying intermittently while she spoke to the author. Ms. Pat* said she was frustrated by hotel living and by not knowing when she would be allowed to return to New Orleans. According to Ms. Pat*, going home meant everything to her:

> *"I wanted to express my opinion, because that's the way I feel about it. I want to go back home, I don't care what New Orleans got; I can bring water back from another city. I am set in my own ways, I am 61 years old, and I'm getting old everyday....I want to go home, but I have no where to stay....but I don't want to stay up here, and that's*

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what's going to bring me to my grave, until I get back to New Orleans. "[61 year old African American female]

The phrase, *"I don't care what New Orleans got"*, was a response from Ms. Pat* to the news that there was nothing in New Orleans; therefore people should not expect to return to the city even three months after the storm. Ms. Pat* felt so strongly about going home that she likened herself to another New Orleanian who had died in Texas

"They had a lady on TV, she worried so much, she took an aneurism. I don't know if you seen it or not. She died. She was up in Texas. All her sons said; all she wanted to do was go home. She ended up in Texas. They rushed her to the hospital, she died. You know what they did, the people in Texas got plane tickets for all 10 of her children to bring her back home to bury her, when this could or should've been avoided. Just like I'm sitting her worrying about going, you never know, I might go in a box just like the lady did, because it is really in my heart to go home, you understand"? [61 year old African American female]

Even if residents were allowed to return to New Orleans, it was not an option for Ms. Pat* because of accommodation issues. Having confirmed that her home and neighborhood had about ten feet of flood water; Ms. Pat's* only hope for accommodation was trailers provided by the Federal Emergency Management Authority (FEMA). At the time of this interview, Ms. Pat* had applied for a trailer but was yet to receive one.

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"Just like I said, Ray Nagin is an outstanding man, and Kathleen Blanco is outstanding governor, but they did wrong, they said for us to come home, they should have found somewhere for us to live; Rita hit Texas. Texas got their trailers faster than us, and they were the second hit." [61 year old African American female]

The reference to Hurricane Rita and Texas having received their trailers while New Orleans had not was Ms Pat's* way of elaborating how FEMA and the leadership of New Orleans and Louisiana had failed to provide for its citizens in a timely manner in comparison to the response in Texas after Hurricane Rita. Being displaced and separated from family, suffered financial loss due to loss of employment and not knowing when they will be allowed to return to their city created multiple concerns among the respondents of this case study. Concerns about dispersed family, concerns about displacement and the accompanying stressful living arrangements in another city, and continuous exposure to the effects of the disaster on those who did not evacuated were major stressors that made the respondents angry, hurt and afraid. The domain associated with perceived stress at three months post- Katrina was ***lack of control.***

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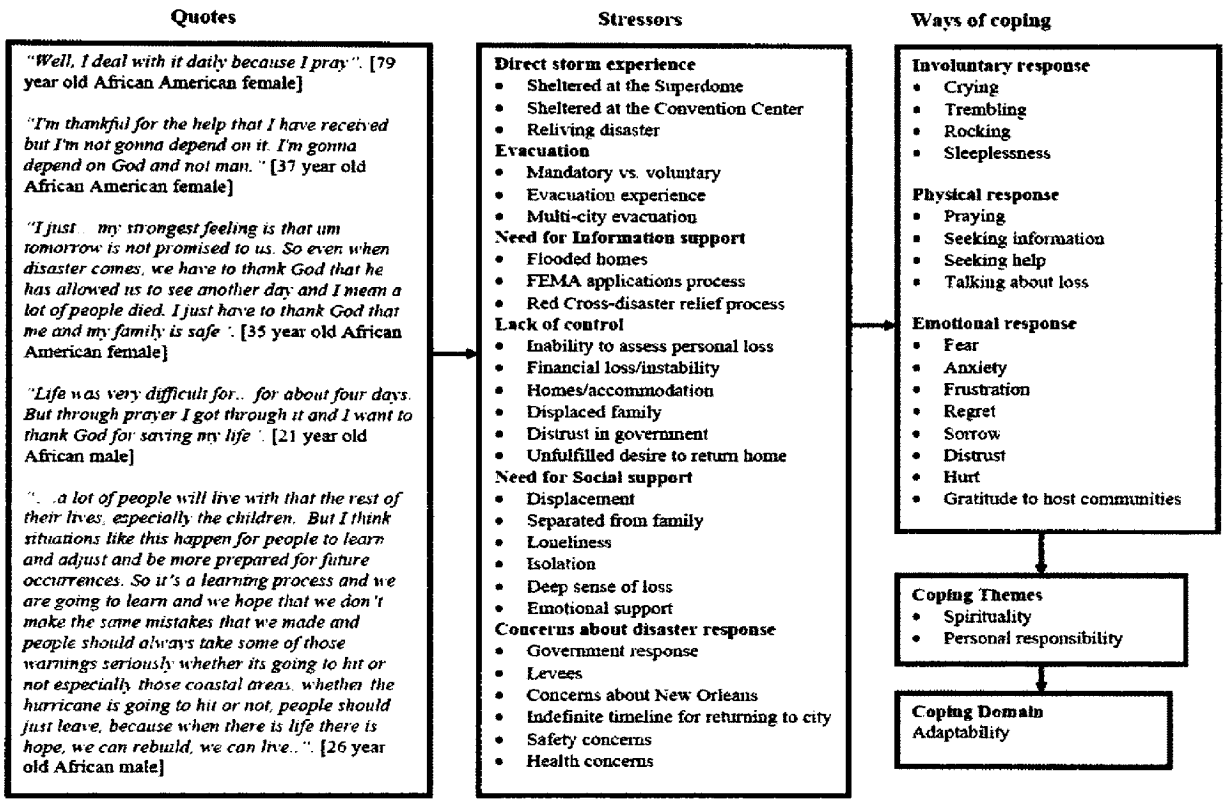
V.A.5. Coping at Three Months Post-Katrina

Figure 4: Summary of Pathway to Coping at Three Months Post-Katrina



While most respondents had something or some story of their lives to share that described how stressful they were, the coping processes they shared were mostly involuntary and emotional, such as crying and trembling. Additionally, the respondents at three months post-Katrina were very willing to share their stories. They were very tactile, holding hands, touching, and sometimes hugging the author as they shared their stories.

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V.A.5.a. Coping Theme 1: Spirituality

The devastation caused by the storm, the flooding and mass evacuation seemed to expose individuals' vulnerability to factors that they considered to be beyond their control. With information about the flood and looting, many were concerned about the status of their homes and had plans on the action needed to mitigate the effects of the storm. But since they could not return to the city and had no information on possible return dates, they had to turn to their beliefs for mental and emotional support. Those who evacuated before the storm *"thanked the Lord"* for not allowing them to experience the flood, but their evacuee status and the uncertainty associated with it was considered to be very stressful.

The long wait in shelters and hotel rooms and the uncertainty about the future rendered the survivors helpless. This state of helplessness became worse when respondents recounted their version of stories about poor government response to the disaster. Religious organizations were considered to be better at meeting the evacuees' needs, supporting the respondents' dependence on God, religion and prayers.

Ms. Brie*, who explained that she goes wherever her family goes, lived in a motel in Douglasville, a suburb of Atlanta, Georgia, with three generations of her family, about 12 people ranging in age from 5-79 years of age. Being a widow and the matriarch of a large family, she said that she needed to rely on God through prayers on a daily basis. When asked how she was coping with her current evacuee status she said:

> *"Well, I deal with it daily because I pray".* (79 year old African American female)

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This daily reliance on their spirituality was echoed by others. The multi-layered levels of needs and concerns grew everyday, requiring the respondents to adjust accordingly. Others were thankful for the aid they received from the church and Red Cross, yet insisted on their dependence on God as a coping mechanism.

> *"I'm thankful for the help that I have received but I'm not gonna depend on it. I'm gonna depend on God and not man."* [37 year old African American female]

Watching the news and hearing about horrific experiences of those left behind and the deaths associated with the flood, as well as seeing corpses on the television, was a terrible experience for some; survivor's guilt was a common feeling expressed by respondents as they assessed their situation in comparison with disaster victims who lost their lives. A deep sense of awareness of their own mortality made them feel that God intervened on their behalf.

Sue*, a single mother of two teenage daughters, was almost speechless when she got to the shelter. She had gone to several government-sponsored shelters but found that none offered such comprehensive support as that run by a group of churches in Douglasville, Georgia.

> *"I just... my strongest feeling is that um tomorrow is not promised to us. So even when disaster comes, we have to thank God that he has allowed us to see another day and I mean a lot of people died. I just*

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have to thank God that me and my family is safe". [35 year old African American female]

Josh*, who spoke extensively about his traumatizing experience at the Superdome, paused many times with a blank stare in his eyes. He often rocked while he spoke. He was restless, clasping and unclasping his hands. As soon as the television was tuned into CNN, Josh* turned and looked away from it. After a long pause he continued,

"Life was very difficult for... for about four days. But through prayer I got through it and I want to thank God for saving my life". [21 year old African male]

Having experienced the worst natural disaster to ever hit the United States, respondents' world was turn apart. The breakdown revealed existing vulnerabilities that seemed overwhelming to decipher. By gauging levels of experience, death being the worst case scenario, all respondents of this study felt there was a higher power that saved them from the effects of the storm.

V.A.5.b. Coping Theme 2: Personal Responsibility

Some respondents believed that their behavioral capability to make informed decisions about their personal safety and the safety of their families was instrumental to their coping. Individuals who cited personal factors as a coping strategy also seemed to re-evaluate the decisions they made; whether or not to evacuate, personal safety and intra-family disaster plans including how to keep in contact should a separation occur. Although two women mentioned this personal capability to assess a situation and be able to employ physical, mental and emotional coping skills, men were more likely than

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women to offer advice to others and were trying hard not to acknowledge to a female stranger (the author) that Hurricane Katrina exposed their vulnerability to stress and made them aware of their low coping self-efficacy related to the disaster.

Tim*, a first generation African immigrant was tired from sleeplessness and concerned about his student status, and the effect of the evacuation on his academic pursuits. He recounted how he almost did not evacuate but thought about it and decided at the last minute to evacuate with his host family. He stressed that personal choices, whether or not to evacuate, could easily determine one's fate.

> *"....a lot of people will live with that the rest of their lives, especially the children. But I think situations like this happen for people to learn and adjust and be more prepared for future occurrences. So it's a learning process and we are going to learn and we hope that we don't make the same mistakes that we made and people should always take some of those warnings seriously whether its going to hit or not especially those coastal areas, whether the hurricane is going to hit or not, people should just leave, because when there is life there is hope, we can rebuild, we can live.."*. [26 year old African male]

An emphasis on personal responsibility was most frequently raised by men. Although they acknowledged the role of a higher power, they also felt that several key choices had to be made in order for God's plan to work. The competing post-disaster stressors such as loss, displacement and survivor's guilt culminating to the overarching domain, lack of control were counteracted by the required flexibility on the part of

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respondents. The flexibility to yearn to go home, yet ensure that children were enrolled in school while displaced; to seek information support on how to apply for a trailer in preparation for life in New Orleans, yet ensure that they are enrolled in FEMA housing/hotel vouchers. Therefore the overarching coping domain at three months post-Katrina was ***adaptability***.

V.A.6. Case Study 1 Summary

Respondents of Case Study 1 were a mixed group of those who experienced Hurricane Katrina's land fall and the subsequent flooding. At the time of storm, more the 80% of the respondents were already evacuated. About 20% of the study respondents actually experienced the storm and flooding of the city of New Orleans. For those who evacuated before the storm and the flood, the media was a source of indirect trauma. News and pictures of the disaster and its aftermath were broadcasted continuously. Direct and indirect exposure to trauma triggered psychological distress. They were emotional and expressed concern for those still in the city. They also experienced survivor's guilt even while acknowledging their own storm-related loss. Those who experienced the trauma directly seemed to be more emotional and indicated that information about the urgency and severity of the storm was not adequately delivered during the warning and threat periods. Some of the common responses to traumatic events include cognitive, emotional, physical and behavioral processes.

Cognitive responses include but are not limited to confusion, difficulty making decisions, memory loss and shortened attention span [50]. The respondents of this study at three months post Katrina had difficulty making long term decisions such as enrolling children in schools, due to their displacement status. Another area where they had

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difficulty making decisions was seeking for or accepting gifts of permanent housing. Living in shelters and FEMA-paid hotel rooms was considered a temporary fix to their situation while they waited to return home. When religious groups and well meaning citizens offered the displaced New Orleanians more permanent housing, some respondents either turned down the offer or accepted it while insisting that it was a temporary solution to their displacement problem. This sometimes confusing interrelationship between tasks and actions associated with permanence; employment, schools, apartments, and being ready to return to New Orleans to take inventory of their loss and plan on the remedy, rescue and recovery processes was considered to be stressful.

One of the main differences between those who evacuated before the storm and those who evacuated after was their experience of the heroic stage of the disaster recovery periods. Some of the respondents who were still in the city when Hurricane Katrina made landfall were able to engage in their own rescue and the rescue of others including family members. While at the Superdome and the Convention Center, there were stories of people helping and encouraging each other as they experienced the heat, hunger and chaotic life.

Respondents who had already evacuated could only watch helplessly on television. This vicarious experience of the trauma suffered by those trapped within the city was equally traumatizing to the already displaced respondents and elicited the expected psychological responses. Crying and trembling and oftentimes very restless, respondents found themselves turning to each other for support. For a brief period in displacement, respondents experienced the honeymoon stage of disaster recovery which

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is characterized by building relationships based on a shared trauma experience. The shared trauma and helplessness became a unifying factor among them.

Life in displacement for all the respondents at three months post-Katrina was made worse by their displaced and dispersed family. Social support has been cited as a strong mediator for stress [61-63]. Losing ones support system consisting of family members and friends, either by death or by displacement greatly reduced the respondents' confidence and emotional well being. Unique attachment and reliance on family for support shown by these respondents encouraged multi-city evacuations. While multi-city evacuation came out of the necessity for proximity to family members, it was said to be very stressful and it created the feeling of being repeatedly "uprooted" and unstable.

Due to displacement, all respondents in this case study could not get a satisfactory picture of the situation at home; they could not exercise the ability to take inventory of the situation at home. Instead, they experienced additional indirect exposure to the disaster through the media. With the lack of control associated with the timeline to return to the city, the remedy, rescue and recovery periods could not be achieved. Using the disaster recovery stages model, the respondents experienced the heroic stage, where they tried to save themselves and their family and friends.

For those within the city during and immediately after the storm and flooding, this stage was characterized by efforts to rescue people from their homes or helping law enforcement maintain order at the Superdome. For those already displaced, the focus was to get information about the status of family and friends, and to provide their own information to the Red Cross data base for easy identification and location. Many

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respondents' focus was to re-unite with family and friends. They used telephones, the internet and word of mouth to exchange information.

At three months post-disaster the respondents transitioned directly into the disillusionment stage, some, bypassing the heroic and honeymoon stages completely. The severity of the disaster, extent of loss, including displacement or death of loved ones, and the availability or lack of resources, including social, emotional and physical support determined the extent and duration of the disillusionment stage.

The disillusionment stage also depended on the protective and risk factors that influenced the development of positive coping skills. The emotional responses associated with this stressful period included crying, willingness to talk about the disaster and its effects, anger and fear. The behavioral responses included restlessness and compulsion to keep busy. In this situation in which survivors felt they had little control over their circumstance, a dependence on a higher power, prayers, and religious beliefs and some personality factors were generated as the primary coping strategies.

By banding together through a shared traumatic experience, travelling across state lines to be with family, garnering strength from their spirituality, and having a great sense of hope that they will soon be able to return to their city, the respondents in this case study were able to temporarily adapt to their circumstances. Applying adaptive processes to the different classes of stressors experienced by respondents of Case Study 1 seemed to be a critical component of their current lifestyle. The exact effects and outcomes of these adaptive processes may not be immediately apparent and may warrant further investigation later.

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V.B. Case Study 2-Six Months Post-Katrina

V.B.1. New Orleans at Six Months Post-Katrina

At six months post-Katrina in the city of New Orleans, most of the infrastructure was yet to be rebuilt, as a result, there were no street lights, whole neighborhoods still vacant, and thousands of New Orleanians still displaced. Only about a third of the pre-Katrina population had returned [59]. Despite these signs of limited progress in the recovery process, the city planned to host its annual Mardi Gras celebration. An announcement that received mixed reviews. Proponents considered the revenue that will be generated in addition to the 'mental lift' for the city's residents as positive motivating factors. Opponents to the plan felt it was inconsiderate of the suffering, loss and displacement that New Orleanians continued to experience at six months post Katrina. Despite these opposing views, Mardi Gras 2006 went on as planned. The celebration was smaller, with less number of participating organizations and floats and abbreviated parade routes. Those in displacement came by the bus load, some visiting for the first time since the storm, to participate in and enjoy a classic New Orleans tradition. This visit became an opportunity to evaluate available options for returning, engaging in the planning process and rebuilding of personal lives, families and whole neighborhoods.

V.B.2. Characteristics of Respondents

Forty-six interviews were conducted at six months post-Katrina. About 64% of the sample was females and almost 70% were African Americans. The mean (± SD) age was 47.2 ± 11.2 years with median age 48 years and range 20-73 years. Half of the sample had an annual income below $25,000 and about 40% had a high school education or

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more. Overall, 61% of respondents owned their homes and 73.2% were heads of their households; about 83% owned a car and half of the respondents reported having more than five generations that had lived in New Orleans prior to the storm. More than 66% of the respondents evacuated before Katrina hit New Orleans, but a little over 64% said they had never evacuated due to hurricanes prior to Hurricane Katrina (Table 2).

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Table 3: Case Study 2 - Six Months Post-Hurricane Katrina Demographic Information (n=42)

	n	%
Age		
<39	8	19.0
40-49	14	33.3
50 and older	18	42.9
*Missing data	2	4.8
Gender		
Male	15	35.7
Female	27	64.3
Race		
African American	29	69.0
Other	13	31.0
Marital status		
Single	20	47.6
Married	13	31.0
Divorced	5	11.9
Widow	3	7.1
Employment status		
Full time	24	57.1
Part time	3	7.1
Retired	10	23.8
Disability Income	2	4.8
Not employed	2	4.8
Education		
<high school	15	35.7
High school/GED	9	21.4
Some college	9	21.4
Junior college	3	7.1
Undergraduate degree	2	4.8
Graduate degree +	1	2.4
Income level		
< 25,000.00	21	50.0
25,000.00 - < 50,000.00	15	35.7
50,000.00 - < 70,000.00	4	9.5
Parish		
Orleans	29	69.0
Jefferson	2	4.8
St. Bernard	11	26.2
Home ownership		
Rents	16	39.0
Owns	25	61.0
Information Source		
Television	37	88.1
Family/Friend	3	7.1
*Missing data	2	4.8
Intent to Stay in New Orleans		
Plan to Stay	36	85.7
Do not plan to Stay	6	4.3
Evacuation History		
Never Evacuated	27	64.3
Evacuated at least once before Hurricane Katrina	15	35.7
# of Generations in New Orleans		
< 5	20	47.6
5 and above	20	47.6
*Missing data	2	4.8
Head of household		
Yes	30	73.2
No	11	26.8
Transportation (Own car)		
Yes	35	83.3
No	6	14.3
*Missing data	1	2.4

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V.B.2. Initial Exposure and Response

The respondents interviewed at six months post-Katrina affirmed that they heard the mandatory evacuation orders from New Orleans Mayor Ray Nagin, yet, 33.3 % did not evacuate before Hurricane Katrina made landfall.

Troy,* an energetic 59 year old respondent was willing to talk to the author before entering the DRC. He said combining multiple sources of information helped him and his family before and during evacuation; he listened to the radio, television and to family and friends.

> *"Uhm, I was watching television all night and every day trying to keep up with it, when I left, I also had a portable radio where I could kind-a listen, just trying to keep up with it, but I left, my family and I left Sunday Morning and we went to Atlanta".* [59 year old African American male]

Upon returning to the city, he had similar information sources as he engaged in the rebuilding process. His main concern was to know detailed information about future storms in a timely manner.

> *"I want to know the category of it, I want to know how fast it's going, and I'd like to know about the canal, will the 17th street canal hold a category 1, 2, 3?"* [59 year old African American male]

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Just as it was important to respondents in this case study to get timely and comprehensive information about future storms, it was equally important for them to know if the levee system will be repaired in time for the hurricane season. When the media reported that prior to Hurricane Katrina, the levee system was not strong enough to withstand a category 5 storm; many New Orleans residents' felt that they had had a false sense of security. With the new understanding of the inadequacies of the levee system, came worry, skepticism and distrust associated with information from the government officials and the Army Corp of Engineers.

> *I'm in a limbo right now, because it's not a definite thing that this canal is gonna be able to hold, another hurricane, and they're not half way finished with it, and the season begins in June, so I mean..."* [59 year old African American male]

> *"Those levees breaking again that's why I'm scared. I want to leave but, I'd just say, there's disaster everywhere but I've never seen nothing like this and I don't want to go through it again".* [29 year old Asian female]

> *"I wanna know what happened to the money they was supposed to be fixin' the levee, and why did the levee break and how did the levee broke and who broke the levee?"*[50 year old African American female]

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"I would like to be warned way in advance, lets say if we have hurricane that's out in the Atlantic before it hits into the Gulf of Mexico, I would like to know". [68 year old African American male]

Respondents were concerned that crucial decisions from the city, state and national leaders were always politically motivated and not centered around citizens' welfare. The respondents felt that politicians made decisions that secured their political futures rather than what was right for the population. At six months post-Katrina, respondents were already aware of the consequences of poor leadership during a crisis. As they listened to the different politicians from the three levels of government continue to trade blames, some respondents saw this as a sign of more trouble in the future.

"I wanna know, I guess more specific, on how they wanna really focus on, redeveloping the more badly damaged areas of the city. A lot of the political in fighting between the governor, mayor, the president, you know all these different, ah, various factions of government, I think they needs to be more on the same page. That concerns me most because they're our leaders, if our leaders are more confused, we're in trouble". [58 year old African American male]

"New Orleans to me like it will never been the same, it just don't look, there's a lot of people that have not returned. I don't think it will ever be the same, 'cause everything is still bad, the school down, they still

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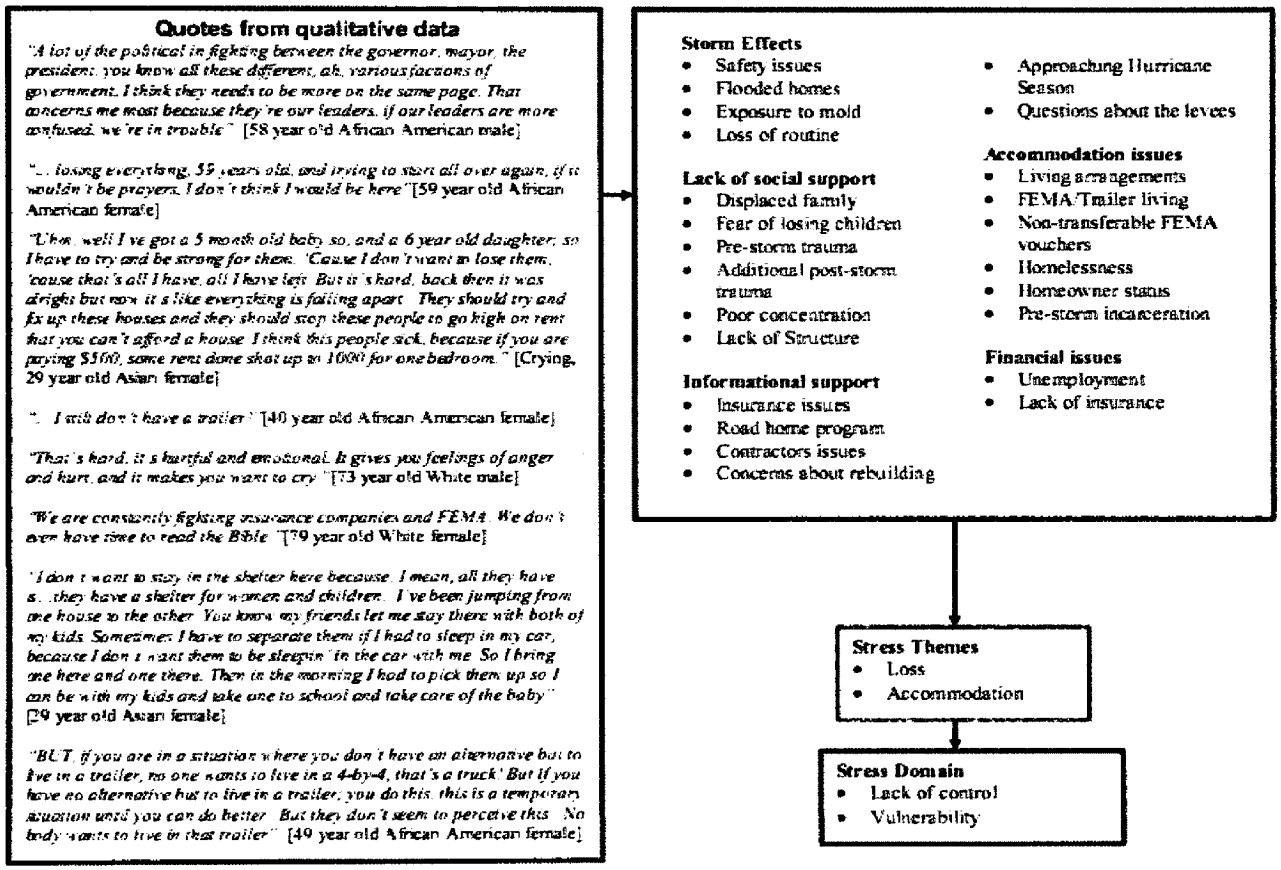
planning on rebuilding; I am so disgusted". [50 year old African American female]

V.B.4. Perceived Stress at Six Months Post-Katrina

Figure 5: Summary of Perceived Stress at Six Months Post-Katrina



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V.B.4.a. Stress theme 1: Loss

After returning to the city and having the opportunity to assess their loss, older respondents who were homeowners considered the reality of having to start life all over again as being emotionally draining and stressful.

> *"I know I lost everything in my house and it's like losing everything you worked for and you had to start all over again..."* [50 year old African American female]

For most respondents who were renters before the storm, returning home meant they had to look for alternate accommodations. Homelessness, therefore, became an issue for some and was even more stressful for those with dependents (children, the mentally and physically disabled and the elderly).

For instance, Mary* a single mother of two very young children was contacted in front of one of the disaster relief centers. Mary* lost her composure and cried when she was approached for the interview. Of the stressors mentioned during the interview, her greatest stressor was fear, the fear specifically of losing her children to the child welfare system due to homelessness.

> *"Uhm, well I've got a 5 month old baby so, and a 6 year old daughter; so I have to try and be strong for them. 'Cause I don't want to lose them, 'cause that's all I have, all I have left. But it's hard; back then it was alright but now it's like everything is falling apart. They should try and fix up these houses and they should stop these people to go high on rent*

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that you can't afford a house. I think this people sick, because if you are paying $500, some rent done shot up to 1000 for one bedroom." [Crying, 29 year old Asian female]

Mary* mentioned several factors that had contributed to her current state of fear. Her reference to *"back then"* was her pre-Katrina child care support. She mentioned that her mother, who was her main source of support prior to Hurricane Katrina, was currently sharing living space with friends and could not afford her own personal accommodation as well. So she could not assist her daughter Mary* with child care as was the case prior to Hurricane Katrina. Therefore, Mary and her children had to look for alternate sources of social support. In addition, Mary* had not been able to keep a job since returning to the city resulting in a loss of a stable income. Above all, because of unaffordable rents, she stated she was homeless and sometimes had to sleep in her car! Mary* reported that she had to pretend to be strong, when she was with her children because she did not want them to know how bad their situation was.

"I don't want to stay in the shelter here because I mean all they have is; they have a shelter for women and children; I've been jumping from one house to the other. You know my friends let me stay there with both of my kids. Sometimes I have to separate them if I had to sleep in my car because I don't want them to be sleepin' in the car with me. So I bring one here and one there. Then in the morning I had to pick them up so I can be with my kids and take one to school and take care of the baby. I know I'm not the only one going through this. [29 year old Asian female]

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Homelessness and joblessness for this young mother coupled with very limited social support, resulted in fear. Fear of losing her children was paramount in her mind but she also felt that her life was filled with uncertainty. Some of the factors mentioned by Mary* are representative of the experiences of respondents in this case study (Text box 1).

Text Box 1: Representative quotes related to perceived stress at six months post-Katrina

Text Box 1	Representative quotes from Case Study 2 participants
Accommodation/high rents	*"...with someplace for them to live, and then they can get on with they life, but as it is now there's no place for people to live, and the ones that are renting their places, are extremely high, they normally rent it for 600, and now its 1300, so they need to crack down on the rent control, because these people, and here they done lost everything"* [59 year old African American female] *"I slept in my car for a couple of days, then FEMA gave me a hotel room in the French Quarter. Then they got me a trailer. I slept in my trailer for a month."* [73 year old White female] *"Cause I had an apartment in Texas and they-I'm waiting on the trailer and they kept giving me the run around, run around. The federal government and this mayor .. they need to stop. They really do"* [49 year old African American female]
Separated family	*"Oh like happen in the city, New Orleans to me like it will never been the same, it just don't look, there's a lot of people that have not returned. I don't think it will ever be the same, cause everything is still bad, the school down, they still planning on rebuilding; I am so disgusted, I have a sister, we haven't seen her since the storm but she is ok, we talks to her she is in Colorado but when it first happened I have a sister she was missing for like a month but we found her and uhm, she is in Arkansas"* [50 year old African American female] *"Well, quite a few of them left with us. We evacuated together, 21 of us. Yeah we separated here and there but we just stayed in touch with each other, by telephone, by physically visiting them and some through mail"* [58 year old African American male]
Levees	*"I wanna know what happened to the money they was supposed to be fixin' the levy, and why did the levy break and how did the levy broke and who broke the levy."* [50 year old African American female] *"...and they should be paying everybody for the way they handled the situation. The way they handled the situation, because if they would have came out the way they were supposed to, I don't think that; things would have been bad but not as bad as it was. They knew about those weak levees and things like that..."* [61 year old African American female] *"I would like to see preparation for next hurricane season. Will the levee be ready for the next hurricane?"* [52 year old African American female]
Fear	*"It's just that I think I'm subconsciously stressed. Because it's like if my husband don't work one day or the job run out, or say his boss say he have to do something and he's sick and can't go to work. Anything that keeps him out of work for one day and we're homeless again."* [47 African American female] *"It not easy for me to talk about; after, I was in Mississippi when I realized after the lights came back on-after about a week or so when I found out where my daughters was by something on the internet, yeah; I was trying to see and they told about how the levees broke and we couldn't come home and this and that..."* [49 year old African American female]

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V.B.4.a.2. Stress Theme 2: Accommodation

Just as Mary* mentioned above, housing was a major concern among respondents. There were several configurations of living arrangements among survivors of Hurricane Katrina who had returned to the city. Some lived with friends, while others lived with various family members.

Women with small children were particularly wary of living in shelters or in hotels on a long-term basis. The process of getting a FEMA trailer was considered to be too confusing for some, while others felt it took too long to get one. Renting an apartment was thought to be a better alternative; however, post-Katrina rents increased more than 50%. The lack of affordable housing made matters worse for those desperately in need of accommodation within the city.

> *"BUT, if you are in a situation where you don't have an alternative but to live in a trailer, no one wants to live in a 4-by-4, that's a truck! But if you have no alternative but to live in a trailer; you do this, this is a temporary situation until you can do better. But they don't seem to perceive this. No body wants to live in that trailer".* [49 year old African American female]

> *"I came back here on the 13th of December but my house; I lost everything in there so now I'm staying with my sister."* [50 year old African American female]

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"Anyway... we left Houma and we went to my sister in Laplace and we lived there for about two or three months. Then I came back by my daughter that's where I'm at right now." [61 year old African American female]

For some, the delayed delivery of Federal Emergency Management Authority (FEMA) trailers was perceived to be stressful. To others, ineligibility for FEMA trailers and/or hotel vouchers at six months post-Katrina was a major stressor.

Since most of the respondents (61% in Case Study 2) were homeowners, having to deal with the insurance claims process simultaneously with gutting their homes in preparation for rebuilding was a constant struggle.

Annie* was approached at the shattered screened-in porch of her Lower 9th ward home. She had been sitting there in 90-degree heat trying unsuccessfully to cool off with a hand-held fan. She was waiting for the contractor who was already three hours late for their appointment. Annie* was angry because she felt she had already overpaid this contractor but the work was going very slowly. Too slow, she said, for her home to be livable by the fall. Annie's* concern was that she faced obstacles every step of the way in her rebuilding efforts.

"It was difficult getting people to clean the yard of debris. Getting plumbers and electricians to actually come out and do the job was very difficult and I still don't have a trailer!"[40 year old African American female]

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The rebuilding needs seemed to be overwhelmingly greater than the available contractors. Respondents found that some contractors were overbooked and were unsuccessfully juggling multiple projects. This made it hard for appointments with homeowners to be kept and for rebuilding timelines to be met. The combination of trying to rebuild while being homeless was an experience echoed by most respondents in this study.

> *"Dealing with insurance companies and construction workers is stressful. You must constantly call them."* [52 year old African American female]

> *"I'm just hoping that the city will come back, but before they come back here you gotta look, people wanna come back but there is nowhere to live, okay so that should be main object, is getting these people back in here, with someplace for them to live, and then they can get on with they life, but as it is now there's no place for people to live, and the ones that are renting their places, are extremely high, they normally rent it for 600, and now its 1300."* [59 year old White female]

For some, their current living arrangement was so bad that they would rather live in a FEMA trailer, but the trailer delivery was very slow. Some of these respondents' hurricane-destroyed homes used to be their childhood homes. Ms. Fannie*, a 79 year old, born and raised in Chalmette, Louisiana, tried hard to be cheerful during the first few minutes of the interview. As soon as she found out that the author was not an out-of-

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town volunteer who had no personal loss here in the Greater New Orleans area but someone who actually lost her home in New Orleans East, Ms. Fannie* lost control and wept. She leaned on the author for a brief moment and then she said:

> *"We are constantly fighting insurance companies and FEMA. We don't even have time to read the Bible."* [79 year old White female]

Ms. Fannie*, who lived in the low-lying areas of St. Bernard Parish (County), Louisiana, returned to what was left of her street and all she saw was water. All the buildings were gone! When asked how she felt about her current situation, she answered;

> *"I don't feel like I have much control over anything except for my feelings and my love for God. A lot of people I talk to are going through the same thing. Sometimes, sometimes I get a little angry".* [79 year old White female]

At the time of the interview, she was living with family on the North shore of Lake Pontchartrain, while waiting for her claims to be addressed by the insurance company. Ms. Fannie's response to what she wants to know from the government was;

> *"Develop a sense of normalcy and hope for people especially the elderly people. There is a blame game between the government and FEMA. Getting the widows and elderly people taken care of. There is no relaxation".* [79 year old White female]

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Anger seemed to be the response associated with the perceived incompetence of FEMA in providing trailers to survivors who had returned to the city. The author met Tori* at a disaster response station in the lower 9th Ward. She had recently returned from Texas to supervise the rebuilding of her home. Tori* was very emotional and cried throughout the interview.

> *"It's been months, it's been almost seven months. And the people still haven't come home. A lot of people I know dead; a lot of people not going to be able to come home" (Crying).* [49 years old African American female]

Several times Tori* was crying saying she did not want to talk about her experience; yet, she would hold the author's hand and continue to talk.[iii]

> *"I don't even want to talk about this now I'm going to start to cry.* (Crying) *I really don't want to talk about it. My daughters; them stayed. I didn't know whether they was dead or alive. I took their children, I had the grandkids".* [49 years old African American female]

While displaced, Tori* was worried about her daughters. She later found out that they were at the Superdome when the storm hit New Orleans.

> *I didn't know nothing about where they was. We didn't know nothing about the flood gates opening or nothing. My daughters stayed in the*

[iii] *The author offered to stop the interview every time Tori* said she did not want to talk. But it soon became apparent that Tori* did want to talk about her experience and she held the authors hand throughout the interview.*

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'Dome for two weeks; ... I had their children and I wanted to come home. [49 years old African American female]

Tori still had an apartment in Houston but said she would *'give it up in a heartbeat'* just to be able to have her own place within the city of New Orleans. At the time of the interview, Tori* lived with her daughter while attending Southern University at New Orleans. She was concerned about how it was easy for people to get FEMA-paid apartments in other cities, but the accommodation vouchers were not transferable to New Orleans, should people decide to return.

"Cause I had an apartment in Texas and they; I'm waiting on the trailer and they kept giving me the run around, run around. The federal government and this mayor ...they need to stop. They really do.....they (FEMA); I had to call them for a trailer. They don't call me, they keep saying they've tried to contact you but my cell phone right here, they ain't tried to contact me, nothing! You know what I'm saying? And I'm paying mysel' out of my pocket; $350 a week for a hotel. And that's ridiculous. I was born and raised here. I am 49 years old, born and raised here. You know what I'm saying?" [49 years old African American female]

For both renters and homeowners, accommodation issues elicited very strong emotional responses. For some, the interrelationship of employment, finances and rents made the situation worse and outside their control, because continuous employment was

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not certain. Uncertainty in gaining and maintaining employment translated to uncertainty in the affordability of rents. For others, especially homeowners struggling to rebuild while having problems with their living arrangements was considered to be stressful on multiple levels as well. Overall, the respondents' reaction to the storm at six months post-Katrina revealed pain, multiple levels of loss, hurt, anger, disbelief and fear.

> *"... It's just that I think I'm subconsciously stressed. Because it's like if my husband don't work one day or the job run out, or say his boss say he have to do something and he's sick and can't go to work. Anything that keeps him out of work for one day and we're homeless again. And that's very stressful to think that one wrong move and we're back on the streets and we don't want to do that again. ..."* [47 year old African American female]

> *"That's hard, it's hurtful and emotional. It gives you feelings of anger and hurt, and it makes you want to cry."*[73 year old White female]

> *"My house was paid off, business was doing well. We had a good income. Now we have nothing but lower income."*[54 year old White female]

Due to the multiplicity of the sources of perceived stress and the interrelationship between the stressors the overarching perceived stress domains were **lack of control** that revealed the respondents' multiple levels of **vulnerability**.

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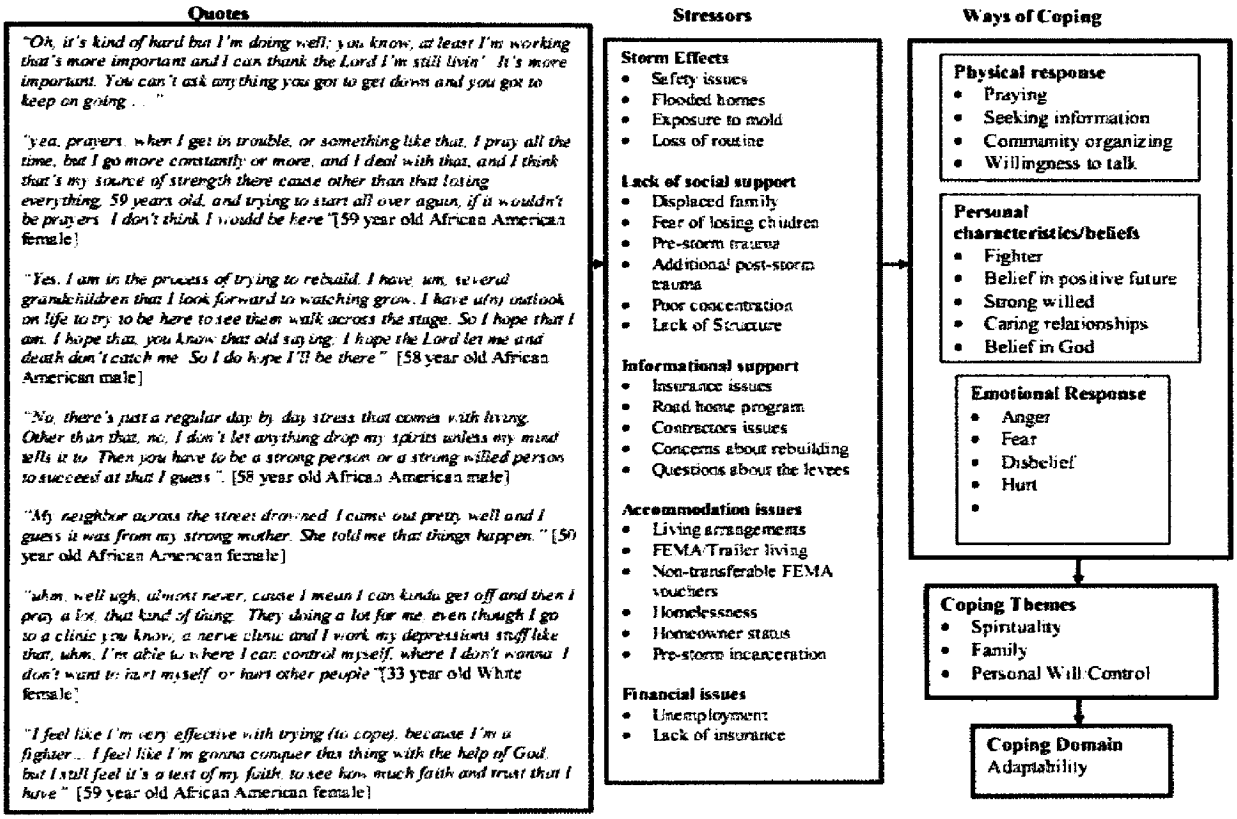
V.B.5. Coping at Six Months Post-Katrina

Figure 6: Summary of Pathway to Coping at Six Months Post-Katrina



At six months post-Katrina, most respondents' stories described the stress associated with returning to New Orleans after several months in displacement. The opportunity to observe the devastated city for the first time in months and to assess their personal loss presented itself.

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V.B.5.a. Coping Theme 1: Spirituality

All of the respondents interviewed at six months post-Katrina acknowledged the fact that the disaster exposed their helplessness on three main fronts. 1) The hurricane could not be stopped; 2) the Army Corps of Engineers failed to build levees strong enough to withstand a Category-5 storm; 3) slow government response to the disaster and an even slower rebuilding process; a process that started with planning meetings that most respondents could not attend due to displacement.

These three factors were not within the respondents' control and were cited as contributing factors to the feeling of helplessness they experienced. Most respondents, therefore, attributed their survival, ability to attend to multiple stressful external demands and subsequent coping to God and prayers.

> *"I think I can handle any problem, with God by me I can handle anything that come along. I never feel like I couldn't cope with nothing".* [61 year old African American female]

> *"Oh, it's kind of hard but I'm doing well; you know, at least I'm working that's more important and I can thank the Lord I'm still livin'. It's more important. You can't ask anything you got to get down and you got to keep on going.....yea, prayers, when I get in trouble, or something like that, I pray all the time, but I go more constantly or more, and I deal with that, and I think that's my source of strength there".* [59 year old African American female]

> *"So all we can do is get our strength from the Lord. It's not, I mean I think of it often, like I think if this happens or this happens I could be*

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out on the street. I just try not to think about it, I just trust in the Lord." [47 year old African American female]

"That is normal. That is the prayer that we try to pray to ask God to help you deal, to help cope with things that you don't understand. So that is just a normal prayer that you try to take and cope with standards of life because that's not always in your control." [47 year old African American male]

V.B.5.b. Coping Theme 2: Family

Family was considered to play a significant role in coping. Most respondents regardless of age and gender simply could not foresee their lives without family members in New Orleans. To those who were caregivers, it was a responsibility they were not willing to give up easily, to others it was the hope for the future and they would do whatever it took to overcome the current stressful situation.

"Right now I'm not worried about nothing. I found what I want: my family. That's what I was worried about. But now I'm kinda on the happy side because I got my family, I'm back home and I'm happy now." [58 year old African American male]

John* looked happy and he smiled when he talked about his family. He evacuated with all his family of more than twenty people. He returned to New Orleans to rebuild his home but his wife and children remained in Houston because his wife's job relocated to Houston. When he talked about his children and grandchildren and the hope of seeing

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them walk across the stage on graduation day, he smiled, looking dreamingly up into the sky.

> *"Yes, I am in the process of trying to rebuild. I have, um, several grandchildren that I look forward to watching grow. I have a(n) outlook on life to try to be here to see them walk across the stage. So I hope that I am. I hope that, you know that old saying; I hope the Lord let me and death don't catch me. So I do hope I'll be there".* [58 year old African American male]

About 52% of respondents interviewed at six months post-Katrina were life long residents of New Orleans and had extended family living in the Greater New Orleans area. When asked if they would stay in New Orleans in spite of the storm, mixed responses ranged from those who did not want to return, to those who were unsure about their decision to stay, to those who definitely wanted to stay (Text Box 2).

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Text Box 2: Themes Related to Quotes about Respondents Decision to Stay in New Orleans	
Those who plan to leave	*"We are rebuilding our house and selling it. I cannot go through this again, it almost killed me."* *"Well, my house has to be demolished and my family members don't want to come back so I don't think I'm coming back."*
Those who haven't made up their minds	*"I haven't decided yet. But Texas is looking pretty... No, I'm not gonna leave-I don't think I'm gonna leave right away. But Texas is looking pretty appealing to me. I'm not lying! There are a lot of jobs available."* *"I am hesitating on it. In a way I want to and in a way I want to leave. I am not really sure right now"* *"I'm in a limbo right now, because its not a definite thing, that this canal is gonna be able to hold, another uh, a category, its not even a category 3, and they're not half way finished with it, and the season begins in June, so I mean.."*
Those who plan to stay	*"I definitely want to come back this is my home. We live in Jefferson parish now."* *"I plan to stay, there is no place like home"*

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V.B.5.c. Coping Theme 3: Personal Will/Control

Some respondents attributed their ability to cope to personal will or control, using the phrases; *'staying strong'* and *'not letting anything get you'*. More men talked about personal will/control as a coping strategy than women. Yet, the majority of the men interviewed at six months post-Katrina fought back tears as they recounted their struggles of survival.

> *"No, there's just a regular day by day stress that comes with living. Other than that, no, I don't let anything drop my spirits unless my mind tells it to. Then you have to be a strong person or a strong willed person to succeed at that I guess".* [58 year old African American male]

> *"My neighbor across the street drowned. I came out pretty well and I guess it was from my strong mother. She told me that things happen."* [50 year old African American female]

Being strong and/or strong willed were important coping factors for both. This man's statement reflected what other men said about themselves in this study. Even though he acknowledged the day-to-day stress, he insists that he had control over what stresses him.

Some women however, talked about personal control in addition to making a deliberate effort to pray as part of their coping strategies. For example, Alicia*, a wife, and mother of three young children, was diagnosed with depression prior to Hurricane Katrina. She spoke about the effort she puts into maintaining her treatment regimen and

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how her dependence on prayers helped her to avoid inflicting pain on herself and hurting others.

> *"uhm, well ugh, almost never, cause I mean I can kinda get off and then I pray a lot, that kind of thing. They doing a lot for me, even though I go to a clinic you know, a nerve clinic and I work my depressions stuff like that, uhm, I'm able to where I can control myself, where I don't wanna, I don't want to hurt myself, or hurt other people"*[33 year old White female]

Praying a lot and having control over how to respond to daily post-disaster stressors seemed to be the norm rather than the exception for many of the respondents in this case study. Some respondents' calling on God in these stressful times, had a deeper spiritual meaning for them

> *"I feel like I'm very effective with trying (to cope), because I'm a fighter... I feel like I'm gonna conquer this thing with the help of God, but I still feel it's a test of my faith, to see how much faith and trust that I have".* [59 year old African American female]

While their belief on the one hand was considered to be an affirmation for their ability to cope with their current circumstances, it was also considered to be a test of their faith. Some believed that even the choice of praying was a personal factor and part of each person drawing upon their inner strength.

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"Oh, it's kind of hard but I'm doing well; you know, at least I'm working; that's more important and I can thank the Lord I'm still livin'. It's more important. You can't ask nothing you got to get down and you got to keep on going." [47 year old African American male]

At six months post-Katrina the respondents believed that they had to rely on their spirituality through prayers in order to cope with the multiple competing stressors. Emphasis on personal will was mentioned equally by men and women, but more women than men considered reliance on prayers as part of the personal will/control needed to cope. Acknowledging the role of a higher power in conjunction with some key personal choices made it easier to handle the daily challenges of living in post-Katrina New Orleans.

The competing post-disaster stressors; loss and accommodation issues that formed the domain, "lack of control" were counteracted by the required flexibility on the part of respondents. The flexibility to hire contractors while trying to file insurance claims; to commute to and from other parts of the city and state in order to keep their jobs; to endure separation from family in order to stay employed and/or engaged in the rebuilding of their homes; to engage in the neighborhood planning process even when they no longer live there. Therefore the coping domain at six months post-Katrina was ***adaptability.***

V.B.6. Case Study 2-Summary

At six months post-Katrina loss of lives, property, employment and accommodation complicated by the fear of losing more were the main stressors

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experienced by respondents in New Orleans. The respondents in this case study relied on their spirituality, their family and strong personal will/control to give them the flexibility required to adapt to their new reality. Using Powell and Rayner's (1952) description of disasters in terms of time periods, warning, threat, impact, inventory, remedy, rescue and recovery [13], at six months post-Katrina, respondents were at various stages of inventory depending on when they returned into the city.

Some were seeing their flooded homes for the first time while others had already gutted their homes in preparation for rebuilding. The respondents in this case study were focused on taking inventory of their loss, seeking information about available resources for rebuilding, seeking employment and affordable housing. But due to the slow rebuilding of the levees and other infrastructure and limited yet fragmented resources, episodic and recurrent stressors made respondents to experience inventory, remedy and rescue periods intermittently (Figure 10).

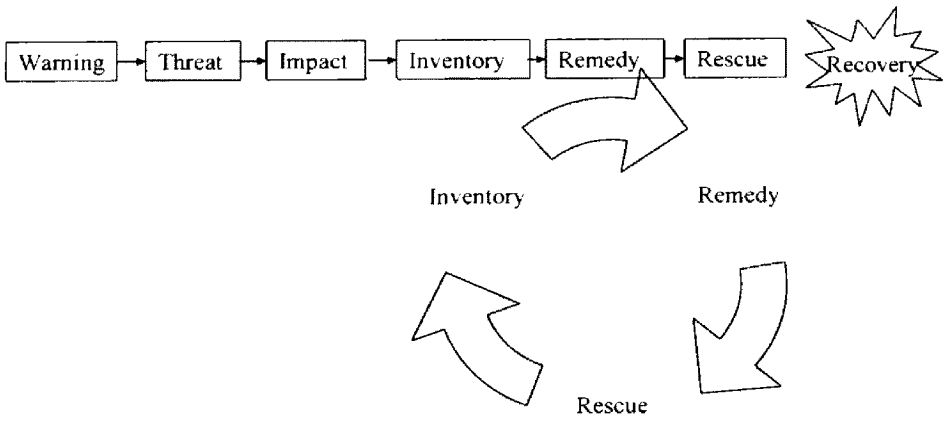

Figure 10: Author's Rendition of Powell and Rayner's Disaster Periods Describing Case Study Respondents' Experiences

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Respondents of Case Study 2 were a mixed group of those who have returned and lived in New Orleans and those who were still displaced but commute to New Orleans due to employment, school and/or to rebuild their homes. After the initial shock of returning to a city still covered in debris, having limited resources and ghost neighborhoods, respondents from this study started to re-evaluate their decision to return to the city. For some, the risks; loss of resources and support systems, fear of urban anarchy, breakdown in the medical establishment and exposure to environmental contaminants [64] were too stressful and considered to be beyond their capacity to cope. Relocation seemed to be the only option for this group of respondents. Most of the relocations however, were to neighboring cities, some, within the Greater New Orleans area.

To others, there were mixed feelings about relocating to another city, parish or state. Family and attachment to the city seemed to be the reasons why some decided to stay. With the decision to stay came another stressor, accommodation. Pre-Katrina homeowners become renters or lived in trailer villages or individual trailers parked in the yards of their storm-damaged property. Most renters depended on FEMA-paid hotel room vouchers or lived in trailer villages scattered across the city. For both groups, renters and homeowners alike, the bureaucracy involved in getting aid was considered to be a major stressor.

Returning to the city and having the opportunity to evaluate their loss for the first time, respondents responses did not fit in neatly into the disaster recovery stages. At a time when they should be in the recovery stage, they were still in the disillusionment stage. Their lack of control was associated with limited resources, distrust of the Army

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Corp of Engineers and other government agencies and the fear of an approaching hurricane season. The most significant stressor for respondents in the case study was lack of control. They did not have control over their own time, nor did they have control over the timeline to rebuild their homes. Even those with the resources to rebuild were not sure about the integrity of the levee system. They were afraid to rebuild faster than the Army Corp of Engineers' completion of the levee repairs.

Some of the emotional responses associated with this stressful period included crying, and willingness to talk about every experience related to the disaster. Using the disaster recovery stages model, the respondents at six months post-Katrina had moved beyond the heroic stage into disillusionment stage without experiencing the honeymoon stage. The extensive damage to their homes, the loss of property, accommodation issues, and the availability or lack of resources, keeping up with the application process for government grants or low interest loans, including social, emotional and physical support seemed to influence the extent and duration of the disillusionment stage.

Due to the perceived lack of control over their circumstances, respondents relied on their spirituality which was characterized by dependence on a higher power, through prayers and religious beliefs. Applying adaptive processes to the different classes of stressors experienced by respondents of Case Study 2 seemed to be a critical component of their current lifestyle in the new, New Orleans. Their adaptability and the exact effects and outcomes of the adaptive processes needed to successfully cope with the post-Katrina stressors may not be immediately apparent and may warrant further investigation later.

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V.C. Case Study 3 -Ten Months Post-Katrina

V.C.1. New Orleans at Ten Months Post-Katrina

As of July 2006, the population of Greater New Orleans area (Orleans, Jefferson, Plaquemines, St. Bernard and St. Tammany Parishes), was 956,000 with an estimated decrease of 266,000. Of these Parishes, Orleans lost the most residents, 225,000 compared to Jefferson Parish, that lost about 3,000 residents [59]. Conversely, St. Tammany Parish, located on the North Shore of Lake Pontchatrain gained about 15,000 residents.

FEMA estimated that about 210,000 Louisiana applicants had an out-of-state address and another 230,000 had an in-state address but with a different zip code from their pre-Katrina residence. The largest concentration of displaced New Orleans residents within the state of Louisiana was in Baton Rouge accounting for about 15% of the total in-state displaced people. Approximately 43% of displaced New Orleanians were in Texas and about 9% were in Georgia [60].

V.C.1. Respondents' Characteristics

Case Study 3 respondents had a mean (± SD) age of 42.7 ± 14 years and a median age of 45.5 years with a range of 19-74 years. More than 78% of respondents had a high school education or more and 83% were African American. Overall, almost 70% had full time jobs but about 67% of respondents had an annual income below $25,000 prior to Hurricane Katrina.

Sixty-two percent of the sample was female, 75% lived in Orleans Parish and about 44% owned their homes.

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Table 4: Case Study 3 - Ten Months Post-Hurricane Katrina Demographic Information (n=36)

	n	%
Age		
<39	15	41.7
40 - 49	6	16.7
50 and older	15	41.7
Gender		
Male	11	30.6
Female	25	69.4
Race		
African American	30	83.3
Other	7	16.7
Marital status		
Single	14	38.9
Married	15	41.7
Divorced	4	11.1
Widow	3	8.3
Employment status		
Full time	25	69.4
Part time	6	16.7
Retired	4	11.1
Not employed	1	2.3
Education		
<high school	8	22.2
High school/GED	10	27.8
Some college	9	25.0
Junior college	3	8.3
Undergraduate degree	4	11.1
Graduate degree +	2	5.6
Income level		
< 25,000.00	24	66.7
25,000.00 - < 50,000.00	7	19.4
50,000.00 - < 70,000.00	2	5.6
70,000.00 and above	2	5.6
Parish		
Orleans	27	75.0
Jefferson	8	22.2
St. Bernard	1	2.8
Home ownership		
Rents	16	44.4
Owns	20	55.6
Information Source		
Television	35	97.2
Family/Friend	1	2.8
Intent to Stay in New Orleans		
Plan to stay	36	100
Do not plan to stay	0	0
Evacuation History		
Never Evacuated	14	38.9
Evacuated at least once before Hurricane Katrina	22	61.1
# of Generations in New Orleans		
< 5	21	60.0
5 and above	15	40.0
Head of Household		
Yes	26	72.2
No	10	27.8
Transportation (Own car)		
Yes	32	88.9
No	4	11.1

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V.C.2. Initial Exposure and Response

At ten months post-Katrina, the respondents all said they heard about the mandatory evacuation ordered by the New Orleans Mayor, yet 38.9 % did not evacuate before Hurricane Katrina made landfall. Some of the reasons why they did not evacuate included perceived severity of the impending storm and the degree of urgency of the information released by the authorities.

> *"We decided to stay because it was pretty much being downplayed by the city officials.* [30 year old African American male]

> *"They should have done it a little earlier, to know what to do and how to get out of the situation. A lot of lives could have been saved and they could have taken things that they really needed"* [74 year old African American male]

'Downplayed' was a term commonly used by respondents to mean that the information they received led them to underestimate the potential severity of the approaching storm.

> *"I really didn't think about what I was gonna do because I wasn't thinking it was gonna come here I thinking it would be spared again, so I really hadn't planned to leave until the last minute."* [65 year old African American female]

> *"I was out of town so I called to see if my husband and brother were leaving. At that particular time, they were not inclined to leaving.*

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They didn't really act like there was anything coming; just another regular hurricane. When it hit a category 5 I was like get out, it's just that simple. It's not that common, you know we have had category 5 storms coming to New Orleans but the potential was it might come to New Orleans, it might not, but this one was heading straight for New Orleans so it was like get out." [31 year old African American female]

"I was a little worried, just because I don't usually evacuate the city. So, I was a little concerned about it, but having New Orleans never hit before, I wasn't thinking it was going to be as bad as it was." [23 year old White female]

'*Just another hurricane*' was used to describe the severity of an approaching storm as compared to previous storms that ended up not to be as severe as predicted. The respondents of this case study felt that they had underestimated the severity of Hurricane Katrina and the associated levee breaches that led to loss of lives and property. They cited the loss of lives and property during the storm and their own unpleasant experiences during evacuation and displacement as avoidable negative outcomes. Using these pre-Katrina experiences and their negative outcomes, respondents were reluctant to believe any information from government officials. Due to the slow government response after Hurricane Katrina, some respondents questioned the truthfulness and commitment by the government to put a viable and timely rebuilding plan in place before another hurricane

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hits New Orleans. In response to the question, "What do you want to hear from your city or government officials"? This respondent said:

> *I don't think I want to learn anything from them because they don't know what we have seen. Um, the fact that the city is really going at the rebuilding efforts really slow"* [30 year old African American male]

Although the rebuilding of the city was slow, some respondents hoped that the government officials would keep their promises and never again to leave stranded people suffer for several days before being rescued. Queen,* a grandmother who lived in Metairie and was rescued from the Convention Center along with her teenaged grandson, said;

> *"..(I would like to know) that what they are saying in the news...that they will take care of us, will rescue us... will be put into practice"* [58 year old African American female]

Having experienced first hand, what it meant to be abandoned for several days without food and water, this respondent remembered hearing promises that were not readily fulfilled when she was at the Convention Center. So her main concern was that all the plans being put forth were just political rhetoric. This same sentiment was shared by other respondents about all the promises being made by the government regarding the levee systems.

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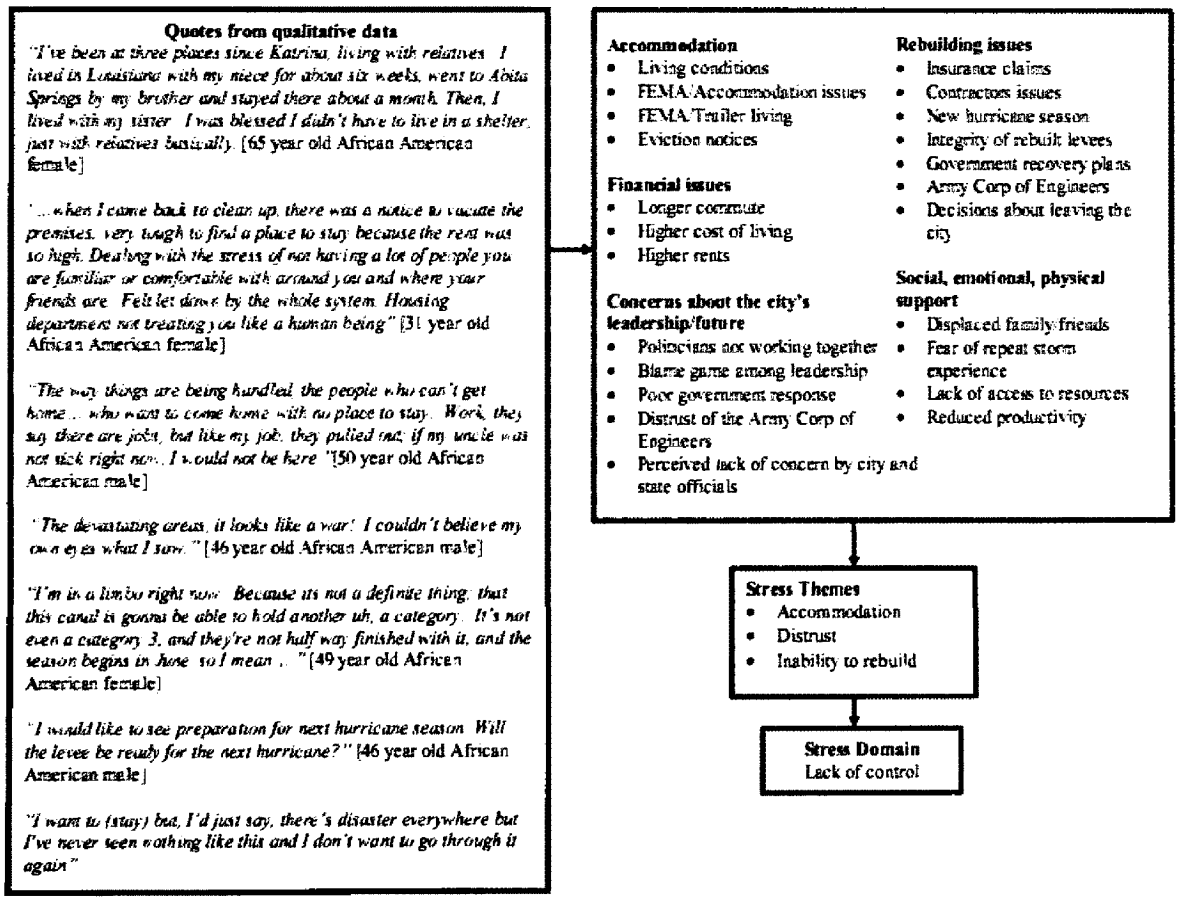
I want to hear that we are progressing and that they are going to work to build better levees to protect the city." [26 year old African American male]

"Now that Katrina came they will probably have more warnings, more precaution." [25 year old African American male]

V.C.4. Perceived Stress at Ten Months Post-Katrina

Figure 7: Summary of Perceived Stress at Ten Months Post-Katrina



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V.C.4.a. Perceived Stress at Ten Months Post-Katrina

V.C.4.a.1. Stress Theme 1: Accommodation

All of the respondents' reported that their current living arrangements were not acceptable. The commute was longer because people lived farther away from the city. Sean,* a graduate student at Tulane University who recently returned to the city from the Northeast where he had spent almost six months after the storm, said that he was a renter who lost everything. He had to start his life over but, upon returning to New Orleans, he could not afford the rents in the uptown neighborhood of New Orleans where he used to live. When asked to elaborate on his current living arrangement, Sean said:

> *"Well, I am really coming from Baton Rouge to New Orleans."* [31 year old African Male]

Lack of accommodation and high rents were cited as the primary causes for whole or parts of families to co-habit with friends, family and even strangers.

Ms. D.* was actively involved with a local group whose mission was to fight against the demolition of homes in the Lower 9th Ward. Of all the trailer residents interviewed at ten months post-Katrina, Ms. D. * was the most excited. She had waited almost nine months to get a FEMA trailer installed in front of her gutted home in the Lower 9th Ward.

> *"This is a FEMA trailer; finally got the FEMA trailer. I've been here maybe about six weeks."*[65 year old African American female]

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For Ms. D. *, moving into the trailer was part of regaining her independence since leaving the city ten months earlier. Although she was excited, she also complained about the small space and the safety concerns associated with living in a trailer during a hurricane season. Ms. D. * like most respondents spoke about their evacuation experience in retrospect and linked it to the current accommodation issues. The respondents reported that they had more addresses within this ten month period since the storm, than they have had in their whole lifetime. Ms. D. * said

> *"I've been at three places since Katrina, living with relatives. I lived in Louisiana with my niece for about six weeks, went to Abita Springs by my brother and stayed there about a month. Then, I lived with my sister. I was blessed I didn't have to live in a shelter, just with relatives basically.* [65 year old African American female]

Living with family or friends during displacement was a welcome alternative to shelter living but it also meant that people moved multiple times, often from city to city.

> *"Yes, um, I went to Thibodeaux, stayed for 3 days, in a shelter, then I went to Texas, stayed in shelter for one night, then went to take an airplane to North Carolina, Charlotte, and stayed there like 3 days, then went from there to South Carolina to Charleston for 3 days, then went back to Tennessee and stayed there for a month.."* [36 year old African male]

Those who were homeowners before the storm and could not get a trailer (or were tired of waiting for one) became renters.

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"We lost everything. Now we live in an apartment" [26 year old African American male]

Usually people considered moving from renting to home ownership as a sign of progress, achieving the American dream. So when former homeowners became renters due to the total loss they suffered when their homes were destroyed, it was considered to be stressful. Those who were renters before the storm faced eviction by property owners. Two recurrent reasons for eviction were 1) repairs/renovations and 2) increased rents. Like most respondents Asia,* a public health graduate listed multiple sources of stress in post-Katrina New Orleans.

"...when I came back to clean up, there was a notice to vacate the premises; very tough to find a place to stay because the rent was so high. Dealing with the stress of not having a lot of people you are familiar or comfortable with around you and where your friends are. Felt let down by the whole system. Housing department not treating you like a human being..." [31 year old African American female]

Similar stories about accommodation issues were common among respondents at ten months post-Katrina. For both pre-Katrina home owners and renters, discussions about accommodation included information about living arrangements during displacement and upon return to the city. After the initial shock of returning to the city was over, people started re-evaluating their decision to return. There seemed to be a

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continuity of stress related to living arrangements, joblessness and reduced social support [Text Box 3].

Text Box 3: Case Study 3 - Quotes about accommodation/living arrangements since Hurricane Katrina

"I started school on the 19th and stayed there for a whole semester and then the second semester I was staying with a family that was arranged by the university so I did not have to pay anything or anything of that sort. The school also takes care of my feeding and everything plus computers and stuff like that. The second semester I was going between Harvard University and the National Center of Polymer and Biophysics Research which is affiliated to the University of Massachusetts Amherst. Why I am I stayed with another family that was arranged by the university commuting this weekend Harvard, the next weekend in Amherst, for an entire semester including the summer I came back now to Baton Rouge around the first week of July. Now leaving Baton Rouge and coming to school at Tulane." [31 year old African American male]

"I been at three places since Katrina living with relatives. I lived Louisiana with my niece for about six weeks went to Abita Springs by my brother and stayed there about a month then I lived with my sister. I was blessed I didn't have to live in a shelter just with relatives basically. This is a FEMA trailer, finally got the FEMA trailer I've been here maybe about six weeks." [65 year old African American female]

"Katrina hurt some people and helped some people. God knows what is best and does not give us more than we can bear. Can't question it. My home now after Katrina was not the quality it was. I was able after Katrina came it helped me to upgrade the quality of my home. It was a lot of things in my home when I brought it that was not there but through having insurance to pay off. I was able to upgrade my home, put things in it that was not in it and other thing I would say the great grace of our God it helped me to say it's mine. It's mine I owe nobody but my wife, it's mine." [74 year old African American male]

"Before we went to Texas we went to two hotels in downtown hotel and left to go to another one. We paid out of our pockets and off our credit cards. We stayed with a friend across the river for six months. A lot of people lost their lives and children lost their parents. Parents are under constant stress. They need counseling everyday, to be told that things are going to be alright." [47 year old African American female]

"Initially my mother-in-law and I stayed with my husband's cousin in Jackson but they had no lights or water up there. So then we went to the Marriott, my husband works for the Marriott, Marriott actually accommodated us because they were giving preference to their employees providing them with accommodation, so since we were up there we stayed at the Marriott a couple of weeks." [31 year old African American female

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The respondents in this case study were very emotional as they told their stories. Some of them considered relocating to other cities to avoid the stress associated with living in New Orleans. Regardless of age or gender, respondents' reactions to the storm at ten months post-Katrina revealed disbelief as they finally saw the evidence of the devastation across the city. They also expressed anger and frustration associated with the multi-level challenges that they faced upon return to the city.

> *"The devastating areas, it looks like a war! I couldn't believe my own eyes what I saw."* [46 year old African American male]

> *"The way things are being handled, the people who can't get home... who want to come home with no place to stay. Work, they say there are jobs, but like my job, they pulled out; if my uncle was not sick right now, I would not be here."* [50 year old African American male]

V.C.4.a.2. Stress Theme 2: Inability to Rebuild

Rebuilding personal lives, homes and the city seemed to be the general goal for those who had returned to the city. The rebuilding efforts after Hurricane Katrina however, were recognized as being constantly challenging at every level; obtaining rebuilding permits, hiring contractors and the high prices of building materials, getting funding from the Small Business Administration (SBA) loans, or insurance claims for those who had insurance were all challenges that respondents faced.

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"I don't think that things will ever be the way that it was before the storm." [44 year old African American male]

'The rebuilding process is slow. A lot of bureaucracy involved in giving aid to individuals in need." [31 year old African American female]

"Just dealing with the come back, and dealing with the loss, stories of sorrow, bureaucracy, FEMA people." [53 year old African American male]

The reference to *'bureaucracy'* was part of the respondents' frustration with the application process for government sponsored aid. Some homeowners found out that their insurance was inadequate to cover their loss while others were told that they were not eligible for grants but rather should apply for SBA loans. Proof of employment was a requirement for the loan application process yet most people had lost their jobs.

Renters felt that government aid was not renter-friendly, and many did not have rental insurance, making their loss absolute with no monetary aid to replace what they lost. With each challenge came the realization that hope and resolve on the personal level was not enough to cope with life in New Orleans. Many of the challenges were at the institutional level and with many New Orleanians still displaced, there was a general feeling that most of them may not be able to return to the city.

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V.C.4.a.3. Stress theme 3: Distrust

At ten months post-Katrina, neighborhoods were organizing around rebuilding issues as a new hurricane season began. Respondents' concerns revolved around the rebuilding of the levees. Since the levee failures, many people seemed to lost faith in the Army Corps of Engineers. Some believed that the government was unable to ensure that the levees were rebuilt to withstand a Category 5 storm. This lack of trust in the government and the Army Corp of Engineers led to anxiety and safety concerns at the start of a new hurricane season.

> *"The Corps of Engineers lied to people and did not do their jobs; to maintain the pumps to divert the water. Man made this disaster, not Katrina."* [74 year old African American male]

> *"I'm in a limbo right now. Because it's not a definite thing; that this canal is gonna be able to hold another uh, a category. It's not even a category 3, and they're not half way finished with it, and the season begins in June, so I mean...."* [49 year old African American female]

> *"I would like to see preparation for next hurricane season. Will the levee be ready for the next hurricane?"* [46 year old African American male]

> *"I want to hear that we are progressing and that they are going to work to build better levees to protect the city. I'm concerned about the*

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levees and a hurricane happening again." [26 year old African American male]

As can be seen from the quotes above, *'the Army Corp of Engineers lied to the people'* became a rallying point for community organizers and it almost became a slogan at ten months post-Katrina. When respondents found out that the levees were not strong enough to protect the city from a Category 5 hurricane as was evident in the breaches that occurred during Hurricane Katrina, they (the respondents) reacted by being angry at people in authority and the government agencies they represented. The anger and distrust that ensued was also reflected in their comments about the rebuilding of the levees and the government's role in the provision of resources for the rebuilding of the city.

The sentence; *"I'm in limbo right now"*, expressed the general sentiment of the respondents, acknowledging their lack of control of the timeline for rebuilding due to the slow pace of the government's rebuilding process. Many were already rebuilding their homes and lives but were in doubt about the current condition of the levee system. There was a constant self-doubt about the rebuilding of homes and lives faster than the government's rebuilding of the levees. There was also the general atmosphere of doubt surrounding the rebuilding plans for the city and the functionality of living in a post-Katrina New Orleans. So while there was a general rush to rebuild homes in order to address their accommodation issues, concerns about the government and the rebuilding of the levees seemed to call for caution and slower -paced individual rebuilding efforts.

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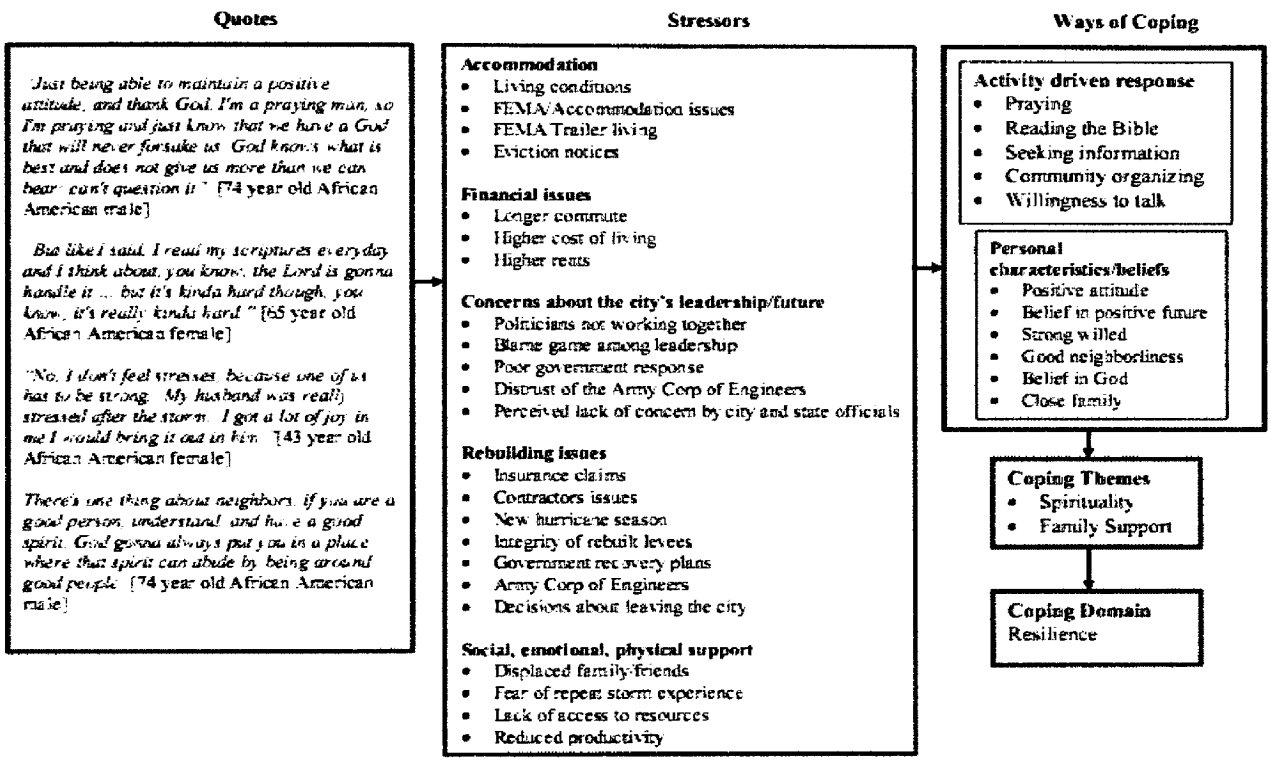
V.C.5. Coping at Ten Months Post-Katrina

Figure 8: Summary of Pathway to Coping at Ten Months Post-Katrina



In spite of the multiple levels of challenges faced by respondents at ten months post-Katrina, there also seemed to be a resolve to rebuild the city. With every set back, some respondents were, almost stubbornly advocating for the rebuilding of the city from the neighborhood level. There were cycles of hope and challenges that seemed to be the common link among the respondents in this case study. But as each challenge was addressed, a new cycle of hope seemed to emerge.

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V.C.5.a. Coping Theme 1: Spirituality/positive attitude

At ten months post-Katrina, the respondents' emphasized being focused on rebuilding their homes and lives. All reported having turned to their spirituality and/or having a positive attitude as their coping strategies. Mr. Ed,* an Elder in his church, repeated several times how prayers helped him keep a positive attitude even after having lost two of his colleagues and their wives, to the storm. Mr. Ed,* tearfully told the story of his colleagues whom he had contact with as he was evacuating his family. He said his colleague asked him to evacuate and not to worry about them. Six months after Hurricane Katrina, the skeletal remains of the colleague, his wife and another couple were found in the attic of their flooded mold infested home.

Mr. Ed,* remembered calling his colleagues and begging them to evacuate. In hind sight, he regretted not putting enough pressure on them. He was very emotional, wiping tears from his eyes as he talked to the author. He blamed himself and felt responsible for his friends' deaths. When asked how he coped, he said

> *"Just being able to maintain a positive attitude, and thank God, I'm a praying man, so I'm praying and just know that we have a God that will never forsake us. God knows what is best and does not give us more than we can bear; can't question it"*. [74 year old African American male]

> *"Just nervous, I work it off, I just gotta do something, I can't just sit still. I feel like I'm very effective with trying, because I'm a fighter. I feel like I'm gonna conquer this thing with the help of God, but I still feel it's a test of my faith, to see how much faith and trust that I have.*

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Well I mean I can't say that I'm angry because it's not my will, it's the lord's will. I mean I have no control of him, he has some powers, and so I can't do that. "[59 year old White female]

Ms. D,* (who was mentioned previously as one of the respondents who opposed the demolition of the Lower 9th Ward houses), could not stop shaking her head in disbelief over the condition of her neighborhood. She was thrilled about the trailer on the front yard of her gutted home and she was glad that she did not have to deal with moving in with another family member; however, she pointed out that almost half of her neighbors were yet to return and some of the homes had overgrown weeds and small bushes. There were some roofs with the temporary blue tarps on. Ms. D.* acknowledged that life as a returnee, has not been easy but she gets by because of her faith.

"But like I said, I read my scriptures everyday and I think about, you know, the Lord is gonna handle it ... but it's kinda hard though, you know, it's really kinda hard." [65 year old African American female]

Ms. D.*, an active community organizer with a local non-profit organization was often asked for advise by her colleagues. She shared her experiences with contractors, FEMA, the City Hall and other agencies she had to deal with since her return to the city. While she acknowledged the stress associated with life in the city, her advice was

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"I would tell them try not to concentrate on it too much, think about positive things, don't think of the negative so much" [65 year old African American female]

"What I'm doing different is that I'm just moving away from mediocrity to knowing that I can do things and just getting it done rather than just dwelling on certain things I have come to the point where enough is enough and I now its time for me to do something I'm just doing whatever I can you know that way I know I am putting a lot into whatever I need to do if I don't than it won't be done." [45 year old African American female]

V.C.5.b. Coping Theme 2: Family

After the initial assessment of their situation and their loss (which may or may not include death of a family member, friend or pet), turning to family for support was considered a major coping strategy. Ms. Naja* recognized that her husband was not doing well and she decided to be the strong one in the family

"No, I don't feel stresses, because one of us has to be strong. My husband was really stressed after the storm. I got a lot of joy in me I would bring it out in him."[43 year old African American female]

The statement, *"no, I don't feel no stresses"* was more of a commitment from this respondent to care for her family whom she considered to be going through a lot more stress than she was. So it wasn't a lack of stress on her part but rather a measured

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response, a determination of sorts, in which the less stressed, was better able to care for the more stressed family member.

Kobe* was among the evacuated prisoners from Orleans Parish detention facilities. He was released from prison less than one week before being interviewed for this case study. After his release from prison, he said, he was homeless, lost and did not know where his family was until he met his niece on Canal Street one morning.

> *"I come home Thursday, I didn't know where I was gonna go. I was gonna try and find a shelter somewhere. I just so happened to find my little niece. She's living in a hotel on Canal Street and she got me in there for the time being."* [46 year old African American male]

While family was commonly cited as a source of support, for some respondents neighbors were more like family. Some neighbors evacuated together and returned to the city together. Other neighbors decided to bond together after returning to the city. Post-Katrina New Orleans had suddenly become a conglomeration of neighborhood associations. With the help of neighbors, some respondents were able to navigate the system set up at the Disaster Recovery Centers (DRC), as they rebuilt their homes and lives.

> *"There's one thing about neighbors, if you are a good person, understand, and have a good spirit, God gonna always put you in a place where that spirit can abide by being around good people."* [74 year old African American male]

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At ten months post-Katrina the respondents believed that they had to rely on their spirituality through prayers in order to cope with the multiple competing stressors associated with the rebuilding process. Emphasis on positive attitudes was mentioned equally by men and women and the reliance on prayers as part of maintaining that positive attitude needed to cope. Acknowledging the role of a higher power in conjunction with social support from family and/or friends made it easier to handle the daily challenges of living in post-Katrina New Orleans. The competing post-disaster stressors; accommodation issues, distrust and inability to rebuild formed the domain sense of control. The respondents in this third case study had a strong sense of control despite the acknowledgement that life in New Orleans was very stressful. There was a commitment to successfully rebuild and live in New Orleans. The respondents focused on adaptive processes that enabled them to cope with the multi-level stressors.

The adaptive processes included the flexibility to work with contractors, file insurance claims, apply for loans or grants, and work with various non-profit organizations to get the aid they had to offer. They engaged in the rebuilding of their homes and in the neighborhood planning and rebuilding process. They hoped that the city will be rebuilt to accommodate all who returned and those who hope to return in the future. Therefore the coping domain at ten months post-Katrina was ***resilience.***

V.C.6. Case Study 3-Summary

The respondents of Case Study 3 were a mixed group of people with varying return dates. Some had been in the city for more than 7 months while others ranged from 0 to 7 months since their return. Accommodation, distrust and inability to rebuild

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created an uncertain environment for respondents and most of them had taken inventory of their situation and had decided they would stay to rebuild. But rebuilding a city after such a widespread devastation required patience because every system, both government and private, was recovering at a different pace. The reality of life in New Orleans at ten months post Katrina was still very stressful and respondents were at various stages of recovery, the most prevalent of which was tunnel vision. At this stage, respondents seemed to be task and goal oriented, with each task and goal requiring its own adaptation process. At ten months post-Katrina, respondents' goal was to achieve complete recovery. The delayed transition from one disaster time period or recovery stage to another as experienced by respondents of this case study, made it hard for them to achieve their goal. The inventory, remedy and rescue periods as described by Powell and Rayner [13] were not achieved in a linear manner (Figure 10; pg. 80).

One of the defining characteristics of respondents at ten months post- Katrina was their success in adapting to the highs and lows of living in post-Katrina New Orleans. Social support, including information and emotional support from family and friends defined how successful these adaptive processes helped them cope with their stressful situation. Their participation in the neighborhood meetings, information sessions and rebuilding efforts made it possible to access available resources and to know if the desired resources will be available of not. Participation increased the neighborhood cohesiveness which enabled returned citizens to organize around pertinent issues that were influencing their lives and rebuilding efforts. Neighborhood cohesiveness was also described in another study as a positive influence on the community's resilience [65]. In describing hurricane Mitch survivors in Nicaragua, Cupples (2007), said 'most

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organized communities seemed to be not only the most resilient ones but also those more effective at attracting aid' [65].

Given the post-Hurricane Katrina conditions that promoted episodic and recurrent stressors, respondents experienced inventory, remedy and rescue periods intermittently. Similarly they experience tunnel vision, honeymoon and disillusionment intermittently requiring them to develop capacities that supported their new reality. Living in New Orleans within the first hurricane season after Hurricane Katrina and the levee breaches, respondents lived under a shadow of uncertainty.

The inventory and tunnel vision period seemed to be prolonged by the uncertainty associated with post-Katrina living experiences. They were worried about the slow rebuilding process as well as the ability of the repaired levees to protect the city from future storm surges and flooding. While the intention to rebuild was strongly expressed, respondents also acknowledged the uncertainty associated with obtaining the resources needed to rebuild.

The extensive damage to their homes, the loss of property, accommodation issues, and the availability of resources, keeping up with the application process for government grants or low interest loans, including social, emotional and physical support seemed to have influenced the extent and duration of the disillusionment stage (Appendix B). The resolve to rebuild despite the odds, with the help of family and friends and a strong dependence on their spirituality was gradually helping them through the transition needed to recover in the months and years ahead.

There seemed to be a pendulous movement in and out of the remedy and rescue periods and the tunnel vision and disillusionment stages. Yet they never lost sight of the

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desire to fully recover. Successfully applying adaptive processes to the different stressors seemed to be the norm by respondents of Case Study 3. As progress was made in the recovery period, any barrier that was encountered seemed to trigger a re-evaluation and presented a new need for alternatives. The gradual transition to the reconstruction stage showed successful adaptation and their resourcefulness which in turn increased respondents' coping self-efficacy. How and why the adaptive processes successfully helped the respondents' transition from the disillusionment stage to the reconstruction phase may not be immediately apparent and may require further investigation.

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VI. DISCUSSION

Hurricane Katrina was not the first powerful hurricane to strike the United States [66]. For residents of the Greater New Orleans area, Hurricane Katrina and the subsequent levee breaches are now considered a mixed disaster. New Orleans, often described as a 'bowl', is prone to flooding due to its unique geography, situated between Lake Pontchatrain and the Mississippi River, and depended on a network of levees and pumps to keep it dry [2].

New Orleans is organized in close knit neighborhoods, rich in cultural heritage and pride. The economy mostly depends on the service industry; which indicates that a large segment of the population is poor [67]. It has been established that poverty in and of itself is a major contributing factor to a population's vulnerability and reduced capacity to deal with the effects of a disaster [68], and the situation in New Orleans after Hurricane Katrina was example of this.

The groups presented in these three case studies were unique in that they had just experienced the worst disaster in U.S. history. The mixed nature of the disaster presented challenges and exposed the vulnerability of the city and its citizens. Some preferred to defined '*the Katrina Disaster*' as a combination of Hurricane Katrina, levee breaches, flooding, inadequate disaster response, oil spills and Hurricane Rita [69]. The human error component of the Katrina Disaster included the levees, the inadequate response to the flooding and the slow recovery at the organizational/institutional levels. While the hurricanes were natural disasters and nature cannot be held accountable or successfully blamed for its actions, respondents in these case studies were quick to blame the government, FEMA, the Army Corp of Engineers for the human error portion of the

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Katrina Disaster. Having someone to blame is associated with sever emotional reactions such as anger.

In the three Case Studies presented in this paper, respondents' stories clearly showed distinct time-related stressors, needs and coping patterns that did not fully conform to the established disaster time periods and recovery models.

VI. A. Key Points

VI.A.1. Lack of Control

The overarching stress domain for respondents in all three case studies was lack of control. They did not have control over their own time. At three months post-Katrina, respondents in displacement were not in control over the timeline to return to the Greater New Orleans area nor did they have control over their living arrangements. According to Bandura (2001), 'the capacity to exercise control over one's own functioning and events that affect one's life is the essence of humanness'[70]. This lack of control resulted in respondents reporting to be very frustrated.

Those who had evacuated before the storm, watched helplessly as the storm and subsequent flood resulted in civil chaos [64]. The helplessness of the situation within the flooded New Orleans caused a lot of frustration and anxiety that was soon identified as survivors' guilt. Survivor's guilt helped this group of respondents to focus on others' loss and pain. It also helped them transition to another stage of recovery; the honeymoon stage. At this stage, respondents were connected through a shared traumatic experience and they responded by sharing their stories, informing each other about available resources and figuring out how to reconnect with family and friends [71].

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At six months post-Katrina respondents who had returned to the city seemed to face the same lack of control over their own time. But in addition to time, they also felt that the rebuilding process, the levee reconstruction and the process of applying for and receiving public aid were outside their control. Accommodation was also a major issue for this group of respondents. Many were still waiting for a FEMA trailer. More than 50% of pre-Katrina Orleans Parish residents were renters therefore; those renters who returned faced the challenges of reduced number of available livable apartments and high rents. Many had to rely on getting a FEMA trailer but their chances of receiving a FEMA trailer on a private lot were slim. Accommodation vouchers for FEMA-paid hotel rooms were expiring and some were not eligible for FEMA vouchers within New Orleans because they already had a FEMA trailer or apartment in another city. Due to the perceived lack of control over several areas that impacted their lives, respondents at six months post-Katrina were experiencing the disillusionment stage of disaster recovery [27].

At ten months post-Katrina, the perceived lack of control was related to their rebuilding process and progress. Due to the different rate of recovery by government agencies and other community support systems, respondents could not progress on their own personal rebuilding efforts. Engaging in community organizing efforts and in acquiring and helping distribute information about available resources seemed to be an outlet employed by this group of respondents as they coped with life in New Orleans at ten months post-Katrina [72].

Although the perceived lack of control over their own time, and the timeline for their return to the city and the rebuilding of their homes and neighborhoods could be seen

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as a negative outcome of Hurricane Katrina and the levee breaches, respondents from all three case studies seemed to adapt to their circumstances. The coping domain that transcended the time periods of these case studies was adaptability.

VI.A.2. Adaptability

Adaptability was the overarching coping domain for both case study 1 and 2. The ability to adapt as shown by respondents in these case studies is a break down of the overall recovery process into smaller task-driven and manageable groups of processes. For instance in case study 1, an overall goal of returning life to normalcy seemed daunting, but enrolling children into schools or the elderly into a day program, was a step towards achieving normalcy. For case study 2 respondents, it was sometimes as simple as successfully applying for and receiving a FEMA trailer on the lawn outside the shell of a flooded home. While successfully implementing these small task-oriented processes seemed rewarding, respondents were not blind to the fact that they were still far from full recovery to their pre-Katrina way of life. In fact many were not expecting that life would ever return to that pre-Katrina state. Yet, as each set of adaptive processes was successfully implemented, it seemed to promote respondents' sense of effectiveness and their ability to face future challenges. These simple yet important task-driven adaptive processes acted as the building blocks for resilience [53].

Respondents from all three case studies relied on their spirituality as a form of adaptive coping mechanism. For New Orleans residents, spirituality generally was part of the cultural milieu and conversations about prayers, meditation and similar activities were common. Reliance on spirituality as a coping mechanism has been described in some studies as a form of escapism, a negative coping strategy [49]. This definition could

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have been true of respondents in these case studies if they had not shown a strong sense of self, sense of purpose and a belief in their own ability to return to some form of normalcy. It should be noted that factors external to these respondents that were necessary for rebuilding were not readily available. Some of the factors included but were not limited to funding, accommodation and insurance etc. so in the post-Katrina environment, people were essentially waiting for these external factors to become available to them. Therefore, spirituality served as a positive coping mechanism and was a major influence in the respondents' successfully adapting to their new way of life. Spirituality also helped respondents tap into their own innate resilience which was characterized by a belief in a positive future, effective problem solving and social competence. Spirituality and their shared experience of a community-wide trauma event were unifying factors that enabled them to reach out and rebuild their social support networks and establish other relationships that did not necessarily involve members or groups from their pre-Katrina networks.

VI.A.3. Resilience

Resilience is described as the outcomes associated with successfully applying coping processes in response to stress and adversity [21]. Resilience was the overarching coping domain for Case Study 3. At ten months post-Katrina, respondents' experiences were varied but the main idea was that, they had invested time and effort towards rebuilding within the Greater New Orleans area. With external factors contributing to their perceived lack of control, which seemed to derail their own personal rebuilding efforts, this group of respondents had mastered the art of adaptability.

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They had more successful clusters of task-driven adaptive processes that could be seen as a hierarchical structure of coping made of numerous instances of coping linked to ways of coping and families of coping and finally adaptive processes at the top [53]. These clusters of adaptive processes are aimed at achieving the goal of rebuilding their lives in New Orleans. Their belief in their personality traits and taking personal responsibility for their actions served as the base for implementing their innate resilience. They also were able to analyze the nature of the available community support. Most of the respondents were able to navigate challenges and to seek out opportunities for meaningful participation within their families and the community in general.

VI.B. Current Literature

Elder et al (2007), conducted a study on African Americans' Decisions Not to Evacuate New Orleans before Hurricane Katrina [73]. They found that people depended on their spirituality as a coping mechanism and that family influenced evacuation decision. In this current study however, the co-dependence on spirituality and family served as a buffer against the uncertainty that was the reality of life in displacement as well as living in post-Katrina New Orleans at six and ten months after the disaster. This sense of belonging and close family ties was also found by other post-Katrina studies to influence evacuation decisions [71, 74-77]. For instance one study found that some people could not evacuate because they could not leave vulnerable family members behind [71]. However, findings from the current three case studies suggested that family ties specifically influenced and encouraged multi-city travel. The main aim for the multi-

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city travel was to be close to other family members; a reliable support system among this group of respondents that pre-dates Hurricane Katrina.

The Urban Institute published a series of essays in 2006 assessing the challenges facing New Orleans after Hurricane Katrina. It was found that displacement places New Orleanians at a disadvantage for finding and maintaining employment [78]. The breakdown in community-level support structures due to the evacuation of whole communities in New Orleans makes it even harder for job placements and future earning potential of the displaced and currently unemployed population. Those who get re-employed sometimes lose close to 20% of their previous wage levels [78]. For Case Study 2 respondents, the reality of life in post-Katrina New Orleans included lack of accommodation and joblessness; however some were willing to make necessary adjustments to successfully rebuild their lives. Others were not so sure and considered relocating to other cities and/or states. According to the Brookings Institute, at one year after the disaster, African American New Orleanians were most likely to have moved to the Houston metro area and low income former New Orleans residents are more likely than Whites and/or higher income residents to be displaced in other metropolitan areas such as Atlanta, Dallas and Houston [79].

The recurrent coping themes across all three case studies were spirituality and/or positive attitude. It has been demonstrated in other studies that those who were dealing with adverse conditions such as physical or emotional pain often drew upon their spirituality, through prayers, positive thinking, congregating in a place of worship or seeking spiritual guidance from a religious leader as part of their coping strategies [80, 81]. In their on-going longitudinal study of people affected by Hurricane Katrina,

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Kessler and colleagues (2008), found that the positive and hopeful attitudes of the subjects reduced the severity of outcomes associated with exposure to the traumatic event [82]. Due to the extensive wind damage and flooding, whole neighborhoods became ghost towns. Recovery of some of these neighborhoods at one year post-Katrina was delayed due to several individual as well as systemic level factors, such as levee repairs, flood insurance coverage and availability of reconstruction labor force [83]. A combination and interrelationship of these factors were also found to influence the return and repopulation of the neighborhoods by respondents of these case studies. Stress and other mental health issues continue to plague both displaced and returned New Orleanians and studies have shown that those who are still displaced four years after Hurricane Katrina have worse psychological problems [84].

The successful application of adaptive processes promoted respondents' coping self-efficacy and made them resilient. Norris et al (2008), defined resilience as a process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance [72]. The adaptability of respondents in all three case studies to the circumstances surrounding their lives in displacement and upon their return to New Orleans is unique. The drive to return and rebuild their community surpassed all previous projections. For example, the RAND Corporation projected that some areas of the Lower Ninth Ward that suffered more sever flood damage will not be repopulated until 2011. On the contrary, by 2009, the number of people living in trailers in front of their flood-damaged homes while rebuilding, surpassed the projected population for 2011 [83].

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Some of the respondents in Case Studies 2 and 3 were actually residents of the Lower Ninth Ward. Many of these residents were actively involved in the community organizing around issues related to the rebuilding of their community. The demographics of the city had changed compared to how it was pre-Katrina. Studies have shown that the population is older, whiter and more educated [85].

No other post-Katrina research to date had captured the hardiness and resourcefulness of the survivors using their own words as presented in these case studies [72]. Given the widespread devastation caused by Hurricane Katrina, each day brought its own challenges; therefore, most of the respondents said they had to continually re-assess their situation, built up new relationships, identified gaps in governmental resource provisions and adjusted their expectations accordingly while employing coping strategies that would meet their daily needs.

VI.C. Importance in the context of published literature

The case studies presented in this dissertation seek to contribute to the post-disaster literature an understanding of the inter-connected issues that survivors faced in the wake of a mixed disaster. While disaster literature acknowledged the challenges associated with sever loss, lack of resources, and breakdown in social support systems [86], these case studies showed that people determined to rebuild their community could reconfigure their relationships around a common sentiment and by their attachment to the community. Engaging in the neighborhood organizing served multiple purposes; recreating a source of social, informational and emotional support needed to recover.

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Having a community-wide shared experience may have helped foster the creation of this new social support system.

The remarkable adaptability of respondents in these case studies to the community-wide disaster seemed to consider the adherence to small task-driven processes as interconnected unique ways of coping [53]. Celebrating each successful implementation and completion of the adaptive process seemed to validate one's coping efficacy and it encourages the individual to keep working towards full recovery. Spirituality in these case studies acted as a protective factor that helped nurture the respondents' resiliency.

VI.C. Limitations and Strengths

VI.C.1. Strengths

Credibility or believability describes how well a phenomenon under study is understood from the participants' perspective [55, 87]. First, only one interviewer conducted the interviews, which eliminated the issue of interviewer reliability (when multiple interviewers are used). This is also a limitation (see page 118).

Interview tapes were transcribed by graduate students who worked independent of each other yet received adequate training and followed the same transcription rules. To ensure consistency, assessment of transcript accuracy was done by the author with references to the tapes and field notes. The author also coded the transcripts, eliminating inter-coder discrepancies. The interpretation and meaning of the themes were discussed using the time periods of a disaster [13].

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The author used convenience sampling, a non-probability sampling technique to recruit information-rich cases. With the following sample sizes: Case Study 1 (n=21), Case Study 2 (n=42) and Case Study 3 (n=36), these case studies represent the largest qualitative study of segments of the New Orleans population affected by Hurricane Katrina. While these numbers are not representative of the New Orleans population, the author did get considerable insight into the participants' stories as it relates to stress and coping after Katrina.

VI.C.2. Limitations

To ensure that the author's analysis and interpretation stayed true to the respondents' stories, the author ideally could have had a follow-up interview. It was deemed too cumbersome and out of financial reach, to track and engage respondents involved in these case studies to assess and confirm the credibility of their stories.

Another threat to the credibility of this study is recall bias. The study relied on respondent's ability to recall information about their experiences at three, six and ten months post-Katrina. Recalled information from memory can sometimes be unreliable, and impacted by mental state, depression and PTSD-like symptoms. History is another source of bias. With the ever changing and often competing stories of rebuilding and other post-Katrina vulnerabilities, respondents' stories may be influenced by an overlap of stress and coping capacities from other time periods.

With only one coder used during the analysis of the qualitative data, the results could be influenced by the single coder's perceptions and judgment, giving rise to bias and lack of objectivity. Furthermore, the use of three independent samples for each case study at three, six and ten months precluded the ability to aggregate the information and

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limited the ability to make comparisons between case studies or to track perceptions of stress and coping over time.

The stories did not reveal negative coping strategies. The use of the PSS could only reveal what respondents perceived as stressful while the HCSE assessed their capability of dealing with specific stressors related to hurricane damage. This may have limited the responses to reflect only the positive coping strategies.

VI.C. Public Health Implications

The magnitude of Hurricane Katrina's effects on residents of New Orleans and the individual stress associated with it were considerable. Based on pre-Katrina census data, the Metropolitan New Orleans was home to about half a million people. Data from these case studies suggested that 100% of survivors were faced with multiple stressors occurring concurrently. Interestingly, the most basic of needs; shelter, security and the need to associate with others, (family and friends) seemed to be relevant at all three time periods and the respondents had to constantly adopt coping strategies that helped them adapt to the recurring stressors.

Disaster management models follow a linear pattern with the success of the next step dependent on the success of the previous. However, in real life, the survivors had to adapt to a recurrence of stressors. Both governmental and non-governmental disaster management teams should allow for flexibility in their implementation of the management models. For instance, some respondents from Case Studies 2 and 3 returned to New Orleans to rebuild their homes but were still occupants of FEMA-paid

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apartments in other cities and states. This made them ineligible for FEMA-sponsored accommodation within the city of New Orleans. They would have preferred to have transferable leases, to ease their accommodation problems in New Orleans. The transferable leases would have been more supportive for all those who were interested in returning but could not find a safe location for a FEMA trailer or to afford the high rents.

Since acquiring and keeping an accommodation was strongly tied with individual and family finances, some people could lose their post-disaster accommodation due to job loss and/or illness. Therefore the relief process might have to include a continuous review process to determine those who might still be struggling with accommodation issues even two or more years after the disaster.

Hurricane Katrina and the subsequent levee breaches in New Orleans created a unique community-wide disaster whose impact and ramifications will be subjects of study in years to come. Research has demonstrated that individuals' perceived stress is negatively related to their coping self-efficacy [47]. While both displaced and returned respondents cited uncertainty as the main stress domain, the factors driving this uncertainty were varied. It would be helpful to explore further what it means to be an internally displaced person within the United States and how that influences survivors' perception of stress. Distrust was reported as a theme associated with survivors' stress. Distrust of government has been studied extensively as it relates to socio-politically marginalized peoples in the United States [1, 6, 9, 41, 84]. This distrust fueled numerous conspiracy theories associated with the levee breaches. An in-depth study of the factors that fueled the origination and spread of these conspiracy theories, as well as the effects

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of the theories on individual disaster preparedness, might shed some light on how people dealt with a perceived institutionalized stressor.

Spirituality/prayers/God and other personal factors appeared to be the coping mechanisms most often used. Some respondents in these case studies depended on either spirituality/prayer/God or other personal factors alone. Others within these case studies admitted using both prayers and personal factors such as belief in oneself, and individual decision not to allow circumstances overtake them. The next logical step would be to thoroughly explore the direct and indirect pathways that personal factors (with or without prayers) influence perceived stress and how people cope.

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VII. CONCLUSION

Katrina presented a unique post disaster environment that made it hard for survivors to fit into the regular time specific model of coping and re-establishment of normalcy. So, depending on the survivor's individual and collective support systems, they have come to realize that uncertainty is a new way of life and are re-generating coping systems to buffer the yet unknown stressors associated with post-Katrina life in New Orleans.

It's a combination of determination, spirituality, flexibility, adaptation and shear will power and it is different for every individual. Disaster preparedness must be associated with the necessary resources to recover and rebuild. This includes paperwork reduction and the bureaucracy that an already traumatized community must experience in order to receive help. A better coordination amongst all levels of government with a clear chain of power is required, making it less confusing to an already confused and traumatized group of survivors.

While it is expected that disaster survivors will experience stress, it was not initially clear how Hurricane Katrina survivors would respond to stress associated with being internally displaced persons in the United States. Displacement created the disruption of respondents' social ties at the time of disaster. Therefore, it is extremely important to understand the complications of life in displacement and how they are intensified along gender and age lines. Many respondents only had family and social ties in New Orleans, so this had a severe impact on availability and accessibility of resources in other states or cities nationwide.

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Having a clear disaster management road map is necessary for timely response to the after effects of a disaster. In studying three independent samples at three different points in time after the hurricane, this study was able to identify specific stressors and coping mechanisms employed by the survivors of this community-wide traumatic event. With the multiplicity of stressors associated with the aftermath of Hurricane Katrina, survivor's self-identified stressors and coping strategies from their stories provided ideas that could inform future disaster management. Often well-intended actions by disaster management teams, if not properly communicated may serve as additional stressors to those being served and impediments to the overall recovery process.

The stories represented in these case studies therefore should serve the purpose of informing the need for flexibility when implementing a disaster management program. Accommodating the larger and more urgent needs of the survivors should take precedence over adherence to a process.

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APPENDICES

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Appendix A: The Interview Instrument

Protocol Title: Diffusion of Information, Perceived Stress and Coping Self-Efficacy of the Greater New Orleans Population affected by Hurricane Katrina

Date: October 28, 2005

My name is Antor Ola. I am a research assistant working with Dr. Jeanette Magnus and Dr. Traci Hong of Tulane School of Public Health and Tropical Medicine. I am researching on how and when residents of New Orleans area were informed of Hurricane Katrina and how they are coping with their current situation. Could you answer the following questions regarding your communication about Hurricane Katrina the days before the hurricane hit landfall? You can answer all, some or none of the questions. Participation in research is voluntary. If you decide not to participate or if you do not answer all the questions, you will not be penalized nor lose any benefits to which you are entitled. For accuracy purposes, I will audio record your response. After I transcribe the tapes I will destroy the tapes. This interview is anonymous. The interview should take approximately 15-20 minutes to complete.

Interview questions:

Initial Exposure and Response

1) Hurricane Katrina hit landfall on Monday morning, August 29. *When* did you *first* hear about Katrina?
2) *How* did you *first* hear about Katrina?
3) If you heard it through the media, do you member which media (TV station, radio station, newspaper)?
4) If you heard it through another person, what is your relationship to this person?
5) When you heard this, did you decided to stay or go?
    - If you decided to go, when had you planned to leave?
    - When did you leave?
    - When you decided to leave, where did you go?
6) What crossed your mind when you heard about the evacuation?

Mandatory Evacuation

7) When did you first hear about the *mandatory evacuation* that Mayor Nagin declared?
8) How did you first hear about the mandatory evacuation?
9) What did you plan to do in response to this information?
10) When you heard this, did you decided to stay or go?
    - If you decided to go, when had you planned to leave?
    - When did you leave?
    - When you decided to leave, where did you go?
11) What crossed your mind when you heard about the mandatory evacuation?

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12) Did the message you get give clear information on how to evacuate?
13) Did you get most of your information about the evacuation from
    a. TV
    b. Radio
    c. Newspaper
    d. Internet
    e. Police
    f. Family/Friend
14) Did you yourself evacuate before the storm hit?
15) Where were you when the storm hit?

Asked of Participants Who Did Not Evacuate:

16) What were some of the reasons why you did not evacuate?
17) Of these reasons, which one would you say was the biggest reason why you did not evacuate?
18) Looking back, do you think you could have found a way to leave before the storm hit, or was there no way for you to leave?
19) Can you tell me all the places you have been before you arrived at this shelter?

Media Use Five Days Proceeding Katrina

20) In the five days before Katrina hit landfall (Wednesday August 24 through Sunday August 28), how much attention did you pay to news coverage about Hurricane Katrina in the newspaper?
    1] None
    [2] A Little
    [3] Some
    [4] A Lot
    [7] Never saw any stories about those things.
21) In the five days before Katrina hit landfall (Wednesday August 24 through Sunday August 28), how much attention did you pay to news coverage about Hurricane Katrina in the network TV news?
    1] None
    [2] A Little
    [3] Some
    [4] A Lot
    [7] Never saw any stories about those things.
22) In the five days before Katrina hit landfall (Wednesday August 24 through Sunday August 28), how much attention did you pay to news coverage about Hurricane Katrina in the local TV news?
    1] None
    [2] A Little
    [3] Some
    [4] A Lot
    [7] Never saw any stories about those things.

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23) In the five days before Katrina hit landfall (Wednesday August 24 through Sunday August 28), how much attention did you pay to news coverage about Hurricane Katrina in the cable TV news?
   1] None
   [2] A Little
   [3] Some
   [4] A Lot
   [7] Never saw any stories about those things.
24) In the five days before Katrina hit landfall (Wednesday August 24 through Sunday August 28), how much attention did you pay to news coverage about Hurricane Katrina in the radio news?
   1] None
   [2] A Little
   [3] Some
   [4] A Lot
   [7] Never saw any stories about those things.
25) In the five days before Katrina hit landfall (Wednesday August 24 through Sunday August 28), how much attention did you pay to news coverage about Hurricane Katrina in the Internet news?
   1] None
   [2] A Little
   [3] Some
   [4] A Lot
   [7] Never saw any stories about those things.

Related Hurricane Preparedness Questions

26) How many hurricanes have you seen through the Gulf Coast?
27) Have you ever left the city in preparation for a hurricane?
28) How would you prefer to learn about future potential storm and hurricane warnings?
29) Since Hurricane Katrina, what *types of information* do you want to know from city and government officials in the days ahead?
30) What concerns you most since the Hurricane?
31) Do you plan to return to the New Orleans area?

Demographics

32) The last questions pertain to demographics. Could you tell me:
   a. How many people are in your household?
   b. How many children under 18 years of age do you have?
   c. What is your marital status?
   d. Does your household have:
      i. Internet access?
      ii. Cable?
      iii. TV?
      iv. Radio?

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v. Newspaper delivery?
vi. A car?

e. How many generations live your household?
f. Who is the head of the household?
g. What parish do you reside in?
h. How old are you?
i. What is your gender?
j. How long have you lived in New Orleans?
k. At the time the hurricane hit, were you living in a home that you or your family owned, renting, living in a facility such as a retirement home, or somewhere else?
l. How many generations do your family go back in New Orleans?
m. How many extended family members live in New Orleans?
n. How many extended family members live in New Orleans?
o. What is the highest level of education that you have completed?

No formal education
Kindergarten
1st-11th grade _____
12th grade/NO diploma
High school graduate/GED
Some college/No degree
Junior college/2-yr. degree
Undergraduate degree
Graduate degree or more

p. Which of the following best describes your ethnic group?

White
Latino/Hispanic
African American
Asian American
American Indian
Other

n. Which of the following best represents your total household income for the past year?

Less than $25,000
$25,000 to less than $50,000
$50,000 to less than $75,000
$75,000 to less than $100,000
$100,000 to less than $125,000
$125,000 to less than $150,000
$150,000 or more

o. Before the hurricane, were you employed..

Full time
Part time
Not Employed

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p. Has a doctor or health professional told you that you had:
   Heart Disease
   Hypertension
   Diabetes
   Asthma or lung disease
   Physical Disability
   Cancer

Finally, in the last questions, I'd like to go back to some of the issues we covered earlier.

33. Do you know where your family is? Do you know where your friends are? How did you find out?

34. In your current or previous job, what exactly do you have to do? Do you have to do some reading and writing?

The Perceived Stress Scale (PSS)

The next few questions pertain to your experiences in the last month.

The response options are:

a. Never
b. Almost never
c. Sometimes
d. Fairly often
e. Very often
f. Don't know/Refuse to answer

35. In the last month, how often have you been upset because of something that happened unexpectedly?

36. In the last month, how often have you felt that you were unable to control the important things in your life?

37. In the last month, how often have you dealt successfully with irritating life hassles?

38. In the last month, how often have you felt nervous or stressed?

39. In the last month, how often have you felt that you are effectively coping with important changes that were occurring in your life?

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40. In the last month, how often have you felt confident about your ability to handle your personal problems?

41. In the last month, how often have you felt that things were going your way?

42. In the last month, how often have you found that you could not cope with all the things that you had to do?

43. In the last month, how often have you been able to control the irritations in your life?

44. In the last month, how often have you felt that you were on top of things?

45. In the last month, how often have you been angered because of things that happened that were outside of your control?

46. In the last month, how often have you found yourself thinking about things that you have to accomplish?

47. In the last month, how often have you been able to control the way you spend your time?

48. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

The Hurricane Coping Self-Efficacy Scale (HCSE)

For the last set of questions, how capable are you in doing the following:
On a scale of (1) "not at all capable to (7) totally capable:

49. Maintaining personal security – protecting yourself and your property

50. Maintaining financial security – obtaining financial resources either through employment or assistance

51. Maintaining housing and food – negotiating insurance claims, FEMA claims, dealing with contractors-landlords, keeping food fresh, etc.

52. Maintaining intimacy and calm within the family – feeling close and avoiding conflict with loved ones

53. Dealing with personal losses caused by the storm – loss of connections to loved ones, loss of treasured belongings, and so on

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54. Going back to normal routine – grocery shopping, banking, schools, gas stations, work, and so on

55. Dealing with the emotions you've experienced since the storm – such as anger, anxiety or depression.

56. Dealing with the demands of clearing debris – downed trees, mud, tc.

57. Maintaining a sense of normality in my daily route

58. Dealing with all the disruption caused by the flood

Media Use in the two months followings Katrina

59) In the two months following Katrina, how much attention did you pay to news coverage about the rebuilding/resettlement of New Orleans area the newspaper?
   1] None
   [2] A Little
   [3] Some
   [4] A Lot
   [7] Never saw any stories about those things.

60) In the two months following Katrina, how much attention did you pay to news coverage about the rebuilding/resettlement of New Orleans area the network TV news?
   1] None
   [2] A Little
   [3] Some
   [4] A Lot
   [7] Never saw any stories about those things.

61) In the two months following Katrina, how much attention did you pay to news coverage about the rebuilding/resettlement of New Orleans area the local TV news?
   1] None
   [2] A Little
   [3] Some
   [4] A Lot
   [7] Never saw any stories about those things.

62) In the two months following Katrina, how much attention did you pay to news coverage about the rebuilding/resettlement of New Orleans area the cable TV news?
   1] None
   [2] A Little
   [3] Some
   [4] A Lot
   [7] Never saw any stories about those things.

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63) In the two months following Katrina, how much attention did you pay to news coverage about the rebuilding/resettlement of New Orleans area the radio news?
1] None
[2] A Little
[3] Some
[4] A Lot
[7] Never saw any stories about those things.

64) In the two months following Katrina, how much attention did you pay to news coverage about the rebuilding/resettlement of New Orleans area the Internet news?
1] None
[2] A Little
[3] Some
[4] A Lot
[7] Never saw any stories about those things

Thank you for taking the time to talk to me.

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Appendix B-1: Author's Rendition of Disaster Time Periods and Recovery Stages

	Pre-Disaster Period	**Zero-Three Months Post Disaster**	**Three-Six Months Post Disaster**	**Six-Nine Months Post Disaster**	**> Nine Months Post Disaster**
Disaster Time Periods	Warning	Impact Inventory Rescue	Inventory Rescue Remedy	Rescue Remedy Recovery	Remedy Recovery
Disaster Recovery Stages	Preparation/evacuation	Heroic Tunnel vision Honeymoon	Honeymoon Disillusionment Reconstruction/recovery	Honeymoon Disillusionment Reconstruction/recovery Enhancement/post-traumatic growth stages	Disillusionment Reconstruction/recovery Enhancement/post-traumatic growth stages

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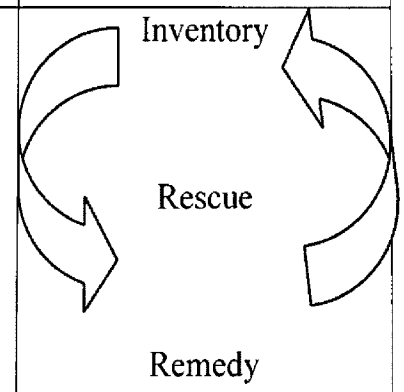
Appendix B-2: Author's Rendition of Disaster Time Periods and Recovery Stages as Experienced by Respondents in this Study

	Pre-Disaster Period	**Zero-Three Months Post-Katrina**	**Three-Six Months Post-Katrina**	**Six-Nine Months Post-Katrina**	**> Nine Months Post-Katrina**
Disaster Time Periods	Warning	Impact (Direct and Indirect)	Impact (Direct and Indirect)	Inventory	
Disaster Recovery Periods	Preparation/evacuation	Heroic Disillusionment	Disillusionment	Disillusionment	Disillusionment Reconstruction/recovery

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Appendix C: Text Box of representative quotes related to hurricanes and evacuation decisions by Case Study 1 Respondents

Case Study 1	Quotes
	"Well, no I always think about it you know when they be talking about it and I think about the dangers we in because we are surrounded by water. And uh, we usually leave". [79 year old African American female] *"I was born and raised in New Orleans, have seen every year, every year, yea a bunch of them, I seen about 30 (hurricanes) that I recall."* [68 year old African American male] *"Well, I was goin' stay at first I thought it was going to be like (Hurricane) Ivan, but my husband and my mother-in-law and all of them was like no! Because one day hurricane is gone hit us and its gone hit us hard"* [18 year old African American female] *"I wanna know if they are ever going to build the New Orleans back to the way it was or even better if possible"* [18 year old African American female] *"Yeah sometimes and then I had so much stress when I got to Douglassville. This is so messed up me and my father-in-law, cause he had, my mother-in-law and them had left before me and they had left, but I took my wife and stayed in New Orleans. I said well we're not leaving, we're going to go and stay in the projects cause its higher, just in case the water get higher.* [23 year old African American male] *"I thought that it's the same thing it always happens when the hurricane season during the hurricane season they are always having those mandatory evacuations. So when I heard about it it was like one of the old stories but I decided to leave because I knew New Orleans is below sea level. I wasn't going to take any chances I knew it might be serious we might still come back and meet the city just the way it usually happens without hitting the city but I really thought about leaving because it was dangerous. I've seen quite a number of hurricanes but I've not actually witnessed any one that hit New Orleans, this (Hurricane Katrina) was the first"* [26 year old African male]

Appendix D

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