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Narrative Analysis of the 3-Year Recovery of Superstorm Sandy Survivors

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Walden University
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Abstract

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by

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MS, Long Island University, C. W. Post Campus, 2005

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Although research has been conducted on the short-term effects of natural and human-made disasters on individuals and families, few researchers have examined the experiences of families during the recovery and rebuilding process when stressors may continue on many levels, sometimes for years later. The aim of this qualitative study was to explore the experience of recovery for families during the 3-year period following Superstorm Sandy in 2012 through the theoretical lens of Bronfenbrenner's bio-ecological perspective. A narrative approach was used in order to understand the experience of natural disaster recovery and the meaning of recovery and coping for these families. Families in the surrounding area of Long Beach, New York were invited to participate. Six families who experienced Superstorm Sandy shared their experiences through interviews. Common themes were found among participants during the preparation for the storm, throughout the storm, and again during identified stages in the recovery process. Participants displayed both positive and negative coping styles and rated the helpfulness of various interventions. Findings from the study suggest that future researchers should focus on understanding the individual factors that may affect the decision to prepare for and evacuate during a large-scale natural disaster. The results of this study can be used by support services staff to develop and target interventions that address the common themes identified during the long-term recovery process. More effective interventions may lessen the length and intensity of suffering. Additionally, highlighting the importance of disaster preparedness may encourage individuals and communities to better prepare for disasters, possibly diminishing damage and losses.

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Dedication

This dissertation is dedicated to my family. First, this is for my parents, who have always instilled in me patience, perseverance, and the love of learning. I am eternally grateful for the foundation that was set for me early in life. Second, to my sister, who has taught me the importance of work and family balance: You have been an amazing role model. Third, to my husband, who spent countless hours supporting me, proofreading, and formatting, as well as occupying our spirited son while I worked. Lastly, this study is dedicated to my son Dominic. You are my joy and my motivation to continuously strive for more.

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Chapter 1: Introduction to the Study

Superstorm Sandy was a potent and highly destructive weather event for many New Yorkers. The superstorm hit the eastern U.S. coast on October 29th, 2012 (Engel, 2012). Destruction and devastation ensued for thousands of people, and billions of dollars in damage occurred (Center of Disaster Philanthropy, 2013; Research Foundation of the State of New York, 2013). The barrier island of Long Beach, New York, was one of the most devastated communities, with $150 million dollars in damages (Asbury, 2017)

Although residents began returning to their homes two to three years after the event, many still had not yet received disbursements of insurance claims and necessary resources (Parry, 2014). Three years later, residents who experienced the storm still felt the physical, emotional, and psychological effects of the storm (Dowdy & Dooley, 2015)). Homes were still being rebuilt and memories of the storm were still vivid. These effects are common for survivors of disasters of such a large magnitude (Cherry et al., 2011; Kraemer, Wittmann, Jenewein, & Schnyder, 2009; North, 2005).

Recent disaster research has shown that when such a large-scale disaster hits, multiple facets and systems in a person's life are affected. There are emotional and psychological consequences for individuals such as symptoms of trauma and depression (Chen, Wang, Zhang, & Shi, 2012; Cherry et al., 2011; Kumar et al., 2007; Norris, Vanlandingham, & Lung Vu, 2009). There are also physical effects such as possible injury (Kotozaki & Kawashima, 2012). Individuals may be missing family members, property may be damaged, or there may be limited access to necessary resources (Walsh, 2007; Wiley et al., 2011). In addition, communities may not be functioning properly, due

to damaged water and sewage lines or destroyed merchants (Catani et al., 2010; Herber & Ballard, 2007; LaGreca, Silverman, Vernberg, & Prinstein, 1996).

There have been a number of studies of the immediate and short-term psychological and social-psychological effects of surviving a national disaster (Chen et al., 2012; Cherry et al., 2011; Kotozaki & Kawashima, 2012; Kumar et al., 2007; Norris et Al., 2009). Other research shows that, years after a large-scale natural disaster, individuals are still affected physically, emotionally, and psychologically (Hartman & Mahesh, 2008; Augustini, Asniar, & Matsuo 2011; LaGreca, et. al., 2010). The recovery process for communities is also complex and may be met with numerous roadblocks such as damaged infrastructure and lack of recovery funding (Joseph, Matthews, & Myers, 2014). It was apparent, as the 10-year anniversary of Hurricane Katrina passed, that the Gulf Coast is still recovering (Travis-Marshall, 2015).

Human recovery from large scale disasters is complex, lengthy, and not well understood (Boon, Cottrell, King, Stevenson, & Millar, 2012; Hackbarth, Pavkov, Wetchler, & Flannery, 2012; Newbury, 2011; Walsh, 2007;). According to Bronfenbrenner's bio-ecological theory, when one system is affected, the other ones are as well (Bronfenbrenner, 1994). In disaster recovery, these systems and elements are all interrelated, highlighting the complexity for recovery workers in determining effective interventions (Cherry et al., 2011; Kraemer et al., 2009; North, 2005).

The need to better understand the recovery process from a systems approach is supported by findings from other disciplines. For example, climatologists have suggested that climate changes may result in increases in the frequency and intensity of future

events (Bjarnadottir, Li, & Stewart, 2011; Evans, Fuentes, Xiao-Ming, & Hamilton, 2011; Gelbach, 2008). Additionally, market research and demography studies have indicated that more people are moving to coastal communities (Burton, 2010; United Nations Environmental Programme, 2013). Thus, more people will be at risk for being impacted by natural disasters in upcoming years. It is important to explore the experiences of families recovering from large-scale natural disasters in order to understand how their individual, family, and community lives are affected, even years after the event when media attention and systematic help are no longer prevalent (Harney, 2007;Landau, Mittal, & Wielig, 2008; Pfefferbaum et al., 2010). This may help to provide targeted interventions and possibly reduce costs and length of recovery.

In the rest of this chapter, I will review the background for this study and present the problem and purpose statements. Then, I will review the research questions, the theoretical framework, and the nature of the study. Definitions relevant to the study and assumptions, the scope and delimitations, and limitations precede a discussion of the significance of the study. A summary ends the chapter.

Background

Researchers have suggested that global warming is influencing the number and severity of natural disasters (Hackenbarth, Pavkov, Wetcher, & Flannery, 2012). This increase in natural disasters affects individuals all over the world and has caused loss of life, natural resources, and economic stability (Slattery, Willett, Cobb, Benson, 2010). Disaster research has improved the understanding of how people are affected by disasters

and what effective interventions could be used for those who experience trauma (Johnson & Rainey, 2007; Walsh, 2007).

Early researchers studying disasters focused on the emotional and psychological effects of disasters on individuals. Trauma-exposed samples showed symptoms of posttraumatic stress disorder (Amstadter, 2008; McDermott, Lee, Judd, & Gibbon, 2005) and depression (LaGreca et al., 1996). Investigators also established that increased substance use was a way of coping with trauma for many individuals and as a result of predisaster risk factors (Cerda, Vlahov, Tracy, & Galea, 2008; Rowe, LaGreca, & Alexanderson, 2010; Timpson et al., 2009).

Researchers then began to see that there were individual differences correlated to risk factors and resiliency after disasters (Amstadter & Vernon, 2008; Pfefferbaum et. al., 2010; VanWilligab, Edwards, Lormand, & Wilson, 2005). Risk factors included lack of resources, mental health issues, poor physical health, and previous exposure to trauma (Lowe, Rhodes, Zwiebach, & Chan, 2009; Sattler et al., 2006). In some research, resiliency after natural disasters was common in those who had resources, strong social support (whether from family or community members) and access to basic needs such as food, water, shelter, and so forth (Bava, Coffey, Weingarten, & Becker, 2010; Gelbach, 2008; Pat-Horenczyk & Broom, 2007;). As researchers began to see that interventions were needed, they shifted their focus towards hurricane preparedness and looking at disasters proactively (Devaney, 2008), how to shorten disaster response so that people's basic needs are met postdisaster (Gelbach, 2008) and providing effective interventions for individuals such as psychological first aid (Rank, 2010).

Children are among the most vulnerable populations when a disaster hits (LaGreca et al., 1996). More recently, disaster researchers have found that children's reactions to disasters might be more complex and extensive than those of adults (Deering, 2000; Masten & Osofsky, 2010; McDermott & Palmer, 2002). Studies showed variations in symptomology by age group; negative impact on normal child development; symptoms of anxiety, depression, and PTSD; and a period of mourning and loss after a disaster (Furr et al., 2011;Overstreet, Salloum, Burch, & West, 2011; Tishelman & Geffner, 2011). Individual differences in how trauma affects children have also been shown, including differences in processing (Deering, 2000). Another key factor for resiliency, similar to adults, is family support (Masten & Osofsky, 2010).

Another contemporary line of research has suggested that there are long-term consequences of a disaster, even years later (Cherry et al., 2011; Kraemer et al., 2009; North, 2005). Both adults and children continue to show maladaptive symptoms such as depression and posttraumatic stress years after the disaster (Augustini et al., 2011; Kronenberg et al., 2010; Wolmer, Laor, Dedeoglu, Siev, & Yanki, 2005). Risk factors include the extent of exposure to the natural disaster, the recovery process including infrastructure, economic conditions, family functioning, and support from others (Cherry et al., 2011; Mohay & Forbes, 2009; Nutman-Shwartz et al., 2010; Pfefferbaum et al., 2010).

Some researchers have evaluated outcomes for individuals 3 or more years after a large-scale natural disaster. The results of two quantitative studies indicated that children and adults continue to show symptoms of depression, avoidance, grief, and general life

dissatisfaction up to four and a half years after a disaster (Augustini et al., 2011; van den Berg, Wong, van der Velden, Boshuizen, & Grievink, 2012). Major risk factors were the extent of damage to the home and the compounding of other disaster experiences (van den Berg et al., 2012).

In addition, previous research mainly consisted of survey research of symptomology using already established assessments such as the National Child Traumatic Stress Network Hurricane Assessment and Referral Tool for Children and Adolescents (Kronenberg et al., 2010) or the effectiveness of age appropriate interventions in schools and in individual therapy (Dogan-Ates, 2010; Dorn, Yzermans, Spreeuwenberg, Schilder, & Zee, 2008). There is a need for studies of an individual's personal experiences of the long-term recovery from large-scale disasters in order to better understand this phenomenon and add to the current body of research (Corey & Deitch, 2011; LaGreca et al., 2010; Lindgaard, Iglebaek, & Jensen, 2009). This type of study could provide insights that could be used for prevention and treatment of long-term recovery from disaster-related stress.

Since the early 2010s, trauma response teams reported on the importance of taking into consideration the impact disasters have on family systems (Cao et al., 2013; Hackbarth et al., 2012; Hafstad, Haavind, & Jensen, 2012; Mendenhall & Berge, 2010). Furthermore, researchers have begun to notice that more macro-level systems such as the economy (Baade, Baumann, & Matheson, 2007), school systems (Beggan, 2010), crime (Leitner, Barnett, Kent, & Barnett, 2011), and housing (Gardner, Irwin, & Peterson, 2009) could have direct and indirect effects on an individual's recovery from natural

disasters. As a result of these investigations, the trauma field has seen the development of interventions that address the immediate needs of individuals and families (e.g., transportation, access to goods, and availability of health care providers; Stehling-Ariza, Park, Sury, & Abramson, 2012) as well as longer-term needs (Walsh, 2007). Other postdisaster systems researchers have examined community resilience and wellness resources (Pfefferbaum & Pfefferbaum, 2010). Most of these researchers have also based their results on survey research, literature reviews, or clinical analyses of children's writings or drawings (Nuttman-Shwartz, et al., 2010; Oncu & Wise, 2010). Some researchers examined the effectiveness of a particular intervention such as the Linking Human Systems Approach for mitigating long-term postdisaster symptomology (Landau et al., 2008)

Investigators conducting focus group and interview research examined the feelings of displaced children (Pfefferbaum et al., 2008) and adults' perceptions of their children's post disaster functioning (Hafstad et al., 2012). Although these studies were family based, only one family member was interviewed, and researchers concluded that parents may not have a true account of how their child is coping (Miller et al., 2012). In general, there have been very few research studies in which investigators have attempted to capture family or systems dynamics by conducting interviews with more than one family member (Reczek, 2014). Multimember family interviews have been conducted, however, to explore family experiences when a family member is hospitalized with a physical or illness (Eggenberger & Nelms, 2007; Kean 2010; Trangkasombat, 2008), to assess the experiences of children who lost a parent to war (Rafman, Canfield, Barbas, &

Kaczorowski, 1997), and to understand the everyday experiences of those who live with acquired brain injury, major depression, and cancer (Ahlstrom, Skarsaterm, & Danielson, 2009; Kuipers et al., 2014; Rosenberg, Baker, Syrjala, Black, & Wolfe, 2013). Through multimember family interviews, researchers were able to observe interaction between family members and could gather a richer account of the everyday lives of each individual. As Reczek (2014) noted, multimember family interviews can provide a wealth of information regarding individual, family, and community functioning after a disaster.

In my literature search of multimember family interviews after major disasters, I found only one study (Soliman, 2005) in which families' response to chronic technological disasters was examined using this interview technique. The results of the study indicated that family support and open communication were important in confronting natural disasters. In addition, community support was essential. However, Soliman (2005) focused on chronic technological disasters as opposed a one-time large-scale storm such as Superstorm Sandy. In this study, I sought to add to the current body of disaster recovery literature by providing an in-depth, post disaster examination of the experiences of all family members following Superstorm Sandy from a bio-ecological point of view.

Problem Statement

It is not only individuals who are affected by a natural disaster (Cai, Jiang, Li, Hui Lo, & Li, 2013; Hackbarth, et. al., 2012; Mendenhall & Berge, 2010; Rendall, 2011; Rowe, et al., 2010; Rowe & Liddle, 2008; Van Willigen, et al., 2005; Walsh, 2007). Individuals are part of families and communities. After a disaster, natural resources may

be lost; and infrastructure damage can affect the functioning of businesses and places of employment. Schools may be closed; transportation and working water and sewage systems may be non-functional.

From a bio-ecological perspective, when one system is affected, the other systems are changed as well (Bronfenbrenner, 1994). This is the dynamic complex interplay of the individual and the environment and vice versa. Disaster research has recently begun to examine the consequences of the disaster experience from a systems perspective, but more research is needed (Landau, et. al., 2008; Pfefferbaum, et. al., 2010). A gap in the literature exists in understanding the experience of individuals within their multiple systems, during the long-term recovery process of a natural disaster. Studies like this can potentially add to the body of knowledge, and improve interventions to promote healthy recovery for disaster victims.

Purpose of the Study

In this study, I explored the narratives of families recovering from Superstorm Sandy 3 years after the disaster occurred. Bronfrenbrenner's (1986) bio-ecological theory was the lens to investigate how each member of the family experienced their recovery in the context of the five systems included in the theory. I used a narrative approach in order to understand the experience of natural disaster recovery and the meaning of recovery for families (Riessman, 2008). By understanding the impact at the various system levels, such as the person's immediate environment (family, school, etc.), community, and political climate, I hoped to provide the groundwork for a comprehensive understanding of the long-term post disaster recovery of individuals and their surrounding systems. This

understanding is a critical component in developing effective interventions at all of Bronfenbrenner's system levels (Boon et al., 2012).

Research Questions

The central research question addressed in the study was, What is the family experience of recovering from a natural disaster over the course of 3 years?

Subquestions that were addressed included the following:

RQ1. What are commonalities and differences in family members' experiences?

RQ2. What is the meaning of positive and negative coping within each of the Bronfenbrenner systems?

RQ3. What kinds of interventions were most helpful to the long-term recovery of the family members?

Theoretical Framework

I based my study on Bronfenbrenner's (1994) bio-ecological perspective. Bronfenbrenner conceptualized five systems that interact in the world of an individual: (a) microsystem, (b) exosystem, (c) macrosystem, (d) mesosystem, and (e) chronosystem. The microsystem consists of the individual and his/her immediate environment (Bronfenbrenner, 1994). The exosystem contains other microsystems that the individual is not the center of (for example a spouse's place of employment; Bronfenbrenner, 1994). The exosystem is comprised of community organizations or entities that may be accessed by the individual (Bronfenbrenner, 1994). The macrosystem is the cultural beliefs and political climate of the environment the individual is living in (Bronfenbrenner, 1994). Finally, the chronosystem is least concrete and consists of how things change in the

person's life (Bronfenbrenner, 1994). This can include life transitions such as moving, death, or illness in the family.

Bronfenbrenner (1994) postulated that what is operating now in a person's life shapes who they are in the future. In fact, each system has an effect on the other as there is a reciprocal interaction, or "transfer of energy", between the developing individual, and the persons, objects, and symbols within their environment (proximal process). Bronfenbrenner also postulated that the more negative experiences a person goes through and the more risk factors in a person's life, then problem behaviors are more likely (Atzaba-Poria, Pike, Deater-Deckard, 2004).

Bronfenbrenner's model has been applied in a few instances to understanding the impact of disasters on communities. For example Boon et. al. (2011) conducted a literature review and used Bronfenbrenner's theory as a framework to explore individual and community resilience after a disaster. According to the researchers, resilience has been linked to not only individual characteristics, but also as a result of existing community infrastructure. Swick & Williams (2006) also used Bronfenbrenner's Bio-ecological perspective as a guide for childhood educators who work with children experiencing stress. They highlighted that it is important to understand all the systems involved in a child's life to fully comprehend an individual's experiences and the dynamic interplay of other factors outside of the individual.

These suggest that the key elements of Bronfenbrenner's theory would be useful as the framework for developing the interview guides and in the data analysis of participants' experience of the long-term consequences of large-scale natural disasters.

Nature of the Study

This study utilized narrative analysis to explore the research questions. Narrative analysis is the study of stories by individuals, groups or societies (Riessman, 2003). Specifically, the method of thematic analysis was used. This approach is commonly used when trying to find common themes interwoven in participants' stories as the information in each story is categorized and analyzed. This approach was appropriate for this study as it was an attempt to explore the life experiences of victims of a large-scale natural disaster (Polkinghorne, 2005). By using a narrative analysis approach, this allowed family members to tell their stories and help us to better understand the similarities and differences among the experiences (Haden & Hoffman, 2013).

Semistructured interviews were conducted with a total of six families affected by Superstorm Sandy. These interviews were conducted with the adults who reside in the home, as well as children, given adult permission. The family was chosen as the unit of analysis because Bronfenbrenner's theory is based upon the dynamic systems in which the person interacts with. Within these systems, the family within an individual's home is the system that the person interacts with most frequently and Bronfenbrenner (1994) postulated that due to the interrelatedness of the family, one part of the family cannot be understood by just examining each family member separately. It is important to observe family dynamics and structure, which is only possible through family interviews.

The number of 6 cases was selected due to phenomenological basis of the study, the homogeneity of the participants, and the potential for saturation within and across the

family (Guest, Bunce & Johnson, 2006). Interviews were tape recorded and then transcribed by researcher.

Participants were asked to timeline their experiences during the long-term recovery process including the different systems and how they interact with one another (Guenette & Marshall, 2009). Photographs, images, and documents were shared by the participants in order to better explain the experiences of loss and recovery, served as verification of information, and focused the interview (Sheridan and Chamberlain, 2011). In addition, due to the fact that some children may not be able to verbalize how they feel, research has used children's drawings as a way to look at how they are feeling (Nuttman-Shwartz, et al., 2010). Analysis and interpretation of the data was done through narrative analysis.

Definitions

In order to understand the phenomenon in this study, there are certain key elements that need to be defined:

Chronosystem: The fifth level of Bronfenbrenner's bio-ecological theory model, which contains the notion of time in a person's environment (Bronfenbrenner, 1994).

Exosystem: The third layer of Bronfenbrenner's bio-ecological theory model which contains the larger social system (Bronfenbrenner, 1994).

Macrosystem: The fourth level of Bronfenbrenner's bio-ecological theory model, which is comprised of cultural values, customs, and laws (Bronfenbrenner, 1994).

Mesosystem: The second layer of Bronfenbrenner's bio-ecological theory model, which connects two or more microsystems (Bronfenbrenner, 1994).

Microsystem: The first layer of Bronfenbrenner's bio-ecological theory, which contains the relationships and interactions a person has with his or her immediate surroundings (Bronfenbrenner, 1994).

Assumptions

I assumed that the accounts of the participants in this study were truthful and accurate, and that participants reported in a knowledgeable and detailed way about their experiences. The assumption placed the participants in the role of the "expert", in hopes that their experience illuminated the experience and road to recovery from a natural disaster.

It is also assumed that one or more of the participants described experiences that are discrepant from the researcher's beliefs or the literature's conclusions. These experiences were also reported to assure that the findings demonstrate credibility and rigor.

It is assumed that researcher engaged in reflexive analysis, a process of awareness and analysis of the researcher's role, thoughts, and feelings throughout the research process.

Using Bronfenbrenner's bio-ecological theory as the theoretical framework, it was assumed that there is a complex, direct, reciprocal relationship between a person and his or her environment, called the "proximal process". The researcher also assumed, as per Bronfenbrenner's theory, that there is a "distal process", i.e., relationships among the individual's environments which can have profound consequences through indirect effects.

Scope and Delimitations

It is important to understand that the recovery process from such an event can be a lengthy, complex process; and that it may vary depending on the nature of the disaster, the type of community, and the closeness of the family. For this study, victims of Superstorm Sandy in the Long Beach area were chosen because of personal experience with this particular disaster; and access to participants in the community who went through this process. Therefore, the scope of the study was limited to participants who have experienced this particular incident (rather than a variety of events). While the intent was not to generalize the findings of this study as one might in a quantitative study, it was hoped that the rendering of detailed accounts and the thematic analysis of those accounts will create for the reader the experience of transferability (Shenton, 2004).

Interviews were held with families affected by Superstorm Sandy. Family members included everyone who was living in the home at the time of the storm. The results may be transferable to other populations but were meant to explore and understand the experiences of families in East Rockaway, Oceanside, Long Beach, and Freeport, New York who experienced Superstorm Sandy. As noted in Bronfenbrenner's model, each individual is affected by his or her environment and surrounding cultures.

Limitations

In every study there is a risk of research bias such that the results of the study may not be dependable. This can occur in the study design or when collecting an interpreting data. In the study's design, ways that bias was diminished were through ensuring participants had no affiliation and that informed consent was used. In addition, a well-

established framework was used. When collecting data, a journal was kept in order to document thoughts when the interviews took place.

Audiotaping ensured capture of the exact words of the families, and notes were taken during the interview. After the interview, researcher summarized the experience in a notebook; and transcribed the interviews within a week of their occurrence. The researcher also provided participants with a summarized transcript of the interview, and each had an opportunity for review and feedback, to improve the dependability of the results. Transcripts and other data sources were examined through respondent validation, a type of triangulation in which what the respondent says was confirmed with other sources of participant data (pictures, documents) and researcher notes (Shenton, 2014).

It may be argued that a threat to this study may have been personal experience with Hurricane Sandy, including having endured property damage and missing family members. This was addressed through continuous monitoring by reflection in journal writing throughout the process; that helped the awareness of thoughts throughout the data collection and data analysis process. I retained a professional counselor with whom I debriefed with for 1 hour after interviewing each family as part of the research process and to increase the credibility of the data collection and analysis process.

Participants may have experienced distress as a result of addressing questions and providing narratives about a traumatic experience. In studies such as this, consideration must be made on the immediate and long-term effects on participants as a result of reliving these experiences (Knack, Chen, Williams, & Jensen-Campbell, 2006). To ensure minimal risk to participants, through informed consent they were told what the

nature and purpose of the study was, the benefits and possible side effects, as well as the voluntary nature. Participants were told that they can discontinue at any time. In addition, a licensed master of social work with a certificate in trauma studies was available to families to address any trauma issues that may have surfaced from the interviews. A debriefing session for each family was held at the conclusion of the interviews.

Transferability was addressed by ensuring that the descriptions of the context, phenomenon and procedures – from data collection through analysis and interpretation -- were rich and thick with respect to detail and organization. This allows readers to make comparisons to their own research and experience (Shenton, 2004).

Significance

Examining the experience of long-term recovery from Superstorm Sandy through the lens of Bronfenbrenner's bio-ecological theory will add to the body of knowledge of how natural disasters affect the complex world of an individual and family.

This study may promote social change in several ways. First, the findings may be published in the professional literature to add to the body of literature on disaster recovery. Professionals and researchers in the field will be better able to understand recovery from a systems approach from the perspective of survivor families. Second, trainings may be provided to community, state, and national agencies, such as the Red Cross, so that they may better understand the complex post-disaster needs of families and to aid in fund allocation. Third, as the nature of this study is exploratory, it may serve as a foundation for future studies that explain elements identified during this research.

Summary

Large-scale natural disasters impact individuals of all cultures, ages, and circumstances. Research has shown the devastating impact disasters can have individuals, families, and communities. The recovery process can be a long arduous process due to the multiple systems that are impacted and the resultant impact on families.

Recent research has indicated the need to better understand exactly how the multiple systems impact families during the long term recovery of a natural disaster. One way of doing this is through the lens of Bronfenbrenner's bio-ecological theory. This qualitative study used thematic analysis in order to explore the experiences of families in the long-term recovery affected by Superstorm Sandy.

Chapter 2: Literature Review

The purpose of this study was to explore the experience of disaster and recovery in families who lived through Superstorm Sandy, through the theoretical lens of Bronfenbrenner's (1994) bio-ecological perspective. Understanding the experience of natural disasters, recovery, and the meaning of recovery for families is a critical component in developing interventions that can provide support during the healing process.

The chapter begins with a description of the literature search strategy used to locate current professional and scientific publications. I also included newspapers and magazines as a means of gaining the media's perspective of these events. Bronfenbrenner's (1994) bio-ecological perspective will then be explained, as well as considerations for how this perspective can be applied to the recovery patterns of families affected by Superstorm Sandy of 2012 (Onwuegbuzie, Collins, & Frels, 2013).

In my subsequent discussion of natural disasters, I provide definitions and statistics about these occurrences and consider their implications. The literature on the effect of natural disasters on adults, children, families, and communities will be reviewed, including the immediate impact, intermediate impact, and extended impact. This review includes a synopsis of studies related to the recovery of systems after natural disasters, an overview of how researchers have approached the problem, and discussion of the gap in the literature.

Literature Search Strategy

I conducted a systematic search of library databases using the EBSCOhost research platform available via Walden University Library. I retrieved approximately 137 articles. Accessed library databases included the following:

- Academic Search Complete,

- AMA Marketing Watch,

- Business Source Complete,

- CINAHL Plus with Full Text,

- Cochrane Central Register of Controlled Trials,

- Cochrane Database of Systematic Reviews,

- Cochrane Methodology Register,

- Communication & Mass Media Complete,

- Computers & Applied Sciences Complete,

- Database of Abstracts of Reviews of Effects,

- eBook Collection (EBSCOhost),

- Education Research Complete,

- ERIC,

- GreenFILE,

- Health and Psychosocial Instruments,

- Health Technology Assessments,

- Hospitality & Tourism Complete,

- International Security & Counter Terrorism Reference Center,

- LGBT Life with Full Text,

- Library, Information Science & Technology Abstracts,

- MEDLINE with Full Text,

- Mental Measurements Yearbook,

- Military & Government Collection,

- NHS Economic Evaluation Database,

- NTIS,

- Political Science Complete,

- Primary Search,

- PsycARTICLES,

- PsycBOOKS,

- PsycCRITIQUES,

- PsycEXTRA,

- PsycINFO,

- PsycTESTS,

- Regional Business News,

- Research Starters – Education,

- SocINDEX with Full Text, and

- Teacher Reference Center.

Key search terms included

- Bronfenbrenner AND disaster,

- Bronfenbrenner AND trauma,

- disaster AND trauma,

- evacuation AND trauma AND disaster,

- family and Bronfenbrenner,

- hurricane and impact, and

- Sandy and psychology.

Theoretical Framework

After a large-scale disaster, it is critical to look at all elements of a situation in order to provide effective interventions to promote resiliency and rebuild communities (Newbury, 2011). In reviewing the current research of natural disasters, several things are evident. When a disaster such as Superstorm Sandy hits, multiple systems are affected (Walsh, 2007). Each element of the system is integral in making the system run smoothly, and typically, when one system is affected, the other systems are affected, as well (Boon et al., 2012). In order to conceptualize the effects natural disasters on these systems, I used Bronfenbrenner's (1994) bio-ecological perspective for my theoretical framework.

Bronfenbrenner's Bio-Ecological Theory

Bronfenbrenner's (1994) bio-ecological perspective of development consists of five systems that interact in an individual's world. These systems include the (a) microsystem (e.g., child's connection with family and friends), (b) mesosystem (parental connections with school), (c) exosystem (e.g., parents' work schedules), (d) macrosystem

(cultural and societal values and access to resources), and (e) chronosystem (time and timing of a traumatic event; Bronfenbrenner, 1994). More specifically, the microsystem level consists of the daily, direct experiences of the individual (Onwuegbuzie et al., 2013). The mesosystem includes how two or more systems in a person's life are interrelated, separate from the individual. The exosystem consists of entities that may not have a person as an active participator, but the person can be affected by these organizations. The macrosystem is comprised of culture, the government, and larger overarching entities.

There are several main tenets to Bronfenbrenner's theory. First, these systems do not exist independently. Combined with an individual's genetic disposition, these systems interactively impact the world of the individual (Swick & Williams, 2006). Second, in understanding individual development, the social and historical context must be examined (Bronfenbrenner, 1994). Third, this process is phenomenological in nature and is ever-changing, with the individual shaping environments, evoking responses, and reacting to environmental stimuli (Darling, 2007).

Bronfenbrenner's theory has been applied to numerous areas in order to explain the dynamic between a person and his or her environment. This differed from the theories of development which preceded his in that his theory looks at what is operating in the person's life now to influence who they are tomorrow (Bronfenbrenner, 2000). His primary writings focused on the impact of the environment on child development including parenting practices in the context of time and social class and examining external influences that affect the capacity of families to foster the healthy development

of their child (Bronfenbenner, 1986; Fenichel, 2002; de Oliveira, Barros, da Silva

Anselmi, & Piccinini, 2006; Harden, Turkheimer, & Loehlin, 2007).

Bronfenbrenner's (1961) work also included the examination of gender,

socioeconomic status, and the objective and detailed measure of social context. Then this

led into the person-process context, genetic influences on development, and the study of

parenting with person, process, context and time model, as well as how environmental

chaos can affect a person (Bradley, 2010). His theory has also been used to: understand

the interrelation between role conflict, stress, & health (Kulik & Faisal, 2006), how

systems can affect substance use and youth violence (Hilarski, 2005; Hong & Liao, 2010;

Hong, Cho, & Lee, 2010), and ways to improve special needs adoption (Schweiger &

O'Brien, 2005).

Rationale for Selected Theory

A major concept in Bronfenbrenner's theory is proximal process is the complex

reciprocal relationship interaction transfer of energy between the developing human

being and the persons, objects, and symbols in the environment (Bronfenbrenner, 1980).

The systems highlighted in Bronfenbrenner's bio-ecological model are all impacted by a

large-scale natural disaster such as Superstorm Sandy. An individual is affected

(microsystem), as well as their immediate environment such as their homes and families

(microsystem), their places of employment or school may also suffer direct damage or

they may not be able to get to work to provide for their families (mesosystem).

In addition, critical components in successful recovery after such a disaster are

social support (exosystem), supplies of basic needs by federal agencies (Hackbarth,

Pakov, Wetchler, & Flanner, 2012), and funds to help in the rebuilding and recovery process (macrosystem). There is also the component of time as it relates to the individual's environment (Boon, et. al., 2012), which includes life transitions such as relocation, death, or illness that may be caused by the disaster (chronosystem). These are all systems that are highlighted in Bronfenbrenner's theory which are said to effect healthy individual development and psychological adjustment.

There is a need to expand the current research to see how these different systems are experienced during the recovery process. In addition, it has been shown that the recovery process is not immediate, but can take years. By exploring the long term recovery of a(n) individual(s), we can begin to understand how these systems, as defined by Bronfenbrenner, are experienced and negotiated over time.

Application to Family Resilience After Natural Disasters

Bronfenbrenner's theory has been used recently as a model to explore individual, family and community functioning after a natural disaster. Although previous disaster research focused on the individual, it is now accepted that when the individual is affected by a natural disaster, other systems surrounding the individual are affected as well. There is a complex interplay of systems highlighted above that has yet to be examined. For example, Bronfenbrenner's theory postulates that the environment is a major source of interruption of proximal processes (Bronfenbrenner, 2000).

The case of a child who has been relocated as a result of their home being damaged by a natural disaster provides an example of how children's lives are disrupted in many ways after a natural disaster. The child's physical, emotional, and cognitive well-

being may be impacted (LaGreca, et al., 1996). It has been shown that lack of structure and unpredictability can cause psychological dysfunction and can impact healthy development (Bronfenbrenner, 2000). Therefore, in disasters in which there are numerous relocations and disruptions in routine, this can impact healthy emotional functioning and adjustment.

Referring back to the example, if the child had to relocate, he may have to attend a different school and may be staying in a temporary shelter. While he at his new school, he may not be able to focus or he may begin acting out. Because children may not have the coping skills or life experience necessary to deal with the aftermath of a disaster, they may turn to their parents. However, parents' capacity to help may be diminished because of the event which occurred (McDermott & Palmer, 2002).

This, in turn, may affect other systems such as a parent's ability to function optimally at work due to worrying about the child or not being able to provide a stable home environment. This stress about not being able to complete work can then cause marital stress, as well as additional tension and discord within the home environment. If you then add in the need for social support, navigating through and waiting for federal assistance, and having to rebuild, one can see how this process can be complex and lengthy.

How well a family functions after a disaster has shown to have positive and negative consequences on each family member and the family system as a whole. Referring back to the example above, Boon, Cottrell, King, Stevenson, & Millar (2012) conducted a review of 774 articles on individual or community resilience. By using the

framework of Bronfenbrenner's theory, this review of literature examined levels of resilience in each of Bronfenbrenner's systems after a disaster. The importance of support by family members, community, and government was shown to have an effect on resilience.

Recovery of Systems After Natural Disasters

There are also studies that do not necessarily use Bronfenbrenner's theory specifically, but do look at the impact of natural disasters on systems. These studies examine the environmental, political, social, and economic implications post-disaster (Horner & Widener, 2011; Landau, et al., 2008; Slattery, et. al., 2010). It is noted that the process in an individual's decision to evacuate is complex. Horner and Widener postulated that not all populations will evacuate so emergency management must plan effectively for those who may stay behind.

After a natural disaster such as Superstorm Sandy, it is not only individuals that are affected. Larger systems such as schools (DeVaney, et al., 2009) and businesses suffer. In a study of the educational system in Louisiana, one year after Hurricane Katrina, results showed changes in student enrollment as well as changes within their roles in the classroom (DeVaney, et al., 2009). After Hurricane Katrina there were multiple environmental impacts, including unemployment, the closing of businesses, and loss of resources.

Most research has focused on how caregivers' psychological characteristics and the environment may influence responses to traumatic events, how support systems can help foster resilience, and the importance of efficient support by the government (Harney,

2007; Pfefferbaum, et. al., 2010). The Child and Family Disaster Research and Training Program, which was focused specifically on enhancing national capacity, conducts disaster mental health research related to children. The program highlights the importance of integrating research in clinical preparedness, response and recovery activities associated with disaster mental health services.

Another program, Linking Human Systems Approach focuses on the strength and resilience of individuals, families and communities and interventions occur on all three levels (Landau, et. al., 2008). This can improve funding and grant writing, national response, risk communication, and community resilience.

Literature Review Related to Key Variables and/or Concepts

Natural Disasters

A natural disaster is defined by the World Health Organization (2013) as "a sudden ecological phenomenon of significant magnitude to require external assistance." There are two general types of natural disasters, natural and man-made (Gelbach, 2008). Man-made disasters include war, nuclear exposure, pollution, and hazardous materials. Natural disasters include hurricanes, earthquakes, floods, fires, and volcanoes.

Weather trends show a likely increase in the magnitude and frequencies of natural disasters, including hurricanes, as a result of climate changes and increasing sea surface temperature (Bjarnadottir, et al., 2011; Evans, et al., 2011; Gelbach, R. A., 2008). In addition, with the world population growing and an influx of people moving to coastal areas this may result in increases of hurricane-related impact (Burton, 2010; United Nations Environmental Programme, 2013).

According to the Spatial Hazard Events and Losses Database for the United States (2013), natural disasters have caused more than half a trillion dollars of losses in the past 50 years. Hurricanes, flooding and coastal hazards, and severe weather comprise about 75% of these hazards. Losses not only include the cost of rebuilding infrastructure, but also the damage done to homes, places of business, and natural resources. The rebuilding process after a major disaster can take years. For example, seven years after Hurricane Katrina, the areas hardest hit are still trying to pull their communities back together (New York Times, 2013).

Recent large-scale natural disasters. According to reliefweb.int, which monitors disasters worldwide, since January 2015 there have been 281 major natural disasters, including tornados, typhoons, earthquakes, avalanches, and floods. Most recent events included Mayon Volcano in the Philippines in January 2018, which displaced 21,823 people and earthquakes in Mexico in September 2017 where thousands of homes were damaged and over 2 million people were affected. There were several hurricanes in during September of 2017. Hurricane formed on September 16, 2017 causing hundreds of people to evacuate in Guadeloupe, Dominica, and Martinique. Puerto Rico sustained significant damage and are currently in the recovery process. 96 people were confirmed killed. Hurricane Irma formed August 30, 2017 and greatly effected Anguilla, Antigua, Barbuda, St. Martin/St. Marteen, the British Virgin Islands, Turks and Caicos, and Florida. Irma affected 1.2 million, with the death toll at 49.

Also in the media was the 7.8 magnitude earthquake in Nepal in April of 2015 and landslides in Afghanistan in April of 2015, which affected over 9,000 families. In

2014, 79 natural disasters were reported worldwide. The ones highlighted in the media for 201 were the 8.2 magnitude earthquake in Chile in April of 2014 and Typhoon Hagupit in the Philippines on December 8, 2014. In 2013, 120 disasters were reported and 132 in 2012.

In less recent years, some major disasters which were covered by the media include:

1. March 11, 2011 Earthquake in China, that caused a tsunami, 19,000 people killed and damaged three nuclear reactors

2. Jan 12, 2010 Tsunami in Haiti that killed 314,000 people

3. May 12, 2008 Earthquake in China that killed 87,000 people

4. 2008 a cyclone in Nargis, Myanmar that killed 138,000 people

5. 2005 an earthquake in Pakistan that killed 80,000 people

6. 2004 a tsunami in Western Indonesia that killed 230,000 people

Superstorm Sandy. Superstorm Sandy touched base in the New York region on October 29, 2012. This storm originated in the Caribbean and came up the east coast, landing in New Jersey, and joined with cold weather fronts from the west and north. The storm resulted in 69 Caribbean casualties and 110 US casualties (Research Foundation of the State of New York, 2013). In addition, over 4.5 million people, including major hospitals, lost power.

Wind gusts were recorded up to 139 miles per hour with a 13.88 feet storm surge recorded in Lower Manhattan. Some areas received 12.55 inches of rain. In New York, 305,000 housing units were destroyed and more than 265,000 businesses disrupted

(Center for Disaster Philanthropy, 2013). Water supplies were contaminated in the barrier island of Long Beach, New York. There were $68 billion in damages, with $60.4 billion in relief funds requested by President Obama.

The Effects of Natural Disasters on Individuals and Systems

In addition to the physical danger and economic toll natural disasters have, there are emotional and psychological consequences as well (Chen, et al., 2012; Cherry, et al., 2011; Kotozaki & Kawashima, 2012; Kumar, et al., 2007; Norris, et al., 2009). These consequences occur on several levels. Natural disasters often cause a disruption in an individual's view of safety, their identity, daily routine, control over their environment, and the world (Walsh, 2007; Wiley, et. al. 2011).

Some effects of a natural disaster are immediate such as symptoms of PTSD, depression, and anxiety, but implications can exist for years after the disaster occurred as recovery continues (Cherry et al., 2011; Kraemer, et al., 2009; North, 2005). It is important to understand how individuals are impacted throughout this process, in order to provide necessary resources and support.

Wolmer, Laor, Dedeoglu, Siev, & Yanki (2005) conducted a follow up study of two groups of school aged children three and a half years after the 1999 earthquake in Turkey. One group of children received a school based intervention program. Results showed a reduction in symptoms in posttrauma, grief, and dissociation. However, a large portion of children still displayed moderate to severe posttraumatic symptoms. There was no significant difference found between the two groups.

Large scale traumas affect both individuals and families (BMC Psychiatry, 2012; Cai, et al., 2013; Hackbarth, et al., 2012; Mendenhall & Berge, 2010; Rendall, 2011; Rowe, et al., 2010; Rowe & Liddle, 2008; Van Willigen, et al., 2005; et al., 2005; Walsh, 2007). Individuals may sustain physical injuries, can lose their homes, and can suffer emotionally through symptoms of depression, PTSD or anxiety. Large scale disasters can also cause discord in families, especially when there were pre-existing stressors.

Larger systems are also impacted by large-scale natural disasters (Landau, et. al.,, 2008, Pfefferbaum , et. al., 2010; Slattery, et. al., 2010). A large-scale event such as a hurricane is sometimes referred to a population-wide trauma (PWT), in which a portion of society is suffers a disaster (Bender and Sims, 2007). Superstorm Sandy not only impacted individual lives, but also damaged necessary resources and infrastructures such as schools (DeVaney, Carr, & Allen, 2009), grocery stores, and sewage lines (Van Biersel, Carlson, & Milner, 2007).

This disruption in multiple systems can have numerous implications, on the health and well-being of communities, especially since it may take some time to get critical assistance to areas of need (Horner & Widener, 2011). A large-scale trauma can affect the short term and long term physical health of the individuals in the community. This can be seen in injuries (Norris, Sherrieb, & Galea, 2010), the lack of access to health care (Stehling-Ariza, Park, Sury, & Abramson, 2012), and long term effects of stress resulting from the disaster (Joseph, Matthews, & Myers, 2014).

For the purpose of this study, the following sections on the consequences of natural disasters will be divided into the following subsections: before the storm, the

immediate impact (1-3 weeks after a disaster), the intermediate impact (up to a year after

the disaster), and the extended impact (after a year post-disaster). The sub-categories in

these sections will discuss the impact of natural disasters on adults, children, families,

and communities.

Before the Storm. Prior to Superstorm Sandy, individuals in the Long Beach area

were instructed to evacuate their homes (Engel, 2012). However, because of various

reasons such as prior hurricane experience, lack of alternatives or the desire to protect

their home, many families chose to stay. Factors shown to influence and individual's

decision to evacuate or stay include: confidence in emergency management, advice from

family and friends, prior evacuation experience, and perceived amount of danger

(Burnside, Miller, & Rivera, 2007; Cutter & Smith, 2009; Jenkins, Laska, & Williamson,

2007, Ohta, Ken-Ichi, Kawasaki, Nakane, Honda, & Mine, 1998). In a study of 1207

residents of the greater New Orleans region, respondents stated that the decision to

evacuate prior to Hurricane Katrina depended on the information they received from

authorities, friends, family, and media (Burnside et. al,. 2007). A large influence was

visual imagery available in regards to evacuation process.

Immediate impact (1-3 weeks post-disaster). The immediate impact of a large-

scale natural disaster on an individual is multi-dimensional; danger, limited available

resources, loss of shelter, and uncertainty (Amstander & Vernon, 2008). The immediate

consequences of such a traumatic event may all lead to changes in emotion, such as an

inability to regulate one's emotions; behavior, such as behaving in a way which is

uncharacteristic; and cognition such as the inability to make a decision (Chen et al., 2012;

Norris, VanLandingham, & Lung, 2009). Physiological changes such as increased heart rate or perspiration may occur as well (Kotozaki & Kawashima, 2012; Joseph, et al., 2014). There is also sometimes an immediate cognitive decline in working memory in middle-aged older adults (Cherry, et al., 2011). These responses may vary as a result of environmental and individual differences such as amount of social support, pre-disaster functioning, access to resources, mental health, & perception of risk or danger (Rank, 2010; Rowe, et al., 2010; von Peter, 2008; Walsh, 2007).

Common mental health concerns. After a natural disaster, individuals often experience symptoms of depression, anxiety and post-traumatic stress disorder (PTSD). PTSD is a reaction to experiencing or witnessing a life-threatening or sexually violent event (American Psychiatric Association, 2013). The experience may be indirect and can include repeated or extreme aversive results of the event.

In order to meet the criteria for PTSD, the individual must be experiencing symptoms of intrusion and avoidance, should have negative alterations in cognitions and mood and alterations in arousal and reactivity (American Psychiatric Association, 2013). The duration of symptoms occurs for more than a month, and there are significant amounts of symptom-related distress or functional impairment. Medical conditions must be ruled out. Other specifications include dissociative symptoms such as depersonalization and derealization, as well as delayed expression.

Access to resources. A large-scale disaster also can impact community resources like shelter, infrastructure, and employment. Different responses seem to occur as the person tries to balance immediate needs, safety, and what is currently available to them

(Pat-Hoerenczyk & Brom, 2007). Lack of resources is a significant cause for symptoms of distress after a natural disaster, whether physical or financial, as well the amount of damage that may have occurred and previous exposure to traumatic events (Lowe et al., 2009; Sattler et al., 2006). These findings highlight the importance of not only attending to the emotional needs of the individual, but also the physical and immediate needs.

In a study of individuals who experienced hurricanes Katrina and Rita, those with higher incomes were shown to have less worry and less perception of risk because of available resources (Trumbo, Lueck, Marlatt, & Peek, 2011). Other research shows that reactions oftentimes are dependent on the objective experiences of victims (Cerda, et al., 2008; Cherry, et al., 2011; Norris, et al., 2009). This means that reactions may not be due to the actual amount of damage that occurs or what the person objectively experiences but it is important to understand how the person internalizes their experience(s).

Pre-existing factors that may influence an individuals' susceptibility for maladjustment after a natural disaster include previous trauma, existing mental and physical health, and support system (Lowe, et al., 2009.). Negative ways of coping, such as avoiding and suppression have been shown to cause symptoms depression, anxiety, and post-traumatic stress disorder (Amstadler &Vernon, 2008). In addition during the disaster itself, death of a loved one, including pets, sickness, physical injury, and inability to communicate with loved ones can increase the likelihood of negative symptoms arising (Schuh & Santos, 2006; Lowe, et al., 2009). Protective factors for post-disaster adjustment include coping skills, spirituality, and perceived social support, whether from family or community members (Lowe, et al., 2009; Wiley, et al., 2011).

Some research has examined possible differences in post-disaster reactions according to age, race, gender, and socioeconomic status. In comparing young adults, middle-aged adults, and older adults differences are seen in social engagement, storm-related disruptions, charity work, and psychosocial functioning (Cherry, et al., 2011). An increase in charitable giving was shown as well as volunteer work. Common difficulties and roadblocks during the immediate aftermath such as damaged shelter, physical and mental health and employment. Wiley, et al., (2011) postulate that it may be identity distress in that there is an inability to reconcile aspects of the self into a relatively coherent and acceptable sense of self.

Middle-aged adults who are the bearer of more responsibility in the home tend to show more PTSD symptoms (Norris, Van Landingham, & Lung vu, 2009). In communities that have a culture of collectivism, it appears there are less avoidance and numbing symptoms (Norris, et al., 2009). Research on gender differences has shown mixed results. And although some research has shown differences in relation to race, more recent research indicates this may have to do with socioeconomic status. For example, individuals with limited financial resources not only may have pre-existing stressors but may also not have the means to recover quickly from a disaster.

It is important to understand the various factors that can influence an adult's reaction to a natural disaster. One factor that seems to stand out in recent literature is the immediate basic needs as highlighted by Maslow (1943). These include the biological and physiological needs of air, food, drink, shelter, warmth, as well as safety and social needs (Pat- Hoerenczyk & Broom, 2007). Although psychological first aid and mental

health screenings are important (North, 2005), it is also important to look at natural

disasters proactively and as opposed to reactive (Gelbach 2008; Bava et. al., 2010).

Natural disasters and the media. During a natural disaster media organizations

are often looked to before an event such as Hurricane Katrina, the media disseminate

important information including storm tracking, preparation, and evacuation (Tinker,

2013). In looking at Bronfenbrenner's framework, media during a natural disaster may be

seen as a link between systems, connecting viewers with government information and aid

organizations. During Hurricane Sandy, social media was used as a way to communicate

(Knight, 2013) whether to get information about families or to obtain information. As

time progressed, it was also a way to cope and to see positive stories of communities

rebuilding or others helping others.

It is also important to mention that media has an effect on both individuals who

directly experience a natural disaster and individuals who experience the disaster through

media only. Borah (2010) examined visual framing in two American newspapers in the

first week of two natural disasters. This subject matter included 264 photographs. Results

indicated that there may be different treatment of identified frames in two very similar

natural disasters. Pfefferbaum, et. al. (2010) reviewed what is currently known about how

media impacts individuals who experience disasters through media. The authors

identified traditional media such as newspapers and televised newscasts have been

associated with PTSD symptoms. Differences occurred in perceived threat.

Children. Children are among the most vulnerable when large-scale disasters

occur as they do not have the life experience, coping capacity, and ability to process the

disaster as adults do. Due to the complexity of children's reactions, major differences in developmental stages, and comparison to adult reactions, the information may be more extensive. Children may develop a vast range of symptoms that includes anxiety, depression, PTSD, disturbances in eating and sleeping patterns, and overall life dissatisfaction (Furr, Comer, Edmunds, & Kendall, 2010; Tishelman & Geffner, 2011; Overstreet, Salloum, Burch, & West, 2011). Feelings of detachment and avoidance of anything related to the disaster is common (LaGreca et al., 1996) as children go through stage of mourning and adjustment (Nutman-Shwartz, Huss, & Altman, 2010).

Prior to a disaster, some risk-factors to maladjustment are similar for children and adults. Emergence of PTSD symptoms has been correlated with pre-existing conditions and multiple traumas (Catani et al., 2010; Taylor, 2006; Robertson, Morse, & Baird-Thomas, 2009; LaGreca, et al., 1996). Risk factors also include poor emotional control, poor coping skills, efficacy, self-esteem, and self-worth (Mohay & Forbes, 2009; Lonigan, Anthony, & Shannon, 1998).

When the disaster occurs, level of exposure, loss of life, displacement, changes in routine, evacuation, and damage to infrastructures such as schools, increases the chances of maladaptive symptoms (LaGreca, et al., 1996; Tishelman & Geffner, 2011). Sleep disturbances occur more in children who suffered more damage and evacuation experiences, as well as in those who perceived a threat to their safety and the safety of their families (Furr, et al., 2010). Other major life events that may occur as a result of the trauma, social support, and parental functioning are additional risk factors (Jones & Ollendick, 2005).

Protective factors for children include social support, sense of self-efficacy, positive parental functioning, hope, hardiness, and spirituality/religiosity (Jones & Ollendick, 2005; Hackbarth, et al., 2012). Similar to adults, children go through a process similar to the stages of grief, after a large-scale disaster. It benefits children to be able to speak about and process their experiences. If they have strong social support, this allows children to process their experiences in a safe environment. In addition, if children believe they have the ability to still control things in their environment post-disaster, this is beneficial as well. Since children do not have the life experience that adults do, many times they look to help them not only understand events, but to also learn how to deal with them.

The development of post-traumatic stress reactions in children has been shown to vary by gender and ethnicity. Some studies show girls report more symptoms, some show differences in types of symptoms (Mohay & Forbes, 2009). For example, girls may show more internalizing symptoms such as withdrawal whereas boys may show more externalizing symptoms such as aggression and acting out (Furr, et al., 2010). Some children show various symptoms of PTSD without meeting the full criteria. Lonigan, et al., 1998 suggest that it is important to look at the severity of the symptoms, not necessarily the presence of a diagnosis in order to predict positive recovery outcomes.

There is growing evidence that children's reactions to large scale trauma may vary depending on their developmental stage. This variation is largely a result of how children cognitively process disaster events (Deering, 2000). Masten and Osofsky (2010) requested researchers to submit their research on how disasters affect children. Fifteen

articles were chosen. The major themes that were discussed had to do with cumulative effects of multiple traumas, the importance of the parents' role in protecting and safeguarding children, the significance of the adversities in the recovery context in the aftermath of disasters, as well as gender and age differences.

Despite the challenges researchers have with access to this vulnerable population, because of ethical or pragmatic reasons, the importance of further exploration into this area is stressed. More longitudinal studies, instead of cross studies, is suggested. Findings from a study of 401 adults age 18-86 show that those with negative reactions to traumatic events may have identity disruption or distress (Wiley, et al., 2011).

Response to disaster in children is sometimes linked to cumulative risk and resilience and is affected by previous traumas and intensity of those traumas (Masten & Obradovic, 2008). Some may say this has to do with coping strategies skills (Mohay & Forbes, 2009; Lonigan, et al., 1998). Others argue that reactions depend on how much the child understands about the events that occurred (Dogan-Ates, 2010).

For example, children who do not have the capacity to understand the implications that the disaster may have may be a protective factor, especially if his or her environment remains stable (Kronenberg, Hansel, Brennan, Osofsky, Osofsky, & Lawrason, 2010). In a literature review, Dogan-Ates (2010) summarizes how children's reactions to disasters may vary. Preschoolers seem to be effected by specific fears, temper tantrums, separation anxiety, re-enactment of the event through play, and regression (Dogan-Ates, 2010). Pre-school age children may also personify the event. School-age children who are exposed to disasters may exhibit more psychological

symptoms than pre-schoolers (Dogan-Ates, 2010). These symptoms include sleep

disturbance and a decline in concentration, which may lead to poor school performance.

Adolescents appear to have reactions similar to adults. Some researchers believe

this is attributable to their cognitive understanding of the event as well as its implications.

The event may change the adolescent's world view or hope for the future (Dogan-Ates,

2010). Other symptoms include anxiety, depression, and belligerence. Anti-social acts

such as drug and alcohol use, truancy, and other risk-taking behaviors can cause serious

impairment in life functioning. Reactions may also differ from other ages since this age

group often turns to friends as opposed to parents, and can exhibit emotional avoidance

(Augustine et al., 2011).

Similar to adults, this current research highlights the importance of promoting

social and emotional support, along with supplying basic needs and medical services in

order to help foster resilience and positive adaptation in children after a large scale

disaster (Mohay & Forbes, 2009; Stehling-Ariza, et al., 2012). It is important for children

to regain a sense of safety and security, as well as a routine. It is not only the event itself,

but also daily stressors which occur as a result of the event that has an impact on this

vulnerable population (Fernando, Miller, & Berger, 2010). Pro-social behavior, self-

regulation skills, biological systems including the hypothalamic-pituitary-adrenal axis

and sympathetic nervous system (Vigil, et al in Masten and Osofsky)

Families. When a large-scale disaster strikes, it not only affects individuals, but

also family systems (Walsh, 2007). The way these events impact families are also multi-

dimensional and complex as each individual may vary in his or her way of coping with

the situation. As stated previously, social support is a critical factor in the healing process after a disaster (Hackbarth et. al., 2012). An individual's family is his or her most immediate support system.

The role an individual plays in the family is important to acknowledge before, during, and after the event. Stress in being able to fulfill their roles and each person's personal meaning of the disaster is necessary to understand in order to begin the healing process (Gelbach, 2008). During Superstorm Sandy, families were encouraged to evacuate. Families then had to decide whether or not to leave or where they would go. Some families chose to stay, some chose to leave, and some split up. During the aftermath of the storm, these decisions may have had tremendous implications (Rendall, 2011).

Risk factors in family-related difficulties in coping with the aftermath of disasters include existing family discord, high exposure to risk, lower education level, socioeconomic status, and ability to access needed resources (Kar, Mohapatra, Nayak, Pattanaik, Swain, & Kar, 2007; Landau, et al., 2008). In addition, parental substance abuse, psychopathology, domestic violence, and occupation are shown to affect the development of PTSD in children after a disaster (McDermott & Cobham, 2012). Protective factors shown to reduce post-disaster discord include support, resilience, positive communication, hope, hardiness, and spirituality/religiosity (Hackbarth, et al., 2012).

Children naturally rely on their parents for support. However, after a natural disaster, a parent's capacity to respond to a child may be diminished as they try to meet

basic needs and get the family back in order (Furr, et al., 2010). Parents should be aware that children's responses have been associated with how the parent(s) respond(s) to the disaster (Tishelman & Geffner, 2011; Polunsky, Meis, McCormick-Deaton, Ries, DeGarmo, Thuras, & Erbes, 2011). In addition, family related resources, parenting style, coping styles of parents and efficacy are shown to have an impact on post-trauma family discord (McDermott & Cobham, 2012; Vigil & Geary, 2008).

*Communities***.** Although previous research highlights the need for individual mental health services post-trauma, recent studies show the importance of supplying communities with necessary resources and supplied in order to aid in the recovery process (Landau, et al., 2008; Raphael & Ma, 2011; Snider, Hoffman, Littrell, Fry, & Thornburgh, 2010). These necessities do not only include basic supplies such as food, water, and working sewer systems, but also suggest the need for social support and community-based resources (Vigil & Geary, 2008). Although an increase in disaster research, and subsequently funding for these studies and the delivery of evidence-based interventions, these interventions are primarily individually based (Bava et al., 2010; Raphael & Ma, 2011).

One of the most important factors in recovery after a large scale disaster is a person's perceived social support. Sharing stories with one another may help the healing process begin. However, oftentimes when a person experiences trauma, a division of the self occurs, which can result in isolation (von Peter, 2009 (1); von Peter, 2009 (2)). It is important to acknowledge this and come up with interventions to bring people together.

Some suggest that after a disaster, instead of focusing on a small individual scale first, an inverted pyramid approach may be most effective. This approach means that first interventions are made with the largest amount of people, on the community level, then a family level, and then individual level (Bava et al., 2010; Raphael & Ma, 2011). Because of the tremendous impact of a disaster such as Superstorm Sandy, where there is a limited availability of resources, it is important to address the community first. This can help to reach a larger number of people and increase community resiliency and efficacy (Landau, et. al., 2008). In places and cultures where there is a greater sense of community, resilience after a disaster is greater (Norris, et al., 2009).

Other community members, such as teachers, are also able to help in the recovery process. After Superstorm Sandy, many children were sent to other schools temporarily because of displacement or the destruction of their schools. Disruption in routine has been shown to have negative effects on children. Teachers from receiving schools should be aware of this, as well as their critical role in the recovery of children (Picou & Marshall, 2007; Beggan, 2010). As parents at home may be distracted by their recovery, teachers are in a good position to assess the post-disaster needs of children. They can also help to facilitate referrals to needed resources (Anthony, Lonigan, & Hecht, 1999; Wolmer, Laor, Dedeoglu, Siev, & Yazgan, 2005.)

During a large-scale disaster, many systems are disrupted. There is often damage to infrastructure, schools, stores, sewage systems, and transportation (Horner & Widener, 2011; Walker, Carlson, Monk, & Irons, 2010; Yang, 2008). This damage, in turn, can affect the economy of the community, as well as the people's accessibility to disaster

relief, goods, and transportation. It may also prevent individuals from getting to work and school. All these elements can exacerbate the amount of stress a person experiences post-disaster. Access to state and federal aid is imperative in order to help meet the basic needs of people who are still able to reside in their home (Johnson & Rainey, 2007). A lack or response can not only compound the trauma, but can also delay the recovery process (Walsh, 2007; Picou & Marshall, 2007).

The impact of large-scale natural disasters on communities indicates the need for planning on multiple levels. Communities can prepare for such events by: educating communities on how to best respond to natural disasters, having plans in place such as to where to put emergency distribution centers, and having culturally and linguistically sensitive interventions for survivors (Rank, 2010). It is important to consider the individuals affected and the emotional state of teachers, guidance counselors (Bender & Sims, 2007) and recovery workers (Bava et al., 2010).

Intermediate impact (up to a year). Recovery after a natural disaster is complex and can be further complicated by numerous factors (Masten and Obradavoc, 2008). Each person follows their recovery pattern, for some this is immediate, and for some it is delayed. Some have to do with pre-disaster functioning. As time progresses, media attention dissipates, and aid ceases. Although other communities may not see the continued impact of the natural disaster, recovery is just beginning for some. This section will highlight current research on the intermediate impact of natural disasters as well as the need for the examination of the long-term impact of disasters (North, 2005).

Adults. In large scale disasters such as Superstorm Sandy, homes are not fixed yet, individuals are still displaced, and post-disaster after effects are still present up to 7 months after the event (LaGreca, et al., 1996). Oftentimes individuals are still going through the arduous process of getting the government and federal aid they need after they dealt with the immediate aftermath of a disaster. At this time, social support is still a critical factor in the recovery process. In a study of 59 adults 6-14 months after Hurricanes Katrina and Rita, results indicated a significant difference in recovery patterns between those with and without perceived safety and perceived social support (Cherry, et al., 2011).

Symptoms of PTSD are still evident in adults a year after a major disaster. Also evident are symptoms of depression, especially around anniversaries of the event. It may also be seen through substance abuse, flashbacks, avoidance, and nightmares (Bave, et al., 2010; Chen, et al., 2012; Kraemer, et al., 2009). Risk factors include physical injury, the death of a loved one, destruction of property, and negative life events since the event (Calders, Palma, Penayo and Killgren, 2001). The one-year anniversary of the event, or even just the hurricane season, may also cause re-experiencing, hopelessness, and frustration (Rank, 2010; Echterling, 1993).

Children. Similar to adults, children who experienced a large scale disaster are still showing difficulties and symptoms related to PTSD, depression, and anxiety up to a year after the event (Kar, et al., 2007; LaGreca, et al., 1996). In a study conducted by McDermott, et al., (2005) six months after a wild fire disaster, out of 222 children aged 8 to 18 years, 9% of students showed symptoms of severe or very severe PTSD and 22.6%

showed abnormal symptomology. Socioeconomic status and ethnicity have also been linked to an increase in psychiatric diagnosis after a natural disaster. This difference is shown in those lacking social and economic safety nets, as well as minority children. Minority children have shown higher levels of PTSD symptoms compared to White children (LaGreca, et al., 1996). In a study of 442 students 3, 7, and 10 months after Hurricane Andrew, despite a decline in PTSD symptomology, 18% reported re-experiencing, numbing/avoidance, and hyperarousal up to 10 months after the hurricane.

Some symptoms included avoidance, numbing, hyper arousal, blame, anger, and difficulty moving through developmental stages. Adolescents show an increase in substance abuse not just as a result of the event itself, but as a result of after-effects, such as family discord and financial difficulties (Rohrbach, Grana, Sussman, & Sun, 2009). Although there was a general trend towards less symptom endorsement, children who had damage to their homes, were separated from their parents, or had to relocate were more likely to show maladaptive symptoms (Kronenberg et al, 2010; Usami et al, 2012). In a study of 12,524 children who experienced the 2011 Japanese Earthquake and Tsunami, children who had houses damaged or experienced separation from family had a significantly higher score on the Posttraumatic Stress Symptom 10 assessment (Usami, Iwadare, Kodaira, Watanabe, Aoki, Katsumo, Matsuda, Makino, Iijima, Harada, Tanaka, Sasaki, Tanaka, Ushijima, & Saito, 2012).

It is also important to be able to identify children who continue to experience post-traumatic stress symptoms. In a study consisting of 447 children and adolescents after super-cyclone in Orissa, India, parents and teachers were only able to identify

mental health concerns in 7.2% of subjects, although 53.1% had PTSD. Research shows the importance of social support from friends, family, and teachers in children who show less symptomology (Catani, et al., 2010; Herber & Ballard, 2007; LaGreca, et al., 1996). These studies examine resilience after a natural disaster focuses on positive adaptation despite negative consequences. Some factors include positive self-views, perception of coping capacities and self-system functioning (Kilmer & Gil-Rivas, 2010).

   Families. Researchers and practitioners have suggested that dialogue with family is important at this time to help other family members process his or her meaning of what occurred, get things back on track, and begin the healing process (Rank, Oulette, and Rodriguez, 2001; McDermott & Cobham, 2012). What complicates this process is that each family member may be at a different stage in his or her recovery from a disaster. These individual reactions can sometimes cause family discord. In addition, adults who are not employed, those do not have the funds to rebuild while waiting for federal aid, or those who may be living with others, may have extra stress.

   Communities. During the year after a major disaster, communities continue to create and maintain a stronger community (Rank, et. al., 2001). Although many negative things may occur after a natural disaster, positive things can come about as well. It is usually throughout the first year that disaster-hit communities are getting help from volunteers and large organizations. For example, in Long Beach, on May 18th, 2013 Jet Blue donated a new playground which many children used prior to Sandy. Individuals must be comfortable with community leaders, higher service delivery- hope and possibility- creation and maintaining a strong sense of community.

One year later, many homes affected by hurricane Sandy are still being rebuilt. Some homes are still unoccupied. The U.S. Department of Housing and Urban Development (HUD) money was sent in February 2013, in order to help restore housing, infrastructure, and economic revitalization (Gilfillan, 2013). In October 2013, the first home on the list for the government program was purchased by the state in order to be rebuilt.

Extended impact (1 year or more).

Adults. Adults have been shown to continue to show symptoms of maladjustment up to 4 years after a large scale disaster, this is more likely in individuals who had their house destroyed or who had an accumulation of disaster experiences (van den Berg, Wong, van der Velden, Boshuizen, & Grievink, 2012). Almost 16 months after hurricane Sandy, some individuals have not yet moved back into their homes or may have relocated permanently. This lack of stable housing not only causes stress from the transition, but oftentimes roadblocks to getting back on track can also further traumatize individuals (Cherry et al., 2011).

Children. Research shows that although there is a decrease in post traumatic stress and depression in children years after a traumatic event, they can continue to show maladaptive symptoms up to four and a half years post-disaster (Augustini, Asniar, & Matsuo, 2011; La Greca, Lai, Silverman, & Jaccard, 2010; Oncu & Mentindogan Wise, 2010). In a study of 387 children who experienced Hurricane Katrina, Kronenberg, et al., (2010) followed participants for 3 years. Results showed that younger students showed more symptoms of depression, PTSD, Re-experiencing, avoidance, and hyperarousal.

Females showed higher on depression, PTSD, re-experiencing, and avoidance. In looking at four outcome measures (stress resistant, normal response and recovery, breakdown without recovery) age, gender, consultation with mental health professional since the storm, and endorsement of family or school problems had influence.

Mohay and Forbes (2009) confirmed that gender and age are risk factors for prolonged psychological disturbances. Other risk factors include previous traumatic experiences, poor economic conditions, extent of exposure to natural disaster, injury, perceived threat, lack of adequate infrastructure, and a slow rehabilitation process (Mohay & Forbes, 2009). In a natural disaster such as Superstorm Sandy, some individuals are still not in their homes up to 2.5 years later. Being forced to relocate was also a significant factor. Two years after a natural disaster, children still consider previous home their natural home (Nutman-Shwartz, et al., 2010).

As stated previously, after a disaster such as Superstorm Sandy, individuals go through stages similar to stages of grief. As children go through these stages at different rates, and may fluctuate between stages, this may prolong the recovery process (Hartman & Mahesh, 2008). Continued mental health treatment has been shown to be helpful in the recovery process (Agustini, et al., 2011).

Similar to adults, reasons for symptoms of PTSD after an extended period of time may not be a result the disaster itself, but may be attributable to hurricane-related stressors and the amount of support the child receives (LaGreca, Lai, Silverman, & Jaccard, 2010). Although children show a reduction of symptoms, more research on long-term recovery after a natural disaster is needed. Children may not be able to identify or

verbalize their feelings. In a study of 53 children 2 years after experiencing the 1999 Turkish earthquake, results showed a range of trauma related symptoms through projective techniques (Oncu & Mentindogan Wise, 2010).

Families. More than a year after a disaster occurs, poorer family cohesion, individuals who lost family members, and financial difficulties were major factors in post-disaster family discord (Cao, et. al., 2013). In a study conducted by Cao, et al., (2013), 18 months after the Wenchuan Earthquake, 264 bereaved individuals were assessed for moderate and severe family dysfunction. Less financial loss during an earthquake, better health status, and support were significant predictors for positive family outcome. Some families showed positive changes at well. These changes may include a sense of a strengthened cohesion, less materialistic values, and more sensitivity towards the needs of other family members (Lindgaard, Iglebaek, & Jensen, 2009).

Communities. The progress in the rebuilding of communities post-disaster has a lot to do with the support they received. Businesses may still be in the recovery process up to three years after a disaster (Corey & Deitch, 2011). Up to two years post-disaster, children may still not access to personal health care providers (Stehling-Ariza, et al., 2012).

At this point, most children have returned to their original schools. However, up to two years later school counselors report children are still dealing with moderate to severe problems, highlighting the importance of continued supportive services (Hartman & Mahesh, 2008). Although most interventions focus on individual post-disaster treatment immediately after a trauma occurs, it is evident that there is need for long term

interventions because of the long path to recovery (Bava et al., 2010). Walsh (2007) summarized ways in which families and communities can be strengthened after a loss or a major disaster. The main principals are early intervention, understanding the personal meaning of the trauma, draw out strengths and coping mechanisms, and to mobilize family and social support.

In this section, I highlighted the disastrous impact laser-scales natural disasters can have on individuals, families, and communities. Immediately after a disaster, the importance of immediate resources and interventions are necessary for healthy recovery. However, the recovery process does not end there. Recent research has shown the effects can last for several years after a disaster occurs. Multiple factors within an individual, their immediate environment, as well as their communities, can affect the recovery process. However, what is absent from the literature is an examination of these effects from a systems perspective, in order to gain a better understanding of how these systems affect one another.

Summary and Conclusions

A disaster is defined as "a sudden catastrophic event which impacts the functioning of a community or society and causes human, material, economic, or environmental losses which exceeds the communities or society's ability to cope using its own resources" (International Federation of Red Cross & Red Crescent Societies, 2017). Between 1900 and 2017, the number of reported natural disasters increased (The Natural Disaster Database, 2017). It is suggested that the trend will continue (Hackenbarth, et al.,

2012). It is estimated that 665 million families are affected by natural disasters each year (United Nations Office for Disaster Risk Reduction, 2011).

A literature review of early disaster research revealed a focus on how individuals are affected immediately after a natural disaster (Walsh, 2007). Although some individuals are shown to recover successfully after such an event, research has shown both short-term and long-term consequences (Hebert & Ballard, 2007). Several literature reviews consistently report that exposure to natural disasters is a risk factor for mental health difficulties and substance abuse, and may also effect child development (Masten & Osofsky, 2010; Dogan-Ates, 2010; LaGreca, et al., 1996). More recent research has focused on resilience, post-traumatic growth, as well as the impact caregivers have on recovery patterns (Calhoun & Tedeschi, 2006; Walsh, 2006).

The recovery process after a large scale natural disaster is complex and multi-dimensional. The complexity of recovery occurs on all system levels, and is often met with difficulties and roadblocks, sometimes prolonging the process. These difficulties highlight the importance of interaction among the different systems in order to strengthen the overall system and help rebuild communities (Bava, et al., 2010; Yoder, Tuerk, & Axsom, 2012). There is a gap in the literature on the difficulty of collaboration between the systems and how to integrate them. What may help to fill in this gap is to examine the personal experiences of families through the recovery and building process, when stressors may continue on many levels.

The importance of social support is a common theme in disaster research. A person's most immediate social support is often his or her family (Walsh, 2007). The

recovery period after a disaster is often a lengthy process and there is a lack of studies on post-disaster family functioning years after an event (Vigil & Geary, 2008; Cohen, Jaycox, Walker, Mannarina, Langley, & DuClos, 2009).

The systems highlighted in Bronfenbrenner's bio-ecological model are all impacted by a large scale natural disaster such as Superstorm Sandy. It is evident that critical components in the recovery are social support, supplies of basic needs by federal agencies, and interventions that promote community resilience and preparedness. In order for all of these things to take place, all these systems need to work together. Although there has been an increase in disaster research, most early studies have focused on individuals. There is a need to expand the current research to how the different systems, as highlighted by Bronfenbrenner, can work together to provide support after a large-scale natural disaster.

The nature of this study is a qualitative approach. Disaster research shows that each survivor's experience is unique. In order to understand particular meaning of a traumatic event it is important to understand the world and perspective of the individual (Walsh, 2007). By using a narrative approach, this provided a detailed exploration of each participating family's perspective and experience.

Chapter 3: Research Method

The aim of this study was to explore the experience of post-disaster stress in families who have faced natural disasters, through the theoretical lens of Bronfenbrenner's (1994) bio-ecological perspective. After a large scale natural disaster, it is important to understand the unique experiences of families in order to establish effective interventions and support. This chapter will include the research design of the study and rationale, the role of the researcher, methodology, issues of trustworthiness, and a summary.

Research Design and Rationale

I used a narrative analysis approach (Riessman, 2008) for my qualitative study. Disaster research has provided evidence showing that each survivor's experience is unique (Walsh, 2007). To understand the particular meaning of a traumatic event, it is important to understand the world and perspective of the individual (Walsh, 2007). By using a narrative analysis approach, I was able to conduct an in-depth exploration of each participating family's perspective and experience.

Patton (2002) described the advantage of qualitative inquiry as allowing for great depth with attention to detail and nuances. Qualitative inquiry is the best approach when one wants to examine a phenomenon or topic through the eyes of the person (Polkinghorne, 2005). This in depth, personal account allows for others to further explore areas that have not been previously researched.

Narrative Analysis

Riessman's (2003) narrative analysis enables the stories of individuals, groups, and societies to be explored. Use of this design allowed for families in the study to tell their experiences, including the context, motivation, and emotions. Specifically, the type of narrative analysis that was used was thematic analysis, which allowed me to organize stories into categories (Riessman, 2003). The use of categories enabled the ability to compare and analyze stories for similarities and differences.

Positionality and subjectivity are assumed in narrative analysis because the researcher is immersed in the storytelling of the participants (Riessman, 2000). An interview, with questions or prompts, is one way researchers collect narrative data. The interview is a reciprocal interaction where empathy and commentary is appropriate (Riesman, 2003). The questions I created served as prompts and provided participants the opportunity to speak without interruption.

Because of my focus on Bronfenbrenner's (1994) systems, I interviewed families in their natural environment. Adults in the home were interviewed as well as children (with parental permission and participant assent for children). Narrative data can be collected by individuals or groups often in their natural environment (Haden & Hoffman, 2013). This also allowed me to observe repairs and water lines in the house, and survey the neighborhoods.

In addition, in accord with Bronfenbrenner's systems, narrators make sense of themselves within the context of others, as well as time. According to Bronfenbrenner (1986), an individual member of the family cannot be fully understood in isolation. Interviewing the families, with questions framed in a timeline form, was consistent with

both narrative analysis and Bronfenbrenner's system. Additionally, the strategies used to interpret data and perform thematic analysis are often used in narrative research where the content of the narrative is the focus (Riessman, 2008).

Research Questions

The central research question addressed in the study was, What is the family experience of recovering from a natural disaster over the course of 3 years?

Subquestions addressed included

RQ1. What are commonalities and differences in family members' experiences?

RQ2. What is the meaning of positive and negative coping within each of the Bronfenbrenner systems?

RQ3. What kinds of interventions were most helpful to the long-term recovery of the family members?

Theoretical Framework

The theoretical framework for this study was Bronfenbrenner's (1994) bio-ecological model. This model is comprised five systems that interact in the world of an individual: (a) microsystem, (b) exosystem, (c) macrosystem, (d) mesosystem, and (e) chronosystem. The microsystem includes the person's immediate environment such as other members of the household. A contextual experience individuals have which vicariously impacts other members of the family is called the exosystem. An example of the exosystem can be seen in how a child may not go to work with a parent but may wonder what the parent experiences at work. The macrosystem includes culture, society, and politics. When two or more systems in an individual's life are connected, this is

called the mesosystem. An example of the mesosytem can be seen when a friend at the parent teacher association gives another parent a resource for their child with emotional difficulties. The chronosystem consists of the history of the family. An example of the chronosystem can be seen as the history of relationships in the family or the history of the family throughout generations. According to Bronfenbrenner, these systems do not exist independently but interactively impact an individual. Bronfenbrenner's system provided a framework for my literature review on disaster research and allowed me to identify areas for interview questions.

Role of the Researcher

A narrative research approach takes into account the lived and told experiences of an individual or group of individuals. For this study, I took an active role in organizing the stories of the participants. I looked at themes and analyzed the meanings of participants' experiences (Riessman, 2000). As I immersed myself in the lives of the participants, I was able to forge a collaborative relationship with participants in which the interpretation of stories were able to be discussed and validated. I was aware of my biases through journaling and consultation with my chair. I was able to recognize other factors such as my own experiences and memories of the event that may have shaped my interpretation. Self awareness is particularly important in narrative analysis, where there is a relational activity (Riessman, 2000). Therefore, it was important to share anything that may have impacted the study and how this was addressed.

I was born and raised on the barrier island of Long Beach, New York. I moved out of my childhood home in the summer of 2011. My parents, along with my sister and

her family remained there. On October 29th, 2012, 2 days after my 35th birthday,
Superstorm Sandy hit Long Beach. My family consisting of my mother, father, sister,
brother-in-law and two nieces decided not to evacuate. Throughout the afternoon and
evening I was exchanging text messages with my sister as she described the water
coming up to the 2nd floor of the house. I remained helpless in my apartment 10 miles
away. At that point we had both lost power and then her phone died. I could not wait for
night to pass so I could go see my family. As I drove I saw the devastation that Sandy
caused. Boats and cars were in the middle of the street. Sandbags and piles of sand from
the coast were obstacles to get around. Pieces of houses and buildings were torn off and
all traffic lights were out. Although I noticed these things, my vision narrowed to focus
on getting "home."

When I tried to enter Long Beach on one side of the island they would not let me
through. I had to go around to the other side of the island where I showed my old driver's
license, telling them my family was still there. I arrived at my childhood home where my
sister was in the driveway area. I left my car in the middle of the street as soon as I saw
her and ran to her. We embraced and cried.

Then the immediate recovery started. Unless someone has gone through it most
people could not imagine how it felt for me to throw out items I had since I was a baby,
not having water or sewage and having to use port-a-potties, or seeing all my neighbors
around me doing the same. The National Guard had a strong presence in Long Beach,
handing out food and water. The next few days that passed seemed like weeks as we
continued to clean up my parent's home.

I had to return to work after a few days but the day I went back to work, I received word that my aunt, who also resided in a nursing home in Long Beach, was missing. I left work and went to numerous shelters until I finally located her.

The weeks that followed consisted of sitting on long lines for gas for the car or generator, dealing with no heat and no hot water, depending on other sources of power to charge electronics. Once my own power was restored, my sister and her family came to stay with me in my studio apartment where they remained until January of 2013.

Researchers play a central role in the research process. Therefore, it is imperative for a researcher to be continuously monitoring his or her own feelings and thoughts throughout the research process. A way that this can be done is through reflexive analysis (Finlay, 2002). In this process it is necessary to understand how personal experiences may affect the research process.

Although I have experience with this event, there are several ways I managed my risk of bias which are consistent with narrative analysis methodology (Haden & Hoffman, 2013). Participants did not have any personal or professional relationships with researcher. This avoided issues of power or influence between the researcher and participants. Because there was personal experience with loss as a result of Superstorm Sandy, possible emotional reactions was monitored through individual therapy and consultation with the dissertation supervisor. Audio transcripts also preserved the original interview, and these were referred to regularly during the analysis process in order to stay "true" to the participants' story.

Methodology

Participant Selection Logic

Families who experienced the long-term consequences of the population were considered as the population of relevance. Criterion sampling (Patton, 2002) was used to review cases with a predetermined criterion of importance. For this study the criterion was a family who experienced Superstorm Sandy.

I invited Families who live in Long Beach, Oceanside, and Island Park, New York, area to participate. I contacted community organizations within the surrounding towns were contacted. They were asked to disseminate an invitation (see Appendix A) to participate in this study through their monthly bulletin. This invitation explained the nature and purpose of the study in order to invite participants. Most individuals who lived in these towns at the time of Superstorm Sandy were affected by the storm.

Sample size. In determining the sample size for this study, I considered the homogeneity of the participants, the depth of information I needed, and the possibility of saturation individually and across family members (Guest, Bunce, & Johnson, 2006). Saturation occurs when there is no more new information observed in the data. Other researchers assert that sampling designs should consider expected reasonable coverage of the phenomenon given the purpose of the study (Patton, 2002).

A sample size of six families affected by hurricane Sandy was used. Since this study looked at the experiences of families throughout the long-term recovery of Superstorm Sandy, the sample was homogeneous in nature, as they all had experienced the same phenomenon and all lived in the same geographic area.

Instrumentation

Documents. Prior to the interview, researcher asked families to collect any photographs, newspaper articles, or documents of damage that may be relevant to the interview. These types of visual material have been used in research in order to enrich narratives, focus the interviewees, recall memories, and verify data (Sheridan and Chamberlain, 2011).

Observational notes. An observation sheet was used during the interviews in order to record nuances such as body language and other important observations that may not be evident through verbal communication (Onwuebuzie, Leech, & Collins, 2010).

Timeline. Participants were asked to draw a timeline of various systems of their lives, and their inter-relationships over the time of the recovery experience. This method has been used when conducting narrative research of sensitive topics in order to help organize and prompt the interviewee (Guenette & Marshall, 2009).

Interview guide. The researcher developed a set of questions to act as prompts for family members to construct narratives around topics, as interviews allowed the families to construct their own narrative about the events that occurred since Superstorm Sandy.

To enhance credibility and dependability, two practicing psychologists reviewed the interview guide. Then, the interview process was piloted with a family known by the researcher to have had Hurricane Sandy experience prior to conducting the study. This was done to check the ease with which participants could understand and answer questions, without being included as part of the data for the study.

Interview Questions

*For children ages 10 and up (then they can leave the interview until the end of the

interview if the parent feels it is best for their child):

Can you tell me what you remember about Superstorm Sandy?

What do you remember about the days after the storm?

*Children then leave the room

What was life like before the storm?

How would you describe your household and family relationships?

Tell me what a typical weekday looked like? Weekend day?

Please describe your community at this time (Give examples if needed: The sense

of community, how often community members met, how local businesses

were).

Tell me about your school/ work life.

Describe your social relationships and support systems at that time.

How much planning did you do for storm preparation?

Then what happened during the storm?

Tell me about how you kept up with the storm's impending landfall; what do you

remember most about that experience?

Tell me about your evacuation experience. How did you decide what to do? What

to take? Where to go?

Tell me about when the storm hit.

Can each person speak about what they experienced in the first few hours?

Please describe how things were after the first few hours and throughout the night.

What was the next day like?

In the first few day and ensuing weeks:

   Please describe how a typical weekday looked like compared to before the storm?

      Weekend day?

   What was the neighborhood like compared to before the storm (Give examples if

      needed: Were businesses functioning, was there military presence)?

   How was your school/ work life?

   Describe your social relationships and support systems at that time.

   Please describe any help or assistance that was available.

   Is there anything else you'd like to tell me that would help me understand you and

      your family's experience of the storm during the first few months?

Please think back to the first anniversary of Superstorm Sandy

   Tell me about your living situation at the time.

   Please describe what a typical day looked like compared to immediate months

      following the storm.

   How was the neighborhood coming along?

   Please tell me about experiences you may have heard from your neighbors.

   Describe your social relationships and support systems at that time.

   Please describe any help or assistance you received.

   Is there anything else you'd like to tell me that would help me understand you and

      your family's experience of the storm at this point in time?

*Children can now come back into the room

These final questions have to do with the past two years (Since the 2nd anniversary of

Sandy).

Please tell me about living in your home over the past two years.

What does a weekday look like now? Weekend day?

What is the neighborhood like?

Please tell me about school/work.

Tell me about your friends or the people you go to when you are upset.

Please describe any help or assistance you used. Which ones were the most

helpful? Which ones were not helpful?

Was there any time recently that reminded you of Superstorm Sandy?

Is there anything else you'd like to tell me that would help me understand you and

your family's experience of the storm at this point in time?

Procedures for Recruitment, Participation, and Data Collection

Participants were recruited through emails and bulletins through local community

organizations described above. Once a person received the invitation and decided to

participate, he or she contacted the researcher by phone. During the initial phone call,

researcher ensured the family met the necessary criteria to participate in the study. In

addition, the researcher explained the purpose and rationale of the study. At this time an

appointment was made for the interview. The participants were given a choice to have the

interview either in the home of the family or in a private office at Holy Trinity church.

Semistructured interviews took place with a total of six families affected by

Superstorm Sandy. The interviews of the families were audiotaped. Interviews took

place in the home of the interviewees and were conducted by the researcher. They were

conducted with the family members who reside in the home, including children, ages 10

and older, with parental permission. Consent forms were signed beforehand and were

reviewed at the start of each interview. The interviewees were informed that they could

request the interview be stopped at any time. The interview protocol (see Appendix B)

was followed during each interview. Parents were given the choice to have the children

leave during the middle part of the interview. The interviewees were given the

opportunity to show and discuss other sources of data such as journals, pictures, report

cards, repair bills, etc. Interviews were tape recorded and then transcribed by researcher.

Data were collected over as many sessions needed by the participants to share

their experiences. If recruitment resulted in too few participants, researcher would have

contacted organizations that were working with families who experienced Superstorm Sandy. This was not necessary as enough participants volunteered.

Pictures and documents, with permission, were scanned in for analysis. Sheridan and Chamberlain discuss the benefit of using visual material to enrich narratives, aid in recovering memories and can focus the interviewee. They can also be used for verification of data (Phoenix & Brannen, 2014). Drawings of systems were scanned in as well.

Participants were informed that they would be debriefed at the conclusion of the interviews. Within a week each participant was given a summarized transcript of the interview, and each had an opportunity to review, provide feedback, and make changes or additions to improve the accuracy of the summary. Debriefing also included a discussion of the interview process, and allowed the participants to ask any questions he/she had. In addition, families were offered a researcher-sponsored home visit by a licensed master of social work with a certificate in trauma studies to address any trauma issues that may surfaced from the interviews.

Data Analysis Plan

Thematic analysis was used to analyze and interpret the data. This approach is often used in narrative research where the content of the narrative is the focus (Riessman, 2008). This method preserves the sequence and wealth of data of the story, which is necessary in this type of study where timeframes are important to examine.

First the transcripts were read several times so that I was familiarized with the data. I also reviewed the notes I took during the interviews. I also reviewed any items that were given to me such as documents, poems, and pictures.

The narratives were then examined for recurrent themes or episodes. NVivo 11 was used to organize interviews, code data to look for patterns and commonalities, and to create visual diagrams (QSR International, 2015). This application allows researchers to visualize qualitative research data and the relationships between them using colors, tree diagrams, and tag clouds (Bergin, 2011). NVivo is useful in organizing non-numerical data and allows it to be quantified.

Once the themes were identified, the interviews were color coded to each theme that emerged from the data. The themes were then reviewed to ensure they were relevant to the research questions and were organized in the context of time.

Exploration of saturation began with data analysis of the interviews from the first two families. The data from each successive unit were examined and compared to see how it added to or differed from the first two units.

Issues of Trustworthiness

Qualitative research does not have the same methods as quantitative in order to ensure trustworthiness. In order to ensure credibility, triangulation was used (Shenton, 2004). The documents gathered by participants, such as photographs or repair bills were used to help ensure credibility by corroborating interview data. Interviews from different family members were triangulated as well.

Member checks were used with the interviewee, during the interview, to confirm the researcher is capturing what the interviewee intended (Guba, 1981; Shenton, 2004). Repeating back what the interviewee states may do this. Finally, rapport was established with participants to encourage them to be honest in each interview session. Then, after the interviews were transcribed, I will prepared a summary for each family to review for accuracy and intent.

Transferability is the degree to which the results of the study can be generalized to other contexts (Guba, 1981). A thorough description of the background, methods, and results of the study was provided to allow replication; and to allow the reader to assess the appropriateness of the transferability.

In order to ensure dependability, or the consistency of findings (Guba, 1981), the researcher used proven qualitative data collection strategies (use of a pilot study; multiple data collection methods), and audit trails to document the data analysis process.

For confirmability, it is important to ensure that data kept and preserved (citation). An audit trail (Shenton, 2004), a detailed, step-by-step account of the steps taken in the research study, was also used. This allows the reader to determine the accuracy of the data. Researchers must also understand their own biases or how their experiences may affect the interpretation of the data. Finally, collecting various sources of data, such as pictures, repair bills, medical records, and school reports, aided in confirmability.

Ethical Procedures

Institutional permissions. When using human subjects in research, it is important to ensure that participants are treated fairly and ethically. Researcher obtained institutional

permission from Walden University's Institutional Review Board (IRB) before beginning research.

Ethical concerns. Each individual in the family was provided informed consent including the nature and the purpose of the study, what the data will be used for, and details about each step of the process. In addition, participants were informed that they can withdraw at any time, their names will remain confidential, and that they will be able to view the interview transcripts after the interview. In addition, personal identifiers were removed or changed from the written data and presentations of analysis.

An ethical concern is ensuring that the participants do not suffer any harm. Since these individuals have experienced a trauma, the researcher understood that recalling their experiences might cause certain reactions. Researcher ensured that if any distress was seen that this was addressed in an ethical manner, with professional resources readily available in the Consent Form and at the time of the interview.

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Summary

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This purpose of this study was to explore the long-term recovery of families affected by Superstorm Sandy. By using a qualitative narrative approach and Bronfenbrenner's bio-ecological theory, a more thorough understanding of this phenomenon can emerge. Participants in this study were recruited from the surrounding areas of the barrier island of Long Beach, New York. Families were asked to participate in semi-structured interviews in order to share their experiences of the long-term recovery of Superstorm Sandy. This data was then analyzed in order to look for commonalities and

trends. This information may be used in order to come up with effective interventions for

disaster victims on multiple system levels.

Chapter 4: Results

The purpose of this study was to examine the long-term experiences of families recovering from a major natural disaster. Through the recording and analysis of these experiences, I sought to achieve a deeper understanding of post-disaster recovery, which might potentially contribute to improved targeting of post disaster interventions. The central research question addressed in the study was, What is the family experience of recovering from a natural disaster over the course of 3 years?

Sub-questions addressed included

RQ1. What are commonalities and differences in family members' experiences?

RQ2. What is the meaning of positive and negative coping within each of the Bronfenbrenner systems?

RQ3. What kinds of interventions were most helpful to the long-term recovery of the family members?

This chapter begins with a description of the conditions that may have influenced the study's results. Additionally, details of the study such as demographics of participants are presented along with the procedures used for data collection and analysis. Evidence of trustworthiness and results follow. The results are summarized and considered in light of the research questions.

Setting

The timing of the interviews, September and October 2016, was very close to the 4-year anniversary of Superstorm Sandy. At that time of the interviews, there was media coverage on the continuous recovery for victims, and I was concerned that the media

attention would have an influence on the interpretation of the study results. I used

multiple methods to mitigate the risk of bias. These methods are discussed later in this

chapter.

Data Collection

I collected data from six families using the interview protocol and open-ended

questions. All interviews were conducted in one session, in the families' homes, and

lasted anywhere from 45 to 90 minutes. Pseudonyms were used to keep identities

confidential. The family compositions are shown in Table 1.

Table 1

Family Composition

	Adults	Children	Family missing from interviews
Family 1	Michael Sue	James	n/a
Family 2	Cassie		n/a
Family 3	David Kelly		n/a
Family 4	Rhonda		n/a
Family 5	Bonnie	Matthew Derrick	1 (father)
Family 6	Marc	Hanna Brianna	n/a

Family Descriptions

Family 1- Michael, Sue, and James. Michael and Sue are married with one son,

James. They have lived in their home for 35 years. Prior to the storm, Michael had just

retired from a series of high-pressure jobs in sales. Sue is a teacher's aide at a local

school. Shortly before the storm, they had purchased a laundromat after spending a

significant time looking for property to buy. At the time of the storm, their son, James,

was residing at college upstate. They wanted to tell their story to help others in the recovery process.

Family 2- Cassie is a single woman who resides by herself. Cassie retired from nursing a few years prior to the storm. However, she still worked part-time locally. Prior to the storm, Cassie did not do any storm preparation, she said, because she thought it would be like previous storms in the past.

Family 3- David and Kelly are a married couple who reside by themselves. They are retired. They have three children, two of whom live close and one who lives upstate. Prior to the storm some of their days consisted of watching their grandchildren and taking them to medical appointments.

Family 4- Rhonda is recently widowed and resides by herself. She has one adult daughter who is married and lives close by. Prior to the storm, Rhonda suffered multiple losses. She reported that she did not have close relationships with her neighbors, but she and her husband were friendly with everyone. Rhonda's husband became ill after the storm and died 9 months later.

Family 5- Bonnie is married with three children. Her husband chose not to participate in the interview. Matthew and Danny are 12, and Derrick is 7. Bonnie and her husband work full-time.

Family 6- Marc is separated from his wife who lives in another state. He lives with his two daughters, Hanna, 11, and Brianna, 13.

I recorded data by audiotape and used a notebook to keep notes during the interviews. In addition, supporting materials such as photographs, legal paperwork, and

journal entries of participants were photographed. Some participants sent these items via e-mail. The recordings were later transcribed into digital text and presented to the participants. This allowed them to redact any parts of the interview they did not want to include and to further check for accuracy. Some respondents chose not to meet with me for member checking and, instead, engaged in this process via e-mail. Two families did not participate in member checking because they were unreachable.

Data Analysis

The detailed summaries of the interviews formed the basis for the thematic analysis. I categorized data in the timeframes of of "before," "during," and "after." This allowed me to capture the narrative arc of each family's story and to allow for subsequent comparisons of how the families narratives overlapped or diverged.

Coding of the transcripts within each theme consisted of going back to the transcripts and noting the key concepts in the margins. This was done line by line for each family. Once this was completed I organized the turning points of the narratives in a chart, with one column for each family. This way was I was able to get a sense of common themes and discrepancies. I then organized then into before, during and after Superstorm Sandy. The codes were grouped into categories related to interview questions. These categories were then tied to the research questions and Bronfenbrenner's systems in order to align the summarized results with the purpose of the research study (see Figure 1).
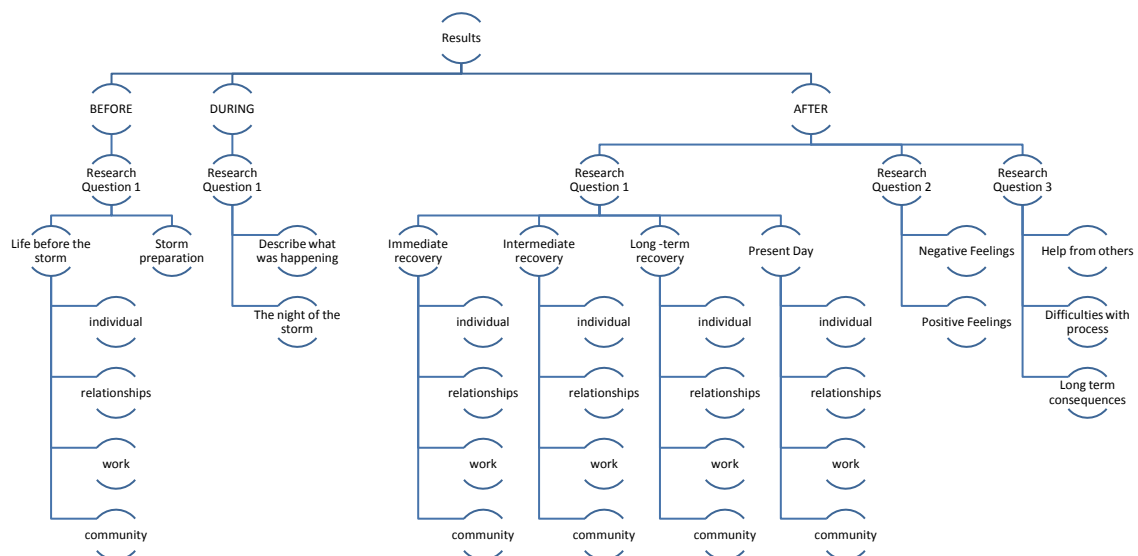
Figure 1. Diagram of categories and codes organized by research question.

Each research question approached the data from a slightly different perspective (family experience of recovery, coping, interventions). So, the study results are organized around the three research questions.

RQ 1: The Family Experience of Recovering

Before the Storm

The first set of questions had to do with life prior to Sandy, examining the different systems surrounding an individual.

Thematic elements of life before the storm. Nearly all participants described life as "normal" and "simple". The category of "normal" was rich with examples of participants' recollections of the activities and functions of daily living that are typically

taken for granted. Another theme that was consistent across participants who were employed was not having the time to form relationships with neighbors.

    Theme: Life as "simple" and "normal. A thematic element during this period included the description of life prior to the storm as "simple" and "normal."

> Family 2, Cassie: Okay, so I went back to work part time. They offered me the position and I said, "Okay, two days week so it works out perfect." Went back to work two days a week, again everything going perfect. Uh, mom was aging out in the Hamptons, she had an apartment. My sister lives out in Hampton Bays. Uh, so I would go out there on the weekends, then I would have my time for me and I work and...life was beautiful.

> Family 4, Rhonda: But everything was normal, you know, normal. Um… and I actually… used to babysit for my grands all the time. They'd be at my house all the time. I'd be at their house all the time- I was really happy.

All participants also described prior stressors, including recent losses, medical problems, or ongoing life challenges that were part of daily living. However, one participant described multiple losses including the death of her dog right before Sandy.

> Family 4, Rhonda: I really truly believed that he laid down thinking, 'What are they going to do with me? I'm not' you know, like he was not sick. I think that dogs are so hypersensitive."

David and his Kelly also identified stressors. They are retired, have a daughter who lives half a mile away. Their two grandchildren have medical issues, and they often pick them up from school or take them to the doctor.

Family 3, David: Ah, but two of them have Crohn's disease. So she's been kinda hunkered down with, ah… taking them for all the medications and the doctors. Sometimes they had to be in the hos-hospital. And, ah, but she was the one that needed the help and we were… used to being on the island so we… we chose to, ah –come here. When she worked, we could take care of them and watch out, pick them up from school, and take them to the doctor's, and whatever was necessary.

In another example, Michael had just retired from a series of high-pressure jobs and he and his wife were looking to open a Laundromat.

Family 1, Michael: So it was hectic, and, and… it, it changed afterwards, but there were a couple of things happening, right. So, I had been in, I'd been in for 30 years….we were looking forward to the change.

Most respondents reported positive relationships with family members. Participants spoke about helping out their family members regularly and traveling with other another. Partners were used to getting support from one another when needed.

Family 1, Michael: We were… we always work as a team. We're a good team together, especially with a task at hand.

Theme: Minimal communication with neighbors.

The next set of questions pertained to the participants' communities and how frequently they spoke with their neighbors. Participants described their communities as "quiet" and "nice".

Family 3, David: There are a lot of nice facilitates such as parks, community centers and a golf course.

Half of the families stated that they did not speak with their neighbors much. There would be a friendly greeting every now and then but participants describe being too busy to form relationships with neighbors.

> Family 2, Cassie: It's a working community, just about everybody works. So I did not get to know my neighbors well.

She did help an elderly woman across the street from time to time. Two families were friendly with the neighbors and had several close friends near them. One participant, Family 4, Rhonda, had difficulty remembering what like was like before the storm.

Storm Preparation and Evacuation

The second set of questions pertained to the storm. These questions included storm preparation, keeping up with impeding landfall, and the night of the storm. In discussing the forecast and choice to evacuate, all but one family did not believe the storm was going to be as bad as the weather forecast indicated because of their prior experiences with hurricanes and storm forecasts.

Thematic elements of storm preparation and evacuation. Two themes emerged during the preparation and evacuation: (1) was the influence of prior experience on evacuation; and (2) disbelief/belief of storm predictions. These themes were the initiators of action that propelled families on different trajectories despite the common weather forecast that predicted the large storm surge and potential damage. One family out of the six - who had prior evacuation experience and extensively prepared, was the only one to evacuate.

The other families chose to stay in their homes (or in their condominium complex) during the storm.

  Theme: The influence of prior storm experience on evacuation. Family 1, Michael and Sue, were confident that the forecast was accurate and were the only ones who evacuated. They stayed at Michael's parents' house despite Michael's wife wanting to stay. All the other families sheltered in place, rationalizing that it would be like previous storms such as hurricane Irene. Family 3, David and Kelly who had a multi-level house stated, "with an upstairs, we thought we were safe." Family 6, Marc's daughters were with their mother in NJ for the weekend prior, so he just asked her to keep them during the storm.

  All but one of the participating families stated that the area they live in typically floods. So many anticipated some flooding, but not to the extent which occurred.

  Family 1, Michael: Because we live in a low-lying area, and have for decades, we're sensitive to our elevation and surge forecast.

  Family 3, David: Every time there is a full moon, particularly when it's an onshore, ah, wind…. the tide comes up and usually floods the street outside with about maybe six inches of water [points to the canal outside the window]. You see, this is a nuisance. You know. An hour later, it's down again.

  Theme: Disbelief/belief of storm predictions. The amount that families prepared for the storm varied depending on the belief/disbelief of weather predictions. Family 1, Michael and Sue family prepared for 3 days after they heard that the surge estimate was 10 feet.

Family 1, Michael: When we got the storm surge estimate of ten feet, it was three days before the storm. For three days straight we moved everything we could. Everything was moved out. Ah, welding equipment, whatever we could get up, we got up. So, when I tell you that for three days, non-stop, the preparation was intense; because we had a very good understanding of where the water was going to be.

Three families did some storm preparation such as buying supplies, moving some items out of the basement and securing outdoor furniture. Two families did not prepare at all thinking that it would be like recent past storms.

Family 5, Bonnie: Um, I did the regular thing. We got batteries. We got the flashlights. We all got flashlights. Yeah, we did like all those. We went to Ace Hardware. We bought a bunch of cheesy stuff…. snacks, I made chili.

During the Storm

Each family had their own unique experiences during the storm. For four out of the six families, the most memorable moments were when the water started rushing into their homes. For the other two families, Family 1 had evacuated and Family 2 was a across the street from her home in a second-floor condominium. For these two families, there were other elements of the night of the storm that were memorable.

Thematic elements of during the storm. This was the time period that most participants recalled when asked about their most vivid memories of the storm. The two themes that emerged from this this time period were (1) feelings of powerlessness and (2) a sense of shock. All families who did not evacuate had recollection of the water rushing

in so quickly that they did not have time to react. Another common theme was looking out of the window and only seeing water. The final theme in this section was participants having difficulty falling asleep.

  Themes: Feelings of powerlessness & shock. During the storm participants spoke about instances where tried to prevent the water from coming in by trying to block doors. This proved unsuccessful and there was a general feeling of powerlessness against the storm, as well as disbelief that the water was rushing into their homes. Family 1, Michael and Sue, were the only ones who evacuated. They also felt a sense of helplessness because they did not know what was happening at their home.

  At the peak of the storm, Family 3, David and Kelly were at the dining room table playing cards. The lights were out at that point already.

    Family 3, David: We were watching the water come up higher and higher. And as it came through the back door [pointing to it from the dining room table], we said 'Wait a minute. Put something against it.' But all of a sudden, just like that, ah, there was a surge and the water just came up right through the floor [pointing at their feet].

    Family 4, Rhonda said it was 7:30/8:00 pm when is started getting bad. Rhonda and her husband were having dinner by candlelight. All of a sudden they realized the water was coming in. The water came rushing in from the floor. Rhonda grabbed dish towels….then a comforter but it did not make a difference. At this point of the interview, Rhonda began to cry. She told of when the water was so high that she had to go on couch.

Family 1, Michael and Sue were staying with Michael's parents. Their son James was upstate at college.

Family 1, Michael: Um, what I remember was, it was like fireworks that night. Ah, because all the transformers everywhere were popping as it was coming in. The other big stress factor was that you were there waiting, and you were helpless. It was almost worse knowing that something bad was happening here and we couldn't do anything about it. It was almost worse than actually seeing it."

Theme: Water rushing in. Another common theme during the height of storm was memories of when the water came rushing in. Some instances can be seen in the theme above. Others are discussed below.

Family 4, Rhonda: All of a sudden, I'm on the back of the couch and John's like, 'We gotta, you know……get up in the attic or something.' And I said, 'You know John, we're not calling for help. This is our fault. We chose to stay here. I don't want a policeman, a fireman, an EMT. I don't want anybody to risk their lives for us because we chose…we were told to evacuate and we didn't,' you know.

Rhonda then speaks of black water which she later said was a reoccurring theme in therapy.

Family 4, Rhonda: And I saw a whirling, almost drain, like it was going to suck us down, and I just kept praying and praying, and that's when we started going up to the attic. We stayed there as long as we could. And I just literally kept praying."

Family 5, Bonnie, Matthew and Derrick also remembered the point the water started pouring in.

Family 5, Matthew: The water was pouring in and we were all moving upstairs [pointing to the sliding doors from the kitchen]. We like tried moving all the stuff upstairs fast as possible. We had to sleep up there for the night. And in the morning we moved to our grandparents.

Family 5, Derrick: It wrecked our house. And we to move to our grandparent's house. And then they built it like this and then we moved back. We were pretty close for a year or two.

Another thing the family spoke about was moving all of their animals upstairs. Bonnie remembers that as everyone was bringing things upstairs and throwing things up the stairs, she was yelling "Bring it up! Bring it up! Bring it up!" Bonnie described the rate in which the water started to pour in.

Family 5, Bonnie: There was no stopping it. Like I said, it happened in a matter of minutes. We looked outside. It was just like right there. Like in the driveway and then all of a sudden it just came up through the ground and just surrounded us like everywhere. And then the toilets started to drain, and everything started coming up and the smell.

Theme: Height of the water. After the water came rushing in, participants recalled looking out of their windows and seeing nothing but water. Some stated that they watched the water cover the tops of cars. Other participants spoke about looking out of the window and seeing nothing but water.

Family 5, Bonnie recalled when they were upstairs they looked outside and saw the water was over the tops of the cars. Bonnie remembered thinking "is the water ever going to go down?"

Family 2, Cassie was across the street watching TV with her neighbor then all of a sudden she saw sparks because transformers were blowing. Then the lights went out. Cassie stated at this time she was not alarmed yet as they expected the power to go out. Soon after the power went out, she looked out the window and saw a fire. Even though they called 911, they were told that there was nothing they could do because they could not get through the floodwater.

> Family 2, Cassie: So now we decided to look out the window, um, and all around us was water, no matter where you live, no matter where you look, all you could see was water.

Cassie also noticed when she looked out the window that car lights were on and trunks were open. Cassie thought that people were leaving, however she soon realized it was car computers shorting out.

> Family 3, David: The high tide would come up twice like ten o'clock and six or whatever, and you look out, I went, 'Oh my Gosh' it was up the stairs…..it was all water, four feet, covered the fence across the street and then there was the other little canal behind. It came back here, you looked across this, water was halfway up the other block. So it looked like we were marooned in the middle.

For Family 6, Marc, it was just he and the dog. Marc stated that the lights were out so he could not see much outside. He heard the car alarms going off all over the neighborhood. Then when he did look outside he watched the water go over his car.

When the water stared coming in the basement, Marc tried sticking things like paper in the holes in the wall. Although his house it elevated and the water only flooded the basement, there was an instance where the water was coming up the basements steps [Marc opened the basement door to show interviewer where the water came up to] and Marc began to worry. The water receded before it reached the living area.

Family 6, Hana: My mom was keeping track of it mostly. She didn't really tell us because I don't think she just….she just didn't want us to get scared or anything."

Family 6, Brianna: The only thing I was focused on was "when is dad coming here?"

Theme: Nighttime. The final theme for this time period was settling down for the night. Some decided to go to sleep because there was nothing else to do. Other participants had difficulty falling asleep because of fear of what would happen during the night.

Once the water stopped coming in, there was not much participants were able to do until the next day. Family 5, Bonnie said that they settled down for the night since they did not know how long they would be stranded. She described her feelings as "panicking from the inside." They also had to keep going down into the water because they only had one bathroom. She described stepping in the water "like stepping in hell."

Family 4, Rhonda stated that when the water receded somewhat she wanted to sleep on the bed and her husband slept on the couch. She slept in her boots in case she had to use the bathroom.

Most participants reported difficulty going to sleep. Family 2, Cassie, remembers telling her neighbor:

> Family 2, Cassie: There's nothing we can do, we're safe, we're just going to sit it out I said, 'Till daylight, there is nothing we could do.' Okay so that is what we did. I want to say at some point, we fell asleep cu when I woke up it was morning … it was daylight.

> Family 4, Rhonda: I just remember being in and out of sleep, and just tossing and turning, and petrified it was going to come back.

Immediate Recovery

The next series of questions asked about the participants' experiences the morning after the storm, damage to their homes, and the immediate recovery process. For this study the immediate recovery is defined as the week following the story. Similar to their experiences during the storm, each family had their own unique account of this time period. There were several common themes during the immediate recovery process. Disbelief and shock were still present (the theme that initially emerged from the previous time period) when looking at the loss and destruction, comparing what they saw to a "warzone." The theme of support from others, including family, friends and employers, was also common.

Theme: Disbelief and shock. Participants spoke about the next day when they first surveyed their homes. For Family 1, Michael and Sue, they stated that it was as bad as they expected. Due to the storm surge total, Michael anticipated the destruction he saw the following day. Family 2, Cassie, remembered walking across the street to see her home. It was a "gorgeous day" and she said to her neighbor that she was going to go and see what she was "up against." She went across the street and saw a pile of eelgrass. She opened the door to her condominium and it was nothing but "wet and mud." Although the water receded, everything was wet. On her fabric wall she could see that water line and it was at about 4 feet [showed interviewer where the line came up to]. She opened cabinets and everything had water in it.

Family 2, Cassie: I opened everything up and walked outside. At that point nobody was around unless you stayed here. The roads were not opened, and you couldn't get through. I remember thinking to myself 'I just can't believe this happened. I can't believe this happened.'

Family 3, David and Kelly did not say much about the following day. They did report that the entire town was desolate as a lot of their neighbors did evacuate. Family 4, Rhonda described the next day as horrible as she looked at all the destruction that ensued. She stated that she spent most of the day "screaming and crying." Family 5, Bonnie and her boys came down the next day and say their refrigerator floating upside down, still plugged in. She recalls the water covering everything and hopes "to never smell that smell again." See Figure C1 in appendix C as an example of

what the floors looked like after the water receded. Family 6, Marc described standing outside and seeing people just milling around as if they didn't really know what to do.

The next series of questions were about the extent of damage from the storm. Family 1, Michael and Sue, were the only ones who had prepared extensively for the storm. One home, they began to mitigate the damage that did occur immediately. Michael stated that as soon as they came home they opened up all the windows and doors to air out the place. He was in hardware stores that day getting the supplies he needed to bleach the floors to prevent mold and to clean off the metal so it did not rust. This, in conjunction with the three days of preparation they did before hand, minimized the amount of damage to their home. However, there was still a significant storm surge. At one point in the interview Michael showed interviewer where the water came up to on the first floor. There was damage to their deck outside. Michael's neighbor told him that his deck was "floating" during the storm. He remembered thinking "I built that deck." Other people had similar experiences with their backyard (see Figure C2 in Appendix C).

Family 2, Cassie, lost her car that was in her garage as well as everything on her first floor. However, the condominium company hired clean up crews fairly quickly and they were discussing brining people in the day after the storm. Other people tried to move their cars to higher ground but the storm surge was so high that it did not matter (see Figure C3 in Appendix C).

Family 3, David and Kelly, moved their car before the storm. However, everything on their first floor and basement was destroyed. And, his new deck outside

lifted up and piled against the neighbor's fence, knocking it down [pointed to the deck out of the window].

> Family 3, David: Well, everything was just demolished, you know. I mean it
> was….you know, you, you'd swear you would never have this experience.
> Family 4, Rhonda and her husband lost everything that they owned.
> Rhonda: I remember sloshing through it all. Just seeing the
> destruction…..everything I owned…you know, every piece of clothing, every
> piece of furniture…the water got in every room of the house, except the attic.
> Family 5, Bonnie and her family lost their car as well as their whole first floor

including one of the son's bedrooms and their only bathroom. Family 6 Marc, had a fairly elevated house so although the basement was completely flooded, and he saw the water coming up the basement steps, it did not reach the living areas.

The next few days after the storm consisted of assessing damage, cleaning up (see Figures C4 & C5 in Appendix C) and surviving without electricity or plumbing. Participants described it as a "return to basics."

Family 1, Michael and Sue stayed elsewhere for six days. They would come back and forth during the day to work on the house. After 6 days, the place was livable, albeit not with the comforts they were accustomed to.

> Family 1, Michael: Life was nothing at all like it was before or since…so you've
> got no heat, you've got no electricity. All of a sudden, a flashlight and a
> rechargeable battery become really important things; a way to charge a cell phone

becomes really important. Dressing in layers to stay warm. Ah, you know,

ah…..basic things little basic things become much more important.

Family 2, Cassie stayed at home for several days while cleaning up. She

remembers eating crackers and water at night. She stated that even now she is "hooked on

Lance crackers." However, nighttime was also a difficult time for Cassie. She developed

a nighttime routine. She would put on her sweat suit and a heavy comforter and go to bed

with her Coleman lantern. This is when she would write to process her thoughts. During

the interview, Cassie shared two of her writings:

> Vision all my possessions being washed out to sea-
> vision of everything I thought was important to me
> Vision bewilderment of people about
> including myself without a doubt.
> Now look around and see what you've got
> the vision God gave you
> to see what's important
> and what is not
>
> To Nancy- who had an airbag deploy as she started her car
> 11/1/12 1:30 am
>
> I'm one of the Lucky Ones
>
> The wrath of God struck
> on Oct 29-12, he'd had enough
> The moon, the earth, and the ocean collided
>
> I witnessed destruction by wind, rain, water, and fire.
> Still I'm one of the lucky ones
> How humble I feel all this devastation
> and mankind had nothing
> to do with it or did he?
> I sit up in bed on this cold dark

time my mind racing about my stuff.
how unimportant it's all become
Now I feel the cold, the hunger
the despair. I'm not longer in control.
God help me with your power
And might to know what's important
And what is not
My stuff is already being put
back in place. Thanks be to
God for his saving grace
So let me count my blessings and
help someone else because
I am one of the lucky ones.
11/4/12 2:00 pm
Cassie recalled the moment where the clean up company told her that she had to

throw out anything the water touched. Some people in her complex stated that it was only

saltwater- what kind of damage could it do. However, the clean up company also said it

was sewage water as well. It was at this time Cassie called her mother in the Hamptons

and asked her if she could stay with her. Because she did not have a car, her sister picked

her up and drove her there.

Family 3, David and Kelly, stayed in their house for a few days until they were

told they had to leave due to a sewage spill. They stayed with their son upstate but came

down frequently for clean up. David remembers coming up the block one night and

described it as "eerie and spooky." Family 4, Rhonda and her husband had to stay with

others during the clean up process because their house was unlivable. Everything that

they owned was destroyed. Family 5, Bonnie, her husband and her sons went to her in

laws. Their only bathroom was on the first floor and the house was already beginning to

grow mold the day after the storm.

Family 5, Derrick: We woke up and it was so terrible. The floor was all green and there was already mold growing on the walls.

For Family 6, Marc and his daughters although it was mostly the basement that had damage, the house was still unlivable. Marc stated that the house had a foul odor and the whole community was shut down. Marc took his daughters and his neighbors that he did not know to his parent's house in Shelter Island. At the time his parents were traveling so there was plenty of room. Marc stated that prior to Sandy he hadn't really spoken to his neighbors.

Theme: Warzone. Outside of the home, a common theme with participants was an environment similar to a warzone. Boats and cars were in the middle of the street (see Figures C6 & C7 in Appendix C), the Long Beach boardwalk was destroyed (see Figures C8 & C9 in Appendix C). National Guard was patrolling, and there were stations with Guardsman handing out water and emergency meals (see Figures C10, C11 & C12 in Appendix C). Trailers were also set up for insurance claims and emergency aid information. Local churches had donated clothes and toiletries (see Figure C13 in Appendix C). Portable toilets were set up on each block since the sewer system was not functioning (see Figure C14 in Appendix C). A curfew was in force at night. Family 1, Michael stated that one night coming home, he saw the darkness and piles of debris and "felt like a refugee."

Participants described the sidewalks filled with garbage bags of people's belongings (see Figures C15 & C16 in Appendix C). People were in and out of their

houses throwing things out. The department of sanitation was making frequent trips around to help clear things up. All the businesses and schools were closed.

   Theme: Support from others. The final theme during this time period was support from others. Participants described the importance of the support they received from family and friends, coworkers and community members. Other participants spoke about their roles in supporting and helping others.

   Throughout the chaos, participants said the community came together. Neighbors offered to take Cassie to get a phone charger. People shared power from their generators, others offered to watch the neighborhood if a family was staying elsewhere. Additionally, participants were also able to help others. Family 1, Michael, helped to order dumpsters for his neighbors, participants with working vehicles would give other people rides or get supplies for people who could not leave their homes. Family 4, Rhonda, provided counseling for city workers who were aiding in the clean up. She recalls one day where she thought she was doing okay. Her supervisor said to her "Rhonda, go take a walk." She seemed to have sensed that Rhonda was in fact, not okay. Rhonda stated that this is one of her most vivid memories walking through the front of city hall and seeing the national guard and people waiting on lines for food and clothes. "I remember thinking I feel like… ah, like I'm in the war in Afghanistan or something."

   Participants stated that support from other was critical for them at this time. Mostly all families had supportive employers, family members and friends. Family 4, Rhonda, stated that several there were several people during the recovery process that disappointed her.

Intermediate Recovery

For this study, the intermediate recovery period is defined as up the one year anniversary of Superstorm Sandy. The length of time that five out of the six families were out of the house varied from six days to two years and two months. Family 5, Rhonda, has not moved back home yet. Thematic elements during the intermediate recovery were the stress of changes in routine, moments that brought hope, and changes in relationships.

Theme: Stress of changes in routine. During the intermediate recovery period, there were changes in daily routine for all the participants. The time spent out of their home varied with each family. Some daily routines consisted of non-stop rebuilding. Other participant commuted hours to work because their temporary home was miles away. Children in the same house had to go to different schools. For some, these changes started to wear on them as time went on.

Family 1, Michael and Sue worked on their house everyday from morning until night. They stated that they were about 95% recovered at the three-month mark.

> Family 1, Michael: For three months life was completely, totally different. We surveyed- what do we have to do next? What's the next job, what are we saving, what are we doing, how are we remediating this, you know, and so that 60 days was just dusk to dawn. After the mold and metal was taken care of, and the walls were sealed there not the same urgency at that point. The third month was a little easier.

Family 2, Cassie was living with her mother in the Hamptons. She would come back to her condo when she had a meeting with a contractor or assessor. At the end of

January, 3 months after the storm, Cassie called work to see if she could come back two days a week. Although told her she could take more time, she would drive from her mother's in the Hamptons and stay in a nearby hotel the night before she had to work. Cassie stated that she felt that she was ready and she wanted to regain a sense of her previous life.

Family 3, David and Kelly stayed with their son upstate for six weeks. Their daughter, who lived nearby, was monitoring the house. David and Kelly came by about twice a week to check on progress.

Family 4, Rhonda has been homeless ever since. She has stayed with various people over the past few years. Three months after the storm, Rhonda's husband collapsed while they were staying at his cousin's house. Rhonda spent most of her time at the hospital while her husband was in and out of coma. While she was ill she was unable to take care of the house ("I had to ignore the house"). Her husband was in ICU for 9 weeks and passed away. This was nine months after the storm.

For Family 5, Bonnie and her sons, they were living with her in-laws along with other family members displaced by the storm. The boys had to attend different schools and the retail store that Bonnie worked at was not renovated for some time. Everyone had to share her in-laws car, and rotate turns to attend to the storm's damage. She remembers people saying, "Okay- who is going today to clean up their house?"

> Family 5, Bonnie: It was just total chaos. Once we cleaned out, we took what was
> needed. We took the minimal that we had…if I tell you Rubbermaid and
> Tupperware, like that was our pantry. Like it was a bathroom drawer, the

medication drawer, like it was just like that's where we lived. The boys slept on blankets side by side and we had to share a bathroom with everyone in the house (see Figures C17 & C18 in Appendix C). They had like a little caddie they would carry back and forth."

Bonnie said the first couple of nights were understood but as the months went on it became "wearing". She stated that Matthew would come home crying every day.

Family 5, Bonnie: We weren't used to being so close. We would basically stay upstairs. Unless we were cooking, like we went food shopping and we would try to condense or go as fast as possible … as months went on, you felt worse and worse….it just became more of like 'Are we ever going to leave?'

Family 6, Marc and the girls were still living in Shelter Island. Marc did not go back to work for two weeks. During this time he worked on the house, draining all the water out of the basement and cleaning the walls. His neighbors lived in the upstairs of his parents' house and Marc and the girls lived downstairs. When Marc went back to work, he described the change in his daily commute, which used to be about an hour each way.

Family 6, Marc: It was three hours, three and a half hour or about four hours going home, you'd come home every night- it was like 9:00. I left at 4:30 am and got home at 8:30.

Theme: Moments that brought hope. Specific turning points during the recovery were mentioned, as well as attempts to instill some sort of normalcy, particularly during the events and holidays.

Family 2, Cassie, described several turning points during the first year…Cassie describes a couple of times in which she broke down. One occurred when she had to make a decision about a remodel and another was when she found out they may have to open up a wall again. The remodeler sat her down and told her that she had come such a long way and to not give up now. Cassie agreed to continue with the rebuild but stated, "That's all, brother, I'm out of here. I said I don't care if you open the wall, leave it running, let it burn down, I don't care, I'm leaving."

Another turning point for Cassie occurred when she was staying at her mother's. She came home to find out that her condominium was robbed, along with others in her gated community [showed interviewer her room and described how she found her belongings after the robbery]. Just when she felt hopeless and almost at her lowest, she checked her checking account and saw that she received money from FEMA. Cassie recalls thinking "I'm going to make it. Um, and then my spirit was lifted again." She thought, "Whatever it is; now I can deal with it." She moved back home the second week of May. She recalls it was right after Mother's day due to the fact that her mother was devastated.

For Family 1, Michael and Sue they stated they worked tirelessly for 60 days, from dusk till dawn. He recalls the point where they came up for air.

Family 1, Michael: Um. So by Christmas, we realized that we, we could kinda

take a breath. We got a little tree and we tried, we tried to……we had it in the

living room, we out two strings of lights on it, and we had Christmas.

Cassie was still living at her mothers and recalled Christmas. She stated that she

had some hesitation but others convinced her to go.

Family 2, Cassie: I have to tell you, when I did go down there I totally forgot

about everything. It- it just left me. I had the best time.

Family 3, David and Kelly also spoke about Christmas that year.

Family 3, Kelly: I think we were the only ones on the whole street that put on

Christmas lights. I said, we have to put a light on the window or something, you

know.

Family 6, Hanna and Brianna recalled celebrating their father's birthday without

him being present.

Theme: Changes in relationships. Another theme during the intermediate

recovery was the change in relationships. Some participants spoke about the stress that

everyone was under with the recovery and others described coming together in support

for one another. Those participants who did not previously speak with their neighbors

began to form relationships with them.

Family 1, Michael: We were sniping at each other because we were, you know,

under crazy pressure, but- I don't think our relationship changed much as…I mean, we

were, we were together a lot more. We were…we always work as a team. We are a good

team together.

Bonnie moved into her in laws and other family members who were displaced by the storm. Although it was tight, they eventually developed a routine.

Family 5, Bonnie: It was very….we were very intense and every night we had to clean up before we went to bed. We had to pull the bed out. And then once you pull the bed out, there was nowhere to walk…….So every night they came and they cleaned up every night. They actually got…..they got a good system going."

Cassie and her mother became close in the time that she spent at her house.

Family 2: Cassie: We really got very close, very close. Um, and I did everything for her. I mean she didn't charge me any rent. You know, and I mean she bought the groceries and I would take her out like we'd have a special night out for dinner and I would take her out.

Rhonda stated that she had several relationships end throughout the storm recovery. Some relationships that changed were with people she was staying with. Rhonda described how it was difficult to live with people that she "thought she knew." She also stated that she realized that some of her previous friends were toxic and she believes that they didn't have her best interest at heart. One situation she described was with a friend who was criticizing her for not moving quicker in repairing her house. Rhonda explained to her that her husband became ill and she was spending a lot of her time in the hospital with him. Her friend did not seem to understand and they have since then, not spoken.

Employers of the participants continued to be supportive. Many companies gave money to employees affected by Sandy and were understandable about the time they

needed to take off. Some participants described the need to work for financial reasons or for the sake or normalcy. Family 2, Cassie, called her boss in January and asked her if she could come back to work at least two days a week despite being further away at her mother's house. In order to accomplish this Cassie drove to work on Tuesday, slept at a local hotel every Tuesday night, in order to work on Wednesday and then drive to her mother's Wednesday night. She did this until she was able to move back. Cassie recalls calling the hotel about their rates.

> Cassie: "Yes – yes, I called them and they said that they would give me a special rate. Um, was a hundred, I think was $125 a night and I said, "That's perfect." And I ... and -- and it was funny because when I went in there, the guy was so nice and I said, "Look, just put me in a safe place." I said, "Because this is not what I normally do." I said you know, "I get up early, I have to be in work at seven so I'm outta here 6.30 in the morning pitch dark..."

The town of Long Beach was significantly damaged. Although some houses were elevated, mostly all businesses, schools and community resources were damaged. The storm had caused the ocean and the bay to converge and the entire town was flooded. During the intermediate recovery, there was extensive work being done on infrastructure and homes. Family 6, Marc stated that this was part of the reason he decided to relocate to Shelter Island until the town was more operational. He stayed at his parent's house in Shelter Island for 6 months. Participants stated that during this recovery period people rallied together to help their neighbors and their communities. Since fences were literally down, neighbors who never spoke before helped in each other in various ways such as

sharing electricity from generators or watching another person's house while they weren't home. Family 6, Marc shared that there was a family down the street that he did not speak to prior to the storm. However, he took the entire family with him and his two girls to Shelter Island to live at his parents' house for five months during the recovery process.

Family 6, Marc: They had nowhere to go, and I said why don't you just come with me and I barely even knew them. They were like 'Everybody?' I was like 'Yeah, come on, I have plenty of room'.

For those participants in Oceanside, Freeport and East Rockaway, the gradient of damage within these towns varied. So during the intermediate recovery period some businesses and residence were in good shape, some were still doing work.

Along with accounts of people helping others, participants also spoke about people taking advantage of other people, as well as taking advantage of the system. There were accounts of people stealing gas from one another or claiming things from insurance companies that were false. At that time gas was a scarce commodity and lines were often long.

The one-year anniversary of Sandy was memorable to participants. Four out of the six families had moved back into their homes. Family 2, Cassie stated that the condominium company did an excellent job of renovating the complex. At the one-year anniversary, people were asking her if she was sure they were affected by Sandy. Family 3, David and Kelly said that at this point about half the residents in their community were back.

However, there was a lot of work still going on at the one-year anniversary. Some participants were still waiting for the work to start. In their own home, Family 3, David and Kelly were still waiting for permits from the Town of Hempstead. Family 6, Marc and his girls were home after five months. However, Marc shared that the ceiling in his basement is still not complete. Family 5, Bonnie and her family were still at her in-laws while the house was being fixed. There were delays with money and permits. Family 4, Rhonda, conducted the opening prayer and blessings during a community ceremony celebrating the one-year anniversary of Superstorm Sandy. She shared a picture of this event (see Figures C19 & C2 in Appendix C) and said that it was beautiful seeing the community come together once again. However, her house was just starting to get worked on. Additionally, at least half of the people she knew were still not at home.

Extended Impact

In the last part of the interview, questions were asked about the recovery during the 2nd and 3rd years after Sandy. By the second year of recovery, four out of the six families were home. Two recurring themes emerged when participants were speaking about the long-term recovery. These were (1) the departure of residents from their communities (moving away after returning; or leaving and never returning); and (2) issues with permits and the completion of repairs.

Theme: The departure of residents from their communities. All participants spoke about the increase of for sale signs in their neighborhoods as well as the "zombie" houses that remain as people abandon them. Additionally, all participants stated that their

communities are not the same as before, and may never be. Family 3, David and Kelly stated that now they have to drive a distance to get to stores that used to be local.

However, Family 3, David and Kelly were not done with the recovery process. David described the frustrating process that he continued to experience such as difficulties obtaining a building permit, receiving conflicting information from federal aid, and caseworkers leaving and/or moving offices. He stated that they are lucky since they are more or less "well off", so they are not in desperate need of federal money that has taken longer than expected to arrive.

> However, the process is still going on. People tell me that the money or permit will be approved in six weeks and three months later it is still not there. … you call then and you cannot find the same woman you spoke to or get transferred to a different office. Sometimes they can't find records [showed interviewer a pile of papers about various types of aid and letters he has written for building permits]. Family 3, David: It's a learning process for them too as it does not happen very often. I understand all that, but there's thousands of people that are in trouble.

At one point Family 5, Bonnie recalled thinking "are we ever going to leave?" She stated that the hold-up had to do with funding and permits. They were able to move home after two years and two months of staying at her in-laws.

Family 4, Rhonda was still not at home. Her house was raised up December 12, 2015. She does remember one group in particular that was incredibly helpful. The name was "All Hands" When they had to leave they invited Rhonda to a dinner. She showed pictures during the interview (see Figures C21 & C22 in Appendix C) and spoke about

the impact this organization had on her. It was two years post Sandy and Rhonda said that "All Hands" was the most helpful and finally started the recovery process for her. Additionally, they were supportive and empathetic to her situation.

Present Day

At the time of the interview, family 4, Rhonda was the only one not at who had not returned to her original home. Three families still had work that they were waiting for permits or work to get done in the home.

Thematic elements of the present day. Two themes about the present-day situation emerged: considerations of relocating (a carry-over from the previous time period), and reminders of Superstorm Sandy. All participants spoke about the fear that they have that a storm as strong as Sandy will occur again. Family 6, Mark said that now he is concerned about the property taxes going up and he knows that other people he spoke to feels the same.

Theme: If another storm happens. Although Family 1, Michael and Sue had the least damage and the shortest recovery period, they reported that they would be able to do rebuild again if another storm happened.

Family 1, Sue: I think I would walk away if it happens again.

Family 1, Michael: It'd be tough. Yeah, it'd be tough. I could have done it before having the knee replaced. I could probably do it again but ah….it was….physically it was….[shaking his head]"

They spoke again about their idea that their son would take over the house. However, with one major storm experience, and the belief that "it will happen again" they do not want him to go through the same thing.

Other participants had the same sentiment in the decision to walk away from their homes if a similar storm happened again.

Family 2, Cassie: Um, if it happens, or when it happens again cuz I do believe it will. I hope it's not in my lifetime, but I do believe it will happen again. I will leave and I will not come back.

Cassie also stated that it took her some time to refer to her place as home again. Similarly, Family 5, Bonnie, stated that the sense of being home has changed.

Family 5, Bonnie: I mean we did work to the front like we cement it, whatever. So yeah, we plan on staying. I just don't want to put pictures up yet. I guess you just always feel like what if it happens again."

In the present day communities of the participants, there are still people and businesses waiting for money or permits. People drive by when David is walking the dog, asking about the houses. He of course wants to be honest.

Family 3, David: What can I tell the guy? Well you gotta be careful. You may have to raise up the house. So if you're gonna buy it, ask them what the situation is".

Themes: Reminders of Superstorm Sandy. Participants reported many reminders of Superstorm Sandy such as seeing a house get lifted, or the abundance of for sale signs. Some of the participants described a visceral reaction when they see a hurricane warning. For example, Family 6, Michael said that he "breaks out in a cold sweat" whenever there

is a hurricane warning. Family 4, Rhonda stated that her constant reminder of Superstorm

Sandy's impact is her ongoing displacement from her home.

RQ2: Positive and Negative Coping

Participants spoke about several instances of positive coping. Themes about

positive coping were 1) the importance of support and 2) thinking positively. Themes

about negative coping were 1) if a storm happened again and 2) symptoms of trauma.

Theme: The importance of support. For Family 1, Michael and Sue, their

relationship and ability to work as a team helped them through the period of recovery.

Additionally, when they did not have the luxuries that most people do these days, such as

electricity and running water, it helped them to appreciate the little they had and to "not

sweat the small stuff." They had the support of each other and also had the resources and

knowledge to minimize damage and speed up the recovery process.

Family 2 Cassie, also had support of her mother and neighbors. Additionally,

many of the contractors she worked with were helpful and took the time to thoroughly

explain the process. The condominium company also had frequent meetings. Work was

supportive and gave her the time she needed. She looks back at her experience is amazed

at what she was able to handle.

Theme: Thinking positively. Family 3, David and Kelly, realized that they are

fairly lucky as they are more or less well off so even though they are still waiting for

money they are able to do it. And although they find it frustrating when caseworkers

leave and they have to explain themselves to new people, David realizes that this was

new to people and unexpected.

For family 6, Marc and his daughters, although they had to relocate for several months, they made the most out of it. Marc described his time at Shelter Island as a big old sleep away camp where they all had fun and did fun things.

Theme: If another storm happened again. There were also instances of negative coping. Some participants spoke about not being able to handle a similar situation if it happened again, stating that they are amazed that they got through it this time. Some families have made evacuation plans and practice them regularly in fear that this will happen again.

Theme: Symptoms of trauma. Other participants spoke about symptoms of trauma and having to attend therapy. Others still get a visceral reaction when they see that a storm is coming in the forecast. Some participants also attended therapy to help them with symptoms of trauma from the storm. Rhonda went through a few therapists to help with her feelings after the storm. For a period of time Rhonda would have flashbacks of black water. "My stability since the storm, I can't remember things. I cannot get myself together". Family 5, Derrick, was seeing a psychologist for a little while. During the Sandy recovery the children's great grandmother passed away. Although they had deaths in the family previously, this one was different. Bonnie said that Derrick would not close his eyes at night and he thought everyone who lived in the house would die. What was helpful to the boys was making an evacuation plan. They still practice it. Bonnie indicated that every time a storm comes they still panic. They fear that everything will get lost again.

Family 4, Rhonda has had the most difficulty in the recovery process. When people tell her that she should be over it she says:

How could I be over it? My life has totally changed. If you saw the car, it's so embarrassing. I basically live out of my car. The back seat is piled up here with clothing, toiletries, with pillow. Cause I don't know where I'm going some nights [voice shaking].

Due to her current living situation there are nights where she may go park in a nearby parking lot and sit in her car until she thinks her friend is asleep. Rhonda stated that she is not only still not home, but she has also lost many relationships since Superstorm Sandy. All other participants spoke of relationships strengthening as a result of the storm as well as an increase in their communication with their neighbors.

RQ3: Helpful Interventions

When asked about what interventions were helpful throughout the long-term recovery process, two themes emerged: difficulty in finding out the proper procedures to get help in all recovery stages and 2) support from others.

Theme: Difficulty in finding help. Many participants reported difficulties in the recovery process during the different stages of recovery outlined in this study. In the immediate recovery state, there was a state of shock from some participants. Once the initial shock work off, participants did not know where to go for help. "Different places had different things so you had to research where to go" (Cassie). Other participants had difficulty with the paper work and stated that representatives from various government agencies gave misinformation. During the intermediate recovery, participants stated that

there was some difficulty with contractors and building permits and delays with money. In the longer-term recovery Family 3, David stated that the frustrating part was that people offered to help but no one followed through.

Some participants stated that information was not readily available. Others stated that different people in the same agency said different things. Family 3, David spoke about going through multiple caseworkers or offices changing locations.

Family 3, David: We had a case worker and then all of a sudden he disappeared, and somebody else took over…..wherever they were picking up these caseworkers…..they would come….constantly coming up and then disappearing.. it was difficult because, you know, you had to explain to the new ones…

Despite the barriers, participants did find interventions that were helpful. Within the family systems, participants stated that the support from each other and family members was helpful. When Family 6, Marc was driving back and forth to work for hours, his sister was a great help with the girls. Additionally, for Family 1, Michael and Sue, they teamwork they showed helped them to get through those grueling first 90 days.

Theme: Support from others. Another commonality with participants was being grateful for the support they got from their employers. Some participants received money from their employers. However, the thing they were most grateful for was the flexibility and understanding of their places of work.

With contractors and federal aid, the things that participants found most helpful was when things were thoroughly explained to them and when they people were

empathetic to their situation. Additionally, the follow through of the actual aid was the most helpful.

There were some discrepancies in how families prepared, and how long they had been unable to return to the original residence. Family 1, Michael and Sue were unique in that they 1) prepared extensively for several days before the storm 2) evacuated and 3) had the knowledge and resources to mitigate damage and speed up the recovery process. In regard to the length of time out of the home, Family 4, Rhonda, was the only participant at the time of the interview that was not home yet.

Evidence of Trustworthiness

Triangulation was used to ensure credibility. Documents such as pictures and repair bills were used to corroborate interview data. In addition, interviews were held in the participants' homes and this allowed me to see water lines as well as repairs. I was also able to observe the surrounding communities, which further corroborated the interview.

Throughout the interview process member checking was used. This was through reflecting back what the interviewee said as well as through establishing rapport to encourage comfortability and honesty. Participants were also able to review transcripts for accuracy and intent. A thorough description of the background, methods, and results of the study was provided to allow replication to allow transferability. In order to ensure dependability, or the consistency of findings, I piloted the questions with a family and used multiple data collection methods. The data analysis process was documented in a notebook and I went through all interviews multiple times during the coding process.

For confirmability, a journal was kept with a detailed a detailed, step-by-step account of the steps taken in the research study, will be also used. As I was personally affected by the storm I also recorded my thoughts and feelings in a journal in order to understand how my own biases or experiences may have influenced my experience of the interviews or the interpretation of the data. Finally, I also secured my own therapist and met with them following interviews in order to process my thoughts and feelings as to not interfere with the process.

Summary of Results

The purpose of this study was to understand the experiences of the long-term recovery of Superstorm Sandy. The central research question addressed by the study was: what is the family experience of recovering from a natural disaster over the course of three years?

Sub-questions addressed include:

1. What are commonalities and differences in family members' experiences?

2. What is the meaning of positive and negative coping within each of the Bronfenbrenner systems?

3. What kinds of interventions were most helpful to the long-term recovery of the family members?

Commonalities and Differences

Although each family had their own unique experience during the storm recovery, several commonalities were found in the participant narratives. Five of the six families did little to prepare for the storm and had to shelter in place. Reasons given were 1)

experience with prior storms; 2) underestimating the forecast; and 3) advice from others. Family 1, Michael and Sue was the only family who prepared extensively and evacuated. This family knew how to mitigate the storm damage and decrease the recovery time. They were home in 6 days and 95% recovered three months after the storm.

For the other families, the damage to the homes varied, as well as the recovery time. Recovery time was influenced by how much help was available. Participants who received help from neighbors or family member, received federal aid or building permits sooner, or had the knowledge of how to receive aid faster, had a faster recovery. Other factors included personal monetary resources and extent of damage.

Almost all participants spoke about relationships that changed after the storm, during the recovery process. Half the participants prior to the storm did not speak to their neighbors. However, after the storm, the same participants had formed relationships with their neighbors as the result of helping them or receiving help from them and are still in communication with them three years later. Family 2, Cassie, still has dinner with her neighbor every Tuesday, just like they did during the recovery process. All participants described their communities after the storm as "a warzone". Additionally, all participants describe the lengthy recovery of their communities and acknowledge that people are moving out or not returning. Participants also agree that their communities will not be the same. Participants described their communities as having less to offer since businesses have closed or move. Other participants describe the physical damage and trauma that everyone is reminded of when they see a lifted house or a for sale sign.

Positive and Negative Coping

Throughout the recovery process there were instances of both positive and negative coping. Positive coping included looking at the positive, "not sweating the small stuff", and "knowing that you could handle just about anything that comes your way". The majority of the participants displayed positive coping. Families 1, 2, 3, and 6 spoke about being the lucky ones, resiliency and helping others. Families 4 and 5 had more negative coping, which can be defined as dealing with problems in a way which can lead to more harm than good. Negative coping came out of feelings of loneliness, feelings of being unsupported and symptoms of trauma, e.g. avoiding others, substance abuse, avoiding reminders of the trauma, working too much, etc. Families 4 and 5 had members who participated in therapy for PTSD symptoms. Both families stated that this was helpful in minimizing symptoms. However, Rhonda (Family 5) had a difficult time finding an effective therapist. Ultimately hypnosis was found to be the effective treatment. Both of the families who used negative coping had loss and family discord prior to the storm. These findings will be discussed in relation to Bronfenbrenner's ecological model in Chapter 5.

Helpful Interventions

For most participants, the most helpful interventions were (1) immediate aid received from the National Guard and local organization; and (2) money from homeowners and flood insurance. Half of the participants were satisfied with FEMA, the other half stated that FEMA was the least helpful. Those who were satisfied with FEMA had little to no trouble with the process and received their money quickly. Those who did

not speak well of FEMA stated that the process was difficult to impossible and Family 5,

stated that FEMA required that they be put on her mortgage.

Summary

In this study, data were collected from six families in the Long Island area who

were directly impacted by Superstorm Sandy. Interviews were transcribed and coded,

grouped into themes aligned with Bronfenbrenner's Bioecological Theory. Analysis and

interpretation of results was done through narrative analysis.

The results reported in this chapter were distinguished by time period (before,

during, and after the storm) as well as by the systems in Bronfenbrenner's theory.

Commonalities and differences were discussed as each research question was addressed.

The next chapter will provide a discussion of the results along with conclusions and

recommendations for future studies.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this study was to explore the experience of disaster and recovery in families who lived through Superstorm Sandy, through the theoretical lens of Bronfenbrenner's (1994) bio-ecological perspective. I obtained data for this study through interviewing families who were lived in areas affected by the storm. Additionally, pictures and documents of their experience were reviewed during the interview. Interviews were conducted in the home and allowed me the opportunity to see certain parts of the home that were damaged and/or repaired since the storm.

The central research question for this study was, What is the family experience of recovering from a natural disaster over the course of 3 years? Interview questions were framed so that the participants could share their stories about what life was like before, during and after the storm. Subquestions addressed included

RQ1. What are commonalities and differences in family members' experiences?

RQ2. What is the meaning of positive and negative coping within each of the Bronfenbrenner systems?

RQ3. What kinds of interventions were most helpful to the long-term recovery of the family members?

The study sample for this study consisted of six families residing in the south shore of Long Island. I used pseudonyms to protect the confidentiality of the participants. Interview questions were semistructured and open-ended to allow for the obtaining of rich, thick data on the experiences of participants. Questions were organized into

categories of before, during, and recovery after the storm. Recovery questions focused on more specific time frames including immediate, intermediate, and long-term recovery.

Each family had their own unique experiences during the storm and throughout the recovery process. However, there were commonalities across families as well. Table 2 includes comparative information on the amount of storm preparation for each family, the length of time out of the home, and their recovery statuses 3 years post disaster.

Table 2

Comparison of Preparation, Length of Time Out of Home, and Third-Year Recovery Status

	Amount of preparation	Length of time out of home	Recovery status
Family 1	Extensive	6 days	Fully recovered
Family 2	None	7 months	Fully recovered
Family 3	None	6 weeks	Not fully recovered
Family 4	Minimal	Still not home	Not fully recovered
Family 5	Minimal	2 years, 2 months	Not fully recovered
Family 6	Minimal	5 months	Not fully recovered

Interpretation of the Findings

Relevance to Literature

Preparation. Out of the six families, only one family extensively prepared for the storm. Reasons families did little to no preparation were advice from others, experiences from prior storms, or disbelief of the weather forecast. The reasons for not evacuating are consistent with prior research where surveyed participants' decision to evacuate was influenced by their perception of risk of harm or damage to home and their trust of the source of information (Burnside et al., 2007).

During the storm. All participants who did not evacuate recalled when the water came into the home. There was a theme of powerlessness and shock. Participants who were home tried to prevent the water from rushing in by putting objects such as towels and comforters against doors or places where the water was seeping in. Prior research shows that during storm impact, uncertainty and danger can have significant effects on recovery and development of maladaptive symptoms such as re-experiencing and feelings of anxiety (Amstander & Vernon, 2008). For many participants, the moment when the water came rushing in their homes, was their most vivid memory of the storm.

Immediate recovery. Immediate recovery was an arduous process for most. The day after the storm, a feeling of shock was still consistent among most of the participants. Participants described their surroundings such as being in a war zone. Some were in disbelief and shock as they surveyed the destruction, not knowing what exactly to do. Prior disaster research shows that this is the time where support is necessary (Rank, 2010; Rowe et al., 2010) and that there should be a balance of both emotional support and physical support (Pat-Hoerenzyk & Brom, 2007).

Daily routines changed after the storm. For many, there was increased stress because of longer commutes, close living quarters, or having to move from place to place. There was a theme of feeling overwhelmed from the change in daily routines. Current disaster research shows that damage to infrastructure, which may prevent people from getting to work or school, can increase stress (Horner & Widener, 2011; Walker et al., 2010). The damage to infrastructure affected people in different ways. Some participants found it difficult to make decisions. For example, in Family 2, Cassie broke

down when one of the contractors asked her to make a decision about her kitchen. The contractor realized that under normal circumstances, individuals have time to make remodeling decisions. However, he expressed to Cassie that it must have been a difficult task to ask her at the moment. Other participants said they were at a loss regarding how to fill out the necessary documents to receive aid due to lack of information or conflicting information from employees. Prior disaster research is consistent with these emotions and cognitive difficulties such as making decision (Chen et al., 2012, Norris, VanLandingham, & Lung, 2009).

Community support and federal aid was imperative at this time to meet the immediate needs of people. Those with support from families and friends also stated that receiving the support from others was imperative at the time. This is consistent with previous disaster research on immediate recovery (Pat-Hoerenczyk & Brom, 2007).

Another theme during the intermediate recovery was moments that brought hope. These moments were integral in pushing participants through this difficult, and sometimes frustrating time period. These moments often came at a time when a participant was about to give up. For Family 2, Cassie this was when she received money from FEMA in her bank account. For Family 1, Michael and Sue it was at the 60 day mark when the repairs in their house was complete. It was around the holidays and they bought a small Christmas tree to have a sense of normalcy.

Looking at the systems surrounding an individual, some participants spoke about relationships changing during intermediate recovery, both positively and negatively. Those who had increased positive relationships had a support from friends and family

member. Participants who reported their relationships with others changed for the worse spoke about a lack of support from friends and family members as well as pre-existing family discord. This is consistent with research findings that social support is a critical factor in the healing process (Hackerbarth et al., 2012). Support from employers was an ongoing theme. Participants who were working highlighted the importance of their employer support through approval of the time off needed and being empathetic of their circumstances. For Family 4, Cassie, support from her employer was in the form of letting her return back to work. For Cassie this provided her with a sense of normalcy despite not living at home yet.

Themes that emerged when participants spoke about their communities during intermediate recovery were how people were changes in relationships; how people were treating on another, and how only half the residents were back in most communities. Typically after such a large natural disaster, although media coverage is not focused on recovery a year later, communities are still rebuilding (Masten & Obradavoc, 2008).

Long-term recovery. Long-term recovery pertained to the second and third years post Sandy. Four out of the six families were home. The two families who were not home spoke about frustration with assistance as well as difficulties obtaining building permits. For the other families, the length of time they were out of the home was correlated to the extent of damage, help and support from others, availability of financial help/resources, and stressful events. This is consistent with previous research on disaster recovery (Schuh & Santos, 2006, Lowe et al., 2009, & Wiley et al., 2011). The participants with the least amount of damage were families 1 and 6. Family 1 had extensively prepared and

Family 6 lived in an elevated house (the damage was confined to the basement). One commonality in the interviews was that families that worked together as a team or had support from close friends and family also had a shorter recovery period. Family 2, Cassie, lived in a condominium complex. The complex had people starting mold remediation the day after the storm. Family 1 said they work well as a team, which also contributed to the quick recovery. Another theme that was found was that participants who did not have much support, had strained relationships, or did not have the resources for repairs, had the longest recovery time. This is consistent with prior research that shows that the support of family members, community, and government is necessary for recovery (Landau et al., 2008; Vigil & Geary, 2008).

The importance of having consistent, knowledgeable and empathetic workers was highlighted. During the long-term recovery, people who were out of their homes for a while were beginning to tire from their change in routines of change in living environments. Prior disaster research shows that symptoms of maladjustment may arise up to 4 years after a natural disaster if houses were destroyed, if there was an accumulation of disaster experience, or lack of stable housing (Van den Berg, Wong, van der Velden, Boshuizen, & Grievink, 2012; Cherry et al., 2011).

Family 5, Derrick attended therapy because of symptoms of PTSD. There were several compounding factors such as relocation for an extended period of time, loss of his grandmother during recovery, and changes in routine. This is consistent with previous disaster research shows that exposure, displacement, changes or routine and loss of a

family member can lead to maladaptive symptoms (La Greca et al., 1996; Tishelman & Geffner, 2011).

During the long-term recovery of their communities, there was a theme of departure. Additionally some participants spoke about how media portrayed their communities as back to "normal" when in actuality that was not the case. Healthcare providers and businesses were often not fully recovered until two to three years after a large scale storm such as Sandy (Stehling-Ariza, et al., 2012; Corey & Deitch, 2011).

As participants spoke about the present day, they again stated that their communities are not the same. This is consistent with research after a large-scale natural disaster where years later communities are changed, with residents moving away because of closing businesses and unemployment (DeVaney et al. 2009). Additionally, participants said constant reminders of Sandy still remain such as ongoing construction and increased for sale signs. Some participants shared still having an emotional or physical reaction when there is a hurricane forecast. Family 6, Marc, stated that he breaks out into a cold sweat whenever he hears a storm forecast. Family 5, Bonnie, Matthew, & Derrick all practice disaster drills at the request of the children. They continue to be worried that there will be another disaster similar to Superstorm Sandy.

Positive and negative coping. Instances of both positive and negative coping were found in the recovery process. Participants showed positive coping in supporting each other, not focusing on the "little things," looking at the positive, and making the most out of negative situations. Some participants, who were doing well financially prior to the storm, found it easier to deal with waiting for the financial assistance. This is consistent

with findings of a prior study of Hurricane Katrina and Rita in which victims with higher

incomes showed less worry during the recovery process (Trumbo, Lueck, Marlatt, &

Peek, 2011).

Some examples of negative coping included participants who spoke about

symptoms of PTSD, not being able to handle a similar situation again, and thinking about

the storm every day. In families who showed symptoms of PTSD and required

counseling, there were other factors such as prior trauma, the death of a loved one, or

worsening family relationships. This is consistent with previous disaster research in

which studies showed these all increased the likelihood of negative symptoms arising

(Lowe et al., Amstadler & Vernon, 2008, Schuh & Santos, 2006).

Despite some challenges in receiving interventions and aid, participants found

some interventions helpful in the recovery process. These included support from family

members and employers, therapy, and federal aid. Current disaster research shows the

importance of social support during the continuum of the recovery process (Cherry et. al.,

2011). Federal aid was particularly helpful when workers were knowledgeable and

empathetic. State and Federal Aid have been shown to be important in the recovery

process (Johnson & Rainey, 2007) and the support got family members, community and

government are shown to have an effect on resilience (Boon et al., 2012).

Relevance to Conceptual Framework

Bronfenbrenner's model describes environment in terms of five different levels.

The microsystem is the most influential being the closest relationships to the individuals,

and concentric levels (friendships, work, community) are more distal, but still interact

with the microsystem. This framework was a useful framework to organize and analyze

narratives (see Figure 2). When a large-scale disaster occurs, all of the systems in

Bronfenbrenner's model are affected. In order to understand how, it was important to

separate out the systems in order to compare similarities and differences.
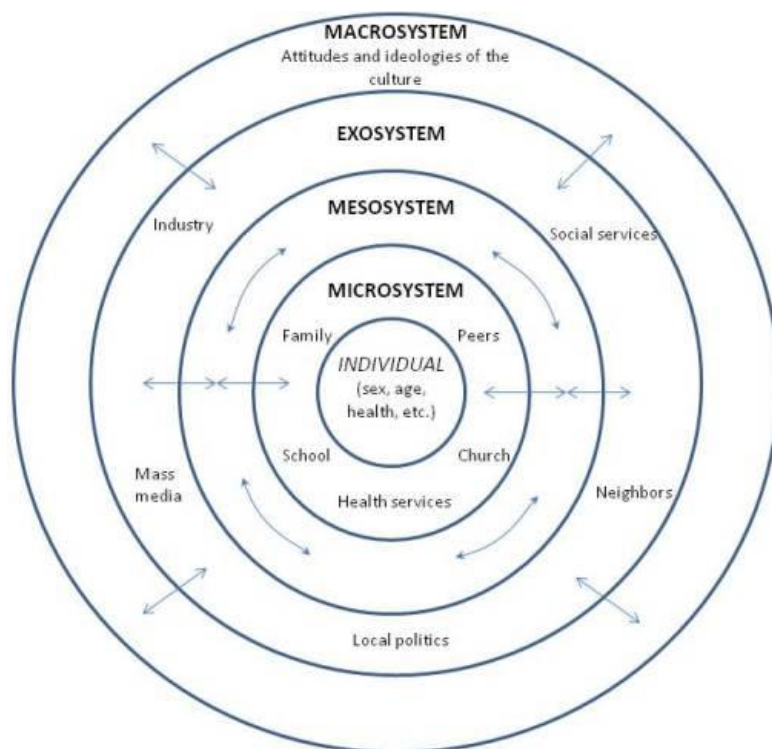
Figure 2. Bronfenbrenner's systems. Republished from

en.wikipedia.org/wiki/Ecological_systems_theory

As shown in Figure 2, themes can be viewed across Bronfenbrenner's model to show how

one system can affect the others.

Starting with before the storm, an individual's prior experiences and advice from

others had a large influence on whether or not they chose to evacuate. Their belief in the

media was another influencing factor. Here you can see both the microsystem and

mesosystem as influential in the decision to evacuate and/or prepare. Another theme during this time period was limited interaction with neighbors. Individuals mainly spoke with people in their micro system because everyone was so busy.

During the landfall of Superstorm Sandy, memories centered around the startling experiences of the individuals and his/her immediate family members (microsystem). Memories included the rushing in of the flood waters or seeing the electric transponders shorting out. There seemed to be an initial sense of shock before some participants started working together to try to move things. Others retreated to the second floors of their homes and waited for morning. One family, Family 4, did not have a second floor and had to go up into the attic. This participant showed later signs of PTSD with the reoccurring memory of the floodwaters rushing in. Many participants looked out of their windows and just saw a sea of water with rooftops.

Recovery was examined in three different stages, immediate, intermediate, and long term. During the immediate recovery, the shock and disbelief was still present for most participants (individual level). Family 1, who extensively prepared, was also knowledgeable about how to quickly clean up and mitigate the damage. There was a sense of loss from possessions. On the microsystem level, family and friends helped other participants as they cleared out their belongings. Family and friends were also important at this time to provide shelter. Communities and infrastructure were devastated at this time. At this time, the Exosystem was influential in providing social services to storm victims.

During the intermediate recovery, changes in daily routines were the result of damaged infrastructure (Microsystem) and had an effect on the stress level of the participants (Individual). Also highlighted was the difficulty and confusion in obtaining aid (Exosystem) which also impacted the participants' recovery and level of stress. Neighbors (Exosystem) started speaking to one another and new relationships formed. Participants (Individual) spoke about the importance of work (Microsystem) being supportive and understanding at this time. Communities were still rebuilding, many participants described their communities looking like a "warzone."

During the long-term recovery, participants who were not home because they were still waiting for repairs (Mesosystem) were getting weary of their daily routines. Close quarters and longer commutes were beginning to take a toll. Those who were experiencing difficulties in receiving aid or building permits described frustrating situations with changes in caseworkers or poorly trained employees (Exosystem). When looking back on the experience, many participants cannot believe they got through it and do not think they would be able to do it again. Some reported that if it does happen again, they would just walk away. Some thought of what they may do differently if such a large-scale storm happened again. In terms of relationships, most participants reported permanent changes in relationships (Microsystem and Mesosystem). Participants reported that although it is not apparent through the news media, the communities effected by Superstorm Sandy will never be the same (Exosystem). For sale signs are increasing as residents leave these communities. Some participants feel that their communities will never be the same.

Recommendations for Practice and Policy

Prior research shows the importance of short term and long-term interventions after a large-scale natural disaster (Pfefferbaum, et. al., 2010). More recent research indicates the need to for targeted social support in multiple systems. The Linking Human Systems Approach (Laundau et. al., 2008) is an intervention which links a survivor to people who can provide support, in all of Bronfenbrenner's system levels. Cagney, Sterrett, Benz, & Tompson (2016) interviewed 1009 residents in 12 neighborhoods in New York and New Jersey after Storm Sandy. Results showed that social connectedness impacted perceptions of preparedness and confidence in resiliency. The authors suggested opportunities for social engagement in communities during non-disaster time periods. Forming disaster preparedness groups in disaster prone areas can do this.

By examining the experiences of participants during the long-term recovery of Superstorm Sandy, results revealed themes that can help guide interventions when working with survivors of a large-scale natural disaster, adding to the existing literature on disaster recovery. Therapeutic interventions that focus in instilling hope may be beneficial. A common theme among participants, at various times, was a sense of helplessness and shock. During these times, moments of hope helped to pull them through trying times. Providers can help survivors to look for tangible things and moments that can offer them a sense of hope.

Another focus of therapeutic interventions can be relationships. A common theme among participants was changing relationships whether positive or negative. Social support was also a factor that participants found necessary during recovery. Therapists

should be attuned to support shifts and changes, as well as the discontinuity of relationships and how these may impact individuals.

Limitations of the Study

Member checking and confirmability were used to ensure trustworthiness. In order to ensure dependability, or the consistency of findings, I piloted the questions with a family and used multiple data collection methods. Every effort was made to ensure that participants were authentic in their narrative. The data analysis process was documented in a notebook and I went through all interviews multiple times during the coding process. A journal was used to process feelings and thoughts throughout the research study.

This study was specific to Long Island, New York and specific to Superstorm Sandy. Every effort was made so that a distinction could be made between researcher and participant. Each step has been explained to be transparent and to ensure transferability.

One limitation to this study was the small sample size. As a result, there is a potential lack of generalizability. Another limitation to this study may be that since interviews were held years after the event, participants may not have been able to remember some details. In one of the families the father was not present. Future research studies should make every effort to make sure family members are present.

Recommendations

The results of this study suggest that the well-being and coping of families who go through natural disasters was first dependent on attention to forecasts and warnings, and good disaster preparation. The participants who heeded warnings, prepared, and evacuated significantly mitigated damage and reduced the length of time out of their

homes. However, this research also revealed insights regarding people who chose not to get ready, i.e., as the result of past experiences with storms or the advice from others. It is suggested that future research examine the interpersonal and intrapersonal (i.e., individual differences) that shape how residents respond to impending warnings, to improve warning efficacy, and better engage individuals in more pro-active preparation.

Implications

I examined the experiences of families before, during, and after a large-scale natural disaster, organized by the multiple levels of Bronfenbrenner's model. Results can be used to instill social change in helping agencies and mental health agencies to target interventions that address the common themes that emerged during the long-term recovery process. This includes the importance of helping survivors to find hope, the acknowledgement of the fluid dynamics of relationships and systems, and to increase awareness of the importance of disaster preparation. By targeting interventions, this may shorten treatment time. Additionally, by raising the awareness of disaster preparedness, this may decrease damage and loss.

Conclusion

Results of this study responded to the research questions with depth and implications for future research and application. RQ1 clearly demonstrated that the one family who was thoughtful in their preparation for the storm had less damage and shorter recovery but you cannot say that this was a causal relationship for this one family nor can the observation be generalized beyond the study. Recovery was complex and arduous for most, regardless of preparation. One common thread among all participants, in the

intermediate recovery stage, was the importance of hope. During the intermediate stage, the changes of previous routines and the stressors of living with others are usually taking a significant toll on disaster survivors. These moments of hope often occurred when participants needed it the most, after moments of despair or setbacks. Throughout recovery, another common thread among participants was the changing of various relationships.

RQ2 examined positive and negative coping throughout recovery. Participants who felt supported and did not "focus on the little things" showed positive coping. Those who had prior trauma or had pre-existing family discord displayed negative coping, including symptoms of PTSD.

Results of RQ3 showed that although there was frustration in finding resources, obtaining permits, and waiting for state and federal aid, participants did find some interventions helpful. Helpful interventions included workers who were knowledgeable and empathic, therapy, and support from others.

In this study, changing of relationships can be seen across various systems and stages of the recovery process and often had an impact on healthy recovery. Those who had an increase in the quality of relationships, or had support from others showed positive coping. Participants who did not receive support from others, or who had a decrease in relationships showed negative coping.

Participants experienced a slow down in assistance, as well the relocation of programs as time went on. Communities were also changed permanently and served as

physical reminders of the storm, years later.. For those who displayed symptoms of PTSD, this may cause re-traumatization.

Throughout the recovery process positive and negative coping emerged. Those with negative coping also had a longer recovery period. However, one cannot conclude if the longer recovery caused negative coping or vice versa. The two participants who displayed symptoms of PTSD showed prior family discord and/or loss.

Immediately after the storm, some participants were in a state of shock, which made it difficult for some to access necessary resources. The most helpful interventions came from those who were empathetic and knowledgeable. During the intermediate recovery, participants described frustration with inconsistent workers and programs, as well as with red tape in getting information and aide. Other helpful interventions for those who showed maladaptive symptoms included therapy and hypnosis.

This present study may add to the existing body of literature on long-term recovery after a natural disaster. It supported existing research that long-term recovery is complex, not only on an individual level, but also in the existing systems surrounding an individual. Results of this study also showed the importance of interventions that focus on hope and with the understanding that relationships an individual has within Bronfenbrenner's systems are dynamically changing during long-term post disaster recovery. Based on the findings of this study, it is useful to understand people's narratives by conceptualizing their experiences by time. Bronfenbrenner's frameworks should be used in understanding how to work with survivors of large-scale natural disasters.

References

Ahlström, B. H., Skärsäter, I., & Danielson, E. (2009). Living with major depression: Experiences from families' perspectives. *Scandinavian Journal of Caring Sciences, 23*(2), 309-316. doi:10.1111/j.1471-6712.2008.00624.x

Amstadter, A., & Vernon, L. (2008). A preliminary examination of thought suppression, emotion regulation, and coping in a trauma-exposed sample. *Journal of Aggression, Maltreatment, & Trauma*, *17*(3), 279-295. doi:10.1080/10926770802403236

Apivatanagul, P., Davidson, R., & Nozick, L. (2012). Bi-level optimization for risk-based regional hurricane evacuation planning. *Natural Hazards*, *60*(2), 567-588. doi:10.1007/s11069-011-0029-9

Asbury, J. (2017) Long Beach, N.Y. is 'Stronger, Smarter, Safer' after Sandy, officials say. *New York Newsday.* Retrieved from http://www.govtech.com/em/disaster/Long-Beach-NY-Is-Stronger-Smarter-Safer-After-Sandy-Officials-Say.html

Atzaba-Poria, N., Pike, A., & Deater-Deckard, K. (2004). Do risk factors for problem behavior act in a cumulative manner? An examination of ethnic minority and majority children through an ecological perspective. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *45*(4), 707-718. doi: https://doi.org/10.1111/j.1469-7610.2004.00265.x

Baade, R. A., Baumann, R., & Matheson, V. (2007). Estimating the economic impact of natural and social disasters, with an application to Hurricane Katrina. *Urban*

Studies, *44*(11), 2061-2076. doi:10.1080/00420980701518917

Baggerly, J., & Ferretti, L. K. (2008). The impact of the 2004 hurricanes on Florida

Comprehensive Assessment Test Scores: Implications for school counselors.

Professional School Counseling, *12*(1), 1-9. doi: 10.5330/PSC.n.2010-12.1

Bave, S., Coffey, E., Weingarten, K., & Becker, C. (2010). Lessons in collaboration, four

years post-Katrina. *Family Process*, *49*(4), 543-558. doi:10.1111/j.1545-

5300.2010.01339.x

Beggan, D. M. (2010). The impact of Hurricane Rita on an academic institution: Lessons

learned. *Disasters*, *34*(1), 93-111. doi:10.1111/j.1467-7717.2009.01116.x

Bender, W. N., & Sims, R. (2007). Katrina kids! Helping kids exposed to population-

wide trauma. *TEACHING Exceptional Children*, *40*(1), 40-47. Online ISSN:

2163-5684

Ben-Ezra, M. (2011). Traumatic reactions from antiquity to the 16th century: Was there a

common denominator? *Stress & Health: Journal of the International Society for

the Investigation of Stress*, *27*(3), 223-240. doi:10.1002/smi.1338

Bergin, M. (2011). NVivo 8 and consistency in data analysis: Reflecting on the use of a

qualitative data analysis program. *Nurse Researcher, 18*(3), 6-12. doi:

10.7748/nr2011.04.18.3.6.c8457

Bjarnadottir, S., Li, Y., & Stewart, M. (2011). Social vulnerability index for coastal

communities at risk to hurricane hazard and a changing climate. *Natural Hazards*,

59(2), 1055-1075. doi:10.1007/s11069-011-9817-5

Boon, H., Cottrell, A., King, D., Stevenson, R., & Millar, J. (2012). Bronfenbrenner's

bioecological theory for modeling community resilience to natural disasters. *Natural Hazards*, *60*(2), 381-408. doi:10.1007/s11069-011-0021-4

Bradley, R. H. (2010). From home to day care: Chaos in the family/child-care mesosystem. *Chaos and its influence on children's development: An ecological perspective* (pp. 135-153). American Psychological Association. doi:10.1037/12057-009

Bronfenbrenner, U. (1970). Some reflections on 'Antecedents of optimal psychological adjustment. *Journal of Consulting and Clinical Psychology*, *35*(3), 296-297. doi:10.1037/h0030089

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, *32*(7), 513-531. doi:10.1037/0003-066X.32.7.513

Bronfenbrenner, U. (1979). Contexts of child rearing: Problems and prospects. *American Psychologist*, *34*(10), 844-850. doi:10.1037/0003-066X.34.10.844

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology*, *22*(6), 723-742. doi:10.1037/0012-1649.22.6.723

Bronfenbrenner, U. (1999). Environments in developmental perspective: Theoretical and operational models. In S. L. Friedman, T. D. Wachs (Eds.) , *Measuring environment across the life span: Emerging methods and concepts* (pp. 3-28). Washington, DC US: American Psychological Association. doi:10.1037/10317-001

Bronfenbrenner, U., & Ceci, S. J. (1994). Commentary on Plomin, R. (1994): Towards a more developmental behavioral genetics. *Social Development*, *3*(1), 64-65. doi:10.1111/j.1467-9507.1994.tb00025.x

Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nuture reconceptualized in developmental perspective: A bioecological model. *Psychological Review*, *101*(4), 568-586. doi:10.1037/0033-295X.101.4.568

Bronfenbrenner, U., & Evans, G. W. (2000). Developmental science in the 21st century: Emerging questions, theoretical models, research designs and empirical findings. *Social Development*, *9*(1), 115-125. doi:10.1111/1467-9507.00114

Burnside, R., Miller, D., & Rivera, J. D. (2007). The impact of information and risk perception on the hurricane evacuation decision-making of the greater New Orleans residents. *Sociological Spectrum*, *27*(6), 727-740. doi:10.1080/02732170701534226

Burton, C. G. (2010). Social vulnerability and hurricane impact modeling. *Natural Hazards Review*, *11*(2), 58-68. doi:10.1061/(ASCE)1527-6988(2010)11:2(58)

Cao, X., Jiang, X., Li, X., Hui Lo, M., & Li, R. (2013). Family functioning and its predictors among disaster bereaved individuals in China: Eighteen months after the Wenchuan Earthquake. *Plos ONE*, *8*(4), 1-8. doi:10.1371/journal.pone.0060738

Carroll, J. C. (1977). The intergenerational transmission of family violence: The long-term effects of aggressive behavior. *Aggressive Behavior*, *3*(3), 289-299. doi:10.1002/1098-2337(1977)3:3<289::AID-AB2480030310>3.0.CO;2-O

Catani, C., Gewirtz, A. H., Wieling, E., Schauer, E., Elbert, T., & Neuner, F. (2010). Tsunami, war, and cumulative risk in the lives of Sri Lankans schoolchildren. *Child Development*, *81*(4), 1176-1191. doi:10.1111/j.1467-8624.2010.01461.x

Ceci, S. J. (2006). Urie Bronfenbrenner (1917-2005). *American Psychologist*, *61*(2), 173-174. doi:10.1037/0003-066X.61.2.173

Cerda, M., Vlahov, D., Tracy, M., & Galea, S. (2008). Alcohol use trajectories among adults in an urban area after a disaster: evidence from a population-based cohort study. *Addiction*, *103*(8), 1296-1307. doi:10.1111/j.1360-0443.2008.02247.x

Chen, W., Wang, L., Zhang, X., & Shi, J. (2012). Understanding the impact of trauma exposure on posttraumatic stress symptomatology: A structural equation modeling Approach. *Journal Of Loss & Trauma*, *17*(1), 98-110. doi:10.1080/15325024.2011.595293

Cherry, K. E., Brown, J., Marks, L. D., Galea, S., Volaufova, J., Lefante, C., & Jazwinski, S. (2011). Longitudinal assessment of cognitive and psychosocial functioning after hurricanes Katrina and Rita: Exploring disaster impact on middle-aged, older, and oldest-old Adults. *Journal of Applied Biobehavioral Research*, *16*(3/4), 187-211. doi:10.1111/j.1751-9861.2011.00073.x

Cohen, J. A., Jaycox, L. H., Walker, D. W., Mannarino, A. P., Langley, A. K., & DuClos, J. L. (2009). Treating traumatized children after hurricane Katrina: Project Fleur-de Lis. *Clinical Child and Family Psychology Review*, *12*(1), 55-64. doi: http://dx.doi.org/10.1007%2Fs10567-009-0039-2

Cook-Cottone, C. (2004). Childhood posttraumatic stress disorder: Diagnosis, treatment, and school reintegration. *School Psychology Review*, *33*(1), 127-139. ISSN: 0279-6015

Corey, C. M., & Deitch, E. A. (2011). Factors affecting business recovery immediately after hurricane Katrina. *Journal of Contingencies & Crisis Management*, *19*(3), 169-181. doi:10.1111/j.1468-5973.2011.00642.x

Cutter, S. L., & Smith, M. M. (2009). Fleeing from the hurricane's wrath: Evacuation and the two Americas. *Environment*, *51*(2), 26-36. doi: https://doi.org/10.3200/ENVT.51.2.26-36

Darling, N. (2007). Ecological systems theory: The person in the center of the circles. *Research in Human Development*, *4*(3-4), 203-217. doi:10.1080/15427600701663023

Darling, N. (2007). Ecological systems theory: The person in the center of the circles. *Research in Human Development*, *4*(3/4), 203-217. doi:10.1080/15427600701663023

de Oliveira, E. A., Barros, F. C., da Silva Anselmi, L. D., & Piccinini, C. A. (2006). The quality of home environment in Brazil: An ecological model. *Journal of Child and Family Studies*, *15*(5), 633-644. doi:10.1007/s10826-006-9063-8

Deering, C. (2000). A cognitive developmental approach to understanding how children cope with disasters. *Journal of Child & Adolescent Psychiatric Nursing*, *13*(1), 7-16.

Devaney, E. (2008). Hurricane preparedness: Planning and procedures at Blue Cross Blue

Shield of Florida. *Journal of Business Continuity & Emergency Planning*, *2*(2), 128-137.

DeVaney, T. A., Carr, S. C., & Allen, D. D. (2009). Impact of hurricane Katrina on the educational system in southeast Louisiana: One-year follow-up. *Research in the schools*, *16*(1), 32-44. ISSN-1085-5300

Dogan-Ates, A. (2010). Developmental differences in children's and adolescents' post-disaster reactions. *Issues in Mental Health Nursing*, *31*(7), 470-476. doi:10.3109/01612840903582528

Dorn, T., Yzermans, J. C., Spreeuwenberg, P. M., Schilder, A., & Zee, J. (2008). A cohort study of the long-term impact of a fire disaster on the physical and mental health of adolescents. *Journal Of Traumatic Stress*, *21*(2), 239-242. doi:10.1002/jts.20328

Dowdy, Z. & Dooley, E. (2015). Three years after Sandy, rough road to recovery. *New York Newsday*. Retrieved from http//newsday.com.

Eamon, M. (2001). The effects of poverty on children's socio-emotional development: An ecological systems analysis. *Social Work*, *46*(3), 256-66. doi:10.1093/sw/46.3.256

Eggenberger, S. K., & Nelms, T. P. (2007). Being family: The family experience when an adult member is hospitalized with a critical illness. *Journal of Clinical Nursing, 16*(9), 1618-1628. doi: https://doi.org/10.1111/j.1365-2702.2007.01659.x

Engel, C. (2012). Retailers trying to assess Sandy's damage. *Furniture Today*, *37*(9), 1-10.

Evans, J. L., Fuentes, J. D., Xiao-Ming, H., & Hamilton, H. (2011). Earth-atmosphere interactions: Tropical storm and hurricane activity in the Caribbean and consequent health impacts. *Journal of Race & Policy*, *7*(1), 53-74.

Evans, L., & Oehler-Stinnett, J. (2008). Validity of the OSU Post-Traumatic Stress Disorder Scale and the Behavior Assessment System for Children Self-Report of Personality with child tornado survivors. *Psychology in The Schools*, *45*(2), 121-131. doi: http://dx.doi.org/10.1002/pits.20285

Fenichel, E. (2002). Relationships at risk: the policy environment as a context for infant development. *Infants & Young Children: An Interdisciplinary Journal Of Special Care Practices*, *15*(2), 49-56.

Fox, M. H., White, G. W., Rooney, C., & Cahill, A. (2010). The psychosocial impact of Hurricane Katrina on persons with disabilities and independent living center staff living on the American Gulf Coast. *Rehabilitation Psychology*, *55*(3), 231-240. doi:10.1037/a0020321

Furr, J. M., Comer, J. S., Edmunds, J. M., & Kendall, P. C. (2010). Disasters and youth: A meta-analytic examination of posttraumatic stress. *Journal of Consulting And Clinical Psychology*, *78*(6), 765-780. doi:10.1037/a0021482

Gardner, T. M., Irwin, A., & Peterson, C. W. (2009). No shelter from the storm: Reclaiming the right to housing and protecting the health of vulnerable communities in post- Katrina New Orleans. *Health & Human Rights: An International Journal*, *11*(2), 101-114.

Gelbach, R. A. (2008). Trauma, research, and EMDR: A disaster responder's wish

list. *Journal of EMDR Practice & Research*, *2*(2), 146-155. doi:10.1891/1933-3196.2.2.146

Greenberger, E. E., & O'Neil, R. R. (1992). Maternal employment and perceptions of young children: Bronfenbrenner et al. revisited. *Child Development*, *63*(2), 431. doi:10.1111/1467-8624.ep9207061022

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? *An experiment with data saturation and variability. Field Methods, 18,* 59-82. doi: https://doi.org/10.1177/1525822X05279903

Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Resources Information Center Annual Review Paper, 29*, 75-91. doi: 10.1007/BF02766777

Guenette, F. & Marshall, A. (2009). Time line drawings: Enhancing participant voice in narrative interviews on sensitive topics. *International Journal of Qualitative Methods, 8*(1), 85-92.

Hackbarth, M., Pavkov, T., Wetchler, J., & Flannery, M. (2012). Natural disasters: An assessment of family resiliency following Hurricane Katrina. *Journal of Marital and Family Therapy*, *38*(2), 340-351. doi:10.1111/j.1752-0606.2011.00227.x

Hafstad, G. S., Haavind, H., & Jensen, T. K. (2012). Parenting after a natural disaster: A qualitative study of Norwegian families surviving the 2004 Tsunami in Southeast Asia. *Journal of Child and Family Studies*, *21*(2), 293-302. doi: 10.1007/s10826-011-9474-z

Harden, K., Turkheimer, E., & Loehlin, J. C. (2007). Genotype by environment

interaction in adolescents' cognitive aptitude. *Behavior Genetics*, *37*(2), 273-283. doi:10.1007/s10519-006-9113-4

Harney, P. (2007). Resilience processes in context: Contributions and implications of Bronfenbrenner's person-process-context model. *Journal of Aggression, Maltreatment & Trauma*, *14*(3), 73-87. doi:10.1300/J146v14n03_05

Harrell-Carter, A., & Lambert, J. T. (2012). Environmental jolt of hurricanes Katrina and Rita: The realignment and transformation of the Louisiana senior assisted living industry. *Business Studies Journal*, *4*(2), 55-75. ISSN 1944-6578 O

Hartman, S. J., & Mahesh, S. (2008). Response to disaster: A two-year examination of student writings following the hurricane Katrina and Rita disasters. *Academy of Strategic Management Journal*, *7*(2), 87-98.

Hayden, C. & Hoffman, P. C. (2013) Cracking the Code: Using personal narratives in Research. Journal of Cognition and Development, 14(3), 361–375. doi: 10.1080/15248372.2013.805135

Hebert, B. B., & Ballard, M. B. (2007). Children and trauma: A post-Katrina and Rita Response. *Professional School Counseling*, *11*(2), 140-144. ISSN-1096-2409

Hilarski, C. (2005). Exploring predictive factors for substance use in African American and Hispanic youth using an ecological approach. *Journal of Social Service Research*, *32*(1), 65-86. doi:10.1300/J079v32n01_05

Hochbaum, C. (2011). Exploring the ecological correlates of family functioning. *Conference Papers -- American Sociological Association*, 1798.

Hong, J., Algood, C. L., Chiu, Y., & Lee, S. (2011). An ecological understanding of

kinship foster care in the United States. *Journal of Child and Family Studies*, *20*(6), 863-872. doi:10.1007/s10826-011-9454-3

Horner, M., & Widener, M. (2011). The effects of transportation network failure on people's accessibility to hurricane disaster relief goods: a modeling approach and application to a Florida case study. *Natural Hazards*, *59*(3), 1619-1634. doi:10.1007/s11069-011-9855-z

Gilfillan, B. (2013) HUD allocated first round of hurricane Sandy relief funds. (2013). *Journal of Housing & Community Development*, *70*(2), 18.

Hunt, M., Al-Awadi, H., & Johnson, M. (2008). Psychological sequelae of pet loss following hurricane Katrina. *Anthrozoos*, *21*(2), 109-121. doi:10.2752/175303708X305765

Jenkins, P., Laska, S., & Williamson, G. (2007). Connecting future evacuation to current recovery: Saving the lives of older people in the next catastrophe. *Generations*, *31*(4), 49-52.

JetBlue turns Hurricane Sandy trauma into playgrounds. (2013). *Airline Industry Information (M2)*,

John, C. (n.d). FEMA releases extra $84.7M for Long Island. *Long Island Business News (Ronkonkoma, NY)*,

John, C. (n.d). Long Island adds 8,800 jobs in December. *Long Island Business News (Ronkonkoma, NY)*,

John, C. (n.d). Nassau County creates 100 temp jobs for Hurricane Sandy victims. *Long Island Business News (Ronkonkoma, NY)*,

Jonathan, L. (n.d). Billy Crystal starring in Long Beach tourism ads. *Long Island Business News (Ronkonkoma, NY)*,

Jones, R. T., & Ollendick, T. H. (2005). Risk factors for psychological adjustment following residential fire: The role of avoidant coping. *Journal of Trauma & Dissociation*, *6*(2), 85-99. doi:10.1300/J229v06n02̲08

Joseph, N. T., Matthews, K. A., & Myers, H. F. (2013). Conceptualizing health consequences of Hurricane Katrina from the perspective of socioeconomic status decline. *Health Psychology*, doi:10.1037/a0031661

Kamps, J. L. (2008). Reflections on hurricane Katrina and its impact: One psychologist's experience. *Professional Psychology: Research and Practice*, *39*(1), 7-11. doi:10.1037/0735-7028.39.1.7

Kean, S. (2010). Children and young people's strategies to access information during a family member's critical illness. *Journal of Clinical Nursing, 19*(1-2), 266-274. doi: https://doi.org/10.1111/j.1365-2702.2009.02837.x

Kessler, R. C., Galea, S., Jones, R. T., & Parker, H. A. (2006). Mental illness and suicidality after hurricane Katrina. *Bulletin of The World Health Organization*, *84*(11), 1-21. doi:10.2471/BLT.06.033019

Kirby, P. (2013). New York Officials Complain About Carrier Response to Hurricane Sandy. *Telecommunications Reports*, *79*(4), 3-6.

Kuipers, P., Doig, E., Kendall, M., Turner, B., Mitchell, M., & Fleming, J. (2014). Hope: A further dimension for engaging family members of people with ABI. *Neurorehabilitation, 35*(3), 475-480. doi: https://doi.org/10.3233/NRE-

141139

Knack, Jennifer M.; Chen, Zhansheng; Williams, Kipling D.; Jensen-Campbell, Lauri A. Analyses of Social Issues & Public Policy. Dec2006, Vol. 6 Issue 1, p175-189. 15p. DOI: 10.1111/j.1530-2415.2006.00116.x.

Knight, M. (2013, March). Communicating in a crisis. *Business Communication Quarterly*. pp. 3-4. doi:10.1177/1080569913478583.

Knowlton, K., Rotkin-Ellman, M., & Sheffield, P. (2013). Post-Sandy preparedness policies lag as sea levels rise. *Environmental Health Perspectives*, *121*(7), A208. doi:10.1289/ehp.1307095

Kotozaki, Y., & Kawashima, R. (2012). Effects of the Higashi-Nihon Earthquake: Posttraumatic stress, psychological changes, and cortisol levels of survivors. *Plos ONE*, *7*(4), 1-6. doi:10.1371/journal.pone.0034612

Kraemer, B., Wittmann, L., Jenewein, J., & Schnyder, U. (2009). 2004 tsunami: Long-term psychological consequences for Swiss tourists in the area at the time of the disaster. *Australian & New Zealand Journal Of Psychiatry*, *43*(5), 420-425. doi:10.1080/00048670902817653

Kronenberg, M. E., Hansel, T., Brennan, A. M., Osofsky, H. J., Osofsky, J. D., & Lawrason, B. (2010). Children of Katrina: Lessons learned about post-disaster symptoms and recovery patterns. *Child Development*, *81*(4), 1241-1259. doi: 10.1111/j.1467-8624.2010.01465.x

Kulik, L., & Rayyan, F. (2006). Relationships between dual-earner spouses, strategies for coping with home-work demands and emotional well-being: Jewish and Arab-

Muslim women in Israel. *Community, Work & Family*,*9*(4), 457-477. doi:10.1080/13668800600925100

Kumar, M., Murhekar, M. V., Hutin, Y., Subramanian, T., Ramachandran, V., & Gupte, M. D. (2007). Prevalence of posttraumatic stress disorder in a coastal fishing village in Tamil Nadu, India, After the December 2004 Tsunami. *American Journal of Public Health*, *97*(1), 99-101. doi:10.2105/AJPH.2005.071167

La Greca, A. M., Silverman, W. K., Lai, B., & Jaccard, J. (2010). Hurricane-related exposure experiences and stressors, other life events, and social support: Concurrent and prospective impact on children's persistent posttraumatic stress symptoms. *Journal of Consulting and Clinical Psychology*, *78*(6), 794-805. doi:10.1037/a0020775

La Greca, A. M., Silverman, W. K., Vernberg, E. M., & Prinstein, M. J. (1996). Symptoms of posttraumatic stress in children after Hurricane Andrew: A prospective study. *Journal Of Consulting and Clinical Psychology*,*64*(4), 712-723. doi:10.1037/0022-006X.64.4.712

Lai, B. S., La Greca, A. M., & Llabre, M. M. (2013). Children's sedentary activity after hurricane exposure. *Psychological Trauma: Theory, Research, Practice, And Policy*, doi:10.1037/a0033331

Landau, J., Mittal, M., & Wieling, E. (2008). Linking human systems: Strengthening individuals, families, and communities in the wake of mass trauma. *Journal of Marital & Family Therapy*, *34*(2), 193-209. doi:10.1111/j.1752-0606.2008.00064.x

Leitner, M., Barnett, M., Kent, J., & Barnett, T. (2011). The impact of hurricane Katrina on reported crimes in Louisiana: A spatial and temporal analysis. *Professional Geographer*, *63*(2), 244-261. doi:10.1080/00330124.2010.547156

LIBN, S. (n.d). Long Island Business News Poll: 6 months after Sandy. *Long Island Business News (Ronkonkoma, NY)*,

Lowe, S. R., Rhodes, J. E., Zwiebach, L., & Chan, C. S. (2009). The impact of pet loss on the perceived social support and psychological distress of hurricane survivors. *Journal of Traumatic Stress*, *22*(3), 244-247. doi: https://doi.org/10.1002/jts.20403

Lustig, S. L. (2010). An ecological framework for the refugee experience: What is the impact on child development? In G. W. Evans, T. D. Wachs (Eds.). *Chaos and its influence on children's development: An ecological perspective* (pp. 239-251). Washington, DC US: American Psychological Association. doi:10.1037/12057-015

Masten, A. S., & Osofsky, J. D. (2010). Disasters and their impact on child development: Introduction to the special section. *Child Development*, *81*(4), 1029-1039. doi:10.1111/j.1467-8624.2010.01452.x

Maxwell, L. A. (2012). Post-Sandy, Schools Claw Back. *Education Week*, *32*(12), 1,.

McDermott, B.M., & Cobham, V. E. (2012). Family functioning in the aftermath of a natural disaster. (2012). *BMC Psychiatry*, *12*(1), 55-61. doi:10.1186/1471-244X-12-55. doi: 10.1186/1471-244X-12-55

McDermott, B. M., Lee, E. M., Judd, M., & Gibbon, P. (2005). Posttraumatic stress

disorder and general psychopathology in children and adolescents following a

wildfire disaster. *Canadian Journal Of Psychiatry*, *50*(3), 137-143. doi:

https://doi.org/10.1177/070674370505000302

McDermott, B., & Palmer, L. (2002). Postdisaster emotional distress, depression and

event-related variables: Findings across child and adolescent developmental

stages. *Australian & New Zealand Journal of Psychiatry*, *36*(6), 754-761. doi:

https://doi.org/10.1046/j.1440-1614.2002.01090.x

Mendenhall, T. J., & Berge, J. M. (2010). Family therapists in trauma-response teams:

bringing systems thinking into interdisciplinary fieldwork. *Journal of Family

Therapy*, *32*(1), 43-57. doi:10.1111/j.1467-6427.2009.00482.x

Miller, P. A., Roberts, N. A., Zamora, A. D., Weber, D. J., Burleson, M. H., Robles, E., et

al. (2012). Families coping with natural disasters: Lessons from wildfires and

tornados. *Qualitative Research in Psychology, 9*(4), 314-336. doi:

https://doi.org/10.1080/14780887.2010.500358

Newbury, J. (2011). Situational analysis: Centerless systems and human service

practices. *Child & Youth Services*, *32*(2), 88-107.

doi:10.1080/0145935X.2011.581953

Nimitz, A. (2006). Natural versus social phenomena: Cuba and the lessons of

Katrina. *Black Scholar*, *36*(4), 43-51. doi:

https://doi.org/10.1080/00064246.2006.11413369

Norris, F. H., Sherrieb, K., & Galea, S. (2010). Prevalence and consequences of disaster-

related illness and injury from hurricane Ike. *Rehabilitation Psychology*, *55*(3),

221-230. doi:10.1037/a0020195

Norris, F. H., VanLandingham, M. J., & Lung, V. (2009). PTSD in Vietnamese

Americans following Hurricane Katrina: Prevalence, patterns, and

predictors. *Journal of Traumatic Stress*, *22*(2), 91-101. doi:10.1002/jts.20389

North, C. S. (2005). The Oklahoma City bombing study and methodological issues in

longitudinal disaster mental health research. *Journal of Trauma &*

Dissociation, *6*(2), 27-35. doi:10.1300/J229v06n0204

Notes from the field: carbon monoxide exposures reported to poison centers and related

to hurricane Sandy - Northeastern United States, 2012. (2012). *MMWR. Morbidity*

And Mortality Weekly Report, *61*(44), 905.

Nuttman-Shwartz, O., Huss, E., & Altman, A. (2010). The experience of forced

relocation as expressed in children's drawings. *Clinical Social Work*

Journal, *38*(4), 397-407. doi:10.1007/s10615-010-0288-z

Nygaard, E., Jensen, T. K., & Dyb, G. (2010). Posttraumatic stress reactions in siblings

after mutual disaster: Relevance of family factors. *Journal of Traumatic*

Stress, *23*(2), 278-281. doi:10.1002/jts.20511

Ohta, Y., Araki, K., Kawasaki, N., Nakane, Y., Honda, S., & Mine, M. (2003).

Psychological distress among evacuees of a volcanic eruption in Japan: A follow-

up study. *Psychiatry & Clinical Neurosciences*, *57*(1), 105-111.

doi:10.1046/j.1440-1819.2003.01086.x

Ohta, Y., Ken-Ichi, A., Kawasaki, N., Nakane, Y., Honda, S., & Mine, M. (1998).

Psychological trauma and longitudinal course of psychiatric problems among

evacuees of a volcanic eruption. *Psychiatry & Clinical Neurosciences*, *52*S41-S48. doi:10.1046/j.1440-1819.1998.0520s1S41.x

Oncu, E., & Wise, A. (2010). The effects of the 1999 Turkish earthquake on young children: Analyzing traumatized children's completion of short stories. *Child Development*, *81*(4), 1161-1175. doi: https://doi.org/10.1111/j.1467-8624.2010.01460.x

Onwuegbuzie, A., Collins, K., & Frels, R. (2013). Foreword: Using Bronfenbrenner's ecological systems theory to frame quantitative, qualitative, and mixed research. *International Journal of Multiple Research Approaches*, *7*(1), 2-8. doi:10.5172/mra.2013.7.1.2

Onwuegbuzie, A., Leech, N. L., & Collins, K. (2010). Innovative data collection strategies in qualitative research. *The Qualitative Report, 15*(3), 696-726. Retrieved from h p://nsuworks.nova.edu/tqr/vol15/iss3/12

Overstreet, S., Salloum, A., Burch, B., & West, J. (2011). Challenges associated with childhood exposure to severe natural disasters: Research review and clinical implications. *Journal Of Child & Adolescent Trauma*, *4*(1), 52-68. doi:10.1080/19361521.2011.545103

Palaseanu-Lovejoy, M., Kranenburg, C., Barras, J. A., & Brock, J. C. (2013). Land loss due to recent hurricanes in coastal Louisiana, U.S.A. *Journal of Coastal Research*, 97-109. doi:10.2112/SI63-009.1

Parry, W. & Lemire, J. (October 30, 2014) New York, New Jersey Look Back 2 Years After Sandy. *Washington Times, The (DC)*.

Pat-Horenczyk, R., & Brom, D. (2007). The multiple faces of post-traumatic

growth. *Applied Psychology: An International Review*, *56*(3), 379-385.

doi:10.1111/j.1464-0597.2007.00297.x

Pfefferbaum, B., Houston, J., Reyes, G., Steinberg, A. M., Pynoos, R. S., Fairbank, J. A.,

& Maida, C. A. (2010). Building national capacity for child and family disaster

mental health research. *Professional Psychology: Research and Practice*, *41*(1),

26-33. doi:10.1037/a0017056

Pfefferbaum, B., Houston, J., Wyche, K., Van Horn, R. L., Reyes, G., Jeon-Slaughter, H.,

& North, C. S. (2008). Children displaced by Hurricane Katrina: A focus group

study. *Journal of Loss & Trauma*, *13*(4), 303-318.

doi:10.1080/15325020701741989

Pfefferbaum, B., Pfefferbaum, R. L., & Norris, F. H. (2010). Community resilience and

wellness for the children exposed to Hurricane Katrina. In R. P. Kilmer, V. Gil-

Rivas, R. G. Tedeschi, L. G. Calhoun (Eds.) , *Helping families and communities

recover from disaster: Lessons learned from hurricane Katrina and its

aftermath* (pp. 265-285). Washington, DC US: American Psychological

Association. doi:10.1037/12054-011

Phoenix, A. & Brannen, J. (2014). Researching family practices in everyday life:

Methodological reflections from two studies. *International Journal of Social

Research Methodology, 17*(1), 11-26. doi:10.1080/13645579.2014.854001

Picou, J., & Marshall, B. K. (2007). Social impacts of Hurricane Katrina on displaced K-

12 students and educational institutions in coastal Alabama counties: Some

preliminary observations. *Sociological Spectrum*, *27*(6), 767-780.
doi:10.1080/02732170701534267

Polkinghorne, D. E. (2005). Language and meaning: Data collection in qualitative
research. *Journal of counseling psychology*, *52*(2), 137. ISSN-0022-0167

QSR International. (2015). http://www.qsrinternational.com/industry/nvivo-in-education.
QSR International. Retrieved January 5, 2016

Rafman, S., Canfield, J., Barbas, J., & Kaczorowski, J. (1997). Children's representations
of parental loss due to war. *International Journal of Behavioral
Development, 20*(1), 163-177. doi:10.1080/016502597385504

Rank, M. (2010). Facilitating hope in the wake of fear: The implementation of a
culturally sensitive group model of intervention for trauma survivors in Latin
America. *Journal of Trauma Counseling International*, *3*(1), 1-24.

Raphael, B. B., & Ma, H. H. (2011). Mass catastrophe and disaster psychiatry. *Molecular
Psychiatry*, *16*(3), 247-251. doi:10.1038/mp.2010.68

Rendall, M. S. (2011). Breakup of New Orleans households after Hurricane
Katrina. *Journal of Marriage & Family*, *73*(3), 654-668. doi:10.1111/j.1741-
3737.2011.00837.x

Reczek, C. (2014). Conducting a multi family member interview study. *Family
Process, 53*(2), 318-335. doi:10.1111/famp.12060

Riessman, C. K. (2008). *Narrative methods for the human sciences*. Thousands Oaks,
CA: Sage.

Robertson, A. A., Morse, D. T., & Baird-Thomas, C. (2009). Hurricane Katrina's impact

on the mental health of adolescent female offenders. *Anxiety, Stress & Coping*, *22*(4), 433-448. doi:10.1080/10615800802290634

Rohrbach, L., Grana, R., Vernberg, E., Sussman, S., & Sun, P. (2009). Impact of Hurricane Rita on adolescent substance use. *Psychiatry: Interpersonal & Biological Processes*, *72*(3), 222-237. doi:10.1521/psyc.2009.72.3.222

Rosenberg, A. R., Baker, K. S., Syrjala, K. L., Back, A. L., & Wolfe, J. (2013). Promoting resilience among parents and caregivers of children with cancer. *Journal of Palliative Medicine, 16*(6), 645-652. doi: 10.1089/jpm.2012.0494

Rowe, C. L., & Liddle, H. A. (2008). When the levee breaks: Treating adolescents and families in the aftermath of Hurricane Katrina. *Journal of Marital & Family Therapy*, *34*(2), 132-148. doi:10.1111/j.1752-0606.2008.00060.x

Rowe, C. L., La Greca, A. M., & Alexandersson, A. (2010). Family and individual factors associated with substance involvement and PTS symptoms among adolescents in greater New Orleans after Hurricane Katrina. *Journal Of Consulting And Clinical Psychology*, *78*(6), 806-817. doi:10.1037/a0020808

Salloum, A., Carter, P., Burch, B., Garfinkel, A., & Overstreet, S. (2011). Impact of exposure to community violence, Hurricane Katrina, and Hurricane Gustav on posttraumatic stress and depressive symptoms among school age children. *Anxiety, Stress & Coping*, *24*(1), 27-42. doi:10.1080/10615801003703193

Sattler, D. N., de Alvarado, A., de Castro, N., van Male, R., Zetino, A. M., & Vega, R.

(2006). El Salvador earthquakes: Relationships among acute stress disorder symptoms, depression, traumatic event exposure, and resource loss. *Journal of Traumatic Stress*, *19*(6), 879-893. doi:10.1002/jts.20174

Schuh, J. H., & Santos Laanan, F. (2006). Forced transitions: The impact of natural disasters and other events on college students. *New Directions For Student Services*, (114), 93-102. doi:10.1002/ss.210

Schweiger, W. K., & O'Brien, M. (2005). Special needs adoption: An ecological systems approach. *Family Relations*, *54*(4), 512-522. doi:10.1111/j.1741-3729.2005.00337.x

Sheridan, J. & Chamberlain, K. (2011). The power of things. *Qualitative Research in Psychology, 8*(1), 315-332. doi: 10.1080/14780880903490821

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*, 63-75. doi: 0.3233/EFI-2004-22201

Slattery, M., Willett, K. L., Cobb, G. P., & Benson, W. H. (2010). Multiple facets of environmental impacts from Hurricane Katrina. *Environmental Toxicology & Chemistry*, *29*(7), 1401-1402. doi:10.1002/etc.213

Snider, L., Hoffman, Y., Littrell, M., Fry, M., & Thornburgh, M. (2010). Supporting children after Hurricane Katrina: Reflections on psychosocial principles in practice. In R. P. Kilmer, V. Gil-Rivas, R. G. Tedeschi, L. G. Calhoun (Eds.), *Helping families and communities recover from disaster: Lessons learned from hurricane Katrina and its aftermath* (pp. 25-51). American Psychological Association. doi:10.1037/12054-001

Soliman, H. H. (2005). Rural families' response to chronic technological disasters: The

    case of the pigeon river. *Rural Social Work & Community Practice, 10*(1), 18-31

    14p. doi: https://doi.org/10.1300/J079v22n01_06

Stats & Trends. (2013). *Auto Body Repair Network*, *52*(1), 14.

Stehling-Ariza, T., Park, Y., Sury, J., & Abramson, D. (2012). Measuring the impact of

    Hurricane Katrina on access to a personal healthcare provider: the use of the

    National Survey of Children's Health for an external comparison group. *Maternal*

    And Child Health Journal, *16 Suppl 1*S170-S177. doi:10.1007/s10995-012-1006-

    y

Stolzer, J. (2005). ADHD in America: A Bioecological Analysis. *Ethical Human*

    Psychology & Psychiatry, *7*(1), 65-75.

Strobl, E. (2011). The economic growth impact of hurricanes: Evidence from U.S. coastal

    counties. *Review of Economics & Statistics*, *93*(2), 575-589. doi:

    https://doi.org/10.1162/REST_a_00082

Swick, K., & Williams, R. D. (2006). An analysis of Bronfenbrenner's bio-ecological

    perspective for early childhood educators: Implications for working with families

    experiencing stress. *Early Childhood Education Journal*, *33*(5), 371-378.

    doi:10.1007/s10643-006-0078-y

Taylor, D. (2006). Children, literacy and mass trauma teaching in times of catastrophic

    events and on-going emergency situations. *Penn GSE Perspectives on Urban*

    Education, *4*(2), 1-62. ISSN-1946-7109

Timpson, S., Ratliff, E., Ross, M., Williams, M., Atkinson, J., Bowen, A., & McCurdy,

S. (2009). A psychosocial comparison of New Orleans and Houston crack

smokers in the wake of Hurricane Katrina. *Substance Use & Misuse*, *44*(12),

1695-1710. doi:10.3109/10826080902962094

Tinker, T. L. (2013). Communicating and managing change during extreme weather

events: Promising practices for responding to urgent and emergent climate

threats. *Journal of Business Continuity & Emergency Planning*, *6*(4), 304-313.

Tishelman, A. C., & Geffner, R. (2011). Child and adolescent trauma across the spectrum

of experience: Research and clinical interventions. *Journal of Child & Adolescent

Trauma*, *4*(1), 1-7. doi:10.1080/19361521.2011.545982

Trangkasombat, U. (2008). Family functioning in mental illness: A study in Thai families

with depressive disorders and schizophrenia. *Journal of Family

Psychotherapy, 19*(2), 187-201. doi:10.1080/08975350801905046

Travis Marshall, J. (2015). Rating the cities: Constructing a city resilience index for

assessing the effect of state and local laws on long-term recovery from crisis and

disaster. *Tulane Law Review, 90* (1) 35-74.

Trumbo, C., Lueck, M., Marlatt, H., & Peek, L. (2011). The effect of proximity to

Hurricanes Katrina and Rita on subsequent hurricane outlook and optimistic

bias. *Risk Analysis: An International Journal*, *31*(12), 1907-1918.

doi:10.1111/j.1539-6924.2011.01633.x

Turner III, D. W. (2010). Qualitative interview design: A practical guide for novice

investigators. *The qualitative report*, *15*(3), 754-760. Retrieved from h

p://nsuworks.nova.edu/tqr/vol15/iss3/19

Usami, M., Iwadare, Y., Kodaira, M., Watanabe, K., Aoki, M., Katsumi, C., & Saito, K. (2012). Relationships between traumatic symptoms and environmental damage conditions among children 8 months after the 2011 Japan Earthquake and Tsunami. *Plos ONE*, *7*(11), doi:10.1371/journal.pone.0050721

Usami, M., Iwadare, Y., Kodaira, M., Watanabe, K., Aoki, M., Katsumi, C., & ... Saito, K. (2013). Sleep Duration among Children 8 Months after the 2011 Japan Earthquake and Tsunami. *Plos ONE*, *8*(5), 1-6. doi:10.1371/journal.pone.0065398

Van Biersel, T., Carlson, D., & Milner, L. L. (2007). Impact of hurricanes storm surges on the groundwater resources. *Environmental Geology*, *53*(4), 813-826. doi:10.1007/s00254-007-0694-x

Van Willigen, M., Edwards, B., Lormand, S., & Wilson, K. (2005). Comparative assessment of impacts and recovery from Hurricane Floyd among student and community households. *Natural Hazards Review*, *6*(4), 180-190. doi:10.1061/(ASCE)1527-6988(2005)6:4(180)

Vigil, J. M., & Geary, D. C. (2008). A preliminary investigation of family coping styles and psychological well-being among adolescent survivors of Hurricane Katrina. *Journal Of Family Psychology*, *22*(1), 176-180. doi: https://doi.org/10.1037/0893-3200.22.1.176

von Peter, S. (2009). The concept of 'mental trauma' and its transcultural application. *Anthropology & Medicine*, *16*(1), 13-25. doi:10.1080/13648470802425922

Wachs, T. D. (2010). Viewing microsystem chaos through a Bronfenbrenner bioecological lens. In G. W. Evans, T. D. Wachs (Eds.) , *Chaos and its influence*

on children's development: An ecological perspective (pp. 97-112). Washington, DC US: American Psychological Association. doi:10.1037/12057-007

Wahlström, L., Michélsen, H., Schulman, A., & Backheden, M. (2008). Different types of exposure to the 2004 tsunami are associated with different levels of psychological distress and posttraumatic stress. *Journal Of Traumatic Stress*, *21*(5), 463-470. doi:10.1002/jts.20360

Walker, C. P., Carlson, N., Monk, P. E., & Irons, E. (2010). The impact of Hurricane Ike on our public schools: Implications for school counseling. *National Social Science Journal*, *35*(1), 153-159.

Walsh, F. (2007). Traumatic loss and major disasters: Strengthening family and community resilience. *Family Process*, *46*(2), 207-227. doi: https://doi.org/10.1111/j.1545-5300.2007.00205.x

Watkins, M. (2013). Testing innovation in the Superstorm Sandy response. *Public Manager*, *42*(3), 54-61.

Weisaeth, L. (2002). The European history of psychotraumatology. *Journal Of Traumatic Stress*, *15*(6), 443-452. doi:10.1023/A:1020909620364

Wiley, R., Berman, S., Marsee, M., Taylor, L., Cannon, M., & Weems, C. (2011). Age differences and similarities in identity distress following the Katrina disaster: Theoretical and applied implications of Erikson's theory. *Journal Of Adult Development*, *18*(4), 184-191. doi:10.1007/s10804-011-9130-2

With Occupy Sandy. (2013). *NACLA Report on the Americas*, *46*(1), 45-48.

Wolmer, L., Laor, N., Dedeoglu, C., Siev, J., & Yazgan, Y. (2005). Teacher-mediated

intervention after Disaster: A controlled three-year follow-up of children's

functioning. *Journal Of Child Psychology And Psychiatry*, *46*(11), 1161-1168.

doi: https://doi.org/10.1111/j.1469-7610.2005.00416.x

Yang, D. (2008). Coping with disaster: The impact of hurricanes on international

financial flows, 1970-2002. *B.E. Journal Of Economic Analysis & Policy:

Advances In Economic Analysis & Policy*, *8*(1), 1-43. Retrieved from

http://hdl.handle.net/1813/55016

Yoder, M. S., Tuerk, P. W., & Axsom, D. (2012). Evaluation of an ecological

intervention targeting helpers in the aftermath of disasters. *International

Perspectives In Victimology*, *6*(2), 134-142. Retrieved from

http://hdl.handle.net/10919/28038

Zhang, W., Jiang, X., Ho, K., & Wu, D. (2011). The presence of post-traumatic stress

disorder symptoms in adolescents three months after an 8·0 magnitude earthquake

in southwest China. *Journal Of Clinical Nursing*,*20*(21/22), 3057-3069.

doi:10.1111/j.1365-2702.2011.03825.x

Zottarelli, L. K. (2010). Broken bond: An exploration of human factors associated with

companion animal loss during Hurricane Katrina. *Sociological Forum*, *25*(1),

110-122. doi:10.1111/j.1573-7861.2009.01159.x

Appendix A: Invitation for Participation

I am conducting interviews as part of a research study to increase our understanding of the long-term recovery of Superstorm Sandy. I am a doctoral student at Walden University and this study is part of a dissertation. If you and your family experienced Superstorm Sandy, you are eligible to participate in this research.

The interviews will take about 3 hours in total and can be done in multiple sessions. We are simply trying to capture your thoughts and perspectives on the recovery process after a large-scale natural disaster. Your responses to the questions will be kept confidential.

There is no compensation for participating in this study. However, your participation will be a valuable addition to our research and findings could lead to greater public understanding of disaster recovery.

If you are willing to participate, or if you have any questions, please contact me with the information below.

Thank you,

Joanne Fortune

[e-mail address redacted]

[phone number redacted]

Appendix B: Interview Protocol

Date:

Family #:

Questions:

*For children ages 10 and up (then they can leave the interview until the end of the

interview if the parent feels it is best for their child):

Can you tell me what you remember about Superstorm Sandy?

What do you remember about the days after the storm?

*Children then leave the room

What was life like before the storm?

How would you describe your household and family relationships?

Tell me what a typical weekday looked like? Weekend day?

Please describe your community at this time (Give examples if needed: The sense

of community, how often community members met, how local businesses

were).

Tell me about your school/ work life.

Describe your social relationships and support systems at that time.

How much planning did you do for storm preparation?

Then what happened during the storm?

Tell me about how you kept up with the storm's impending landfall; what do you

remember most about that experience?

Tell me about your evacuation experience. How did you decide what to do? What

to take? Where to go?

Tell me about when the storm hit.

Can each person speak about what they experienced in the first few hours?

Please describe how things were after the first few hours and throughout the night.

What was the next day like?

In the first few day and ensuing weeks:

Please describe how a typical weekday looked like compared to before the storm?

Weekend day?

What was the neighborhood like compared to before the storm (Give examples if

needed: Were businesses functioning, was there military presence)?

How was your school/ work life?

Describe your social relationships and support systems at that time.

Please describe any help or assistance that was available.

Is there anything else you'd like to tell me that would help me understand you and

your family's experience of the storm during the first few months?

Please think back to the first anniversary of Superstorm Sandy

Tell me about your living situation at the time.

Please describe what a typical day looked like compared to immediate months

following the storm.

How was the neighborhood coming along?

Please tell me about experiences you may have heard from your neighbors.

Describe your social relationships and support systems at that time.

Please describe any help or assistance you received.

Is there anything else you'd like to tell me that would help me understand you and

your family's experience of the storm at this point in time?

*Children can now come back into the room

These final questions have to do with the past two years (Since the 2nd anniversary of

Sandy).

Please tell me about living in your home over the past two years.

What does a weekday look like now? Weekend day?

What is the neighborhood like?

Please tell me about school/work.

Tell me about your friends or the people you go to when you are upset.

Please describe any help or assistance you used. Which ones were the most

helpful? Which ones were not helpful?

Was there any time recently that reminded you of Superstorm Sandy?

Is there anything else you'd like to tell me that would help me understand you and

your family's experience of the storm at this point in time?

Appendix C: Figures

Figure C1. First floor that was flooded.

Figure C2. Backyard.

Figure C3. Cars that no longer worked.

Figure C4. Basement that was flooded.

Figure C5. Salvaging keepsakes.

Figure C6. Boats in the street the day after the storm.

Figure C7. The community of Long Beach.

Figure C8. Going up to the Long Beach Boardwalk.

Figure C9. Long Beach Boardwalk.

Figure C10. National Guard presence.

Figure C11. National Guard handing out food and water.

Figure C12. Meals that were given out.

Figure C13. Drop off center for donations.

Figure C14. Portable toilets being delivered.

Figure C15. People's belongings lining the streets.

Figure C16. More of people's belongings.

Figure C17. Still not home yet.

Figure C18. Making the best use of space.

Figure C19. One-year memorial in Long Beach.

Figure C20. One-year memorial in Long Beach 2.

Figure C21. Second year post-Sandy.

Figure C22. Second year post-Sandy 2.