



2018

## Measuring Community Violence, Trauma, and Family Functioning among Youth Living in Low-Income, Urban Environments

Kyle Deane

Follow this and additional works at: [https://ecommons.luc.edu/luc\\_diss](https://ecommons.luc.edu/luc_diss)



Part of the [Clinical Psychology Commons](#)

---

### Recommended Citation

Deane, Kyle, "Measuring Community Violence, Trauma, and Family Functioning among Youth Living in Low-Income, Urban Environments" (2018). *Dissertations*. 2951.

[https://ecommons.luc.edu/luc\\_diss/2951](https://ecommons.luc.edu/luc_diss/2951)

This Dissertation is brought to you for free and open access by the Theses and Dissertations at Loyola eCommons. It has been accepted for inclusion in Dissertations by an authorized administrator of Loyola eCommons. For more information, please contact [ecommons@luc.edu](mailto:ecommons@luc.edu).



This work is licensed under a [Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License](#).  
Copyright © 2018 Kyle Deane

LOYOLA UNIVERSITY CHICAGO

MEASURING COMMUNITY VIOLENCE, TRAUMA, AND FAMILY FUNCTIONING  
AMONG YOUTH LIVING IN LOW-INCOME, URBAN ENVIRONMENTS

A DISSERTATION SUBMITTED TO  
THE FACULTY OF THE GRADUATE SCHOOL  
IN CANDIDACY FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

PROGRAM IN CLINICAL PSYCHOLOGY

BY

KYLE C. DEANE

CHICAGO, IL

AUGUST 2018

Copyright by Kyle C. Deane, 2018  
All rights reserved.

## ACKNOWLEDGMENTS

I am very grateful to all those who offered mentorship, instruction, and support throughout my graduate career and on this dissertation project. Firstly, I would like to express my sincere appreciation to my dissertation chair, Dr. Maryse Richards, for her level of commitment, patience, and guidance throughout this project. I also want to thank her for providing a fantastic example of leading a full and balanced life, devoted to both work and family. I would also like to thank the members of my dissertation committee, Dr. Catherine Santiago, Dr. Jim Garbarino, and David Treering, who were all so generous with their time and wisdom. A special thanks to the psychology department faculty at Loyola University Chicago, particularly Dr. Grayson Holmbeck, who have fostered a supportive and cohesive environment to learn, research, teach, and develop professionally. Finally, I am especially grateful for my wife, Claire, who offered unwavering support and love, and my sweet daughter, Maggie, who offered unwavering laughter and joy as we all crossed the finish line together.

## TABLE OF CONTENTS

ACKNOWLEDGMENTS	iii
LIST OF TABLES	vii
LIST OF FIGURES	ix
ABSTRACT	xi
CHAPTER ONE: INTRODUCTION	1
Exposure to Community Violence: Definition and Prevalence	1
Effects of Exposure to Community Violence	2
Measurement Issues in Investigating Exposure to Community Violence and Adjustment	3
Theoretical Underpinnings, Ecology, and Resilience: The Role of Family Functioning	5
Overview of Current Investigation and Studies	6
CHAPTER TWO: POSTTRAUMATIC STRESS, FAMILY FUNCTIONING, AND EXTERNALIZING IN ADOLESCENTS EXPOSED TO VIOLENCE: A MODERATED MEDIATION MODEL	10
Introduction	10
Exposure to Violence, Externalizing Symptoms, and Posttraumatic Stress	11
The Role of Gender	13
Family Cohesion and Daily Family Support as Moderators	14
Limitations of Previous Research	16
The Present Study	17
Method	18
Participants	18
Procedure	19
Measures	20
Results	22
Preliminary and Correlational Analyses	22
Regression Analyses	23
Mediation Analyses	27
Moderation by Family Cohesion and Daily Family Support	28
Moderated Mediation of Significant Models	32
Discussion	33
Study Overview and Major Findings	33
Limitations of the Current Study	40
Strengths of the Current Study	42
Future Research Directions	43
Clinical Implications	43

CHAPTER THREE: VIOLENCE EXPOSURE, POSTTRAUMATIC STRESS, EMOTION REGULATION, AND FAMILY FUNCTIONING AMONG AFRICAN AMERICAN YOUTH: A TIME SAMPLING APPROACH	45
Introduction	45
Exposure to Community Violence in Urban, African American Communities	45
Exposure to Violence, Posttraumatic Stress, Internalizing, and Externalizing Outcomes	46
Exposure to Community Violence, Feeling States, and Posttraumatic Stress	49
Symptoms: The Role of Emotion Regulation	
Resilience: Family Functioning Variables as Moderators	50
Daily Experience: Benefits of Time Sampling Techniques	52
Current Study	53
Method	55
Participants	55
Procedure	56
Measures	59
Analytic Procedure	60
Results	63
Preliminary Analyses	63
HLM Analyses	63
Discussion	80
Study Overview and Major Findings	80
Limitations of the Current Study	84
Future Research Directions	85
 CHAPTER FOUR: MAPPING NEIGHBORHOOD STRESSORS AND RESILIENCE USING GEOGRAPHIC INFORMATION SYSTEMS: A COMMUNITY BASED PARTICIPATORY APPROACH	 87
Introduction	87
Exposure to Community Violence	89
Social Capital: The Role of Community Assets, Social Support Networks, and Family Functioning	91
Geographic Information Systems and Mixed-Methods Research	93
Theoretical Framework	95
Current Study	97
Aims and Hypotheses	98
Method	101
Participants	101
Procedure	102
Analytics Procedure	104
Results	111
Psychological Difficulties Related to Community Violence	111
Community Assets	113
Social Support Networks	116

Route to School	118
Spatial Analyses	123
Discussion	134
Deleterious Psychosocial Outcomes Following Violence Exposure	134
Violence Exposure in the Context of School and Route to School	136
The Role of Social Capital in the Context of Violence Exposure	138
Limitations of the Current Study	142
Future Research and Implications	143
CHAPTER FIVE: DISCUSSION	146
Measuring Community Violence Exposure and Related Variables Using Questionnaires and ESM	147
Measuring Community Violence Exposure and Related Variables Using a Daily Sampling Approach	148
Measuring Community Violence Exposure and Related Variables Using CBPR, Focus Groups, and GIS	150
Overarching Findings	152
Implications for Intervention and Policy	155
Conclusion	157
REFERENCE LIST	158
VITA	178

## LIST OF TABLES

Table 1. Correlations among variables under study for the entire sample ( $N = 169-258$ )	25
Table 2. Correlations among variables under study by gender (males: $N = 64-96$ ; females: $N = 94-138$ )	26
Table 3. Significant overall conditional effects for the entire sample	29
Table 4. Significant overall conditional effects examined separately by gender	29
Table 5. Relation between 7 <sup>th</sup> grade posttraumatic stress and 8 <sup>th</sup> grade aggression, moderated by family cohesion	32
Table 6. Conditional indirect effects of witnessing community violence on subsequent aggression through posttraumatic stress symptoms at levels of family cohesion	33
Table 7. Descriptive statistics and correlations for variables under study	67
Table 8. Hierarchical linear models for posttraumatic stress as the outcome with family functioning moderation	68
Table 9. Hierarchical linear models for posttraumatic stress as the outcome with feeling state variability moderation	69
Table 10. Hierarchical linear models for dysphoria as the outcome with family functioning moderation	70
Table 11. Hierarchical linear models for dysphoria as the outcome with feeling state variability moderation	71
Table 12. Hierarchical linear models for anxiety as the outcome with family functioning moderation	72
Table 13. Hierarchical linear models for anxiety as the outcome with feeling state variability moderation	73

Table 14. Hierarchical linear models for hostility as the outcome with family functioning moderation	74
Table 15. Hierarchical linear models for hostility as the outcome with feeling state variability moderation	75
Table 16. Simple slopes at +/- 1.0 standard deviation of the moderator for hierarchical linear models	76
Table 17. Focus group codes, themes, and selected quotes	119
Table 18. Descriptive statistics and correlations for spatial variables under study	127

## LIST OF FIGURES

Figure 1. Path coefficients for simple mediation analysis on symptoms of aggression (N = 116)	27
Figure 2. Moderation of the direct effect of posttraumatic stress in 7 <sup>th</sup> grade on 8 <sup>th</sup> grade aggression by level of family cohesion	31
Figure 3. Hypothesized guiding model	55
Figure 4. Daily violence exposure × dysphoria variability on next-day posttraumatic stress	77
Figure 5. Daily violence exposure × anxiety variability on next-day posttraumatic stress	77
Figure 6. Daily violence exposure × dysphoria variability on same-day dysphoria	78
Figure 7. Daily violence exposure × dysphoria variability on next-day dysphoria	78
Figure 8. Daily violence exposure × dysphoria variability on next-day hostility	79
Figure 9. Daily violence exposure × anxiety variability on next-day hostility	79
Figure 10. Daily violence exposure × hostility variability on next-day hostility	80
Figure 11. Chicago community areas (neighborhoods) and study area	99
Figure 12. CPD violent crime data occurring in public for the year 2013 in Little Village	106
Figure 13. CPD violent crime occurring in public for the year 2013 in Little Village by category	106
Figure 14. Location of neighborhood schools (a), libraries (b), and places of worship (c) acquired from public databases	107
Figure 15. Youth report of violent incidents in Little Village	109
Figure 16. Location of youth-plotted friends' homes (a), hangout areas (b),	110

homes (c), and youth community programs (d)	
Figure 17. Location of youth-plotted perceived safe (a), unsafe areas (b), and gang territories within Little Village	110
Figure 18. Determining the geographic unit of analysis	125
Figure 19. Community assets with overlay of youth-report of exposure to violent incidents	128
Figure 20. Community assets with overlay of CPD-report of violent crimes	128
Figure 21. Youth-reported social support networks with youth exposure overlay	129
Figure 22. Youth-reported social support networks with overlay of CPD-report of violent crimes	129
Figure 23. Clustered units of analysis by OLS estimated dependent variable, youth reported violent crime, as predicted by community assets	130
Figure 24. Clustered units of analysis by OLS standard residual for youth reports as predicted by social support networks	131
Figure 25. Youth-reported routes to school	133
Figure 26. Youth-reported method of transportation to school	133

## ABSTRACT

Exposure to community violence is a pressing public health concern that has profound effects on an adolescent's development and psychological well-being, and is disproportionately experienced by ethnic minority youth living in economically disadvantaged urban environments. Efforts to measure violence exposure and its sequelae have centered primarily on the use of retrospective questionnaires and cross-sectional design and often fail to consider other contributory risk or resilience factors. Comprised of three related studies, the goal of this dissertation is to address the relations between exposure to community violence, adjustment difficulties, such as posttraumatic stress, and family functioning among African American and Latinx adolescents living in high violence, low-income communities. Moreover, each project in this collection employs varying methods and measurements of violence exposure, its consequences, and familial protective factors. By examining these variables among a high-risk population in three integral contexts of an adolescent's environment—individual characteristics, family, and neighborhood—this dissertation takes a comprehensive approach informing intervention efforts and policy initiatives in this area.

## CHAPTER ONE

### INTRODUCTION

#### **Exposure to Community Violence: Definition and Prevalence**

It is a tragic reality that violence is endemic in the U.S. for many children and adolescents. Youth exposure to community violence has been recognized by a number of researchers as a significant public health concern (Finkelhor, Turner, Shattuck, Hamby, 2013; Zinzow et al., 2009). In a large representative sample of U.S. youth, 37.8% of adolescents witnessed threats or assaults with weapons, robberies, sexual assaults, or physical assaults (Zinzow et al., 2009). According to the National Center for Children Exposed to Violence (2016), community violence can be categorized as any act of interpersonal violence towards an individual by another individual with no intimate relation to the victim. Frequently occurring forms of community violence include shootings, physical and sexual assault, burglary, and violence committed by gang members. These acts can be experienced throughout a number of contexts in the child's life, including home, school, parks, and the neighborhood. This exposure to chronic community violence, either through witnessing or victimization, is disproportionately distributed throughout populations based on demographic and socioeconomic factors, more commonly being experienced by ethnic minority youth living in socially toxic and disadvantaged urban environments marked by poverty, unemployment, and a scarcity of localized supports (Bureau of Justice Statistics, 2011; Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009; Synder & Sickmund, 2006).

## **Effects of Exposure to Community Violence**

Children and adolescents who witness or are victimized by violence in the community can have profound psychological and behavioral adjustment difficulties, with both internalizing and externalizing sequelae (e.g., Fowler et al., 2009; Goguen, 2005; Gorman-Smith, Henry, & Tolan, 2004; Mazza & Reynolds, 1999; Schwartz, Gorman, Nakamoto, & Toblin, 2005; Zinzow et al., 2009). Even after controlling for a range of covariates, exposure to community violence has been associated with symptoms of depression (Lambert, Nylund-Gibson, Copeland-Linder, & Jalongo, 2010; Turner et al., 2006) and anxiety, including specific phobias, separation anxiety, and generalized anxiety (Bacchini, Concetta Miranda, & Affuso, 2011; Gudiño, Nadeem, Kataoka, & Lau, 2012; Horowitz, McKay, & Marshall, 2005). Youth exposed to community violence can also tend to exhibit behavioral problems, including increased hostility, aggression, and delinquency (Allwood & Bell, 2008; Ozer, 2005; Zahradnik, Stewart, Sherry, Stevens, & Wekerle, 2011), with some researchers finding stronger associations for externalizing problems than internalizing problems (Jenkins & Bell, 1994; Ng-Mak, Salzinger, Feldman, & Stueve, 2004). In addition to these maladaptive outcomes, community violence influences the daily lives of children and adolescents living in these communities. For example, perceived threat and fear of daily violence has been demonstrated to influence walkability of neighborhoods, causing a barrier to many youths' commute to school and generally constraining youth movement (Wiebe, 2013).

Perhaps the most strongly linked deleterious outcome of community violence exposure is posttraumatic stress disorder and posttraumatic stress symptoms (e.g., Berman, Silverman, Kurtines, 2000; Denson, Marshall, Schell, & Jaycox, 2007). Posttraumatic stress disorder is

characterized in the *DSM-5* (American Psychiatric Association, 2013) by four criteria: A) exposure to real or threatened death, injury, or sexual violence, B) persistent re-experiencing of the event through intrusive thoughts, flashbacks, or images, C) avoidance of reminders of the event, D) negative mood or cognition, such as feelings of shame or memory impairment, and E) changes in reactivity and arousal, such as hypervigilance or an exaggerated startle response. In a meta-analysis of adolescent samples exposed to violence, Fowler and colleagues (2009) report that community violence exposure is most strongly linked with posttraumatic stress disorder over and above all other symptoms, indicating that posttraumatic stress symptoms seem to be a particularly harmful and pervasive result of children being exposed to community violence. While the majority of research examining the exposure to traumatic events on subsequent posttraumatic stress or other constellations of deleterious symptomatology has been focused on a time-limited exposure, such as a car accident or natural disaster (Luthra et al., 2009), children living in toxic environments are exposed to a chronic form of exposure. Research has suggested that this sequential, chronic exposure to trauma in the form of community violence exposure can result in a differential presentation of posttraumatic stress symptomatology and other externalizing and internalizing symptoms (Spano, Rivera, & Bolland, 2010; Terr, 1991; Yoon, Steigerwald, Holmes, & Perzynski, 2016)

### **Measurement Issues in Investigating Exposure to Community Violence and Adjustment**

Given the scope and consequences of children's exposure to community violence, it represents an important subject of study. However, there are prevalent methodological issues in the current literature in conceptualizing and measuring community violence exposure and its negative sequelae (Kennedy, Ceballo, & Alexander, 2014; Trickett, Durán, & Horn, 2003). One

primary measurement problem is the wide range of definitions utilized for community violence exposure that inform the different methods used to measure it. For example, sexual assault is infrequently included as a form of community violence exposure, potentially considerably altering the observed effects of exposure among girls, who are more likely to be sexually assaulted than their male peers (Turner, Finkelhor, Ormrod, 2006). Moreover, some methods of measurement only focus on one form of violence, witnessing or victimization, further adding to the lack of clarity surrounding the definition and theoretically influencing the measurement of the deleterious effects of violence exposure. Researchers also irregularly state theoretical reasons for using differing frequency scales of exposure (e.g., past month, year, two years, lifetime), each of which have different merits depending on the aims under investigation (Kennedy, Ceballo, & Alexander, 2014). Importantly, there has been a pervasive reliance on standard survey methodology, with nearly all research using retrospective ordinal scales, which may significantly limit knowledge about community violence exposure and associated outcomes (Margolin et al., 2009). In a review of 31 studies examining exposure to violence among urban youth, 18 different scales for violence exposure measurement were utilized, all of which were retrospective questionnaires (Ozer, Lavi, Douglas, & Wolf, 2015).

The nearly exclusive reliance on retrospective paper-and-pencil surveys for community violence exposure also occurs among studies assessing resulting mental health outcomes and possible familial protective factors. In the same review previously discussed, the most commonly utilized measure of mental health outcomes was the Children's Behavior Checklist (Achenbach, 1991; Ozer, Lavi, Douglas, & Wolf, 2015). While this is a well-validated measure, traditional measurements such as these are inevitably vulnerable to recall errors and biases given the

traumatic nature of violence exposure (Schwartz & Stone, 2007). Furthermore, posttraumatic stress disorder and posttraumatic stress symptomatology may occur at any point following an exposure event, with possible fluctuating symptoms over time, precluding limiting the possibility of identifying symptom onset with retrospective ordinal scales or cross-sectional designs.

### **Theoretical Underpinnings, Ecology, and Resilience: The Role of Family Functioning**

Not all children exposed to community violence experience adjustment difficulties, suggesting that there are other factors that influence this development. Bronfenbrenner (1979) and Cicchetti and Lynch (1993) portrayed human development as an interaction between the child and his or her ecological environment. This theoretical framework, along with a risk and resilience framework (Luthar, Cicchetti, & Becker, 2000; Alvord & Grados, 2005; Masten & Obradovic, 2006), offers a useful context for understanding the effects of community violence exposure can have on youth. An ecological theory of development stresses the dynamic and bidirectional nature of relations among individuals, the immediate environment through which they navigate, and the larger context in which the individuals and environments are embedded (Bronfenbrenner, 1977). The ecological-transactional model (Cicchetti & Lynch, 1993) further expounds on this theory of ecology by incorporating a developmental psychopathology perspective (Sroufe & Rutter, 1984), which emphasizes that adjustment throughout childhood can be characterized as a child's successful negotiation of tasks relevant to each developmental stage. Finally, in a risk and resilience framework, resilience is conceptualized as a process or collection of protective factors that promote positive adaptation in response to significant stress, while risks refer to factors that augment the likelihood of a child experiencing psychosocial problems (Brownlee et al., 2013). Therefore, according to these theoretical frameworks,

individual ontogenic development transpires within simultaneously occurring and interactive risk and protective factors within differing levels of the environment: the macrosystem (e.g., culture), exosystem (e.g., neighborhood and community), and microsystem (e.g., family). Among children and adolescents living in high violence, inner-city neighborhoods, community violence represents an insidious, distal and proximal risk factor within the exosystem.

The harmful stressor of exposure to violence, experienced as a witness or direct victimization, may influence relationships within the youth's most proximal, prominent, and persistent developmental influence: his or her family. Thus, a child and adolescent's experience of violence is not only determined by the violence exposure itself, but also by the child's capacities to utilize environmental resources, such as the family, that provide support and protection. (Zolkoski and Bullock, 2012). Furthermore, family functioning and parenting characteristics may affect the severity of reaction to the violence experienced by the child. While the negative effects of violence exposure in youth have been demonstrated, much less is known about the role of family functioning influencing adjustment among youth in this context. A growing body of literature, however, is beginning to identify specific familial factors that may mediate or moderate the deleterious internalizing and externalizing symptoms frequently associated with exposure in children's lives, including parenting practices, family cohesion, and family support (Buka, Stichick, Birdthistle, & Earls, 2001; Hammack, Richards, Luo, Edlynn, & Roy, 2004; Kliewer et al., 2004; Paxton, Robinson, Shah, & Schoeny, 2004).

### **Overview of Current Investigation and Studies**

The three studies presented in the current dissertation seek to address the interlocking nature of exposure to community violence, adjustment difficulties, such as posttraumatic stress,

and family functioning among ethnic minority adolescents living in economically disadvantaged and socially toxic neighborhoods. Understanding the nexus and complex interactions between these variables is critical to more effectively address intervention efforts and policy issues in this area. Furthermore, each study in this collection utilizes various methodologies and measurements of violence exposure, its consequences, and familial protective factors, providing a more nuanced understanding of these relationships. These differing approaches address the aforementioned methodological limitations present in the current literature, including inconsistent definitions of violence exposure, overreliance on retrospective questionnaires, cross-sectional designs, and atheoretical foundations, which inhibit a cohesive understanding of the nature and effects of violence.

The first study, “Posttraumatic Stress, Family Functioning, and Externalizing in Urban African American Youth Exposed to Violence: A Moderated Mediation Model,” found in Chapter Two and published in the *Journal of Clinical Child and Adolescent Psychology* (Deane, Richards, Mozley, Scott, Rice, & Garbarino, 2016), provides a nuanced statistical approach to understanding the intersection of violence exposure, maladaptive adjustment in the form of externalizing difficulties and posttraumatic stress symptomatology. This study, based on my master’s thesis, investigates posttraumatic stress as a mediator in the relation between exposure to community violence and deleterious outcomes as well as the moderating role of family cohesion and daily family support in buffering these effects on later outcomes. Questionnaires were administered to 268 low-income African American seventh-grade students from high crime urban neighborhoods and experience sampling method (ESM) was used to measure daily family support.

With the findings from this study serving as a backdrop, the second study, “Violence Exposure, Posttraumatic Stress, Emotion Regulation, and Family Functioning Among African American Youth: A Time Sampling Approach,” presented in Chapter Three, aims to assess the daily experiences of violence exposure, posttraumatic stress, and feeling states of dysphoria, anxiety, and hostility using a unique combination of ESM and a daily sampling approach with the same sample as in the first paper. Additionally, this study examines violence exposure with same-day and next-day posttraumatic stress levels and negative feeling states. Family cohesion, daily family support, and feeling states variability are examined as moderators allowing for a comprehensive model of the immediate and prolonged effects of violence exposure. The study expands the literature by utilizing a nuanced methodological approach that incorporates a real-time and longitudinal analysis of these variables through the use of a daily sampling and time-lagged approach to measuring posttraumatic stress and exposure to community violence.

The third study described in Chapter Four, “Mapping Neighborhood Stressors and Resilience Using Geographic Information Systems: A Community Based Participatory Approach,” also examines violence exposure, its effects, and the influence of family functioning in the context of Latinx youth living in a disadvantaged, low-income, high violence community. However, this study will use a community approach emphasizing individual Latinx youth perspectives to explain the interrelations between these variables within a context by using both spatial data and qualitative data. This project emphasizes an ecological systems approach enhanced by use of a community-based participatory research design, which will help identify neighborhood characteristics, such as perceptions of neighborhood safety and protective community assets or social supports, in the context of violence exposure. These variables are

measured through the use of a mixed-methods approach consisting of Geographic Information Systems (GIS) technology along with semi-structured qualitative focus groups. The use of a mixed-methods paradigm provides a distinctive method of measuring violence exposure within these communities as well as improve empirical understanding of the effects of violence exposure and various protective factors gathered from focus group data, including familial support, which informs future interventions on an individual and systemic level.

## CHAPTER TWO

### POSTTRAUMATIC STRESS, FAMILY FUNCTIONING, AND EXTERNALIZING IN ADOLESCENTS EXPOSED TO VIOLENCE: A MODERATED MEDIATION MODEL

#### **Introduction**

Exposure to community violence has emerged as one of the most pressing public health issues facing American youth today. Community violence has been defined as the “exposure to intentional acts of interpersonal violence committed in public areas by individuals who are not intimately related to the victim” (National Child Traumatic Stress Network, 2016). These violent acts encompass incidents including muggings, sexual abuse, gunshot noise, and burglaries, and can occur in a variety of contexts including an individual’s neighborhood, school, or home. This violence disproportionately impacts poor, urban, and ethnic minority youth (Bureau of Justice Statistics, 2011). In studies of such youth samples in Chicago, approximately 30% had been exposed to three or more acts of violence (Gorman-Smith & Tolan, 1998).

Exposure to violence has been associated with elevated levels of distress, including posttraumatic stress symptoms (Zinzow et al., 2009), as well as a wide variety of behavioral problems, including conduct disorder, substance abuse, and aggression (McCabe, Lucchini, Hough, Yeh, & Hazen, 2005). In a sample of adolescents living in urban neighborhoods, exposure to violence was significantly correlated with externalizing problems (Li, Nussbaum, & Richards, 2007). As children and adolescents in environments marked by poverty and violence undergo significant cognitive, social, and biological changes, they are vulnerable to increased

violence exposure and its associated deleterious outcomes (Kohl, Gross, Harrison, & Richards, 2015). Although the negative outcomes associated with poverty and violence exposure are widely understood, research is limited by a lack of clarity regarding the indirect effects of violence exposure on posttraumatic stress and externalizing symptoms. Still less is known about factors that may protect adolescents from these harmful effects.

### **Exposure to Violence, Externalizing Symptoms, and Posttraumatic Stress**

A considerable amount of research in the past two decades has linked youth exposure to community violence with posttraumatic stress disorder (PTSD; Berman, Silverman, & Kurtines, 2000; Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009), marked by reexperiencing symptoms, physiological arousal, and avoidance and numbing symptoms. Children and adolescents living in low-income neighborhoods with elevated incidents of crime will often endorse only some of the symptoms of PTSD (Luthar & Goldstein, 2004). However, previous research indicates that posttraumatic stress symptoms alone, without meeting a full PTSD diagnosis, have significant deleterious effects on child and adolescent development (Garbarino, 1995; Mazza & Reynolds, 1999). Therefore, this study examined the level of posttraumatic stress symptoms in lieu of a full PTSD diagnosis.

The predictive nature of community violence on subsequent aggressive and other externalizing behaviors among adolescents has also been frequently reported (Gorman-Smith & Tolan, 1998; Ozer, 2005). In a review of nine studies investigating the rates of comorbidity of posttraumatic stress symptoms among children and adolescents, comorbidity rates of PTSD with conduct disorders ranged from 5.8% to 25% (Saigh & Bremner, 1999). Burton, Foy, Bwanausi, Johnson, and Moore (1994) found that nearly one fourth of their sample of juvenile offenders

met Diagnostic and Statistical Manual of Mental Disorders (3rd ed., rev.; American Psychiatric Association, 1987) diagnostic criteria for PTSD, further suggesting the link between posttraumatic stress symptoms and delinquent behavior.

Although the relation between exposure to violence and detrimental outcomes has been well-established, an investigation into how these detrimental outcomes occur is essential for enhancing services provided as well as advancing clinical theory. Given that posttraumatic stress symptoms are often the first sign of distress following exposure to violence and are significantly related to other externalizing disorders, it is conceivable that posttraumatic stress symptoms may play a role in mediating the relation between exposure to community violence and other adjustment difficulties. There is a paucity of research examining posttraumatic stress symptomatology as a mediating variable in this context. Some recent research, however, has suggested a mediating role of posttraumatic stress between violence exposure and aggression (Zahradnik, Stewart, Sherry, Stevens, & Wekerle, 2011). The evidence from these studies suggests that children exposed to violence who experience characteristic posttraumatic stress symptoms, including significant difficulty regulating emotions and behaviors, may reexperience the violent events through intrusive images or thoughts. This symptom of posttraumatic stress is often accompanied by an increased physiological arousal (APA, 2000). A combination of diminished emotion and behavior regulation and hyperarousal would conceivably contribute to subsequent aggressive or delinquent behavior. For example, PTSD symptoms and the acceptance of violent thoughts have been found to mediate the relationship between exposure to violence and externalizing symptoms, including violent behavior (Allwood & Bell, 2008). For a sample similar to the current study, PTSD symptoms have also been found to mediate the relationship

between exposure to violence and depression and suicide ideation (Mazza & Reynolds, 1999). In addition, children exposed to violence who experience symptoms of traumatic stress are also more likely to have health problems, including higher rates of asthma and headaches, than children who do not experience traumatic stress (Graham-Bermann & Seng, 2005).

### **The Role of Gender**

Some evidence suggests significant differences in the manner that male and female adolescents experience and respond to exposure to community violence. Foster, Kuperminc, and Price (2004) reported that boys are more frequently exposed to community violence than are girls, particularly in the form of victimization. Although male adolescents report exposure to homicide and victimization of violent crime more frequently, the degree of distress associated with such exposure is variable. In one study, boys and girls reported equal numbers of psychological symptoms associated with direct victimization (Foster, Kupermine & Prince, 2004), whereas in another study, girls reported more psychological distress than did boys related to violence exposure (Eiser, Havermans, & Eiser, 1995).

Research has generally found, however, gender difference in the types of symptoms expressed in adolescents, with girls endorsing more internalizing symptoms (i.e., anxiety, depression) and boys endorsing more externalizing symptoms (i.e., aggression, delinquency; Achenbach, 1991). Nolen-Hoeksema, Parker, and Larson (1994) attributed these gender differences to socialization at a very young age and to stereotypes of men as guarded and women as empathic and sensitive. The differences in socialization may encourage boys to externalize their problems and girls to internalize them. Perhaps because most PTSD symptoms are internalizing in nature (e.g., feelings of detachment, distressing nightmares), female adolescents

are far more likely to develop posttraumatic stress symptoms despite higher reported levels of exposure to community violence among male adolescents (Singer, Anglin, Song, & Lunghofer, 1995). Based on a review of multiple studies, Horowitz, Weine, and Jekel (1995) concluded that females of every age have a 5 times greater risk than males of developing posttraumatic stress symptoms following exposure to violence or some other traumatic event.

### **Family Cohesion and Daily Family Support as Moderators**

Although it is apparent that adolescents living in high-violence, low-income, urban environments are at increased risk for various maladaptive externalizing adjustment outcomes, the degree of risk is not equitable throughout this population (Garbarino, 1995). A growing body of literature is beginning to identify the factors that may serve to moderate the negative sequelae frequently associated with violence exposure (Hammack, Richards, Luo, Edlynn, & Roy, 2004; Kliewer et al., 2004; Paxton, Robinson, Shah, & Schoeny, 2004). In addition to recognizing the paramount significance of parenting practices and attributes as a large portion of research has done (e.g., Goldner, Peters, Richards, & Pearce, 2011), certain facets of family functioning, such as family cohesion, have been associated with lower child externalizing symptoms (Halpern, 2004). Family cohesion has been described as feelings of connectedness between family members (Olson et al., 1983). Levels of cohesion are an index of positive interpersonal interactions and relationships within the family and are related to family effectiveness in addressing environmental stress and developmental change. Children living within traumatic conditions likely respond to the emotional state and behaviors of their family members, thereby reducing deleterious mental health outcomes in socially toxic environments (Gorman-Smith, Henry, & Tolan, 2004). Therefore, family members responding in a cohesive, composed, and

operative manner can provide a positive model for youth and potentially produce fewer traumatic outcomes for youth than family members who are disjointed, absent, or overwhelmed (Pynoos, 1993). Indeed, family cohesion has been linked negatively to juvenile delinquency and deviance during adolescence (Kliewer et al., 2004; Tolan, 1988). Thus, perceived family cohesion may be an integral variable in successful adjustment for children living in disadvantaged environments.

A similar construct, perceived family support, has also been established as an integral variable promoting successful adjustment and buffering maladjustment for children living in disadvantaged communities (Reese, Vera, Simon, & Ikeda, 2000). Research suggests that when a family is not a dependable source of support, youth experiencing violence exposure are more likely to perpetuate violence than youth from families with more consistent support. (Gorman-Smith et al., 2004). Indeed, using a similar sample to the current study, family support was found to act as a protective factor against the negative effects of exposure to violence (Li et al., 2007). Family support is theorized to act as a protective factor by providing an environment whereby children feel supported by and connected to family members and therefore may be more comfortable processing thoughts elicited by negative events. This degree of supportiveness may promote adaptive coping strategies to buffer the negative behavioral consequences following violence exposure. The influence of the caregiver's response to stressors and the youth's likeliness to seek emotional support from family during stressful events make family cohesion a critical component of resiliency in adolescence. It is abundantly evident that an emphasis solely on individual child processes fails to account for the protective or insidious nature of external contexts.

## **Limitations of Previous Research**

One notable limitation of previous research on the development of PTSD in children and adolescents is the considerably limited samples (Luthar & Goldstein, 2004). Most often, this work is focused on European American samples, thus neglecting the impact of repeated trauma experienced by individuals living in lower income, urban environments on the development of externalizing symptoms. As previously stated, exposure to traumatic community violence disproportionately affects ethnic minority youth living in low-income, urban environments. By utilizing a sample representative of this high-risk group, the current study seeks to better understand the development of PTSD following exposure to community violence.

Of the few studies that do examine the role of posttraumatic stress as a mediator between exposure to community violence and other outcomes, most are cross-sectional by design, which prevents claims of causality and true mediation. Frequently, these studies examine only a single outcome rather than testing a more complete model. Furthermore, most rely exclusively on child self-report for measurements of outcome variables. Perhaps most notably, the available studies examining this type of model solely examine child characteristics and ignore potential buffering variables in the child's environment. The constructs of familial support and, in particular, family cohesion are over-looked as potential buffering variables in the development of posttraumatic stress and other adjustment difficulties in response to exposure to community violence. Fewer still have examined these variables using measures of extended family among African American youth. Aisenberg and Ell (2005) concluded that community violence research should examine more than individual child characteristics in order to provide a more contextualized and comprehensive child, family, and community approach to adequately address the effects of

exposure to violence.

### **The Present Study**

The present study addressed these limitations in the following ways: First, it investigated an overlooked form of trauma in the posttraumatic stress literature—basic and sequential traumatization in the form of exposure to community violence—in a historically underresearched, high-risk, and underserved population. Second, the design was longitudinal in nature, allowing for an examination of the causal pathways of posttraumatic stress symptoms. The current study also examined a comprehensive model of externalizing behaviors, examining rates of both aggression and delinquency. Finally, longitudinal mediation models were examined taking into account the influence of the contextual family protective factors of cohesion and supportiveness as moderators, allowing for a more comprehensive model representing the effects of exposure to violence, posttraumatic stress, and other outcomes. The youth's family included their extended family in addition to their immediate family. Few investigations, if any, have examined the interactions between these variables in this population.

In the current model, improved family functioning, as conceptualized by family cohesion and daily family support, is predicted to be associated with lower levels of posttraumatic stress and externalizing symptoms (Hypothesis 1). Furthermore, the level of posttraumatic stress symptoms is seen as a mechanism for change (i.e., mediator). Thus, a higher exposure to community violence was posited to lead to higher levels of posttraumatic stress symptoms, which subsequently results in higher levels of deleterious externalizing symptoms (Hypothesis 2). Moreover, it was predicted that the strength of the mediating effect would be dependent on level of family functioning, such that family functioning would moderate the indirect effect of

exposure to violence on both posttraumatic stress and externalizing symptoms, and that family functioning would buffer the relation between posttraumatic stress and subsequent externalizing symptoms (Hypothesis 3). Finally, due to the gender differences in exposure to violence and psychopathological development and outcomes pertaining to externalizing symptoms and posttraumatic stress, the strength of the conditional indirect effect was examined by gender for each pathway in the model.

## **Method**

### **Participants**

A sample of 254 low-income, urban, African American adolescents in the seventh grade was recruited for a 2-year longitudinal study examining the effects of youth exposure to community violence. Fifty-eight percent of the students recruited for the study agreed to participate, which is consistent with previous studies using a similar sample (e.g., Cooley-Quille, Turner, & Beidel, 1995). The participants were enrolled in one of six public schools located within low-income Chicago neighborhoods. Chicago Police Department statistics obtained in the year prior to data collection indicated that these schools were high-crime areas. The average age of the students in the 1st year of collection under examination in this study was 12.57 years, and 59% of the students were female. Of the total sample, 222 students continued into the eighth grade ( $M = 13.58$ ), forming the 2nd-year sample. There were no significant group differences between the retained sample of participants and the sample of participants lost to attrition in terms of parental education, annual household income, or parents' marital status (Goldner et al., 2011) or in levels of the variables under investigation in the current study. Most participants lived in lower income households, indicated by a median family income of \$19,132 per annum.

Forty-eight percent of the students lived in single-parent households. The median household size for this sample was five people. Most parents had at least a high school degree (83%), and 10% reported having either a college or postgraduate or professional degree.

### **Procedure**

Each participant provided parent or guardian consent and child assent prior to data collection. As an incentive to participate, students received prizes at the end of each data collection period, such as sports equipment, games, or gift cards. The students completed questionnaires that were administered by trained research staff over the course of 5 consecutive days for each year of the study. Parent questionnaires were completed at home and returned to project staff during each period of collection. Student data were also obtained using the Experience Sampling Method (ESM). This data collection technique involved participants carrying alarm watches and a diary for a 1-week period each year. The student completed a brief self-report questionnaire in the diary when signaled by the alarm at random times outside of school hours. Questions in the diary assessed current location, activity, companionship, thoughts, and feelings. The participants were signaled twice per school day, every 1.5 hours before and after school, and on weekends. Prior to receiving the ESM booklet and alarm, participants were given a 40-minute training session on how to appropriately respond to the alarm and enter information. Moreover, the research staff visited the school each day of data collection to ensure compliance and the quality of data. To be included in the study, participants responded to at least 15 signals with a maximum 51 possible (Kohl et al., 2015). The median response rate was 42 signals with an overall compliance rate of 82%. The students and parents or guardians were made aware at the outset of games, gift certificates, and other forms of compensation they would

receive as an incentive for participation.

## Measures

**Exposure to Violence.** Youth exposure to violence was measured with the 25-item self-report Exposure to Violence–Revised (EV-R) scale. This scale was adapted from the My Exposure to Violence Interview (Buka, Selner-O’Hagan, Kindlon, & Earls, 1997). Participants rated how many times they had been exposed to violent acts over the past year using a 6-point scale ranging from 0 (never) to 5 (four or more). As the study was focused on community violence, other forms of violence (e.g., domestic abuse) were not assessed.

Both witnessing and victimization forms of violence exposure were assessed by the EV-R. The witnessing subscale (13 items) consisted of questions like, “Have you seen someone else being hit, kicked, or beat up?” and “Have you seen someone being forced to have sex?” The Victimization subscale (12 items) included questions such as, “Have you been threatened with a knife or a gun?” The EV-R scale demonstrated adequate internal consistency during seventh-grade ( $\alpha = .95$ ) and eighth-grade ( $\alpha = .92$ ) collection.

**Posttraumatic Stress Symptoms.** To measure posttraumatic stress symptoms, participants completed the 25-item Trauma Symptom Questionnaire (TSQ), which was adapted from the Checklist of Child Distress Symptoms (Richters & Martinez, 1990) and the Trauma Symptom Checklist for Children (Briere, 1996). Participants completed the questionnaire on 5 consecutive days over a 1-week period. The respondents rated their level of particular posttraumatic stress symptoms on a 4-point Likert scale: 0 (not true at all), 1 (a little true), 2 (pretty true), and 3 (very true). The total score on the TSQ was formed by computing the average daily score after adding up each item score on the measure throughout the week. The TSQ

comprises five subscales found to be important in trauma literature: Numbing, Avoidance, Dissociation, Intrusion, and Hyperarousal. The total score demonstrated high internal consistency for both seventh ( $\alpha = .95$ ) and eighth ( $\alpha = .92$ ) grades.

**Aggression.** To measure aggression, parents of participants completed the Aggression subscale of the parent form of the Child Behavior Checklist (CBCL–Parent Form; Achenbach, 1991). The CBCL is a well standardized and widely utilized measure rating youth competencies and behavioral problems. This subscale demonstrated good internal reliability, with a Cronbach’s alpha of .94 for Year 1 and .91 for Year 2 of the samples under study.

**Delinquency.** Participants completed the Delinquency subscale of the Juvenile Delinquency Scale (JDS; Tolan, 1988). The JDS is a self-report questionnaire consisting of 20 items assessing adolescent delinquent behaviors. The JDS has been shown to correlate significantly with other reports of delinquent behavior, legal records, and direct interviews (Hindelang, Hirschi, & Weis, 1981). Internal reliability in this study was good for both seventh ( $\alpha = .88$ ) and eighth ( $\alpha = .83$ ) grades.

**Family Cohesion.** Participants reported level of perceived family cohesion, or the degree of commitment and help family members provide for one another, by completing the Family Assessment Measure (FAM), adapted from the Family Environment Scale (FES) (Moos & Moos, 1986). The present study aimed to incorporate the family cohesion dimension (ten items), which is scored on a 4-point scale ranging from 1 (Not true for my family) to 4 (Very true for my family). Samples items include, “Family members really back each other up” and “There is a feeling of togetherness in our family.” The Family Assessment Measure yielded a Cronbach’s alpha of .65 for year one and .68 for year two of the samples under study.

**Daily Family Support.** Using the ESM, participants reported the degree of perceived daily family support. Students participating in the ESM were asked to rate how “friendly” and “helpful” the people around them were at each pager signal. These two items rated on a 7-point scale ranging from 1 (very unfriendly or very unhelpful) to 7 (very friendly or very helpful). Using a different data set, Li et al. (2007) computed a mean of these two variables during the occasions when the participants reported being exclusively with members of their family in order to obtain an index of daily perceived family support, which was adopted by the current study. The ESM data were aggregated across time points and standardized with z scores to reduce potential bias that may have resulted from participants’ overall response tendencies. Although this variable represents an aspect of family cohesion, the current study labeled this “Daily Family Support” in order to distinguish it from the Family Assessment Measure self-report questionnaire of cohesion just outlined. Internal reliability for the measure was .81 at Year 1 and .88 at Year 2.

## **Results**

### **Preliminary and Correlational Analyses**

The means and standard deviations for reports of posttraumatic stress, aggression, delinquency, CBCL externalizing, family cohesion, daily family support, and exposure to violence (witnessing and victimization), for both seventh and eighth grade were assessed. Means and standard deviations for all variables examined in the current study are presented in Table 1 and Table 2. The correlations between the independent variables, moderators, dependent variables, and posttraumatic stress are displayed in Table 1. Table 2 presents these correlations separately for males and females.

## Regression Analyses

The first hypothesis of the current study was to examine the relation between family functioning (i.e., family cohesion and daily family support) and posttraumatic stress and externalizing symptoms for this sample. The relation between each of these variables and current level of family functioning was examined by a series of hierarchical simultaneous multiple regression analyses to examine the cross-sectional and longitudinal data with two predictors (family cohesion and daily family support) and three outcomes (child-reported delinquency, posttraumatic stress, and parent-reported aggression). To examine the relation between family functioning and concurrent posttraumatic stress, subsequent aggression, and subsequent delinquency, two longitudinal equations were tested for the overall sample with gender as a moderator and for males and females separately. Baseline outcomes were entered simultaneously as controls for each longitudinal analysis.

It was hypothesized that lower family functioning would be significantly associated with higher levels of posttraumatic stress. For Year 1, family cohesion significantly accounted for 2% of the variance in posttraumatic stress ( $\beta = -.139, p < .05$ ). After including gender as a moderator, no gender differences emerged. When examined separately by gender, Year 1 family cohesion significantly explained 5% of the variance in posttraumatic stress for male participants ( $\beta = -.228, p < .05$ ), whereas it did not account for significant variance among female participants. Year 1 daily family support did not account for significant variance in same-year posttraumatic stress for the overall sample, or for males or females when examined separately across time.

Furthermore, it was hypothesized that lower family functioning would significantly

predict increased externalizing outcomes. All aggression and delinquency regression equations included Year 1 aggression or delinquency in order to control for baseline levels of the particular outcome. Family functioning did not account for significant variance in Year 2 aggression in the overall sample or for male and female participants examined separately. Year 1 family cohesion and daily family support did not account for a significant change in Year 2 delinquency for the overall sample. Including gender as a moderator showed no significant differences between male and female participants. When examined separately by gender, however, Year 1 family cohesion approached significance, explaining 3% of change in variance for female delinquency ( $\beta = -.191$ ,  $p = .052$ ), though this did not emerge for male participants. Similarly, although daily family support did not explain a significant change in delinquency for male participants, 3% of the variance in Year 2 delinquency was significantly accounted for among female participants ( $\beta = -.177$ ,  $p < .05$ ).

Table 1. Correlations among variables under study for the entire sample ( $N = 169-258$ )

	1	2	3	4	5	6	7	8	9
1. 7 <sup>th</sup> ETV - Witness (c)	1								
2. 7 <sup>th</sup> ETV - Victim (c)	.60**	1							
3. 7 <sup>th</sup> Posttraumatic Stress (c)	.16*	.00	1						
4. 7 <sup>th</sup> Family Cohesion (c)	.01	-.04	-.19*	1					
5. 7 <sup>th</sup> Family Support (c)	-.08	-.08	-.04	.21**	1				
6. 7 <sup>th</sup> Aggression (p)	-.07	-.06	.28**	-.16**	.03	1			
7. 8 <sup>th</sup> Aggression (p)	-.01	-.11	.26**	-.11	.04	.69**	1		
8. 7 <sup>th</sup> Delinquency (c)	.21**	.16*	.35**	-.31**	-.17*	.22**	.22**	1	
9. 8 <sup>th</sup> Delinquency (c)	.27**	.10	.14	-.14	-.17*	.20*	.28**	.40**	1
<i>M</i>	2.44	1.02	.343	18.44	-.09	.31	.31	5.79	9.52
<i>SD</i>	4.00	2.43	.413	4.28	.70	.32	.30	9.52	8.89

*Note.* *M* = mean. *SD* = standard deviation. (c) = child report. (p) = parent report. ETV = exposure to violence levels from the Exposure to Violence-Revised (EV-R) Scale. Posttraumatic Stress levels from the Trauma Symptom Questionnaire (TSQ). Family Cohesion levels from the Family Assessment Measure (FAM). Family Support derived from “friendly” and “helpful” items of the Experience Sampling Method (ESM). Aggression levels from the Child Behavioral Checklist (CBCL) aggression subscale. Delinquency levels from the Juvenile Delinquency Scale (JDS).

\*  $p < .05$ ; \*\*  $p < .01$

Table 2. Correlations among variables under study by gender (males:  $N = 64-96$ ; females:  $N = 94-138$ )

		1	2	3	4	5	6	7	8	9
1. 7 <sup>th</sup> ETV - Witness (c)		1	.42**	.08	.03	-.16	.15	-.01	.30**	.26**
2. 7 <sup>th</sup> ETV - Victim (c)		.76**	1	.01	.02	-.03	-.04	-.09	.28**	.14
3. 7 <sup>th</sup> Posttraumatic Stress (c)		.20	.27**	1	-.11	-.08	.35**	.36**	.32**	.13
4. 7 <sup>th</sup> Family Cohesion (c)		-.05	-.12	-.23*	1	.18*	-.08	-.13	-.37**	-.31**
5. 7 <sup>th</sup> Family Support (c)		.01	-.15	.02	.32**	1	-.06	-.03	-.32**	-.30**
6. 7 <sup>th</sup> Aggression (p)		-.18	-.12	.08	-.18	.09	1	.72**	.24*	.23*
7. 8 <sup>th</sup> Aggression (p) <sup>a</sup>		-.03	-.15	-.10	-.01	.25	.68**	1	.25*	.25*
8. 7 <sup>th</sup> Delinquency (c)		.16	.07	.44**	-.41**	-.05	.20	.31*	1	.47**
9. 8 <sup>th</sup> Delinquency (c) <sup>a</sup>		.25*	.06	.20	.06	.02	.25	.43**	.32**	1
Males	<i>M</i>	2.27	1.06	.27	18.96	-.11	.27	.29	7.38	7.08
	<i>SD</i>	4.61	2.84	.35	3.81	.77	.28	.23	12.49	9.92
Females	<i>M</i>	2.43	2.43	.35	18.17	-.12	.34	.35	4.31	5.84
	<i>SD</i>	3.60	3.60	.47	4.46	.69	.34	.35	6.41	8.42

*Note.* Correlations among variables for females are located above the diagonal; male correlations are below the diagonal. M = mean.

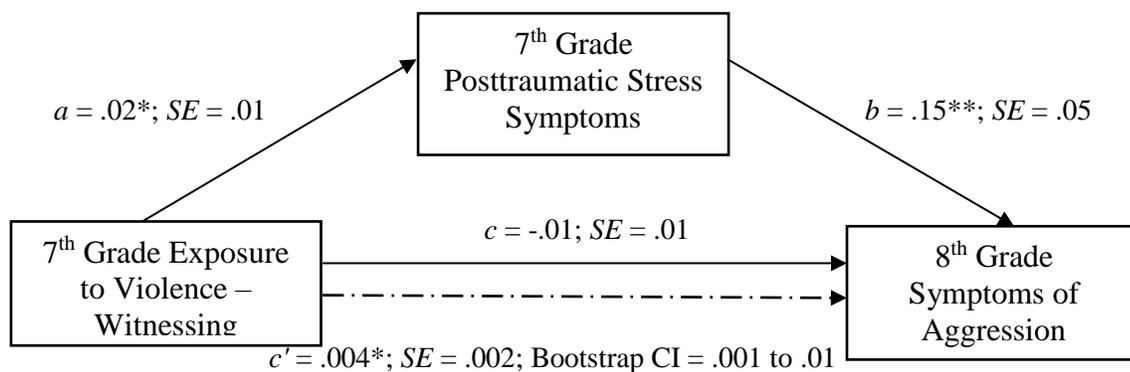
SD = standard deviation. (c) = child report. (p) = parent report. ETV = exposure to violence levels from the Exposure to Violence-Revised (EV-R) Scale. Posttraumatic Stress levels from the Trauma Symptom Questionnaire (TSQ). Family Cohesion levels from the Family Assessment Measure (FAM). Family Support derived from “friendly” and “helpful” items composite of the Experience Sampling Method (ESM). Aggression levels from the Child Behavioral Checklist (CBCL) aggression subscale. Delinquency levels from the Juvenile Delinquency Scale (JDS).

\*\*  $p < .05$ ; \*  $p < .01$

## Mediation Analyses

The second aim and associated hypothesis of the current study was to determine the indirect and mediating function of posttraumatic stress between exposure to community violence and subsequent externalizing outcomes. Using the computational PROCESS bootstrapping procedure for SPSS ( $n = 10,000$  bootstrap samples; Hayes, 2013), three models were estimated to determine the total, direct, and indirect effects of both victimization and witnessing violence on externalizing outcomes through posttraumatic stress symptoms. Given that violence exposure and posttraumatic stress symptoms were obtained concurrently, recommendations by Cole and Maxwell (2003) were followed. As such, covariates included Year 1 aggression and delinquency in models when corresponding Year 2 variables were measured as the outcome, and these three variables were included in the model simultaneously with the other predictors. Point estimates of these effects were considered significant when the confidence intervals (CIs) did not contain zero. This analysis demonstrated a significant positive indirect effect of seventh grade witnessing violence on subsequent eighth- grade aggression through seventh-grade posttraumatic stress symptoms (point estimate = .004), 95% percentile CI [.0003, .0110], as seen in Figure 1. Posttraumatic stress did not mediate any other violence exposure to externalizing outcome relation for the sample as a whole.

Figure 1. Path coefficients for simple mediation analysis on symptoms of aggression (N = 116)



*Note.* Dotted line represents the indirect effect of exposure to community violence when level of posttraumatic stress symptoms is included as the mediator; 95% Bias-corrected bootstrap confidence interval is included. *a*, *b*, *c*, and *c'* are unstandardized logistic regression coefficients. 7<sup>th</sup> grade aggression was included as a covariate but is not visually represented here. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

### **Moderation by Family Cohesion and Daily Family Support**

The third hypothesis of the current study was that the strength of the mediated relation between exposure to violence and adjustment through posttraumatic stress would be dependent on level of family functioning. PROCESS for SPSS is capable of estimating the coefficients of a model using OLS regression as well as generating the conditional effects in moderation (Hayes, 2013). The proportion of the total variance of the outcome that is independently attributed to the interaction is presented. Moreover, the macro provides the ability to estimate the conditional effects of X at the 10th, 25th, 50th, 75th, and 90th percentiles of the selected moderator. These five selected percentiles, which may be interpreted as very low, low, moderate, high, and very high levels of the moderator, will always fall in the range of the data (Hayes, 2013).

Significant conditional direct effect models are reported for the overall sample in Table 3, and separately by gender in Table 4. Significant overall conditional direct effects followed a similar pattern, with an improvement in family functioning leading to a diminished relation between seventh-grade exposure to violence or seventh-grade posttraumatic stress and subsequent eighth-grade externalizing difficulties. Family cohesion did not, however, exhibit an overall moderating effect between seventh-grade violence exposure and concurrent posttraumatic stress.

Table 3. Significant overall conditional effects for the entire sample

Independent Variable	Dependent Variable	Moderator	Coefficient for Interaction	$R^2$ Change	$p$
7 <sup>th</sup> ETV – Witnessing	8 <sup>th</sup> Delinquency	Family Cohesion	-.1037	.0248	.0185
7 <sup>th</sup> ETV – Witnessing	8 <sup>th</sup> Delinquency	Daily Family Support	-.9053	.0856	.0000
7 <sup>th</sup> ETV – Victimization	8 <sup>th</sup> Delinquency	Daily Family Support	.0058	.0206	.0412
7 <sup>th</sup> Posttraumatic Stress	8 <sup>th</sup> Aggression	Family Cohesion	-.0290	.0373	.0036

*Note.* 7<sup>th</sup> = 7<sup>th</sup> grade (time 1). 8<sup>th</sup> = 8<sup>th</sup> grade (time 2). ETV = exposure to violence levels from the Exposure to Violence-Revised (EV-R) Scale. Posttraumatic Stress levels from the Trauma Symptom Questionnaire (TSQ). Family Cohesion levels from the Family Assessment Measure (FAM). Daily Family Support derived from “friendly” and “helpful” items composite of the Experience Sampling Method (ESM). Aggression levels from the Child Behavioral Checklist (CBCL) aggression subscale. Delinquency levels from the Juvenile Delinquency Scale (JDS).

Table 4. Significant overall conditional effects examined separately by gender

Gender	Independent Variable	Dependent Variable	Moderator	Coefficient for Interaction	$R^2$ Change	$p$
Females	7 <sup>th</sup> ETV – Witnessing	8 <sup>th</sup> Delinquency	Family Cohesion	-.1570	.0662	.0021
Females	7 <sup>th</sup> ETV – Witnessing	8 <sup>th</sup> Delinquency	Daily Family Support	-1.2804	.1863	.0000
Females	7 <sup>th</sup> Posttraumatic Stress	8 <sup>th</sup> Delinquency	Daily Family Support	6.7102	.0363	.0324
Females	7 <sup>th</sup> Posttraumatic Stress	8 <sup>th</sup> Aggression	Family Cohesion	-.0302	.0389	.0178

*Note.* 7<sup>th</sup> = 7<sup>th</sup> grade (time 1). 8<sup>th</sup> = 8<sup>th</sup> grade (time 2). ETV = exposure to violence levels from the Exposure to Violence-Revised (EV-R) Scale. Posttraumatic Stress levels from the Trauma Symptom Questionnaire (TSQ). Family Cohesion levels from the Family Assessment Measure (FAM). Daily Family Support derived from “friendly” and “helpful” items composite of the Experience Sampling Method (ESM). Aggression levels from the Child Behavioral Checklist (CBCL) aggression subscale. Delinquency levels from the Juvenile Delinquency Scale (JDS).

The third hypothesis also speculated that family functioning would significantly moderate the second pathway ( $M \rightarrow Y$ ). Family cohesion did significantly moderate the relation between seventh-grade posttraumatic stress and subsequent eighth-grade aggression ( $\beta = -.0290$ ,  $p = .004$ ), with approximately 4% of the variance in aggression uniquely attributable to the interaction between posttraumatic stress and family cohesion ( $r^2 = .036$ ). The conditional effects of seventh-grade posttraumatic stress at five levels of family cohesion indicated that higher levels are associated with eighth-grade aggression, but only when family cohesion is very low or low. In contrast, when family cohesion is moderate, high, or very high, posttraumatic stress was no longer predictive of subsequent aggression (see Table 5 and Figure 2). The relation between posttraumatic stress and aggression was stronger as family cohesion decreased. Additional analyses showed that gender did not moderate this relation.

Figure 2. Moderation of the direct effect of posttraumatic stress in 7<sup>th</sup> grade on 8<sup>th</sup> grade aggression by level of family cohesion

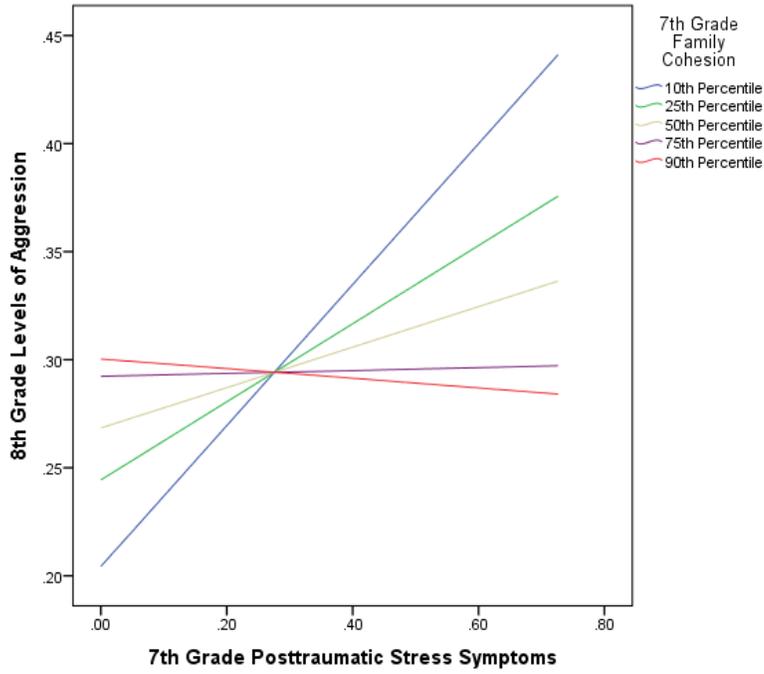


Table 5. Relation between 7<sup>th</sup> grade posttraumatic stress and 8<sup>th</sup> grade aggression, moderated by family cohesion

Level of Moderator	Conditional Effect	<i>p</i>
Very Low (10 <sup>th</sup> percentile)	.3260	.0001
Low (25 <sup>th</sup> percentile)	.1808	.0007
Moderate (50 <sup>th</sup> percentile)	.0937	.0872
High (75 <sup>th</sup> percentile)	.0066	.9247
Very High (90 <sup>th</sup> percentile)	-.0224	.7716

### Moderated Mediation of Significant Models

Model 5 was used to test for moderated mediation (see Preacher, Rucker, & Hayes, 2007). This model examines the moderating effect of an outside variable on both the pathway between the independent variable and the mediator and the pathway between the mediator and the dependent variable. The moderation analysis showed that the effect of violence exposure on posttraumatic stress and of posttraumatic stress on aggression depended on family cohesion. Thus, because the mediation was moderated, Preacher, Rucker, & Hayes (2007) recommended estimating and testing the conditional indirect effects using a bootstrap confidence interval and whether these effects differ from zero at specified values of the moderator. This procedure was completed using the specified model of 59 in PROCESS (see Hayes, 2013). Table 6 presents the point estimates and 95% CIs of a test of the full model, including the mediating effect of posttraumatic stress and the moderating effect of family cohesion. As can be seen in this table, the indirect effect of seventh-grade witnessing on eighth-grade aggression was significantly positive among those from families moderate in cohesion (.0026), 95% CI [.0001, .0088]. This indirect effect was not significantly different from zero among children and adolescents from

families that were very low, low, high, or very high in cohesion. Thus, higher levels of witnessing violence related to increased concurrent posttraumatic stress, which subsequently increased eighth-grade aggression symptoms for children in moderately cohesive families. This mediation is significant only among children from approximately the 50th percentile in cohesion due to the significant initial pathway ( $X \rightarrow M$ ) relation and partially significant pathway  $c$  relation ( $M \rightarrow Y$ ) that did not consistently emerge among those from families higher or lower in cohesion.

Table 6. Conditional indirect effects of witnessing community violence on subsequent aggression through posttraumatic stress symptoms at levels of family cohesion

Family Cohesion Percentile	Point estimate effect	Bootstrap SE	95% Bias-corrected bootstrap confidence interval
10 <sup>th</sup> (13.00)	.0064	.0109	-.0350 to .0134
25 <sup>th</sup> (16.00)	.0019	.0030	-.0024 to .0108
50 <sup>th</sup> (19.00)	.0026	.0019	.0001 to .0088
75 <sup>th</sup> (22.00)	.0007	.0020	-.0025 to .0069
90 <sup>th</sup> (23.00)	-.0025	.0031	-.0117 to .0024

*Note.* Number of bootstrap samples for bias corrected bootstrap confidence intervals: 10,000

## Discussion

### Study Overview and Major Findings

The primary purpose of the current study, conducted with low-income, urban, African American adolescents, was to examine the relation between exposure to community violence (i.e., witnessing or victimization) and subsequent externalizing (i.e., aggression or delinquency) symptoms across seventh to eighth grade, with attention to the mediating role of posttraumatic stress symptomatology and the moderating role of family functioning (i.e., family cohesion or

daily family support). Results of the analyses demonstrated that family functioning was significantly related to concurrent posttraumatic stress and predicted subsequent delinquency, though the presence and strength of the relation differed depending on gender, method, and outcome variable. Moreover, family functioning variables were discovered to significantly buffer the effects of violence exposure and posttraumatic stress on the development of maladaptive outcomes. Posttraumatic stress emerged as a significant mediator between witnessing violence in seventh grade and increased aggression in eighth grade, and the strength of these indirect effects depended on the level of family cohesion.

The first specific hypothesis of the present study involved the investigation of the association between family functioning and posttraumatic stress and externalizing symptoms. Consistent with previous research demonstrating a negative relation between family functioning and subsequent maladaptive outcomes (e.g., Hammack et al., 2004; Kliewer et al., 2004; Paxton et al., 2004; Reese et al., 2000), the present study found that daily family support predicted decreased delinquency for female adolescents and decreased levels of posttraumatic stress. Family cohesion alone predicted concurrent posttraumatic stress in the entire sample.

Surprisingly, neither family functioning variable contributed to eighth-grade aggression. This nonsignificant finding may be related to the lesser power available with a smaller number of parents completing the measurement of aggression. Informant effects may also explain disparate findings between aggression and delinquency. Informant effects are likely to appear when including both child and parent reports given differences in perception of how often certain behaviors occur, as well as how each reporter views them (e.g., Kim, Deater-Deckard, Mullineaux, & Allen, 2010). As parents may not be fully aware of their children's aggressive behavior outside of the home, this may have contributed to divergence between the children's

reports of delinquency and their parents' report of aggression. Likewise for family cohesion and posttraumatic stress symptoms, differential findings may be due to informant effects given reliance on youth self-report for both constructs. Previous research has demonstrated that some discrepancies in a parent-child report of African American participants may be due to a lack of parent-child emotion related communication (Weems, Taylor, Marks, & Varela, 2010).

Although it is considered ideal to use multiple, independent reporters, a lack of communication between sources may lead to inconsistent perspectives from participants.

Gender did not appear to play a role in the nature of the relation of family functioning to externalizing outcomes when examined as a moderator. When these pathways were examined separately by gender, however, differences did emerge. Among female adolescents, both family cohesion and daily family support variables predicted eighth-grade delinquency but did not appear to influence male delinquency. There are several explanations for these disparate findings across gender that may prove recurrent throughout subsequent analyses. In general, previous research on the topic has reported gender differences in the symptomatology exhibited in adolescents following violence exposure, with female participants endorsing more internalizing symptoms and male participants endorsing more externalizing symptoms (Achenbach, 1991; Eiser et al., 1995; Springer & Padgett, 2000). Accordingly, the finding in the current study that family variables generally predict a change in externalizing symptoms in female adolescents (i.e., delinquency), although at first may be counterintuitive, is not entirely surprising. It is possible that delinquent behavior among male participants and the experience of posttraumatic stress (a set of symptoms that are primarily internalizing in nature) among female participants is more gender congruent and thus more stable in development, and therefore less likely to be ameliorated by certain factors in the adolescents' environment, such as degree of family cohesion

or support. This finding has important implications for understanding the effects of exposure to violence and later mental health prevention and intervention among male and female adolescents.

One specific aim of the current study outlined predictions for the moderating effects of family functioning between violence exposure, posttraumatic stress, and adjustment difficulties. Overall, the results confirmed the notion discussed in previous research that family functioning is an integral component of the environment that serves to protect youth from the adverse effects of violence exposure. Moreover, after youth are exposed to violence in their communities and potentially develop posttraumatic stress frequently associated with such exposure, increased family cohesion and daily family support demonstrates a protective-stabilizing effect in the development of subsequent or comorbid delinquency and aggression. Although family cohesion had positive effects, it unexpectedly did not seem to buffer the negative effects of seventh-grade violence exposure on concurrent posttraumatic stress. This may suggest that family functioning emerges as more protective in later adolescence. Although the pattern of these effects differed based on predictor, outcome, and gender of the participant, the overall findings generally support the role of healthy family functioning in preventing or stabilizing pathology for youth living in high-violence neighborhoods. These findings advance current literature by longitudinally measuring the moderating role of healthy family functioning through dual source report and a multimethod approach.

It is important to note that these conditional direct effects occurred with more frequency after witnessing violence rather than after being directly victimized, which is consistent with past research findings (e.g., Hammack et al., 2004). In fact, the only conditional effect found in the current study involving victimization predicted delinquency at differing levels of daily family

support. That is, children reporting lower rates of family helpfulness and friendliness in their daily life were more likely to engage in delinquent behavior following violence victimization. These disparate findings may be linked to the unique contributions to trauma symptoms made by different forms of violence exposure. Using an ethnically diverse sample of late adolescents, Rosenthal (2000) reported that both indirect witnessing and direct victimization were linked with equal magnitude to overall number of trauma symptoms, though each had an independent relation with specific trauma symptoms. Specifically, exposure to violence in the form of witnessing was more strongly related to anger, whereas being victimized was more strongly related to symptoms of depression. Although the effects of witnessing violence may be as deleterious as those following victimization, it seems that aspects of the family environment more readily mitigate the effects of witnessing rather than the effects that follow being the victim of a violent act. This suggests that support within a family may allow children who witness violence to express feelings of anger or receive a sense of understanding resulting in more positive outcomes. Furthermore, negative outcomes faced by children following victimization may require more care than a family can provide.

Posttraumatic stress in childhood and adolescence represents a significant yet overlooked mental health problem. The findings of this study are consistent with previous theoretical explanations of the relation between childhood trauma exposure and externalizing outcomes. Garbarino (2008) described a “war zone mentality” that some children acquire while living in socially toxic environments. This mentality, which is essentially an adaptive response to a threatening environment, correlates to posttraumatic stress symptoms demonstrated by youth. In turn, these symptoms may further express themselves as other behavioral problems.

The investigation of under what circumstances a predictor variable exerts an effect on an

outcome variable, rather than simply whether a relation exists, provides a more nuanced understanding of the variables under examination. The results of this study partially supported the hypothesis of posttraumatic stress acting as a causal mediational variable in the relation between exposure to violence and various externalizing outcomes. A model examining the indirect effects of violence exposure through posttraumatic stress emerged as significant, providing support for the role of posttraumatic stress as a mechanism explaining the development of externalizing difficulties in adolescence. Witnessing violence in seventh grade exerted an indirect effect on eighth-grade aggression through posttraumatic stress. Thus, increased witnessing of violence in the community appeared to predispose adolescents to more severe posttraumatic stress symptoms that, in turn, contributed to increased aggression.

These findings are consistent with previous research linking posttraumatic stress and aggression (Kerig, Vanderzee, Becker, & Ward, 2012; Zahradnik et al., 2011). The posttraumatic stress symptoms of reexperiencing and hyperarousal may contribute to a difficulty in regulating emotions and behaviors, conceivably contributing to subsequent externalizing problems. These findings advance the trauma and exposure to violence literature by longitudinally demonstrating the mediating role of posttraumatic stress and its effect on externalizing symptoms by both child and parent report.

The moderated mediation analyses demonstrated that the indirect effect of seventh-grade witnessing violence on eighth-grade aggression through seventh-grade posttraumatic stress was conditioned on family cohesion. The indirect effect of witnessing violence on aggression through posttraumatic stress was stronger for adolescents from families that were moderate in level of cohesion. Significant indirect effects did not emerge for adolescents with very low, low, high, or very highly cohesive families. This finding is somewhat puzzling and contradicts expectations

that indirect effects would be most prominent among those from families lower in cohesion. One explanation for this finding is that adolescents hailing from more dysfunctional family environments simply experience more severe levels of posttraumatic stress and aggression, thereby negating the unique influence of exposure to violence as a significant predictor of subsequent aggression through the development of posttraumatic stress. Furthermore, the relation between seventh-grade posttraumatic stress and eighth-grade aggression was significant only for children from families low to very low in cohesion and approaching significance among those moderate in cohesion. It is therefore conceivable that a considerably positive and more cohesive family environment buffers the sequence of posttraumatic stress to later aggression, whereby average levels of cohesion do not. This further emphasizes the protective role of family functioning following the presentation of posttraumatic stress.

These results, when considered in light of a risk and resilience framework (Luthar, Cicchetti, & Becker, 2000), suggest the importance of examining the deleterious effects of community violence in the context of the family environment. Although the link between violence exposure and deleterious outcomes has been well-established in previous literature, the degree of this relation does not appear to be equitable throughout this population. Moderation analyses performed in the current study confirm that the child's most proximal developmental influence—his or her family—exhibits a protective-stabilizing effect when high in reported cohesion and support. Feelings of connectedness between family members, an index of positive interpersonal interactions and relationships within the family unit, likely relate to effectiveness in attending to environmental stress present in disadvantaged environments (Reese et al., 2000). Moreover, it seems that daily family support may have provided these children with an environment that further facilitates the processing of negative events and promotes coping

strategies that may buffer negative outcomes following violence exposure—a finding that confirms previous research in the area (e.g., Hammack et al., 2004; Li et al., 2007).

### **Limitations of the Current Study**

The findings of the current study also need to be considered in the context of a number of limitations with regard to the sample, methodology, and measurement issues. One significant weakness of the investigation is that, although significant correlations between children's exposure to community violence and posttraumatic stress symptomatology were found, the posttraumatic stress levels were not in successive temporal sequence with violence exposure. Moreover, although the deleterious effects of community violence exposure have been demonstrated by a body of literature, it is possible in the current study that other potential confounding variables, such as exposure to sexual abuse or familial violence, are contributing to the level of posttraumatic stress symptoms among youth in this study. Consequently, it is not possible to determine whether community violence exposure was a causal predictor of concurrent posttraumatic stress. Moreover, the measure utilized to gather information concerning posttraumatic stress did not provide a definitive confirmation of the presence or absence of a discrete PTSD diagnosis. Thus, differentiation cannot be made between youth meeting full diagnostic criteria for PTSD and those who may be experiencing more normal levels of traumatic response that may diminish through time. It should be noted, however, that previous research indicates that the presence of posttraumatic stress symptoms alone, without meeting the threshold of a diagnosis, have significant deleterious effects on development (e.g., Garbarino, 1995; Mazza & Reynolds, 1999).

Although the data under study were multimethod and obtained from both parent and child, the reliance on a single reporter for the variables under review in this article increases the

likelihood of common reporter variance. The dependence solely on child report for violence exposure, posttraumatic stress, family functioning, and delinquency may have yielded stronger relations among these variables than if both parent and child report were measured for each variable. For example, some portion of the significant relation between family cohesion and posttraumatic stress could be explained by informant effects as both variables were measured by youth self-report. Important to note, the use of separate reporters for the predictor and outcome variable in the significant mediating relationship model (i.e., violence exposure and aggression) minimized the likelihood of common reporter variance. Moreover, although adolescents are thought to be valid reporters on themselves and their experiences, it is sometimes questionable to assume they will demonstrate adequate insight to recall and report these experiences. Hammack and colleagues (2004) asserted, however, that the developmental processes and outcomes of African American youth can be best understood by examining their own perceptions and interpretations of their experiences, particularly in relation to experiences surrounding community violence.

Another potential limitation of the current study was its homogenous sample with regard to race, social class, and geographical location. Although conducting the study among a specific population has advantages, the lack of heterogeneity in the current sample diminishes external validity and the generalizability of the findings to other demographic groups. It is uncertain whether the findings of the current study would be the same when examining adolescents exposed to violence from other demographic groups. Finally, given the characteristics of the data set, the current study was limited in its ability to estimate missing data. As such, listwise deletion was used to address missing variables, which has the potential to introduce biased estimates and standard errors when a large amount of data is missing (Enders, 2001).

### **Strengths of the Current Study**

The current study is strengthened by its focus on a population exposed to disproportionately higher levels of violence. Much of the existing trauma literature focuses exclusively on Type I, or single-event traumatic experiences. Furthermore, these studies have been conducted among limited and most frequently European American samples (Luthar & Goldstein, 2004), whereas exposure to community violence in fact disproportionately affects ethnic minority youth in low-income, urban environments. The study is also strengthened by its longitudinal design. Of the limited number of studies examining posttraumatic stress as a mediator between community violence and negative outcomes, the majority are cross-sectional. Moreover, these studies often examine only a single outcome variable without potential moderating mechanisms. Furthermore, significant mediation was found across both parent and child report, solidifying the importance of data collection from multiple sources when possible. The current study is also strengthened by its investigations into how relations among the selected variables differ by gender.

Furthermore, the current study is strengthened by its consideration of multiple family functioning variables obtained via a multimethod approach. The experience sampling method utilized to capture the daily experience of adolescents in the sample provides a rich context to the concept of family support. Daily family support and family cohesion yielded somewhat different findings, suggesting that both family cohesion and support may influence the development of posttraumatic stress and other deleterious outcomes in distinct ways, such as family cohesion playing a more integral role in reducing the development of delinquent behavior following violence exposure by providing an environment in which positive interaction and effective social modeling can take place. Rather than emphasizing parental characteristics, the current study

found support for the influence of healthy family functioning as a unit. No previous research has examined the interactions between these variables in this population using a longitudinal, multiple report, and multimethod approach.

### **Future Research Directions**

Future studies should be designed to compensate the limitations previously noted with regards to sample, measurement, and design concerns. With regard to sample, it would prove valuable to examine heterogeneous samples in order to determine whether the sequelae of posttraumatic stress and role of family functioning was consistent across differing racial, socioeconomic, age, and geographic divides. In addition, examining the unique predictive relations of posttraumatic stress symptom clusters and outcomes rather than using a total score of posttraumatic stress may yield important insights into how posttraumatic stress acts as a mediator between violence exposure and aggression. Obtaining observational samples of family interaction may provide a rich understanding of family functioning.

### **Clinical Implications**

In light of these findings, it may be important to inquire about family functioning characteristics, particularly level of family cohesion, when assessing African American adolescents who present with posttraumatic stress symptomatology. Given the link with later development of delinquency, aggression, depression, and anxiety, this line of questioning should also focus on degree of exposure to violence within the community. Mental health providers working with urban African American youth need to understand the influence of chronic exposure to community violence and its link to posttraumatic stress when working to reduce externalizing symptoms. Childhood aggression and delinquency can be the outcome of a more complex clinical picture that includes symptoms of posttraumatic stress.

Given the moderating impact of family functioning on the relation between violence exposure, posttraumatic stress, and externalizing outcomes, individuals living in high-crime, low-income neighborhoods may distinctly benefit from therapeutic interactions that emphasize the role of family. The results provide support for an integrationist approach to adolescent psychopathology whereby intervention is provided at both individual and family levels. The relationships found between family functioning and maladaptive outcomes provide compelling support for the importance of providing interventions focused on improving family cohesiveness and support for these adolescents (Cumsille & Epstein, 1994). Moreover, these results suggest that clinicians should be sensitive to gender differences in how family variables contribute to the expression of externalizing outcomes among youth exposed to violence.

## CHAPTER THREE

### VIOLENCE EXPOSURE, POSTTRAUMATIC STRESS, EMOTION REGULATION, AND FAMILY FUNCTIONING AMONG AFRICAN AMERICAN YOUTH: A TIME SAMPLING APPROACH

#### **Introduction**

#### **Exposure to Community Violence in Urban, African American Communities**

Exposure to violence, both witnessed and experienced directly, is a tragic reality for many children and adolescents living throughout the United States. This violence can occur as a mass shooting that attracts significant media attention or as a less publicized yet more frequently occurring incident of injury or murder in a high-crime community. A sizable collection of research offers compelling evidence that violence exposure is a substantial problem in many U.S. communities. The 2008 National Survey of Children's Exposure to Violence (Finkelhor, Turner, Ormrod, & Hamby, 2009) indicated a 60.6% exposure rate to at least one event of violence witnessing or victimization over the period of just one year. In this same nationally representative sample of 4,549 children and adolescents aged zero to seventeen years, 46.3% of participants reported a history of physical assault, 6.1% reported sexual victimization, and 25.3% reported witnessing community violence or family assault over the previous year.

Community violence, defined as deliberate acts intended to cause physical harm against a person or persons in a community (Lynch, 2003), is a major public health concern. Exposure to community violence is often divided into two distinct categories: witnessing and victimization.

Witnessing violence involves being exposed to a violent incident, such as the threat of physical injury, assault, or even homicide. Violence victimization occurs when the individual is the object of the intentional act by another in order to cause some form of harm, such as robbery, assault, being shot at, or experiencing injury. Exposure to community violence is experienced at a higher rate among African American urban families living in poverty (Bureau of Justice Statistics, 2011). In one sample of fifth and sixth grade students living in an urban environment, 70% of the youth who had witnessed a shooting reported witnessing at least two (Bell & Jenkins, 1993). Using a similar sample, Gorman-Smith, Henry, and Tolan (2004) reported approximately half the youth had witnessed a physical assault and greater than 20% had witnessed a shooting or homicide.

### **Exposure to Violence, Posttraumatic Stress, Internalizing, and Externalizing Outcomes**

Numerous studies have documented that negative mental health outcomes are often the consequence of exposure to violence during adolescence (see Margolin & Gordin, 2000 for a review). Both internalizing and externalizing disorders have been strongly linked with exposure to community violence (Bradshaw, Rodgers, Ghandour, & Garbarino, 2009; Buka, Stichick, Birdthistle, & Earls, 2001; Cooley-Quille, Boyd, Frantz, & Walsh, 2001; Li, Nussbaum, & Richards, 2007; Saltzman, Pynoos, Layne, Steinberg, & Aisenberg, 2001). Elevated levels of distress linked with violence exposure have been reported, including depression and anxiety (Zinzow et al., 2009). Moreover, a variety of behavioral problems, such as conduct disorder and aggression have been linked with being exposed to violence among youth living in these communities (McCabe, Lucchini, Hough, Yeh, & Hazen, 2005).

The results from a recent meta-analysis on the outcomes of exposure to community violence found a strong link specifically with posttraumatic stress disorder and posttraumatic stress symptoms (Fowler, Tompsett, Braciszweski, Jacques-Tiura, & Baltes, 2009).

Posttraumatic stress disorder is a clinical disorder characterized by the presentation of a collection of heterogeneous symptoms that manifest in response to the experience of a traumatic event. Clusters of symptoms that have been identified throughout the diagnostic history of the disorder include re-experiencing, hyperarousal, avoidance, numbing, and intrusive thoughts. The current iteration of the disorder as identified by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) requires the experience of an event involving exposure to actual or threatened death, serious injury, or sexual violence. After this event, at least one avoidant symptom, one intrusive symptom, two negative alterations in cognition and mood, and two alterations in reactivity and arousal must be present. Moreover, these symptoms must last more than 1 month, cause significant distress or impairment, and not be related to a substance or medical condition (DSM-5; pp. 271-272).

Children and adolescents living in low-income, high crime neighborhoods will frequently report experiencing only some symptoms of posttraumatic stress disorder (Luthar & Goldstein, 2004), without meeting all criteria requisite for a diagnosis. Previous research indicates that experiencing only some posttraumatic stress symptoms also has significant negative effects on development (Mazza & Reynolds, 1999). Thus, examination of posttraumatic stress symptoms in the absence of a diagnosis can have important implications for outcomes and treatments. Moreover, researchers distinguish between time-limited and chronic trauma among children. Time-limited, or Type I, trauma consists of a single traumatic event, such as experiencing a car

accident or natural disaster, while chronic, or Type II, trauma involves a more pervasive exposure to trauma, such as continual exposure to familial or community violence. While Type I trauma might be more strongly associated with symptoms of re-experiencing, avoidance, and hyperarousal, Type II trauma might be more likely to manifest as symptoms of dissociation and numbing (Terr, 1991). The majority of research examining the risk of development of posttraumatic stress symptomatology among children and adolescents has been focused on the influence of Type I trauma (Luthra et al., 2008), neglecting the investigation of sequential traumatization disproportionately experienced by youth living in low-income, urban environments.

Posttraumatic stress disorder and associated symptoms are distinct from other maladaptive outcomes described in the literature and DSM in that the diagnosis requires the “gatekeeping” criterion of initial exposure to a traumatizing event. Milan, Zona, Acker, and Turcios-Cotto (2013) describe two distinct types of risk factors for posttraumatic stress symptoms: variables that increase the likelihood for exposure (i.e., sources of differential exposure) and variables that increase the likelihood for a negative reaction following exposure (i.e., sources of differential vulnerability). Specific theorized factors increasing vulnerability included diminished emotional regulation and family discord. They note that identifying the factors that are associated with differential vulnerability can assist in developing targeted prevention efforts to support the most vulnerable adolescents.

## **Exposure to Community Violence, Feeling States, and Posttraumatic Stress Symptoms: The Role of Emotion Regulation**

Adolescence is a period of development marked by emotional turbulence as adolescents experience more variable mood states and a broader range of emotions than their adult counterparts (Silk et al., 2011). This increased emotional variability and intensity may be due to the biological changes that occur with the onset of puberty, which influences mood through brain development (Forbes, Phillips, Silk, Ryan, & Dahl, 2011) and hormonal changes (Angold, Costello, Worthman, 1998). Feng and colleagues (2008) identify the capacity to regulate emotions as an integral component of healthy development. They define emotion regulation as the “ability to initiate, maintain, and modulate emotional arousal in order to accomplish individual goals and facilitate adaptation to the social environment.” Indeed, increased emotional fluctuations and dysregulation has been linked with increased emotional maladjustment in adolescents, including depressive feelings (Silk, Steinberg, & Morris, 2003; Silk et al., 2011), posttraumatic stress symptoms (Ortiz, Richards, Kohl, Zaddach, 2008), and aggression (Mushe-Eizenmen et al., 2004).

Children and adolescents experiencing chronic traumatization in the form of violence exposure may be at significant risk for a disruption of the information processing in the developing brain, which may result in dysregulated neurobiological responses to subsequent traumas (De Bellis & van Dillen, 2005; Perry, Pollard, Blakly, Baker, & Vigilante, 1995). Indeed, youth living in these environments tend to display increased impulsivity and aggression, and diminished emotional modulation (van der Kolk, 2005). Previous literature has suggested that individual characteristics of adolescents, such as impulsivity, and not only environmental

factors, predict violence exposure (Elwood et al., 2011). Importantly, these same characteristics that increase the likelihood of exposure to violence may also serve to increase the vulnerability for development of posttraumatic stress symptoms (Milan et al., 2013). There is some evidence suggesting that emotion regulation may predict later development of posttraumatic stress disorder. For example, Benoit, Bouthillier, Moss, Rousseau, & Brunet (2010) identified the mediating role of emotion regulation in the later development of posttraumatic stress disorder following trauma. Few studies have examined the role of emotion regulation and variable mood states in subsequent posttraumatic stress symptoms among youth exposed to violence.

### **Resilience: Family Functioning Variables as Moderators**

A large body of research conducted over the past two decades has demonstrated variability in response among children and adolescents who have been exposed to violence, highlighting several protective factors that may serve to buffer the deleterious psychosocial effects of exposure. Consistent with an ecological (Bronfenbrenner, 1979) and risk and resilience framework (Luthar, Cicchetti, and Becker, 2000) that examines the bidirectional nature of factors across multiple contexts in the lives of youth, family functioning has been examined as a significant protective variable in community violence literature. Existing research suggests that family functioning has the potential to ameliorate or aggravate the deleterious effects of living in a violent community. One such barometer of family functioning, family cohesion, is defined as interactions among family members that are affectionate, caring, and that promote connectedness (Olson et al., 1983). Among adolescents, high family cohesion has been associated with lower externalizing behaviors (Deane et al., 2016; Richmond and Stocker, 2006), fewer depressive symptoms for adolescent boys (Queen, Stewart, Ehrenreich-May, & Pincus, 2013), and low

family cohesion has been linked with diagnoses of conduct disorder, oppositional defiant disorder (Rey, Walter, Plapp, & Denshire, 2000), and feelings of loneliness among adolescent girls (Johnson, LaVoie, & Mahoney, 2001). Moreover, reports of high family cohesion during adolescence have been associated with lower levels of aggression and emotional distress and higher subjective well-being in early adulthood (Fosco, Caruthers, & Dishion, 2012). Increased levels of family cohesion, marked by a connected and warm family environment, may conceivably provide children a forum to discuss exposure to distressing events, thereby reducing the prospect of negative outcomes.

Another such measure of family functioning, family support, seems to exert a protective-stabilizing effect by weakening the relation between violence exposure and maladjustment (Proctor, 2011). Using the same sample as the current study, Deane and colleagues (2016) reported that daily family support served as a moderator between seventh grade witnessing and victimization and subsequent eighth grade delinquency. Ozer and Weinstein (2004) reported that the perceived helpfulness of family members protected against posttraumatic stress symptoms and depression following community violence exposure among a sample of urban middle school students. Using a comparable method and the same sample as the present study, Hammack and colleagues (2004) found that amount of time spent with family and daily social support was negatively associated with depressive symptoms and anxiety. In a review of several studies, Mazza and Overstreet (2000) report that there is strong empirical evidence suggesting the integral nature of family support in buffering symptoms of posttraumatic stress versus depression or anxiety. This finding, which emphasizes the importance of social support in the etiology of posttraumatic stress in adolescence, is consistent with research across the lifespan identifying

social support immediately following a traumatic event as an integral protective factor (Ozer, Best, Lipsey, & Weiss, 2003). These results coincide with the theory that unsupportive relationships promote risk while supportive ones confer protection.

### **Daily Experience: Benefits of Time Sampling Techniques**

Most research examining children and adolescents' exposure to community violence or subsequent emotional functioning and expression of posttraumatic stress symptoms relies on retrospective questionnaires. This classical methodology has several drawbacks. Firstly, retrospective reports are prone to biases, such as over or underestimation, and errors, including invalid responses due to poor memory (Schwarz, 2007). In the case of violence exposure, youth may minimize report of exposure as a form of self-protection (Guterman & Cameron, 1997). In spite of assurances of privacy and confidentiality, youth have been observed to underreport experiences they fear may place them at risk for stigmatization, physical harm, or legal problems (Guterman, Cameron, & Staller, 2000). Additionally, negative mood states, including feelings of hostility, depression, anxiety, and symptoms of posttraumatic stress, might be disproportionately exaggerated in retrospective reports as compared with positive feeling states (Sato & Kawahara, 2011). Furthermore, recall of community violence events tends to weaken over time (Wolfer, 1999), which may be attributable to typical memory deterioration, but may also be related to imprecise recall given the influence of traumatic symptoms, such as numbing, re-experiencing, and dissociation (Guterman et al., 2000).

Given these limitations, studies have increasingly relied on different types of daily life measurements, known as time sampling techniques or ambulatory assessments, which measure these variables among individuals in their real-world environments (Trull & Ebner-Primer,

2013). These methods include experience sampling method (ESM), otherwise known as ecological momentary assessment, as well as daily diaries. Using these forms of measurement reduces errors of recall bias (Bolger, Davis, & Rafaeli, 2003), results in stronger ecological validity (Schwarz, 2012), and allows for investigation of short-term fluctuations in symptoms as participants report events as they occur or day-by-day (Reis & Gable, 2000). Additionally, time sampling allows investigators to examine within-person variability (Hamaker, 2012), which provides a more accurate estimation of daily life variables, such as posttraumatic stress symptoms and daily feeling states. Moreover, these time sampling techniques provide further context of violence exposure and response by measuring time, place, and types of situations experienced by youth. In a study using the same sample as the current study, frequencies of daily violence were assessed, revealing that youth experienced a total of 841 total violent incidents over the course of a week, and information about timing and location were collected (Richards et al., 2015). While violence exposure has been linked with several negative outcomes summarized above, research to date has not investigated the relation between daily violence exposure to immediate emotional and psychological outcomes for youth given methodological limitations, including recall biases and temporal inconsistencies.

### **Current Study**

The present study examines the daily experiences of violence exposure, posttraumatic stress symptoms, and negative feeling states of dysphoria, anxiety, and hostility, among African American adolescents living in low-income, high-violence, urban neighborhoods using an ESM and a daily sampling approach. Moreover, this study will examine the interrelations of violence exposure with same-day and next day, posttraumatic stress levels and negative feeling states

within this sample. These models will be examined taking into consideration the individual emotion regulation as well as the contextual protective factors of family cohesion and daily family support as moderators, allowing for a comprehensive model of the immediate effects of violence exposure on posttraumatic stress and emotional well-being. No study, to the author's knowledge, has examined the interactions among these variables using this methodology with this population.

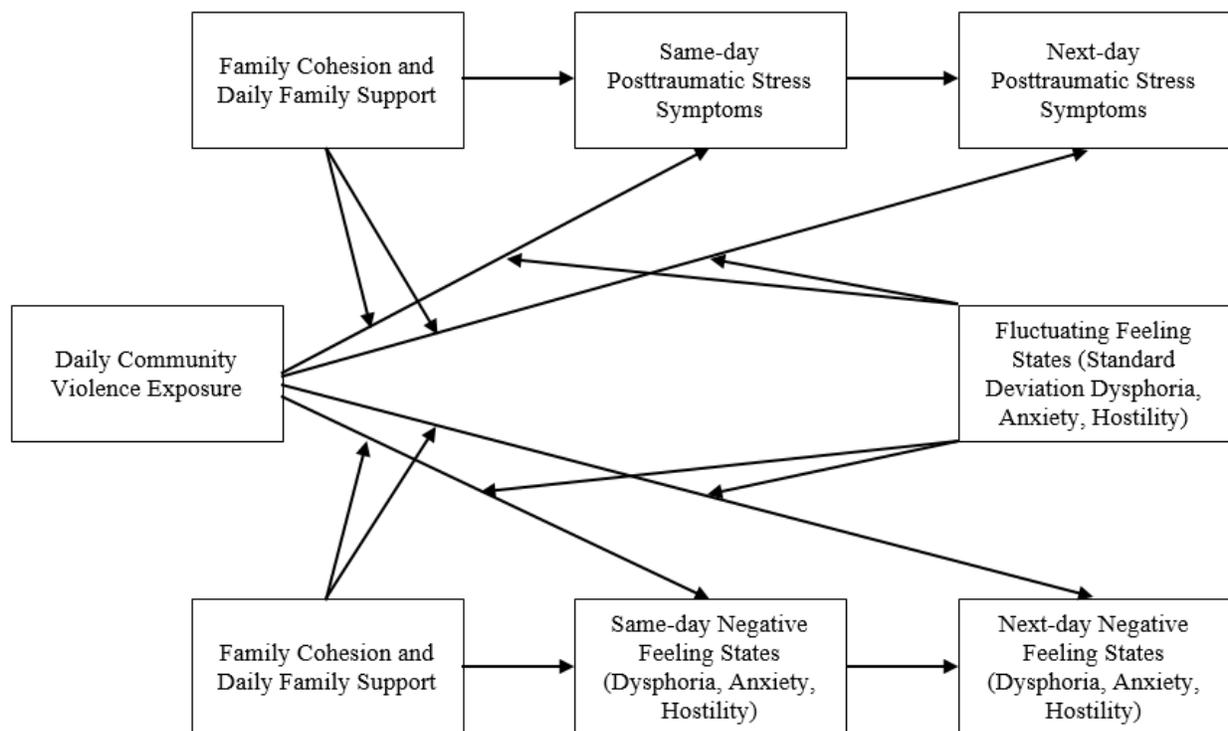
The overarching purpose of the current study is to examine the immediate and prolonged impact of daily exposure to community violence on same day and next day levels of posttraumatic stress symptomatology and various feeling states (i.e., dysphoria, hostility, and anxiety), as well as the moderating influence of family functioning and fluctuating feeling states on this relationship in a sample of African American adolescents living in urban, low-income, high violence neighborhoods by utilizing ESM and daily sampling. The present study has three specific hypotheses. Figure 3 provides a graphical representation of the hypothesized model.

***Hypothesis 1.*** It is predicted that elevated daily violence exposure would be associated with higher mean levels of same-day posttraumatic symptomatology and increased next-day posttraumatic stress symptomatology. Moreover, it is predicted that elevated daily violence exposure would be associated with higher mean levels of same-day negative feeling states (dysphoria, anxiety, and hostility) and increased next-day negative feeling states.

***Hypothesis 2.*** It is predicted that high levels of family cohesion and daily family support will buffer against the harmful impact of daily violence exposure on deleterious outcomes via a two-way interaction. Under conditions of elevated family functioning, violence exposure would lead to lower mean posttraumatic stress and negative feeling states for same-day and next-day.

**Hypothesis 3.** It is hypothesized that youth reporting fluctuating feeling states (emotion dysregulation), using standard deviation of anxiety, hostility, and dysphoria, will be more susceptible to the negative effects of exposure to a violent incident by exhibiting increased traumatic symptoms and negative feeling states via a two-way interaction. Under conditions of elevated violence exposure, higher negative feeling state variability would lead to elevated mean posttraumatic stress and negative feeling states for same-day and next-day.

Figure 3. Hypothesized guiding model



### Method

#### Participants

A sample of 268 low-income, African American sixth grade students was recruited from six urban Chicago public schools for a three-year longitudinal study investigating the effects of exposure to community violence. Data collection was initiated during the 1999-2000 school year

and concluded during the 2001-2002 school year. Consistent with previous studies using a similar sample, 58% of the participants recruited for the study agreed to participate (e.g., Cooley-Quille & Lorion, 1999). Chicago Police Department statistics obtained for the calendar year prior to the study's commencement reveal that these schools were located within high-crime areas. A previous study examining retrospective self-report questionnaires reported that the same sample reported being exposed to between four and five acts of violence over the previous year (Hammack, Richards, Luo, Edlynn, & Roy, 2004). Fifty-nine percent of the participants were female, with an average age of 11.65 years. Nearly half of the participants (48%) lived in single-parent households. The median household size of the sample was five people. In terms of parental education level, 83% reported having at least a high school degree, with 10% reporting having either a college or graduate/professional degree. Participants' median family income was \$19,132 per year.

### **Procedure**

All participants provided assent and parent or guardian consent before data collection began. As an incentive to participate, students received up to \$40 for the first year of participation at the end of each data collection period. The students and parents or guardians were informed at the outset of forms of compensation that would be received. Questionnaire data completed by students measuring violence exposure and posttraumatic stress symptoms was administered and collected by trained research staff over the course of five to seven consecutive days for each year of the study. Student's parents or guardians also completed a set of questionnaires that were completed at home and returned to research staff.

To measure daily experience, information about students' current location, activity,

thoughts and feelings, and companionship was collected using ESM (see Csikszentmihalyi & Larson, 1987). Trained research staff met with small groups of participants for a training session on how to properly engage in this process, and students completed in a short trial run in which research staff checked for accuracy prior to initiation of data collection. For a one-week period, participants carried notebooks and watches programmed to signal at random times every 1.5 hours while the students were out of school, and twice per day while in school. When the watch signaled during this one-week period, participants were asked to record information about who and what they were surrounded by, what activities they were engaged in, and what they were thinking and feeling at that exact moment. Research staff members met at the end of each school day with youth to ensure compliance with the ESM. Over the course of each weeklong data collection period, participants received a total of 51 signals. The median response rate to the signals was 42, or 82%. Students had to respond to at least 15 signals to be included in the study (Kohl, Gross, Harrison, & Richards, 2015).

## Measures

**Daily exposure to community violence.** Daily exposure to community violence was measured using a daily diary booklet containing an 18-item self-report Daily Exposure to Violence (DEV) measure, which was adapted from the *My Exposure to Violence Interview* (Buka, Selner-O'Hagan, Kindlon, & Earls, 1997). Youth indicated whether they had been exposed to each of 18 types of violent acts that day, who committed the violence, who was victimized, and the time and location of each exposure. Both victimization and witnessing forms of violence exposure were measured by the DEV measure. Sample exposure events include, "Someone getting stabbed or shot," "A gun being shot," "Hiding because of shootings."

“Fighting involving pushing, slapping, kicking, or punching,” and “Someone being chased and you were scared.” Location was coded into nine distinct categories, including “At school,” “In neighborhood,” “Park,” and “My building/block,” which were based on coding strategies developed for diary method location (Goldner, Peters, Richards, & Pearce, 2011). Previous research has demonstrated a significant correlation between the DEV and both the victimization ( $r = .18, p = .03$ ) and witnessing ( $r = .20, p = .01$ ) scales of the exposure to community violence questionnaire (Goldner et al., 2011), a 25-item questionnaire administered at the start of the week asking about exposure to violence occurring over the past year (Richards et al., 2015). Response rate for the daily report of violence was 89%, which consistent with ESM results (see Larson, Richards, Sims, & Dworkin).

**Daily feeling states.** Using ESM, youth reported feeling states rated on unipolar or bipolar scales. Unipolar items consisted of a 4-point response range and bipolar items consisted of a 7-point range. In order to create empirically driven daily feeling state subscales, Sweeney, Goldner, and Richards (2011) submitted all ESM feeling state items to a factor analysis for all three years of study resulting in three subscales of interest to the current study: dysphoric, hostile, and anxious feeling states. These scales have been found to relate to measures of psychopathology including depression (Hammack, Ross, Sturdivant, & Richards, 2001) and posttraumatic stress symptoms (Ortiz, Richards, Kohl, Zaddach, 2008). The scales consisted of percent of time feeling a certain way, including feeling sad, unfriendly, and disrespected (Dysphoria), feeling scared, worried, disappointed, and nervous (Anxiety), and feeling like yelling, hitting, or angry (Hostility). Cronbach’s alphas for the four subscales for the scales were

the following: Hostility (.91), Dysphoria (.57), and Anxiety (.72). In addition to mean levels of feeling states, standard deviations were measured to assess feeling state variability.

**Posttraumatic stress symptoms.** Youth levels of posttraumatic stress were assessed once per day for five consecutive days with the Trauma Symptom Questionnaire (TSQ), adapted from the Checklist of Child Distress Symptoms (Richters & Martinez, 1993), and the Trauma Symptom Checklist for Children (TSCC; Briere, 1996). This questionnaire consists of five subscales considered important to a diagnosis of posttraumatic stress disorder (PTSD): hyperarousal (e.g., “I felt really jumpy or scared when I heard loud noises or when someone came up behind me,” “I watched things around me really closely so nothing bad would happen,” avoidance (“Either did not or tried not to go to places that reminded me of something scary or bad that happened to me or someone else,” “Tried very hard not to think about something bad or scary that happened to me or someone else”), numbing (“Didn’t care about the things I used to care about,” “Unable to laugh or feel happy, even when something really good or funny happened”), dissociation (“Pretended I was somewhere else,” “Felt like things weren’t real”), and intrusion (“I remembered something scary even when I didn’t want to,” “The scary thing seemed so real that I could actually see pictures of it in my mind”). The TSQ is comprised of 25 items ranging from 0 (*not true at all*) to 3 (*very true*) for each symptom. Summing the individual item scores on the TSQ to average across the five subscales produced a total score for the measure. Internal reliability for the total score was .86.

**Family cohesion.** Youth reported level of perceived family cohesion with the *Family Assessment Measure* (FAM), which was adapted from the *Family Environment Scale* (FES;

Moos & Moos, 1986). The family cohesion subscale consists of ten items on a 4-point scale ranging from 1 (*Not true for my family*) to 4 (*Very true for my family*). Sample items include, “Family members really back each other up,” and “There is a feeling of togetherness in our family.” The FAM demonstrated a Cronbach alpha of .77.

**Daily family support.** Using ESM, students reported the degree of perceived daily family support. Youth were asked to rate how “friendly” and “helpful” the people around them were at each watch signal. The two items were rated on a 7-point scale ranging from 1 (*very unfriendly, very unhelpful*) to 7 (*very friendly, very helpful*). Using a similar strategy to Li and colleagues (2007), a mean of these two variables was computed during occasions when students reported being exclusively with members of their family to acquire an index of daily family support. This ESM information was aggregated across all time points throughout the week of data collection.

### **Analytic Procedure**

To test the current study’s hypotheses involving diary data, hierarchical linear modeling (HLM) using HLM 7 software was employed (Scientific Software International, Inc.). Torres, Ong, Zárate, and Michael (2010) highlight a few advantages to using this approach, which apply to the current study. Firstly, this analytic procedure is appropriate for diary data. Analysis of ESM and diary data can be complex as it consists of repeated measures nested within participants that occur at semi-random time points with occasional missing values. The current study contains data with a hierarchical structure with up to 18 observations for ESM data and 7 observations for daily diary measures within each of 268 students. Secondly, HLM provides precision weighting, in which more reliable reporters of information contribute more to the

estimation of parameters than less reliable participants (Raudenbush & Bryk, 2002). Thirdly, data from students with differing entry points or missing data from certain days can be used (Bolger et al., 2003; Schwartz & Stone, 2007; Jahng et al., 2008). Thus, list-wise deletion does not occur, all participants are retained in the analysis, and data imputation was not employed. Finally, this approach allows for the simultaneous estimation of Level 1 or within-participant effects as well as Level 2 or between-person effects. Thus, HLM allows for a direct assessment of whether variability is heterogeneous across differing groups.

In the present study, daily diary ratings of community violence exposure, posttraumatic stress symptoms and ESM ratings of feeling states represent the Level 1 data measured on a daily basis for each year of the study. The Level 2 data is the individual participant, with aggregated daily feeling state variability across the week, aggregated daily family support across the week, and family cohesion measured at the beginning of the year of the study. To test the prediction that daily violence exposure will predict increases in posttraumatic stress and negative feeling states over time, a 1-day lagged multilevel modeling procedure was used. Previous day violence exposure, posttraumatic stress levels, and negative feeling states were included in the model as control variables in order to dismiss the possibility that lagged effects of violence exposure on posttraumatic stress/negative feeling states was due to initial level of these variables. In order to test whether each day relation between violence exposure and posttraumatic stress/negative feeling states vary as a function of person-level differences in perceived family functioning and variable feeling states, partial regression coefficients from the aforementioned analyses provided estimates of the mean change in posttraumatic stress and negative feeling states at average levels of family functioning and feeling states. Thus, each participant's weekly mean of daily level 1

predictor was included at level 2 in each model to disaggregate between-person and within-person effects (Bolger & Laurenceau, 2013). A grand-mean centering approach for predictors at levels 1 and 2 was utilized in the present analyses in order to improve interpretability (see Raudenbush & Bryk, 2002).

Level 1 daily violence exposure was entered as an independent variable, consisting of seven daily diary ratings. A stepwise approach was used for all models in which main effects were tested first followed by tests of interactions, including exposure to violence x family functioning and exposure to violence x feeling states variability (controlling for main effect of daily exposure to violence mean), with both posttraumatic stress symptoms and negative feelings states as outcomes. In conjunction with the same-day models, next-day models were run to examine main and interactive effects in a time-lagged context. A total of 5 moderation models were run both same-day and next-day outcome variables. All significant interactions were probed and graphed utilizing Rweb (see Preacher, Curran, & Bauer, 2006). This next-day model example equation is testing a cross-level interaction, with the dependent variable interpreted as the change in posttraumatic stress levels from the previous day to the next day with dysphoria variability as a moderator:

$$\text{Level 1: } (\text{Posttraumatic Stress})_{ii} = \pi_{0i} + \pi_{1i}(\text{Previous-Day Violence Exposure})_{ii} + \pi_{2i}(\text{Previous-Day Posttraumatic Stress})_{ii} + e_{ii}$$

$$\begin{aligned} \text{Level 2: } \pi_{0i} &= \beta_{00} + \beta_{01}(\text{Dysphoria Variability})_i + \beta_{03}(\text{Weekly Mean Violence Exposure})_i + r_{0i} \\ \pi_{1i} &= \beta_{10} (\text{Dysphoria Variability}) \\ \pi_{2i} &= \beta_{20} \end{aligned}$$

## Results

### Preliminary Analyses

As recommended by Maas and Hox (2005) the present study tested intraclass correlations (ICC) prior to performing the primary analyses in order to ensure that clustering will not lead to biased estimates. The ICC for daily posttraumatic stress was 0.57, while ESM dysphoria, anxiety, and hostility demonstrated ICC of 0.67, 0.66, and 0.63s, respectively. This indicates that variance existed at both the person-level and day-level for each outcome variable. Table 7 presents the Level 1 (day-level) and Level 2 (person-level) means, standard deviations, and intercorrelations. Descriptive statistics and correlation coefficients for day-level variables were computed by averaging across the week. Youth reported, on average, exposure to slightly more than one violent event during the week. Exposure to violence and posttraumatic stress was significantly and positively correlated. Violence exposure and family cohesion were not significantly correlated, but there was a trend toward a negative correlation between these variables. Family cohesion demonstrated significant and negative associations with posttraumatic stress, dysphoria, hostility, and dysphoria variability. Family support was negatively correlated with dysphoria and dysphoria variability. Consistent with findings by Ortiz and colleagues (Ortiz, 2008), variability in hostility demonstrated positive and significant correlations with posttraumatic stress, dysphoria, anxiety, hostility, dysphoria variability, and anxiety variability. Additionally, variability in dysphoria were linked with posttraumatic stress and dysphoria, and anxiety variability were additionally associated with anxiety and hostility levels.

### HLM Analyses

The results of the HLM models are presented separately by outcomes in Tables 8-15.

Simple slopes at one standard deviation above and below the mean level of the moderator for all significant two-way interactions can be found in Table 10. The first aim of the study was to examine the relation between daily community violence exposure and same-day and next-day posttraumatic stress and negative feeling states. Hypothesis 1 predicted that violence exposure would significantly predict higher concurrent and next-day negative symptomatology after controlling for weekly mean violence exposure. This hypothesis was partially supported (see Tables 8-15 for a summary of these regression equations). Violence exposure was significantly related to elevated same-day posttraumatic stress ( $\beta = .06, p < .01$ ), same-day dysphoria ( $\beta = .03, p < .01$ ), next-day posttraumatic stress ( $\beta = .11, p < .01$ ), and next-day hostility ( $\beta = .02, p < .01$ ). Exposure to violence as a predictor was approaching significance for same-day anxiety ( $\beta = .02, p = .051$ ) and next-day dysphoria ( $\beta = .11, p = .073$ ). No relation between violence exposure and same-day hostility or next-day anxiety emerged as significant.

The second aim of the study was to examine the role of family functioning in the relation between community violence exposure and deleterious outcomes throughout the week. Hypothesis 2 predicted that high family cohesion would buffer against the harmful impact of violence exposure on posttraumatic stress and negative feeling states. Tables 8, 10, 12, and 14 present the results of these two-way interactions. No interactions between family cohesion and community violence exposure emerged significant in either same-day or next-day models. It was also predicted that daily family support would buffer the relation between violence exposure and negative outcomes. Similarly, no significant interaction emerged between daily family support and community violence exposure.

The third purpose of the study was to examine the role of fluctuating feeling states, or emotion dysregulation, in the relation between community violence exposure and concurrent and subsequent posttraumatic stress and negative feelings states. Hypothesis 3 predicted that high feeling state variability, operationalized as the standard deviation of dysphoria, anxiety, and hostility, would exacerbate the harmful impact of violence exposure on same-day and next-day posttraumatic stress and negative feeling states. Tables 9, 11, 13, and 15 present the results of these two-way interactions.

There was a significant interaction between daily violence exposure and both dysphoria and anxiety variability on next-day posttraumatic stress levels (see Figures 4 and 5). As hypothesized, for youth with higher levels of dysphoria variability, elevated violence exposure resulted in increased levels of subsequent posttraumatic stress. Youth with lower dysphoria variability did not experience a change in subsequent posttraumatic stress with increased violence exposure. Contrary to hypothesis 3, higher anxiety variability appeared to buffer the negative effects of violence exposure on next-day posttraumatic stress; however, neither simple slope was statistically significant at high or low levels of the moderator, limiting the interpretation of this finding.

There was a significant interaction between violence exposure and dysphoria variability in both same-day and next-day dysphoria models (see Figures 6 and 7). As hypothesized, for youth with high levels of dysphoria variability, heightened violence exposure resulted in elevated same-day dysphoria. Notably, this relation also emerged for youth reporting lower levels of dysphoria variability; however, this relation was weaker. Contrary to the hypothesis, lower levels of dysphoria variability resulted in increased levels of next-day dysphoria as violence exposure

increased. Finally, in next-day hostility models, there was a significant interaction between violence exposure and all feeling state fluctuations, including dysphoria, anxiety, and hostility variability (see Figures 8-10). For youth with both high and low levels of feeling state variability, elevated violence exposure resulted in increased levels of next-day hostility; however, this relation was stronger among those with increased feeling state variability in each next-day model.

Table 7. Descriptive statistics and correlations for variables under study

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Daily Violence Exposure	1.19	2.56	1									
2. Daily Posttraumatic Stress	0.53	0.47	.18*	1								
3. Daily Dysphoria	1.62	0.77	-.50	.17 <sup>+</sup>	1							
4. Daily Anxiety	1.28	0.45	.07	.15 <sup>+</sup>	.11	1						
5. Daily Hostility	1.27	0.51	.07	.24	.14	.66***	1					
6. Daily Dysphoria SD	0.36	0.35	-.08	.18*	.55***	.07	.12	1				
7. Daily Anxiety SD	0.25	0.32	.02	.12	.10	.74***	.56***	.16 <sup>+</sup>	1			
8. Daily Hostility SD	0.20	0.23	.01	.30**	.23**	.52**	.73***	.29**	.61***	1		
9. Family Cohesion	18.69	3.84	-.16 <sup>+</sup>	-.20*	-.31***	-.15	-.18*	-.22*	-.08	-.14	1	
10. Daily Family Support	6.20	0.89	-.03	-.11	-.58***	-.14	.03	-.23**	-.08	-.13	.16 <sup>+</sup>	1

*Note.* <sup>+</sup> $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . For daily report variables, correlation coefficients were calculated using the weekly mean averages for each day.

Table 8. Hierarchical linear models for posttraumatic stress as the outcome with family functioning moderation

	Same-day posttraumatic stress				Next-day posttraumatic stress			
	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value
Intercept	0.55 (.04)	109	12.51	< .001	0.36 (0.05)	77	6.63	<.001
Family cohesion	-0.04 (.01)	109	-2.79	.006	-0.25 (.02)	77	-1.74	.086
Daily family support	-0.04 (.05)	109	-0.78	.440	-0.00 (.06)	77	-0.29	.980
Weekly violence exposure	0.01 (.02)	109	0.02	.550	-0.01 (.05)	77	-0.18	.009
Daily violence exposure	0.06 (.02)	196	2.99	.003	0.11 (.04)	69	2.51	.001
Daily posttraumatic stress	--	--	--	--	0.65 (.13)	69	5.12	<.001
Family cohesion × daily violence exposure	0.00 (.00)	305	0.20	.844	-0.00 (.01)	146	3.57	.465
Daily family support × daily violence exposure	0.01 (.02)	305	0.30	.764	-0.08 (.08)	146	-0.96	.337

*Note.* Main effects are results of models that did not include interactive effects. Interactions were tested sequentially while controlling for main effect of weekly violence exposure.

Table 9. Hierarchical linear models for posttraumatic stress as the outcome with feeling state variability moderation

	Same-day posttraumatic stress				Next-day posttraumatic stress			
	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value
Intercept	0.55 (.04)	109	12.51	< .001	0.36 (0.05)	77	6.63	<.001
Dysphoria SD	0.12 (.15)	108	0.81	.418	0.22 (.16)	76	1.43	.158
Anxiety SD	0.07 (.24)	108	0.28	.779	0.06 (.37)	76	0.16	.874
Hostility SD	0.63 (.24)	108	2.58	.011	0.65 (.30)	76	2.15	.035
Weekly violence exposure	0.01 (.02)	109	0.02	.550	-0.01 (.05)	77	-0.18	.009
Daily violence exposure	0.06 (.02)	196	2.99	.003	0.11 (.04)	69	2.51	.001
Daily posttraumatic stress	--	--	--	--	0.65 (.13)	69	5.12	<.001
Dysphoria SD x daily violence exposure	0.10 (.08)	305	1.14	.257	0.23 (.03)	146	4.75	<.001
Anxiety SD x daily violence exposure	0.04 (.23)	305	0.19	.850	-0.63 (.27)	146	-2.35	.020
Hostility SD x daily violence exposure	0.15 (.09)	305	1.70	.089	-0.01 (.16)	146	-0.09	.927

*Note.* Main effects are results of models that did not include interactive effects. Interactions were tested sequentially while controlling for main effect of weekly violence exposure.

Table 10. Hierarchical linear models for dysphoria as the outcome with family functioning moderation

	Same-day dysphoria				Next-day dysphoria			
	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value
Intercept	1.56 (.05)	113	31.41	< .001	1.54 (.06)	113	29.93	<.001
Family cohesion	-0.04 (.01)	113	-2.77	.007	-0.05 (.02)	113	-2.19	.031
Daily family support	-0.37 (.06)	113	-6.20	<.001	-0.36 (.07)	113	-5.14	<.001
Weekly mean violence exposure	0.01 (.02)	113	-0.44	.663	-0.01 (.03)	113	-0.43	.671
Daily violence exposure	0.03 (.01)	534	2.64	.008	0.11 (.04)	506	1.80	.073
Daily dysphoria	--	--	--	--	0.18 (.05)	506	3.74	< .001
Family cohesion × daily violence exposure	0.01 (.00)	647	1.82	.070	0.00 (.01)	619	-0.37	.711
Daily family support × daily violence exposure	-0.00 (.02)	647	-0.19	.850	0.00 (.01)	619	-0.33	.743

*Note.* Main effects are results of models that did not include interactive effects. Interactions were tested sequentially while controlling for main effect of weekly violence exposure.

Table 11. Hierarchical linear models for dysphoria as the outcome with feeling state variability moderation

	Same-day dysphoria				Next-day dysphoria			
	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value
Intercept	1.56 (.05)	113	31.41	< .001	1.54 (.06)	113	29.93	<.001
Dysphoria SD	0.83 (.19)	112	4.28	<.001	0.71 (.21)	112	3.45	<.001
Anxiety SD	-0.06 (.29)	112	-0.19	.849	-0.03 (.32)	112	-0.10	.936
Hostility SD	0.16 (.32)	112	0.50	.618	0.10 (.34)	112	0.28	.777
Weekly mean violence exposure	0.01 (.02)	113	-0.44	.663	-0.01 (.03)	113	-0.43	.671
Daily violence exposure	0.03 (.01)	534	2.64	.008	0.11 (.04)	506	1.80	.073
Daily dysphoria	--	--	--	--	0.18 (.05)	506	3.74	< .001
Dysphoria SD × daily violence exposure	0.37 (.06)	647	5.89	<.001	-0.12 (.04)	619	-3.25	.001
Anxiety SD x daily violence exposure	-0.06 (.11)	647	-0.52	.603	0.01 (.06)	619	0.16	.877
Hostility SD x daily violence exposure	0.15 (.10)	647	1.50	.134	0.04 (.04)	619	0.91	.366

*Note.* Main effects are results of models that did not include interactive effects. Interactions were tested sequentially while controlling for main effect of weekly violence exposure.

Table 12. Hierarchical linear models for anxiety as the outcome with family functioning moderation

	Same-day anxiety				Next-day anxiety			
	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value
Intercept	1.26 (.04)	113	30.88	<.001	1.22 (.04)	113	33.50	<.001
Family cohesion	-0.01 (.01)	113	-0.55	.584	-0.01 (.01)	113	-0.633	.528
Daily family support	-0.10 (.05)	113	-2.01	.047	-0.08 (.05)	113	-1.59	.115
Weekly mean violence exposure	0.01 (0.02)	113	0.52	.602	0.01 (.01)	113	0.79	.432
Daily violence exposure	0.02 (.01)	533	1.96	.051	0.01 (.01)	502	1.28	.202
Daily anxiety	--	--	--	--	0.01 (0.20)	502	0.06	.952
Family cohesion × daily violence exposure	0.00 (.00)	646	-0.30	.763	0.00 (.00)	615	0.39	.699
Daily family support × daily violence exposure	0.00 (.02)	646	-0.24	.814	-0.01 (.01)	615	-1.02	.307

*Note.* Main effects are results of models that did not include interactive effects. Interactions were tested sequentially while controlling for main effect of weekly violence exposure.

Table 13. Hierarchical linear models for anxiety as the outcome with feeling state variability moderation

	Same-day anxiety				Next-day anxiety			
	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value
Intercept	1.26 (.04)	113	30.88	<.001	1.22 (.04)	113	33.50	<.001
Dysphoria SD	-0.16 (.08)	112	-2.02	.046	-0.18 (.08)	112	-2.14	.034
Anxiety SD	1.45 (.12)	112	12.13	<.001	1.11 (.13)	112	8.44	<.001
Hostility SD	0.17 (.13)	112	1.35	.179	0.31 (.14)	112	2.18	.031
Weekly mean violence exposure	0.01 (0.02)	113	0.52	.602	0.01 (.01)	113	0.79	.432
Daily violence exposure	0.02 (.01)	533	1.96	.051	0.01 (.01)	502	1.28	.202
Daily anxiety	--	--	--	--	0.01 (.20)	502	0.06	.952
Dysphoria SD× daily violence exposure	0.00 (.05)	646	0.05	.960	0.02 (.02)	615	.865	.387
Anxiety SD× daily violence exposure	0.07 (.06)	646	1.35	.178	-0.07 (.04)	615	-1.92	.055
Hostility SD × daily violence exposure	0.00 (.06)	646	0.02	.985	0.05 (.03)	615	1.91	.057

*Note.* Main effects are results of models that did not include interactive effects. Interactions were tested sequentially while controlling for main effect of weekly violence exposure.

Table 14. Hierarchical linear models for hostility as the outcome with family functioning moderation

	Same-day hostility				Next-day hostility			
	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value
Intercept	1.20 (.03)	113	34.89	<.001	1.18 (.04)	112	33.00	<.001
Family cohesion	-0.01 (.00)	113	-1.21	.229	-0.01 (.01)	112	-1.02	.309
Daily family support	-0.01 (.04)	113	-0.32	.747	0.00 (.04)	112	0.08	.940
Weekly mean violence exposure	0.01 (.02)	113	0.35	.726	0.01 (.02)	112	0.85	.396
Daily violence exposure	0.00 (.01)	521	0.30	.763	0.02 (.01)	491	3.22	.001
Daily hostility	--	--	--	--	0.01 (.04)	491	2.34	.020
Family cohesion × daily violence exposure	0.00 (.00)	634	0.17	.866	0.00 (.00)	603	1.01	.311
Daily family support × daily violence exposure	-0.01 (.02)	634	-0.46	.643	-0.01 (.01)	603	-1.47	.142

*Note.* Main effects are results of models that did not include interactive effects. Interactions were tested sequentially while controlling for main effect of weekly violence exposure.

Table 15. Hierarchical linear models for hostility as the outcome with feeling state variability moderation

	Same-day hostility				Next-day hostility			
	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value	Coefficient (SE)	df	<i>t</i> -ratio	<i>p</i> value
Intercept	1.20 (.03)	113	34.89	<.001	1.18 (.04)	112	33.00	<.001
Dysphoria SD	-0.08 (.07)	112	-1.03	.307	-0.06 (.09)	111	-0.71	.481
Anxiety SD	0.17 (.12)	112	1.41	.160	-0.15 (.14)	111	-1.03	.303
Hostility SD	1.16 (.12)	112	9.41	<.001	1.28 (.02)	111	8.84	<.001
Weekly mean violence exposure	0.01 (.02)	113	0.35	.726	0.01 (.02)	112	0.85	.396
Daily violence exposure	0.00 (.01)	521	0.30	.763	0.02 (.01)	491	3.22	.001
Daily hostility	--	--	--	--	0.01 (.04)	491	2.34	.020
Dysphoria SD× daily violence exposure	0.00 (.04)	634	0.11	.911	0.09 (.04)	603	2.35	.019
Anxiety SD× daily violence exposure	-0.06 (.06)	634	-1.14	.253	0.08 (.04)	603	2.21	.027
Hostility SD × daily violence exposure	-0.04 (.04)	634	-0.89	.373	0.15 (.03)	603	5.85	<.001

*Note.* Main effects are results of models that did not include interactive effects. Interactions were tested sequentially while controlling for main effect of weekly violence exposure.

Table 16. Simple slopes at +/- 1.0 standard deviation of the moderator for hierarchical linear models

Interaction	Moderator Value	Simple Slope	<i>t</i> value	<i>p</i> value
Daily violence exposure × dysphoria variability on next-day posttraumatic stress	Dysphoria Variability <i>M</i> - 1 <i>SD</i>	-0.03	-1.26	.210
	Dysphoria Variability <i>M</i> + 1 <i>SD</i>	0.11	3.40	<.001
Daily violence exposure × anxiety variability on next-day posttraumatic stress	Anxiety Variability <i>M</i> - 1 <i>SD</i>	0.07	1.84	.069
	Anxiety Variability <i>M</i> + 1 <i>SD</i>	-0.22	-1.76	.081
Daily violence exposure × dysphoria variability on same-day dysphoria	Dysphoria Variability <i>M</i> - 1 <i>SD</i>	0.82	4.27	<.001
	Dysphoria Variability <i>M</i> + 1 <i>SD</i>	0.31	6.12	<.001
Daily violence exposure × dysphoria variability on next-day dysphoria	Dysphoria Variability <i>M</i> - 1 <i>SD</i>	-0.02	-1.58	.114
	Dysphoria Variability <i>M</i> + 1 <i>SD</i>	-0.09	-3.08	.002
Daily violence exposure × dysphoria variability on next-day hostility	Dysphoria Variability <i>M</i> - 1 <i>SD</i>	0.03	4.19	<.001
	Dysphoria Variability <i>M</i> + 1 <i>SD</i>	0.09	6.78	<.001
Daily violence exposure × anxiety variability on next-day dysphoria	Anxiety Variability <i>M</i> - 1 <i>SD</i>	0.02	2.65	.008
	Anxiety Variability <i>M</i> + 1 <i>SD</i>	0.06	3.21	.001
Daily violence exposure × hostility variability on next-day hostility	Hostility Variability <i>M</i> - 1 <i>SD</i>	0.03	3.62	<.001
	Hostility Variability <i>M</i> + 1 <i>SD</i>	0.09	6.54	<.001

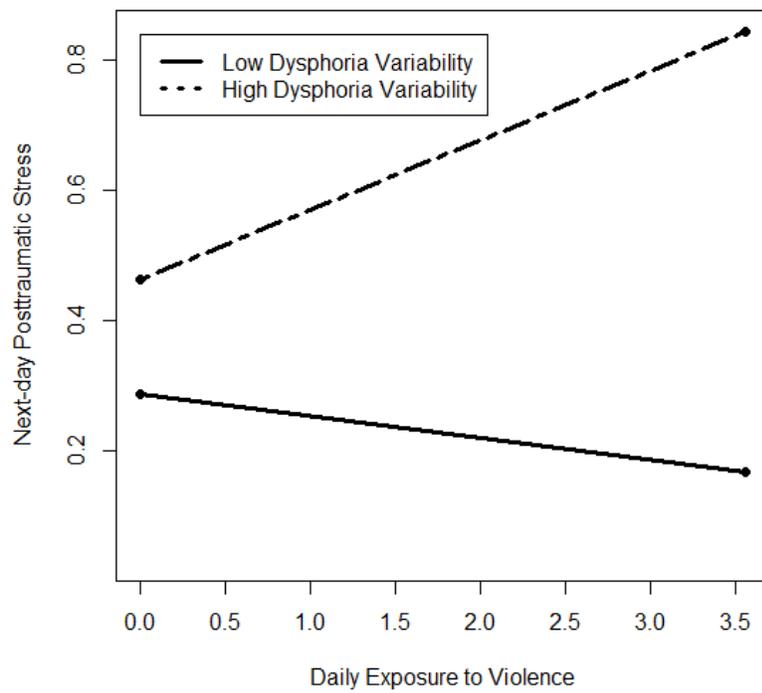
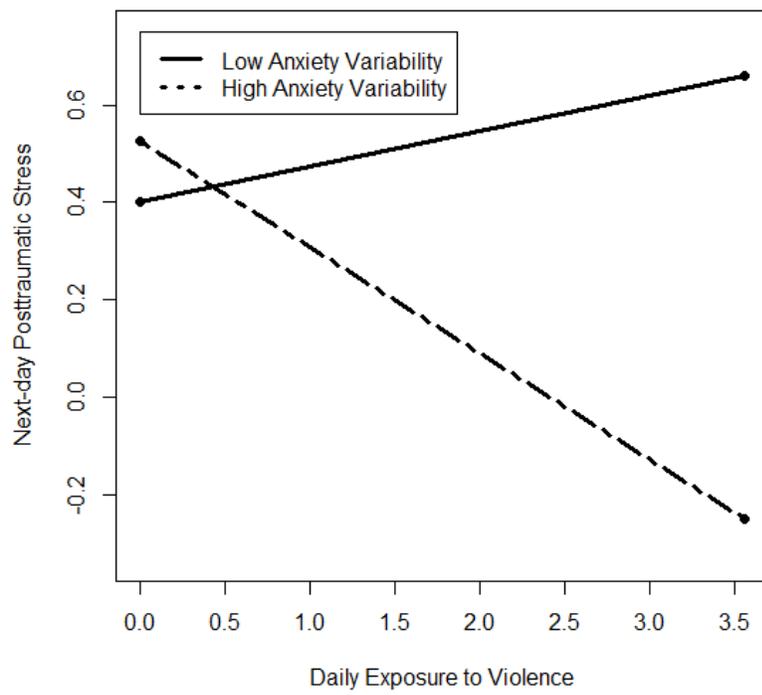
Figure 4. Daily violence exposure  $\times$  dysphoria variability on next-day posttraumatic stressFigure 5. Daily violence exposure  $\times$  anxiety variability on next-day posttraumatic stress

Figure 6. Daily violence exposure  $\times$  dysphoria variability on same-day dysphoria

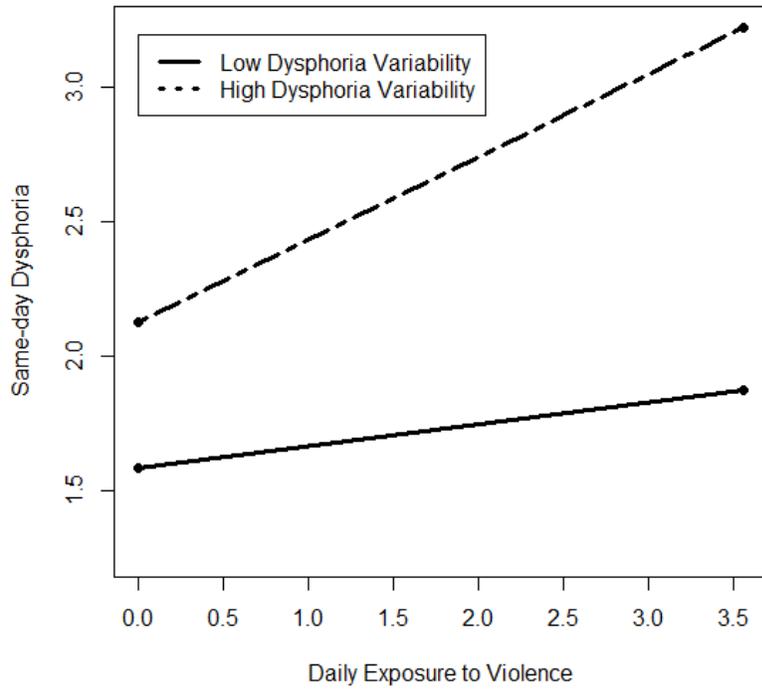


Figure 7. Daily violence exposure  $\times$  dysphoria variability on next-day dysphoria

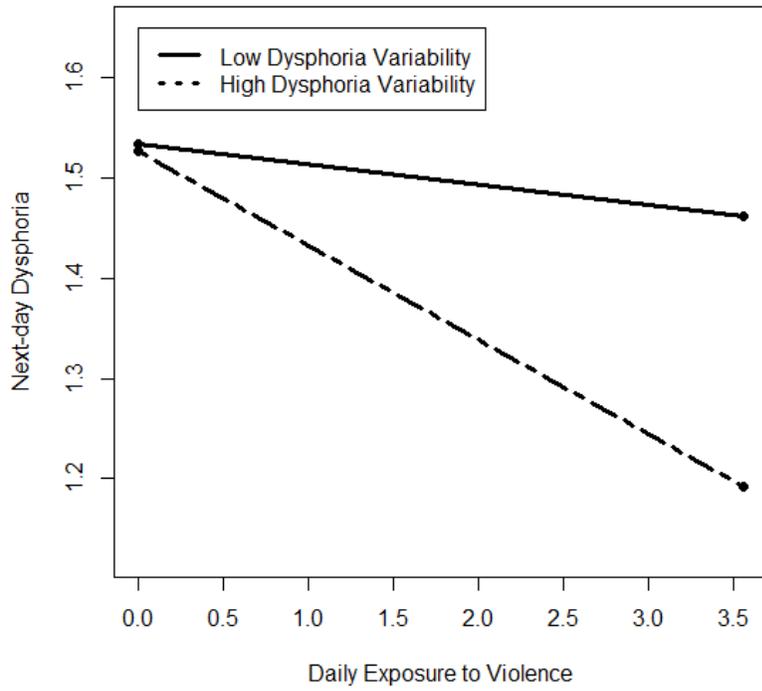


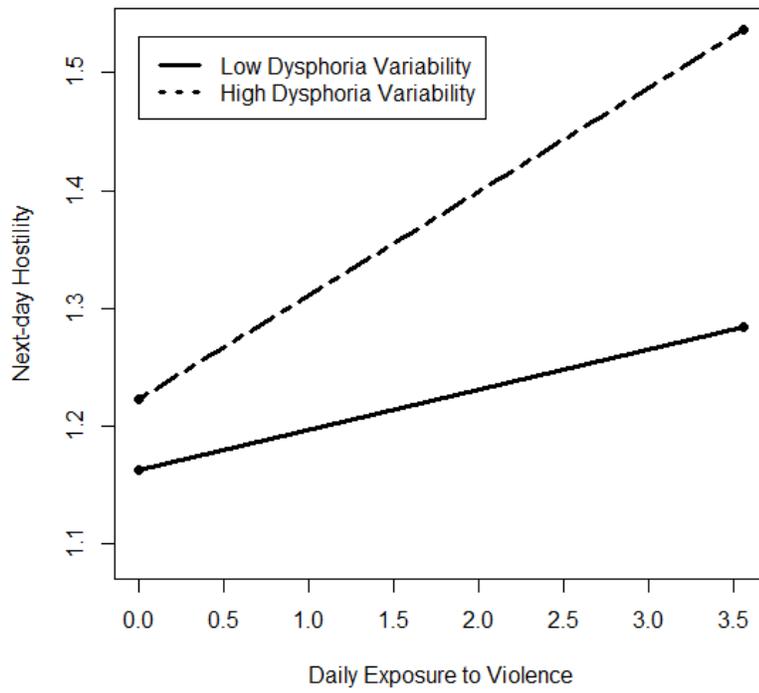
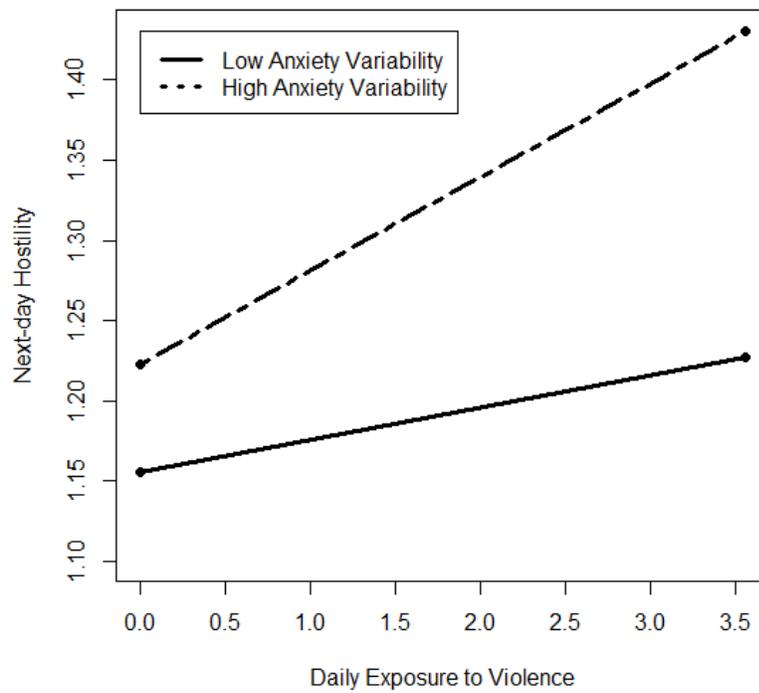
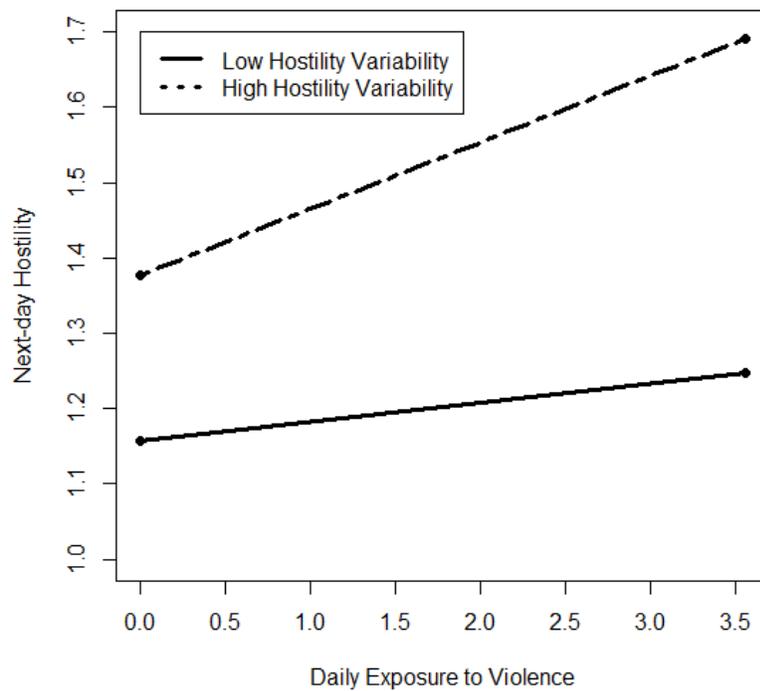
Figure 8. Daily violence exposure  $\times$  dysphoria variability on next-day hostilityFigure 9. Daily violence exposure  $\times$  anxiety variability on next-day hostility

Figure 10. Daily violence exposure  $\times$  hostility variability on next-day hostility

## Discussion

### Study Overview and Major Findings

The current study expands on previous research by utilizing a daily diary and ESM approach to examine the daily experiences of community violence exposure, posttraumatic stress, and emotional experiences among urban African American youth. No previous studies have examined the interrelations of these variables among this population using a time sampling and time-lagged approach. The results of the current study have important implications and strengths that extend the exposure to violence, trauma, and family functioning literature using a daily diary and ESM approach that captures *in vivo* information about the levels and variability of adolescents' daily experiences. The use of this time sampling approach within an understudied, non-clinical, community-based, and comparatively increased risk population adds information about how youth experience violence and emotions in a daily context. This approach

limits recall bias, providing a more precise measure of the constructs under study. The high rates of exposure measured by the daily time sampling technique suggests that traditional questionnaires may be underestimating the frequency of this intractable public health concern.

Consistent with prior research (e.g., McCabe et al., 2005; Bradshaw et al., 2009; Zinzow et al., 2009) community violence exposure was positively associated with posttraumatic stress and negative feeling states in this sample. Daily exposure to violence was revealed to have either an immediate or prolonged effect on youth posttraumatic stress, dysphoria, anxiety, and hostility levels throughout the week. The examination of daily community violence exposure and immediate effects within a low-income, urban, adolescent African American sample is especially imperative, as this population is exposed to the highest levels of daily community violence (Bureau of Justice Statistics, 2011; Stein, Jaycox, Kataoka, Rhodes, & Vestal, 2003).

Interventions targeted to address the needs of African American youth exposed to community violence may benefit from including modules targeted at hostility and mood regulation due to elevations in dysphoria and anxiety following exposure.

Consistent with previous research demonstrating a negative relation between family functioning and subsequent deleterious outcomes (e.g., Deane et al., 2016; Hammes, Aparecida Crepaldi, & Bigras, 2012; Paxton et al., 2004; Kliwer et al., 2004), correlational and regression analyses revealed that increased family cohesion was associated with decreased levels of posttraumatic stress, dysphoria, hostility, and dysphoria variability. Moreover, analyses revealed that increased daily family support was linked with decreased posttraumatic stress, dysphoria, and dysphoria variability. These findings are in keeping with the ecological-transactional (Cicchetti & Lynch, 1993) and risk and resilience framework (Luthar, Cicchetti, & Becker, 2000) that focus on the interplay of community violence and other systemic factors, including

the context of the family environment.

Contrary to the second hypothesis of the current study, however, moderation models containing family functioning variables were not significant. Thus, it did not appear that either variable buffered the relation between violence exposure and concurrent or subsequent deleterious outcomes. This finding is in contrast with other research that has demonstrated that family cohesion and daily family support exhibit a protective-stabilizing effect following violence exposure (Deane et al., 2016). However, it is possible that these variables do not have an immediate influence on same-day or next-day mood following exposure to a violent incident, which this study measures. It is possible that the role of the family is integral in processing prolonged violence exposure and that these effects occur over a longer period. Some previous evidence suggests that family support factors fail to protect youth from developing symptoms under high levels of violence exposure (Hammack et al., 2004). Another possible explanation could be the relatively diminished role of the family during adolescence in moderating the negative influences of violence exposure (Fergus & Zimmerman, 2005) as the child increasingly pursues social and adaptive autonomy during this developmental period. It should be noted that, while not assessed directly in the current study, low family cohesion may be serving as a proxy for domestic violence occurring within the home. Another interpretation is that the negative outcomes experienced by youth following repeated and acute violence exposure may necessitate more care than a family can immediately provide. An examination of what specific variables within the family prevent the development of negative sequelae and promotes positive youth development (Lerner, Lerner, Almerigi, et al., 2005) beyond cohesion and support would be beneficial. Overall, the absence of significant findings suggests that further research is needed in order to adequately understand the potential mechanisms and context through which family

functioning influences positive outcome among youth.

The results of the current study reveal several important findings that highlight the importance of examining the interaction of emotion dysregulation in influencing the relation between violence exposure and deleterious outcomes. Youth variability in dysphoria exacerbated the effect of daily violence exposure on concurrent or next-day posttraumatic stress, dysphoria, and hostility. Moreover, variability in anxiety and hostility exacerbated the experience of next-day hostility. These findings are consistent with previous research indicating that greater emotional fluctuations are associated with emotional maladjustment within adolescents (Silk, Steinberg, & Morris, 2003; Silk et al., 2011). This is consistent with the differential vulnerability hypothesis (Milan et al., 2013), which posits that increased emotion dysregulation contributes to increased maladaptive outcomes. Emotion regulation may be central for youth to adequately appraise surroundings and adapt to stressful circumstance (van der Kolk, 2005). Youth who exhibit increased variability in dysphoria, anxiety, or hostility may have limited ability to understand their emotional states in the context of an emotionally laden situation (van Roekel et al., 2015), and may therefore have increased changes of experiencing a negative reaction following exposure to community violence. Therefore, preventative interventions may focus on fostering stable, safe, and structured school and after-school activity environments for youth to express their emotions and promote healthy emotion regulation skills. These types of activities are not always available to low-income, urban youth, however, which is problematic given the aforesaid increased risk for violence exposure.

In contrast to the third hypothesis of the current study, results indicated that youth increased variability in dysphoria and anxiety resulted in decreased next-day levels of dysphoria and posttraumatic stress, respectively. This variability moderation may be related to the use of

avoidant coping style strategies employed by youth who endorse higher levels of anxiety, which have been found to be protective in the context of increased violence exposure (Edlynn, Gaylord-Harden, Richards, & Miller, 2008). Moreover, avoidant coping style may have more of an impact in the long-term rather than the short-term (Tolan, Guerra, & Montaini-Kloydahl, 1997). However, it should be noted that while optimum levels of anxiety may improve performance and reduce involvement in risky behaviors, clinically elevated levels of anxiety are strongly related to poor youth outcomes (Beesdo, Knappe & Pine, 2009; Woodrow & Fergusson, 2001).

### **Limitations of the Current Study**

While the current research yielded several important findings relating to the interrelations between daily violence exposure and immediate negative outcomes, it also contains limitations regarding design, methodology, and statistical approach that should be considered. Firstly, while it is imperative to examine this topic as it relates to African American youth living in low-income, urban environments, the specificity of this population and results of the investigation may not generalize to other populations. Likewise, the results of the current study focus on a group of 6<sup>th</sup> grade students and thus generalizations to younger children or older adolescents should be made with caution. Moreover, all factors examined in the current study were measured by self-report. While this provides a noninvasive and cost-effective approach, future studies may consider the inclusion of multi-method and multi-source design. Another limitation of the current study is the absence of multiple time points measuring family cohesion. While this factor is not as likely to shift over the duration of one week, it is conceivable that youth perceptions of family cohesion levels may demonstrate daily variability. The research design prevents an investigation of these possible fluctuations, which may have impacted the finding that baseline cohesion did not appear to buffer the relation between exposure and negative feeling states and posttraumatic

stress. Also, while the daily diary and ESM design and HLM approach allows for repeated measures and augmented statistical power as well as fewer Type 1 errors compared with other statistical approaches (Larson, 2013), conducting numerous moderation models may increase the likelihood of Type 1 error. Additionally, while the daily diary and ESM approach is a unique contribution and strength of the current study's design, the study's short duration may underemphasize or overlook the effects of violence exposure, family functioning, and emotional regulation over longer durations of time. Likewise, because daily violence and same-day outcomes were collected concurrently, a causal relationship between these variables cannot be established and interpretations should be made with caution.

### **Future Research Directions**

Future studies would benefit from examining the current study's constructs while addressing the limitations noted above. The inclusion of a mixed-method design (e.g., qualitative methods, obtaining observational samples of family functioning, measuring salivary cortisol levels) as well as mixed-source (e.g., teacher report, parent report) would be useful in gathering a more refined understanding of the interrelation of the variables under study as well as differentiate alternative explanations for findings as well as reduce potential spurious variance due to the measurement method or other systematic error (Holmbeck, Li, Schurman, Friedman, & Coakley, 2002). In terms of sample, it would be beneficial to examine differing populations to identify whether the immediate effects of violence exposure and the role of emotion regulation and family functioning applies across various socioeconomic, geographic, and racial groups. Relatedly, while adolescence is an important period to examine the effects of violence exposure and its relation to emotion dysregulation given the integral nature of these variables at this point in development, there is evidence that violence exposure disrupts these cognitive processes at an

earlier stage of development (De Bellis & van Dillen, 2005). Thus, it is essential to examine these variables longitudinally from childhood through adolescence to thoroughly understand the development and disruption of these skills over time. The pervasiveness and effect of exposure to community violence and associated emotion dysregulation, negative feeling states, and posttraumatic stress symptomatology on the lives of youth, particularly those residing in low-income, urban environments, validate the necessity for sustained research and continued informing of theory, intervention approach, and overarching policy connected to youth exposure to community violence.

## CHAPTER FOUR

### MAPPING NEIGHBORHOOD STRESSORS AND RESILIENCE USING GEOGRAPHIC INFORMATION SYSTEMS: A COMMUNITY BASED PARTICIPATORY APPROACH

#### **Introduction**

Over the past two decades, researchers have continued to clarify the complicated mechanisms by which neighborhood characteristics influence children and adolescents' development and psychosocial functioning (for a review, see Ingoldsby & Shaw, 2002). Investigations have been made into crime, social detachment, physical hazards, and toxic stress (Ross, 2000; Ross & Mirowsky, 2001) characteristic of certain economically and socially disadvantaged inner-city neighborhoods. Children living in these socially toxic environments, beset with poverty, violence, poor nutrition, unemployment, a lack of community assets and localized supports are at significant risk for deleterious physical and mental health outcomes (Fitzpatrick & LaGory, 2000), constituting a demanding public health concern, particularly among ethnic minority and Latinx youth. While there is ample research demonstrating the interrelated nature of violence, maladaptive outcomes, and other risk factors, these relationships are less understood in the context of various resilience factors, including social support networks, family functioning, and community assets (Kiewer et al., 2004). The current study will attempt to explain these interrelations through the utilization of a mixed-methods paradigm emphasizing a youth perspective among children and adolescents living in a low-income, high violence neighborhood in Chicago, IL.

## **Exposure to Community Violence**

One neighborhood characteristic that has received considerable attention in the literature is exposure to community violence. Community violence can be broadly conceptualized as acts of interpersonal behavior that threatens, attempts, or accomplishes the intentional infliction of psychological or physical harm committed by individuals not intimately related to the victim (Spilsbury, 2005; National Child Traumatic Stress Network, 2016). Experiencing acts of community violence include, but are not limited to, being a witness or victim of muggings, sexual abuse, hearing gunshots, burglaries, and homicide, and can occur in a variety of contexts through which a child navigates, including his or her home, school, or broader neighborhood. While rates of violent crime have declined in the U.S. over the past decade (Bureau of Justice Statistics, 2015), children's rate of violence exposure as a witness or victim remains alarmingly elevated within many urban environments (Reed et al., 2014; Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009). Moreover, crime data indicates that ethnic minority youth living in urban, economically disadvantaged communities are disproportionately exposed to this form of violence, with an estimated half of all youth in these environments experiencing exposure (Bureau of Justice, 2012). Violence exposure has been associated with a variety of emotional and behavioral problems for youth, including posttraumatic stress disorder, anxiety, depression, suicidal ideation, and delinquency (Fowler et al., 2009; Gorman-Smith, Henry, & Tolan, 2004; Mazza & Reynolds, 1999). Most of these studies have reported that elevated violence exposure has a predictive and additive effect on increased negative symptomatology. Mexican American youth are particularly vulnerable to a number of systemic stressors that may compromise psychosocial development and functioning, including violence exposure. In part due to these

experiences of violence exposure in marginalized communities, Mexican American and Latinx youth have significantly higher rates of anxiety and depressive symptoms as well as externalizing adjustment difficulties (Surgeon General, 2001).

In addition to adversely affecting mental health functioning, violence in these communities can directly shape how youth perceive and interact with their neighborhood. Parkes, Kearns, and Atkison (2002) reported that perceived crime was the greatest predictor of neighborhood satisfaction among residents. Community violence also reduces walkability in neighborhoods, resulting in a barrier to many students' commute to school (Wiebe, 2013). Across the U.S., 5.5% of high school students reported not attending school one or more days in the previous month given a perceived lack of safety at school or on their way to or from school (Centers for Disease Control and Prevention, 2007). Federal support for the promotion of safe passages for students to attend school has recently been losing support in various legislatures (Safe Routes to School National Partnership, 2016), potentially further exacerbating this problem. In spite of the mobilization of governmental and non-profit organizations to create safe passage, there have been few investigative efforts dedicated to understanding the fear of community violence that children and adolescents may experience as they traverse between their home and school environments, and throughout their broader community.

Within these hazardous and socially toxic environments, several issues remain unclear, including the location and timing of violence exposure, what areas represent a refuge from these exposures, and who the perpetrators are. Indeed, the same locations that youth may seek for protection may also be the same areas in which violent incidents occur. For example, among a sample of urban youth engaging in a time-sampling study, a large portion of adolescents reported

witnessing a violent act taking place in school or on school grounds (Richards et al., 2015). Indeed, a previous study using the same sample as the current study reported discrepancies between CPD and youth-report of violence, with youth reporting disproportionately higher rates of violence near schools than CPD report (Burns, Treering, Zakaryan, Deane, Bocanegra, & Richards, 2015), highlighting the need to examine violence exposure across multiple sources. There is a particularly wide gap in research examining these variables of violence exposure among Latinx youth (Aisenberg & Herrenkohl, 2008; Reingle et al., 2013). While violence in Latinx communities is not necessarily attributable to gang activity (Papachristos & Kirk, 2006), the presence of gangs in neighborhoods appears to place youth at greater risk for exposure given risk of initiation as well as closer proximity to gang activity (Howell, 2011). One neighborhood analysis of youth safety in a Chicago West Side Neighborhood (“The Little Village Youth Safety Map”) found that gang violence and bullying were the most frequent forms of violence experienced by youth according to local principals (Bocanegra & Rak, 2015). Despite some understanding of the influence of gang violence on child and adolescent development within these communities, an investigation into youth perception of gang activity may provide important insights into a child’s experience of violence exposure and perception of neighborhood safety.

### **Social Capital: The Role of Community Assets, Social Support Networks, and Family Functioning**

While the negative effects of violence exposure and living in an economically disadvantaged community are clear, not all youth residing in hazardous environments demonstrate equal levels of distress. Indeed, certain children and adolescents exposed to

significant stressors and violence living in high-risk communities manage to adapt and adjust successfully, potentially due to a collection of individual characteristics, social support networks, and community assets, such as family, friends, school, churches, and various community organizations (Dumont & Provost, 1999; Paxton, Robinson, Shah, & Schoeny, 2004; Kliewer, et al., 2004). Two distinctive sets of resources have emerged as being important mechanisms in buffering the negative effects of environment on psychosocial functioning: psychological resources and social resources, which may be conceptualized as two facets of an individual's personal capital (Ensel & Lin, 1991). Putnam (2000) described social capital, a collection of social resources, as a critical asset for fostering individual and neighborhood well-being. Social networks and community assets are hypothesized to promote neighborhood cohesion within a community. While physical neighborhood resources, such as schools, parks, libraries, churches, and youth organizations have been linked with neighborhood satisfaction and promotion of positive adjustment among children (Hart & Mueller, 2013), informal social support networks, such as family, friends, and hangout areas also likely play a role in the promotion of psychosocial well-being. Indeed, recent research has demonstrated that the amount of time spent with family and friends is protective against violence exposure among youth (Goldner, Peters, Richards, & Pearce, 2015). Moreover, in one study utilizing a mapping approach, youth were equally as likely to identify safety with specific people as they were with physical places (Padgett, Juarez, Samaniego, & Bess, 2009).

One important element of a youth's social capital is their family, with regard to family support, cohesion, parenting practices, and overall functioning. Raising children in dangerous surroundings marked by crime and violence presents a considerable challenge for parents, and

several studies have demonstrated a vast set of strategies that parents utilize in order to minimize the negative effects of violence exposure or other dangers on their child's development (Burton & Jarrett, 2000). These practices include enforcing curfews (Ensminger et al., 1996), chaperoning or forbidding children from engaging in certain extra-curricular activities (Outley & Floyd, 2002), and spatial restriction (Fursterberg et al., 1999). In addition to caregiver protective factors, other family functioning attributes have been associated with improved outcomes in the context of toxic stress, including family cohesion (Halpern, 2004) and perceived family support (Gorman-Smith et al., 2000; Li et al., 2007; Reese, Vera, Simon, & Ikeda, 2000). A supportive and cohesive response to stressors by family and caregivers may promote youth's likelihood of seeking out familial support following violence exposure. Indeed, many Latinx youth demonstrate resilience when confronted with stress within challenging environments. For example, Latinx youth reported increased levels of self-efficacy in the context of high family cohesion (Leidy, Guerra, & Toro, 2010) and positive parenting (Ingoldsby et al., 2004). Overall, family functioning and child-monitoring practices are pieces of an overall fabric of family variables and other aspects of social capital that may serve as protective factors in the relation between neighborhood conditions and various developmental outcomes.

### **Geographic Information Systems and Mixed-Methods Research**

Though many studies examine the individual and proximal variables that contribute to psychological and behavioral outcomes, it is also essential to investigate contextual factors, such as neighborhood characteristics, and the mechanisms by which they affect mental health outcomes and safety. The innovative and increasingly utilized *geographic information systems* (GIS) technology has been used to investigate and analyze neighborhood characteristics in a

graphical and accessible manner. Cromley and McLafferty (2012) describe GIS as computer-driven procedures used for the integration and examination of geographic spatial data. They report that recent developments in this technology have been developed based on interest in spatial and cartographical analysis technique and theory that has existed for years prior to the contemporary advances in digital computing that has allowed for GIS. Goodchild (1995) outlined four key software functions that distinguish GIS as a methodology: 1) the capacity to display spatial relationships between computed or stored data, 2) the capacity to store several attributes of specific objects, 3) the capacity to examine spatial and attribute data in addition to simply storing and retrieving the data, and 4) the capacity to amalgamate spatial data from different sources.

GIS has been applied across many disciplines for a variety of purposes, with its use expanding rapidly in the 1990s (Gatrell & Löytönen, 1998), particularly in the area of public health. There have been relatively few applications of the technology to examine community violence in neighborhoods (Wiebe et al., 2013). Kwan and Knigge (2006) report that most work with GIS has been applied as a positivist tool for storing and analyzing exclusively quantitative data. GIS is being increasingly utilized, however, as an approach in a mixed-methods paradigm (Elwood, 2006; Keddem, 2015), with several studies exhibiting the usefulness of GIS combined with qualitative methods in a mixed-methods approach (Dennis et al., 2009). This type of study enables members of the community to describe their experiences through geographically presented information. Utilizing an interactive GIS approach, Talen and Shah (2007) employed 18 participants in order to facilitate a qualitative evaluation of neighborhood, an approach they argue that could be utilized to inform policy beyond the dissemination of government-procured

data. Moreover, this method can be used as an exploratory instrument for generating new ideas at the community level. GIS offers researchers an opportunity to integrate survey or government data with youth-generated spatial data. The use of a mixed-methods qualitative and GIS approach may provide further contextual information regarding the links between neighborhood characteristics, violence exposure, family and peer support, and psychosocial functioning.

### **Theoretical Framework**

In order to understand the associations between the variables under review, an integration of multiple theories, including Bronfenbrenner's (1979) ecological systems theory, a risk and resilience framework (Luthar, Cicchetti, & Becker, 2000), and community based participatory research guided the current study. Ecological systems theory offers a sophisticated and dynamic framework with which to contextualize the elements that inform an individual's development. This theory posits that children are influenced by processes existing within various environmental systems, including internal characteristics, the immediate environment (e.g., family and community), and macrolevel environments, such as an overall cultural and societal context. An ecological perspective on development differs from the concept of a simple cause and effect relationship, by instead emphasizing that relationships between variables are influenced by the context in which they occur (Garbarino, 2001). A child's family, for example, may serve as a child or adolescent's most integral, consistent, and proximal developmental influence (Bronfenbrenner, 1979), and therefore may play an important role in mitigating the negative effects of violence exposure or living in a toxic environment.

Based on a risk and resilience framework, the current study will utilize the term *risk* to refer to concepts that augment the likelihood of an individual experiencing emotional or

behavioral problems. Resilience, in contrast, refers to a process that involves positive adaptation in response to significant stress or adversity in an individual's environment (Luthar et al., 2000). Thus, the current study utilizes the terms *protective factors*, *assets*, and *resources* in order to describe factors that promote resilience by minimizing the effects of risk on psychological and behavioral adjustment. These assets are categorized into three domains, including individual features, family features, and community features (Forehand, Biggar, & Kotchik, 1998). The present study will examine the individual features of psychosocial maladjustment (internalizing and externalizing symptoms), family functioning and peer social support, and community characteristics of violence prevalence and community assets (libraries, churches, schools, parks, community organizations).

Informed by these two overarching theoretical frameworks, the current study employs a community-based participatory research (CBPR) approach. CBPR is an approach to health and environmental research that is designed to increase the value of studies for both researchers and the community under investigation (Viswanathan et al., 2007). This type of research involves collaboration between researchers, organization representatives, and community members. CBPR allows researchers and community members to voice their opinions equally, engage in a reciprocal exchange of expertise and learning, and to take an active part in addressing neighborhood problems and promoting community assets. Given shared ability to make decisions concerning the project and mutual ownership of processes, CBPR may promote local advocacy, facilitate community acceptance of intervention programs, and provide community organizations with knowledge about services that may effectively address community needs (O'Brien & Whitaker, 2011). As youth are considered "experts in their own lives" (Langhout &

Thomas, 2010), and youth reports of perceptions of neighborhood are more reliable than parents in predicting child outcomes (Byrnes et al., 2007) the use of CBPR with children and adolescents is well suited to collect accurate youth perceptions. CBPR affords the use of various methodologies (e.g., survey methods, focus groups) to develop a more comprehensive socio-demographic profile (Checa & Arjona, 2010). Applying this method to the study of violence exposure and neighborhood characteristics is of interest to researchers given increasing awareness of the interrelated nature of various contextual levels of a child and adolescent's individual, familial, social, and community.

### **Current Study**

While the aforementioned studies examining violence exposure, social capital, and family functioning provide insight into these variables, they do not incorporate community and individual perspectives that may help to explain the interrelations of these elements within a spatial or qualitative context. Relatively few studies examine variables through a youth perspective, fewer utilize GIS technology to examine youth daily experiences, and even fewer use a mixed-methods approach to describe youth exposure to violence and experience of neighborhood. The addition of a mixed-methods paradigm, including both a quantitative and qualitative perspective, may provide additional understanding of the effects of violence exposure and various protective and risk factors through the lens of youth living within these communities, which can ultimately support the development of more effective and appropriate interventions on an individual and system level. The current study will provide a methodological and empirical contribution to the literature on exposure to community violence among Latinx youth living in high violence, low-income neighborhoods. Through the utilization of a mixed-methods CBPR

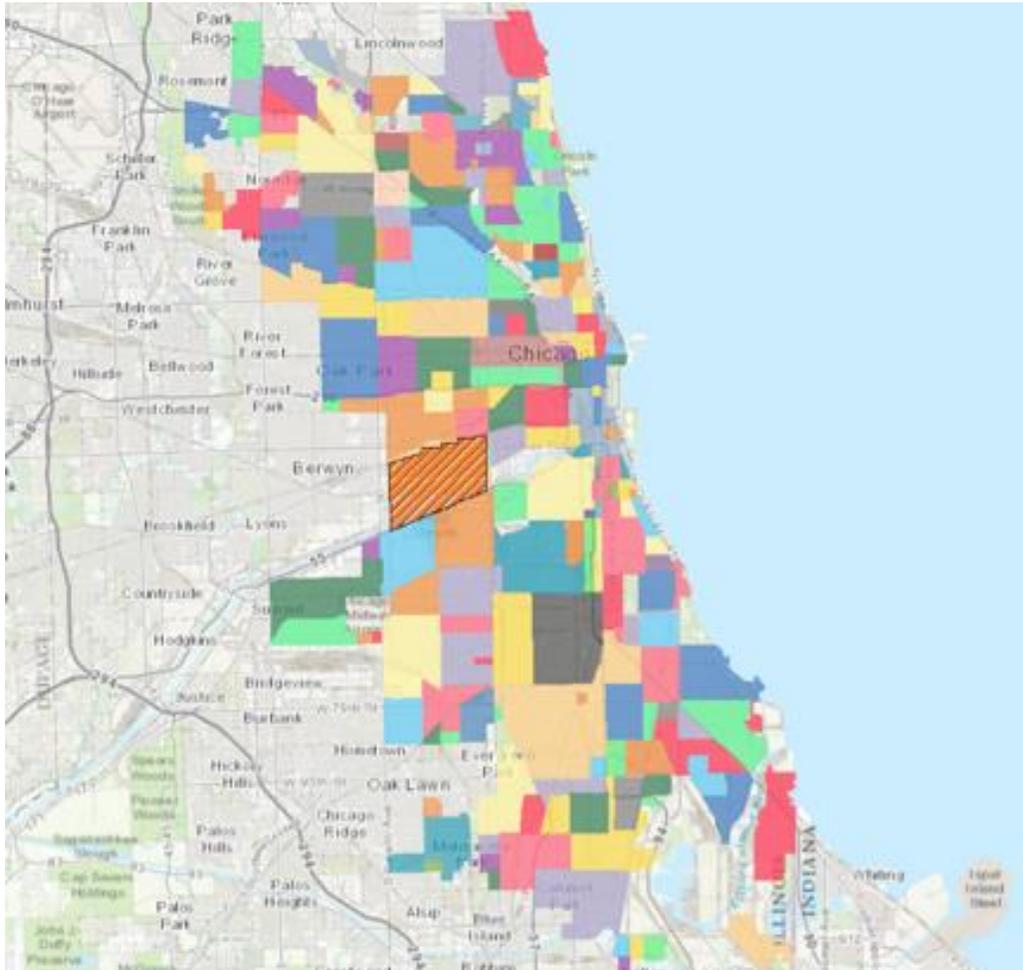
design, the current study will qualitatively and quantitatively examine violence exposure, family functioning and various neighborhood characteristics, including perceptions of neighborhood safety and various protective community assets and social support networks identified by Mexican American youth living in South Lawndale, or “Little Village,” the largest Latinx neighborhood in Chicago, Illinois (see Figure 11). The variables of interest were measured and presented by utilizing a mixed-methods approach consisting of GIS technology along with semi-structured qualitative focus groups.

### **Aims and Hypotheses**

The present study seeks to examine the following four aims and related hypotheses:

**Aim 1.** The first aim of the current study is to examine how youth in this community experience community violence exposure via focus groups and GIS mapping. The location of violence exposure will be measured in relation to several neighborhood characteristics, including various community assets (i.e., churches and places of worship, libraries, private and public schools, youth and community organizations, parks), and social support networks, (i.e., youth’s home, friends’ homes, hangout areas). While not quantitatively or directly assessed across groups, a qualitative examination of the effects of violence exposure will also be examined across focus groups.

Figure 11. Chicago community areas (neighborhoods) and study area



*Note.* Little Village community area is highlighted and depicted with a diagonal pattern.

***Hypothesis 1.1.*** It is predicted that youth across all focus groups (out of four groups of differing age and risk) will identify exposure to community violence as a significant stressor in their community. While not able to be tested or measured directly, qualitative information from the youth involved is expected to reveal associations between violence exposure and various deleterious effects, including posttraumatic stress symptoms, internalizing, and externalizing symptoms.

***Hypothesis 1.2.*** It is predicted that some types of community assets and social network

areas identified by the youth will emerge as protective, resulting in fewer reported Chicago Police Department (CPD) and youth-reported incidents of violence exposure in areas of the neighborhood containing these assets. The relation between community and social assets with CPD and youth-reported incidents will be examined separately. All risk groups are expected to discuss community violence in relation to these protective assets.

**Aim 2.** A second aim of the current study is to examine and display what youth identify as safe areas and community and social assets. Identification of what types of relationships youth classify as positive and protective will be examined. An investigation into the role of family functioning as it relates to remaining safe and supported as described by focus groups will take place.

**Hypothesis 2.1.** Youth of all risk and age groups are expected to identify family, friends, libraries, parks, churches, and/or community organizations as important assets in promoting safety and promoting psychosocial well-being.

**Hypothesis 2.2.** It is anticipated that youth identify family and friends as safe regions more frequently on their maps than they do for traditional community assets and physical spaces.

**Hypothesis 2.3.** Family functioning and support is expected to be cited as an integral factor in well-being and protection from the negative effects of violence exposure across all risk and age groups.

**Aim 3.** A third aim of the study is to examine youth-reported routes to and from school in Little Village in relation to perceived unsafe areas.

**Hypothesis 3.** It is expected that focus group reports and youth generated maps will indicate that a significant number of youth traverse perceived unsafe regions and gang territories

on their route to school (based on percentage of route in unsafe/gang areas).

## **Method**

### **Participants**

A sample of 40 urban, Mexican American youth aged 12 to 18 ( $M = 16$ , 50% female) was recruited for a study examining neighborhood perceptions and exposure to community violence. In accordance with CBPR collaborative methodology, outreach workers and school-based mentors from Enlace, a Chicago-based non-profit violence prevention and community organization, along with academic researchers, identified youth involved in Enlace programming to participate. The data collection period began in 2012 and continued through 2013. 56% of youth resided with both parents, 33% lived with either parent, and 11% lived with extended family members. There was a mean of 4.33 individuals per household. In regards to parental education attainment, most parents did not complete high school (77% of fathers, 61% of mothers). Most participant mothers identified as homemakers (67%) and most fathers worked full time (72%). In terms of immigrant status, 88% of youth were U.S.-born while the remainder were first-generation immigrants from Mexico.

All youth were from the Little Village neighborhood, an urban neighborhood on the West Side of Chicago, IL. This neighborhood is characterized by a predominance of Mexican-American inhabitants, with 75% of the residents identifying as Mexican American (Ready & Brown-Gort, 2005). Little Village is also comprised largely of low-income families, with 31% of its inhabitants living below the poverty line (City of Chicago Census Data, 2008-2012). According to 2014 crime statistics compiled by CPD and the Cook County Medical Examiner's Office, Little Village had the fifth highest number of youth homicides out of 77 community areas

in Chicago (RedEye Chicago, 2014). In 2013, the CPD recorded 2,750 crimes in Little Village, over 1,100 of which were violence (City of Chicago, 2013). It is an area marked by elevated crime rates and gang violence, with over 75% of crimes in this community committed by gang members under 24 years of age (OJP-Crime Solutions Profile, 2013).

In order to maximize openness to discussion and promote group cohesion, the participating youth were divided into five distinct cohorts based on their respective involvement with Enlace programming. These five separate cohorts comprised youth involved in community mentoring, work experience, college preparation, and academic mentoring (forming two groups). Based on youth placement in these various groups, along with transcript information, and additional demographic information, the groups were categorized in terms of overall risk and functioning following completion of the data collection. Youth in community mentoring programs consisted of two groups labeled as “high-risk,” with one group containing the youngest members and the other with known gang members. Youth participating in academic mentoring were separated into two groups classified as “high functioning,” with one group in a college preparation program and one group containing youth in less risky home and peer environments. Finally, youth involved in the work experience programming contained a larger group of mixed risk and older age participants.

### **Procedure**

Participation in the study was voluntary and youth responses were confidential. Parent or guardian consent and youth assent or consent was received prior to data collection for each participant. Prior to enrollment, the youth were made aware of a \$40 gift that was received following the last focus group session as an incentive for participation. The youth were enrolled

in four separate focus groups of approximately ten youth per group divided based on age groups and gender. Trained research staff conducted four focus group sessions over the course of three to five weeks per focus group. The scripts were developed to prompt discussion pertaining to youths' perceptions of: 1) neighborhood experiences and characteristics, 2) psychosocial functioning, mental health, and youth empowerment, 3) school and community connectedness, 4) and family and cultural experiences. Sample prompts include:

*How would you describe your neighborhood to someone who has never been there?*

*What places/areas in your neighborhood do you consider safe? What makes them safe?*

*What does the average family in Little Village look like?*

*How do the adults in the community support the ideas you come up with? Do you feel comfortable sharing your ideas and feel confident that they will be heard?* [SEP]

*Are there people in the neighborhood who you consider a part of your family even though they are technically friends?*

*How do people in your family/your parents deal with stress?* [SEP]

*How would you describe the people you spend time with in your community?*

*In what ways are you involved with other people in your community? What activities do you do in your community?*

*Formally (clubs, church, afterschool programs, mentoring programs)* [SEP]

*Informally (cliques, crews, parks, hanging on the corner)* [SEP]

*What is it like walking to and from school?* [SEP]

A trained graduate student or research team member conducted each focus group with another research team member to assist with observing and note taking. All sessions were audio recorded and transcribed by members of the research team.

After the focus group meetings, the youth participated in an interactive GIS mapping exercise, using ArcGIS (Esri, 2016) custom online map templates, which involved youth

individually identifying various spatial points and areas of interest within the Little Village neighborhood. The youth were asked to produce their own community map of Little Village using a prepared online mapping template, complete with reference locations and a street map overlay. Information presented by the youth from the focus group also informed the collection of spatial data. Informed, in part, by these themes, the following parameters were obtained for each participant: youth's home, friends' homes, hangout locations, youth community programs, gang territories, perceived safe and unsafe territories, their route and mode of transportation to school, and the specific locations of witnessed or experienced violent incidents or other crimes. Each participant created points, lines, and polygons depicting these spatial locations. The resulting spatial data were saved to a central database server whereby youth maps were integrated in preparation for analysis.

### **Analytic Procedure**

**Focus group data analysis.** Following ground theory methodology described by LaRossa (2005), the research team used an open, axial, and selective coding procedure. The research team and a senior Enlace staff member performed preliminary coding of transcripts based on the key areas of interest from the topics discussed by youth in the focus groups. Research team members developed and reviewed the initial coding to determine the breadth of each domain and then expand, condense, or remove initial codes to define a final coding scheme based on team consensus. A trained expert coder from the research team reviewed 20% of all transcripts to ensure inter-rater reliability of .80 and above. Atlas.ti 7.1, the qualitative data analysis and research software, will be used to perform content analyses to investigate and analyze themes and information gathered from the semi-structured focus groups. The current

study will examine Aims 1 through 4 by focusing on exposure to violence, perception of neighborhood, community stressors, community assets, and peer and family social support presented by the youth from the transcripts.

**Spatial data analysis.** ArcMap and ArcGIS for Desktop, the GIS software package for examining maps and spatial data, was used to analyze the mapping information gathered from participants. Publicly available data from digital geographic databases were uploaded in ArcGIS layered over a graphical representation of Little Village. Crime data for the calendar year of 2013 was obtained from the City of Chicago data portal (<https://data.cityofchicago.org/>) as reported by the CPD. These data were filtered to exclusively include crime that took place in public places using the location parameters of *abandoned building, alley, bar or tavern, church/synagogue/place of worship, CTA bus stop, CTA train, CTA platform, commercial/business office, driveway, hotel/motel, library, parking lot, park property, residence porch/hallway, residential yard, restaurant, school, sidewalk, street, vacant lot, and vehicle*, while excluding *apartment, residence, and residence-garage*. Data were further filtered to include only violent crime exposures, including *armed robbery, assault, battery, child sex abuse, criminal damage, criminal sexual assault, homicide, and unlawful use/possession of handgun*. There were 1,209 total violent crime incidents reported by the CPD in 2013 in Little Village. See Figure 12 for a graphical representation of these data and Figure 13 for a description of CPD violent crime by category. Additional publicly available data, including location of libraries, places of worship, and private and public schools were obtained. Figure 14 depicts three maps containing these points of interest within the boundaries of Little Village.

Figure 12. CPD violent crime data occurring in public for the year 2013 in Little Village

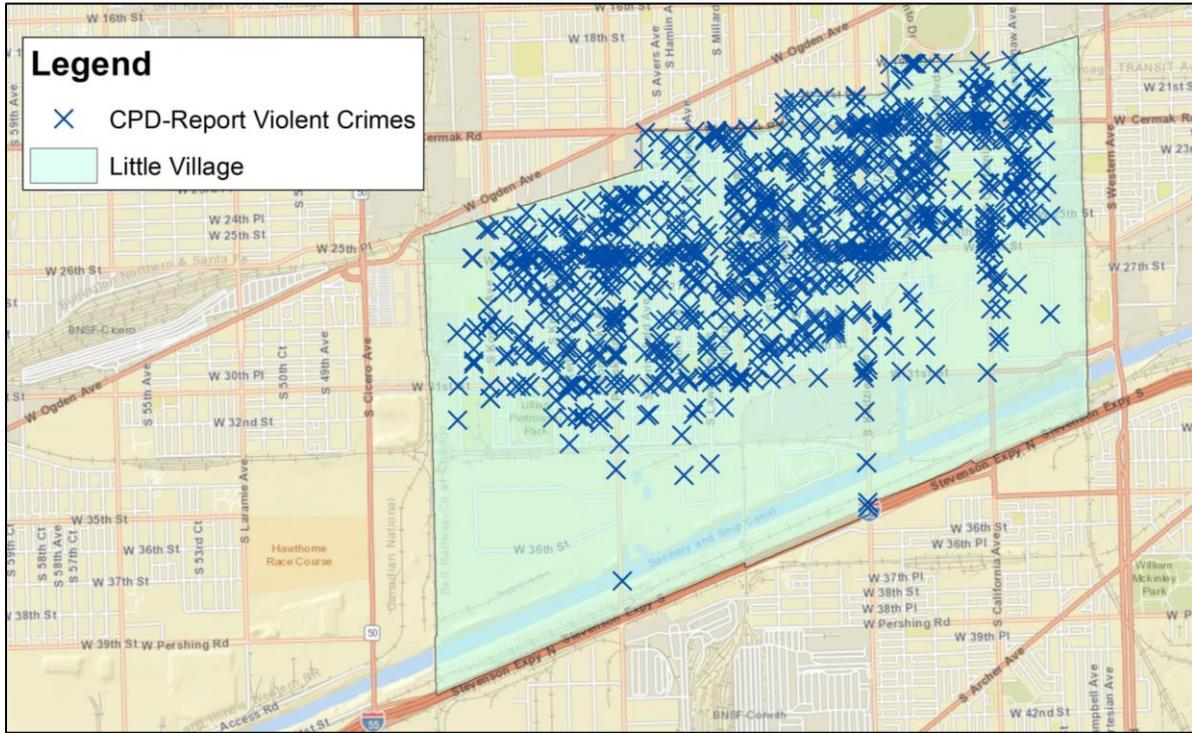


Figure 13. CPD violent crime occurring in public for the year 2013 in Little Village by category

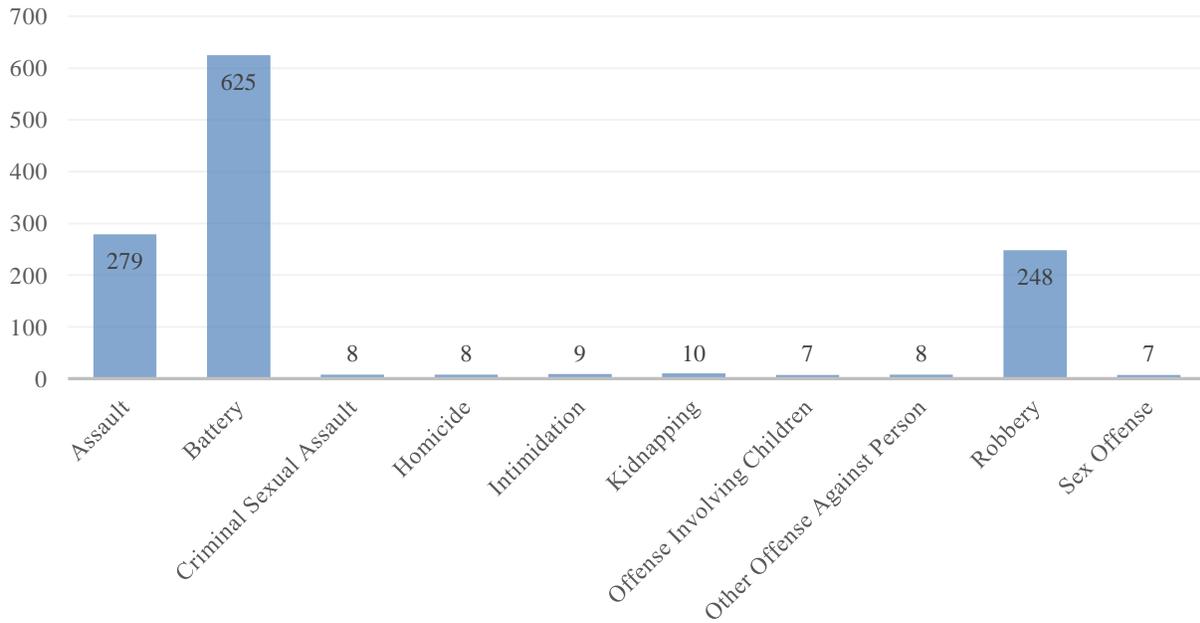
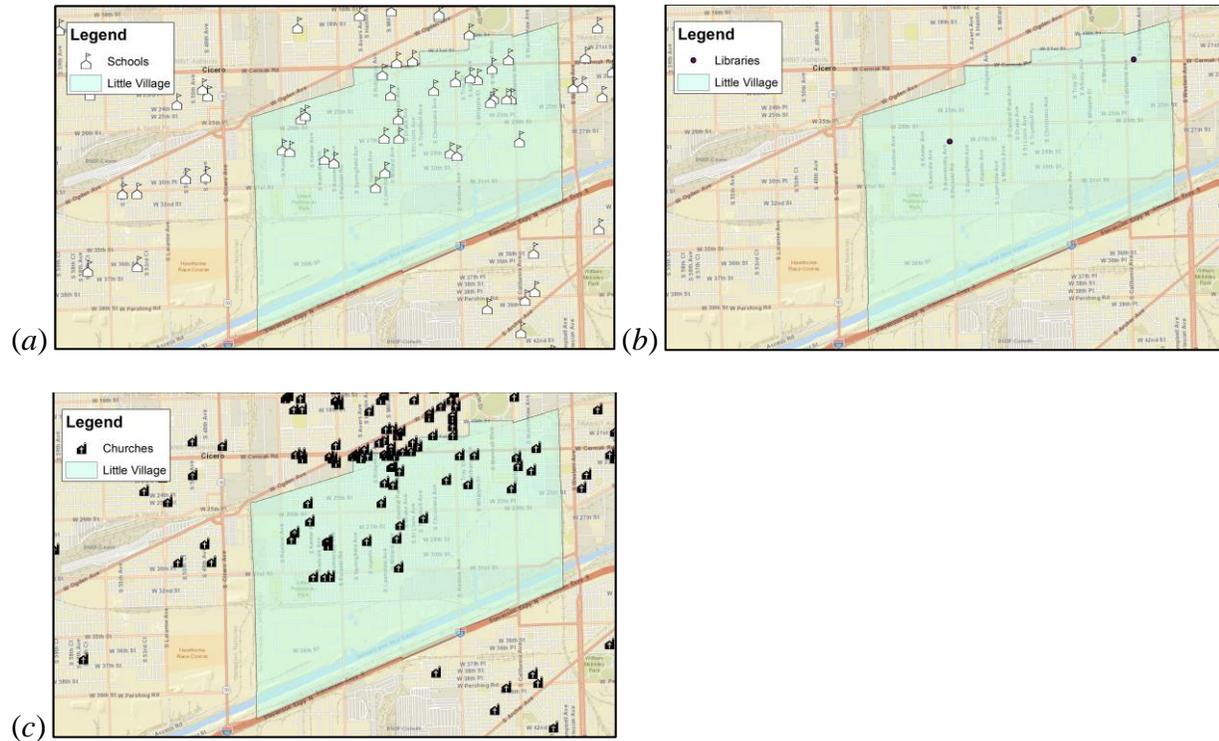


Figure 14. Location of neighborhood schools (a), libraries (b), and places of worship (c) acquired from public databases



ArcGIS was used to analyze and visually represent the experience of violence exposure, perceptions of safety, social and community assets mapped by the youth, as well as the interactions between these variables. Figures 15, 16, and 17 graphically present the raw data as mapped by youth in the study. Descriptive displays of the spatial distribution of each of these neighborhood characteristics, both through the eyes of the youth and via public records, will be generated in ArcGIS. Clusters of high- and low-levels of violence exposure will be graphically depicted. Ordinary Least Squares linear regression operations will be conducted to examine the relation between various community asset and social support variables with reported violent incidents throughout the neighborhood.

In preparation for the construction of a composite map of variables, GIS will be used to calculate and display the density of youth-created data (i.e., incidents of exposure to violence, youth community programs, homes, friends' homes, areas for socializing, unsafe and safe areas, gang territories, and routes to school) and for publicly available data (i.e., CPD violent crime, libraries, places of worship, schools). This will be performed using a kernel density function, which mounts a smooth surface radiating from each individual incident point or polygonal area. In this function, the surface value is highest at the location of the incident and decreases with accumulative distance from that point. In order to account for areas with differing levels of population, each of the point locations will be normalized by the census block group population it includes and incorporated into the kernel density estimation, which will provide a weighted visualization of density. The resulting graphical representation will ultimately be a raster map layer, or a continuous surface that is represented as a grid of cells, which offers a more refined manner in which to depict how neighborhood characteristics vary by location (Boots, 1999).

Figure 15. Youth report of violent incidents in Little Village

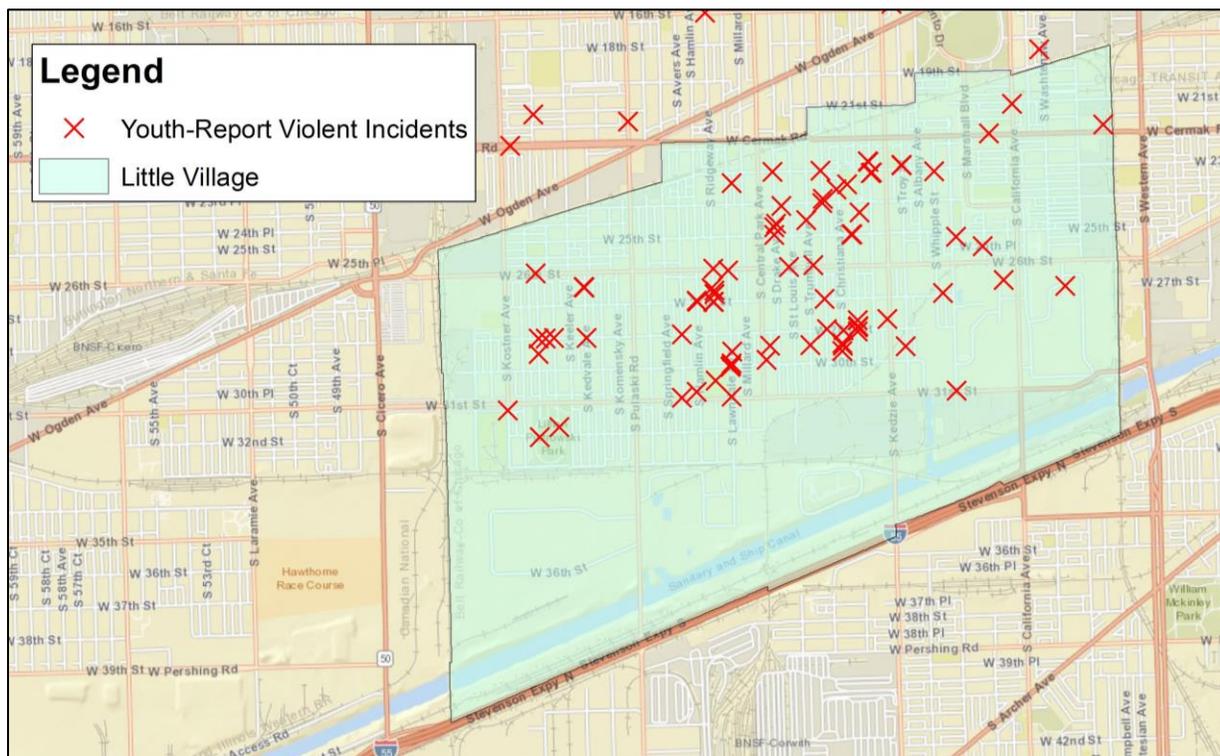


Figure 16. Location of youth-plotted friends' homes (a), hangout areas (b), homes (c), and youth community programs (d)

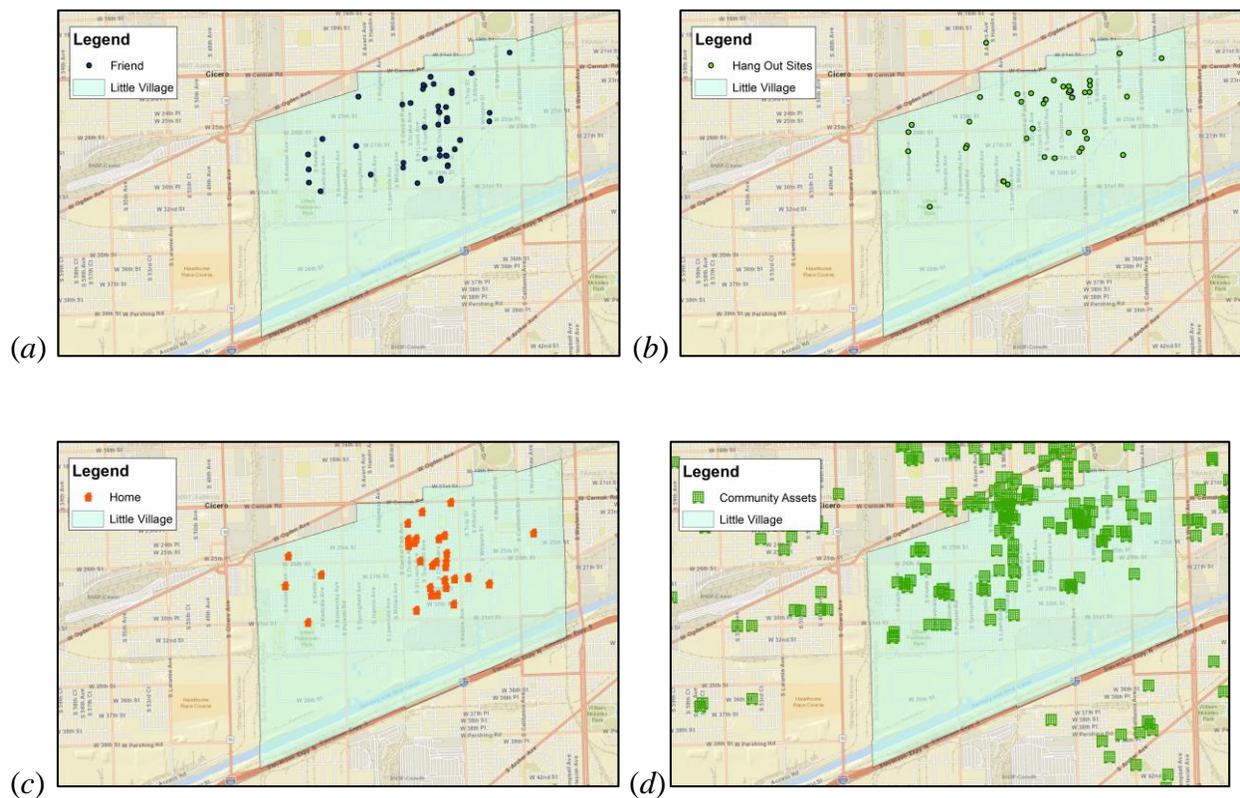
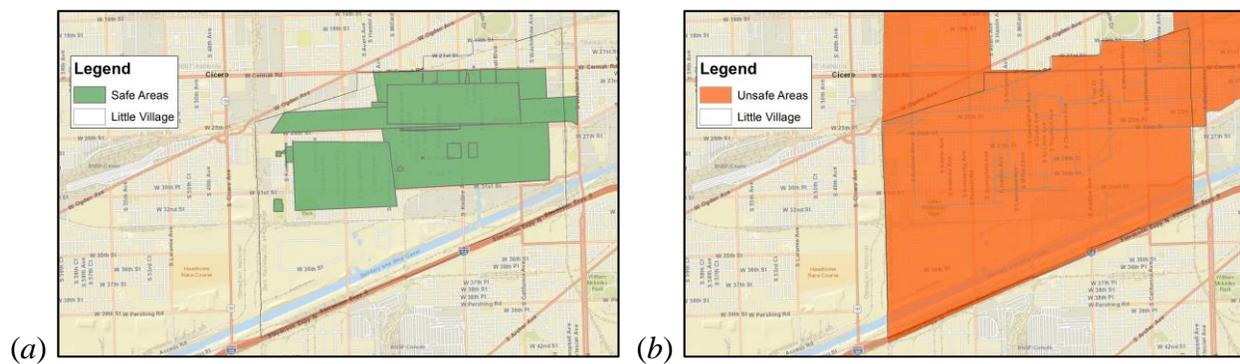


Figure 17. Location of youth-plotted perceived safe (a), unsafe areas (b), and gang territories within Little Village





## Results

The qualitative analyses demonstrated key themes across four broad areas related to the study hypotheses on exposure to community violence: Psychosocial Difficulties, Community Assets, Social Support Networks, and Family Functioning. Themes related to youth's route to and from school were also examined. See Table 17 for a summary of themes and illustrative quotations.

### Psychological Difficulties Related to Community Violence

**Depressive Symptoms.** Independent of risk level, youth experienced depressive symptoms as a negative effect of the exposure to violence within their community. Across all groups, dysphoria and hopelessness were cited as responses to the fear or experience of being a victim to violence. One participant from the low-risk college-bound group reported, “I could never go out. If I go out, something happens to me... I would always be inside my house watching T.V., and that’s how I started getting depression, being absent at school.” Moreover, when asked about the future, one participant from the high-risk gang involved group expressed losing hope as it had “died over the years.” He went on to say that his feeling of hopefulness is “buried so deep in my heart, nobody can find it, nobody is going to get it.” Moreover, youth in the high-risk groups tended to respond with a negative outlook on their longevity compared to

other risk groups. For example, one participant remarked, “I’m probably going to make it past 21, 22 max. Then I’m going to be rolled up in my grave.” Another youth in this group expressed, “I am supposed to be thinking about the future but I have my mind set on death and everything else.”

**Anxiety Symptoms.** Regardless of age or risk level, all groups contained participants that endorsed difficulties related to symptoms of anxiety following violence exposure. Youth recounted experiences of first-person or third-person symptoms of anxiety, including fear, stress, nervousness, and general worry related to witnessing or being a victim of violence. For instance, several participants expressed concern regarding friends and family members’ safety. One member of the low-risk college-bound group said, “Mostly what I think about is, ‘are my friends in danger?’ I’m scared that they will be in a shooting or stabbing or something... I worry when my little brother goes out.”

**Posttraumatic Stress Symptoms.** Across focus groups, youth described various symptoms of posttraumatic stress following exposure to community violence, including hyperarousal, avoidance, emotional numbing. Hyperarousal, particularly among the high-risk, gang-involved youth, emerged as one of the most frequently discussed responses to violence exposure. One participant stated, “All you got to know is I watch my back every single moment of my life.” In contrast, descriptions of emotional numbing appeared to be prevalent across the low-risk groups, with one youth from the younger low-risk group saying, "I don't think we let other people know our feelings, how we're feeling. We kind of just keep it in until we push each other's buttons and then they just snap." Another member from the low-risk college-bound group noted, “I think to some extent we become accustomed to it. We are not surprised by it, we don’t

get scared by it no more, we get used to it.” Notably, no participants noted experiences of re-experiencing or intrusive thoughts related to violence exposure.

**Externalizing Symptoms.** Among all risk groups, several externalizing symptoms were also endorsed in response to community violence exposure. Youth reported behaviors such as retaliation, aggression, substance use, and defiance. However, youth in the low-risk group reported witnessing more direct externalizing behaviors in response to exposure than those in other groups. When asked how they cope with the stresses related to community violence exposure, youth in the low-risk group noticed feelings of anger and witnessed accounts of collective community aggression. For example, one participant described the vindication and anger members of their community endorsed following the loss of a life to community violence. Alternatively, participants in the high-risk groups reflected upon the intergenerational effects of violence exposure. One participant reflected on how such responses will impact future generations, stating, “I think about the kids” and “They are just going to grow up knowing this exists...Monkey see, monkey do.” Similarly, another youth reported that the violence is “What you were shown your whole life. You got to know how to do stuff... you need to know how to handle it. Right here, in Little Village, the way to get away from the pain is violence, smoking, drinking.”

### **Community Assets**

**Volunteer Organizations/Clubs** After-school activities, such as volunteer organizations and clubs, emerged as common sources of positive involvement within the community for youth, despite community violence, particularly among youth in the low-risk, college-bound group. It was also expressed that these activities may serve to provide positive examples for other youth in

the community. From the low-risk college-bound group, one participant explained the purpose of the “Mikva” club is to discuss the effectiveness of their school (“things that work and things that don’t work”) along with addressing their community’s safe and unsafe areas in order to decide on the placement of “community watchers in the community.” Similarly, another youth from the same group described Dreamers Alliance, an organization that informs the community about opportunities for undocumented students. Across all groups, other types of clubs and organizations reported from the youth include: Feeding Illinois program, El Vejo, Enlace, Caps, and Project Vida, many of which have missions related to reducing violence exposure and its deleterious effects.

**Churches and Places of Worship.** The influence of church affiliation as a protective factor in relation to community violence exposure was noted among youth in the low and mixed risk groups. Youth identified their church and participation in church activities as a peaceful and positive alternative to the socially toxic environments produced from community violence. One participant reported their church as a “peaceful” place and that even those affiliated in gang activity can play basketball there and nothing “really gets out of hand.” Another youth described a similar experience at their church, noting that in addition to providing a safe environment for students to study, there are individuals available to talk to them and “help them [with] whatever they need.”

**Schools** Youth across focus groups expressed ambivalent views regarding the safety of schools. Some focus groups highlighted specific concerns regarding safety within and around schools. One youth from the mixed-risk group described feeling safe in the morning but not while leaving school: “If you’re in after-school and you are coming out late, there are probably

gangs around.” Another youth from the high-risk, gang-involved group noted that fights occur during all times of the day, before, during, and after school. One youth even described a teacher being struck by a student while attempting to intervene in a fight. Two youth from this high-risk group highlighted racial tensions within the school that have led to an outbreak of a fight. For example, one participant remarked, “The Hispanics, the African Americans, we fight just because they want to go down.” In contrast, while no participant specifically identified schools as safe regions within the neighborhood, some groups described teachers and mentors within the school that encouraged involvement in the community, avoidance of gang membership, and support following exposure to violence. When asked specifically about what the youth do when they witness or experience violence, one student from the low-risk group remarked, “I talk to two of my teachers.” Another youth from the mixed-risk group reported believing that after-school programs, such as tutoring and community engagement, provide structure and prevent violence.

**Other Community Assets and Areas.** Other regions of the neighborhood were cited by youth as being both valuable assets and areas of potential danger within their community, including parks, hospitals, libraries, and shopping malls. Youth from all risk groups cited various establishments in commercial districts, such as ice cream shops, Mexican restaurants, and clothing stores, as being places of congregation, safety, and support. Various responses from the focus groups suggest that public parks are perceived as peaceful areas within the community, while others view parks as dangerous areas to avoid. For instance, one participant described parks in the community as areas that serve as a distraction from various stressors he experiences. In contrast, one participant remarked, “a lot of people go there, but there’s so many gang

members there.” Similarly, another youth described the need to avoid certain parks at night due to known gang associations.

### **Social Support Networks**

**Home/Block.** In all groups, regardless of age or risk, youth described the level of perceived safety and security within the context of their home or block. Various focus group transcripts revealed that the characteristics of one’s home or neighborhood block was viewed as a significant protective network in relation to community violence. Individuals from the low-risk and low-risk college-bound youth, perceived their home or block as a protective factor. Youth falling within that category described their home as “the safest place” and reported that the people who they know on their block “protect” them there. A frequently discussed topic included youth reporting that relationships with other people, such as knowing everyone on the block, as protective. One participant described that through this connection, people “don’t really mess with you.” Similarly, another participant described feelings of safety due to the members of the community protecting them. Another youth reported on the importance of associating with the right people, noting that there are “good people” and “bad people” and that if you follow the right road, you will make it in Little Village.” Alternatively, some youth reported their neighborhood context as a risk factor. Such youth referred to the presence of gang activity outside of their homes as a reason to not feel safe at home. One participant describes this presence as an impediment to their safety, noting, “it did not make [me] feel safe.”

**Friends.** Youth described strong protective bonds formed with friends in the community across all risk groups. In response to the question of whether there are friends around the neighborhood who can be considered as family, one participant from the high-risk gang involved

group stated, “almost all my friends, they all really mean something good to me. And I’d be ready to give my life for them. And it’s the same way for them.” Furthermore, another youth from the low-risk college-bound group described their friend as family, being “like a sister to me. . . She knows my family, we know each other’s families, we just understand each other, trust each other, like a sister.”

**Role of Family Functioning.** Youth endorsed themes related to family functioning, perceived family support, and family presence with regards to community violence exposure. Within such contexts, youth recognized the role family members (particularly parental figures) play in either working to protect the youth from violence or the lack thereof due to their absence. One participant from the low-risk group recognized that parents are aware of the prevalence of violence and caution their children against it. Another participant noted that he is unable to travel in certain areas of the neighborhood based on his mother’s concern about violence. However, the youth identified the limitations parents may have in such efforts, with one participant from the low-risk college-bound focus group noting that even though “they moms nag and tell them not [to] do this and that...they still do it.” Relatedly, the same participant recognized the value in this parental protective monitoring and reported that youth that do not have this asset are at a disadvantage. The participant reported that children without mothers, fathers, or both will not have an opportunity “to learn from all of them.” They continued, “A kid can’t take all that, all that depression or anything, because like you don’t have your father there, who’s going to be your father figure to tell you, ‘keep on going, be a man. Make a goal, keep on pushing yourself...” Youth from the low-risk college-bound cited family members, such as uncles, aunts, siblings, and parents, as sources of support during times of crisis.

## **Route to School**

Regardless of risk level, concerns regarding traversing the neighborhood and safe passage to and from school was endorsed across all groups. Youth from all groups recounted of avoiding certain areas due to fear of violence. One participant described navigating interactions with gang members during her route home, saying, “When I walk out of school, on Spaulding, which is my block, there’s always a bunch of gangbangers that are out there... So I just try to be nice so they won’t bother me, so I won’t get in trouble or get picked on or stuff like that.” Another participant described missing school due to fear of violence, “Sometimes I won’t even go to school, I just walk the other way.” Other focus group members, particularly across the low-risk groups, described parental monitoring and travel restriction through certain areas of the neighborhood. Others noted the importance of traveling in groups to ensure safety as well as knowing other members in the community. For example, one participant remarked, “I don’t think you’ll be safe if you were just new, and you just got here and you were walking around on your own, because if they say anything to you and you don’t know what’s going on, they could end up doing something to you as in beating you up or shooting you. But if you were with someone you know, I don’t think there will be any problems, because you could let them know I know this person, and they’ll leave you alone.” Finally, one student from the low-risk college-bound group described involvement in a program designed to ensure safe passage to and from school.

Table 17. Focus group codes, themes, and selected quotes

Codes	Themes	Quotes
<b>Psychosocial Difficulties Related to Violence Exposure</b>	Anxiety Symptoms	<p>“I worry is when my little brother goes out. It worries so much when my little brother and dad go out, like step out the house. And my mom as well. Because, like, so much crime going on right now”</p> <p>“Like problems, just, people fighting. And sometimes when you hear the gunshots in the neighborhood, you are thinking it is one of your friends or even sometimes your family.”</p>
	Depression Symptoms	<p>"...And also something that I thought about, if that adults don't realize that youth could have depression these days... I wouldn't do my homework, I wouldn't eat, just because..."</p> <p>“...A lot of people get sad because of all of the shooting that happens and all the close friends we lose because of it</p>
	Externalizing Symptoms	<p>“Violence. That’s how we deal with our problems.”</p> <p>“Anger. They get really angry, they just try to fight a lot.”</p> <p>“For example, on Sunday, our friend died. And a lot of the people in our community got really mad... everyone just jumped into their car... and tried to get revenge back for killing him. They went over there, they started beating them up.”</p>
	Posttraumatic Stress Symptoms	<p>"I don't think we let other people know our feelings, how we're feeling. We kind of just keep it in until we push each other's buttons and then they just snap."</p> <p>"People don't talk really those things, they just keep things in... They really get angry or they just go to sleep. Like I said, they cry, and they still don't tell you anything. They just want to keep it in, they don't want to talk about it."</p> <p>“I don’t show my tears or my pain.”</p> <p>“...They didn’t care, they ignored it. I don’t know if they’re just used to it and they see it as normal. And they</p>

		<p>want to ignore it, because by ignoring it, it's not going to happen again.”</p> <p>“I started looking around my back. And you have to watch yourself in Little Village because bullets don't got names on them.... Bullets ain't got no names on them. They hit whoever they hit.”</p>
<p><b>Community Assets</b></p>	<p>Churches</p>	<p>“Some people seek churches and pastors.”</p> <p>“I volunteer at the church, Amor de Dios. It's peaceful around there. Gangbangers come there to play basketball, but they never really get out of hand or anything, they just have fun there, so it's peaceful.”</p>
	<p>Schools</p>	<p>“[Fights occur] during all three. Before, after, inside the school.”</p> <p>“When I say the name of my school, they go like ‘what? Are you okay?’ They ask me if I don't get shot or beat up at my school.”</p> <p>“I've heard stories of teachers get hit by students because of it, when they try to help out or get involved to separate them, and they end up getting punched.”</p> <p>“She personally pulled me out of class and [asked,] ‘What's going on?’ She knows my name she was super supportive.”</p>
	<p>Volunteer Organizations and Clubs</p>	<p>"I tried to stay very involved. I'm part of the Dreamer's Alliance – we go out to the community a lot, we try to keep them informed about opportunities that undocumented students and people have."</p> <p>"El Vejo... they bring the community together with gardens. Enlace works with the youth, Caps works with the youth as well. They're more involved with the policeman so you get to meet them and interact with them. You get to meet with your community as well as officers."</p>
	<p>Parks</p>	<p>“Yeah, I go to the park and forget about it. That's how they make me keep on going. They make me forget about a lot of things and [give me] strength.”</p> <p>“I think a lot of people get together [at the park]... A lot of people go there, but there's so many gang members there.”</p>

		<p>“There was a time when we were walking some students that were not from this area. They weren’t used to anything like this, and they came here just to get to know Little Village. When we were walking, I kept thinking to myself that we can walk to this park and we can’t walk to this one.”</p>
<p><b>Social Support Networks</b></p>	<p>Home and Block</p>	<p>“I think the safest place is your house.”</p> <p>“The people. You know everyone on your block, everyone knows you. So, they don’t really mess with you.”</p> <p>“Chicago ain’t all bad. It’s the people you run into. You’ve got the good people and then you’ve got the bad people. That’s all it’s got to it. And if you follow the right road, you will make it in Little Village. That or shot or locked up.”</p>
	<p>Friends</p>	<p>"Almost all my friends, they all really mean something good to me. And I'd be ready to give my life for them. And it's the same way for them."</p> <p>"I consider [one friend] like family, like we've been knowing each other for a very long time, and... she's like a sister to me. She knows my family, we know each other's families, we just understand each other, trust each other, like a sister."</p>
	<p>Role of Family Functioning</p>	<p>“I think that’s the source of all the problems and all the violence, and all the negative stuff starts with families. I think that the base of everything, the base of neighborhood, the base of city starts with family.”</p> <p>“I think that another way I look at it, is that half of the people that I believe are gang affiliated is because family has forgotten about them and not paid attention to what they really needed.”</p> <p>“I see that the parents don’t really have time for the kids, they don’t spend family time. They can like find that love somewhere else. Like gangs can say we are a family and we help one another. But when there is a gun shooting it’s like every man for himself, save yourself. You can’t save yourself then that’s too bad. If a family does love each other and they’re there for their family, then they won’t look for love somewhere else and do</p>

<p><b>Route to School</b></p>	<p>Avoiding Certain Areas Within the Neighborhood</p>	<p>other stuff.”</p> <p>“[My mom] don’t even want us after school to be on Cermak. Or it could be broad daylight, 5 in the afternoon, Cermak is the one place we’re not allowed to go. Even our parents always tell us, ‘I don’t want you over there, you guys have no business over there, your house is over here, your friends are here.’ I have friends that live over there, but I can’t go over there to hang out and they can’t come over here and hang out with us. The only times we could chill is at school and that’s it.”</p> <p>“[Farragut Avenue] doesn’t look nice and gang bangers go smoke there. It’s not safe for me.”</p> <p>“For me it’s different because the school is not too far from my house but it’s still kind of scary because I have to pass by the park.”</p> <p>“There was a time when we were walking some students that were not from this area. They weren’t used to anything like this, and they came here just to get to know Little Village. When we were walking, I kept thinking to myself that we can walk to this park and we can’t walk to this one. I didn’t want Little Village to look bad.”</p> <p>“After you pass that you get shot.”</p> <p>“I live around here like Farragut. Why do I feel like I have to walk all the way past 31<sup>st</sup>?”</p>
	<p>Traveling in Groups and Group Affiliation</p>	<p>“I don’t think you’ll be safe if you were just new, and you just got here and you were walking around on your own, because if they say anything to you and you don’t know what’s going on, they could end up doing something to you as in beating you up or shooting you. But if you were with someone you know, I don’t think there will be any problems, because you could let them know I know this person, and they’ll leave you alone.</p> <p>I would tell them it’s safe if you’re with someone who lives around here, so they could let you know where everything’s at, or where anything you need might be at I’d say be careful at night go to the main address and make sure you have someone to take you home. It’s not the best place to be by yourself at night especially if you don’t look like you belong there.”</p>

		<p>“From Fairfield to Hamlin or to Ridgeway, you’ve got the whole things all Latin Kings there. You’ve got it from Hamlin to Kenneth going that way all 26s and you’ve got gang bangers going all up, no down and you’ve got them side to side, all everywhere. Pretty much Little Village is good only if you know people.”</p>
	<p>Safe Route Program</p>	<p>"I was part of a group called "Mikva." The whole point of it was to talk about how our school worked and we talked about things that don't work. We also talked about safe and unsafe places in the community also, and we actually decided where to put community watchers in the community. So that felt cool because we were able to see them where when we walked to school. I think that's one time."</p>

## Spatial Analyses

**Data Preparation.** While the majority of the South Lawndale/Little Village community area as defined by the City of Chicago is a densely populated mix of residential, commercial, and industrial buildings, the region contains an approximately 1.5 square-mile continuous industrial district containing zero residents. Thus, analyses were restricted to a study area that excludes this region for the current manuscript. This restriction of analysis had a minimal effect on the variables under study. Of the 1,209 CPD violent crimes, 12 were lost after restricting the study area. There was no change in youth-report report of violent incidents.

When attempting to analyze aggregated data as part of predetermined spatial units (e.g., blocks or census tracts), the Modifiable Areal Unit Problem (MAUP) may introduce bias. This is due to varying sizes of spatial units and varying methods of drawing area boundaries, which is often arbitrary (Schuurman, Bell, Dunn, & Oliver, 2007). The MAUP describes the differences in statistical results related to the use of data at differing degrees of spatial resolution (i.e., the scale effect) as well as how modifiable areal units can be grouped at a particular scale (i.e., the zoning effect). For example, when total violent incidents are aggregated into census tracts or

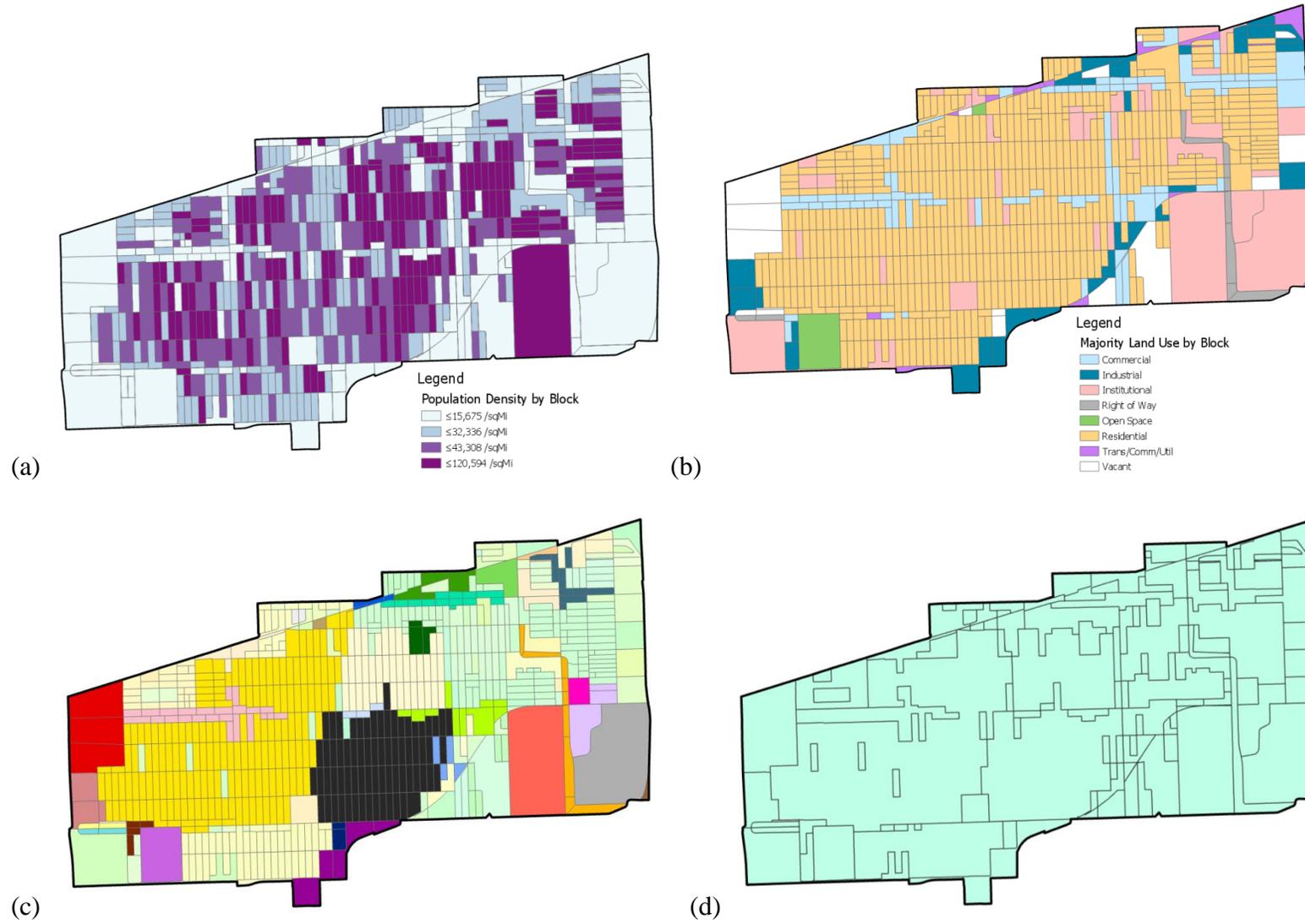
when population density is being determined, the subsequent summary values are impacted by the scale and shape of the aggregation unit (Dark & Bram, 2007).

Special care must be taken when determining the geographic unit of analysis in order to statistically test the relation between neighborhood characteristics, violent incidents, community assets, and social support variables in the current study. Demographic variables used for normalization are available from U.S. census data (City of Chicago Census Data, 2008-2012) at varying levels of geography, with the smallest being individual blocks, followed by Block Groups, and then Tracts. The average block length in Chicago is 660 feet by 330 feet (Chicago Department of Transportation, 2007). With 696 blocks in the Little Village community, this unit of analysis was determined to be unreasonably small and numerous to examine the variables under study and draw meaningful conclusions. In contrast, there is evidence that socioeconomic and demographic differences become smaller as the sizes of geographic units increase and samples within units are increasingly heterogeneous (Quaglia, Lillini, Mamo, Iyaldi, Vercelli, & Group, 2013). Thus, the approximately 43 Census Block Groups in the neighborhood (City of Chicago Census Data, 2008-2012), were determined to be excessively large and insufficient in number to conduct meaningful analysis without diluting results leading to bias.

To address the aforementioned issues using Census Block Groups related to MAUP, the Spatial Constrained Multivariate Clustering (Esri, 2016) tool was utilized to find spatially contiguous clusters of Census Blocks based on a set of physical and social attribute values. A parameter of the clustering is the number of output groups which was set, between the very large count of 696 blocks and the small count of 43 block groups, to 100 to have an adequate number of features for statistical analysis. The following attributes were used to generate 100 clusters: 1) Total Population and Population Density (see Figure 18a), 2) Housing Units by Occupancy

(Chicago Metropolitan Agency for Planning, 2013), which counts housing units by Occupancy versus Vacancy and Renter versus Owner Occupied, and 3) Land Use, which identifies blocks by their majority use (Residential, Industrial, Commercial, Institutional, Transit/Community Use/Utility/Waste). Land use polygon data was mapped for the study area and converted to Majority Land Use type by Census Block through a vector to raster conversion (Esri, 2016) and the use of zonal statistics. Figure 18b depicts the derived majority land use attributes by Census block. It is theorized that these spatial units of analysis are sufficiently small in number and size to be influenced by a variable population structure (Tervonen et al., 2017). Additional physical and social inputs to the grouping approach provide more cohesive and less arbitrary estimates of area units for analysis of the effects of social and community assets on exposure to community violence. The Spatially Constrained Multivariate Clustering Analysis was then performed using the Delaunay triangulation method (see Shewchuk, 2014). The resulting groupings are presented in Figure 18c. These groupings were finalized by dissolving the blocks containing the 100 unique cluster identifiers into 100 new polygon features with a sum of demographic attributes from the source features (see Figure 18d). Given that the sizes of the generated groupings vary significantly by area, normalizing the counts of violent incidents and social and community assets by population (Per Capita) and by square mile (Per Unit Area) is necessary before performing further analysis.

Figure 18. Determining the geographic unit of analysis



**Correlational and Linear Regression Analyses.** The first aim of the current study was to examine the relation between social capital and violent incidents occurring in the neighborhood. Table 18 presents the means, standard deviations, and intercorrelations of the variables under study. Youth spatially identified a total of 89 witnessed or experienced violent incidents, 38 youth programs, and 93 areas of social interaction and support within their neighborhood. In support of hypothesis 2.2 of the current study, an examination of youth qualitative mapping input revealed that youth identified friends and family as safe areas in addition to traditional protective community assets (e.g., churches, youth organizations). Indeed, an examination of youth-inputted text revealed that 44% of safe areas identified were related to these more informal social support networks. Kernel density functions were performed on neighborhood community assets (see Figures 19 and 20) and on social support network locations (see Figures 21 and 22) and were overlaid with youth reported violent incidents and CPD violent crimes.

Table 18. Descriptive statistics and correlations for spatial variables under study

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Youth Report of Violence	0.79	3.21	1										
2. CPD Report of Violence	11.90	28.60	.85***	1									
3. Youth Programs	15.63	57.16	.02	.01	1								
4. Public Schools	9.56	35.36	-.02	-.03	.00	1							
5. Private Schools	6.26	41.73	-.03	-.04	-.03	-.04	1						
6. Places of Worship	19.35	73.22	-.03	-.03	-.06	.00	.44***	1					
7. Youth Homes	5.85	21.49	.27**	.21*	-.07	.11	-.04	-.06	1				
8. Youth Hangouts	24.40	76.18	.03	.00	.22*	.09	.31**	.12	-.03	1			
9. Friends' Homes	5.91	24.35	.36***	.27**	-.03	.10	-.03	-.05	.18 <sup>+</sup>	-.03	1		
10. Community Assets	50.80	116.41	-.03	-.04	.45**	.29**	.61***	.76***	-.05	.32**	-.02	1	
11. Social Support Networks	35.41	82.82	.20*	.134	.17 <sup>+</sup>	.14	.27**	.08	.28**	.91***	.31**	.28**	1

*Note.* <sup>+</sup> $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .00$ . Violent incidents are raw counts by cluster, while the other variables are normalized by area (count per square mile).

Figure 19. Community assets with overlay of youth-report of exposure to violent incidents

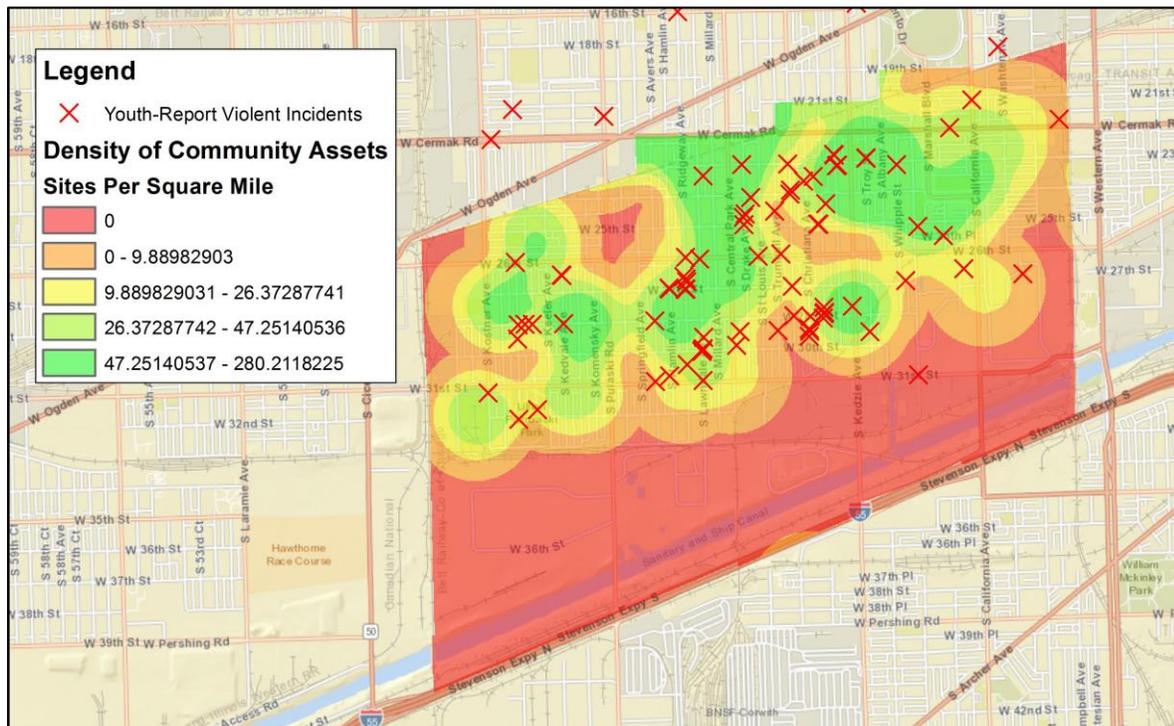


Figure 20. Community assets with overlay of CPD-report of violent crimes

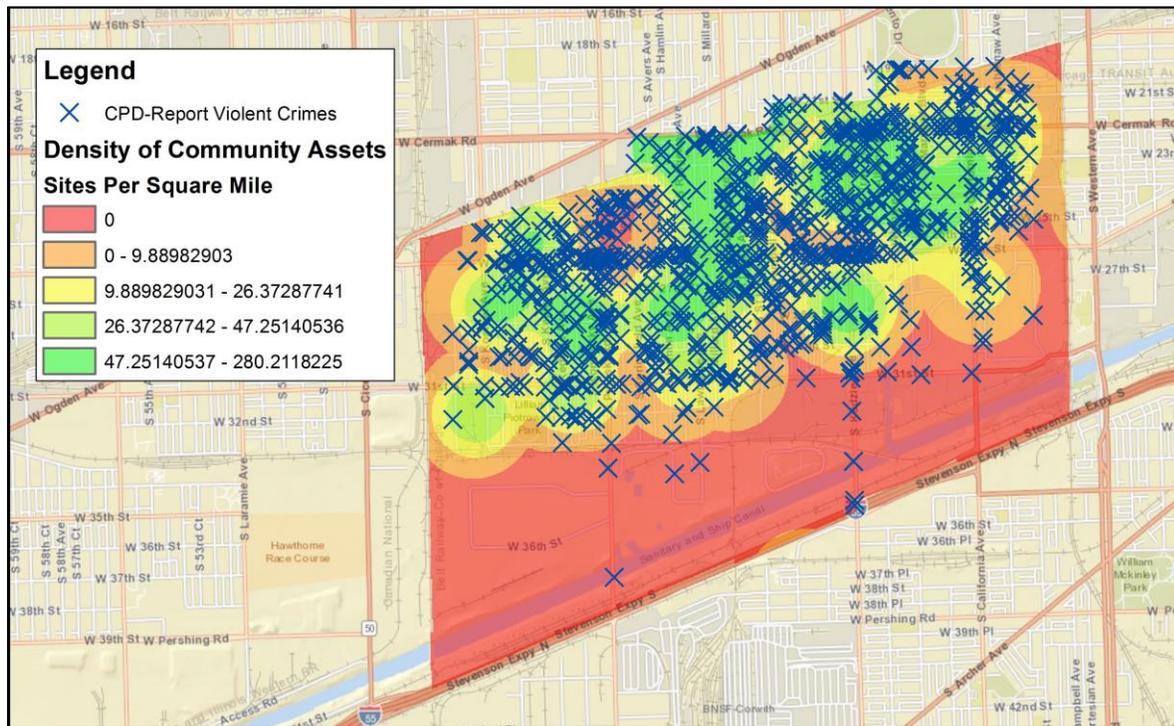


Figure 21. Youth-reported social support networks with youth exposure overlay

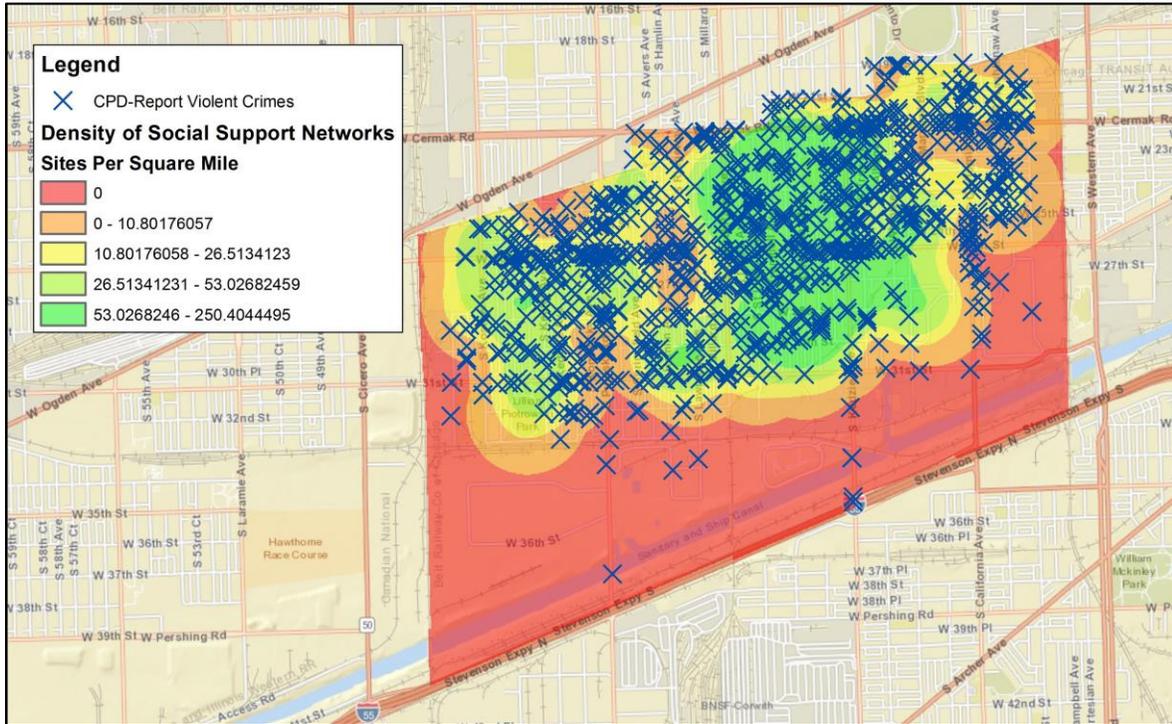
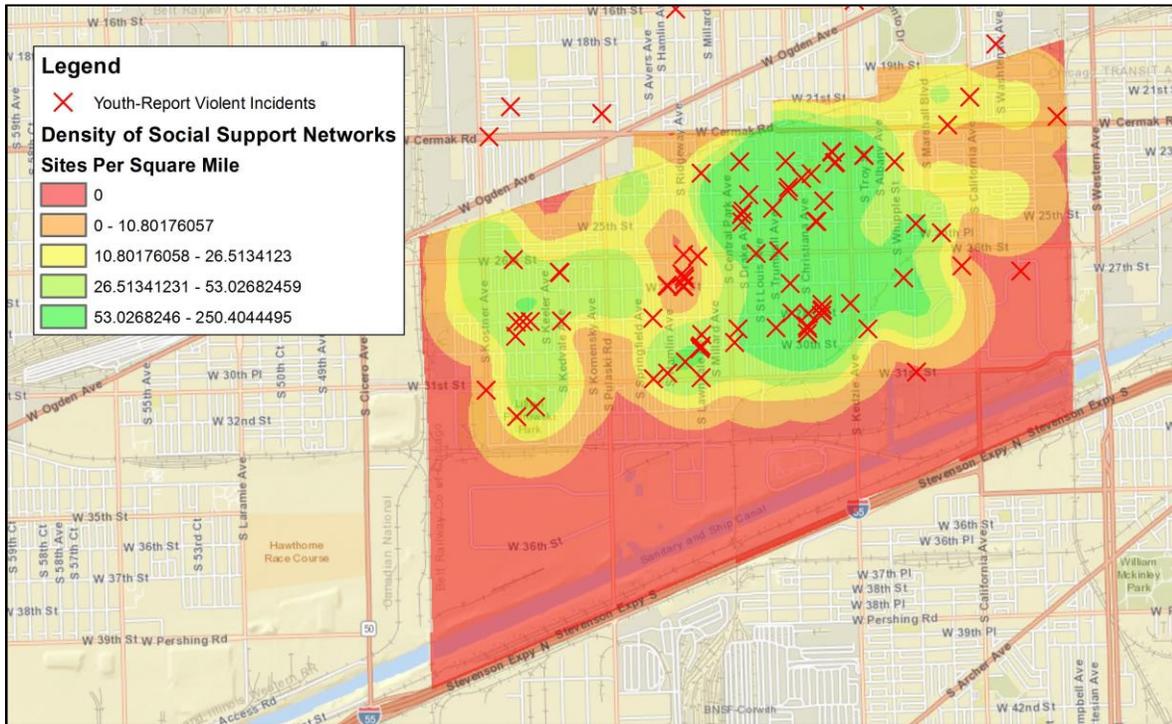


Figure 22. Youth-reported social support networks with overlay of CPD-report of violent crimes



Ordinary Least Squares (OLS) linear regression operations were conducted on the clusters controlling for area to model violent incidents in the neighborhood in terms of their relationship to community assets and social support explanatory variables. Figures 23 and 24 present the units of analysis by OLS model estimates and standard residuals, respectively, for youth exposure reports as predicted by social support location densities.

Figure 23. Clustered units of analysis by OLS estimated dependent variable, youth reported violent crime, as predicted by social support networks

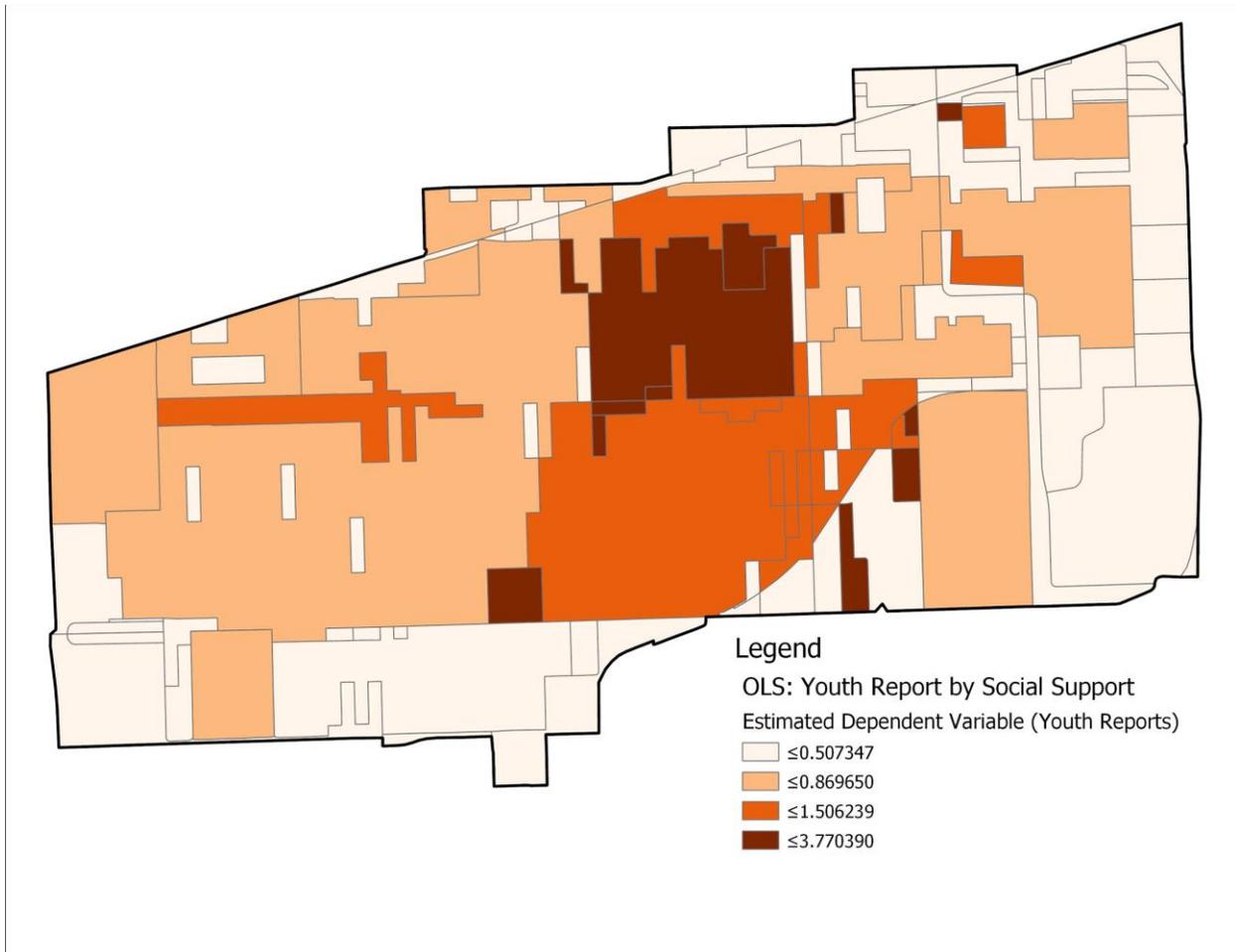
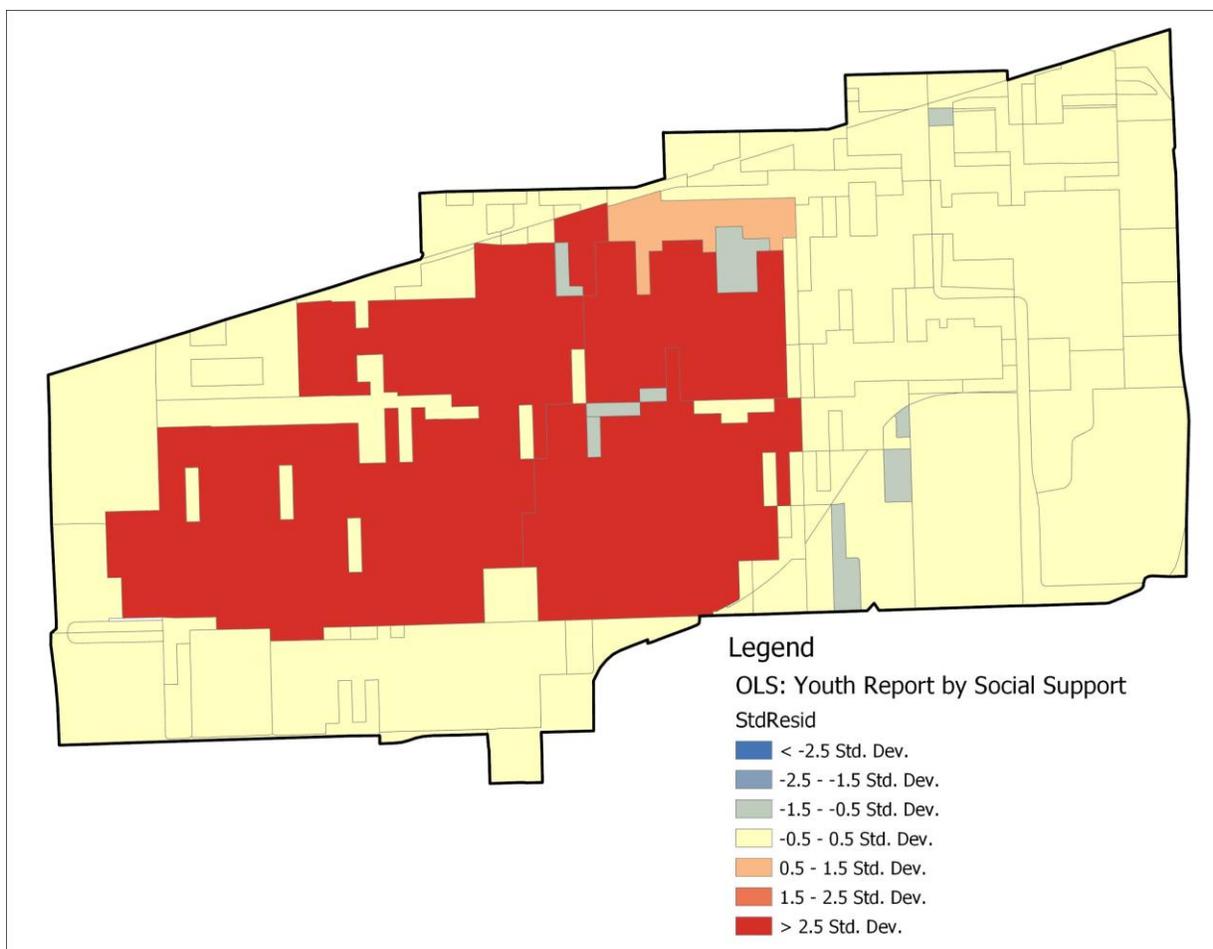


Figure 24. Clustered units of analysis by OLS standard residual for youth reports as predicted by social support networks



It was hypothesized (Hypothesis 1.2) that proximity to community assets would be negatively correlated with youth and CPD-report of violence. Neither the community asset aggregate, nor any of the individual assets (i.e., places of worship, public schools, private schools, youth community programs), accounted for significant variance in reported violence exposure or neighborhood crime. Community assets were shown to be a poor predictor of CPD and youth reports. It was further hypothesized that areas in the neighborhood containing social support networks identified by the youth would be negatively correlated with youth and CPD-

reported violence and crime. In contrast to predictions, the social support network variable significantly explained 3% (adjusted  $R^2$ ) of the variance in youth-reported violence ( $\beta = .008, p = .04$ ), such that increases in the count of these variables resulted in increased youth-reported violence exposure. Aggregated social support networks did not significantly account for variance in CPD-reported violent crime. When examining social support variables individually, overall youth home significantly accounted for 6.1% of the variance in youth-reported violence ( $\beta = .040, p = .007$ ) and 3.3% of variance in CPD-reported violence ( $\beta = .276, p = .383$ ), in the opposite direction than hypothesized. Similarly, youth report of friends' homes significantly accounted for 11.9% of the variance in youth-reported violence ( $\beta = .047, p < .001$ ) and 6.2% of the variance in CPD-reported violent crimes ( $\beta = .313, p = .007$ ). Likewise, this relationship was not in the hypothesized direction, but rather suggests that increased count of friends' homes in the areas resulted in increased violence exposure and crime.

**School route spatial data.** The third aim of the current study was to examine youth-reported routes to and from school in relation to exposure to violence and perceived safety. Youth-reported routes to and from school is presented in Figure 25. The method of transportation for the participants are presented in Figure 26. To determine youth travel through perceived unsafe or gang territories, the Intersection tool in ArcMap was utilized (Esri, 2016) in order to generate a geometric intersection of individual youth route and corresponding individual polygons of unsafe/gang regions. Examination of these youth generated maps revealed that 53.3% of youth reported traversing through areas that they perceived as unsafe or gang territories on their way to school. Of the youth whose route is intersecting with these self-identified regions, the average proportion of distance within a gang territory was 38.85%, which

corresponds to an average of 1,101 feet, and 23.51% proportion of distance on average within perceived unsafe territories, which corresponds to an average of 677.5 feet.

Figure 25. Youth-reported routes to school

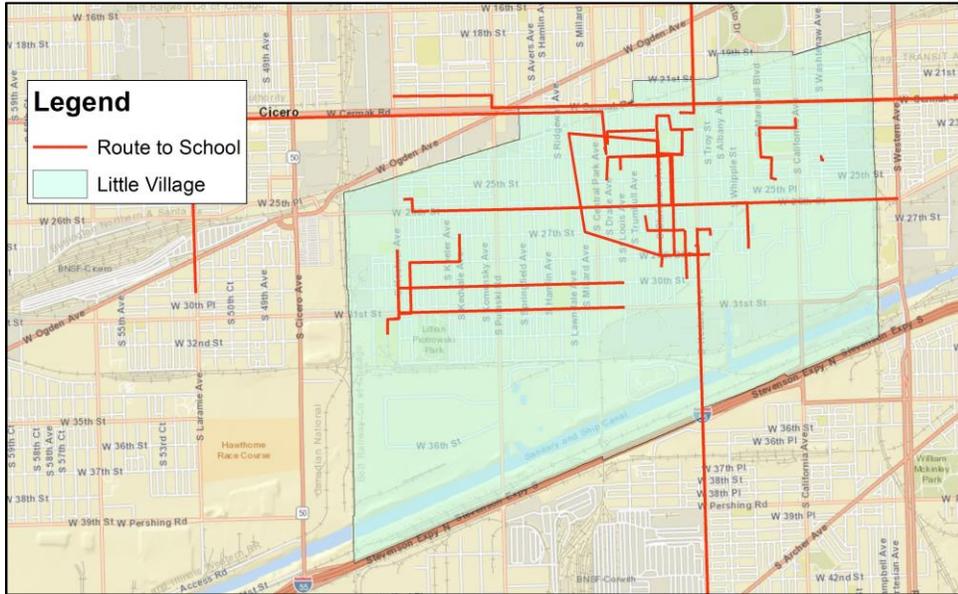
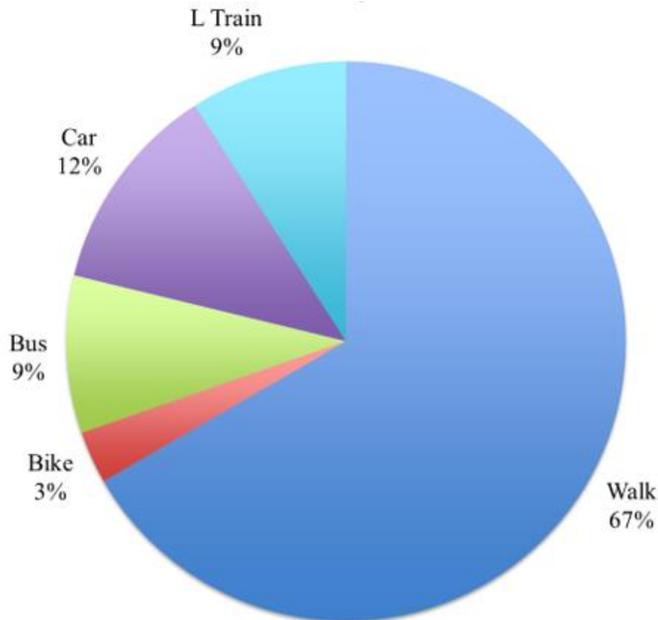


Figure 26. Youth-reported method of transportation to school



## Discussion

This study examined youth perceptions of violence exposure, individual characteristics, family functioning, and various neighborhood features among Latinx youth living in a high violence, low-income neighborhood using a mixed-methods CBPR design. Youth mapping and themes surrounding the deleterious effects and widespread occurrence of exposure to community violence suggest that this problem is salient and produces harmful effects on youth and their families, including internalizing, externalizing, and posttraumatic stress symptomatology. Nonetheless, themes of resilience, in both familial and community contexts, were also revealed. Youth discussed the value and protective nature of family and peer support, church involvement, social capital, and community engagement to buffer the negative effects of violence exposure within their neighborhood.

### **Deleterious Psychosocial Outcomes Following Violence Exposure**

As predicted, all focus groups in the current study discussed the negative effects of violence exposure on emotional and behavioral well-being. The results highlight decidedly stressful aspects of the environment in which youth from Little Village reside, including increased internalizing symptoms following violence exposure. Youth from all groups described feelings of anxiety, especially the fear of violence occurring to themselves or to loved ones. While it is important to note that optimal levels of anxiety are somewhat protective through reduced participation in risky behaviors and enhanced academic involvement, pathological levels of anxiety are reliably related to poor outcomes (Beesdo, Knappe & Pine, 2009; Woodrow & Fergusson, 2001). Consistent with previous literature demonstrating that Latinx youth experience increased depressive symptoms compared with other minority youth (Choi et al., 2006; Mikolajczyk et al., 2007; Ramos et al., 2003; Wight et al., 2005), all focus groups in the current

study described feelings of depression, particularly hopelessness about the future, in the context of violence exposure. Hope has emerged as an important indicator of healthy development and has been negatively associated with depression and risky behavior (Bolland, 2003), and positively associated with scholastic achievement and overall psychological well-being (Gilman, Dooley, & Florell, 2006; Valle, Huebner, & Suldo, 2006) among children living in low-income, urban neighborhoods. Perhaps as a corollary of increased violence exposure and gang involvement, members of the high-risk focus groups described feelings of hopelessness regarding their longevity, predicting a shortened life due to becoming victim to violence within the neighborhood.

A greater number of externalizing behaviors were reported by the high-risk groups in response to violence exposure. This is consistent with previous literature suggesting a link between exposure to community violence and a variety of behavioral difficulties, including aggression and conduct disorder (Galaif, Sussman Chou, & Willis, 2003; McCabe, Lucchini, Hough, Yeh, & Hazen, 2005). Youth from this group also described retaliatory violence between gang-affiliated youth. These findings suggest that interventions should target high-risk youth exposed to violence in order to promote positive coping strategies and improve violence prevention.

The prediction that youth would describe symptoms of posttraumatic stress in the context of exposure to violence within their community was also supported in the current study. An extensive body of literature has demonstrated this relationship in youth, including symptoms of hyperarousal, avoidance, numbing, and re-experiencing symptoms (Berman, Silverman, & Kurtines, 2000; Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009). In the current study, hyperarousal emerged as a prominent response to violence among the high-risk groups,

symptoms of numbing were more salient in the low-risk groups, and avoidance of specific reminders was prevalent across all groups. No participant specifically endorsed re-experiencing symptoms, which may be attributable to the fact that posttraumatic stress symptomatology was not a specific facet of inquiry within the focus group interview scripts. While these symptoms were described as troubling to the youth in the current study, it has been suggested that posttraumatic stress symptoms can be considered an adaptive response to dangerous environments (Garbarino, 2008), in that some of these symptoms result in a reduction of repeated violence exposure endorsed by youth. Thus, symptoms classically associated with posttraumatic stress disorder (e.g., avoidance, hypervigilance) should be considered in light of the context in which the youth reside, and might be considered a healthy response to stress in many cases.

### **Violence Exposure in the Context of School and Route to School**

The current study produced novel findings relating to the perspectives of youth and their perceived safety from violence as they traveled to and from school as well as during school hours. As revealed by focus groups, perceptions regarding safety in school were complicated, only partially supporting the study hypothesis. Previous research has revealed that positive relationships with teachers reduced perceived lack of school safety, and a close relationship between neighborhood satisfaction and school safety perceptions has also been found (Peguero, Connell, Hong, Voisin, & Lee, 2018). While several of youth described their school and teachers as sources of important socioemotional support, others depicted school grounds as regions of pervasive violence. Furthermore, several participants described racial tension and occasional physical confrontations between African American and Latinx students during and immediately following school hours, which is consistent with some literature (Hipp, Tita, & Boggess, 2009). Indeed, previous research has found that youth are more aware of violent incidents that are

taking place closer to school zones while they are less aware of clusters of violent incidents taking place near major intersections and commercial areas as reported by police (Burns et al., 2015). Using a similar sample, Richards and colleagues (2015) reported that school is the location in which most daily violence exposure occurred, regardless of whether it was during the week or on the weekend. Thus, while schools appear to be sources of refuge for which to process neighborhood stressors for some youth, the influence of neighborhood characteristics and exposure to violence within school complicates the notion of schools as safe zones for others.

As predicted and in support of previous literature (Centers for Disease Control and Prevention, 2007), it was revealed that exposure to community violence en route to school represents a significant barrier for the current sample. In fact, the mixed-methods approach of focus group interviews and youth-mapped school routes revealed that approximately half (53%) of the sample traverse perceived unsafe or gang territories and experience fear for their safety during their commute to school. It was also apparent that feelings of safety altered dynamically, depending on companions, time of day, and neighborhood area. The rate of violence reported in this region as identified by kernel density maps for both CPD and youth-report reflects that at least some of the fear experienced by the youth is warranted. This is further alarming as 70% of the current sample walk or bike to school, prolonging their potential exposure during their commute. While Safe Passage programs are in place for some of the schools attended by the current study's participants (City of Chicago, 2016), federal support for the provision of safe routes for students has been losing support in various legislatures (Safe Routes to School National Partnership, 2016). This is in spite of local evidence that violent crime is decreasing along these routes (Chicago Sun Times, 2018). The results of the current study indicate a need for broad and targeted policies to address the safety of children commuting to schools.

## **The Role of Social Capital in the Context of Violence Exposure**

In addition to schools, other aspects of social capital, including community assets, were found to serve a complicated role within the eyes of youth in the context of exposure to community violence. While youth in the current study described parks as valuable assets within the community and sources of neighborhood satisfaction, which is reflective of previous research (Hart & Mueller, 2013), the same youth noted that these regions emerged as locations of risk. Using a daily sampling approach and a similar sample, Richards and colleagues (2015) reported that a disproportionate number of violent incidents were reported in settings of less structure and supervision, such as parks. In contrast to unstructured assets, youth noted the value of after-school program involvement, volunteering, and church involvement. Notably, no significant spatial relationship was found between any of these community asset variables and either youth-reported violence or CPD violent crime, reflecting the complex role that these assets may serve in preventing violence exposure. Garbarino & Sherman (1980) also found that families residing within economically disadvantaged and high-risk neighborhoods did not report positive evaluations of community activities and the neighborhood as a whole. Participation in extracurricular activities; however, has been previously linked with a host of positive developmental variables, including academic performance and psychological well-being (Larson & Brown, 2007; Wood, Larson, & Brown, 2009). Extracurricular involvement, in general, has also been associated with fewer externalizing behaviors and exposure to community violence (Haradaway, McLoyd, & Wood, 2012; Richards et al., 2004). Indeed, many of the youth in the current study indicated that these organizations are means of empowerment and opportunities to demonstrate leadership in their school environment and community. Unfortunately, participation can also mean youth are traveling home later in the day and thus, may be exposed to more

violence as most violent crime occurs during after-school hours (Salzinger, Feldman, Stockhammer, & Hood 2002).

Another source of social capital, peer support and informal leisure activity, represented a mixed role in preventing or ameliorating the negative effects of violence in the lives of these youth. Youth described social support as an integral aspect of promoting positive psychosocial development, which is in keeping with previous research demonstrating a link between social capital and neighborhood well-being (Putnam, 2000). The youth described traversing and interacting with the neighborhood as a social unit, in that they relied on strength in numbers to avoid violence and aggressive confrontation. In fact, the GIS mapping data indicated that approximately half (44%) of protective and safe areas in the neighborhood identified by youth were informal peer hangouts, such as friends' homes, malls, and restaurants.

Previous literature has supported the protective-stabilizing role of social support factors in the context of increased violence exposure (Hammack, Richards, Luo, Edlynn, & Roy, 2004). However, spatial analyses revealed that the relationship between social support networks (youth homes and friends' homes) and community violence was not in the hypothesized direction, but rather suggests that increased proximity to these variables resulted in increased youth-reported crime, even after controlling for population and land use variables. This finding may simply indicate that youth spend greater amounts of time in areas near their homes and friends' homes, and are therefore at increased risk for violence exposure in these areas. The association of CPD reports with aggregated and individual social support network assets (home and friends' homes) is likely based on various other neighborhood characteristics that occur near these assets, but modeling with the data collected in this study is unable to fully explain this association. While OLS regression can be a powerful exploratory tool for determining significant independent

variables, the current study finds that these models using community asset and social network densities as explanatory variables are biased and cannot, by themselves, explain the location of violent incident reports. Nevertheless, these findings are further confirmations of the concept that increased time spent with peers and in public outdoor places is associated with increased exposure to community violence (Goldner et al., 2011). The notion that this may also be linked to behavioral and academic problems for low-income adolescents in high violence neighborhoods (Richards et al., 2004) further elucidates the potential negative effects of unstructured time with peers.

Perhaps the most important explanation for the lack of protection offered by social and community assets is related to entrenched poverty within this community. Violence levels vary significantly across neighborhoods in the U.S., with concentrated poverty highly correlated with high levels of violence (Gennetian et al., 2012). Despite an overall growth in the economy, income inequality has steadily increased, with high concentrations of poverty in many urban areas (Briggs et al., 2010). This phenomenon is particularly pronounced among ethnic minority communities, with 28% of Latinx American youth under 18 years of age classified as poor and 11% as living in deep poverty (Koball & Yang, 2018). Additionally, firearm exposure is widely prevalent within these pervasively poor communities (Quimby, Deane, Richards, Rice, DiClemente, 2018), which may further contribute to violence exposure. Thus, while improving access to these community and social assets (e.g., after-school programs, churches, violence prevention programs, supportive families) may be beneficial for positive youth development, it may not be a sufficient approach above and beyond a focus on the reduction of entrenched poverty and firearm exposure.

An additional component of social capital, a child's family, emerged as an important

protective factor from the focus groups in preventing violence exposure within the neighborhood, as well as buffering the negative effects of violence exposure on various maladaptive outcomes. In support of previous research (Ensminger et al., 1996; Outley & Floyd, 2002; Fursternberg et al., 1999), the youth from the current study revealed that several of their parents employed a variety of strategies to minimize danger in their environment, including enforcing curfews, restricting areas of allowable travel, and encouraging traveling within groups. Youth also described relying on family members, particularly parents, when attempting to process stressful events. However, perhaps given developmental trajectory, older adolescents from the groups discussed the occasional limited efficacy in curbing these perceived risky behaviors. Interestingly, GIS analyses revealed that increased proximity to youth homes, which may serve as a proxy to family, led to increased levels of youth-reported violent crimes. This is likely due to the aforementioned issue of youth observing more violence where they spend more time. In fact, while some youth reported that their home was the only location wherein they felt safe in Little Village, others specifically mentioned feeling unsafe in the area near their home. Relatedly, youth from all groups noted that deficient family functioning, monitoring, and support may lead to increased externalizing and internalizing outcomes among their peers, which is a notion supported in the literature (Halpern, 2004; Reese, Vera, Simon, & Ikeda, 2000).

Despite considerable diversity among Latinx groups, specific cultural values, such as *familismo*, represent commonalities often noted across Latinx families (Cruz-Santiago & Ramirez Garcia, 2011), and may denote a protective factor in the context of a dangerous neighborhood. *Familismo* involves prioritizing family over individual needs, maintaining a strong sense of loyalty and unity with one's family, and increased reliance on family for social support (Calzada, Fernandez, & Cortes, 2010). Thus, the macrolevel influence of family

involvement appears to protect against the negative effects of violence exposure by providing an alluring alternative to spending time at unstructured activities within the neighborhood (Guilamo-Ramos et al., 2007). In addition, as youth in the current study reported reliance on family members to promote psychological well-being, family cohesion and support may have attenuated the effects of community violence exposure on anxiety, depression, and posttraumatic stress symptoms (Scarpa et al., 2006) within the current sample.

### **Limitations of the Current Study**

The findings of the current study should be interpreted considering methodical and sampling limitations. An important limitation to note is the relatively small sample size, both in terms of number of adolescents surveyed and neighborhoods examined, potentially introducing a bias and reducing generalizability. Another potential limitation is the homogenous sample in terms of ethnicity and geographic location. Though the current sample of low-income Latinx youth represents a particularly underserved and at-risk population, the specific nature of the sample could reduce external validity and generalizability to other populations. Furthermore, the cohorts of youth were predetermined by the community partner, which introduced a set of limitations that are important to note. Firstly, as focus groups were mixed gendered, a thorough evaluation of the role of gender within groups was not possible despite potential gender differences in the experience of, and response to, violence exposure (e.g., Zona & Milan, 2011). Moreover, while the focus groups were comprised of varying ages, the youngest children were in a high-risk group, while the oldest participants were in the mixed-risk group. Thus, age may be a confounding variable in drawing conclusions from focus groups based on risk level.

Further limitations were related to the GIS methodology. Given insufficient data inputted by youth, the current study was unable to systematically and meaningfully examine the

unsafe/safe/gang territories identified by youth, aside from the examination of the intersection through these regions on routes to and from school. Future research should set clear parameters on selection of these areas using geographic software, including instruction on completing all fields of data, standardized units of analysis, such as the utilization of a fishnet grid (Irfan, Koj, Thomas, 2017), and clearer instruction on functionality, navigation, scale, and search.

### **Future Research & Implications**

Future research would benefit from the continued use of CBPR design to investigate community violence, its sequelae, and various protective factors. The partnership with the community organization and the implementation of CBPR provided several significant benefits to the current study, foremost being a fruitful dialogue between community stakeholders and the research team, which offered a unified understanding of the study's purpose and method. The research team aimed to ensure that individuals involved were empowered through the research process by fostering opportunity for both the youth and community leaders to identify the strengths and challenges experienced within their neighborhood (Nelson, Kloos, & Ornelas, 2014). Moreover, both parties mutually benefited from this collaboration. Both the research team and the community staff communicated results with the goal of informing successful programming within the organization to ultimately extend this information to other programs within the Little Village community.

Future research should conduct CBPR and mixed-methods designs with larger samples of youth, including youth from differing backgrounds. Such research may further elucidate perceptions of neighborhood and violence that more precisely reflect the experiences of the larger population of urban youth. GIS approaches in particular are uniquely positioned to facilitate integration of qualitative and quantitative data. Future studies should continue to use

GIS-informed approaches as an exploratory tool to investigate neighborhood perceptions and experiences of youth. Additionally, a mixed-methods paradigm with longitudinal collection of data would allow investigators to gauge the long-term effects of community violence exposure as well as how youth perception of neighborhood fluctuates over time.

Replications of this study in other regions and by other community organizations could provide communities with tools to analyze, discuss, and target violence reduction efforts. In addition, other explanatory variables should be investigated to refine the model for both police and youth-report violence. Examples of predictors of community violence that may be investigated using this approach include reported gang activity, population density, time of day (Richards et al., 2015), socioeconomic variables, industry type, levels of employment, gender (Zona & Milan, 2011), and concentration of vacant buildings. Furthermore, while the use of Spatially Constrained Multivariate Clustering Analysis (Esri, 2016), reduces arbitrary estimates of area units and allows for the consideration of several control variables when conducting OLS regressions, future studies may consider geographically weighted regression as an alternative approach. As Tobler (1970) noted, “Everything is related to everything else, but near things are more related than distant things.” As similar variables cluster together on a map, such as the occurrence of violence or the presence of community assets, the assumption that observations are independent from one another is violated. Thus, geographically weighted regression may be a way to account for the phenomenon of spatial autocorrelation when predicting what variables influence this incidence of violence.

The distinctive use of mixed-methods CBPR has revealed several potentially profound applications for policy and intervention. A similar GIS approach could be produced and utilized by other violence prevention organizations in order to track violence rates in an organized

manner as well as specifically tailor meaningful interventions based on focus group feedback. Similar methodologies could be used to evaluate the Chicago Public School's Safe Passages program to identify specific routes where safe passage is needed, as well as an ongoing evaluation of effectiveness through the eyes of the youth. Utilizing collaborative projects founded in the CBPR model, violence prevention and other youth organizations may explore the significant needs of the youth they serve and how they can best serve that particular community and neighborhood. Furthermore, current findings suggest that mental health providers should be cognizant of the multi-systemic factors that influence Latinx youth living in low-income communities, including fostering positive coping mechanisms in response to exposure to community violence (Reingle et al., 2013). Interventions should encourage and incorporate involvement in structured after-school programs as well as target family functioning through the promotion of family cohesion, monitoring, and support in these communities. Finally, as protection from violence during school hours and travel to school is a nationwide concern, findings of the current study support the notion that policies should be adopted to improve neighborhood and school safety in urban communities across the U.S.

## CHAPTER FIVE

### DISCUSSION

The overarching aim of this dissertation is to advance knowledge on the interrelations between exposure to community violence, posttraumatic stress, maladaptive outcomes, and family functioning among ethnic minority adolescents residing in economically disadvantaged urban neighborhoods. Furthermore, each study in this collection utilized varying methodologies and measurements of violence exposure, its sequelae, and familial and social protective factors. These differing approaches fill a gap within the current literature that is noted for reliance on retrospective questionnaires, cross-sectional designs, and lack of theoretical basis, which impede a cohesive understanding of the nature and effects of violence exposure on youth. In addressing this alarming problem, clinicians, scholars, and policymakers alike can benefit from different and sophisticated investigations into these relationships. The first study, found in Chapter Two, utilized traditional questionnaires to examine the longitudinal effects of violence exposure on various outcomes, with posttraumatic stress as a mediator and with family functioning moderating this mediation relationship, among a sample of low-income, ethnic minority youth. Chapter Three expanded on the investigation into these variables within the same sample by using a time sampling methodology examining more immediate effects of community violence exposure on various outcomes. This study also examined the contextual factors of an individual's emotion regulation and family functioning on same-day and next-day outcomes. Finally, Chapter Four explored the variables of community violence exposure, deleterious effects, and potential

protective factors by using CBPR and GIS design to examine a youth's perspective within home, school, and neighborhood contexts. This final chapter will briefly summarize each of the empirical chapters and draw conclusions regarding policy and intervention implications across the studies.

### **Measuring Community Violence Exposure and Related Variables Using Questionnaires and ESM**

Chapter Two provided the foundation for the empirical analyses of the dissertation, examining exposure to community violence, family functioning, posttraumatic stress, and externalizing symptomatology among low-income, African American youth. This study used established, well-validated self and parent report questionnaires and ESM measures. It had four overall goals: 1) examine associations between family cohesion (self-report questionnaire) as well as daily family support (ESM) with posttraumatic stress and externalizing symptoms, 2) examine posttraumatic stress symptoms as a mechanism for change (i.e., mediator) in the relation between exposure to community violence and externalizing outcomes, 3) examine the moderating role of family functioning on this mediating effect, and 4) examine the role of gender in moderating the strength of the conditional effect. Most existing studies examining these variables used cross-sectional design, used single informant as opposed to child and parent-report, and used limited samples in terms of ethnicity and socioeconomic status. Additionally, most previous literature solely examines individual characteristics and overlooks potential buffering variables in the adolescent's environment.

Consistent with previous literature, results of this project revealed that family cohesion and daily family support were related to outcome variables and appeared to exhibit a protective-

stabilizing or buffering effect for several of the proposed outcomes. Extending past previous literature, two further findings arose as salient. Firstly, results from the analyses using PROCESS bootstrapping longitudinally demonstrated that posttraumatic stress symptomatology mediated the effect of witnessing community violence on subsequent parent-reported aggression. Secondly, the strength of the indirect effect of exposure on aggression was dependent on degree of family cohesion in that the relation between these two variables emerged as significant only for children from families low to very low in cohesion. This finding underscores the protective role of family functioning. Notably, similar findings were not found for youth-reported delinquency, suggesting that parent and adolescent views on violence exposure and subsequent outcomes may differ from one another. Future research should examine family functioning using varying methodology, such as qualitative investigations or observational samples, as well as continuing to obtain information from multiple reporters, to provide a rich representation of family functioning. Furthermore, future studies should examine heterogenous samples across differing ethnic, socioeconomic, age, and geographic divides to establish generalizability of these findings.

### **Measuring Community Violence Exposure and Related Variables Using a Daily Sampling Approach**

With improved understanding of the interrelations of exposure to community violence, posttraumatic stress, aggression, and family functioning, Chapter Three built upon these variables, as well as the individual characteristics of emotion regulation and internalizing symptoms, among the same sample using a distinctive combination of ESM and a daily sampling approach. This procedure allowed for an investigation into the more immediate effects of

violence exposure on adolescent's well-being. This project was characterized by three principal aims: 1) examine the predictive nature of daily violence exposure on same-day and next-day posttraumatic stress symptomatology and the negative feeling states of dysphoria, anxiety, and hostility, 2) examine the buffering role of family cohesion and daily family support against the harmful impact of daily violence exposure on same-day and next-day deleterious outcomes, and 3) examine the moderating role of emotion regulation on these pathways as determined by the individual variability (standard deviations) in dysphoria, anxiety, and hostility. Using ESM and daily diary methodology, this project fills a gap in the literature, which has primarily relied upon retrospective questionnaires that are prone to bias and underestimation. This time sampling approach theoretically results in improved ecological validity as well as allows for investigation of short-term fluctuations in symptoms and an examination of within-person variability.

In alignment with previous literature, Chapter Three revealed a negative association between family cohesion and deleterious outcomes, including posttraumatic stress, dysphoria, hostility, and the emotion dysregulation variable of dysphoria. Additionally, analyses indicated that daily family support was linked with reduced posttraumatic stress, dysphoria, and dysphoria variability. Expanding beyond previous literature, it was also revealed, through the use of HLM time-lagged analysis, that daily exposure to violence had either an immediate or next-day effect on youth posttraumatic stress, dysphoria, anxiety, and hostility levels throughout the week of data collection. In contrast to previous literature, moderation containing family functioning variables within these models were not significant. It is conceivable that the context of the family does not have an immediate influence on same-day or next-day mood following exposure to a violent incident, but rather is more effective in buffering this relationship over a longer period.

Additionally, harmful outcomes experienced by youth following acute violence exposure may require more care than a family is able to immediately provide. Chapter Three also revealed several important interactions between emotion dysregulation and violence exposure in predicting various outcomes. For example, individual variability in dysphoria, anxiety, or hostility exacerbated the effect of daily violence exposure on concurrent or next-day posttraumatic stress, dysphoria, and hostility. This suggests that emotion dysregulation and fluctuation is associated with emotional maladjustment in the context of violence exposure. Future research should involve investigation into what specific variables beyond cohesion and support within the family promote positive youth development and prevent negative sequelae. Future studies should also continue to examine these variables using a mixed-methods and mixed-source design with differing populations to determine whether the immediate effects of violence exposure, the role of family functioning, and the role of emotion regulation apply across other groups.

### **Measuring Community Violence Exposure and Related Variables Using CBPR, Focus Groups, and GIS**

The final project, presented in Chapter Four, shifted the focus to the study of these variables using CBPR design in order to emphasize individual youth perspective. Using both spatial and qualitative data, this chapter examined the interrelations of community violence exposure, externalizing, internalizing, and posttraumatic stress outcomes, and the influence of family functioning in Latinx youth living in an economically disadvantaged, high violence community. Moreover, this study added to the previous chapters with an examination of neighborhood characteristics, including community assets and social supports. The project had

three primary goals achieved via GIS mapping and focus group interviews: 1) examine how youth experience and respond to community violence exposure and its relation to community assets (i.e., churches and places of worship, libraries, private and public schools, youth and community organizations, parks), and social support networks, (i.e., youth's home, friends' homes, hangout areas), 2) examine what youth identify as sources of support, including the role of family, in mitigating the negative effects of violence exposure, and 3) examine violence exposure in the context of passage to and from school within the neighborhood. This project addressed several gaps in the literature by examining community and individual constructs to describe interrelations of these elements within both a spatial and qualitative context. Studies examining variables through a youth perspective are rare, even fewer employ GIS technology, and only a handful have used a mixed-methods approach to describe youth exposure to violence and experience of neighborhood.

This project further confirmed the deleterious effects and widespread occurrence of exposure to community violence through youth mapping and focus group themes, including internalizing, externalizing, and posttraumatic stress symptomatology. However, the study also revealed themes of resilience in familial and community contexts. Youth described the protective nature of family, teacher, and peer support, church involvement, and community engagement in buffering the negative effects of violence exposure within their neighborhood. The study also produced novel findings relating to the perspectives of youth regarding violence experienced at and en route to school, painting a complex picture of school as a mixed source of support and danger. GIS regression analyses revealed that youth experienced increased violence exposure near hypothesized community assets, which indicates that these assets are insufficient in

reducing exposure to community violence. However, focus groups and GIS mapping by youth revealed the protective role of many of these assets, suggesting that they may serve as protective in ameliorating the negative effects following exposure. Future research should continue to utilize the advantageous community-emphasized approach of CBPR as well as mixed-methods designs examining these variables, especially with larger samples of youth.

### **Overarching Findings**

In addition to the individualized conclusions enclosed within each chapter, the empirical chapters of this dissertation yielded four general and overarching conclusions. First, exposure to community violence is a pervasive problem experienced to a widespread degree by the two samples within this dissertation, composed of low-income ethnic minority youth in urban communities. The differing methodologies led to varying rates of violence exposure across studies, however. Using daily diary methodology, Chapter Three showed that, on average, youth in the sample reported being exposed to at least one act of community violence per day. Chapter Two, which employed a retrospective assessment approach, also found a high rate of yearly exposure, though this was lower than the time-sampling method. The higher rate of exposure measured by the daily time sampling technique suggests that self-report, yearly questionnaires may be underestimating the regularity of this concern. Chapter Four presented corroborating evidence for the prevalence of violence exposure using spatial and focus group data. The sample of 40 Latinx participants mapped 88 violent exposures occurring within their neighborhood over the past year. This method of measuring violence provided a rich set of data, which also included location and qualitative experience of violence exposure. Future studies may consider the use of a multi-method and multi-source approach to examining exposure to community violence

exposure and related outcomes based on these differing findings depending on theoretical foundations and scope. Furthermore, while investigation of these variables among high-risk populations is essential, replication of these results among children representing diverse ethnicities and socioeconomic contexts is recommended.

A second conclusion that can be drawn from these projects is that exposure to community violence within adolescence results in the development of immediate and long-term deleterious effects. Each chapter demonstrated the negative effects of violence exposure on the development of externalizing, internalizing, and posttraumatic stress symptomatology. Chapter Two demonstrated that increased violence exposure in one year is linked with increased posttraumatic stress and aggression in the following year. Chapter Three expanded on these findings by demonstrating the more immediate effect of violence exposure on next-day hostility, anxiety, dysphoria, and posttraumatic stress. The investigation of daily community violence exposure and immediately occurring and next-day effects within a low-income, urban, ethnic minority sample is especially important as this population is exposed to the highest levels of daily community violence. Using qualitative interview analyses, Chapter Four revealed that youth from all focus groups, regardless of age and risk, discussed the negative psychosocial effects of violence exposure, including anxiety, depression, externalizing, and posttraumatic stress. These interviews also highlighted the concepts of hopelessness, gang retaliatory violence, and hypervigilance within these negative outcomes. Future research should examine the mechanisms underlying specific facets of internalizing and externalizing, such as individual posttraumatic stress symptom clusters. Each empirical chapter also discusses the potentially adaptive response of

posttraumatic stress symptomatology that youth may employ within communities experiencing high rates of violence.

A third conclusion that can be gleaned across these studies is that family functioning may be especially protective for adolescents at risk. In keeping with a risk and resilience and ecological-transactional framework, all three empirical chapters sought to incorporate and investigation into multiple systemic factors beyond individual characteristics that may serve to mitigate the negative effects of violence. Both Chapters 2 and 3 demonstrate the negative associations between daily family support, family cohesion, and maladaptive outcomes. Family cohesion and connection between family members may be related to effectiveness in coping with environmental stressors within the environment. Furthermore, a supportive family may provide these adolescents with an environment that facilitates the processing of negative events, such as chronic violence exposure. Chapter Four partially confirmed these findings, with youth across risk groups identifying family as an integral resource in preventing violence and reducing its negative effects. Furthermore, youth from this project indicated that family monitoring may serve to reduce the amount of exposure to violence experienced within the community through the enforcement of curfews, spatial restriction, and encouraging more time spent within the child's home.

One final conclusion that can be made across all three studies is that, despite its apparent importance, positive family functioning may not be sufficient to alleviate the negative effects of acute violence exposure across all contexts. While Chapter Two demonstrated the protective-stabilizing effect of family cohesion following witnessing community violence, this effect was not noted for youth who were victimized by violence. Furthermore, Chapter Three demonstrated

that family functioning variables did not serve as significant moderators between daily violence exposure and concurrent or next-day deleterious outcomes. It may be that the role of family functioning does not exert an immediate effect on violence, but rather that these variables are more important over longer periods. These findings may also be explained by the possibility that repeated or acute violence exposure results in a severe presentation of negative outcomes that are not remediated by a family's support or cohesion alone. Chapter Four further sheds light on this issue through youth excerpts suggesting that the family influence wanes as the youth progress through adolescence. Moreover, youth social support variables, including the clustering of youth family households, appeared to be ineffective in preventing police-reported and youth-reported violence exposure. This may indicate that entrenched poverty within these communities contributes to rates of violent crime over and above potential absence of social and community assets within the neighborhood. Further research is critical in order to sufficiently understand the context and mechanisms through which family functioning prevents maladaptive outcomes in youth.

### **Implications for Intervention and Policy**

Composed of three projects addressing individual, family, and neighborhood contexts, this dissertation utilizes a multi-systemic approach to informing efforts to reduce violence exposure and its deleterious among youth living in low-income, urban environments. Results from these chapters reveal several implications for intervention and policy at both the local and national level. Given the high rate of exposure to violence reported across the samples in these studies, preventative policies and interventions should focus on fostering safe environments for ethnic minority youth living in economically disadvantaged communities. This would involve

the promotion of stable and structured school and after-school activities, which are often not available for populations that are most at-risk for violence exposure. Given the experience of violence in the community and near schools, these studies provide evidence in favor of broad and targeted policies to address the safety of children commuting to their school. The distinctive approaches outlined in these studies, particularly the use of time-sampling measurement, GIS technology, and CBPR approach, have profound potential in terms of application for violence prevention organizations and local governments. The ability to obtain valid, longitudinal, and individualized information through these methods could be utilized to track violence rates and tailor meaningful intervention and programming. Using these approaches also allows for collaboration with community organizations to explore the significant needs of the youth served and the specific needs of communities in which they are applied.

Several implications for policy and intervention emerged in terms of protective and moderating variables examined across the three studies. More resources should be provided to establish preventative interventions housed within schools or after-school programs that focus on providing environments for youth to express their emotions regarding violence exposure and teach strategies to promote healthy emotion regulation skills. Providers are furthermore encouraged to be cognizant of the intertwined nature of community violence exposure and how the various deleterious outcomes affect ethnic minority youth living in these environments. Interventions targeted to the needs of youth living in these environments may benefit from specifically targeting hostility due to elevations in internalizing mood states following exposure. The findings also offer evidence in support for interventions provided at both individual and family levels. It may also be useful to inquire about family functioning characteristics when

working with adolescents who present with posttraumatic stress symptomatology. Finally, the associations revealed between family functioning and negative outcomes offer support for the provision of interventions focused on improving family support and cohesiveness.

### **Conclusion**

In summary, this dissertation produced further understanding of exposure to community violence, its negative sequelae, and various protective factors, such as family functioning, among adolescent youth. The studies presented here employed a variety of distinctive and advantageous approaches to measuring these variables that offer nuanced understanding of the interlocking nature of these constructs as well as blueprints for further scientific inquiry. The pervasiveness and broad negative effects of violence exposure in the lives of youth, in particular those living within and navigating urban neighborhoods, confirm the necessity for continued research in this area to contribute to theoretical understanding, to inform preventative and intervention methods, to augment pathways of healthy development, and to galvanize policy change and resources to confront this pervasive problem.

## REFERENCE LIST

- Achenbach, T. M. (1991). The child behavior checklist 4–18 and 1991 profile. Burlington, VT: University of Vermont, Department of Psychiatry.
- Aisenberg, E., & Ell, K. (2005). Contextualizing community violence and its effects. *Journal of Interpersonal Violence, 20*(7), 855–871. doi:10.1017/S0954579409000145
- Allwood, M. A., & Bell, D. J. (2008). A preliminary examination of emotional and cognitive mediators in the relations between violence exposure and violent behaviors in youth. *Journal of Community Psychology, 36*(8), 989–1007. doi:10.1002/jcop.20277
- Alvord, M. K., & Grados, J. J. (2005). Enhancing resilience in children: A proactive approach. *Professional Psychology: Research and Practice, 36*, 238–245.
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, DC: Author.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed. Text revision). Washington, DC: American Psychiatric Association.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Angold, A., Costello, E.J., Worthman, C.M. (1998). Puberty and depression: The roles of age, pubertal status and pubertal timing. *Psychological Medicine, 28*, 51–61.
- Bacchini, D., Concetta Miranda, M., & Affuso, G. (2011). Effects of parental monitoring and exposure to community violence on antisocial behavior and anxiety/depression among adolescents. *Journal of Interpersonal Violence, 26*(2), 269-92.
- Beesdo, K., Knappe, S., & Pine, D. S. (2009). Anxiety and anxiety disorders in children and adolescents: developmental issues and implications for DSM-V. *Psychiatric Clinics of North America, 32*(3), 483-524.
- Bell, C. C., & Jenkins, E. J. (1993). Community violence and children on Chicago's southside. *Psychiatry, 56*, 46–54.
- Benoit, M., Bouthillier, D., Moss, E., Rousseau, C., & Brunet, A. (2010). Emotion regulation

- strategies as mediators of the association between level of attachment security and PTSD symptoms following trauma in adulthood. *Anxiety, Stress & Coping: An International Journal*, 23, 101–118.
- Berman, S. L., Silverman, W. K., & Kurtines, W. M. (2000). Youth exposure to crime and violence: Its effects and implications for intervention. *Journal of Cognitive Psychotherapy*, 14, 37-50.
- Bocanegra, K. & Rak, K. (2015). Little Village youth safety map. Enlace Chicago, 1-29. Retrieved from <https://drive.google.com/file/d/0B7hfYz0mVSz1TmduLXFzRDRRZFk/view>.
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual review of psychology*, 54(1), 579 – 616. doi: 10.1146/annurev.psych.54.101601.145030
- Bolger, N., & Laurenceau, J. P. (2013). *Intensive longitudinal methods: An introduction to diary and experience sampling research*. New York, NY: Guilford.
- Bolland, J.M. (2003). Hopelessness and risk behavior among adolescents living in high-poverty inner-city neighborhoods. *Journal of Adolescence*, 26, 145-158.
- Boots, B. (1999). Spatial tessellations. In P.A. Longley, M.F. Goodchild, D.J. Maguire, & D.W. Rhind (Eds.), *Geographical information systems: Vol. 1. Principles and technical issues* (2<sup>nd</sup> ed. Pp. 503- 526). New York: Wiley.
- Bradshaw, C., Rodgers, C., Ghandour, L., & Garbarino, J. (2009). Social–cognitive mediators of the association between community violence exposure and aggressive behavior. *School Psychology Quarterly*, 24(3), 199–210.
- Briere, J. (1996). *Trauma symptom checklist for children: Professional manual*. Florida: Psychological Assessment Resources Inc. doi: 10.1017/S0954579409000145
- Briggs, X. de S., Popkin, S.J., & Goering, J. (2010). *Moving to Opportunity: The Story of an American Experiment to Fight Ghetto Poverty*. Oxford University Press, U.S.A.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Brownlee, K., Rawana, J., Franks, J., Harper, J., Bajwa, J., O'Brien, E., & Clarkson, A. (2013). A systematic review of strengths and resilience outcome literature relevant to children and adolescents. *Child and Adolescent Social Work Journal*, 30(5), 435-459.

- Buka, S. L., Selner-O'Hagan, M. B., Kindlon, D. J., & Earls, F. J. (1997). The "My Exposure to Violence Interview" administration and scoring manual, Version 3. Boston: Harvard School of Public Health.
- Buka, S. L., Stichick, T. L., Birdthistle, S., & Earls, F. J. (2001). Youth exposure to violence: Prevalence, risks and consequences. *American Journal of Orthopsychiatry*, *1*, 298–310.
- Bureau of Justice Statistics. (2011). Criminal Victimization in the United States, Statistical Tables. Retrieved from: [http://www.bjs.gov/index.cfm? ty=pbdetail&iid=2173](http://www.bjs.gov/index.cfm?ty=pbdetail&iid=2173)
- Burns, M., Treering, D., Zakaryan, A., Deane, K. C., Bocanegra, K., Richards, M. (2015). Mexican American youth perceptions of community violence. Poster presented at the 2015 Society for Research in Child Development Biennial Meeting, Philadelphia, PA.
- Burton, D., Foy, D., Bwanausi, C., Johnson, J., & Moore, L. (1994). The relationship between traumatic exposure, family dysfunction, and posttraumatic stress symptoms in male juvenile offenders. *Journal of Traumatic Stress*, *7*, 83–93. doi:10.1002/jts.2490070109
- Burton, L.M. and Jarrett, R.L. (2000) In the mix, yet on the margins: The place of families in urban neighborhood and child development research, *Journal of Marriage and the Family*, *62*(4), 1114–1135.
- Calzada, E. J., Fernandez, Y., & Cortes, D. E. (2010). Incorporating the cultural value of respeto into a framework of Latino parenting. *Cultural Diversity and Ethnic Minority Psychology*, *16*, 77–86.
- Centers for Disease Control and Prevention. (2007). Youth risk behavioral surveillance United States. *MMWR*, *57*.
- Cicchetti, D., & Lynch, M. (1993). Toward an ecological/transactional model of community violence and child maltreatment: Consequences for children's development. *Psychiatry: Interpersonal and Biological Processes*, *56*, 96–118.
- City of Chicago Census Data. (2008-2012). *Selected socioeconomic indicators in Chicago*. Retrieved from <https://data.cityofchicago.org/Health-Human-Services/Census-Data-Selected-socioeconomic-indicators-in-C/kn9c-c2s2>
- City of Chicago (2016). Chicago Public Schools – Safe Passage Routes SY1617. Retrieved from: <https://data.cityofchicago.org/Education/Chicago-Public-Schools-Safe-Passage-Routes-SY1617/ewfe-5r6t>
- Chicago Department of Transportation (2007). Street and site plan design standards. Retrieved from: <https://www.cityofchicago.org/dam/city/depts/cdot/StreetandSitePlanDesignStandards407.pdf>

- Chicago Metropolitan Agency for Planning (2013). 2013 Parcel-Based Land Use Inventory Categories. Retrieved from: <https://datahub.cmap.illinois.gov/dataset/land-use-inventory-for-northeast-illinois-2013>.
- Chicago Sun Times (2018). Safe Passages program expands to 14 more schools. Retrieved from: <https://chicago.suntimes.com/news/chicago-public-schools-safe-passage-expanded/>
- Choi, H., Meininger, J. C., & Roberts, R. E. (2006). Ethnic differences in adolescents' mental distress, social stress, and resources. *Adolescence*, *41*(162), 263-283.
- Clauss-Ehlers, C. S., & Lopez Levi, L. (2002). Violence and community, terms in conflict: An ecological approach to resilience. *Journal of Social Distress and the Homeless*, *11*, 265-278.
- Clougherty, Jane E., Levy, Jonathan I., Kubzansky, Laura D., Ryan, P. Barry, Suglia, Shakira Franco, Canner, Marina Jacobson, & Wright, Rosalind J. (2007). Synergistic effects of traffic-related air pollution and exposure to violence on Urban Asthma Etiology. *Environmental Health Perspectives*, *115* (8), 1140.
- Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology*, *112*(4), 558–577. doi:10.1037/0021-843X.112.4.558
- Cooley-Quille, M., Boyd, R. C., Frantz, E., & Walsh, J. (2001). Emotional and behavioral impact of exposure to community violence in inner-city adolescents. *Journal of Clinical Child Psychology*, *30*(2), 199–206.
- Cooley-Quille, M. R., Turner, S. M., & Beidel, D. C. (1995). Emotional impact of children's exposure to community violence: A preliminary study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *34*, 1362-1368. doi:10.1097/00004583-199510000-00022
- Coordinating Council on Juvenile Justice and Delinquency Prevention, Office of Juvenile Justice and Delinquency Prevention, U.S. Department of Justice Combating violence and delinquency: The National Juvenile Justice Action Plan (1996). Retrieved from: <http://www.ncjrs.gov/pdffiles/jjplanfr.pdf>.
- Cromley, E., & McLafferty, S. (2012). *GIS and public health (2nd Edition)*. New York: Guilford Press.
- Cruz-Santiago, M., & Ramirez Garcia, J. I. (2011). 'Hay que ponerse en los zapatos del joven': Adaptive parenting of adolescent children among Mexican-American parents residing in a dangerous neighborhood. *Family Process*, *50*, 92–114. doi: 10.1111/j.1545.

- Csikszentmihalyi, M., & Larson, R. W. (1987). The Experience Sampling Method (ESM). *Journal of Nervous and Mental Disease*, *175*, 526–536.
- Cumsille, P., & Epstein, N. (1994). Family Cohesion, Family Adaptability, Social Support, and Adolescent Depressive Symptoms in Outpatient Clinic Families. *Journal of Family Psychology*, *8*(2), 202–214. doi:10.1037/0893-3200.8.2.202
- Dark, S. J., & Bram, D. (2007). The modifiable areal unit problem (MAUP) in physical geography. *Progress in Physical Geography*, *31*(5), 471–479.
- De Bellis, M. D., & Van Dillen, T. (2005). Childhood posttraumatic stress disorder: an overview. *Child and Adolescent Psychiatric Clinics of North America*, *14*, 745–772.
- Deane, K.C., Richards, M., Mozley, M., Scott, D., Rice, C., & Garbarino, J. (2016). Posttraumatic stress, family functioning, and externalizing in adolescents exposed to violence: A moderated mediation model. *Journal of Clinical Child and Adolescent Psychology*, 1-14.
- Dennis Jr., S.F., Gaulocher, S., Carpiano, R.M., Brown, D. (2009). Participatory photo mapping (PPM): exploring an integrated method for health and place research with young people. *Health Place*, *15* (2), 466-473.
- Denson, T. F., Marshall, G. N., Schell, T. L., & Jaycox, L. H. (2007). Predictors of posttraumatic distress 1 year after exposure to community violence: The importance of acute symptom severity. *Journal of Consulting and Clinical Psychology*, *75*, 683–692. doi:10.1037/0022-006X.75.5.683
- Dumont, M., & Provost, M. A. (1999). Resilience in adolescents: Protective role of social support, coping strategies, self-esteem, and social activities on experience of stress and depression. *Journal of Youth and Adolescence*, *28*, 343–363.
- Edlynn, E., Gaylord-Harden, N., Richards, M., & Miller, S. (2008). African American Inner-City Youth Exposed to Violence: Coping Skills as a Moderator for Anxiety. *American Journal of Orthopsychiatry*, *78*(2), 249-258.
- Eiser, C., Havermans, T., & Eiser, J. (1995). The emergence during adolescence of gender differences in symptom reporting. *Journal of Adolescence*, *18*, 307–316. doi:10.1006/jado.1995.1021
- Elwood, S., 2006. Critical issues in participatory GIS: deconstructions, reconstructions, and new research directions. *Transactions in GIS*, *10* (5), 693-708.
- Elwood, L., Smith, D., Resnick, H., Gudmundsdottir, B., Amstadter, A., Hanson, R., et al. (2011). Predictors of rape: findings from the national survey of adolescents. *Journal of*

*Traumatic Stress*, 24 (2), 166–173.

- Enders, C. K. (2001). A primer on maximum likelihood algorithms available for use with missing data. *Structural Equation Modeling: A Multidisciplinary Journal*, 8, 128–141. doi:10.1207/S15328007SEM0801\_7
- Ensel, W., & Lin, N. (1991). The life-stress paradigm and psychological distress. *Journal of Health and Social Behavior*, 32, 321–341.
- Ensminger, M.E., Lamkin, R.P. and Jacobson, N. (1996) School leaving: A longitudinal perspective including neighborhood effects, *Child Development*, 33(5), 2400–2416.
- Feng, X., Shaw, D. S., Kovacs, M., Lane, T., O'Rourke, F. E., & Alarcon, J. H. (2008). Emotion regulation in preschoolers: The roles of behavioral inhibition, maternal affective behavior, and maternal depression. *Journal of Child Psychology and Psychiatry*, 49, 132–141.
- Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: A framework for understanding healthy development in the face of risk. *Annual Review of Public Health*, 26, 399–419. <http://dx.doi.org/10.1146/annurev.publichealth.26.021304.144357>.
- Finkelhor D, Kendall-Tackett K. (1997). A developmental perspective on the childhood impact of crime, abuse, and violent victimization. See Cicchetti & Toth 1997, pp.1–32
- Finkelhor, D., Turner, H.A., Shattuck, A., Hamby, S.L. (2013). Violence, crime, and abuse exposure in a national sample of children and youth: an update. *JAMA Pediatrics*. 167, 614-621.
- Fitzpatrick, K. M., & LaGory, M. (2000). *Unhealthy places: The ecology of risk in the urban landscape*. New York: Routledge
- Forehand, R., Biggar, H., & Kotchik, B. A. (1998). Cumulative risk across family stressor: Short- and long-term effects for adolescents. *Journal of Abnormal Child Psychology*, 26, 119-128.
- Foster, J. D., Kupermine, G. P., & Price, A. W. (2004). Gender differences in post-traumatic stress and related symptoms among inner-city minority youth exposed to community violence. *Journal of Youth and Adolescence*, 33(1), 59–69. doi:10.1023/A:1027386430859
- Fowler, P. J., Tompsett, C. J., Braciszewski, J. M., Jacques-Tiura, A. J., & Baltes, B. B. (2009). Community violence: A meta-analysis on the effect of exposure and mental health outcomes of children and adolescents. *Development and Psychopathology*, 21, 227–259. doi:10.1017/ S0954579409000145

- Furstenberg, F.F. (1993) How families manage risk and opportunity in dangerous neighborhoods, in: Wilson, W. J. (ed.) *Sociology and the Public Agenda*, Newbery Park, CA: Sage Publications, 231–258.
- Galaif, E., Sussman, R., Chou, S., & Wills, C. (2003). Longitudinal Relations Among Depression, Stress, and Coping in High Risk Youth. *Journal of Youth and Adolescence*, 32(4), 243-258.
- Garbarino, J. (1995). The American war zone: What children can tell us about living with violence. *Journal of Developmental & Behavioral Pediatrics*, 6, 431–435. doi:10.1097/00004703-199512000-00008
- Garbarino, J. (2001). Lost boys: Why our sons turn violent and how we can save them. *Smith College Studies in Social Work*, 71, 2, 167-181.
- Garbarino, J. (2008). *Children and the dark side of human experience: Confronting global realities and rethinking child development*. New York, NY: Springer. doi:10.1007/978-0-387-75626-4
- Garbarino, J., & Sherman, D. (1980). High-risk neighborhoods and high-risk families: The human ecology of child maltreatment. *Child Development*, 51(1), 188-98.
- Gatrell, A.C., & Löytönen, M. (Eds.). (1998). *GIS and health*. London: Taylor & Francis.
- Gennetian, L., Sanbonmatsu, L., Katz, L., Kling, J., Sciandra, M., Ludwig, J., . . . Kessler, R. (2012). The long-term effects of moving to opportunity on youth outcomes. *Cityscape*, 14(2), 137-167.
- Gilman, R., Dooley, J., & Florell, D. (2006). Relative levels of hope and their relationship with academic and psychological indicators among adolescents. *Journal of Social & Clinical Psychology*, 25, 166-178.
- Goldner, J., Peters, T. L., Richards, M. H., & Pearce, S. (2011). Exposure to Community violence and protective and risky contexts among low income urban African American Adolescents: A prospective study. *Journal of Youth and Adolescence*, 40, 2, 174-186. doi: 10.1007/s10964-010-9527-4
- Gorman-Smith, D., Henry, D. B., & Tolan, P. H. (2004). Exposure to community violence and violence perpetration: The protective effects of family functioning. *Journal of Clinical Child and Adolescent Psychology*, 33(3), 439-449.
- Gorman-Smith, D., & Tolan, P. (1998). The role of exposure to community violence and developmental problems among inner-city youth. *Development and*

*Psychopathology*, 10, 101–116.

- Graham-Bermann, S. A., & Seng, J. (2005). Violence exposure and traumatic stress symptoms as additional predictors of health problems in high-risk children. *The Journal of Pediatrics*, 146(3), 349–354. doi:10.1016/j.jpeds.2004.10.065
- Guilamo-Ramos, V., Dittus, P., Jaccard, J., Johansson, M., Bouris, A., & Acosta, N. (2007). Parenting practices among Dominican and Puerto Rican mothers. *Social Work*, 52, 17–30.
- Guterman, N. B., & Cameron, M. (1997). Assessing the impact of community violence on children and youths. *Social Work*, 42, 495–505. doi:10.1093/sw/42.5.495
- Guterman, N. B., Cameron, M., & Staller, K. (2000). Definitional and measurement issues in the study of community violence among children and youths. *Journal of Community Psychology*, 28, 571–587. doi: 10.1002/1520-6629(200011)28:6 571::AID-JCOP3 3.0.CO;2-Q
- Gudiño, O., Nadeem, G., Kataoka, E., & Lau, S. (2012). Reinforcement Sensitivity and Risk for Psychopathology Following Exposure to Violence: A Vulnerability-Specificity Model in Latino Youth. *Child Psychiatry & Human Development*, 43(2), 306-321.
- Halpern, L. F. (2004). The relations of coping and family environment to preschoolers' problem behavior. *Journal of Applied Developmental Psychology*, 25, 399–421. doi:10.1016/j.appdev.2004.06.001
- Hammack, P. L., Richards, M. H., Luo, A., Edlynn, E. S., & Roy, K. (2004). Social support factors as moderators of community violence exposure among inner-city African American young adolescents. *Journal of Clinical Child and Adolescent Psychology*, 33, 450-462.
- Hart, Caroline O. and Christian E. Mueller. 2013. School Delinquency and Social Bond Factors: Exploring Gendered Differences among a National Sample of 10th Graders. *Psychology in the Schools* 50(2), 117–133.
- Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Hayes, A. F. (2013). *An introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press. doi:10.1111/jedm.12050
- Hamaker, E. L. (2012). Why researchers should think within-person: A

- paradigmatic rationale. In M. R. Mehl, & T. Conner (Eds.), *Handbook of research methods for studying daily life* (pp. 43–61). New York: Guilford Press.
- Hammack, P., Ross, A., Sturdivant, A., & Richards, M. H. (2001, April). The ecology of depression among urban African American early adolescents: A study of daily mood states, activities, and companionship. Poster presented at the Biennial Meeting of the Society for Research in Child Development, Minneapolis, MN.
- Hammack, P. L., Richards, M. H., Luo, A., Edlynn, E. S., & Roy, K. (2004). Social support factors as moderators of community violence exposure among inner-city African American young adolescents. *Journal of Clinical Child and Adolescent Psychology*, *33*, 450–462. doi: 10.1207/s15374424jccp3303\_3
- Hindelang, M. J., Hirschi, T., & Weis, J. G. (1981). *Measuring delinquency*. Beverly Hills, CA: Sage. doi:10.1016/0047-2352(82)90086-1 Holmbeck, G. N., Li, S. T., Schurman, J. V.,
- Hipp, J., Tita, G., & Boggess, L. (2009). Intergroup and intragroup violence: Is violent crime an expression of group conflict or social disorganization? *Criminology*, *47*(2), 521-564.
- Friedman, D., & Coakley, R. M. (2002). Collecting and managing multisource and multimethod data in studies of pediatric populations. *Journal of Pediatric Psychology*, *27*, 5-18. doi:10.1093/jpepsy/27.1.5
- Horowitz, K., McKay, M., & Marshall, R. (2005). Community violence and urban families: Experiences, effects, and directions for intervention. *American Journal of Orthopsychiatry*, *75*, 356–368. doi:10.1037/0002-9432.75.3.356
- Horowitz, K., Weine, S., & Jekel, J. (1995). PTSD symptoms in urban adolescent girls: Compounded community trauma. *Journal of the American Academy of Child & Adolescent Psychiatry*, *34*(10), 1353–1361. doi:10.1097/00004583-199510000-00021
- Howell, J. C. (2011). Gang prevention: An overview of research and programs. Retrieved from <https://www.ncjrs.gov/pdffiles1/ojdp/231116.pdf>
- Ingoldsby, B., Schvaneveldt, P., Supple, A., & Bush, K. (2004). The relationship between parenting behaviors and adolescent achievement and self-efficacy in Chile and Ecuador. *Marriage & Family Review*, *35*(3-4), 139-159.
- Ingoldsby, E.M. and Shaw, D.S. (2002) Neighborhood contextual factors and early-starting antisocial pathways. *Clinical Child and Family Psychology Review*, *5*(1), 21–55.
- Irfan, Koj, Sedighi, & Thomas. (2017). Design and development of a generic spatial decision support system, based on artificial intelligence and multicriteria decision analysis. *GeoResJ*, *14*, 47-58.

- Johnson, H. D., LaVoie, J. C., & Mahoney, M. A. (2001). Interparental conflict and family cohesion: Predictors of loneliness, social anxiety, and social avoidance in late adolescence. *Journal of Adolescent Research, 16*, 304–318.  
doi:10.1177=0743558401163004
- Keddem, Barg, Glanz, Jackson, Green, & George. (2015). Mapping the urban asthma experience: Using qualitative GIS to understand contextual factors affecting asthma control. *Social Science & Medicine, 140*, 9-17.
- Kennedy, T., Ceballo, R., & Alexander, Gerianne M. (2014). Who, What, When, and Where? Toward a Dimensional Conceptualization of Community Violence Exposure. *Review of General Psychology, 18*(2), 69-81.
- Kerig, P. K., Vanderzee, K. L., Becker, S. P., & Ward, R. M. (2012). Deconstructing PTSD: Traumatic experiences, posttraumatic symptom clusters, and mental health problems among delinquent youth. *Journal of Child & Adolescent Trauma, 5*, 129–144.  
doi:10.1080/ 19361521.2012.671796
- Kliwer, W., Cunningham, J. N., Diehl, R., Parrish, K. A., Walker, J. M., Atiyeh, C., Neace, B., et al. (2004). Violence exposure and adjustment in inner-city youth: Child and caregiver emotion regulation skill, caregiver-child relationship quality, and neighborhood cohesion as protective factors. *Journal of Clinical Child and Adolescent Psychology, 33*, 477-487.
- Kim, J., Deater-Deckard, K., Mullineaux, P., & Allen, B. (2010). Longitudinal studies of anger and attention span: Context and informant effects. *Journal of Personality, 78*(2), 419–440. doi:10.1111/j.1467- 6494.2010.00621.x
- Koball, H. & Yang, J. (2018) National Center for Children in Poverty: Basic facts about low-income children. Retrieved from: [http://nccp.org/publications/pub\\_1194.html](http://nccp.org/publications/pub_1194.html)
- Kohl, K., Gross, I., Harrison, P., & Richards, M. (2015). Numbing and hyperarousal as mediators of exposure to community violence and depression in urban African American Youth. *Journal of Child & Adolescent Trauma, 8*, 33–43. doi:10.1007/s40653-015-0038-z
- Lambert, S. F., Nylund-Gibson, K., Copeland-Linder, N., & Ialongo, N. S. (2010). Patterns of community violence exposure during adolescence. *American Journal of Community Psychology, 46*, 289 –302. doi:10.1007/ s10464-010-9344-7
- Langhout, R. D., & Thomas, E. (2010). Imagining participatory action research in collaboration with children: An introduction. *American journal of community psychology, 46*, 60-66.
- Larson, G. D., (2013) Fundamentals of Hierarchical Linear and Multilevel Modeling. In G. D. Larson (Ed.), *Hierarchical Linear Modeling: Guide and Applications* (pp. 3-25). Los

Angeles, CA: SAGE Publications.

- Larson, R. W., Richards, M. H., Sims, B., & Dworkin, J. (2001). How urban African American young adolescents spend their time: Time budgets for locations, activities, and companionship. *American Journal of Community Psychology, 29*, 565–597. doi:10.1023/A:1010422017731
- Leidy, M. S., Guerra, N. G., & Toro, R. I. (2010). A review of family-based programs to prevent youth violence among Latinos. *Hispanic Journal of Behavioral Sciences, 32*(1), 5-36.
- Lerner R.M., Lerner J.V., Almerigi J.B., et al. (2005) Positive youth development, participation in community youth development programs, and community contributions of fifth-grade adolescents: Findings from the first wave of the 4-H study of positive youth development. *Journal of Early Adolescence, 25*(1), 17–71. doi: 10.1177/0272431604272461
- Li, S. T., Nussbaum, K. M., & Richards, M. H. (2007). Risk and protective factors for urban African-American youth. *American Journal of Community Psychology, 39*, 21-35. doi: 10.1007/s10464-007-9088-1
- Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71*, 543–562.
- Luthar, S. S., & Goldstein, A. (2004). Children's Exposure to Community Violence: Implications for Understanding Risk and Resilience. *Journal of Clinical Child and Adolescent Psychology, 33*, 3, 499-505.
- Luthra, R., Newcorn, J., Schmeidler, J., Nomura, Y., Chemtob, C. M., Abramovitz, R., Schoor, A., ... Greenberg, R. (2009). Relationship between type of trauma exposure and posttraumatic stress disorder among Urban children and adolescents. *Journal of Interpersonal Violence, 24*, 11, 1919-1927.
- Margolin, G., Vickerman, K. A., Ramos, M. C., Serrano, S. D., Gordis, E. B., Iturralde, E., . . . Spies, L. A. (2009). Youth exposed to violence: Stability, co-occurrence, and context. *Clinical Child and Family Psychology Review, 12*, 39–54. doi:10.1007/s10567-009-0040-9
- Masten, A. S., & Obradovic, J. (2006). Competence and resilience in development. *Annals of the New York Academy of Sciences, 1094*, 13–27.
- Lynch, M. (2003). Consequences of children's exposure to community violence. *Clinical Child and Family Psychology Review, 6*.
- Margolin, G., & Gordis, E. B. (2000). The effects of family and community violence on children. *Annual Review of Psychology, 51*, 445–479.

<http://dx.doi.org/10.1146/annurev.psych.51.1.445>

- Mazza, J. J., & Reynolds, W. M. (1999). Exposure to violence in young inner-city adolescents: Relationships with suicidal ideation, depression, and PTSD symptomatology. *Journal of Abnormal Child Psychology*, *27*, 203–213.
- McCabe, K. M., Lucchini, S. E., Hough, R. L., Yeh, M., & Hazen, A. (2005). The relation between violence exposure and conduct problems among adolescents: A prospective study. *American Journal of Orthopsychiatry*, *75*, 575–584.
- McCart, M. R., Smith, D. W., Saunders, B. E., Kilpatrick, D. G., Resnick, H., & Ruggiero, K. J. (2007). Do urban adolescents become desensitized to community violence? Data from a national survey. *American Journal of Orthopsychiatry*, *77*, 434–442. doi:10.1037=0002-9432.77.3.434
- McDonald, C. C., & Richmond, T. R. (2008). The relationship between community violence exposure and mental health symptoms in urban adolescents. *Journal of Psychiatric and Mental Health Nursing*, *15*, 833–849. doi:10.1111/j.1365-2850.2008.01321.x
- McKelvey, L., Conners-Burrow, N., Mesman, G., Pemberton, J. & Casey, P. (2015) Promoting adolescent behavioral adjustment in violent neighborhoods: Supportive families can make a difference! *Journal of Clinical Child & Adolescent Psychology*, *44:1*, 157-168, DOI: 10.1080/15374416.2014.895939
- Mikolajczyk, R. T., Bredehorst, M., Khelaifat, N., Maier, C., & Maxwell, A. E. (2007). Correlates of depressive symptoms among Latino and Non-Latino White adolescents: findings from the 2003 California Health Interview Survey. *BMC Public Health*, *7*(1), 21.
- Milan, S., Zona, K., Acker, J., Turcios-Cotto, V. (2013). Prospective risk factors for adolescent PTSD: Sources of differential exposure and differential vulnerability. *Journal of Abnormal Child Psychology*, *41*, 339–353. doi 10.1007/s10802-012-9677-9
- Moos, R. H., & Moos, B. S. (1986). *Family Environment Scale manual* (2nd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Mushe-Eizenmen, D. R., Boxer, P., Danner, S., Dubow, E. F., Goldstein, S. E., & Heretick, D. M. L. (2004). Social-cognitive mediators of the relation of environmental and emotional regulation factors to children's aggression. *Aggressive Behavior*, *30*, 389–408.
- Nolen-Hoeksema, S., Parker, L. E., & Larson, J. (1994). Ruminative coping with depressed mood following loss. *Journal of Personality and Social Psychology*, *67*, 92–104. doi:10.1037/0022-3514.67.1.92

- O'Brien, M.J., Whitaker, R.C. (2011). The role of community-based participatory research to inform local health policy: A case study. *Society of General Internal Medicine*, 26(12), 1498-501. doi:10.1007/s11606-011-1878-3.
- O'Campo, P. (2003). Invited commentary: advancing theory and methods for multilevel models of residential neighborhoods and health. *American Journal of Epidemiology*, 157, 9-13.
- Olson, D. H., McCubbin, H., Barnes, H., Larsen, A., Muxem, A. and Wilson, M. (1983). *Families: what makes them work*. Beverly Hills, CA: Sage. doi: 10.2307/2070818
- Ortiz, V., Richards, M., Kohl, K., & Zaddach, C. (2008). Trauma symptoms among urban African-American young adolescents: A study of daily experience. *Journal of Child & Adolescent Trauma*, 1(2), 135–152.
- Outley, C.W. and Floyd, M.F. (2002). The home they live in: Inner-city children's views on the influence of parenting strategies on their leisure behavior, *Leisure Sciences*, 24(2), 161–179.
- Ozer, E., Lavi, I., Douglas, L., & Wolf, J. (2015). Protective Factors for Youth Exposed to Violence in Their Communities: A Review of Family, School, and Community Moderators. *Journal of Clinical Child & Adolescent Psychology*, 1-26.
- Padgett, D., Juarez, P., Samaniego, V., & Bess, K. (2009). *Community-based asset mapping for youth violence prevention* (PDF document). Retrieved from [http://www.uh.edu/class/hcpp/\\_docs/cbpr/15-MappingforYouthViolencePrevention-Padgett.pdf](http://www.uh.edu/class/hcpp/_docs/cbpr/15-MappingforYouthViolencePrevention-Padgett.pdf)
- Papachristos, A. V., & Kirk, D. S. (2006). Neighborhood effects on street gang behavior. In J. F. Short & L. A. Hughes (Eds.), *Studying youth gangs* (pp. 63–84). Lanham, MD: AltaMira Press.
- Paxton, K. C., Robinson, W. L., Shah, S., & Schoeny, M. E. (2004). Psychological distress for African American adolescent males: exposure to community violence and social support as factors. *Child Psychiatry and Human Development*, 34, 281–295.
- Peguero, A. A., Connell, N. M., Hong, J. S., Voisin, D. .R, & Lee, J. (2018). Urban African American Youth and Their Caregivers' Perceptions of School Safety in Chicago. *Youth Violence and Juvenile Justice*, 16(2), 174-189.
- Preacher, K. J., Curran, P. J., & Bauer, D. B. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *The Journal of Educational and Behavioral Statistics*, 31(4), 437-448. doi: 10.3102/10769986031004437

- Proctor, L. (2006). Children growing up in a violent community: The role of the family. *Aggression and Violent Behavior, 11*, 558-576.
- Pynoos, R. S. (1993). Traumatic stress and developmental psychopathology in children and adolescents. In J. Oldham, M. Riba, & A. Tasman (Eds.), *Review of psychiatry* (pp. 205–237). Washington, DC: American Psychiatric Press.
- Quaglia, A., Lillini, R., Mamo, C., Iyaldi, E., Vercelli, M., Group, S. W. (2013). Socioeconomic inequalities: A review of methodological issues and the relationships with cancer survival. *Critical Reviews in Oncology and Hematology, 85*(3), 266-277.
- Queen, A. H., Stewart, L. M., Ehrenreich-May, J., & Pincus, D. B. (2013). Mothers' and fathers' rating of family relationship quality: Associations with preadolescent and adolescent anxiety and depressive symptoms in a clinical sample. *Child Psychiatry & Human Development, 44*, 351–360. doi: 10.1007/s10578-012-0329-7
- Quimby, D., Deane, K.C., Richards, M., Rice, C., DiClemente, C. (2018). Prevalence and effects of gun exposure among African American adolescents living in urban environments. *Journal of Black Psychology.*
- R Development Core Team (2013). R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria.
- Raudenbush, S. W., Bryk, A. S., Cheong, Y. F., & Congdon, R. (2004). *Hierarchical linear and nonlinear modeling*. Chicago: Scientific Software International.
- Ready, T., & Brown-Gort, A. (2005). *The state of Latino Chicago: This is home now*. University of Notre Dame, Institute for Latino Studies.
- RedEye Chicago. (2014). Tracking homicides in Chicago. Retrieved from <http://homicides.redeyechicago.com/date/2014/>.
- Reed E., Lawrence D. A., Santana M., Welles C. S., Horsburgh C. R., Silverman J. G., et al. (2014). Adolescent experiences of violence and relation to violence perpetration beyond young adulthood among an urban sample of Black and African American males. *Journal of Urban Health, 91*, 96-106. doi: 10.1007/s11524-013-9805-z
- Reese, L. E., Vera, E. M., Simon, T. R., & Ikeda, R. M. (2000). The role of families and care givers as risk and protective factors in preventing youth violence. *Clinical Child and Family Psychology Review, 3*, 61–77. doi:10.1023/A:1009519503260
- Reingle, J. M., Jennings, W. G., Lynne-Landsman, S. D., Cottler, L. B., & Maldonado-Molina, M. M. (2013). Toward an understanding of risk and protective factors for violence among

- adolescent boys and men: a longitudinal analysis. *Journal of Adolescent Health*, 52(4), 493-498.
- Reis, H. T., & Gable, S. L. (2000). Event-sampling and other methods for studying everyday experience. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 190–222). Cambridge, UK: Cambridge University Press.
- Rey, J. M., Walter, G., Plapp, J., & Denshire, E. (2000). Family environment in ADHD, oppositional defiant and conduct disorders. *Australia and New Zealand Journal of Psychiatry*, 34, 453–457.
- Richards, M., Romero, E., Zakaryan, A., Carey, D., Deane, K.C., Quimby, D., Patel, N., & Burns, M. (2015). Assessing Urban African American Youths' Exposure to Violence through a Daily Sampling Method, *Psychology of Violence*, 5, 275-284. doi: 10.1037/a0038115
- Richards, M. H., Larson, R., Miller, B. V., Luo, Z., Sims, B., Parrella, D. P., et al. (2004). Risky and protective contexts and exposure to violence in urban African American young adolescents. *Journal of Clinical Child and Adolescent Psychology*, 33, 138–148. doi: 10.1207/ S15374424JCCP3301\_13.
- Richmond, M. K., & Stocker, C. M. (2006). Associations between family cohesion and adolescent siblings' externalizing behavior. *Journal of Family Psychology*, 20, 663–669. doi:10.1037=0893-3200. 20.4.663
- Richters, J. E., & Martinez, P. (1990). Checklist of children's distress symptoms. Child and Adolescent Disorders Research Branch, National Institute of Mental Health.
- Richards, M., Romero, E., Zakaryan, A., Carey, D., Deane, K.C., Quimby, D., Patel, N., & Burns, M. (2015). Assessing Urban African American Youths' Exposure to Violence through a Daily Sampling Method, *Psychology of Violence*, 5, 275-284. doi: 10.1037/a0038115
- Rosenthal, B. S. (2000). Exposure to community violence in adolescence: Trauma symptoms. *Adolescence*, 35, 271–284.
- Ross, C. E. (2000). Neighborhood disadvantage and adult depression. *Journal of Health and Social Behavior*, 41, 177–187.
- Ross, C., & Mirowsky, J. (2001). Neighborhood disadvantage, disorder and health. *Journal of Health and Social Behavior*, 42, 258–276.
- Safe Routes to School National Partnership. Key lawmakers acting to end dedicated funding for

bicycling and walking. Retrieved from: <http://www.saferoutespartnership.org/national/763249>.

- Saigh, P. A., & Bremner, J. D. (1999). *Posttraumatic stress disorder: A comprehensive text*. Boston, MA: Allyn and Bacon. doi:10.1192/bjp.177.4.382-a
- Saltzman, W. R., Pynoos, R. S., Layne, C. M., Steinberg, A. M., & Aisenberg, E. (2001). Trauma-and grief-focused intervention for adolescents exposed to community violence: Results of a school-based screening and group treatment protocol. *Group Dynamics*, 5, 291–303.
- Salzinger, S., Feldman, R., Stockhammer, T., & Hood, J. (2002). An ecological framework for understanding risk for exposure to community violence and the effects of exposure on children and adolescents. *Aggression and Violent Behavior*, 7(5), 423-451.
- Sato, H., & Kawahara, J. (2011). Selective bias in retrospective self- reports of negative mood states. *Anxiety, Stress, and Coping*, 24, 359–367.
- Scarpa, A., Haden, S. C., & Hurley, J. (2006). Community violence victimization and symptoms of Posttraumatic Stress Disorder: The moderating effects of coping and social support. *Journal of Interpersonal Violence*, 21, 446–469. doi: 10.1177/0886260505285726.
- Schuurman, N., Bell, N., Dunn, J. R., Oliver, L. (2007). Deprivation indices, population health and geography: An evaluation of the spatial effectiveness of indices at multiple scales. *Journal of Urban Health*, 84(4), 591-603.
- Schwartz, D., Gorman, A. H., Nakamoto, J., & Toblin, R. L. (2005). Victimization in the peer group and children's academic functioning. *Journal of Educational Psychology*, 97, 425–435. doi:10.1037= 0022-0663.97.3.425
- Schwartz, J.E., Stone, A.A. (2007). The analysis of real-time momentary data: a practical guide. In: Stone, A.A., Shiffman, S., Atienza, A.A., Nebeling, L. (Eds.), *The Science of Real-time Data Capture: Self-reports in Health Research*. Oxford University Press, Oxford, pp. 76-113.
- Schwarz, N. (2007). Retrospective and current self-reports: the rationale for real-time data capture. In A. S. Stone, S. Shiffman, A. A. Atienza, & L. Nebeling (Eds.), *The science of real-time data capture* (pp. 11–26). New York: Oxford University Press.
- Schwarz, N. (2012). Why researchers should think real-time: A cognitive rationale. In M. R. Mehl & T. S. Conner (Eds.), *Handbook of research methods for studying daily life* (pp. 22–42). New York: Guilford Press.
- Scientific Software International, Inc. HLM 7 for Windows [Computer software]. Skokie, IL.

- Shewchuk, J. (2014). Reprint of: Delaunay refinement algorithms for triangular mesh generation. *Computational Geometry: Theory and Applications*, 47(7), 741-778. Silk, J. S., Forbes, E. E., Whalen, D. J., Jakubcak, J. L., Thompson, W. K., Ryan, N. D., et al. (2011). Daily emotional dynamics in depressed youth: a cell phone ecological momentary assessment study. *Journal of Experimental Child Psychology*, 110(2), 241-257. doi: 10.1016/j.jecp.2010.10.007.
- Silk, J. S., Steinberg, L., & Morris, A. S. (2003). Adolescents' emotion regulation in daily life: links to depressive symptoms and problem behavior. *Child Development*, 74, 1869-1880. doi: 10.1046/j.1467-8624.2003.00643.x.
- Singer, M. I., Anglin, T. M., Song, L. Y., & Lunghofer, L. (1995). Adolescents' exposure to violence and associated symptoms of psychological trauma. *Journal of the American Medical Association*, 273, 477– 482. doi:10.1001/jama.1995.03520300051036
- Snyder, H.N., Sickmund, M. (2006). Juvenile Offenders and Victims: 2006 National Report. US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention, Washington, DC.
- Spano, R., Rivera, C., & Bolland, J. (2010). Are Chronic Exposure To Violence and Chronic Violent Behavior Closely Related Developmental Processes During Adolescence? *Criminal Justice and Behavior*, 37(10), 1160-1179.
- Spilsbury, J. (2005). 'We don't really get to go out in the front yard'—children's home range and neighborhood violence. *Children's Geographies*, 3(1), 79-99.
- Springer, C., & Padgett, D. K. (2000). Gender differences in young adolescents' exposure to violence and rates of PTSD symptomatology. *American Journal of Orthopsychiatry*, 70, 370–379. doi:10.1037/h0087637
- Sroufe, L. A., & Rutter, M. (1984). The domain of developmental psychopathology. *Child Development*, 55, 17–29.
- Stein, B., Jaycox, D., Kataoka, L., Rhodes, H., & Vestal, S. (2003). Prevalence of Child and Adolescent Exposure to Community Violence. *Clinical Child and Family Psychology Review*, 6(4), 247-264. doi: 10.1023/B:CCFP.00000006292.61072.d2
- Surgeon General, U. S. (2001). Chapter 6: Mental health care for Hispanic Americans. In *Mental health: Culture, race, and ethnicity. A supplement to mental health: A report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services.
- Sweeney, C., Goldner, J., & Richards, M. (2011). Exposure to Community Violence and Daily

- Feeling States Among Urban African American Youth. *Journal of Prevention & Intervention in the Community*, 39(2), 114-131.
- Terr, L. C. (1991). Childhood traumas: An outline and overview. *American Journal of Psychiatry*, 148, 10-20.
- Tervonen, H. E., Morrell, S., Aranda, S., Roder, D., You, H., Niyonsenga, T... Currow, D. (2017). The impact of geographic unit of analysis on socioeconomic inequalities in cancer survival and distant summary stage: A population-based study. *Australian and New Zealand Journal of Public Health*, 41(2), 130-136.
- The National Child Traumatic Stress Network. (2016). Community Violence. Retrieved from <http://www.nctsn.org/trauma-types/community-violence>.
- Tobler W., (1970) "A computer movie simulating urban growth in the Detroit region". *Economic Geography*, 46, 234-240.
- Tolan, P. H., Guerra, N. G., & Montaini-Klov Dahl, L. R. (1997). Staying out of harm's way. In *Handbook of Children's Coping* (pp. 453-479). New York, NY: Springer.
- Torres, L., Ong, A., & Zárate, Michael A. (2010). A Daily Diary Investigation of Latino Ethnic Identity, Discrimination, and Depression. *Cultural Diversity and Ethnic Minority Psychology*, 16(4), 561-568.
- Trickett, P. K., Durán, L., & Horn, J. L. (2003). Community violence as it affects child development: Issues of definition. *Clinical Child and Family Psychology Review*, 6, 223–236. doi:10.1023/B:CCFP.0000006290.91429.75
- Trull, T. J., & Ebner-Priemer, U. W. (2009). Using experience sampling methods/ecological momentary assessment (ESM/EMA) in clinical assessment and clinical research: introduction to the special section. *Psychological Assessment*, 21, 457–462. doi:10.1037/a0017653.
- Turner, H. A., Finkelhor, D., & Ormrod, R. (2006). The effect of lifetime victimization on the mental health of children and adolescents. *Social Science and Medicine*, 62, 13–27. doi:10.1016/j.socscimed.2005.05.030
- Valle, M. F., Huebner, E. S., & Suldo, S. M. (2006). An analysis of hope as a psychological strength. *Journal of Social Psychology*, 44, 393-406.
- van der Kolk, B. (2005). Developmental trauma disorder. *Psychiatric Annals*, 35(5), 401–408.
- Viswanathan, M., Ammerman, A., Eng, E., Gartlehner, G., Lohr, KN, Griffith, D., *et al.* Community-based participatory research: Assessing the evidence (Structured abstract).

Health Technology Assessment Database 2004. Available from:  
<http://www.ahrq.gov/downloads/pub/evidence/pdf/cbpr/cbpr.pdf>

- Weems, C. F., Taylor, L. K., Marks, A. B., & Varela, R. E. (2010). Anxiety sensitivity in childhood and adolescence: Parent reports and factors that influence associations with child reports. *Cognitive Therapy and Research, 34*(4), 303–315. doi:10.1007/s10608008-9222-x
- Wiebe, Guo, Allison, Anderson, Richmond, & Branas. (2013). Fears of Violence During Morning Travel to School. *Journal of Adolescent Health, 53*(1), 54-61.
- Wight, R. G., Aneshensel, C. S., Botticello, A. L., & Sepúlveda, J. E. (2005). A multilevel analysis of ethnic variation in depressive symptoms among adolescents in the United States. *Social Science & Medicine, 60*(9), 2073-2084.
- Wolfer, T. A. (1999). “It happens all the time”: Overcoming the limits of memory and method for chronic community violence experience. *Journal of Interpersonal Violence, 14*, 1070–1094. doi:10.1177/088626099014010005
- Wood, D., Larson, R. W., & Brown, J. R. (2009). How adolescents come to see themselves as more responsible through participation in youth programs. *Child Development, 80*, 295–309.
- Woodward, L. J., & Fergusson, D. M. (2001). Life course outcomes of young people with anxiety disorders in adolescence. *Journal of the American Academy of Child & Adolescent Psychiatry, 40*(9), 1086-1093.
- Yoon, S., Steigerwald, S., Holmes, M., & Perzynski, A. (2016). Children's Exposure to Violence: The Underlying Effect of Posttraumatic Stress Symptoms on Behavior Problems. *Journal of Traumatic Stress, 29*(1), 72-79.
- Zahradnik, M., Stewart, S. H., Sherry, S. B., Stevens, D., & Wekerle, C. (2011). Posttraumatic stress hyperarousal symptoms mediate the relationship between childhood exposure to violence and subsequent alcohol misuse in Mi'kmaq youth. *Journal of Traumatic Stress, 24*(5), 566-74. doi: 10.1002/jts.20677
- Zalot, Alecia A., Jones, Deborah J., Forehand, Rex, & Brody, Gene. (2007). Self-regulation and conduct problems among low-income African American youth from single-mother homes: The roles of perceived neighborhood context and child gender. *Journal of Black Psychology, 33*(3), 239.
- Zinzow, H., Ruggiero, K., Resnick, H., Hanson, R., Smith, D., Saunders, B., &

- Kilpatrick, D. (2009). Prevalence and mental health correlates of witnessed parental and community violence in a national sample of adolescents. *Journal of Child Psychology and Psychiatry*, 50(4), 441-450.
- Zolkoski, S. M., & Bullock, L. M. (2012). Resilience in children and youth: A review. *Children and Youth Services Review*, 34, 2295-2303.
- Zona, K., & Milan, S. (2011). Gender Differences in the Longitudinal Impact of Exposure to Violence on Mental Health in Urban Youth. *Journal of Youth and Adolescence*, 40(12), 1674-1690.

## VITA

Dr. Kyle C. Deane graduated from the University of Dayton in 2010, receiving his B.A. in Psychology. During his undergraduate studies, Dr. Deane completed an Honors Thesis examining facial recognition among children with autism. This experience fueled his interest in working with vulnerable populations through research and clinical activities. He then pursued a Ph.D. in Clinical Psychology at Loyola University Chicago, specializing in both Clinical Child Psychology and Neuropsychology. Dr. Deane's research has focused on exposure to violence, trauma, family functioning, and other mechanisms that underlie certain mental and physical health outcomes among underserved populations, including immigrant, refugee, and minority groups. As a member of Dr. Maryse Richards' research lab, Dr. Deane developed and evaluated the effectiveness of intervention programs designed to reduce violence exposure and promote psychosocial well-being among youth residing in low-income urban neighborhoods.

During his graduate career at Loyola, Dr. Deane completed four years of clinical practice in pediatric consultation-liaison, psychotherapy, and neuropsychological assessment at the University of Chicago, Shriners Hospitals for Children, and NorthShore University Health System. He completed his pre-doctoral internship at Alexian Brothers Behavioral Health Hospital specializing in pediatric health psychology. Dr. Deane will return to Shriners Hospital in Chicago as an Assistant Investigator and Clinical Pediatric Rehabilitation Postdoctoral Fellow, where he will continue his research and clinical work in pediatric psychology as well as continue working with vulnerable and underserved youth and families.