Journal of Family Strengths

Volume 19
Issue 1 *The Impact of Hurricanes on Children and Families and Interconnected Systems*

Article 1

8-2019

The Louisiana Spirit Hurricane Recovery Program: Addressing the Needs of Children and Adolescents after Catastrophic Hurricanes

Melissa J. Brymer
UCLA/Duke University National Center for Child Traumatic Stress, and Department of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, mbrymer@mednet.ucla.edu

Tonya Hansel
Tulane University School of Social Work, New Orleans and Louisiana State University Health Sciences Center, Department of Psychiatry, New Orleans, tcross1@tulane.edu

Alan M. Steinberg
UCLA/Duke University National Center for Child Traumatic Stress, Department of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, asteinberg@mednet.ucla.edu

Anthony Speier
Louisiana State University Health Sciences Center, Department of Psychiatry, New Orleans, aspei1@lsuhsc.edu

Joy Osofsky
Louisiana State University Health Sciences Center, Department of Pediatrics and Psychiatry, New Orleans, josofs@lsuhsc.edu

Recommended Citation
See next page for additional authors
Brymer, Melissa J.; Hansel, Tonya; Steinberg, Alan M.; Speier, Anthony; Osofsky, Joy; and Osofsky, Howard (2019) "The Louisiana Spirit Hurricane Recovery Program: Addressing the Needs of Children and Adolescents after Catastrophic Hurricanes," *Journal of Family Strengths*: Vol. 19: Iss. 1, Article 1.
DOI: https://doi.org/10.58464/2168-670X.1400
Available at: https://digitalcommons.library.tmc.edu/jfs/vol19/iss1/1

The Louisiana Spirit Hurricane Recovery Program: Addressing the Needs of Children and Adolescents after Catastrophic Hurricanes

Acknowledgements

Acknowledgement: Team members that participated in the Louisiana Spirit Hurricane Recovery Program also included James M. Becnel, Garcia Bodley, Charles Cook, So'Nia Gilkey, Ruth W. Landis, Betty Pfefferbaum, Kirsten Sundgaard Riise, and Cassandra Wilson.

Authors

Melissa J. Brymer, Tonya Hansel, Alan M. Steinberg, Anthony Speier, Joy Osofsky, and Howard Osofsky

The Louisiana Spirit Hurricane Recovery Program: Addressing the Needs of Children and Adolescents after Catastrophic Hurricanes

The Louisiana Spirit Hurricane Recovery Program created an extension of the Federal Emergency Management Agency's Crisis Counseling Assistance & Training Program (CCP) in Louisiana called the Specialized Crisis Counseling Services (SCCS) Program to address the significant behavioral health needs of individuals living in affected communities and for those who required additional services beyond the scope of traditional CCP services. SCCS services were provided by the five service agencies that were providing CCP services across the state, mostly in community locations. SCCS interventions, in comparison to traditional crisis counseling, provided more individualized and intensive support to address identified needs and concerns of survivors. A Practice Directorate was formed, with disaster behavioral health experts in the state and across the country, to provide expert consultation and ongoing assessment of program needs in the development of policies and procedures, training and consultation, data collection and evaluation, and to ensure that services provided were consistent with current evidence in the field. The SCCS program was able to adapt and implement an evidence-based risk screening instrument for both children and adolescents, and delivered services using an evidence-informed intervention, *Skills for Psychological Recovery (SPR)*. These aspects of the Louisiana Spirit Program represent an advance in models of disaster recovery through incorporation of psychometrically sound risk screening instruments, algorithms for referral for more in-depth assessment, and provision of a structured, skills-based, modular intervention. This model has since been adopted for use within the Regular Services CCP.

This program addresses several areas where advances in disaster response and associated research are needed. First, the study demonstrates the feasibility of screening children and adolescents in a large community-based disaster recovery program using screening tools that can be employed by paraprofessionals to identify survivors at risk to make appropriate referrals. Second, the study also demonstrates the feasibility of training paraprofessionals to deliver a structured, skills-based child, adult, and family intervention. In so doing, it contributes to progress in post-disaster interventions for severely affected youth and their families. Third, the outcome findings contribute to the literature in providing preliminary evidence of the benefits of the SPR intervention.

Background

According to the International Federation of Red Cross and Red Crescent Societies (2014), extreme weather events are increasing in frequency and magnitude, with approximately 200 million people worldwide affected annually by disasters. With incidents of emergencies on the rise, disasters touch the lives of millions of children each year (UNICEF, 2011). In the United States, some type of disaster has affected over half of all families (Save the Children, 2015). Not only is there an increased frequency of disasters each year, but their magnitude is also becoming more devastating, suggesting that the numbers of children significantly affected by disasters is increasing. Of note, 94% of U.S. children live in communities at risk of natural disasters, estimated in 2016 to be 73 million children (U.S. Census Bureau, 2016).

The field of disaster behavioral health is well established, with a large number of studies of the psychological sequelae of exposure to different types of disasters (for reviews, see Galea, Nandi, & Vlahov, 2005; Furr, Corner, Edmunds & Kendall, 2010; Terasaka, Tachibana & Okuyama, 2015). These studies have consistently indicated that children are more vulnerable than adults when exposed to disasters (Brymer, Reyes & Steinberg, 2012; Masten & Osofsky, 2010; Overstreet, Salloum, Burch, & West, 2011; Pfefferbaum, Jacobs, Griffin, & Houston, 2015). Consequently, in recent years increased attention is being paid to the special needs of children, adolescents, and families during and following disasters. Currently, children are recognized in the Pandemic and All-Hazards Preparedness Reauthorization Act, (Public Law No. 113-5 (2013) as a special population with unique vulnerabilities to disaster and terrorist events. The National Advisory Committee on Children and Disasters (2010) further specified important vulnerability characteristics of children and how these can be identified and addressed related to medical and public health needs. The National Disaster Report Card on *Protecting Children in Disasters*, (Save the Children, 2015), highlights that 79% of the Commission's recommendations have remained unfulfilled since Hurricane Katrina. More striking was the finding that 40% of parents did not have a disaster safety plan, and that most extant plans were inadequate (Save the Children, 2015).

Post-Disaster Reactions and Symptoms among Children and Adolescents

Given the slow progress on child disaster preparedness and recovery issues, it is understandable that many children suffer following exposure to disasters (for review of trajectories of posttraumatic stress symptoms after

disaster, see Lai, Lewis, Livings, La Greca & Esnard, 2017). Extensive research on children and adolescents after disasters has found that the most common post-disaster mental health reactions are depression, anxiety, and posttraumatic stress (Osofsky, Osofsky, Kronenberg, Brennan, & Hansel, 2009; Pfefferbaum & North, 2013; Pina et al., 2008; Pynoos, Steinberg, & Piacentini, 1999). Younger children (Osofsky, Kronenberg, Bocneck & Hansel, 2015) are often exposed to additional traumas in the aftermath of disaster (Greeson et al., 2014; Kronenberg et al., 2010). Children who had been relocated due to disaster have also been found to be particularly vulnerable (Hansel, Osofsky, Osofsky, & Fredrich, 2013). Approximately three years after Hurricane Katrina, the prevalence of disaster-related Serious Emotional Disturbance (SED) among youth remained significantly elevated, despite a reduction from baseline (McLaughlin et al., 2010).

Characteristics of the children's parents and family dynamics that are associated with less favorable outcomes include excessively anxious and overly protective parenting, as well as conflict, irritability, and withdrawal among family members (McFarlane 1987). There are also several studies identifying pre-existing mental health issues in one or more parent as a risk factor for children's behavioral issues in the face of disasters (Earls, et al. 1988; Green, et al. 1991). Maternal depression and PTSD has been found to be associated with substantially increased behavior problems in young children (Chemtob, et al., 2010). The amount of stability and support provided by the family is also associated with the degree of trauma to caregivers, as well as disruption of community, school, and social supports (Appleyard & Osofsky, 2003; Kerns et al., 2014).

In addition, the disaster literature indicates that factors associated with increased vulnerability among children for the development of symptoms of anxiety, depression, or posttraumatic stress disorder include:

- Female gender (Lai et al., 2017);
- Degree or "dose" of exposure to the disaster (Goenjian et al., 2018; Furr, et al., 2010);
- Physical injury (Piyasil et al., 2007);
- Prior trauma history and occurrence of subsequent traumatic events (Perkonigg et al., 2005);
- Pre-existing behavioral health problems (Osofsky, Osofsky, Weems, Hansel, & King, 2014; Udwin, Boyle, Yule, Bolton, & O'Ryan, 2000);
- Lack of social support in the aftermath (Lai et al., 2017);

- Neurobiological, neurohormonal and genetic factors (Goenjian et al., 1996; Goenjian et al., 2008); and
- Post-disaster economic problems and disparities in care (Cloitre et al., 2009; Greeson et al., 2011; Hallegatte, Vogt-Schilb, Bangalore, & Rozenberg, 2017; Osofsky, Osofsky, & Harris, 2007).

Research has shown that families living in poverty are more significantly affected by disasters due to fewer resources and supports. In a study of young children and disaster-related problems, families living in poverty prior to Hurricane Katrina were more likely to experience post-disaster attachment and behavior problems (Osofsky, Kronenberg et al., 2015). Disasters that are associated with a protracted recovery such as Hurricane Katrina, especially given the persistent stress on caregivers and lack of social and community resources, can result in acute and chronic psychological effects (Brymer et al., 2008; Kessler, Galea, Jones, & Parker, 2006; Kronenberg et al., 2010; Masten & Osofsky, 2010; Osofsky & Osofsky, 2013; Osofsky et al., 2009) that negatively alter the child's developmental trajectory (Kessler et al., 2006; Pynoos et al., 1999; Weems, Russell, Neill, Berman, & Scott, 2016). This is consistent with findings regarding the association of protracted recovery with cumulative and cascading adversities that occur over time (Masten & Cicchetti, 2010). Such prolonged recovery can have significant effects on children into adulthood (Goenjian et al., 2018), with possible cross-generational effects (Osofsky et al., 2015).

While evidence shows that children and families with lower levels of disaster-related trauma and adversities can cope well and demonstrate adaptive skills following a disaster, those with higher levels of exposure will experience significant distress and adjustment difficulties (Goenjian et al., 1997; King et al., 2015; McLaughlin, et al., 2010; Osofsky et al., 2009; Osofsky, Osofsky, Weems, King, & Hansel, 2015; Weems et al., 2016). In 2005, the major impact of Hurricane Katrina, followed within weeks by Hurricane Rita, devastated large sectors of Gulf Coast communities and major population centers (Knabb, Rhome & Brown, 2006). Hurricane Katrina created the largest population of internally displaced persons in U.S. history, with 19 crisis counseling programs established to support both those remaining in the affected area and those displaced across 17 states (Norris & Bellamy, 2009). This report describes the outreach strategies, risk screening protocol, and the intervention employed in a statewide behavioral health recovery program, the Louisiana Spirit Hurricane Recovery Program, implemented in response to the hurricanes.

Behavioral Health Response after Disasters

Systematic disaster response initiatives are effective when public officials have rapid access to crucial and accurate information to guide their response. Disaster recovery responses, including behavioral health services, have been shown to be effective in reducing symptoms of PTSD and depression (Berger, Gelkopf, & Heineberg, 2012; CATS Consortium, 2010; Giannopoulou, Dikaiakou & Yule, 2006; Jaycox et al., 2010; Powell & Thompson, 2016). Newman et al. (2015). A review of 24 studies of interventions for children and adolescents after natural and manmade disasters found that those receiving interventions did better than those that did not, although additional studies are needed to dismantle interventions to identify their effective therapeutic elements. Other studies have indicated that basic components of disaster behavioral health recovery programs should include attention to timing, optimal sequencing of intervention components, and nature of the population receiving the intervention, especially related to cultural influences (Pfefferbaum et al., 2014). However, there have been limited systematic studies of response initiatives that are family centered, assessment driven, evidence-informed, and readily accessible to survivors following disaster.

Child and Adolescent Risk Screening

Post-disaster screenings provide a systematic and efficient method of planning and matching recovery services with survivor's needs. Screenings are important to identify those at-risk who may benefit from services and can provide information to guide selection of the type of services needed and where resources should be directed (Disaster PAST, 2012; Steinberg, Brymer, Steinberg, & Pfefferbaum, 2006). While there are numerous methods for post-disaster screening, North and Pfefferbaum (2013) concluded from a systematic review that, in general, all post-disaster screenings should adhere to the following basic principles: they should be brief, reflect the current situation within the post-disaster environment, be culturally appropriate, and easy to administer and score. The content of the screening tool must provide critical information about needs and reactions while also limiting burden on providers and survivors (Hamada, Kameoka, Yanagida, & Chemtob, 2003).

The Child and Adolescent Assessment and Referral Tool

The Louisiana Spirit Hurricane Recovery Program outreach activities included the use of a specially designed SCCS interview form, the *Child*

and Adolescent Assessment and Referral Tool. The exposure and symptom items for this form were originally developed for use in Project Liberty, a CCP following the September 11, 2001 attacks in New York (NCTSN, 2002). These items were subsequently modified to assist frontline workers in evaluating children and adolescents for Katrina-related risk factors (Hansel, Osofsky, & Osofsky, 2015; NCTSN, 2005). Selected screening items were based on the UCLA PTSD Reaction Index for DSM-IV (Steinberg, Brymer, Decker, & Pynoos, 2004; Steinberg et al., 2013), with the addition of items to assess depression and anxiety. Separate interview forms for adults and for children/adolescents were used as screening and referral tools to guide crisis counselors in their decision to refer survivors for SCCS.

The *Child and Adolescent Assessment and Referral Tool* for the Louisiana Spirit Hurricane Recovery Program included 22-symptom items that were scaled from 0 (*no days in the past month*), to 4 (*almost every day*). Total symptom scores were calculated by adding the number of items to which youth responded 3 (*two to three times a week*) or 4 (*almost every day*). Total number of items score equal to or greater than 4 was used as a criterion for referral to SCCS and/or to other more intensive services.

The *Child and Adolescent Assessment and Referral Tool* was used to gather demographic information along with information about pre-disaster conditions, disaster-related experiences, and post-disaster circumstances and reactions to assess appropriateness for SCCS or referral to other needed services. This information was used by the counselors to guide the selection and sequencing of SCCS interventions, and allowed for documentation of services provided and for evaluation of improvement. Data used for the present analyses were derived from sections of the *Child and Adolescent Assessment and Referral Tool*, along with information completed by the counselors for children and caregivers continuing with SCCS services.

Specialized Crisis Counseling Services

A major component of the Louisiana Spirit Hurricane Recovery Program was the SCCS that was implemented in early 2007 in Louisiana with the goal of addressing immediate needs and ongoing reactions and symptoms to prevent the development of longer-term mental health problems. SCCS was a supplement to the federally funded CCP based on the assumption that services should be provided on an ongoing basis by disaster-trained crisis counselors. SCCS services were designed to be culturally and developmentally appropriate—consistent with local traditions and

parent/child preferences. The SCCS allowed for a broader array of intervention services and additional training opportunities than the regular CCP. SCCS interventions encouraged even young children, together with their parents, to take an active role in choosing which services were desired and for how long, and in setting goals, finding solutions, and planning activities to reach these goals. This model is flexible and applicable to a widely diverse population for use in a variety of community settings. Services were family-centered, and primarily provided in schools and in the child's home. The SCCS program utilized an evidence-informed intervention, *Skills for Psychological Recovery*.

Skills for Psychological Recovery (SPR)

A strength-based intervention to address a range of post-hurricane distress reactions and adversities was introduced based on an evidence-informed modular intervention developed by the National Child Traumatic Stress Network (NCTSN) and the National Center for PTSD (NCPTSD), entitled *Skills for Psychological Recovery* (SPR; Berkowitz et al., 2010). The SPR skills include: *Information Gathering*, *Problem-Solving*, *Promoting Positive Activities, Managing Reactions*, *Helpful Thinking*, and *Rebuilding Social Connections*. Each skill stands alone and can be applied in single or multiple sessions. After gathering information about current needs and concerns and post-hurricane reactions and symptoms, crisis counselors prioritized the use of appropriate SPR skills. SPR was developed to ensure that training and service provision would be feasible in the intermediate phase after a disaster for use by paraprofessionals. Crisis counselors were provided a two-day training and regular consultation to support their use of SPR in the field.

Most sessions began with strategies of *Information Gathering* and *Problem Solving* to identify and prioritize goals and empower the survivor to take an active role in a recovery plan. *Positive Activity Scheduling* was directed at improving mood and well-being, while *Managing Reactions* focused on decreasing distress and addressing the impact of trauma and loss reminders. Techniques in the *Managing Reactions* module were useful for survivors with significant psychological and physical reactivity to disaster reminders, sleep problems, grief/loss reactions, and chronic stress. Counselors working with different trauma and grief reactions used specific coping strategies such as skills that promoted a calming of the body, strategies to anticipate and manage reactions, and writing exercises to help to organize thoughts. *Helpful Thinking* was used to correct catastrophic thoughts about oneself and the future. *Rebuilding Healthy Social Connections* was used to facilitate social connections that were

disrupted due to the storms and subsequent moves and to deal with disturbed relationships with family members and peers. SCCS teams working with families used a combination of strategies from their training in both the adult and child sections of SPR. Evaluation of counselor training in SPR and its use after a large-scale disaster has been described (Hansel et al., 2011; Wade et al., 2014).

Methods

The Louisiana Office of Mental Health was awarded grants from FEMA through the CCP. The CCP was administered by the Substance Abuse and Mental Health Services Administration (SAMHSA) to assist individuals, families, and communities affected by Hurricanes Katrina and Rita. Details of this overall CCP program are described by Norris and Bellamy, 2009. As previously mentioned, additional funding was obtained to create the SCCS program to expand services of the CCP.

Counselors began providing SCCS following initial training in February 2007 and steadily increased service provision through November 2008. Referral for SCCS services originated within the crisis counseling teams. When it was determined that the level of intervention necessary to assist a survivor exceeded the capabilities of traditional crisis counseling interventions, an interview was conducted to determine appropriateness for SCCS. The SCCS interview included the use of the *Child and Adolescent Assessment and Referral Tool* to facilitate identification of children and adolescents with more severe and persistent difficulties and the process of referral to a broader array of services. On every third visit with the SCCS counselor, sections of the assessment and referral tool were re-administered to guide continuation of SCCS services or the appropriateness for additional referrals. SCCS counselors maintained a list of names and corresponding numbers; these numbers were used to track follow-up overtime, and the only identifying information connecting SCCS participants to the assessments was contained in confidential counselor records.

Participants

A total of 818 child assessment interviews were conducted for the SCCS. Of these, 56% were conducted at school, 32% at the child's home, and 12% at other community locations. A total of 663 children received an initial interview for SCCS, and 255 follow-up assessments were conducted with those who received SCCS services. The mean number of assessment interviews per child was 1.3 (SD = 0.7). The minimum number of child assessment interviews was 1 and the maximum was 6. The

majority of interviews were conducted with the child only (428; 73%); 20% were conducted with the child and parent/caregiver together; and 7% were conducted with a parent/caregiver without the child. Descriptive statistics for demographic variables, including grade, gender, ethnicity, and race calculated from the initial assessments (*N* = 663), are presented in Table 1.

Table 1:
Frequency of Demographic Characteristics

Demographic Variable	Freq.	%
Grade		
Kindergarten	24	3.6
1st	40	6.0
2nd	61	9.2
3rd	52	7.8
4th	72	10.9
5th	52	7.8
6th	53	8.0
7th	72	10.9
8th	57	8.6
9th	35	5.3
10th	35	5.3
11th	39	5.9
12th	19	2.9
Missing/Unknown	52	7.8
Gender		
Female	326	49.2
Male	312	47.1
Missing/Unknown	25	3.8
Ethnicity		
Hispanic or Latino	13	2.0
Race*		
Black	512	77.2
White	133	20.1
American Indian	4	.6
Asian	2	.3

**Note*: Survivors were allowed multiple responses.

The mean age was 11.41 (*SD* = 3.55). The majority of youth reported that their preferred language was English (98%).

Results

Risk Factors

Table 2.
Percentages of Child/Adolescent Survivors Who Endorsed Risk Factors at the Initial Assessment

	Initial Assessment (*N*=663)	
	Freq.	%
Displaced b/c of storm	557	68.1
Belongings, clothes/toys destroyed by storm	492	60.1
Transferred to a new school b/c of storm	480	58.7
Evacuated	466	57.0
Saw neighborhood destroyed or damaged	456	55.7
Saw other areas destroyed or damaged	316	38.6
Saw violence after the storm	237	29.0
Major loss/trauma since the storm	224	27.4
Home Damaged	219	26.8
Saw someone injured during storm	174	26.2
Lived away from parents/caregivers b/c of storm	202	24.7
Parents/caregivers unemployed b/c of storm	185	22.6
Home Destroyed	163	19.9
Pet left behind, lost, hurt or killed b/c of storm	139	17.0
Family member/friend seriously injured as a result of the storm	99	14.9
Saw someone who died b/c of storm	83	12.5
Currently living away from parents/caregivers	89	10.9
Parents/caregivers currently unemployed b/c of storm	101	12.3
Saw a counselor/doctor for storm related problems	98	12.0
Family member/friend killed as a result of the storm	76	9.3
Family member served as a rescue worker	63	7.7
Seriously injured during the storm	30	4.5

Table 2 shows the percentages of children and adolescents who endorsed each of the risk factors from the *Child and Adolescent Assessment and Referral Tool* at the initial assessment. More than 50% of the children/adolescents interviewed had been displaced (68%), evacuated (57%), and transferred to a new school (59%) because of the storm. Most of the children had personal belongings destroyed by the storm (60%) and saw their neighborhood damaged or destroyed (56%).

Many of the children had lived away from their caregivers because of the storm (25%). A considerable number of children witnessed a family member seriously injured (15%), killed (9%) or someone else who was injured (26%) or died (13%). In addition to hurricane-related risks, 17% of children reported previous trauma, and 27% reported being exposed to traumatic experiences after the storm. Less than 4% reported thoughts of self-harm (3%), harm to others (2%), and past or current substance use problems (3%).

Behavioral Reactions and Symptoms

Table 3 shows the frequency and percentages of children and adolescents who endorsed each reaction/symptom at the initial assessment. The majority of those interviewed were worried about what was going to happen (59%) and worried about something else bad happening (52%). A substantial percentage reported trying not to think/talk about what happened (37%) and becoming upset, afraid, or sad when thinking about the hurricane (34%). More than one-third of the children were having a harder time getting along with family and friends (37%), having trouble concentrating (36%), feeling irritable (36%), and feeling depressed (34%).

Table 3.

Frequency and Percentages of Reactions/Symptoms Endorsed by Child/Adolescent Survivors at Initial Assessment

	Initial Assessment (*N*=663)	
	Freq.	%
Worry about what is going to happen	373	59.2
Worry that something bad will happen	319	51.8
Try not to think/talk about what happened	225	37.0
Having a harder time getting along with family/friends	221	36.5
Harder to concentrate	223	36.3
Feel irritable or grouchy	221	35.7
Feel sad, down, or depressed	212	34.4
Upsetting thoughts/pictures about what happened	209	34.0
Upset, afraid or sad when thinking of hurricane	213	34.2
Harder to get school work done	202	33.8
Jumpy or nervous	175	28.7
Difficulty falling/staying asleep	159	25.9
Bad dreams/nightmares about what happened	139	22.8

Having a hard time making new friends	124	21.9
Have more aches and pains	124	20.5
Stay away from people places things that remind you of hurricane	113	18.8
Harder to do or enjoy activities that you use to	107	18.2
Feel that nothing is fun for you any more or not interested	106	17.6
Less energy	92	15.5
More or less interested in eating since the hurricane	89	14.8
Used alcohol or drugs	24	4.5

Symptoms/Reactions over Time

The average initial assessment total score for child/adolescent interviews was 6.3 (SD = 4.6), with 72% meeting the criterion (≥ 4) for referral to SCCS. Of the 663 initial assessments, 532 (80%) of the children and adolescents that were assessed were referred and received SCCS services. The remaining 131 (20%) did not receive further SCCS services due to low screening scores, choosing not to accept referral for SCCS, or being referred for services outside the program.

A McNemar chi-square test was used to determine whether fewer children met the criterion for referral at their last assessment than at initial assessment. Results revealed that a significantly greater proportion of children met the criterion for SCCS at the first visit (N = 467, 82%) as compared with the last (N = 370, 65%), χ^2 (567) = 48.8, p < .001. The average assessment score for child SCCS recipients at the first assessment was 6.8, and 4.8 at the last assessment. A dependent sample t-test was used to evaluate differences between the first and last scores on children's assessments. Results revealed a significant decrease over time; children scored lower on their last assessment (M = 4.83, SD = 4.11) compared to their first assessment score (M = 6.84, SD = 4.22), t (111) = 4.85, p < .001.

Intervention Strategies Used by Counsellors

For children and caregivers continuing with SCCS services, counselors completed 1,525 contact reports. Contact reports noted the location, length of time, and specified the strategies used in each session. Almost half (49%) of the contacts occurred at school, 40% at the child's home, and the remaining 11% occurred at community locations. The most frequent length of each visit was 45 or more minutes (51%), followed by 30–44 minutes (37%), and the remaining 12% were less than 30 minutes.

Table 4:
Frequency of Intervention Strategies Used by Counselors

Strategies	Percent
Enhance coping skills	40%
Anger management	38%
Enhance problem solving skills	27%
Helpful thinking	25%
Behavior regulation	24%
Anxiety management	22%
Enhance social support/connectedness	20%
Managing reactions	19%
Play/drawing/movement	18%
Social skills training	17%
Supportive strategies	17%
Promote self-care	13%
Grief counseling	12%
Promote leisure recreational activities	5%
Crisis management	5%
Guilt/shame reframing	3%
Parent training	3%
Safety planning	3%
Promote developmental progression	2%
Trauma narratives	1%

Table 4 presents the frequencies of intervention strategies used by SCCS counselors. The five most frequently reported intervention strategies used were: enhance coping skills (40%); anger management (38%); enhance problem-solving skills (26%); helpful thinking (25%); and behavior regulation (24%).

Discussion

Child and adolescent survivors of Hurricane Katrina were exposed to a range of traumatic experiences during and after the storm and were also subject to a multitude of post-disaster hardships and adversities. Regarding hurricane-related objective risk factors, the majority of children and adolescents initially interviewed had been evacuated, displaced, and transferred to a new school. They had seen their neighborhood and other areas damaged or destroyed. Many saw family members or pets injured or killed, and experienced losses of different kinds, including loss of their home, belongings, school, and friends. They were separated from family

members and dislodged from their familiar neighborhoods. There was widespread and ongoing disruption of normal daily routines. These findings indicate that, in addition to screening for hurricane-related exposure to trauma, risk screening protocols need to include areas covering bereavement, losses, and separations. Accordingly, intervention programs need to incorporate specific strategies to address grief reactions, and reactions to changes in school, classmates, friends, and daily routines. Because of parental separations and subsequent family adversities (e.g., parental unemployment, home destroyed), interventions need to incorporate strategies that promote family cohesion and family communication. For example, counselors encouraged families to maintain bedtime routines through such means as making sure that a bedtime story was told, either by phone or video.

Most survivors interviewed reported symptoms and adverse behavioral reactions at the time of their initial interview which was conducted from 1.5 to 3 years following the storm. The persistence of these reactions was commensurate with the magnitude of destruction, morbidity, and mortality of Hurricane Katrina, and the post-disaster adversities. In addition, ongoing lack of family stability, altered school environments, long-term displacement, and loss of community resources contributed to maintenance of these negative reactions. Numerous studies have documented the pernicious effects of post-disaster adversities in the longitudinal course of disaster-related distress and behavioral disturbances in children and adolescents, suggesting that behavioral health recovery programs after disaster also need to work with local and national government, as well as with non-governmental agencies and organizations, to address the post-disaster ecology.

The two most common reported reactions found were worry about the future and worry about something else bad happening. To address these worries, SPR counselors promoted skills for *Helpful Thinking* and *Managing Reactions*. Because youth are often aware of family economic problems, parents/caregivers were encouraged to enhance family communication and clarification about economic issues. In addition, many counselors that had been economically affected themselves learned helpful ways to communicate with, and support their own children (Hansel et al, 2011).

More than one third of those at initial interview reported trouble getting along with others, trouble concentrating, and feeling irritable and depressed. These reactions can significantly interfere with school behavior and performance, as well as functioning at home, with peers, and in the community. SCCS counselors worked with others, including

parents/caregivers and relatives, teachers, community religious professionals, and sport coaches, to help further address these reactions by teaching them the SPR skills so that they could reinforce these skills among the children and adolescents under their care and supervision.

As has been noted, complex needs and increased vulnerability in children is related not only to demographic and hurricane-related factors, but also to exposure to school, home, and community disruption (Cloitre et al., 2009; Greeson et al., 2011; Osofsky et al., 2007). Findings from this study indicated that over half of the children and adolescents were displaced (68%) or transferred to a new school (59%) because of the storm. SPR is designed to help children gain coping skills to manage current adversities related to school, peer, and family life through its component of *Problem Solving*. SPR also targets many of the negative reactions and symptoms identified in the *Child and Adolescent Assessment and Referral Tool* and can help prioritize the types of assistance given. For example, more than half of the children had symptoms of anxiety or worry. SCCS counselors worked with parents to assist their children with fears of separation by providing strategies to help them reassure their children through direct communication about plans for living arrangements and using SPR coping strategies together with their children manage anxiety and fears. Approximately one third were upset with or avoided hurricane reminders, reported difficulty with family and friends, and felt irritable or depressed. The SPR skills of *Managing Reactions* to identify and reduce reactions to reminders, promoting *Helpful Thinking* to replace worry with more helpful and constructive thoughts, and *Rebuilding Healthy Social Connections* to enhance social contacts and support, are specifically designed to address these reactions and symptoms.

Through culturally appropriate community-based outreach activities, SCCS counselors offered emotional support and psychoeducation to hurricane survivors, which took place mainly in schools and in homes. The SCCS program provides not only the content (SPR) for the services, but also the platform to increase access to behavioral health focused services.

The pre-intervention scores from the first assessment were well above the criteria for referral to an enhanced level of behavioral health services reflecting a population with substantial ongoing disaster-related reactions. The findings of improvement suggest that SCCS interventions were effective in significantly reducing the number and severity of these symptoms and reactions.

Limitations

The lack of a comparison group and lack of random assignment into services limits any causal inference from the outcome findings. However, the findings provide preliminary support for a promising post-disaster behavioral health intervention and highlight the need for future outcome studies of disaster behavioral health programs for children and adolescents. By design, participants in the SCCS program were likely to have more severe and prolonged reactions and symptoms compared to the general population, thus limiting generalizability to the larger population of child and adolescent survivors. As SPR is a secondary prevention model, children with more severe difficulties were referred out for more formal mental health services and were thus unavailable for follow-up. Although assessment scores decreased significantly, average scores remained above the criterion score, with more than half of SCCS recipients exceeding the criterion score at their last assessment. This may be due to children and adolescents in SCCS services until outside referral services became available, while others might have moved away from a service delivery area. It cannot be determined if more children and adolescents would have experienced greater improvement in symptoms and reactions if SCCS services had been provided earlier or were extended for a longer period. Finally, this study did not investigate whether outcomes vary by demographic characteristics.

Directions for Future Research

There are several areas of needed research suggested by the findings from the Louisiana Spirit SCCS Program. First, continued research of risk screening tools is needed to further develop, refine, and validate tools to improve their sensitivity and specificity, especially across age groups, sex, and ethnicity. This includes both research on key aspects of disaster-related experiences associated with risk, as well as research employing the DSM-5 diagnostic criteria for PTSD. There is also a need for an array of additional assessment tools, including those for surveillance, clinical assessment, monitoring intervention progress and outcome, and for overall program evaluation that can provide data needed for developing more effective public mental health disaster response and recovery programs. Additional research is needed regarding effective ways of training and evaluating paraprofessionals in delivery of the SPR intervention (Cross Hansel et al., 2011), as well as additional research on effective strategies for intermediate post-disaster interventions for children and families (Hobfoll, et al., 2007). The preliminary evidence of benefit

shown in this study indicates the need for rigorous outcome studies to further establish the evidence-base for SPR.

Conclusion

The Louisiana Spirit Hurricane Recovery Program provides a model for youth and family outreach, risk screening, and provision of services. SCCS services are consistent with a systematic approach promoted by the Institute of Medicine (2015) to help children and families with moderate to severe distress and post-disaster difficulties. To meet the needs of these youth and families, the SCCS Program provided individualized and intensive support through the *Skills for Psychological Recovery* intervention to help children and families use skill-based strategies to manage distress reactions and solve problems related to current adversities. The SPR intervention requires additional research to further establish its evidence base, as well as research into which components of the intervention are most easily taught, adopted, and effective.

To deliver services as efficiently, effectively, and sensitively as possible, the Louisiana Spirit SCCCS Program identified the importance of preparation and training of a local indigenous workforce that, once trained in SPR services, can respond most sensitively and effectively to children and families affected by the disaster. From a policy perspective, it is recommended that local providers and responders, as opposed to those coming from the outside, should be used to better gain access to children and families, and to accelerate recovery through sharing the cultural values and traditions of the affected population.

Because of the success of the Louisiana Spirit Program, the *Child/Adolescent Risk Screening and Referral Tool* and the *Skills for Psychological Recovery* intervention have been incorporated into the Substance Abuse and Mental Health Services Administration's Regular Services CCP. By establishing this approach as an integral part of CCPs, this model can become a part of larger scale CCP initiatives. Adoption of these proactive and strategic recovery activities can lead to better investment of federal recovery resources, as well as those coming from other federal sources and philanthropic entities. Overall, it is imperative that local, state, and federal government continue to make child and family behavioral health a priority to address the needs of children and families after catastrophic disaster.

References

Appleyard, K., & Osofsky, J. D. (2003). Parenting after trauma: Supporting parents and caregivers in the treatment of children impacted by violence. *Infant Mental Health Journal*, *24*, 111–125.

Berger, R., Gelkopf, M., & Heineberg, Y. (2012). A teacher-delivered intervention for adolescents exposed to ongoing and intense traumatic war-related stress: A quasi-randomized controlled study. *Journal of Adolescent Health*, *51*, 453–461.

Berkowitz, S., Bryant, R., Brymer, M., Hamblen, J., Jacobs, A., Layne, C., … & Watson, P., National Center for PTSD and National Child Traumatic Stress Network. (2010). *Skills for Psychological Recovery: Field Operations Guide.* Unpublished. Retrieved on December 4, 2018, from: https://www.ptsd.va.gov/professional/treat/type/SPR/SPR_Manual.pdf

Brymer, M. J., Reyes, G., & Steinberg, A. M. (2012). Disaster behavioral health for children and adolescents: Best practices for preparedness, response, and recovery. In J. L. Framingham and M.L. Teasley (Eds.), *Behavioral Health Responses to Disasters* (pp. 143–158). New York: Taylor and Frances Group.

Brymer, M. J., Steinberg, A. M., Vernberg, E. M., Layne, C. M., Watson, P. J., Jacobs, A., … & Pynoos R. S. (2008). Acute Interventions for children and adolescents exposed to trauma. In E. Foa, T. Kean, M. Friedman, & J. Cohen (Eds.), *Effective Treatments for PTSD* (2nd Edition; pp. 106–116). New York: Guildford Press.

CATS Consortium. (2010). Implementing CBT for youth affected by the World Trade Center disaster: Matching need to treatment intensity and reducing trauma symptoms. *Journal of Traumatic Stress, 23(*6), 699–707.

Chemtob, C. M., Nomura, Y., Rajendran, K., Yehuda, R., Schwartz, D., & Abramovitz, R. (2010). Impact of maternal posttraumatic stress disorder and depression following exposure to the September 11 attacks on preschool children's behavior. *Child Development*, *81(*4), 1129–1141.

Cloitre, M., Stolbach, B. C., Herman, J. L., Kolk, B. V. D., Pynoos, R., Wang, J., & Petkova, E. (2009). A developmental approach to complex PTSD: Childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress*, *22,* 399–408.

Cross Hansel T., Osofsky, H. J., Steinberg, A. M., Brymer, M. J., Landis, R., Sungaard Riise, K. … & Speier, A. (2011). Louisiana spirit specialized crisis counseling: Counselor perceptions of training and services, *Psychological Trauma: Theory, Research, Practice, and Policy*, *3*, 276–282.

Disaster PAST. (2012). *Disaster Psychological Assessment and Surveillance Toolkit*. Retrieved from: http://www.medschool.lsuhsc.edu/psychiatry/docs/ Disaster%20PAST%20Toolkit.pdf

Earls, F., Smith, E., Reich, W., & Jung, K. G. (1988). Investigating psychopathological consequences of a disaster in children: A pilot study incorporating a structured diagnostic interview. *Journal of the American Academy of Child and Adolescent Psychiatry, 27,* 90–95.

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

Galea S., Nandi A., & Vlahov D. (2005) The epidemiology of post-traumatic stress disorder after disasters. *Epidemiology Review*, *27*, 78–91.

Giannopoulou, I., Dikaiakou, A., & Yule, W. (2006) Cognitive-behavioral group intervention for PTSD symptoms in children following Athens 1999 earthquake: a pilot study. *Clinical Child Psychology and Psychiat*ry, *114*, 543–553.

Goenjian, A., Khachadourian, V., Armenian, H., Demirchyan, A., & Steinberg, A. M. (2018). Posttraumatic stress disorder 23 years after the 1988 Spitak earthquake in Armenia. *Journal of Traumatic Stress, 31*, 47–56.

Goenjian, A. K., Noble, E. P., Walling D. P., Goenijian, H. A., Karayan, I. S., Ritchie, T., & Bailey, J. (2008). Heritabilities of symptoms of posttraumatic stress disorder, anxiety, and depression in earthquake exposed Armenian families. *Psychiatric Genetics, 18*, 261–266.

Goenjian, A. K., Pynoos, R. S., Karayan, I., Minassian, D., Najarian, L. M., Steinberg, A. M., & Fairbanks, L.A. (1997). Outcome of psychotherapy among pre-adolescents after the 1988 earthquake in Armenia. *American Journal of Psychiatry, 154*, 536–542.

Goenjian, A. K., Yehuda, R., Pynoos, R. S., Steinberg, A. M., Tashjian, M., Yang, R. K., … & Fairbanks, L. A. (1996). Basal cortisol and dexamethasone suppression of cortisol and MHPG among adolescents after the 1988 earthquake in Armenia. *American Journal of Psychiatry, 113*, 929–934.

Green, B. L., Korol, M., Grace, M. C., Vary, M., Leonard, A. & Gleser, G. (1991). Children and disaster: Age gender and parental effects on PTSD symptoms. *Journal of the American Academy of Child and Adolescent Psychiatry, 30,* 945–951.

Greeson, J. K., Briggs, E. C., Kisiel, C. L., Layne, C. M., Ake III, G. S., Ko, S. J., Fairbank, J. A. (2011). Complex trauma and mental health in children and adolescents placed in foster care: Findings from the National Child Traumatic Stress Network. *Child Welfare*, *90*, 91–108.

Greeson, J. P., Briggs, E. C., Layne, C. M., Belcher, H. M. E., Ostrowski, S. A., Kim, S., … & Fairbank, J. A. (2014). Traumatic childhood experiences in the 21st century: Broadening and building on the ACE studies with data from the National Child Traumatic Stress Network. *Journal of Interpersonal Violence*, *29*, 536–556.

Hallegatte, S., Vogt-Schilb, A., Bangalore, M., & Rozenberg, J. (2017). Unbreakable: Building the Resilience of the Poor in the Face of Natural Disasters. Climate Change and Development Series. Washington, DC: World Bank. doi:10.1596/978-1-4.

Hansel, T. C., Osofsky, J. D., & Osofsky, H. J. (2015). Louisiana State University Health Sciences Center Katrina Inspired Disaster Screenings (KIDS): Psychometric Testing of the National Child Traumatic Stress Network Hurricane Assessment and Referral Tool. Child & Youth Care Forum. doi: 10.1007/s10566-015-9313-2.

Hansel, T. C., Osofsky, J. D., Osofsky, H. J., & Fredrich, P. (2013). The Effect of Long-Term Relocation on Child and Adolescent Survivors of Hurricane Katrina. *Journal of Traumatic Stress*, *26*, 613–620.

Hansel, T.C., Steinberg, A. M., Osofsky, H. J., Brymer, M. J., Osofsky, J. D., Landis, R., … & Speier, A. (2011). The Louisiana spirit specialized crisis counseling program: Counselor perceptions of disaster mental health training and services. *Psychological Trauma: Theory, Research, Practice, and Policy*, *3*, 276–282.

Hamada, R. S., Kameoka, V., Yanagida, E., & Chemtob, C. M. (2003). Assessment of elementary school children for disaster-related posttraumatic stress disorder symptoms: The Kauai recovery index. *Journal of Nervous and Mental Disease, 191*, 268–272.

Hobfoll, S. E., Watson, P. E., Bell, C. C., Bryant, R. A., Brymer, M. J., Friedman, M. J …. Urasano, R. J. (2007). Five essential elements of immediate and mid-term mass trauma intervention: Empirical evidence. *Psychiatry: Interpersonal and Biological Processes, 70,* 283–315*.*

International Federation of Red Cross and Red Crescent Societies. (no date). Retrieved 13 April 2016 from http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/.

Jaycox, L. H., Cohen, J. A., Mannarino, A. P., Walker, D.W., Langley, A. K., Gegenheimer, K. L., & Schonlau, S. M. (2010). Children's mental health care following Hurricane Katrina: A field trial of trauma-focused psychotherapies. *Journal of Traumatic Stress*, *23*, 223–231.

Kerns, C. E., Elkins, R. M., Carpenter, A. L., Chou, T., Green, J. G., & Comer, J. S. (2014). Caregiver distress, shared traumatic exposure, and child adjustment among area youth following the 2013 Boston Marathon bombing. *Journal of Affective Disorders*, *167*, 50–55.

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*, 930–939.

King, L. S., Osofsky, J. D., Osofsky, H. J., Weems, C. F., Hansel, T. C., & Fassnacht, G. M. (2015). Perceptions of trauma and loss among children and adolescents exposed to disasters: A mixed-methods study. *Current Psychology*, *34*, 524–536.

Knabb, R. D., Rhome, J. R., & Brown, D. P. (2006). Tropical cyclone report Hurricane Katrina. National Hurricane Center. Retrieved from http://www. nhc.noaa.gov/pdf/TCR-AL122005_Katrina.pdf

Kronenberg, M. E., Hansel, T. C., Brennan, A. M., Osofsky, H. J., Osofsky, J. D., & Lawrason, B. (2010). Children of Katrina: Lessons learned about postdisaster symptoms and recovery patterns. *Child Development*, *81*, 1241–1259.

Lai, B. S., Lewis, R., Livings, M. S., La Greca A. M., & Esnard, A. (2017). Posttraumatic stress symptom trajectories among children after disaster exposure: A review. *Journal of Traumatic Stress*, *30*, 571–582.

Masten, A. S., & Osofsky, J. D. (2010). Disasters and their impact on child development: Introduction to the special section. *Child Development*, *81*, 1029–1039. doi: 10.1111/j.14-67-8624.2010.01452

Masten, A. S., Cicchetti, D. (2010). Developmental Cascades. *Development and Psychopathology, 22*, 491–495.

McFarlane, A. (1987). Family functioning and overprotection following a natural disaster. The longitudinal effects of post–traumatic morbidity. *Australian New Zealand Journal of Psychiatry, 21*, 210–218.

McLaughlin, K. S., Fairbank, J. A., Gruber, M. J., Jones, R. T., Osofsky, J. D., Pfefferbaum, … & Kessler, R.C., Trends in serious emotional disturbance among youths exposed to Hurricane Katrina. (2010). *Journal of the American Academy of Child and Adolescent Psychiatry*, *49*, 990–1000. doi: 10.1016/j.jaac.2010.06.012

National Child Traumatic Stress Network. (2002). Project liberty enhanced child and adolescent assessment and referral tool.

National Child Traumatic Stress Network. (2005). Hurricane assessment and referral tool for children and adolescents. Retrieved from http://www. nctsnet.org/nctsn_assets/pdfs/intervention_manuals/referraltool.pdf

National Commission on Children and Disasters. (2010). Report to the President and Congress. AHRQ Publication No. 10-M037. Rockville, MD: Agency for Healthcare Research and Quality.

Newman, E., Pfefferbaum, B., Kirlic, N., Tett, R., Nelson, S., & Liles, B. (2014). Meta-Analytic Review of Psychological Interventions for Children Survivors of Natural and Man-Made Disasters. *Current Psychiatry Reports*, *16*, 462.

Norris, F. H., & Bellamy, N. D. (2009). Evaluation of a national effort to reach Hurricane Katrina survivors and evacuees: The crisis counseling assistance and training program. *Administration and Policy in Mental Health and Mental Health Service Research, 36*, 165–175.

North, C. S., & Pfefferbaum, B. (2013). Mental health response to community disasters: A systematic review. *Journal of American Medical Association, 310*(5), 507–518.

Osofsky, H. J., Osofsky, J. D. (2013) Hurricane Katrina and the Gulf Oil Spill: Lessons learned. *Psychiatric Clinics of North America, 36*, 371–383.

Osofsky, J. D., Osofsky, H. J., Weems, C. F., King, L. S., & Hansel, T. C. (2015). Trajectories of posttraumatic stress disorder symptoms among youth exposed to both natural and technological disasters. *Journal of Child Psychology and Psychiatry*, *56*, 1347–1345.

Osofsky, H. J., Osofsky, J. D., Kronenberg, M., Brennan, A., & Hansel, T. C. (2009).

Posttraumatic stress symptoms in children after Hurricane Katrina: Predicting the need for mental health services. *American Journal of Orthopsychiatry*, *79*, 212–220.

Osofsky, J. D., Osofsky, H. J., Weems, C. F., Hansel, T. C., & King, L. (2014). The effects of stress related to the Deepwater Horizon oil spill on child and adolescent mental health. *Journal of Pediatric Psychology*, *10*, 1–9.

Osofsky, J. D., Kronenberg, M. E., Bocneck, E., & Hansel, T. C. (2015). Longitudinal impact of attachment-related risk and exposure to trauma among young children after Hurricane Katrina. *Child & Youth Care Forum*. doi: 10.1007./s10566-015-9300-7

Osofsky, J. D., Osofsky, H. J., & Harris, W. W. (2007). Katrina's children: Social policy considerations for children in disasters. *Social Policy Report*, *21*, 3–18.

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*, 68. doi:10.1080/19361521.2011.545103

Pandemic and All-Hazards Preparedness Reauthorization Act. (2013). Public Law 113-5. 113th Congress. 127 Stat. 161.

Perkonigg, A., Pfister, H., Stein, M. B., Hofler, M., Lieb, R., Maercker, A. & Wittchen, H. U. (2005). Longitudinal course of posttraumatic stress disorder and posttraumatic stress disorder symptoms in a community sample of adolescents and young adults. *American Journal of Psychiatry, 162*, 1320–1327.

Pfefferbaum, B., Jacobs, A. K., Griffin, N., & Houston, J. B. (2015). Children's disaster reactions: The influence of exposure and personal characteristics. *Current Psychiatry Reports*, *17*, 56.

Pfefferbaum, B., Seeeton, J. L., Mitiema, P., Noffsinger, M. A., Vandana V., Summer, N. D., & Newman, E. (2014). Child disaster mental health interventions: Therapy components. *Prehospital Disaster Medicine*, *29*, 494–502.

Pfefferbaum, B., & North, C. S. (2013). Assessing children's disaster reactions and mental health needs: Screening and clinical evaluation. *Canadian Journal of Psychiatry*, *58*(3), 135–142.

Piyasil, V., Ketuman, P., Plubrukarn, R., Jotipanut, V., Tanprasert, S., Aowjinda, D, & Thyaeeromanophap, S. (2007) Post traumatic stress disorder in children after tsunami disaster in Thailand: 2-years follow-up. *Journal of the Medical Association of Thailand*, *34*, 1174–1184.

Pina, A. A., Villalta, I. K., Ortiz, C. D., Gottschall, A. C., Costa, N. M., & Weems, C. F. (2008). Social support, discrimination, and coping as predictors of posttraumatic stress reactions in youth survivors of Hurricane Katrina. Journal of Clinical Child and Adolescent Psychology, *37*(3), 564–574.

Powell, T., & Thompson. S. J. (2016). Enhancing coping and supporting protective factors after a disaster: Findings from a quasi-experimental study. Research on Social Work Practice, *26*(5), 539–549.

Pynoos, R. S., Steinberg, A. M., & Piacentini, J. C. (1999). A developmental psychopathology model of childhood traumatic stress and intersection with anxiety disorders. *Biological Psychiatry*, *46,* 1542–1554.

Save the Children (2015). *National Disaster Report Card on Protecting Children in Disasters*. Retrieved from: http://www.savethechildren.org/site/c.8rKLIXMGIpI4E/b.8777053/k.F31D/Get_Ready_Get_Safe_Disaster_Report_Card.htm

Steinberg, A. M., Brymer, M. J., Steinberg, J. R., & Pfefferbaum, B. (2006). Conducting research on children and adolescents after disaster. In F. H. Norris, S. Galea, M. J. Friedman, & P. J. Watson (Eds.), *Methods for disaster mental health research* (pp. 243–253). New York: Guilford Press.

Steinberg, A. M., Brymer, M. J., Decker, K. B., & Pynoos, R. S. (2004). The University of California at Los Angeles posttraumatic stress disorder reaction index. *Current Psychiatry Reports, 6*, 96–100.

Steinberg, A. M., Brymer, M. J., Kim, S., Briggs, E. C., Gosh Ippen, C., Ostrowski, S. A., &

Pynoos, R. S. (2013). Psychometric properties of the UCLA PTSD reaction index: Part I. *Journal of Traumatic Stress, 26*, 1–9.

Terasaka A, Tachibana Y, Okuyama M, & Igarashi, T. (2015). Post-traumatic stress disorder in children following natural disasters: A systematic review of the long-term follow-up studies. *International Journal of Child, Youth, and Family Studies*, *6*,111–133.

Udwin, O., Boyle, S., Yule, W., Bolton, D., & O'Ryan, D. (2000). Risk factors for long-term psychological effects of a disaster experienced in adolescence: Predictors of post-traumatic stress disorder. *Journal of Child Psychology and Psychiatry*, *41*, 969–979.

UNICEF (2011). *UNICEF and Disaster Risk and Reduction.* Retrieved from: www.unicef.org/files/DDR_final.pdf

U.S. Census Bureau. (2016) Current population reports. July 18, 2016. http://www.childstats.gov/americaschildren/tables/pop2.asp

U.S. Census Bureau. (2016). Current population reports. Retrieved 18 July 2016 from http://www.childstats.gov/americaschildren/tables/pop2.asp 4

Wade D., Crompton, D., Howard, A., Stevens, N., Metcalf O., Brymer, M., … & Forbes, D. (2015). Skills for Psychological Recovery: Evaluation of a post-disaster mental health training program, *Disaster Health*, *2*, 138–145.

Weems, C. F., Russell, J. D., Neill, E. L., Berman, S. L., & Scott, B. G. (2016). Existential anxiety among adolescents exposed to disaster: Linkages among level of exposure, PTSD, and depression symptoms. *Journal of Traumatic Stress*, *29,* 466–473.