

PREDICTING CONDUCT PROBLEMS IN YOUTH:  
THE MODERATING EFFECTS OF HURRICANE KATRINA

A Thesis

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## TABLE OF CONTENTS

ACKNOWLEDGMENTS.....	ii
LIST OF TABLES.....	iv
LIST OF FIGURES.....	v
ABSTRACT.....	vi
INTRODUCTION.....	1
Overview of Conduct Problems.....	2
Externalizing Behaviors and Disasters.....	3
Exposure to Community Violence and Externalizing Behaviors.....	4
Social Support and Externalizing Behaviors.....	5
Parenting Behavior and Externalizing Behaviors.....	7
Current Study and Hypotheses.....	8
METHOD.....	10
Participants.....	10
Measures.....	10
Procedure.....	14
RESULTS.....	15
Missing Data and Data Screening.....	15
Descriptive Statistics.....	15
Zero-Order Analyses.....	17
Regression Analyses.....	18
DISCUSSION.....	26
Hurricane Katrina and Conduct Problems.....	26
Unique Predictors of Conduct Problems.....	27
Moderating Effects of Hurricane Katrina.....	28
Limitations.....	30
Strengths, Limitations, and Future Directions.....	30
REFERENCES.....	32
APPENDIX: DEMOGRAPHIC QUESTIONNAIRE.....	36
VITA.....	40

**LIST OF TABLES**

Table 1: Demographic Variable Means, Frequencies, and Standard Deviations.....11

Table 2: Means, Standard Deviations, and Observed Range of Variables.....15

Table 3: Frequency of Endorsement for HURTE items.....16

Table 4: Zero-Order Correlations among all Variables.....17

Table 5: Hierarchical Regression Analysis Evaluating Hurricane Exposure as Moderators on the  
Relations between Conduct Problems and Various Predictors .....21

## LIST OF FIGURES

Figure 1: Moderational Effects of Hurricane Katrina-related Life-Threatening Experiences on the Relation between Violence Exposure and Conduct Problems.....	22
Figure 2: Moderational Effects of Hurricane Katrina-related Life-Threatening Experiences on the Relation between Family Routines and Conduct Problems.....	24
Figure 3: Moderational Effects of Hurricane Katrina-related Loss/Disruption on the Relation between Family Routines and Conduct Problems.....	25

## **ABSTRACT**

This study explored the moderating effects of disaster exposure on the relationships between youth conduct problems and a variety of risk and protective factors in a low-income population. Specifically, the study tests the moderating roles of hurricane-related life-threatening events and loss/disruption on the relations between conduct problems and violence exposure, social support, parenting behaviors, and family routines, respectively. This study draws data from an existing dataset, comprised of 281 displaced mother-child dyads from New Orleans and 98 non-displaced mother-child dyads from Baton Rouge, a city approximately 85 miles west of New Orleans. It was predicted that heightened conduct problems would be associated with more prior violence exposure, less perceived social support, and parenting behaviors including more corporal punishment and inconsistent discipline, as well as fewer family routines. It was further predicted that level of hurricane exposure would moderate each of these relations. Results indicate that the level of hurricane exposure moderated the relation between conduct problems and violence exposure, as well as that between conduct problems and family routines. Implications are discussed.

## INTRODUCTION

In many respects, the destruction caused by Hurricane Katrina in late August 2005 is incomprehensible. Thousands of residents along the Gulf Coast were left homeless, children were left without schools, and the city of New Orleans was essentially shut down for months (U.S. Department of Homeland Security, 2007). Although the devastation was immediately obvious to researchers and lay people around the world, the effects of Hurricane Katrina on the behavior of youth are just now being revealed.

Although much post-disaster research targets the adjustment of adults (see Norris et al., 2002), ample evidence indicates that youth experience a variety of psychological symptoms after experiencing a disaster, including depressive symptoms (Jeney-Gammon, Daugherty, Finch, Belter, & Foster, 1993), self-reported aggressive behavior (Reijneveld, Crone, Verhulst, & Verloove-Vanhorick, 2003), and symptoms of posttraumatic stress disorder (PTSD; Vernberg, La Greca, Silverman, & Prinstein, 1996). Interestingly, in a review of studies conducted on 160 post-disaster samples, Norris and colleagues reported increases in juvenile deviance and delinquency, but noted decreases in teachers' reports of disruptive behavior. Specifically, Shaw, Applegate, and Schorr (1996) found a decrease in teachers' reporting of disruptive behaviors 21 months following Hurricane Andrew.

Several risk factors for post-disaster psychological distress have been identified, including perceived stress and loss of resources related to the disaster (Asarnow et al., 1999), pre-disaster psychological functioning (Earls, Smith, Reich, & Jung, 1988) and proximity to the disaster (Bradburn, 1991). However, very little research has evaluated factors predictive of youth externalizing behavior specifically subsequent to experiencing a disaster. The current study was designed to examine the manner in which hurricane exposure may moderate the relations between conduct problems and varying predictive factors, such as exposure to community violence, perceived social support, and parenting behaviors.

## **Overview of Conduct Problems**

Conduct problems may be conceptualized as a manifestation of externalizing behavior ranging in severity from relatively innocuous oppositional behavior to dangerous and destructive antisocial behavior, such as firesetting (McMahon, Wells, & Kotler, 2006). Due to the range in behavior encompassed by conduct problems, much research has examined the latent structure of the broad construct. Among the most prominent of the resulting theories is Frick and colleagues' (1993) two-dimensional model. In a meta-analytic review of 60 factor and cluster analyses regarding parent and teacher report of conduct problems, Frick and colleagues proposed that two orthogonal dimensions underlie the behavior: the overt-covert dimension and the destructive-nondestructive dimension. These orthogonal dimensions intersect, yielding four quadrants or subsets of conduct problems, including: Property Violations, in the destructive-covert quadrant; Aggression, in the destructive-overt quadrant; Status Violations in the nondestructive-covert quadrant; and Oppositional, in the nondestructive-overt quadrant.

The category Oppositional includes behaviors such as lying or defiance, while Property Violations includes acts such as firesetting and Status Violations describes behavior like swearing or drug use. The category of Aggression has been further decomposed into several subtypes, each described on a dichotomous scale (Hinshaw & Lee, 2003). These distinctions include physical versus verbal aggression (i.e., fighting versus taunting); proactive versus reactive aggression (i.e., threatening versus fighting back); direct versus indirect aggression (i.e., bullying versus third-party involvement); overt versus covert aggression; and hostile versus instrumental aggression (i.e. executed with physical harm as its foremost goal versus executed with the intent to advance one's own standing or power, rather than to inflict harm). Some researchers argue that these formulations describe interrelated aspects of the same construct, rather than separate and independent types of aggression (e.g., Walters, 2005).

Diagnostically, conduct problems are partitioned into two disorders: Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD; American Psychiatric Association, 2000). The primary division between these disorders is based on severity (Frick et al., 1993), with CD embodying more egregious behaviors. According to Frick and colleagues' two-dimensional model, the symptoms of ODD lie entirely within the overt-nondestructive Oppositional quadrant, whereas the symptoms of CD fall in the other three quadrants.

According to the *Diagnostic and Statistical Manual of Mental Disorders – 4<sup>th</sup> Edition Text Revision* (DSM-IV-TR; APA, 2000), CD is further described by a childhood-onset or adolescent-onset qualifier. Frick and Ellis (1999) discuss the additive approach of identifying youth with callous and unemotional (CU) tendencies to further differentiate among the variegated group of children and adolescents meeting criteria for CD. Borrowed from the adult psychopathy literature (see Hare, Hart, & Harpur, 1991), CU traits among childhood-onset CD are posited to be markers of CD symptom severity and of psychopathy in adulthood (Frick & Ellis, 1999).

Conduct problems are among the most costly mental disorders and may lead to the greatest societal impact. One to 10% of youth are diagnosed with CD and 2% - 16% are diagnosed with ODD (APA, 2000). Although signs of noncompliance emerging at a young age are thought to be most important in the etiology of conduct problems, varying risk factors are associated with the development of antisocial behavior, some of which are this study's focus.

### **Externalizing Behaviors and Disasters**

Copious evidence exists to suggest that traumatic events can lead to externalizing behaviors such as aggression or conduct problems (Garbarino, 2002). In his review of the child trauma literature, Garbarino (2002) identified a link between adolescent violence and delinquency. He noted the central roles that abuse and violence exposure play in the lives of violent adolescents. Dubbing their neighborhoods “war zones,” Garbarino asserts that the

concentration of violence, abuse, neglect, and generally ill circumstances often found in inner-city neighborhoods forces children to fend for themselves—a truth which often leads to gang membership and the adoption of violent practices.

Despite evidence implicating trauma exposure in delinquent behavior, most post-disaster research targeting youth has emphasized PTSD symptomatology as an outcome, rather than conduct problems (La Greca & Prinstein, 2002). Nonetheless, in their study following Mount Saint Helen's ashfall in Othello, Washington, Adams and Adams (1984) found that experiencing a natural disaster led to an increase in aggression. By comparing pre- and post-disaster rates of community violence, Adams and Adams (1984) found consistent increases in juvenile and adult criminal bookings, charges of disorderly conduct, vandalism/malicious mischief, assaults, and domestic violence. Reijneveld and colleagues (2003) also found heightened aggression following a disaster. In their study of Dutch adolescents involved in a fatal fire, Reijneveld and colleagues found an increase in adolescents' self-reported aggression compared to their pre-disaster scores on the Youth Self-Report (Achenbach, 1991). Swenson, Saylor, & Paige (1996) also found significantly more behavior problems in 2 to 6 year-old children fourteen months after experiencing Hurricane Hugo than in children who had no hurricane exposure. Considering these findings, it is reasonable to expect a rise in antisocial behavior in New Orleans youth post-Katrina as well. It is expected that conduct problems will be elevated to the degree that the youth were exposed to Hurricane Katrina.

### **Exposure to Community Violence and Externalizing Behaviors**

One type of trauma consistently associated with elevated levels of antisocial behavior is exposure to community violence (ECV). Often discussed in relation to youth, ECV has been defined as violence occurring in a child's surroundings, such as the school, neighborhood, or other areas, which is distinct from domestic violence (Aisenberg & Ell, 2005). Both cross-sectional and longitudinal studies suggest that short- and long-term ECV is associated with

increased aggression and conduct problems. For example, Farrell and Bruce (1997) conducted a study of ECV with mostly African American middle school students in an urban setting.

Students completed questionnaires to assess violence exposure, emotional distress, and violent behavior. The results indicated a positive relationship between ECV and frequency of violent behavior displayed. Scarpa (2001) found similar results in a study of mostly Caucasian young adults at a rural western state university, revealing a positive relation between self-reported aggressive acts and community violence exposure.

Despite the relative stability of aggressive traits across time (Olweus, 1979), Gorman-Smith and Tolan (1998) found that, in their sample of mostly African American and Latino inner-city boys, ECV was related to changes in aggression over a one-year period, whereas exposure to other types of stress was not. The authors concluded that a distinct relationship exists between exposure to violence and aggression, and that this relationship is qualitatively different from the relation between aggression and other life stressors (Gorman-Smith & Tolan). Although 50% of participants were considered high-risk youth based on teacher ratings of aggression, a relationship between ECV and heightened aggression remained after controlling for previous aggression (Gorman-Smith & Tolan).

ECV is a particularly relevant risk factor for conduct problems in the current sample due to the greater likelihood of its occurrence in a low income, minority sample (Gladstein, Slater Rusonis, & Heald, 1992), such as those who experienced Hurricane Katrina. Thus, considering the increased antisocial behavior following ECV reported in the literature, it is reasonable to suspect an increase in conduct problems in the current sample with heightened prior violence exposure.

### **Social Support and Externalizing Behavior**

Social support may be conceptualized as encouragement, assistance, or care provided to an individual by friends, family, or other sources, typically in a time of stress or need. Social

support includes not only assistance received, but also the perceived availability of such assistance (Hobfoll, 1988). The benefits of social support on mental health outcomes are demonstrated repeatedly throughout the literature, and there are varying mechanisms by which social support is posited to serve as a protective factor. In a comprehensive review of social support literature, Cohen and Willis (1985) examined whether social support had a direct effect on well-being, or whether it served a “buffering” effect in the face of stress, and the authors found evidence bolstering both conceptualizations.

A myriad of empirical evidence illustrates the protective effects of social support for children and young adults. Kliewer, Lepore, Oskin, & Johnson (1998), for example, found that social support played an integral role in youth’s reaction to community violence exposure. Kliewer and colleagues interviewed 112 caregiver-child dyads and obtained measures of community violence exposure, internalizing symptoms, intrusive thinking, perceived social support, and social strain. The researchers found that social support moderated the relation between violence exposure and intrusive thinking, such that youth with high violence exposure and low social support experienced more intrusive thinking than did their cohorts. Furthermore, among youth with high intrusive thinking, those who had low social support or high social strains displayed more internalizing symptoms than their adequately supported counterparts.

Scarpa and Haden (2006) found social support to moderate the relation between violence exposure and antisocial behavior in their sample of young adults. Participants completed varying self-report measures, including the Multidimensional Scale of Perceived Social Support and the Survey of Exposure to Community Violence. Results indicated that low perceived support from friends, but not family, was related to elevated aggression scores. The authors interpreted this finding to suggest that, in their sampled age group, peers may play a greater role in the expression of aggressive behavior than does family.

A lack of social support has been linked to adolescents' increased likelihood to use physical and verbal aggression when quelling interpersonal conflict (Kashani & Sheppard, 1990). In another study, inadequate social support was related to aggressive attitudes in adolescents after controlling for school violence victimization (Brockenbrough, Cornell, & Loper, 2002). Finally, social support from a sibling is negatively correlated with externalizing symptoms in adolescents (Branje, van Lieshout, van Aken, & Haselager, 2004). In the current sample, it was expected that social support would serve a protective function, such that youth with higher levels of perceived social support would display fewer conduct problems, whereas those with deficient social support would display more.

### **Parenting Behavior and Externalizing Behavior**

Parallel in many respects to social support, research has consistently documented the effects of parenting on children's and adolescents' displays of externalizing symptoms. Social learning theory (Bandura, 1971), one explanation for the relationship between parenting and behavior problems, holds modeling and observational learning at its core, asserting that behavior may be "socially transmitted" (Bandura, 1973; p. 72), or passively learned. Numerous studies have documented the relation between abusive parenting and later aggression or antisocial behavior in the child victims (see Hinshaw & Lee, 2003). Thus, the present study predicted that children of parents who discipline using more corporal punishment would display more conduct problems.

Parenting behaviors and family characteristics are purported to affect youth conduct problems in ways that extend social learning theory and incorporate operant conditioning principles. Patterson (1982) discusses interactions in homes with aggressive or antisocial youth as a series of coercive family processes in which both the parent's and the child's negative behavior escalates until one ultimately terminates his destructive behavior. Patterson notes that parents of antisocial children and adolescents typically lack discipline skills, and this deficit

interacts with antisocial youths' natural tendencies to create a "psychological anarchy" (p.11) in the home that eventually extends to their interactions outside the home as well. By this model, aggressive or antisocial behavior is both positively and negatively reinforced, such that a child either receives an aspired reward or squelches an unpleasant occurrence as a result of his behavior. For instance, a child's or adolescent's hostility toward a sibling may be rewarded either by sibling compliance (i.e., positive reinforcement) or by the ceasing of an otherwise unpleasant parental request for the youth to spend time with his sibling (i.e., negative reinforcement). Instances in which the parent reacts aversively to the youth (i.e., yells or hits) to the point at which the youth stops aggressing translate into negative reinforcement for the caregiver as well. Thus, poor parenting practices can contribute to a cycle of antisocial behavior in children and adolescents. It was therefore expected that negative parenting practices, such as inconsistent discipline, would be positively related with youth conduct problems in the current sample.

The presence or absence of family routines has also been shown to affect antisocial behavior in youth (Hinshaw & Lee, 2003; Patterson, 1982). Past research indicates that having poor household routines early in life predicts aggression later in childhood (Singer, Singer, & Rapaczinski, 1984) and puts female adolescent sexual abuse victims at greater risk for alcohol and substance abuse (Bean, 1993). Given the results of prior studies, it was expected that children in the current sample whose families have fewer routines would exhibit more externalizing behaviors than their cohorts.

### **Current Study and Hypotheses**

While extant literature suggests that ECV, social support, and parenting behaviors all independently affect youth externalizing problems, previous studies have not explored the moderating role that exposure to a disaster has on the relation between conduct problems and each of these factors. The current study did so by testing the following hypotheses:

(1) The first hypothesis maintained that the violence exposure-conduct problems relation would be replicated and would be moderated by hurricane exposure. Expressly, while it was expected that increased violence exposure would be associated with heightened conduct problems in *all* children and adolescents, it was predicted that this relationship would be exaggerated in youth with high levels of hurricane exposure.

(2) The next hypothesis examined the moderating role of hurricane exposure in the relationship between social support and conduct problems. It was hypothesized that social support would serve a greater buffering effect for youth with high hurricane exposure than it would for youth with low hurricane exposure.

(3) The third hypothesis tested the moderating effects of hurricane exposure on the relation between corporal punishment and conduct problems. While it was expected that corporal punishment would be related to increased conduct problems generally, it was predicted that youth of parents using corporal punishment who have *also* experienced more hurricane exposure would exhibit more conduct problems than their counterparts who experienced less hurricane exposure.

(4) The fourth hypothesis also explored the moderating role of Hurricane Katrina on the relation between parenting behaviors and conduct problems. It was first predicted that more inconsistent discipline would be related to heightened conduct problems generally. It was further predicted that children of inconsistent disciplinarians who have also experienced more hurricane exposure would exhibit more conduct problems than their cohorts who experienced less hurricane exposure.

(5) The final hypothesis examined the effect of hurricane exposure on the family routines-conduct problems relationship. Specifically, it was predicted that family routines would be related to fewer conduct problems generally, and that this relationship would be stronger for youth with high hurricane exposure than it would for youth with low hurricane exposure.

## METHOD

### Participants

The participants were 281 displaced mother-child dyads from New Orleans and 98 non-displaced mother-child dyads from Baton Rouge. This study made use of an existing data set collected approximately three to seven months after Hurricane Katrina made landfall (see Kelley et al., in press). The demographic characteristics of the two samples are presented in Table 1. As seen in Table 1, the majority of the displaced and non-displaced samples were impoverished African Americans. Youth were in grades 4-8 and the average age in both groups was 12 years old. Because group means differed significantly only on child sex and degree of hurricane exposure, which were controlled for in the regression analysis, the two sub-samples were used in combination.

### Measures

Parents completed the following measures regarding their children.

Demographic Questionnaire (see Appendix). Parents completed a demographic questionnaire which assessed youth and family demographic characteristics. Youth gender and age were used as control variables in this study.

Behavior Assessment System for Children, Second Edition - Parent Report Scale (BASC-2 PRS; Reynolds & Kamphaus, 2004). The BASC-2 PRS is a parent-reported broad-range measure of youths' emotional and behavioral symptoms and adaptive behaviors. Parents completed one of two forms, depending on their child's age. The BASC-2 PRS consists of sixteen primary scales which comprise five composite scales: Adaptive Skills, Behavioral Symptoms Index, Externalizing Problems, Internalizing Problems, and School Problems. This study employed the primary scale of Conduct Problems, which measures the tendency to engage in both overt and covert delinquent or oppositional behaviors. This measure has demonstrated

Table 1. Demographic Variables Means, Frequencies, and Standard Deviations (SD)

	Entire Sample	Displaced Group	Non- Displaced	Comparison Statistic	Significance Level
<b>Child Variables</b>					
<b>Age</b>	$M=11.58(1.56)$	$M=11.59(1.55)$	$M=11.56(1.69)$	$t(377)=-.16$	$p = .87$
<b>Gender</b>				$t(376)=-3.16$	$p = .00$
Male	184	123	61		
Female	194	157	37		
<b>Race</b>				$t(370)=-1.22$	$p = .22$
African American	254	185	69		
Asian	18	14	4		
Caucasian	89	65	24		
Hispanic	7	7	0		
Native American	2	2	0		
Other	2	2	0		
<b>Mother Variables</b>					
<b>Age</b>	$M=38.65(7.50)$	$M=38.84(7.51)$	$M=38.10(7.49)$	$t(361)=-.78$	$p = .43$
<b>Marital status</b>				$t(354)=1.52$	$p = .19$
Never married	112	82	30		
Married	156	121	35		
Separated	24	17	7		
Divorced	58	38	20		
Widowed	6	3	3		
<b>Education level</b>					
6 <sup>th</sup> grade or less	3	2	1		
Junior high	11	7	4		
Partial high School	43	33	10		
High School Grad	100	80	20		
Some college	127	88	39		
College grad	55	40	15		
Graduate degree	21	14	7		
<b>Income before Hurricane</b>				$t(332) = 1.09$	$p = .28$
\$0-4,999	53	46	7		
\$5,000-9,999	41	26	15		
\$10,000-14,999	36	26	10		
\$15,000-24,999	54	37	17		
\$25,000-34,999	50	41	9		
\$35,000-49,999	30	24	6		
\$50,000-74,999	47	31	16		
\$75,000-99,999	14	10	4		
\$100,00 +	9	6	3		
<b>Household Type</b>				$t(222)=-1.56$	$p = .12$
Single-parent Home	112	80	32		
Two-parent home	112	90	22		

good internal consistencies and test-retest reliabilities (Reynolds & Kamphaus, 1998; Reynolds & Kamphaus, 2004). Cronbach's alpha for the Conduct Problems scale in the current sample was .89 for the adolescent version of the measure and .81 for the child version.

Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996). The APQ is an assessment system designed to measure various types of parenting practices. The system consists of parent and child questionnaires as well as parent and child telephone interviews. The present study used select subscales from the parent questionnaire, which consists of 42 items comprising six subscales that assess parenting behaviors: Parent Involvement (10 items), Positive Parenting (6 items), Poor Monitoring/Supervision (10 items), Inconsistent Discipline (6 items), Corporal Punishment (3 items), and Other Discipline practices (7 items). Most subscales have demonstrated adequate reliability (.70 and higher; Essau, Sasagawa, & Frick, 2006). Responses were scored on a five-point scale. The current study used the Corporal Punishment and Inconsistent Discipline subscales. Cronbach's alphas in the current sample were .74 for Corporal Punishment and .71 for Inconsistent Discipline.

Child Routines Inventory (CRI; Sytsma-Jordan, Kelley, & Wymer, 2001). The CRI is a 38-item parent-report measure designed to assess youths' daily routines. Responses are scored on a five-point scale, and the measure consists of the following subscales: Daily Living Routines, Household Responsibilities, Discipline Routines, and Homework Routines. The total score has demonstrated good internal consistency ( $\alpha = .90$ ) and was used in this study. Cronbach's alpha for the total score was .96 in the current sample.

Youth completed the following self-report measures.

Hurricane-Related Traumatic Experiences (HURTE; Vernberg et al., 1996). The HURTE is a measure designed to assess child traumatic experiences during and after a hurricane. The measure yields two factors: Life Threat and Loss/Disruption. The current study used each scale independently to obtain a measure of youth exposure to hurricane-related traumatic experiences.

Though the relatively recent development of the scale limits available data on psychometric properties, the HURTE has demonstrated good predictive validity (Vernberg et al., 1996). In the current sample, the HURTE scales showed moderate to good reliability (Threat  $\alpha = .47$ ; Loss  $\alpha = .73$ ).

Screen for Adolescent Violence Exposure (SAVE; Hastings & Kelley, 1997). The SAVE is a 32-item adolescent-report measure of violence exposure that consists of three subscales: Home Violence, School Violence, and Neighborhood Violence. The SAVE also yields factors of indirect violence, traumatic violence, and physical/verbal aggression. Both frequency of violence exposure and subjective impact of violent events are assessed. The SAVE has demonstrated adequate internal consistency ( $\alpha$ 's ranging from .65 to .95) and test-retest reliability ( $r$ 's ranging from .53 to .92; Hastings & Kelley, 1997). The measure has also exhibited good convergent, divergent, construct, and known-groups validity (Hastings & Kelley, 1997). The present study made use of the total violence score. Cronbach's alpha for the total violence score in the current sample was .97.

KID-SAVE (Flowers, Hastings, & Kelley, 2000). The KID-SAVE is an adapted version of the SAVE intended for use with children in grades three through seven. This measure of violence exposure comprises 34 items and yields factors of indirect violence, traumatic violence, and physical/verbal aggression. Parallel to the SAVE, the KID-SAVE produces factors of traumatic violence, indirect violence, and physical/verbal abuse, as well as measures of both frequency and impact of violent events. The KID-SAVE has demonstrated good validity and internal consistency ( $\alpha$ 's ranging from .66 to .91; Flowers, Hastings, & Kelley, 2000). The present study used the total violence score. Cronbach's alpha for the total score in the current sample was .89.

Harter's Social Support Scale for Children (SSSC; Harter, 1985). The SSSC is a 24-item youth self-report measure designed to assess perceived social support. The measure produces

four subscales, each comprising 6 items, which assess four different sources of social support: parents, classmates, teachers, and close friends. The subscales demonstrated good internal consistency and adequate validity (Harter, 1985). A total score of social support was used in the present study. Cronbach's alpha for the total score in the current sample was .85.

### **Procedure**

In order to recruit participants, institutional review board approval and school board consent were first obtained. Three to five months following Hurricane Katrina, fliers were sent home to mothers of children in New Orleans and surrounding areas describing the study, along with packets of questionnaires that included the Demographic Questionnaire, the BASC-2 PRS, the APQ, and the CRI. Upon return of these questionnaires and the accompanying consent form to the children's schools, the study was described to the youth and youth assent was obtained. The children and adolescents were administered packets of questionnaires in the classroom under researcher supervision, with the packets read aloud to younger children and poor readers.

Participants were compensated in a variety of ways. Assenting youth were offered either a pizza party or \$5 cash compensation. Mothers were entered into a drawing for a cash prize or were paid \$20 directly. Both mother and child packets were coded, and names were removed from the data.

## RESULTS

### Missing Data and Data Screening

Missing data were replaced using multiple imputation (MI), as described by Shafer and Graham (2002). Using this procedure,  $m > 1$  datasets were generated randomly from the distribution of the variable with missing values. Statistical analyses were then run on the  $m$  datasets to give parameter estimates of the sample. The data were also screened for multivariate outliers. Cases more than 3.29 standard deviations from the mean of their predicted values were excluded (Tabachnik & Fidell, 2006).

### Descriptive Statistics

Table 2 provides descriptive information for all predictor, moderating, and criterion variables in this study, including the mean, standard deviation, and observed range of each variable.

Table 2. Means, Standard Deviations, and Observed Range of Variables

Variable	Mean	SD	Observed Range	
			Minimum	Maximum
1. Age	11.58	1.58	8.00	16.00
2. Gender <sup>a</sup>	1.51	.50	1.00	2.00
3. Life-threatening Experiences	.71	1.00	.00	6.00
4. Loss/Disruption	3.16	2.29	.00	13.00
5. ECV (younger sample raw scores) <sup>b</sup>	11.21	8.54	.00	46.00
6. ECV (older sample raw scores) <sup>b</sup>	43.18	44.58	.00	220.00

(table continued)

7. Perceived Social Support (total)	53.88	12.67	.00	85.00
8. Inconsistent Discipline	14.42	4.94	4.00	30.00
9. Corporal Punishment	6.16	2.97	1.00	15.00
10. Family Routines	106.69	25.59	4.00	30.00
11. Conduct Problems (T-score)	52.39	13.80	37.00	117.00

*Note.* *SD* = Standard Deviation. <sup>a</sup> Gender is coded 1 for males and 2 for females. <sup>b</sup> Separate ECV measures exist for each age group.

Description of the Moderating Variables: Hurricane Exposure. Frequencies of hurricane related life-threatening experiences and loss/disruption are reported in Table 3. Overall, children

Table 3. Frequency of Endorsement for HURTE Items

Item	% Endorsing Item		
	Combined Sample	Displaced	Nondisplaced
<b>Perceived Life Threat</b>			
At any time during the hurricane, did you think you might die?	30	26	20
<b>Life-Threatening Experiences</b>			
Did windows or doors break in the place you stayed during the hurricane?	16	18	10
Did you get hurt during the hurricane?	3	4	1
Did you see anyone else get hurt during the hurricane?	20	21	17
Did you have to go outside during the hurricane because the building you were staying in was badly damaged?	8	9	5
Did a pet you liked get hurt or die during the hurricane?	19	24	4
Did you get hit by anything falling or flying during the hurricane?	5	5	7
<b>Loss/Disruption Experiences</b>			
Was your home damaged badly or destroyed by the hurricane?	45	55	15
Did you have to go to a new school because of the hurricane?	52	68	5

(table continued)

Did you move to a new place because of the hurricane?	37	47	10
Did one of your parents lose his or her job because of the hurricane?	32	38	15
Has it been hard to see your friends since the hurricane because they moved or you moved?	60	74	20
Did your family have trouble getting enough food or water after the hurricane?	21	22	21
Were your clothes or toys ruined by the hurricane?	41	51	12
Did your pet run away or have to be given away because of the hurricane?	9	11	4
Did you have to live away from your parents or a week or more because of the hurricane?	13	15	8

and adolescents reported relatively few life-threatening experiences. Specifically, only 3% of youth reported getting hurt during the storm. Children and adolescents generally endorsed more loss/disruption caused by the hurricane. For example, 45% of youth reported that their homes were damaged by the hurricane, and 60% indicated that it became harder to see friends post-hurricane.

### Zero-Order Analyses

Table 4 presents the correlations among all predictor, moderating, and criterion variables.

Table 4. Zero-Order Correlations Among all Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Age	---	.03	.06	-.02	.10	-.02	.11*	-.04	-.24*	.23**
2. Gender <sup>a</sup>		---	.07	.08	.09	.02	.05	-.01	.09	-.11
3. Life-threatening experiences			---	.39**	.30**	.04	.07	.12*	-.01	.04

(table continued)

4. Loss/Disruption	---	.19**	.15**	.05	.10	-.02	.00
5. Violence Exposure		---	-.01	.12*	.16**	-.08	.16**
6. Perceived Social Support			---	.03	.01	.12*	.06
7. Inconsistent Discipline				---	.44**	-.24**	.35**
8. Corporal Punishment					---	-.17**	.32**
9. Family Routines						---	-.29**
10. Conduct Problems							---

<sup>a</sup> Gender is coded 1 for males and 2 for females; \*  $p < .05$ ; \*\*  $p < .01$

Mother-reported conduct problems were significantly and positively related to inconsistent discipline, corporal punishment, violence exposure, and child age. Conduct problems were significantly negatively related to family routines. The relations between conduct problems and hurricane-related life-threatening experiences and loss/disruption were not significant.

### **Regression Analysis**

Overview. A hierarchical regression was conducted to determine the potential moderating effects hurricane exposure on the relations between conduct problems and ECV, social support, and parenting behavior, and family routines. As recommended by Baron and Kenny (1986), Aiken and West (1991), and Tabachnik and Fidell (2007), variables were centered around their means to control for multicollinearity. Interaction terms were formed by creating a cross-product of each of the centered predictor variables (ECV, social support, corporal punishment, inconsistent discipline, and family routines) and each moderator variable (life-threatening experiences and loss/disruption), resulting in 10 interaction terms total.

In order to further control for overlap among predictors, only one regression analysis was conducted to test for moderating effects of the variables of interest. In Step 1 of the regression, pertinent demographic characteristics, i.e., child age and child sex, were entered. In Step 2, the following variables were entered in order to test for their main effects: hurricane-related life-threatening experiences, as measured by the HURTE; hurricane-related loss/disruption, as measured by the HURTE; violence exposure, as measured by the total violence z-scores on the SAVE and KID-SAVE; perceived social support, as measured by the total social support score on the SSSC; parenting behaviors, as measured by the Corporal Punishment and Inconsistent Discipline scales on the APQ; and family routines, as measured by the total score on the CRI. In Step 3, separate two-way interaction terms between life-threatening experiences and ECV, perceived social support, corporal punishment, inconsistent discipline, and family routines, as well as separate two-way interaction terms between loss/disruption and each predictor variable, were each entered to test for the possible moderating effects of hurricane exposure on the relation between conduct problems and each predictor.

As recommended by Aiken and West (1991) and Holmbeck (2002), interactions remaining significant in the reduced model were plotted for further interpretation. To create the plots, the regression equation was solved at varying levels of the moderating variables; specifically, at two standard deviations above and below each variable and at the mean of each variable to represent high, low, and medium scores, respectively. Tests of simple effects were conducted to test the significance of the relation between youth hurricane exposure and conduct problems at each level of each significant moderator using Aiken and West's (1991) simple slope analysis.

The overall model including all predictors and potential moderating variables was significant,  $F(19, 270) = 8.45, p < .001$ . This model was associated with 37% of the variance seen in youth conduct problems, and the interaction terms contributed an additional 5.6% of the variance to the model ( $\Delta R^2 = .05, p < .01$ ). Table 5 presents the results of the regression analysis.

Demographic Variables. Youth age and sex were entered into the regression to control for the effects of these variables on the prediction of conduct problems. There was a main effect of child age ( $B = 1.47, t(270) = 3.56, p < .001, sr^2 = .03$ ), such that mothers of adolescents reported more conduct problems than mothers of younger children. There was also a significant main effect of sex ( $B = -3.98, t(270) = -3.19, p < .01, sr^2 = .02$ ), such that mothers of boys reported more conduct problems than mothers of girls.

Hurricane Exposure. Hurricane exposure was measured by two scales on the HURTE: life-threatening experiences and loss/disruption. Neither life threat nor loss/disruption made a significant contribution to the prediction of conduct problems in youth ( $p$ 's  $> .50$ ), indicating that a direct relation between hurricane exposure and conduct problems does not exist in this sample.

Violence Exposure. The moderating role of hurricane exposure on the relationship between ECV and conduct problems was tested via hierarchical regression. Prior violence exposure made a significant unique contribution to the prediction of conduct problems in youth,  $B = 1.45, t(270) = 2.29, p < .05, sr^2 = .01$ . However, this main effect for violence exposure was qualified by an interaction between hurricane-related life-threatening experiences and ECV,  $F(19, 270) = 9.49, p < .01, sr^2 = .02$ . Figure 1 depicts the interaction of these variables. For youth with low [ $t(278) = 3.17, p < .01, sr^2 = .02$ ] and medium [ $t(278) = 2.37, p < .05, sr^2 = .03$ ] levels of life-threatening experiences, increased violence exposure was related to greater conduct problems. This relation did not hold for youth with high levels of hurricane exposure ( $p$

Table 5. Hierarchical Regression Analysis Evaluating Hurricane Exposure as Moderators on the Relations between Conduct Problems and Various Predictors

Step: Predictors	Set Statistics			Decomposition of set effect		
	$r^2\Delta$	Sig. of $r^2\Delta$	$r^2$ total	$B$	Unique $r^2\Delta$	Sig. of unique $r^2\Delta$
1: Demographics	0.06	<.001	0.06			
Child age				1.47	0.03	<.001
Child sex				-3.98	0.02	0.002
2: Main Effects	0.26	<.001	0.32			
Total Violence Exposure				1.45	0.01	0.02
Social Support Inconsistent Discipline				0.08	0.004	<i>Ns</i>
Corporal Punishment				0.67	0.05	<.001
Family Routines				1.08	0.048	<.001
Hurricane-related life-threatening experiences				-0.08	0.02	0.003
Hurricane-related loss/disruption				0.46	>.001	<i>ns</i>
3: Interaction Terms	0.06	0.009	0.37			
Threat x Violence				-2.00	0.022	0.002
Threat x Social Support				-0.08	0.002	<i>ns</i>
Threat x Inconsistent Discipline				0.28	0.006	<i>ns</i>
Threat x Corporal Punishment				-0.25	0.003	<i>ns</i>
Threat x Family Routines				0.08	0.014	0.013
Loss x Violence				0.53	0.007	<i>ns</i>
Loss x Social Support				0.03	0.004	<i>ns</i>
Loss x Inconsistent Discipline				0.001	>.001	<i>ns</i>
Loss x Corporal Punishment				0.02	>.001	<i>ns</i>
Loss x Family Routines				-0.04	0.017	0.007

= .93). These results are contrary to hypothesis 1, which predicted a stronger positive relation between ECV and conduct problems for youth with more hurricane exposure than for those with less hurricane exposure. Among youth exposed to lower levels of community violence (i.e., 2 standard deviations below the mean), those who experienced many life-threatening experiences displayed more conduct problems than those experiencing fewer hurricane-related life-threatening experiences,  $t(278) = 2.09, p < .05, sr^2 = .01$ . However, among children and adolescents exposed to high levels of community violence (i.e., 2 standard deviations above the mean), those experiencing few hurricane-related life-threatening experiences showed significantly greater conduct problems than those with higher levels of life-threatening experiences,  $t(278) = -1.95, p < .05, sr^2 = .01$ .

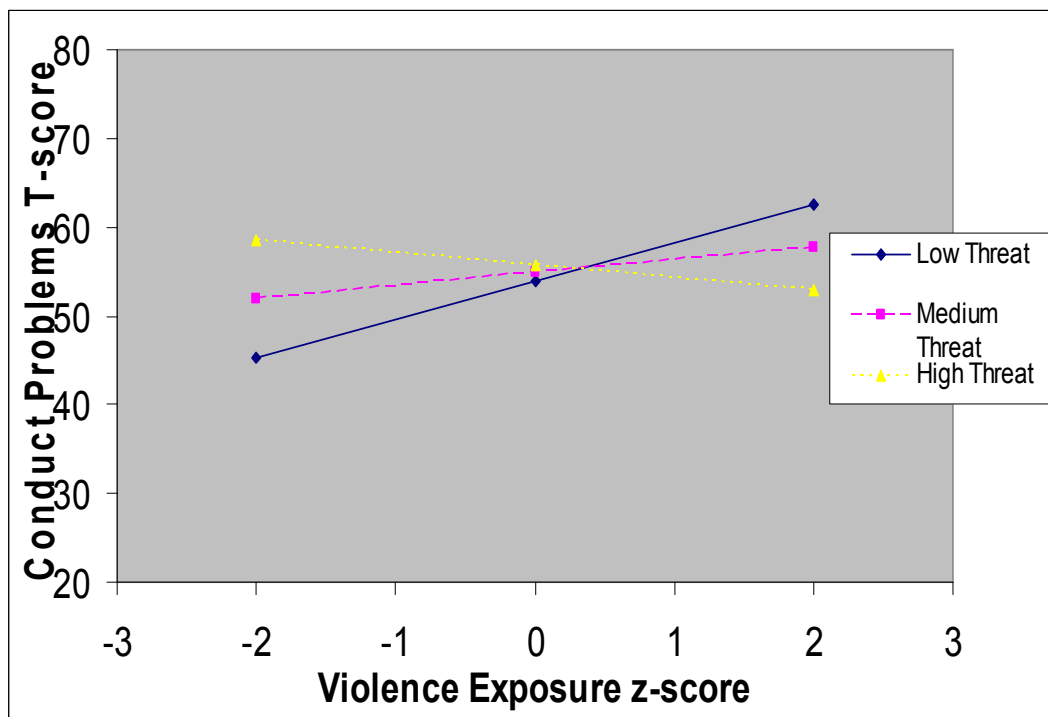


Figure 1. Moderational Effects of Hurricane Katrina-related Life-Threatening Experiences on the Relation between Violence Exposure and Conduct Problems.

Perceived Social Support. Hurricane Katrina-related experiences were also examined as a potential moderator on the relation between youths' perceived social support and conduct problems. However, there was no main effect of social support on conduct problems, nor was there a significant interaction ( $p$ 's > .16). Hypothesis 2 was therefore not supported.

Corporal Punishment. Results indicated a significant main effect of corporal punishment on conduct problems in youth,  $B = 1.08$ ,  $t(270) = 4.55$ ,  $p < .001$ ,  $sr^2 = .05$ . That is, children of parents who report using more corporal punishment display significantly more conduct problems than children of parents using less corporal punishment. There was no significant interaction between corporal punishment and hurricane exposure in the prediction of conduct problems. Thus, hypothesis 3 was partially supported.

Inconsistent Discipline. Results indicated a significant main effect of inconsistent discipline on conduct problems,  $B = .69$ ,  $t(270) = 4.60$ ,  $p < .001$ ,  $sr^2 = .05$ , such that children of parents who report using more inconsistent discipline displayed more conduct problems than children whose parents used less inconsistent discipline. There was no significant interaction between inconsistent discipline and hurricane exposure in the prediction of conduct problems. Thus, hypothesis 4 was partially supported.

Family Routines. Finally, the potential moderating role of hurricane exposure on the relation between family routines and conduct problems was examined. Family routines made a significant contribution in the prediction of conduct problems,  $B = -.08$ ,  $t(270) = -2.96$ ,  $p < .01$ ,  $sr^2 = .02$ . However, this main effect was qualified by an interaction between both hurricane-related life-threatening experiences [ $F(19, 270) = 6.25$ ,  $p < .05$ ,  $sr^2 = .01$ ] and routines, as well as hurricane-related loss/disruption [ $F(19, 270) = 7.45$ ,  $p < .01$ ,  $sr^2 = .02$ ] and routines. Figures 2 and 3 depict the interactions. For youth with low [ $t(278) = -3.87$ ,  $p < .001$ ,  $sr^2 = .03$ ] and medium

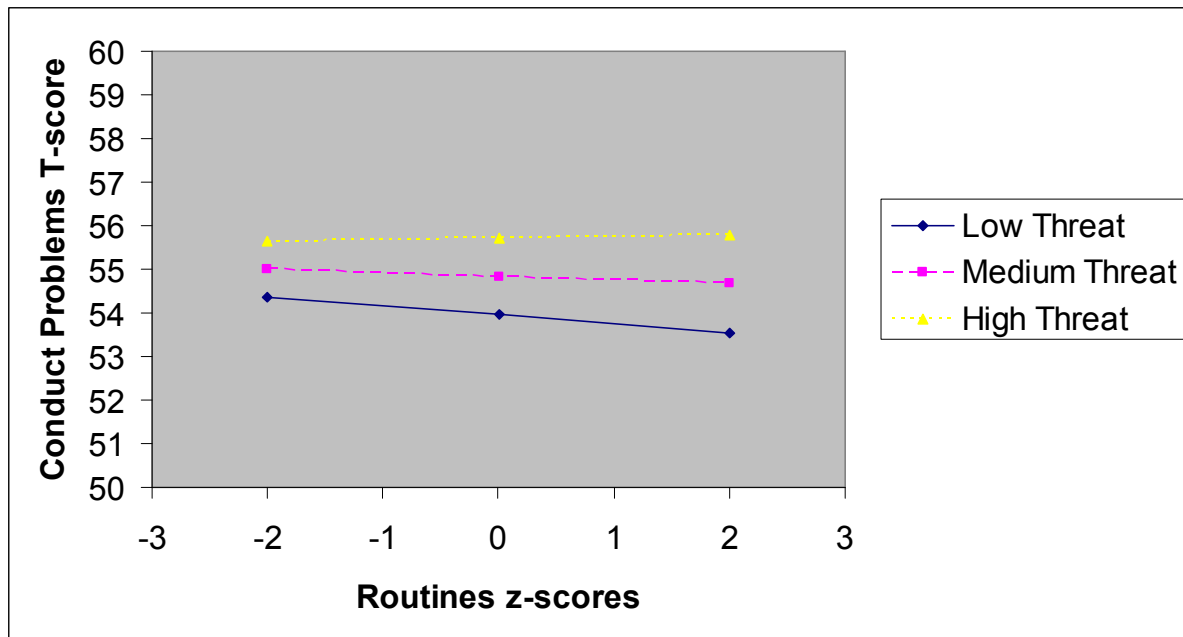
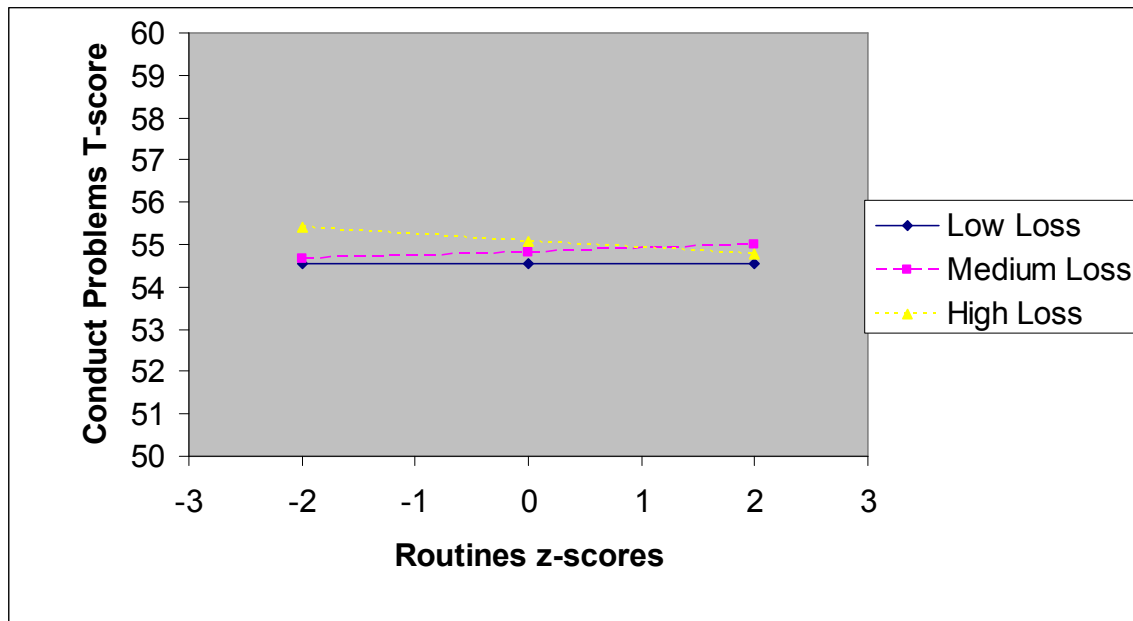


Figure 2. Moderational Effects of Hurricane Katrina-related Life-Threatening Experiences on the Relation between Family Routines and Conduct Problems.

[ $t(278) = -3.08, p < .01, sr^2 = .02$ ] levels of life-threatening experiences, having more family routines serves as a buffer against conduct problems. However, for youth with high levels of life-threatening experiences, this relationship does not hold ( $p = .56$ ). Youth with high versus low levels of life-threatening experiences did not display significantly different levels of conduct problems as a function of amount of family routines.

For youth enduring high levels of loss or disruption brought about by the hurricane, having more family routines again serves as a buffer against conduct problems,  $t(278) = -4.26, p < .001, sr^2 = .04$ . Paradoxically, having more family routines served as a risk factor for conduct problems in youth with average levels of hurricane exposure,  $t(278) = -3.08, p < .01, sr^2 = .01$ . There was no relationship between family routines and conduct problems for youth with low levels of hurricane-related loss/disruption ( $p = .40$ ). Among those with low levels of family

routines, youth who experienced high levels of loss or disruption displayed significantly greater conduct problems than those experiencing lower levels of loss/disruption,  $t(278) = 2.56, p < .05, sr^2 = .01$ . This same relation held true for children and adolescents whose families employ more routines,  $t(278) = -2.40, p < .05, sr^2 = .01$ .



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Figure 3. Moderational Effects of Hurricane Katrina-related Loss/Disruption on the Relation between Family Routines and Conduct Problems

## DISCUSSION

This study is the first to examine the moderating effects of natural disaster exposure on various risk and protective factors associated with youth conduct problems. It was predicted that life-threatening experiences and loss/disruption begotten by Hurricane Katrina would intensify the relations that exist between conduct problems and factors such as ECV, social support, parenting behaviors, and family routines. These predictions were partially supported.

### **Hurricane Katrina and Conduct Problems**

Life-threatening experiences related to Hurricane Katrina were endorsed at a relatively low rate in the current sample. Only 3% of youth reported getting hurt during the hurricane, and only 16% of youth witnessed doors or windows breaking in their place of shelter during the storm. Considerably more children and adolescents reported events that were disruptive or related to the loss of possessions. Over half of the sample reported having to attend a new school due to Hurricane Katrina, nearly half said that their homes were badly damaged and/or their clothes or toys were destroyed, and 60% endorsed difficulty seeing friends as a result of the storm.

Neither hurricane-related life-threatening experiences nor hurricane-related loss and disruption was uniquely related to conduct problems in the current sample. This finding is inconsistent with past literature that supports a positive relation between trauma exposure and externalizing behaviors (Garbarino, 2002). Furthermore, this finding contradicts studies that have found an association between the specific trauma of disaster exposure and aggressive or delinquent behaviors (e.g., Adams & Adams, 1984; Reijneveld et al., 2003). Perhaps the relatively low endorsement of life-threatening events by our sample limited the impact of Hurricane Katrina on conduct problems. Alternatively, hurricane exposure may be directly

predictive of conduct problems at a later point in time (i.e., 1 or 2 years post-hurricane) for the current sample.

### **Unique Predictors of Conduct Problems**

Several main effects consistent with existing research emerged in this study. The current study's findings that boys and older youth exhibit more conduct problems is well-supported in the literature (for a review, see McMahon et al., 2006). Furthermore, the positive relation between conduct problems and both inconsistent discipline and corporal punishment replicates the findings of past research and theories (e.g., Patterson et al., 1982) that cite parenting behavior as an integral factor in the development of conduct problems. Significant main effects for violence exposure and family routines also emerged, but these effects were qualified by interactions.

Surprisingly, perceived social support was not related to conduct problems in youth. This finding stands in contrast to previous literature which points to the protective effects of social support on psychopathology generally (Cohen & Willis, 1985) and on externalizing behaviors specifically (Kashani & Shepphard, 1990; Scarpa & Haden, 2006). This unexpected finding may be a result of factors unique to the current population, such as low socioeconomic and minority status. For instance, in a sample of low-income women with psychopathology, Goodman and Johnson (1986) found that the number of available social support resources was not related to psychological functioning. It is possible that pervasive stressful life events (e.g., violence exposure) and negative life circumstances (e.g., poverty) override social support in the prediction of conduct problems. Specifically, factors such as familial stress or negative parenting may outweigh any effects of social support. Alternatively, the lack of relation found between social support and conduct problems in this sample may be an artifact of methodological decisions.

That is, the use of the total social support score—as opposed to scores indicative of specific sources of social support, such as parents or peers—may have diluted any effects that do exist.

### **Moderating Effects of Hurricane Katrina**

Hypotheses predicting a moderating effect of hurricane exposure on the relation between ECV and conduct problems were partially supported. Results indicated that, for children with low and moderate levels of hurricane-related life-threatening experiences, increasing violence exposure significantly predicted heightened conduct problems. However, violence exposure was not predictive of conduct problems for children exposed to high levels of life-threatening experiences during the storm. At both low and high levels of violence exposure, children with many hurricane-related life-threatening experiences exhibited significantly more conduct problems than those with few life-threatening experiences.

Given that the intensity and severity of a trauma is generally positively related to deleterious outcomes (APA, 2000), the finding that violence exposure is associated with increased conduct problems among children with *low* and *moderate* levels of hurricane threat, but not those with *high* hurricane threat may at first seem paradoxical. However, under more careful interpretation, these findings also indicate that ECV is unrelated to conduct problems among children with high hurricane threat. The effects of high levels of hurricane-related life-threatening experiences appear to wash out the effects of violence exposure on conduct problems. These findings are consistent with those of Spell and colleagues (2008), who suggested the possible overriding predictive power of hurricane exposure in predicting child internalizing and externalizing symptoms. Alternatively, it is possible that there is another variable at play in the relationship amongst ECV, hurricane exposure, and conduct problems, which was not measured by the current study.

Hypotheses predicting the moderating role of Hurricane Katrina on the relation between family routines and conduct problems also were partially supported. Both life-threatening experiences and loss/disruption significantly moderated this relation. For youth with low and medium levels of hurricane threat, having more family routines served as a buffer against conduct problems. However, this relation did not hold true for children and adolescents experiencing high hurricane threat. Furthermore, there were not significant differences in the levels of conduct problems shown between children with high and low threat, regardless of family routines. Thus, this interaction must be interpreted with caution. Although statistical analyses detected a significant interaction, the effect sizes found were very small, thereby calling into question the clinical significance of the finding. Nonetheless, the significant trend of this threat-by-routines interaction is consistent with the interaction found between hurricane-related life-threatening experiences and violence exposure; in both relationships, children and adolescents with high levels of hurricane threat remained unaffected by factors that contribute to the prediction of conduct problems in those with low and moderate levels of hurricane threat. These findings align with previous research indicating that the severity of exposure is consistently among the most important factors in predicting youth adjustment following a disaster (Asarnow et al., 1999; Vernberg et al., 1996).

A significant interaction also emerged between hurricane-related loss and disruption and family routines in the prediction of conduct problems. Among children and adolescents with high levels of loss and disruption, having greater family routines served as a buffer against conduct problems. Conversely, for youth with moderate family loss and disruption, having more family routines was associated with *more* conduct problems. For those with low levels of loss and disruption, there was no relationship at all between the level of family routines present and

conduct problems displayed. Although statistical differences emerged between the level of conduct problems displayed by youth with high and low loss/disruption at both high and low levels of family routines, the clinical significance of these results is questionable. The size of the effect is quite small, and the effect therefore should be interpreted with caution.

### **Limitations**

Several important limitations to this study must be noted. This study is correlational in nature, and therefore causal conclusions must not be drawn from its findings. Additionally, standardized scores for violence exposure were obtained using the present dataset, which may limit the generalizability of this study's findings. Furthermore, the current study employed self-report data only and included child self-report, which is at times unreliable (see Altshuler & Ruble, 1989). Finally, as aforementioned, the effect sizes of the interactions including family routines are small and must be interpreted with caution.

### **Strengths, Implications, and Future Directions**

The current study has several strengths. It is the first of its kind to examine the potential moderating effects of a natural disaster on the relationship between conduct problems and a variety of risk and protective factors in a sample of predominantly African American, low-income youth. The most important finding of this study is that the number of life-threatening events experienced during a hurricane is associated with the degree to which ECV affects conduct problems. High levels of hurricane threat appear to negate the otherwise strong effects of ECV in the current sample. This finding is consistent with the trend of the interaction found between hurricane threat and family routines, such that the otherwise protective nature of family routines is ineffective at high levels of hurricane-related life-threatening experiences. Despite the trend found in this study for high levels of hurricane threat to qualify the effects of

well-established predictors of conduct problems, it is possible that factors unmeasured by this study act on the relation among ECV, conduct problems, and hurricane exposure, as well as on the relation between family routines, conduct problems, and hurricane exposure. Further research is therefore warranted to more fully explicate these relationships.

These findings may help inform the development of post-disaster intervention for youth and families by suggesting that, at the highest levels of disaster-related life-threatening experiences, the effects of factors generally known as being risk-enhancing or protective are mitigated. It is therefore imperative that more research be conducted to develop interventions aimed specifically at youth experiencing the greatest amount of threat. Future research should also consider the long-term effects of disaster exposure on conduct problems by examining the relationship at later time points. The present study offers a step toward understanding the effects of disaster exposure on the behavior of youth and can assist psychologists, caregivers, and policymakers in better aiding the recovery and adjustment of children and adolescents affected by a natural disaster.

## REFERENCES

- Brockenbrough, K.K., Cornell, D.G., & Loper, A.B. (2002). Aggressive attitudes among victims of violence at school. *Education and Treatment of Children, 25*, 273-287.
- Cohen, S. & Willis, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310-357.
- Earls, F., Smith, E., Reich, W., & Jung, K.G. (1988). Investigating psychological 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.
- Farrell, A.D., & Bruce, S.E. (1997). Impact of exposure to community violence on violent behavior and emotional distress among urban adolescents. *Journal of Clinical Child Psychology, 26*, 2-14.
- Flowers, A.L., Hastings, T.L., & Kelley, M.L. (2000). Development of a screening instrument for exposure to violence in children: The KID-SAVE. *Journal of Psychopathology and Behavioral Assessment, 22*, 91-104.
- Frick, P.J., & Ellis, M. (1999). Callous-Unemotional traits and subtypes of Conduct Disorder. *Clinical and Family Psychology Review, 2*, 149-168.
- Frick, P.J., Van Horn, Y., Lahey, B.B., Christ, M.A.G., Loeber, R., Hart, E.A., et al. (1993). Oppositional Defiant Disorder and Conduct Disorder: A meta-analytic review of factor analyses and cross-validation in a clinic sample. *Clinical Psychology Review, 13*, 319-340.
- Garbarino, J. (2002). Pathways from childhood trauma to adolescent violence and delinquency. In R. Greenwald (Ed.), *Trauma and juvenile delinquency: Theory, research, and interventions* (pp. xix-xxv). New York: The Haworth Press, Inc.
- Gladstein, J., Slater Rusonis, E.J., & Heald, F.P. (1992). A comparison of inner-city and upper middle class youths' exposure to violence. *Journal of Adolescent Health, 13*, 275-280.
- Goodman, S.H., & Johnson, M.S. (1986.) Life problems, social supports, and psychological functioning of emotionally disturbed and well low-income women. *Journal of Community Psychology, 14*, 150-158.
- Gorman-Smith, D. & Tolan, P.H. (2003). Positive adaptation among youth exposed to community violence. In S. Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the Context of Childhood Adversities* (pp.392-413). Cambridge: Cambridge University Press.

- Hare, R.D., Hart, S.D., & Harpur, T.J. (1991). Psychopathy and the DSM-IV criteria for antisocial personality disorder. *Journal of Abnormal Psychology, 100*, 391-398.
- Harter, S. (1985). *Manual for the Social Support Scale for Children*. Denver: University of Denver.
- Hastings, T.L., & Kelley, M.L. (1997). Development and validation of the Screen for Adolescent Violence Exposure (SAVE). *Journal of Abnormal Child Psychology, 25*, 511-520.
- Hinshaw, S.P., & Lee, S.S. (2003). Conduct and oppositional defiant disorders. In E.J. Mash & R.A. Barkley (Eds.), *Child Psychopathology* ( pp.144-198). New York: Guilford Press.
- Hobfoll, S.E. (1988). *The ecology of stress*. Washington, DC: Hemisphere.
- Holmbeck, G.N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology, 27*, 87-96.
- Jeney-Gammon, P., Daugherty, T.K., Finch, A.J., Belter, R.W., & Foster, K.Y. (1993). Children's coping styles and report of depressive symptoms following a natural disaster. *The Journal of Genetic Psychology, 154*, 259-267.
- Kashani, J.H., & Sheppard, J.A. (1990). Aggression in adolescents: The role of social support and personality. *Canadian Journal of Psychiatry, 35*, 311-315.
- Kelley, M.L., Palcic, J.L., Vigna, J.F., Spell, A.W., Pellegrin, A., Davidson, K.L., et al. (in press). The effects of parenting behavior on children's mental health post-Hurricane Katrina. In R.P. Kilmer, Gil-Rivas, V., Tedeschi, R.G., & Calhoun, L.G. (Eds.), *Meeting the Needs of Children, Families, and Communities Post-Disaster: Lessons Learned from Hurricane Katrina and Its Aftermath*. Washington, D.C.: American Psychological Association.
- La Greca, A.M., & Prinstein, M.J. (2002). Hurricanes and earthquakes. In A.M. La Greca, W.K. Silverman, E.M. Vernberg, & M.C. Roberts (Eds.), *Helping Children Cope with Disasters and Terrorism* (pp. 107-138). Washington, D.C.: American Psychological Association.
- McMahon, R.J., Wells, K.C., & Kotler, J.S. (2006). Conduct Problems. In E.J. Mash and R.A. Barkley (Eds.), *Treatment of Childhood Disorders* (pp. 137-268). New York: Guilford Press.
- Norris, F.H., Friedman, M.J., Watson, P.J., Byrne, C.M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. *Psychiatry, 65*, 207-239.

- Olweus, D. (1979). Stability of aggressive reaction patterns in males: A review. *Psychological Bulletin*, 85, 852-875.
- Patterson, G.R. (1982). *Coercive Family Process*. Eugene, OR: Castalia.
- Reijneveld, S.A., Crone, M.R., Verhulst, F.C., Verloove-Vanhorick, S.P. (2003). The effect of a severe disaster on the mental health of adolescents: A controlled study. *The Lancet*, 386, 691-696.
- Reynolds, C.R., & Kamphaus, R.W. (1998). *BASC: Behavior Assessment System for Children manual*. Circle Pines, MN: American Guidance Service.
- Reynolds, C.R., & Kamphaus, R.W. (2004). *Behavior Assessment System for Children, second edition manual*. Circle Pines, MN: American Guidance Service.
- Schafer, J.L., & Graham, J.W. (2002). Missing data: Our view of state of the art. *Psychological Methods*, 7(2), 147-177.
- Scarpa, A. (2001). Community violence exposure in a young adult sample: Lifetime prevalence and socioemotional effects. *Journal of Interpersonal Violence*, 16, 36-53.
- Scarpa, A., & Haden, S.C. (2006). Community violence victimization and aggressive behavior: The moderating effects of coping and social support. *Aggressive Behavior*, 32, 502-516.
- Singer, J.L., Singer, D.G., & Rapaczynski, W.S. (1984). Family patterns and television viewing as predictors of children's beliefs and aggression. *Journal of Communication*, 34, 73-89.
- Shaw, J.A., Applegate, B., & Schorr, C. (1996). Twenty-one-month follow-up study of school-aged children exposed to Hurricane Andrew. *Journal of the American Academy of Child and Adolescent Psychology*, 35, 359-364.
- Spell, A.W., Kelley, M.L., Self-Brown, S., Davidson, K.L., Pellegrin, A., Palcic, J., et al. (in press). The moderating effects of maternal psychopathology on children's adjustment post-Hurricane Katrina. *Journal of Clinical Child and Adolescent Psychology*.
- Swenson, C.C., Saylor, C.F., & Powell, M.P. Impact of a natural disaster on preschool children: Adjustment 14 months after a hurricane. *American Journal of Orthopsychiatry*, 66, 122-130.
- Tabachnick, B.G. & Fidell, L.S. (2007). *Using Multivariate Statistics* (5<sup>th</sup> ed.). Boston: Pearson.
- U.S. Department of Homeland Security. (2007). *The 18-month anniversary of Hurricane*

*Katrina: Progress made and lessons learned.* Retrieved September 1, 2007, from [http://www.dhs.gov/xprevprot/programs/gc\\_1173201764934.shtm](http://www.dhs.gov/xprevprot/programs/gc_1173201764934.shtm)

- Vernberg, E.M., La Greca, A.M., Silverman, W.K., & Prinstein, M.J. (1996). Prediction of posttraumatic stress symptoms in children after Hurricane Andrew. *Journal of Abnormal Psychology, 105*, 237-248.
- Walters, G.D. (2005). Proactive and reactive aggression: A lifestyle view. In J.P. Morgan (Ed.), *Psychology of Aggression* (pp.29-43). Happaug, NY: Nova Science Publishers, Inc.

**APPENDIX**

**DEMOGRAPHIC QUESTIONNAIRE**

**ABOUT YOU AND YOUR FAMILY**

Please fill out the following background information about yourself and your family. Read each item carefully.

**Your age:** \_\_\_\_\_  
**Your spouse's age:** \_\_\_\_\_  
**Your child's age:** \_\_\_\_\_  
**Your child's sex:** \_\_\_\_\_

**Your Child's School History:**

Your child's current grade: \_\_\_\_\_  
School your child attended BEFORE the hurricane? \_\_\_\_\_  
(Circle one: Public or Private)

School your child attends NOW, after the hurricane? \_\_\_\_\_  
(Circle one: Public or Private)

**Race:**

\_\_\_\_\_ White  
\_\_\_\_\_ Black  
\_\_\_\_\_ Hispanic  
\_\_\_\_\_ Asian  
\_\_\_\_\_ Native American  
\_\_\_\_\_ Pacific Islander  
\_\_\_\_\_ Other

**Marital Status:**

\_\_\_\_\_ Never Married  
\_\_\_\_\_ Married  
\_\_\_\_\_ Separated  
\_\_\_\_\_ Divorced  
\_\_\_\_\_ Widowed

**Education:** What is the highest level of education completed by?

Yourself

\_\_\_\_\_ 6<sup>th</sup> grade or less  
\_\_\_\_\_ Junior High school (7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> grade)  
\_\_\_\_\_ Partial high school (10<sup>th</sup>, 11<sup>th</sup> grade)  
\_\_\_\_\_ High school graduate  
\_\_\_\_\_ Partial college (at least 1 year) or specialized training  
\_\_\_\_\_ Standard college or university graduate  
\_\_\_\_\_ Graduate professional degree (Master's, Doctorate)

Your Spouse

\_\_\_\_\_ 6<sup>th</sup> grade or less  
\_\_\_\_\_ Junior High school (7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> grade)  
\_\_\_\_\_ Partial high school (10<sup>th</sup>, 11<sup>th</sup> grade)  
\_\_\_\_\_ High school graduate  
\_\_\_\_\_ Partial college (at least 1 year) or specialized training  
\_\_\_\_\_ Standard college or university graduate  
\_\_\_\_\_ Graduate professional degree (Master's, Doctorate)

**Past Income:** What was the total annual income of your household **BEFORE** the hurricane?  
(Combine the income of all the people living in your house right now as well as any government assistance.)

_____ \$0-4,999	_____ \$15,000-24, 999	_____ \$50,000-74,999
_____ \$5,000-9,999	_____ \$25,000-34,999	_____ \$75,000-99,999
_____ \$10,000-14,999	_____ \$35,000-49,999	_____ \$100,000 and up

**Current Income:** What is the total and **CURRENT** annual income of your household?  
(Combine the income of all the people living in your house right now as well as any government assistance.)

_____ \$0-4,999	_____ \$15,000-24, 999	_____ \$50,000-74,999
_____ \$5,000-9,999	_____ \$25,000-34,999	_____ \$75,000-99,999
_____ \$10,000-14,999	_____ \$35,000-49,999	_____ \$100,000 and up

If you are unable to say what your annual income is, what is your monthly income?  
\$ \_\_\_\_\_

**Past Occupation:** Please provide the following information about you and your spouse's job(s) **BEFORE** the hurricane.

#### **About You**

What was your occupation/job title? (If you were retired, please write "retired" and your past occupation. If you did not work outside the home, write "unemployed.")

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If employed, what kind of industry or company? (For example, elementary school, clothing store, hospital, restaurant, etc.)

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If employed, what were your job duties? (Please be specific.)

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If you were **unemployed before** the hurricane, were you seeking a new job? Yes / No

#### **About Your Spouse**

What was your spouse's occupation/job title? (If he was retired, please write "retired" and his past occupation. If they did not work outside the home, write "unemployed.")

---

What kind of industry or company did they work for? (For example, elementary school, clothing store, hospital, restaurant, etc.)

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What were their job duties? (Please be specific.)

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If your spouse was **unemployed before** the hurricane, were they seeking a job? Yes / No

**Current Occupation:** Please provide the following information about you and your spouse's job(s) **CURRENTLY**.

#### **About You**

What is your occupation/job title? (If you are retired, please write "retired" and your past occupation. If you do not work outside the home, write "unemployed." If your job is the same as it was before the hurricane, please write "same.")

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If employed, what kind of industry or company? (For example, elementary school, clothing store, hospital, restaurant, etc.)

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If employed, what are your job duties? (Please be specific.)

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If you are **currently unemployed**, are you currently seeking a new job? Yes / No

#### **About Your Spouse**

What is your spouse's occupation/job title? (If he is retired, please write "retired" and his past occupation. If they do not work outside the home, write "unemployed." If their job is the same as it was before the hurricane, please write "same.")

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What kind of industry or company did they work for? (For example, elementary school, clothing store, hospital, restaurant, etc.)

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What are their job duties? (Please be specific.)

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If your spouse is **currently unemployed**, are they currently seeking a new job? Yes / No

**Family:** Please list the age and sex of all those living in your household **BEFORE** the hurricane, including yourself, your spouse, other relatives, and all children.

<u>Relationship to you</u>	<u>Age</u>	<u>Sex</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>
_____	_____	<u>Male/Female</u>

What was the TOTAL number of people, including yourself, living in your home **BEFORE** the hurricane? \_\_\_\_\_

What was the TOTAL number of adults over 18, including yourself, living in your home **BEFORE** the hurricane? \_\_\_\_\_

What was the TOTAL number of children under 18 living in your home **BEFORE** the hurricane? \_\_\_\_\_

## VITA

Born in 1984, Julia Vigna grew up in Cherry Hill, New Jersey. She attended Tulane University in New Orleans, Louisiana, where she earned a Bachelor of Arts in psychology in 2006. While at Tulane, Julia completed an honors thesis regarding the moderating roles of coping and attributional style on the relation between community violence exposure and child aggression. Upon graduating, Julia entered the doctoral program in clinical psychology at Louisiana State University, where she is currently in her second year. Research and clinical interests include the broad range of topics encompassed by the spectrum of stress and trauma in both youth and adults.