2015

Exploring the Predictors of Psychological Distress in Children Following the Gulf Coast Hurricanes of 2005

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EXPLORING THE PREDICTORS OF PSYCHOLOGICAL DISTRESS IN CHILDREN FOLLOWING THE GULF COAST HURRICANES OF 2005

A Thesis
Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Masters of Social Work

in
The School of Social Work

by
Jonathan Scott Brothers
B.S., Louisiana State University, 2012
May 2015
ACKNOWLEDGEMENTS

First, I would like to express my utmost appreciation to my thesis committee chair, Dr. Timothy Page, for his invaluable support and guidance throughout this process. His knowledge, experience, and dedication made this project possible. In addition, I would like to thank the members of my committee, Dr. Michelle Livermore and Dr. Scott Wilks, for their feedback and guidance on my project. Their knowledge and insight played a major role in composing my finalized thesis. Finally, I would like to thank my family and peers for their unwavering support and encouragement throughout my life and academic endeavors. Your assurance and support were crucial to the success of my thesis.
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ABSTRACT

The purpose of this study is to investigate the predictors of psychological distress in children following the Gulf Coast hurricanes of 2005. Previous literature has suggested that children that experience natural disasters, such as hurricanes, may face the same psychological dangers as children that experience other types of traumatic experiences. Thus, it is expected that children that were exposed to various stressors throughout the occurrence of the hurricanes will display more symptoms of psychological distress in the aftermath of the storms. In this study, 614 caregivers of children of ages 1 to 9 years old were sampled in a cross-sectional study to examine possible predictors of psychological distress in this population. Results indicated significant associations between various exposure variables (e.g. child was injured during hurricane, child lost belongings due to hurricane) and elevated scores on Posttraumatic Stress Disorder (PTSD) Symptom screener and an Adjustment and Emotion Regulation Symptom screener. Conclusions from this study add to the growing body of knowledge on children’s functioning after disasters by providing results from a large sample in an area of study that has many inherent limitations.
CHAPTER 1
INTRODUCTION

Natural disasters affect the lives of millions of people each year. Hurricanes, floods, earthquakes, tornadoes, and fires ravish communities across the world placing overwhelming burdens on the people that call these places home. Within these affected populations are millions of young children who are left confused by the devastating effects on their communities and by the disruption of their daily lives incurred by natural disasters.

Southern Louisiana is not a stranger to natural disasters. Many of the most devastating and deadliest tropical systems to impact the United States have hit Southern Louisiana (Moth, 2010). Throughout the last century unforgettable storms have taken the lives of over 3,000 of Louisiana residents. Before 2005, Hurricane Audrey inflicted the one of the highest death toll for any hurricane to hit Louisiana in the United States’ modern history claiming approximately 526 lives across the Louisiana and Texas coastlines (Moth, 2010). Sadly, Audrey’s record was hugely defeated approximately a decade ago by the unforgiving conditions brought about by Hurricane Katrina.

In 2005, the people and landscape of southern Louisiana endured two major hurricanes. Hurricane Katrina, one of the most devastating storms to affect the United States in the last century ravished New Orleans and its surrounding areas. The storm killed over 1,800 people, cost approximately $125 billion, flooded over 80% of the city of New Orleans, and displaced over 250,000 residents (Graumann, et al. 2006). Only a month later, Hurricane Rita made landfall in southern Louisiana. Making landfall as a Category 3 hurricane, Rita produced a storm surge that obliterated a number of southern Louisiana coastal communities (Knabb, et al, 2011). The combination of the insurmountable effects of the two hurricanes left Louisiana’s citizens in an extremely vulnerable place. Among the 250,000 New Orleans residents displaced by Katrina,
the poor and the African American community were disproportionately affected (Gabe, et al., 2005).

Furthermore, children accounted for a significant portion of the affected population. Gabe, et al. (2005) suggested that approximately 183,000 children were displaced from Hurricane Katrina. Many children remained in the city during the storm and were forced to bear witness to a number of atrocities including death, devastating winds and flooding, and the destruction of homes and communities (Osofsky & Harris, 2007). Osofsky, et al. (2007) went on to note that one-fifth of children under the age of 10 experienced separation from their parents during or after the storm. Children whose families were able to evacuate returned to see their communities in devastated conditions. Kent (2006) reported that a significant number of schools were either destroyed or significantly impacted by Hurricanes Katrina and Rita. Out of the state’s 2,000 primary schools, 1,500 were located in parishes that were most impacted by the storms, resulting in approximately 715,000 students and teachers being affected (Kent, 2006).

Children that experience natural disasters may be confronted with many of the same psychological dangers as children that experience other traumatic events (Page, Buchanan, & Verbovaya, 2013). Traumatic experiences of young children occur when children directly experience or witness an event or events that threatens their physical or psychological integrity (Zero to Three, 2005). Generally, closer proximity to traumatic events increases the likelihood for children to experience traumatic reactions (Pynoos, Goenjian, & Steinberg, 1998). Scheeringa and Zeanah (2008) found a higher rate of Posttraumatic Stress Disorder (PTSD) in children who remained in New Orleans during Hurricane Katrina. However, the rate of PTSD in children who evacuated was still significantly elevated (Scheeringa & Zeanah, 2008), suggesting that preparing, evacuating, and returning to the home can be traumatic due to the high levels of
stress and anxiety in families and communities during these times (National Child Traumatic Stress Network, 2014). This finding highlights a need for further research into the preparation and evacuation processes and their effect on children and families.

One of the possible avenues by which hurricanes can harm children is through the storms’ effects on caregivers and caregiving quality, especially in young children (Masten & Obradovic, 2008). Due to the reliance of children on their caregivers, caregivers play a crucial role in protecting their children from the dangers of natural disasters (Masten & Osofsky, 2010). Masten & Osofsky (2010) noted that caregivers can provide this protection through a number of actions such as appropriate preparation for the disaster, appropriate communication to children about the circumstances, training the child on actions during the disaster, and modeling adaptive behaviors throughout the affected time period.

Furthermore, a child’s attachment pattern has been shown to affect psychological well-being following traumatic experiences such as hurricanes (Busch & Lierberman, 2007). In her seminal studies on attachment patterns, Ainsworth (1978) defined three different attachment patterns as secure, anxious-avoidant, and anxious-ambivalent. Ainsworth considered the anxious–avoidant and anxious-ambivalent patterns as insecure attachments. Busch and Lieberman (2007) noted that securely attached children have an advantage over insecurely attached children in recovering from a traumatic experience due to a perception that others will be available to them for protection and comfort in times of distress, and also that they are worthy of the help from others. Consequently, Masten and Osofsky (2010) recommended that, during times of disaster, parents should work to protect a child’s sense of security and restore it as soon as possible if it has been damaged. If disaster strikes in the context of an insecure attachment pattern, therapeutic methods that work to strengthen attachments should be utilized.
Disaster research is extremely complicated due to the inherent nature of disasters. Disaster researchers are confronted with ethical, conceptual, methodological, and practical challenges (Masten & Osofsky, 2010). Masten & Osofsky (2010) highlighted that unique ethical considerations arise when researching populations of traumatized survivors, such as obtaining informed consent from a recently traumatized individual. Most importantly, the immediate health and needs of survivors in the aftermath of a disaster override the potential for research opportunities. Furthermore, experimental designs that involve pre-disaster data are nearly impossible due to the unpredictable nature of disasters (Masten & Osofsky, 2010).

Research on the effects of disasters has been extremely limited until recent years with only a small number of published studies existing. La Greca, et al. (2013) noted that research on disasters’ effects on children has improved. However, the authors pointed out that there are still significant gaps in the literature, specifically in children’s psychological functioning in the aftermath of disasters. These gaps in literature hinder the ability of mental health professionals in identifying and helping the youth in need of services due to disasters.

For reasons previously discussed, this study will seek to add to the existing literature on the effects of disasters on children. The study will investigate and examine the predictors of psychological well-being and distress in children in the months following the Gulf Coast hurricanes of 2005. The author will investigate a number of factors in the lives of children affected by these hurricanes (e.g. remained in city during storm, evacuated, injury or death of family, loss of home, etc.) and explore the association of these factors to psychological well-being or to the development of psychological symptoms, particularly PTSD symptoms. Furthermore, the study will be guided conceptually by the importance of children’s attachment bonds to their caregivers and the effects of these bonds in the aftermath of exposure to trauma.
The author expects that certain factors, such as having difficulties during the evacuation process and having cumulative traumatic experiences, will be associated with elevated rates of PTSD symptoms and other problems.
CHAPTER 2
LITERATURE REVIEW

Posttraumatic Stress Disorder in Young Children

Although past research on the responses of young children to life threatening traumatic experiences has been scarce, the recent materialization of valid posttraumatic event questionnaires and diagnostic measures has seen an increase in knowledge in this area and population (Scheeringa, Zeanah, Myers, & Putnam, 2003). Scheeringa and Zeanah (2008) reported that these new, developmentally appropriate measures have produced results that indicate a similar rate of Posttraumatic Stress Disorder diagnosis in young children when compared with other populations. In the nation’s population of children, research has shown that approximately 15% to 43% of girls and 14% to 43% of boys have experienced one or more traumatic event(s) (Department of Veterans Affairs, 2014). Furthermore, this research found that in these populations, 3% to 15% of girls and 1% to 6% of boys are diagnosed with posttraumatic stress disorder (PTSD) following the event.

Scheeringa, Zeanah, and Cohen (2011) stated that the authors of the Diagnostic Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) were confronted with the challenge of factoring in developmental differences in the expression of PTSD between children and adult populations. The DSM-5 writing committee hired experts in the field of child trauma to commission a report outlining recommendations for possible modifications to the existing PTSD algorithm that would result in more developmentally sensitive diagnostic criteria for PTSD in young children (Scheeringa et al, 2011). Scheeringa et al. (2011) stated that their proposed algorithm consisted of changes in wording in several diagnostic items such as adding extreme temper tantrums to the previous manual’s item for irritability and angry outbursts. However, the major modification is found in criterion C (numbing and avoidance symptoms). Now, children 6
years or younger must only display one of these symptoms instead of the three symptoms that must be present in older populations. Although this modification was empirically based, the reasoning for it was that many of the previous symptoms in this item reflected advanced internalized processes that seem to be either developmentally impossible for young children or tremendously difficult to detect in this population (Scheeringa, et al., 2011).

In response to the need for a developmentally appropriate algorithm for PTSD in young children, the American Psychiatric Association (APA, 2013) added a new section consisting of the diagnostic criteria for PTSD in children 6 years or younger. According to the APA (2013), a child of this age must be exposed to a traumatic event(s) through directly experiencing the event, witnessing the event, or learning that the event occurred to a parent or caregiver. Following the traumatic event, the child must exhibit one or more symptoms in each symptom category laid out by the APA. First, the child must be experiencing at least one intrusion symptom related to the event such as distressing memories, distressing dreams, and dissociative reactions. Next, the child must present with at least one symptom that signifies either the continual avoidance of stimuli related to the traumatic event or negative alterations in cognitions and mood related to the traumatic event. Lastly, the child must be experiencing changes in arousal and reactivity associated with the traumatic event. These arousal and reactivity symptoms can manifest in a number of ways including angry outbursts and problems with concentration (APA, 2013). In addition to the child presenting with symptoms from each category, the APA (2013) noted that these disturbances must last for more than one month and must cause clinically significant distress or impairment in the child’s life. Once a child is 7-years-old, the APA (2013) advises clinicians to utilize the diagnostic criteria for adults.
In recent years, studies have begun to investigate the comorbidity of PTSD and other psychiatric disorders in young children. Scheeringa and Zeanah (2008) found that 75% of young children diagnosed with PTSD were also diagnosed with oppositional defiant disorder, and that 63% of children with PTSD also have separation anxiety disorder. The elevated rates for these specific disorders in children also diagnosed with PTSD were considerably higher in comparison to children that displayed PTSD symptoms but did not carry the PTSD diagnosis. Furthermore, the study showed that only 6% of young children diagnosed with PTSD also suffered from major depression, a much lower comorbidity rate than found in adult populations (Scheeringa et al., 2008). Of particular concern to this population, 38% of children were diagnosed with both attention deficit/hyperactivity disorder (ADHD) and PTSD. However, the percentage of comorbidity of the two diagnoses of this group was not significantly higher than the percentage of children diagnosed with only ADHD. This supports the view that some children with PTSD may be wrongly diagnosed with ADHD, likely because concentration problems can appear very similar in both disorders (Scheeringa & Zeanah, 2008).

Scheeringa & Zeanah (2008) went on to investigate certain aspects of children’s experience of Hurricane Katrina and these aspects’ effects on the prevalence of PTSD and PTSD symptoms. Results of this study showed that children who did not evacuate for Hurricane Katrina had a 62.5% rate of PTSD, which was higher than the rate for children who evacuated. However, the PTSD rate of children who did evacuate was also elevated to a rate of 43.5%. In an effort to understand this high rate among evacuated children, Scheeringa and Zeanah associated the PTSD rates with other contextual factors of the hurricane such as terrifying evacuations and returning to their ravished neighborhoods and devastated houses. The PTSD symptoms may subside with time. LaGreca et al. (1996) studied children after Hurricane Andrew in 1992 and
found an alleviation of severe PTSD symptoms between the 7-month anniversary and 10-month anniversary of the storm.

**Children’s Exposure to Trauma and Hurricanes**

As previously noted, recent research has found that children experience PTSD and PTSD symptoms at similar rates as other populations (Scheeringa & Zeanah, 2008). Due to a young child’s instinctual reliance on a caregiver for protection and security from threat and danger (Bowlby, 1982), a child’s trust in the capacity of his or her caregiver to provide this protection may be severely threatened when a child experiences a traumatic event (Busch & Lieberman, 2007). In addition to damaging the foundation of the attachment relationship (Busch & Lieberman, 2007), traumatic experiences in childhood have been linked to future psychiatric disorders (Boyce & Harris, 2011). Furthermore, the means by which children understand traumatic experiences have been shown to impact their perceptions of how the experiences may affect them and their feelings of vulnerability to the experiences (Cordon et al., 2004). In addition to a child’s understanding of traumatic events, research has shown that possessing accurate information about traumatic experiences can alleviate anxiety associated with the uncertainty of the facts surrounding the experience and even foster feelings of control over the experience (Fivush & Sales, 2006).

Page, et al. (2012) noted that children’s exposure to natural disasters may induce the same psychological risks as exposure to other types of traumatic experiences. Masten and Osofsky (2010) reported that disasters—such as hurricanes, floods, earthquakes, and tornadoes—affect the lives of millions of children each year. Garmezy and Rutter (1983) noted that scientists have had a curiosity in the influence of disasters on children dating back a number of decades. Studies on the effects of disasters have been limited because of the inherent challenges of
disaster research. However, research in this area has increased due to the significance of disasters’ impacts on child and family development (Masten & Osofsky, 2010).

Several studies have found that responses to trauma are frequently associated with the “dose–response gradient,” which is defined as the severity of exposure to past traumatic experiences or to the conditions of the recovery environment (Masten & Osofsky, 2010). Pine, et al. (2005) reported that as the level of severe trauma exposure increases or accrues, the level and intensity of trauma symptoms, behavior issues, mental health issues, and various other difficulties increase. Strengthening the above claim, a study following the 2004 tsunami in Sri Lanka found that children’s struggle in recovery from the storm was associated with exposure severity, as well as to increased exposure to other traumatic stressors (continuous war, family violence, and other psychological stressors; Catani, et al., 2010).

However, significant variance in a range of these issues has been documented, suggesting that other factors—namely promotive and protective factors—have a role in the recovery from a disaster (Masten & Obradovic, 2008). Kronenberg, et al. (2010) found that children with better psychological well-being 2 and 3 years after Hurricane Katrina had lower prior trauma exposure, as well as less recovery hardship. Furthermore, the quality of parenting is a crucial aspect related to the well-being of children following the traumatic experience, especially in very young children (Masten & Obradovic, 2008). Parents have a pivotal role in preparing, protecting, and nurturing their children throughout the occurrence of disasters (Masten & Osofsky, 2010). Busch & Lieberman (2007) noted that the failure of a caregiver to protect their young child in the face of traumatic stressors results in the child losing trust in the protective capacity of the caregiver.
Attachment

Attachment theory, originated by John Bowlby, transformed the long held view on the nature of the child-caregiver relationship (Fitton, 2012). At its core, the theory holds that the making of intimate emotional bonds among individuals is a critical element of human nature. Furthermore, Bowlby’s theory stresses the significant impact of the nature of a child’s attachment and relationship with his or her parents, specifically in the mother-child relationship, on the overall development of a child (Bowlby, 1989).

Bowlby (1982) explained that three behavioral systems, which he considered necessary and fundamental components of human nature, function simultaneously to facilitate attachment relationships. These systems include the attachment behavioral system, caregiving behavioral system, and exploratory behavioral system. Attachment behavior is the instinctive desire to be in physical proximity of a protective and nurturing caregiver during times of perceived vulnerability or distress (Bowlby, 1989). While attachment behavior concerns a child’s desire for physical proximity to a caregiver, a child’s careseeking behavior is also heavily influenced by the intimate emotional bond shared between a child and caregiver (Bowlby, 1989). To further highlight the significance of this emotional bond, Bowlby (1989) articulated the importance of emotional expression as a means of communication between the caregiver and preverbal child. He went on to state that nonverbal emotional communication, a major facilitator of the emotional bond, remains a prime aspect of interpersonal relationships even after a child is able to communicate through speech and throughout the child’s life.

Bowlby (1989) stated that caregiving behavior, which works complementarily to the other behavioral systems, is the primary role of parents. Ainsworth et al. (1978) found that caregiver sensitivity was a primary influence in the nature of attachments. The importance of
caregiver sensitivity, especially when demonstrated to respond to a young child’s distress, has been shown by results of various studies since Ainsworth’s initial work (McElwain & Booth-Laforce, 2006). Furthermore, Bowlby (1989) noted that exploratory behaviors act complementarily with attachment behavior and caregiving behavior. If a child has learned and can anticipate that his or her caregiver will be available and responsible, then a child will feel adequately secure, leading to exploration of the environment. The caregiver acts as a “secure base” and is available to for the child to return in times of distress.

Page, et al. (2012) stated that infants and preschool-aged children normally require nurturance directly from a primary caregiver. However, as children mature, they are able to utilize past experiences with caregivers to provide comfort to themselves and self-regulate their emotions. The entire child-caregiver relationship is internalized by the developing child (Sroufe & Fleeson, 1986) resulting in the development of affective and cognitive constructs, referred to as internal working models. According to Crowell and Feldman (1991), these constructs are used unconsciously to understand and act on new experiences. Bowlby (1988) stated that securely attached children create appropriate and healthy representations of themselves and parents resulting from past times defined by dependable caregiving and continuous reflection on interpersonal relationships.

As previously discussed, Busch and Lieberman (2007) stated that a child’s experience of a traumatic event may lead to the child losing trust in the capacity for his or her caregiver to provide protection from danger and potentially negatively alter a child’s internal working models. Amatya and Barzman (2012) stated that trauma can damage a child’s positive view of him/herself and of the world resulting in the child now viewing him/herself as incompetent and also seeing the world as a dangerous and unpredictable place. However, a child’s capacity for
recovering from a traumatic event and repairing these internal working models is impacted by the quality of his or her attachment with primary caregivers (Busch & Lieberman, 2007). Amatya and Barzman stated that nurturing caregivers who promote feelings of competence in their child and endorse the world as a safe place can strengthen the child’s damaged internal working models following trauma, which can result in a decrease of the negative effects of trauma and possibly impede the development of PTSD.

Furthermore, Amatya and Barzman (2012) went on to state that research has highlighted an association of emotional engagement with the traumatic experience and trauma resolution. Amatya and Barzman stated that young children first learn about emotional engagement through reciprocal emotional communication with their primary caregivers and go on to develop particular attachment patterns that can impact children’s recovery from a traumatic experience. They suggest that securely attached caregiving relationships can draw out feelings of engagement, nurturance, and comfort in the child. These feelings can result in the child being able to process the trauma in a healthy manner and decrease the potential for PTSD development. On the other hand, trauma taking place in the framework of an insecure attachment style that discourages emotional engagement can increase the likelihood of PTSD development due to the lack of a child’s sense safety necessary for trauma recovery (Amatya & Barzman, 2012).

Scheeringa and Zeanah (2001) also highlighted the impact of the quality of the child-caregiver attachment relationship in a child’s trauma recovery, stating that an infant’s regulatory systems, including their stress-response systems, are reliant on the infant’s relationship with primary caregivers. To substantiate this notion, Scheeringa and Zeanah cited a study conducted on infant stress and cortisol secretion. The relevant study, conducted by Gunnar, Larson, Hertsgaard, Harris, and Broderson (1992), examined cortisol secretion in infants during
separation from their mothers. During a 30-minute separation from their mothers, infants were either left with a responsive substitute caregiver or a minimally responsive substitute caregiver. Infants who were left with a responsive substitute caregiver did not show increased levels of cortisol secretion. However, infants who were left with a minimally responsive caregiver showed increase levels of cortisol secretion (Gunnar, Larson, Hertsgaard, Harris, & Broderson, 1992). In addition, Scheeringa and Zeanah noted that the presence of a secure attachment has been shown to mitigate the impacts of stress on cortisol secretions in vulnerable infants.

In summary, natural disasters affect the lives of millions of children each year. Unfortunately, a number of the affected children suffer from posttraumatic symptoms and are at risk of developing PTSD. Research has also shown that children with PTSD are at risks of developing a number of other psychiatric issues early in life. Furthermore, children’s attachment bonds with their caregivers can impact the prevalence of posttraumatic symptoms and also effect the risk for the development of PTSD. The purpose of this study is to investigate the predictors of psychological distress in children following the Gulf Coast hurricanes of 2005. The study will explore a number of factors in the lives of children affected by these hurricanes and explore these factors’ possible relation to the development of psychological symptoms, specifically symptoms of Posttraumatic Stress Disorder (PTSD).
CHAPTER 3
METHODS

The guiding research question of this exploratory study is to determine the degree to which certain factors in the lives of children affected by hurricanes, obtained from the Louisiana Health Sciences Center (LSUHSC) Katrina Inspired Disaster Screenings (LSU KIDS) given to affected children’s caregivers, were associated with the prevalence of PTSD symptoms, indicated by the global score on the symptom questionnaire found in LSU KIDS obtained from affected children’s caregivers. LSU KIDS is a post disaster screener tool based on the National Children Traumatic Stress Network Assessment (NCTSN) and Referral Tool for Children.

This cross-sectional study consisted of a secondary analysis of data collected in 2005 and 2006 by the LSUHSC Department of Psychiatry following Hurricane Katrina and Hurricane Rita. The dataset includes responses to a post-disaster interview given to parents of children attending schools in the New Orleans Metropolitan area. The data collection was part of a larger school screening initiative aimed at bettering the understanding of the mental and behavioral health climate of school-aged children following disasters. The study was approved by the Louisiana State University Institutional Review Board.

Participants

Participants in this study included 614 caregivers of children ages 1 to 9-years-old affected by hurricanes Katrina and Rita in New Orleans Metropolitan area. Caregivers reported the age, sex, and ethnicity of their children. The average age was 6.08 years old, with a range of 1 years to 9 years old. Of these children, 56.2% were female (n=338) and 43.8% were male (n=263). Ethnically, 55% of the children were Caucasian (n=326), 37% were African-American (n=227), 2.2% were Hispanic (n= 13), 1.7% were American-Indian/Alaskan Native, 1.3% were “Mixed Race” (n=8), .2% were Middle Eastern (n=1), and 1.3% responded with “Other” (n=8).
Of the caregivers that completed the exposure variable questionnaire in its entirety (N=360), every caregiver reported that his or her child experienced at least 2 of the exposure variables. Caregivers, upon their children’s return to school, were requested to complete LSU KIDS administered by the staff of LSUHSC Department of Psychiatry. The assessment was administered confidentially, but not anonymously, so that students presenting with mental health symptoms were able to receive services. Families, who elected not to participate, were still offered mental health services by the skilled staff of LSUHSC Department of Psychiatry.

**Measures**

**LSUHSC Katrina Inspired Disaster Screenings (LSU KIDS).** The LSUHSC Department of Psychiatry utilized the LSU KIDS, a modified version of the NCTSN Disaster Assessment and Referral Tool for Children and Adolescents (NCTSN, 2005; see Appendix). The NCTSN Disaster Assessment scale is based on the Post Traumatic Stress Reaction Index for Children (PTSD-RI; Pynoos, et al., 1998), which asked participants to rate children’s posttraumatic stress symptoms. The department collaborated with reopening schools in order to learn more about the experiences and responses of displaced children after their return to the New Orleans Metropolitan area (Osofsky et al., 2007).

The first section of LSU KIDS asks caregivers to provide basic demographic information about their children (name, age, school grade, ethnicity, and sex), as well as information regarding the household composition of the family before the hurricanes. The initial section also contains a question asking if the caregiver or caregiver’s spouse was a first responder during and after the storm. The second section consists of a number of questions that ask the caregiver about his or her child’s possible exposure to traumatic stressors during and after the storm. These questions cover a number of traumatic exposures such as witnessing injury or death, destruction
of home, and loss or destruction of belongings. The section also consists of questions regarding trauma exposure previous to the hurricanes, as well as the child’s previous history of mental health services.

The NCTSN assessment scale, which is based on the validated UCLA PTSD Index, is found in the third section of the screener. The assessment scale contains 20 items, which measure a number of posttraumatic symptoms. The items are a 4-point Likert scale, with 1 signifying not at all, 2 signifying a little bit, 3 signifying quite a bit, and 4 signifying very much. The scale is scored by summing the numeric responses to the 10 items to calculate a total global score. Four or more scores of 3 or higher indicate a need for further psychiatric evaluation and mental health services (Kronenberg et al., 2010). The fourth section of the screener, whose items are on the same type of 4-point Likert scale as the previous section, consists of 7 items that ask caregivers about additional psychological symptoms related to emotion regulation and adjustment that the child is displaying since the hurricanes. The screener concludes with a question asking if the caregiver is interested in mental health services for his or her family and/or child.

Procedures

Staff members of schools in the New Orleans Metropolitan area collected the data for this study after Hurricanes Katrina and Rita. Upon their children’s return to school, between the months of September 2005 and November 2006, caregivers were requested to complete the LSU KIDS assessment. Participating caregivers visited their child’s school to complete the assessment measures in person. Both participating families and non-participating families were offered mental health services administered by the LSUHSC Department of Psychiatry staff. After being approved by the LSUHSC Institutional Review Board, the researcher of this study was given the relevant data set by the LSUHSC Department of Psychiatry staff.
Data Analysis

The researcher calculated basic frequencies to examine the number of children exposed to the various traumatic stressors related to the hurricanes, as well as any previous traumatic exposures. In analyzing possible relationships between trauma exposure and symptoms, a combination of bivariate tests (t-tests, Pearson correlations, and Chi-square tests) was conducted on parametric variables (e.g. exposure to death, evacuation, loss of house) and non-parametric variables (e.g. global score on PTSD symptom questionnaire).
CHAPTER 4
RESULTS

Overall, 100% of the sample (n=360) experienced at least one of the exposure variables before, during, or after Hurricane Katrina. The mean and standard deviation of the frequencies of exposure variables were found to be $M=7.29$ ($SD=1.91$).

Table 1 displays the frequency of each exposure variable reported. The most common exposure variable experienced by children was being displaced from home with 93.3% ($n=556$) of parents reporting home displacement due to the hurricane. The second most common exposure variable experienced by children was the destruction of their belongings, toys, and/or clothes with 84.4% ($n=518$) of parents reporting this stressor.

<table>
<thead>
<tr>
<th>Exposure Variable</th>
<th>n</th>
<th>Valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child injured</td>
<td>7</td>
<td>1.2</td>
</tr>
<tr>
<td>Family or friend(s) injured</td>
<td>28</td>
<td>4.7</td>
</tr>
<tr>
<td>Family or friend(s) killed</td>
<td>46</td>
<td>7.7</td>
</tr>
<tr>
<td>Child witnessed injury</td>
<td>17</td>
<td>2.8</td>
</tr>
<tr>
<td>Child witnessed death</td>
<td>10</td>
<td>1.7</td>
</tr>
<tr>
<td>Child separated from parent(s) or caregiver(s)</td>
<td>90</td>
<td>14.8</td>
</tr>
<tr>
<td>Child’s home damaged or destroyed</td>
<td>474</td>
<td>77.2</td>
</tr>
<tr>
<td>Child saw neighborhood damaged or destroyed</td>
<td>496</td>
<td>83.2</td>
</tr>
<tr>
<td>Child separated from pet(s)</td>
<td>195</td>
<td>32.3</td>
</tr>
<tr>
<td>Child’s belongings, clothes, or toys destroyed</td>
<td>518</td>
<td>85.8</td>
</tr>
<tr>
<td>Child did not have time to prepare for evacuation</td>
<td>231</td>
<td>39.4</td>
</tr>
<tr>
<td>Child had difficulty evacuating</td>
<td>43</td>
<td>7.2</td>
</tr>
<tr>
<td>Child isolated</td>
<td>27</td>
<td>5.5</td>
</tr>
<tr>
<td>Child in crowded shelter</td>
<td>81</td>
<td>16.2</td>
</tr>
<tr>
<td>Child displaced from home</td>
<td>561</td>
<td>93.3</td>
</tr>
<tr>
<td>Child currently in shelter</td>
<td>31</td>
<td>5.5</td>
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</tbody>
</table>
A global score of 20-80 on the *PTSD Symptom screener* was calculated for each subject. The mean and standard deviation for the *PTSD Symptom screener* were found to be $M=29.29$ ($SD=10.51$). If subjects received a score of 29 or greater, then they were referred for a psychological assessment and PTSD evaluation. This “clinical cut off” score was determined by the LSUHSC Department of Psychiatry staff. Overall, 36.34% (n= 193) of subjects met the criteria for clinical referral based on their global score on the *PTSD Symptom screener*.

Additionally, a global score of 7-28 on the *Adjustment and Emotion Regulation screener* was calculated for each subject. The mean and standard deviation for this screener were found to be $M=10.48$ ($SD=3.79$). Furthermore, both screener variables were found to be normally distributed.

Bivariate analyses were conducted with all demographic variables (age, gender, and ethnicity) and screener scores. The only demographic variable found to be associated with the symptom screeners was age of child. Therefore, subsequent analyses included child age among independent variables.
Analysis of Covariance (ANCOVA) were conducted to examine associations between exposure variables and screener scores, controlling for child age. Table 2 displays the exposure variables that were significantly associated with the PTSD Symptom screener. The reliability coefficient for this scale in previous research has been found to be between .85 and .94. In this study, this scale produced a reliability coefficient of .93. Of the 24 exposure variables examined, 19 were significantly associated with screener scores on this scale. The exposure variables obtaining the largest F-values in association with PTSD Symptom screener scores were as followed in order of magnitude: Child did not have time to prepare for evacuation, Child in crowded shelter, Child received previous mental health treatment, Child’s belongings, clothes, or toys destroyed, Child experienced previous trauma(s) or loss(es), Child separated from pet(s), Child’s home damaged or destroyed.

<table>
<thead>
<tr>
<th>Exposure Variable</th>
<th>F-statistic (df)</th>
<th>Mean 1/Mean 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child injured</td>
<td>6.21*(1,522)</td>
<td>29.22/40.60</td>
</tr>
<tr>
<td>Family or friend(s) injured</td>
<td>9.81**(1,513)</td>
<td>29.03/35.29</td>
</tr>
<tr>
<td>Family or friend(s) killed</td>
<td>8.52**(1,515)</td>
<td>28.88/33.51</td>
</tr>
<tr>
<td>Child witnessed injury</td>
<td>17.06*** (1,521)</td>
<td>29.07/40.85</td>
</tr>
<tr>
<td>Child separated from parent(s) or caregiver(s)</td>
<td>7.45**(1,524)</td>
<td>28.91/31.89</td>
</tr>
<tr>
<td>Child’s home damaged or destroyed</td>
<td>12.49*** (1,484)</td>
<td>28.29/30.80</td>
</tr>
<tr>
<td>Child saw neighborhood damaged or destroyed</td>
<td>5.66* (1,512)</td>
<td>27.20/29.82</td>
</tr>
<tr>
<td>Child separated from pet(s)</td>
<td>13.17*** (1,519)</td>
<td>28.25/31.37</td>
</tr>
<tr>
<td>Child’s belongings, clothes, or toys destroyed</td>
<td>15.77*** (1,520)</td>
<td>25.57/30.01</td>
</tr>
<tr>
<td>Child did not have time to prepare for evacuation</td>
<td>38.82*** (1,508)</td>
<td>32.84/27.08</td>
</tr>
<tr>
<td>Child had difficulty evacuating</td>
<td>11.30** (1,518)</td>
<td>28.90/35.41</td>
</tr>
<tr>
<td>Child isolated</td>
<td>10.07** (1,426)</td>
<td>29.30/36.39</td>
</tr>
<tr>
<td>Child in crowded shelter</td>
<td>27.89*** (1,435)</td>
<td>28.57/36.17</td>
</tr>
<tr>
<td>Child moved homes</td>
<td>9.48** (1,510)</td>
<td>26.96/30.57</td>
</tr>
</tbody>
</table>
Table 3 displays the exposure variables that were significantly associated with elevated scores on the *Adjustment and Emotion Regulation screener*. In this study, this scale produced a reliability coefficient of .76. Of the 24 exposure variables examined, 19 were significantly associated with screener scores on this scale. The exposure variables for which the largest F-values were found in association with *Adjustment and Emotion Regulation screener* scores were as followed in order of magnitude: Child in crowded shelter, Child did not have time to prepare for evacuation, Child took psychotropic medications before hurricane, Child’s home damaged or destroyed, Child experienced previous trauma(s) or loss(es), Child witnessed injury, and Family or friend(s) killed.

<table>
<thead>
<tr>
<th>Traumatic Stressor</th>
<th>F-statistic (df)</th>
<th>Mean 1/Mean 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family or friend(s) injured</td>
<td>4.58*(1,449)</td>
<td>10.36/12.25</td>
</tr>
<tr>
<td>Family or friend(s) killed</td>
<td>12.89*** (1,451)</td>
<td>10.25/12.65</td>
</tr>
<tr>
<td>Child witnessed injury</td>
<td>12.92*** (1,461)</td>
<td>10.37/14.15</td>
</tr>
<tr>
<td>Child separated from parent(s) or caregiver(s)</td>
<td>5.92* (1,463)</td>
<td>10.28/11.55</td>
</tr>
<tr>
<td>Child’s home damaged or destroyed</td>
<td>13.48*** (1,434)</td>
<td>9.61/10.69</td>
</tr>
<tr>
<td>Child saw neighborhood damaged or destroyed</td>
<td>5.36* (1,457)</td>
<td>9.61/10.69</td>
</tr>
<tr>
<td>Child separated from pet(s)</td>
<td>11.27*** (1,464)</td>
<td>10.08/11.35</td>
</tr>
</tbody>
</table>
Additionally, exposure variables that were conceptually similar were grouped together and analyzed for associations with elevated screener scores, as a way to reduce the number of exposure variables and potentially identify themes among these. The groups were as followed: 

*Witness injury, death, or violence* (Child witnessed injury, Child witnessed death, and Child witnessed violence and/or looting), *Previous mental health treatment* (Child received previous mental health and Child took psychotropic medications before hurricane), *Parental factors* (Family member served as emergency worker and Parent unemployed due to hurricane), and *Evacuation issues* (Child did not have time to prepare for evacuation, Child had difficulty evacuating, Child in crowded shelter, Child displaced from home, Child currently in shelter, and Child isolated). Ordinary least square regressions were conducted to examine these associations while controlling for age.

<table>
<thead>
<tr>
<th>Exposure Variable</th>
<th>Coefficient</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child’s belongings, clothes, or toys destroyed</td>
<td>11.33**</td>
<td>9.03/10.71</td>
</tr>
<tr>
<td>Child did not have time to prepare for evacuation</td>
<td>19.02***</td>
<td>11.43/9.86</td>
</tr>
<tr>
<td>Child had difficulty evacuating</td>
<td>5.7*</td>
<td>10.32/11.97</td>
</tr>
<tr>
<td>Child in crowded shelter</td>
<td>32.36***</td>
<td>10.03/12.90</td>
</tr>
<tr>
<td>Child displaced from home</td>
<td>5.07*</td>
<td>9.00/10.58</td>
</tr>
<tr>
<td>Child moved homes</td>
<td>5.11*</td>
<td>9.76/10.74</td>
</tr>
<tr>
<td>Family member served as emergency worker</td>
<td>8.08***</td>
<td>10.20/11.38</td>
</tr>
<tr>
<td>Parent unemployed due to hurricane</td>
<td>5.67*</td>
<td>9.68/10.70</td>
</tr>
<tr>
<td>Child received previous mental health</td>
<td>5.25**</td>
<td>10.39/11.97</td>
</tr>
<tr>
<td>Child took psychotropic medications before hurricane</td>
<td>16.06***</td>
<td>10.34/13.65</td>
</tr>
<tr>
<td>Child experience previous trauma(s) or loss(es)</td>
<td>13.28***</td>
<td>10.18/11.97</td>
</tr>
<tr>
<td>Child witnessed violence and/or looting</td>
<td>5.07*</td>
<td>10.44/12.44</td>
</tr>
</tbody>
</table>

*p<.05 **p<.01 ***p<.001
Three of the four conceptual variable groupings were significantly associated with global scores on the *PTSD Symptom screener*. The statistics for each group can be found below in Table 4.

<table>
<thead>
<tr>
<th>Traumatic Stressor</th>
<th>t-value (df)</th>
<th>Standardized Beta</th>
<th>Adjusted R-squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Witness injury, death, or violence</td>
<td>4.27***</td>
<td>.182</td>
<td>.071</td>
</tr>
<tr>
<td>Previous mental health treatment</td>
<td>4.67***</td>
<td>.200</td>
<td>.075</td>
</tr>
<tr>
<td>Parental Factors</td>
<td>3.41***</td>
<td>.147</td>
<td>.060</td>
</tr>
<tr>
<td>Evacuation Issues</td>
<td>1.92</td>
<td>.095</td>
<td>.034</td>
</tr>
</tbody>
</table>

Furthermore, all four conceptual variable groupings were significantly associated with global scores on the *Adjustment and Emotion Regulation screener*. The statistics for each group can be found below in Table 5.

<table>
<thead>
<tr>
<th>Traumatic Stressor</th>
<th>F-Statistic (df)</th>
<th>Standardized Beta</th>
<th>R-squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Witness injury, death, or violence</td>
<td>3.49***</td>
<td>.163</td>
<td>.023</td>
</tr>
<tr>
<td>Previous mental health treatment</td>
<td>3.90***</td>
<td>.182</td>
<td>.030</td>
</tr>
<tr>
<td>Parental Factors</td>
<td>3.61***</td>
<td>.167</td>
<td>.025</td>
</tr>
<tr>
<td>Evacuation Issues</td>
<td>1.92*</td>
<td>.095</td>
<td>.034</td>
</tr>
</tbody>
</table>

*p<.05  **p<.01  ***p<.001
CHAPTER 5
DISCUSSION

As previously discussed, conducting research on the psychological effects of disasters on affected populations is extremely difficult and complex. Due to the various ethical, conceptual, methodological, and practical challenges inherent to disaster research, significant gaps in the literature have been found in this area (Masten & Osofsky, 2010). These gaps in research and findings are even greater in the area of the psychological functioning of children following disasters (La Greca et al., 2013.). This exploratory study was intended to investigate the experiences of children affected by the Gulf Coast hurricanes of 2005 and to examine the psychological functioning of these children in the aftermath of the storms in hopes of adding to the body of knowledge in this research area.

Of the caregivers that completed the exposure variable questionnaire in its entirety (N=360), every caregiver reported that his or her child experienced at least 2 of the exposure variables. The average number of exposure variables experienced by this sample was found to be 7.29 showing that many children in this sample were exposed to many potentially traumatizing events throughout the affected time period in which the hurricanes occurred. Furthermore, data analysis found that the vast majority of these exposure variables were associated with elevated screener scores suggesting that these incidents caused by the hurricane may have negative effects on children in the aftermath of natural disasters. These findings suggest that caregivers of children should be proactively working to protect their children from experiencing these additional stressors during these trying times.

As previously stated, the vast majority of the exposure variables were associated with elevated screener scores. Exposure variables that involved an injury or death to the child or to others were associated with elevated scores on the PTSD Symptom screener. As the APA (2013)
stated, The diagnostic criteria for Post-Traumatic Stress Disorder requires exposure to the actual or threatened death or serious injury to one’s self or to others and various symptoms related to the event(s). The findings of this study are in accordance with these criteria, for children who experienced injury to one’s self or injury or death to others were more likely to score higher on the PTSD Symptom screener. Additionally, children who had family members or friends injured or killed also displayed elevated scores on this screener. Surprisingly, children who experienced an injury did not display elevated scores on the Adjustment and Emotion Regulation screener. However, children who witnessed injury or who had a family member or friend injured or killed did show elevated scores on this screener. Also, children who witnessed violence or looting also scored higher on both screeners suggesting that these experiences may negatively affect children’s mental health.

Furthermore, children that were separated from their caregiver(s) as a result of the hurricanes scored higher on both the PTSD Symptom screener and the Adjustment and Emotion Regulation screener. These findings are consistent with attachment theory, for Bowlby (1989) stated that children utilize their caregivers for protection and nurturance during times of stress and vulnerability. Additionally, Busch and Lieberman (2007) noted that a child’s experience of a traumatic event may lead to a child losing trust in a caregiver’s ability to protect the child in times of danger. Therefore, children who were not with their caregivers during these hurricanes may have felt that the caregiver was incapable of protecting him or her, which could have led to the elevated scores on the psychological screeners. These findings, along with previous findings in disaster research, highlight the importance of children remaining with their caregivers throughout the hurricane experience and the importance of the caregiver’s well-being for their children’s well-being.
Damage and destruction of homes and neighborhoods are an inevitable result of natural disasters. In this study, children whose home was damaged or destroyed scored higher on both screeners suggesting that these factors may lead to negative psychological effects in children. Furthermore, children who saw their homes and neighborhoods destroyed by the storms also displayed elevated scores on both screeners. As previously stated, the damage and destruction of property is expected when natural disasters occur. However, the findings of this study suggest that children fair better psychologically if they do not see the damaged or destroyed areas and property. Therefore, caregivers may be able to lessen the psychological burden on their children by not allowing their children to return to the affected area until after the major destruction is repaired. This delay in the return of the children may be difficult given the already strained resources of the affected population during these times but should be enacted if possible.

Additionally, children whose belongings, toys, and/or clothes were destroyed as a result of the hurricanes scored higher on both screeners. As with homes and neighborhoods, the destruction of personal belongings is extremely common in the event of a natural disaster. However, caregivers may be able to reduce the psychological damage inflicted by the loss of these belongings by giving time to their children to choose personal items that they would like to evacuate with. Practically, a family cannot evacuate with all of a child’s personal belongings. Therefore, caregivers should prepare children for the possibility of the loss of belongings as long as this preparation is done at a developmentally appropriate level.

The separation of a child from his or her pet(s) was also found to be significantly associated with elevated scores on the screeners. Evacuating with pets may not always be practical or possible, but the findings of this study suggest that, if possible, families should consider evacuating with pets when possible to alleviate the stress imposed on their children.
Furthermore, multiple exposure variables concerning the evacuation process were found to be significantly associated with the presence of psychological symptoms in the aftermath of the hurricanes. Children who did not have time to prepare for evacuation and children who had difficulty evacuating displayed higher scores on both the PTSD Symptom screener and the Adjustment and Emotion Regulation screener. Additionally, children who were isolated during the hurricane or were in crowded shelters displayed elevated PTSD symptom screener scores. As Masten and Osofsky (2010) noted, parents have a pivotal role in preparing, protecting, and nurturing their children throughout the experience of a natural disaster. This study’s findings underscore the importance of the parent’s role in preparing the child and also in giving the child time to prepare for the evacuation process, when this is possible. In addition, the findings highlight the importance of caregivers preparing and implementing the most efficient and least stressful evacuation plan in order to reduce the chance of the evacuation negatively impacting their children.

As previously stated, the damaging and destruction of homes is an inevitable occurrence when natural disasters strike. In this study’s sample, children who were forced to move houses due to the hurricanes showed more PTSD symptoms than children who were able to move back into their houses. Furthermore, children who were displaced from their homes and children who were forced to move houses due to the hurricane scored higher on the Adjustment and Emotion Regulation screener. These findings suggest that these factors are psychologically distressing to young children.

Previous studies (Scheeringa and Zeanah 2001; Amatya and Barzman 2013) have shown that responsive caregiving and positive caregiving-child relationships can alleviate psychological symptoms following a traumatic experience. Therefore, a caregiver’s mental health following
these events can affect the mental health of the child. However, hurricanes can inflict additional stress on caregivers and may affect their ability to be responsive caregivers. This study examined two possible stressors on parents during the hurricane experience—parents unemployed due to hurricane and parent serving as emergency worker. Children whose parents served as emergency workers during the hurricane displayed more PTSD symptoms. Additionally, children whose parents served as emergency workers and children whose parents were unemployed due to the hurricane scored higher on the PTSD Symptom screener and the Adjustment and Emotion Regulation screener. These findings suggest these stress-inducing factors experienced by parents may have an effect on their children’s psychological well-being in the aftermath of natural disasters.

The remaining examined exposure variables involved the children’s previous mental health history and trauma exposure. Children who had received previous mental health treatment and children who took psychotropic medications before the hurricane scored higher on both screeners suggesting that children’s psychological well-being before natural disasters may affect their psychological well-being after natural disasters. These findings are consistent with previous research on traumatic experiences of children who have a history of mental health issues. These studies have found that exposure to natural and manmade disasters is associated with elevated posttraumatic stress symptoms, especially in children with previous histories of mental health issues (Kronenberg et al., 2010; La Greca, Silverman, Vernberg, & Prinstein, 1996;).

Furthermore, children who experienced previous trauma or loss(es) displayed elevated level PTSD symptoms and scored higher on the Adjustment and Emotion Regulation screener. These findings are consistent with previous literature (Pine et al., 2005; Osofsky, Osofsky, Weems, Hansel, & King, 2014) that stated that as the level of trauma exposure increases, the
level and intensity of trauma symptoms and mental health issues increase as well. In addition, previous research (Kronenberg et al., 2010; Weems & Graham, 2014) has found that cumulative or complex trauma results in an increased vulnerability in children to psychological conditions. Interestingly, a child’s experience of a previous hurricane(s) was not significantly associated with elevated scores on either screener. This evidence suggests that experiences of similar types of traumatic experience (e.g. previous hurricane exposure) may have provided some psychological protection to these children. Weems et al. (2014) found that children who had high levels of exposure to Hurricane Katrina but low levels of exposure to Hurricane Gustav in the following year retrieved less negative memories of Katrina and fewer PTSD symptoms.

Limitations and Future Direction

While this study provided evidence for the association between the experience of hurricanes and future psychological symptoms, it was not without limitations. A major limitation, which is a frequent limitation in disaster research, is that the naturalistic design of this study does not allow for definitive causal conclusions regarding the associations reported. An additional main limitation of this exploratory study is that their exposure and screener data were supplied by only one respondent, a caregiver. The collection of data from a secondary source is prone to inaccuracy and misrepresentations. Moreover, the biased perspectives of parent reporters could have influenced responses on both sources of data analyzed in this study. Another limitation of the findings is the modest effect sizes found in the amount of variance in screener scores accounted for by the exposure variables. Clearly, children’s symptoms were influenced by other factors not measured in the present study. Despite these limitations, the sample size of the study was relatively large and provided an extensive amount of data for analysis.
This study provides further evidence for the negative psychological effects of natural disasters on children. These findings, along with other similar findings, can be used to educate policy makers and government officials in hopes of improving the evacuation and safety plans for hurricanes so that these plans better protect our youth. The study also adds to the body of knowledge on cumulative and complex trauma. Future studies should continue to investigate this phenomenon. Specifically, future research should investigate whether the type of previous trauma affects a child’s response to a future traumatic experience. This area of research can have a significant influence on the treatment of trauma and also solidify newer theories of traumatic memory consolidation.
REFERENCES


APPENDIX A
LSU KIDS MEASURE

LSUHSC HURRICANE KATRINA/rita disaster interview

5:00

(All information will be kept confidential and used only for follow-up)

Parent/Caregiver Name

Child Name & Birthday

Child's Grade:

Are you or your spouse a first responder (first responders are employed in police/fire/EMS)? □ Yes □ No

[ ] Yes, the first responder is (check one) □ Police   □ Fire □ EMS

First Responder is (check one) □ Mother and/or □ Father

Zip Code

Ethnicity: □ Caucasian □ Hispanic origin □ African-American □ Middle Eastern

□ American Indian/Alaska Native □ Mixed race □ Other

SEX: □ Male □ Female

Preferred language: □ English □ Spanish □ Other

What adults lived in your home with your child before Hurricane Katrina? (Check all that apply)

□ Mother (Biological or adopted)

□ Father (Biological or adopted)

□ Parent's partner/significant other

□ Grandparent

□ Other adult relative, if yes, who?

□ Other adult non-relative

□ Unknown

□ Other, Specify:

Total number of adults (18 years of age or older) living in child's home:

Total number of children younger than 18 years of age (including child) living in child's home:

1. Was your child injured because of the hurricane? □ Yes □ No If yes, how seriously

2. Were any of your child's family members or friends seriously injured or killed? □ Yes □ No If yes, who?

□ Mother □ Injured or □ Killed

□ Father □ Injured or □ Killed

□ Parent's partner/significant other □ Injured or □ Killed

□ Grandparent □ Injured or □ Killed

□ Other adult relative □ Injured or □ Killed

□ Unknown □ Injured or □ Killed

□ Friend □ Injured or □ Killed

□ Other □ Injured or □ Killed

3. Did your child witness injury or death? □ Yes □ No

If yes, did your child witness (check one or both) □ Injury and/or □ Death
4. Was your child separated from the parent(s) or primary caretaker(s)? □ Yes □ No

5. Was your child’s home destroyed/badly damaged by hurricane/flooding? □ Yes □ No
   If yes, (check one) □ home destroyed or □ badly damaged
   (check one or both) by □ hurricane or □ flooding

6. Did your child see his/her neighborhood destroyed or badly damaged? □ Yes □ No
   6 (a) Did your child see other areas destroyed or badly damaged? □ Yes □ No

7. Was your child separated from a pet(s)? □ Yes □ No
   If yes, pet was (check one) □ lost □ hurt □ killed

8. Were your child’s belongings, clothes, or toys destroyed by hurricane/flooding? □ Yes □ No

9. Was your child evacuated with (check one) □ no time to prepare or □ time to prepare?

10. Was your child trapped or did your child have difficulty evacuating? □ Yes □ No
    10 (a) Was your child isolated □ Yes □ No
    10 (b) Was your child in a crowded shelter □ Yes □ No

11. Was your child exposed to violence or looting? □ Yes □ No

12. Was your child displaced from his/her home? □ Yes □ No
    If yes, length of time in days: Hurricane Katrina was Monday, August 29, 2005
    12 (a) Number of shelters/displacement centers your child has been in: ___________
    12 (b) Is your child currently in a shelter/displacement center? □ Yes □ No

13. Did the family move to a new place because of hurricane/flooding? □ Yes □ No
    13 (a) If the family moved, are extended family in the area? □ Yes □ No
    13 (b) If the family moved, is the family (check one) □ in state or □ out of state?

14. Has the child transferred to a new school because of hurricane/flooding? □ Yes □ No
    14 (a) How many schools has your child attended since the hurricane? ___________
    14 (b) If your child is in school currently, how long was your child out of school (in days)? ___________

15. Did a family member serve as a rescue/recovery worker? □ Yes □ No

16. Were you or your spouse unemployed because of hurricane/flooding? □ Yes □ No
    16 (a) Are you or your spouse currently unemployed? □ Yes □ No

17. Had your child experienced a hurricane or flooding before? □ Yes □ No

18. Has the child seen a counselor or doctor in the past for emotional problems? □ Yes □ No

19. Was the child taking medicine for emotional or behavior issues before the disaster? □ Yes □ No
    21. (a) Is medication currently available? □ Yes □ No

20. Has your child experienced previous major loss or trauma? □ Yes □ No
    If yes, what? ____________________________________________________________________________

21. Other pertinent information: ____________________________________________________________________________
We are interested in your child’s feelings and thoughts about the Hurricane/Flooding and how much they are causing problems now. Think about your child’s thoughts, feelings and behavior DURING THE LAST MONTH

For each question choose ONE of the following responses and enter the number of the choice in the box for that question.

(1) Not at all  (2) A little bit  (3) Quite a bit  (4) Very much

1. Does your child get upset, afraid or sad when something makes him/her think about the hurricane/flood evacuation?
   1 2 3 4

2. Does your child have bad dreams or nightmares about what happened?
   0 2 3 4

3. Does your child have upsetting thoughts or pictures that come to mind about what happened?
   0 2 3 4

4. Does your child try not to think about or talk about what happened?
   1 2 3 4

5. Does your child stay away from places, people or things that make him/her remember the hurricane/flood evacuation?
   0 2 3 4

6. Since the hurricane/flood evacuation, especially in the past four weeks, does your child feel that nothing is fun any more or that he/she just isn’t interested in anything?
   0 2 3 4

7. Does your child have difficulty falling asleep at night or wake up in the night because of what happened?
   1 2 3 4

8. Does your child often feel jumpy or nervous?
   0 2 3 4

9. Since, the hurricane/flood evacuation, does your child find it harder to concentrate or pay attention to things?
   0 2 3 4

10. Since the hurricane/flood evacuation, especially in the past four weeks, does your child worry about what is going to happen?
    0 2 3 4

11. Does your child often feel irritable or grouchy?
    0 2 3 4

12. Does your child often feel sad, down or depressed?
    0 2 3 4

13. Has your child’s appetite changed?
    0 2 3 4

14. Does your child have headaches or stomachaches?
    0 2 3 4

15. Does your child have less energy than usual?
    0 2 3 4

16. Does your child find it harder to get his/her schoolwork done?
    0 2 3 4

17. Does your child worry about something bad happening to him/her?
    0 2 3 4

18. Since the hurricane/flood evacuation, especially in the past four weeks, does your child have a harder time getting along with family or friends?
    0 2 3 4

19. If in a new school, is your child having a hard time making new friends?
    0 2 3 4

20. Is your child finding it harder to do or enjoy activities?
    0 2 3 4
Additional questions for Parents/Caregivers:

1. Has your child been more clingy or worried about separation?  1 2 3 4
2. Has your child been quieter and withdrawn?  1 2 3 4
3. Has your child talked repeatedly about or asked questions about the hurricane/flooding?  1 2 3 4
4. Has your child’s play been about the hurricane/flooding?  1 2 3 4
5. Have you noticed changes in your child’s development (e.g., bedwetting, baby talk, need more help with self care)?  1 2 3 4
6. Is your child having more behavior problems?  1 2 3 4
7. Do you have other concerns about your child since the hurricane/flooding? What?  1 2 3 4

Are you interested in services for your child or family? Yes No
APPENDIX B
IRB MATERIALS

ACTION ON EXEMPTION APPROVAL REQUEST

TO: Jonathan Brothers
Social Work

FROM: Dennis Landin
Chair, Institutional Review Board

DATE: October 22, 2014

RE: IRB F 9044

TITLE: Investigating the Predictors of Psychological Symptoms in Children Following the Gulf Coast Hurricanes of 2005


Review Date: 10/21/2014
Approved X Disapproved

Approval Date: 10/21/2014 Approval Expiration Date: 10/20/2017

Exemption Category/Paragraph: 4a

Signed Consent Waived?: Yes

Re-review Frequency: (three years unless otherwise stated)

LSU Proposal Number (if applicable): __________

Protocol Matches Scope of Work in Grant Proposal: (if applicable) __________

By: Dennis Landin, Chairman

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –

Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects.
2. Prior approval of any change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins), notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being of informed consent of the individual participants, including notification of all information that might affect consent.
6. Prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.

8. SPECIAL NOTE:

*All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing the use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsu.edu/irb
VITA

Jonathan Brothers received his Bachelors of Science in Psychology from Louisiana State University and is currently a candidate for a Masters of Social Work (MSW) degree from Louisiana State University. While completing his MSW, Jonathan has had the opportunity to improve his clinical social work skills through internships at River Oaks Hospital’s Dual Diagnostic Unit, River Oaks Hospital’s New Orleans Institute for Trauma and Compulsive-Based Disorders, and at the Louisiana State University School of Medicine as a Harris Infant Mental Health Fellow. After graduation, Jonathan hopes to continue to grow as a therapist and researcher while pursuing his license to become a Clinical Social Worker. One day, Jonathan hopes to pursue a Ph.D. in Social Work or Psychology in hopes of combining his clinical skills and knowledge with extensive training in scientific research.