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Posttraumatic Stress, Family Functioning, and Adjustment in Urban African American Youth Exposed to Violence: A Moderated Mediation Model

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POSTTRAUMATIC STRESS, FAMILY FUNCTIONING, AND ADJUSTMENT

IN URBAN AFRICAN AMERICAN YOUTH EXPOSED TO VIOLENCE:

A MODERATED MEDIATION MODEL

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BY

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ABSTRACT

Exposure to community violence is a pressing public health issue that disproportionately impacts poor, urban, and ethnic minority youth. It has been associated with a multitude of negative externalizing and internalizing symptoms, most frequently with posttraumatic stress. This study investigates the role that posttraumatic stress has in mediating the relation between exposure to community violence and other adjustment difficulties. Moreover, because not all adolescents experience these difficulties in the face of significant violence exposure, the study examines the moderating role of family cohesion and support in buffering the effect of violence and posttraumatic stress on later adjustment. A sample of 268 low-income, urban, African American sixth graders living in high crime neighborhoods participated in a three-year longitudinal study measuring the effects of community violence exposure. Family cohesion and daily family support exhibited a protective-stabilizing or buffering effect for several of the proposed outcomes. Posttraumatic stress was shown to mediate the effect of witnessing community violence on subsequent internalizing symptoms and aggression. However, the strength of these indirect effects was dependent on level of family cohesion. The findings provide evidence in support for interventions provided at both individual and family levels. Mental health providers working with this population should be aware of the intertwined nature of chronic exposure to community violence, posttraumatic stress, and subsequent maladaptive outcomes.

CHAPTER ONE

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 acts of interpersonal violence committed by individuals who are not intimately related to the victim" (National Center for Children Exposed to Violence, 2010, paragraph 1). These violent acts encompass incidents including muggings, sexual abuse, hearing gunshots, and burglaries, and can occur in a variety of contexts including an individual's neighborhood, school, or home. In a national study of adolescents aged 12 to 17, more than a third of girls and nearly one half of boys reported witnessing at least one act of community violence in their lifetime (Kilpatrick, Saunders, & Smith, 2003). This violence disproportionately impacts poor, urban, and ethnic minority youth (Bureau of Justice Statistics, 2002). In studies of such youth samples in Chicago, approximately 30% had been exposed to *three or more* acts of violence (Gorman-Smith & Tolan, 1998). In one urban sample of fifth and sixth graders, 70% of the youth who had witnessed a shooting reported witnessing at least two (Bell & Jenkins, 1993). Furthermore, Gorman-Smith, Henry, and Tolan (2004) found that nearly half their sample of urban youth reported seeing someone beaten and more than 20% witnessed someone being shot or killed. Exposure to violence has been associated with elevated levels of distress,

including posttraumatic stress symptoms, depression, and anxiety (Garbarino, Dubrow, Kostelny, & Pardo, 1992; Fowler, Tompsett, Braciszewski, Jacques-Tiura, & 2009; 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 these low-income, high violence, urban neighborhoods, exposure to violence was significantly correlated with both externalizing and internalizing problems (Li, Nussbaum, & Richards, 2007). Moreover, other stressors frequently experienced by African American youth, such as economic hassles, discrimination, and peer difficulties have been consistently linked to a broad range of emotional and behavioral outcomes. Though 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 and internalizing symptoms. Still less is known about factors that may protect adolescents from these harmful effects.

Theoretical Framework

The current study was guided by Bronfenbrenner's (1979) ecological system's theory and a risk and resilience framework (e.g., Luthar, Cicchetti, & Becker, 2000). Ecological system's theory provides a dynamic and intricate framework with which to conceptualize the factors that shape a child's development. Bronfenbrenner recognized that children are influenced by processes that occur at a variety of levels, including internal characteristics, the immediate environment (i.e., family, school, community), and macrolevel environments, such as cultural and societal context. An ecological perspective on development suggests that simple cause and effect relationships seldom transpire, but

rather are invariably influenced by the context in which the relationship occurs (Garbarino, 2001). Much of the research investigating community violence exposure and its corollaries has been influenced by this perspective, as it provides a framework for understanding how the effects of such an environmental stressor are influenced by other contexts. The family is one such context, and it serves as the adolescent's most prominent, persistent, and proximal developmental influence (Bronfenbrenner, 1979). Improved family functioning, therefore, may exhibit a protective-stabilizing or buffering effect on influence of exposure to violence and negative outcomes.

In a risk and resilience framework, resilience is defined as a process that encompasses positive adaptation in response to significant adversity or stress (Luthar et al., 2000). In the current study, the term *risk* refers to factors that increase the likelihood of a child experiencing psychological and behavioral problems. The terms *protective factors*, *buffers*, *assets*, and *resources* refer to concepts that promote resilience by minimizing risk and its impact on emotional and behavioral well-being. These protective factors are classified in three domains: individual characteristics, family characteristics, and community characteristics (Forehand, Biggar, & Kotchik, 1998). The current study considered the individual characteristics of psychological maladjustment (posttraumatic stress symptoms, internalizing, and externalizing problems), the family characteristics of cohesion and supportiveness, and the community characteristic of violence prevalence (as measured by the child's exposure to violence). In this framework, the collective effects of risk factors, such as degree of violence exposure, and the absence of protective factors, such as family cohesion and supportiveness, are associated with maladaptive outcomes.

Exposure to Community Violence in Adolescence

Compared with adults, children and adolescents in urban environments are particularly at risk for traumatic exposure to community violence in their homes, schools, and communities. Fitzpatrick and Boldizar (1993) reported that the victimization rate for adolescents aged 12-19 years is two times higher than adults living in the same community. Many urban minority youths witness or are victimized by community violence on a daily basis. A body of research has shown that a high level of exposure during this period is positively associated with both internalizing disorders, such as depression, anxiety, and posttraumatic stress disorder (Fitzpatrick & Boldizar, 1993; Fowler et al., 2009; Gorman-Smith, Henry, & Tolan, 2004), and externalizing behaviors, such as aggressiveness (Barkin, Keritetr, & DuRant, 2001; Scarpa, 2001).

The relationship among violence, socioenvironmental conditions, and resulting maladaptive behavior is particularly strong in adolescence, as this period is marked by swift developmental changes and a notable sensitivity to environmental influences (Dodge & Pettit, 2003). During this phase of development, adolescents often perceive themselves to be individuating from their parents both psychologically and behaviorally in order to forge their unique identities (Steinberg & Silverberg, 1986). Increased time away from the structured and supervised familial environment may place adolescents at greater risk for involvement in delinquent activities, and ultimately at greater risk for exposure to violence within the community (Goldner, Peters, Richards, & Pearce, 2011). Potential engagement in risky behavior is amplified in this period due to incomplete development of the frontal lobe, an area of the brain responsible for planning and tempering impulsivity (Sowell, Thompson, Tessner, & Toga, 2001). Moreover,

adolescents in this stage of development are particularly susceptible to a cognitive perception of invulnerability (Feldman, 2007) and to the suggestion of peers (Steinberg, 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 (Garbarino et al., 1992).

Posttraumatic Stress and Exposure to Community Violence

Overall, evidence suggests that the experience of trauma in the form of exposure to violence among urban African American youth is relatively common and detrimental to healthy development. The psychological disorder most frequently associated with the experience of exposure to violence is posttraumatic stress disorder (PTSD) (Fowler et al., 2009). Indeed, a considerable amount of research in the past two decades has linked youth exposure to community violence with posttraumatic stress symptomatology (Ollendick, 1996; Berman, Silverman, & Kurtines, 2000; Fowler et al., 2009). In its modern definition according to the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition text revision (*DSM-IV-TR*; American Psychiatric Association, 2000), PTSD is a set of 17 symptoms following the experience, witnessing, or confrontation with a traumatic event involving actual or threatened death, serious injury, or threat to physical integrity. In addition, the individual must have responded with intense fear, horror, or helplessness at the time of the event in order to receive a full diagnosis. The 17 symptoms are categorized into three broad clusters including reexperiencing symptoms, physiological arousal, and avoidance and numbing symptoms.

A significant number of these individuals will react in ways that substantially disrupt their growth and development and ability to function normally in day-to-day living.

Children and adolescents living in low-income neighborhood with elevated incidents of crime will often endorse only some of the symptoms composing posttraumatic stress disorder (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 (Mazza & Reynolds, 1999; Garbarino, 1995). Therefore, this study examined level of posttraumatic stress symptoms in lieu of a full PTSD diagnosis.

As initially formulated by Lenore Terr (1991), researchers distinguish between chronic and time limited trauma among children. Time-limited trauma (Type I) involves a singular traumatic event, such as a violent crime or a natural disaster, whereas chronic trauma (Type II) consists of more pervasive experiences, such as exposure to community violence. Terr (1991) hypothesized that Type I trauma might result in the hallmark symptoms of PTSD of reexperiencing, hyperarousal, and avoidance and numbing. Conversely, Type II trauma may result in a different profile of symptoms including emotional numbing and dissociation. Limited evidence suggests that children and adolescents who experience repeated exposure to community violence are significantly more likely to normalize this experience, and dissociate themselves from resulting distress (Farrell & Bruce, 1997).

According to Perry, Pollard, Blakley, Baker, & Vigilante (1995), the effects of continuous trauma are particularly alarming given that frequently reoccurring patterns of specific types of neural activation result in a more ineradicable internal representation for

the child. A child or young adolescent's experience, therefore, creates a processing

template through which all new information is interpreted. Type II trauma may activate a

neural network more continuously, conceivably resulting in more insidious effects to the

child's information processing templates. The majority of research examining the risk for

the development of posttraumatic stress symptoms and the development of subsequent

constellations of symptoms among children and adolescents has been narrowly focused

on the impact of a particular type of trauma exposure, such as a natural disaster or

involvement in a car accident (i.e., type I trauma) (Luthra et al., 2008). This neglects the

impact of sequential traumatization frequently experienced by those living in low-

income, urban environments on the development of internalizing and externalizing

symptoms.

Understanding the particular impact that trauma has on children is important for

diagnoses and treatments. PTSD has foremost been studied in adults, but young people

seem to respond differently to traumatic events (Meiser-Stedman, Smith, Glucksman,

Yule, & Dalgleish, 2008; Scheeringa, Wright, Hunt, & Zeanah, 2005). Consequently, the

symptom structure of adult PTSD may not necessarily transfer to children and

adolescents. Perry and colleagues (1995) theorize that the human brain consists of several

organized and complex systems working in conjunction with one another for the singular

purpose of survival. The brain is highly responsive to the external and internal

environment, and utilizes predictable survival strategies, including the 'fight', flight', or

'surrender' response. While adults—particularly males—are more likely to rely on the

'fight or flight' response pattern, children will more frequently display the dissociative

pattern of surrendering or numbing response. These response patterns, though originating

as adaptive responses to trauma, often persist beyond the direct threat of danger, and develop into maladaptive behavioral, emotional, and cognitive problems. Using the terminology of behavioral psychologists, these reactions can be referred to as "prepared responses" that are biologically innate and extremely difficult to extinguish. The evolutionary nature of the physiological response to trauma perhaps presents a particularly problematic task of extinguishing maladaptive responses among developing children and adolescents.

Posttraumatic Stress and Internalizing/Externalizing Symptoms

Throughout the trauma literature, posttraumatic stress disorder has exhibited comorbidity with a variety of psychopathologies (Davidson & Foa, 1993; Kulka et al., 1990). Most often, these comorbid diagnoses include affective disorders, such as depression and anxiety (Kilpatrick et al., 2003; Kassam-Adams, Marsac, & Cirilli, 2010). Reasons for the high correlation between PTSD and depression and anxiety in clinical research involve the overlap or similarity of symptomatology, a common source, or a sequential causation whereby depression is assumed to follow PTSD (Hukkelberg & Jensen, 2011). There are, however, wide variations in the reported rate of comorbidity of posttraumatic stress symptoms with other disorders. Saigh and Bremner (1999) reviewed nine studies investigating the rates of comorbidity of PTS symptoms among children and adolescents. In this review, PTSD comorbidity rates with depressive disorders ranged from 8.3 to 62% among the children and adolescents. Comorbidity rates of anxiety disorders with PTSD were nearly as varied, ranging from 8.3 to 41.6%.

Strong evidence has also suggested the predictive nature of community violence to subsequent aggressive behavior among adolescents (Gorman-Smith & Tolman, 1998;

Ozer, 2005). One study, using the same dataset as the current investigation, found a relation between posttraumatic symptoms and externalizing responses (Rollins, Romero, Deane, Richards, under review). In the aforementioned review, Saigh and Bremner (1999) reported significant overlap of posttraumatic stress symptoms with externalizing behaviors throughout the nine studies, with comorbidity rates of PTSD with conduct disorders ranging from 5.8 to 25%. Burton, Foy, Bwanausi, Johnson, and Moore (1994) found that nearly a quarter of their sample of juvenile offenders met *DSM-III-R* diagnostic criteria, further suggesting the link between posttraumatic stress symptoms and delinquent behavior.

Posttraumatic Stress as a Mediator

While the relationship between exposure to violence and detrimental outcomes has been well established, an investigation into *how* these differential outcomes occur is essential for enhancing services provided as well as advancing theory. Given that posttraumatic stress symptoms are often the first sign of distress following exposure to violence, and are significantly related to other internalizing and 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, however, a paucity of research examining posttraumatic stress symptomatology as a mediating variable in this context. Moreover, much of this research is cross-sectional by design, and only examines a single outcome variable. The current study advances PTSD and trauma literature by examining the mediating role of posttraumatic stress and its influence on both externalizing and internalizing symptoms over time.

Of the few studies that have examined this type of model, posttraumatic stress has indeed emerged as a mechanism explaining a variety of adjustment outcomes, including a selection of internalizing symptoms. In one sample of 6th, 7th, and 8th grade students from low-income, urban neighborhoods, posttraumatic stress symptomatology was found to mediate the relation between violence exposure and depressive symptoms (Mazza & Reynolds, 1999). That is, being exposed to violence resulted in symptoms of PTSD, which subsequently led to depressive symptomatology. Mazza and Reynolds (1999) argued that certain symptoms of PTSD, including re-experiencing the traumatic events, intrusive thoughts, or avoidance, might lead to feelings of loneliness or helplessness, which may further contribute to youth depression. Another study of adolescents in a South African city found PTSD exhibited a mediating function between witnessed violence and depression (Shields, Nadasen, & Pierce, 2009). Ruchkin, Henrich, Jones, Vermeiren, and Schwab-Stone (2007), found evidence for a full mediating effect of PTSD on the relationship of victimization to depression and anxiety in girls, and a partial mediating effect for boys. The authors acknowledge that their studies were limited by cross-sectional design, however, and that further research should incorporate longitudinal analyses of posttraumatic stress as a mediating pathway between violence exposure and other disorders.

Children and adolescents who suffer from posttraumatic stress symptoms may also experience symptoms and cognitions indirectly related to the subsequent development of internalizing symptoms. For example, Vernberg and Varela (2001) found that children living in urban environments who endorsed posttraumatic stress symptoms also reported more difficulty falling and staying asleep, a symptom that has been found

longitudinally to be a predictor of depression (Baglioni, Battagliese, Feige, Spiegelholder, & Nissen et al., 2011). Other PTSD symptoms, such as hyperarousal, intrusive thoughts, and flashbacks, may cause the traumatized child to be in a constant state of fear and distress, which correspond to a diagnosis of anxiety (van der Kolk & McFarlane, 1996). Thus, children and adolescents chronically exposed to high levels of community violence may continuously perceive the world as an inherently dangerous place as a result continuous traumatic experiences and resulting posttraumatic stress (Smith, Smith, & Earp, 1999), further contributing to the development of maladaptive cognitions and symptoms associated with internalizing symptomatology.

Furthermore, recent research with Latino American and European American youth has suggested that posttraumatic stress symptoms may mediate the relation between exposure to violence and problem behaviors, such as aggression and delinquency (Saigh, Yasik, Oberfield, Halamandaris, & McHugh, 2002; Zahradnik, Stewart, Sherry, Stevens, & Wekerle, 2011). Ruchkin et al. (2007) found that the relation between violence exposure and the commission of violence was mediated by posttraumatic stress symptoms for boys. In one recent study, Kerig, Vanderzee, Becker, and Ward (2012) assessed the relations between trauma, PTSD symptoms, and various mental health outcomes among a sample of adolescents in a juvenile detention center. They found that the relation between exposure and externalizing symptoms was mediated by the posttraumatic stress symptoms of re-experiencing and hyperarousal. Hyperarousal has also been found to mediate the relation between violence exposure and alcohol misuse (Zahradnik et al., 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 re-experience 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.

The Role of Gender

There is ample evidence to suggest significant differences in the manner that adolescent males and females experience and respond to exposure to community violence. Foster, Kupermine, and Prince (2004) report that boys are more frequently exposed to community violence than girls, particularly in the form of victimization. While homicide rates reflect only a narrow aspect of community violence, the Centers for Disease Control (2008) found that African American boys are six times more likely to be the victims of homicide than African American girls, and twenty-six times more likely than White girls. While adolescent males 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 (Kupermine & Prince, 2004), while in another, girls reported more psychological distress than 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 females endorsing more internalizing symptoms (i.e., anxiety, depression) and males 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 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 violence among males (Jenkins & Bell, 1994; Singer, Anglin, Song, & Lunghofer, 1995). Springer and Padgett (2000) found in their sample of young African American and Latino/a adolescents living in high crime areas that 58.9% of females reported severe posttraumatic stress symptoms, while 44.2% of males did the same. Based on a review of multiple studies, Horowitz, Weine, and Jekel (1995) concluded that females of every age have a five times greater risk than males to develop posttraumatic stress symptoms following exposure to violence or some other traumatic event. There may also be gender differences in response to various protective factors among adolescents exposed to community violence. One longitudinal study of African American adolescents found that increased time spent with family and closeness to mother buffered the development of anxiety symptoms for girls who had witnessed violence, while this protective factor did not emerge for boys (Hammack, Richards, Luo, Elynn, & Roy, 2004). Given the gender differences in psychopathological development and outcomes regarding externalizing symptoms, depression, anxiety, and posttraumatic stress, this study examined these pathways separately by gender.

Resilience: Family Cohesion and Daily Family Support as Moderators

While it is apparent that adolescents living in high-violence, low-income, urban

environments are at increased risk for various maladaptive externalizing and internalizing

adjustment outcomes, the degree of risk is not equitable throughout this population

(Garbarino et al., 1992). Indeed, while many adolescents do not exhibit mental health

difficulties or engage in problem behaviors (Tolan, Gorman-Smith, Huesman, & Zelli,

1997), the specific contributing protective factors serving to buffer the negative influence

of these toxic environments remains unclear in this area of research (Garbarino et al.,

1992). However, a growing body of literature is beginning to identify the factors the may

serve to moderate the negative sequelae frequently associated with violence exposure

(Hammack et al., 2004; Paxton, Robinson, Shah, & Schoeny, 2004; Kliewer et al., 2004).

As previously mentioned, the child's family is considered to be the most immediate and

influential developmental influence within an ecological framework (Bronfenbrenner,

1979). Therefore, family functioning variables, in particular family cohesion and support,

may serve as protective factors for adolescents in such harmful environments.

A large portion of research examining family variables as risk or protective

factors for adolescent development focus primarily on parenting practices, without

investigating other properties of family functioning. Faulty discipline methods and

deficient parental monitoring have been consistently related to problem behavior and

poor mental health outcomes within the literature, including analyses of the dataset

utilized in the current study (Goldner et al., 2011). Hammack and colleagues (2004)

examined the strength of the parent-child dyad as well as the amount of time spent with

family and its relation to subsequent internalizing symptoms in a sample of urban youth

living in low-income neighborhoods. The authors found significant protective or stabilizing effects of positive parent-child relations in eleven proposed models. In five of the eleven models, children with the hypothesized asset (e.g., quality of parent-child relationship, time spent with family) showed no escalations in reported psychopathology (i.e., anxiety or depression) despite increases in exposure to violence. In contrast, children low in the asset demonstrated an increase in these maladaptive symptoms.

In addition to recognizing the paramount significance of parenting practices and attributes, however, other facets of family functioning are integral to healthy development. Halpern (2004) reports that increases in one such variable, overall family cohesion, was associated with lower child internalizing and externalizing symptoms. 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. Family cohesion defines the quality of familial interactions that can foster support and security or invoke disengagement (Smetana, 1995). During adolescence, family cohesion has been linked positively to adolescent self-reports of life satisfaction (Henry, 1994) and negatively to juvenile delinquency and deviance (Tolan, 1988). Thus, perceived family cohesion may be an integral variable in successful adjustment for children living in disadvantaged environments (Reese, Vera, Simon, & Ikeda, 2000).

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 et al., 2000; Hill & Madhere, 1996).

Using a similar method and the same sample as the current study, Hammack et al. (2004) found that daily social support and amount of time spent with family was negatively associated with anxiety and depressive symptoms. Another study, using a different sample, reported that family support was negatively related to 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 reduce exposure to violence in general as well as promote adaptive coping strategies to buffer the negative emotional and behavioral consequences following violence exposure (Kliewer, LePore, Oskin, & Johnson, 1998).

Taylor (1996) found that youth perception of family social support was inversely related to maladaptive conduct behaviors in this population. Youth reporting supportive kin have been found to be more resilient to the development of internalizing symptoms (Masten, Morrison, Pelligrini, & Tellegen, 1990). Moreover, a high degree of family support has been found to correlate with fewer externalizing behaviors under conditions of increased stress and violence (Quamma & Greenberg, 1994). It is abundantly evident that the traditional emphasis on individual child processes fails to account for the protective or insidious nature of external contexts. Informed by ecological theory, the current study acknowledged the child's most prominent and immediate context by examining the potential moderating influence of family cohesion and daily family support.

Limitations of Previous Research

One notable limitation in research examining posttraumatic stress among children and adolescents is the focus on type I trauma. Thus, the impact of repeated trauma experienced by individuals living in lower-income, urban environments on the development of internalizing and externalizing symptoms is overlooked. Moreover, the vast majority assessing the risk of developing PTSD has been within considerably limited samples (Luthra et al., 2008), most often among European Americans. As stated previously, exposure to traumatic community violence disproportionately affects ethnic minority youth living in these low-income, urban environments. The current study investigated sequential traumatization in the form of exposure to community violence among adolescents living in this type of environment.

Of the few studies that do examine role of posttraumatic stress as a mediator between exposure to community violence and other outcomes, most are cross-sectional by design, preventing demonstrations of causality and claims of true mediation. Frequently, these studies only examine a single outcome rather than testing a more complete model. Furthermore, most rely exclusively on child self-report for measurements of posttraumatic stress and 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 overlooked as potential buffering variables in the development of posttraumatic stress and other adjustment difficulties in response to exposure to community violence. 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 and later mental health prevention and intervention.

Informed by ecological systems theory (Bronfenbrenner, 1979) and a risk and resilience framework (e.g., Luthar, Cicchetti, & Becker, 2000), the current study adds to the literature in the following ways. First, it investigated an overlooked form of trauma in the posttraumatic stress literature—sequential traumatization in the form of exposure to community violence—in a historically under researched, high risk, and underserved population. Second, the design was longitudinal in nature, allowing for an examination of the causal pathways of posttraumatic stress symptoms. Third, many studies focus on a single outcome variable, while the current study examined a comprehensive model of externalizing and internalizing behaviors. Finally, longitudinal mediation models were examined taking into account the influence of the contextual family protective factors of cohesion and supportiveness, allowing for a more comprehensive model into the effects of exposure to violence, posttraumatic stress, and other outcomes. Few investigations, if any, have examined the interactions between these variables in this population.

Summary of the Literature and Guiding Model

The aforementioned review of the available literature led to the formulation of the model that guided this study. See Figure 1 for a visual presentation of the guiding model. Exposure to community violence was selected as the independent variable of interest due to its pervasive impact on mental health and its prevalence within the selected sample of inner-city African American adolescents living in low-income and high crime

neighborhoods. A body of research, including studies using the same sample as the current study, has found that adolescents exposed to community violence by witnessing or being victimized are at a significantly higher risk of exhibiting maladaptive internalizing and externalizing symptoms, including depression, anxiety, aggression, and delinquency (e.g., Garbarino et al., 1992; Hammack et al., 2004; Li et al., 2006; McCabe et al., 2005). Thus, externalizing and internalizing symptoms characterized by these presentations were selected as the dependent variable. While the association between exposure to violence and adjustment difficulties has been established in this sample, preliminary confirmatory analyses were conducted in order to examine this predictive relationship given modifications in variables and time-points used. More recent research suggests, however, that the link between violence exposure and adjustment may be partially dependent upon other variables that serve to mediate or moderate the relationship.

Figure 1. Guiding model
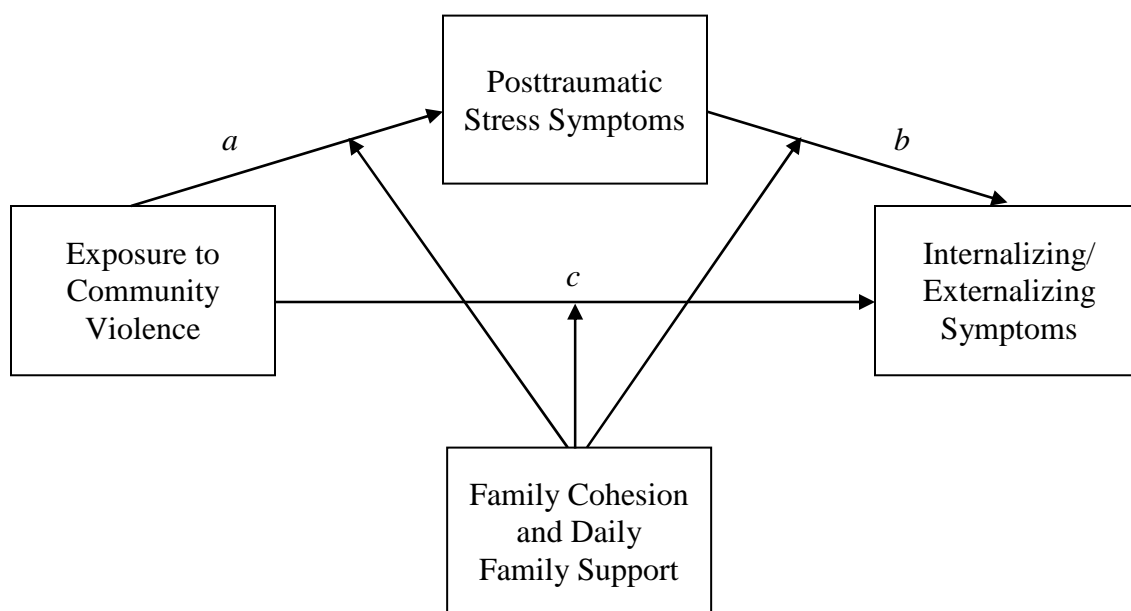
In this model, the level of posttraumatic stress symptoms is seen as a mechanism for change (i.e., mediator). Thus, higher exposure levels to community violence were posited to lead to higher levels of posttraumatic stress symptoms, which subsequently results in higher levels of deleterious externalizing and internalizing symptoms. In other words, posttraumatic stress symptomatology was selected as a potential mediator of the association between exposure to violence and these negative outcomes. Family cohesion and daily support are conceptualized as buffers within the present model, and were therefore the proposed moderators. Research has consistently confirmed the importance of family functioning in the successful development of children in these toxic environments. Thus, adolescents highly exposed to community violence from low-functioning families may be more at risk for the development of posttraumatic stress

symptoms. Furthermore, when posttraumatic stress symptom levels are high, family

functioning was expected to buffer the association between PTS symptoms and

subsequent externalizing and internalizing symptoms.

Aims and Hypotheses

The overarching purpose of the current study was to examine the relationship of

exposure to community violence to subsequent levels of internalizing and externalizing

symptoms, and the interplay of posttraumatic stress symptomatology and family

functioning with regard to the impact on this relationship in a sample of African

American adolescents living in low-income, urban, high violence neighborhoods. The

current study had three specific aims and associated hypotheses.

Aim 1

The first aim of the current study was to examine the association of family

functioning (i.e., family cohesion and daily family support) with posttraumatic stress,

externalizing, and internalizing symptoms.

Hypothesis 1. It was hypothesized that lower family functioning would be

associated with higher levels of posttraumatic stress, externalizing and internalizing

symptoms.

Aim 2

The second aim was to determine the indirect effects and potential mediating

function of posttraumatic stress symptoms in the link between exposure to community

violence and externalizing symptoms and a composite variable of internalizing

symptoms. Significant mediation models were then tested to examine whether family

functioning (conceptualized as either family cohesion or daily family support) acted as a

buffer at each pathway in the model. Figure 2 provides a graphical representation of the hypothesized moderated mediation, such that high levels of exposure to violence cause adolescents to develop posttraumatic stress symptoms, and high levels of posttraumatic stress symptoms cause adolescents to exhibit an increased number of internalizing/externalizing symptoms.

Hypothesis 2-1. It was predicted that posttraumatic stress symptoms would mediate the relation between exposure to violence and internalizing/externalizing symptoms, such that the presence of PTS symptoms was hypothesized to explain the potential relationship as a causal factor.

Hypothesis 2-2. It was further hypothesized that the strength of this mediating effect would be dependent on level of family functioning (either family cohesion or daily family support). Thus, it was believed that family functioning would moderate the indirect effect of exposure to violence on internalizing/externalizing symptoms through the buffering or exacerbation of PTS symptoms.

Hypothesis 2-2a. It was hypothesized that under conditions of high levels of exposure to violence, low family functioning (i.e., low family cohesions and low daily family support) would lead to increased posttraumatic stress symptomatology.

Hypothesis 2-2b. It was hypothesized that under conditions of higher posttraumatic stress symptoms, low family functioning (i.e., low family cohesions and low daily family support) would lead to increased maladjustment (i.e., high internalizing/externalizing symptoms).

Hypothesis 2-2b. Finally, it was hypothesized that under conditions of high levels of exposure to violence, low family functioning would lead to increased maladjustment.

Aim 3

The third aim of the current study was to examine the aforementioned moderated

mediation models separately for male and female adolescents in the sample.

Hypothesis 3. Due to the gender differences in exposure to violence and

psychopathological development and outcomes pertaining to externalizing symptoms,

depression, anxiety, and posttraumatic stress, it was anticipated that males and females

would differ in the strength of the conditional indirect effect for each model.
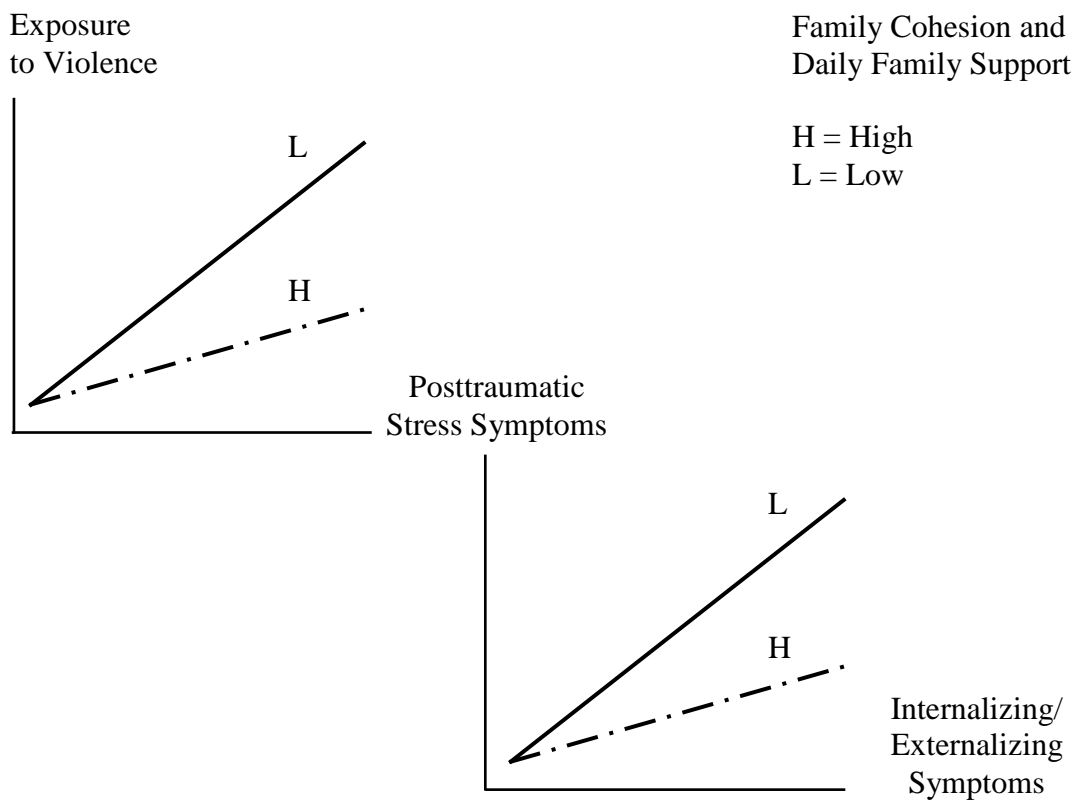
Figure 2. Hypothesized moderated mediation outcomes

CHAPTER TWO

METHOD

Participants

A sample of 268 low-income, urban, African American adolescents in the sixth

grade was recruited for a three-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 & Lorion, 1999). Data collection commenced during the

1999-2000 school year and continued through the 2001-2002 school year. 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. A previous study

found that participants in the same sample reported being exposed to between four and

five acts of violence in the past (Hammack et al., 2004). The average age of the students

in the first year of collection was 11.65 years and 59% of the students were female. 254

seventh graders ($M = 12.57$ years) participated in the second year of the study, and 222

students continued into the eighth grade ($M = 13.58$) forming the third year sample. Data

from years two and three of the data collection process were examined for the current

study. There were no significant group differences in parental education, annual

household income, or parents' marital status in the retained sample of participants than

the group included with participants lost to attrition over the duration of the three-year

study (Goldner et al., 2011). Given the absence of some parent data in some of the years

the sample sizes for certain statistical analyses in this study may be diminished when

parent-report data are included.

A previous study using this sample reported family and parent characteristics

(Goldner et al., 2011). Most participants lived in lower-income households, indicated by

a median family income of $10,000 and $20,000 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 post-graduate/professional degree.

Procedure

Each participant provided parent or guardian consent and child assent prior to data

collection. The students completed questionnaires that were administered by trained

research staff over the course of five consecutive days for each year of the study. Parent

questionnaires were completed at home and returned to project staff during each period

of collection. Both student self-report and parent-report questionnaire data were

examined in the current study. 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 one-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. Each submission was designed to take the

participant approximately two minutes to complete, and the participants were signaled

twice per school day, and 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. In order to be included in the study, participants responded to at least

15 signals with a maximum 51 possible (Kohl et al., under review). The median response

rate was 42 signals with an overall compliance rate of 82%. The students and

parents/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 five-

point scale ranging from 0 (*never*) to 5 (*four or more*). As the initial 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 get chased by someone who wanted to hurt them?", "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?" and "Have you been mugged/stuck up?"

The EV-R scale demonstrated adequate internal consistency in the second ($\alpha = .79$, $N = 227$) and third year ($\alpha = .68$, $N = 202$) of the initial three-year study.

Posttraumatic Stress Symptoms

In order 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 five consecutive days over a one-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, 3 = very true). The TSQ is comprised of five subscales found to be important in trauma literature: numbing (e.g., "Unable to laugh or feel happy, even when something really good or funny happened," "Didn't care about the things I used to care about"), avoidance (e.g., "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"), dissociation ("Felt like things weren't real," "Pretended I was somewhere else"), intrusion (e.g., "The scary thing seemed so real that I could actually see pictures of it in my mind," "I remembered something scary even when I didn't want to"), and hyperarousal (e.g., "I watched things around me really closely so nothing bad would happen," "I felt really jumpy or scared when I heard loud noises or when someone came up behind me"). Summing the individual item scores on the TSQ and averaged across the five responses

produced a total score for the measure. The total score demonstrated high internal

consistency for both year two ($\alpha = .95$, $N = 257$) and three ($\alpha = .92$, $N = 221$).

Internalizing Symptoms

   Scores from two child questionnaires were combined to form the internalizing

symptoms composite variable. These questionnaires included the sum score from the

Children's Depression Inventory (CDI-child report; Kovacs, 1985) and the mean score

from *How I Feel (Anxiety) Questionnaire* of the *State-Trait Anxiety Inventory for*

Children (HIF; Spielberger, Edwards, Montouri, & Lushene, 1973). The CDI is a self-

report measure of current depressive symptoms. Each of the 27 items used in this study

included three statements (e.g., "Nothing will ever work out for me," "I am not sure if

things will work out for me," "Things will work out for me O.K."). The participant

endorses the statement that most describes him or her during the past two weeks.

Responses are counted as 0, 1, or 2 reflecting symptom severity, and are summed to

provide a total score of depressive symptoms for each participant. The CDI yielded

adequate reliability coefficients for both year two ($\alpha = .88$) and year three ($\alpha = .88$). The

HIF is a 19-item self-report whereby you report the frequency of various anxiety

symptoms on a 3-point scale ranging from 1 (*hardly ever*) to 3 (*often*) on this 20-item

measure. Sample items include "Unimportant thoughts run through my mind and bother

me" and "It is hard for me to fall asleep at night". The HIF yielded adequate internal

reliability at year two ($\alpha = .90$) and year three ($\alpha = .91$) of the initial study. The HIF and

CDI were significantly correlated ($r = .48$, $p < .001$), and were standardized and averaged

in order to create the internalizing symptoms variable.

Externalizing Symptoms

In order to measure externalizing symptoms, participants and or their parents

completed the aggression subscale of the parent form of the *Child Behavioral Checklist*

(CBCL-parent form; Achenbach, 1991) and 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). Both of these subscales were found to be

highly reliable (Cronbach's alphas > .83) in a similar sample (Li, Nussbaum, & Richards,

2007).

Family Cohesion

Participants reported level of perceived family cohesion by completing the *Family*

Assessment Measure (FAM) adapted from the *Family Environment Scale* (FES) (Moos &

Moos, 1986). The full original version of the FES consists of ten subscales design to

measure children and adolescents' perception of various aspects of their family. The

present study only 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, "There is a feeling of togetherness in our family,"

"Family members really back each other up," and "There is plenty of time and attention

for everyone in our family." The FAM yielded a Chronbach alpha of .65 for year two and

.68 for year three in the initial study.

Daily Family Support

Using the Experience Sampling Method, 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 dataset, 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. The ESM data were standardized with z-scores in order to reduce potential bias that may have resulted from participants' overall response tendencies. While this variable represents an aspect of family cohesion, the current study labeled this "Daily Family Support" in order to distinguish it from the FAM self-report questionnaire of cohesion outlined above.

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Analytic Procedure

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Preliminary analyses were conducted to evaluate assumptions of normality (i.e., skewness and kurtosis), plot the data, attain correlations and descriptive statistics, and assess reliability. Methods to ensure reliability (e.g., item removal) were performed if problems of reliability arise.

To examine the mediating function of posttraumatic stress symptoms, multiple regression analyses were used to determine if four conditions as defined by Baron and Kenny (1986) to establish mediation are met. The first condition is that the predictor variable (i.e., exposure to violence) is significantly related to the outcome variable (i.e., internalizing/externalizing symptoms). Secondly, the predictor variable must be

correlated with the proposed mediator (i.e., posttraumatic stress symptoms). Thirdly, the mediator must be significantly associated with the outcome variable controlling for the predictor variable. Finally, a significant attenuation of the effect of the predictor (i.e., exposure to violence) on the outcome (internalizing/externalizing symptoms) must be observed when the hypothesized mediator (i.e., posttraumatic stress symptoms) is in the model.

In addition to the causal step process and Sobel tests of mediation (Baron & Kenny, 1986; Sobel, 1982), a method known as bootstrapping (Hayes, 2009) was used to test posttraumatic stress symptomatology as a mediator in the model. This statistical method is considered to be more powerful and valid then the causal steps process outlined by Baron and Kenny for several reasons. Firstly, inferences can be made based on approximations of the indirect effects. Hayes (2009) writes that the effects of a predictor variable on an outcome variable can be the summation of indirect effects, including those opposite in direction or not included in the model. Therefore, the predictor is able to exert an indirect effect on the outcome variable through a mediator in the absence of an initial association. Secondly, the bootstrapping method is a more sensitive test of indirect effects (i.e., mediation). Thirdly, the bootstrapping method reduces the opportunity for incorrect conclusions augmented by the multiple significance tests required by the causal steps approach. Finally, no assumptions are necessary regarding the shape of the sampling distribution of the indirect effects, avoiding the oft-violated assumption underlying Sobel's (1982) method that the sampling distribution be normal. Nevertheless, the results from Baron and Kenny's approach were presented in the current study given the widespread continued use of the causal steps approach.

The type of moderated mediational analysis conducted depends on particular variables and the stated hypothesized outcomes, but can be conceptualized based on which one of five moderated mediation models described by Preacher and colleagues (Preacher, Rucker, & Hayes, 2007) displays the most appropriate fit. Each one of the five described models was considered in regards to their relevance to the variables selected for examination in the current study. Model 1 tests the potential moderating effect of the independent variable (IV) on the relation between the proposed mediator and the dependent variable (DV). Model 2 tests the moderating effect of an outside variable on the relation between the IV and the proposed mediator. Model 3 examines the moderating effect of an outside variable on the relation between the mediator and the DV. Model 4 examines multiple potential moderators. Finally, Model 5 combines the second and third model to examine the moderating effect of an outside variable on both the pathway between the IV and the mediator and the pathway between the mediator and the DV. Model 5 was selected for the current study given the hypothesis that family functioning (i.e., family cohesion and daily family support) would act to moderate both the pathway between exposure to violence and posttraumatic stress symptoms and between posttraumatic stress symptoms and subsequent adjustment problems (i.e., internalizing and externalizing symptoms).

The SPSS-17 macro PROCESS (Hayes, 2012) was used in order to probe this model of conditional indirect effects (i.e., moderated mediation). This computational macro performs both regression analyses simultaneously and provides conditional indirect effects at specific values of the moderator in addition to bootstrap standard errors. Indirect effects were considered significant at $p < .05$ for the 95% bootstrap

confidence intervals. As recommended by Mallinckrodt and colleagues (Mallinckrodt, Abraham, Wei, & Russel, 2006), 10,000 bootstrap iterations were performed for each analysis.

CHAPTER THREE

RESULTS

Preliminary Analyses

The means and standard deviations for reports of posttraumatic stress, aggression, delinquency, depression, anxiety, CBCL externalizing, CBCL internalizing, family cohesion, family support, and exposure to violence (witnessing and victimization), for both 7th and 8th grade were assessed. No methods to ensure reliability, such as item removal, were necessary given the adequate to excellent reliability coefficients for all scales (Year 1 Cronbach's alphas: .78 - .92; Year 2 Cronbach's alphas: .76 - .95). Means and standard deviations for all variables examined in the current study are presented in Table 1 and Table 2.

Correlational Analyses

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.

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

	1	2	3	4	5	6	7	8	9	10	11
1. 7th ETV - Witness (c)	1										
2. 7th ETV - Victim (c)	.60**	1									
3. 7th Posttraumatic Stress (c)	.16*	.00	1								
4. 7th Family Cohesion (c)	.01	-.04	-.19*	1							
5. 7th Family Support (c)	-.08	-.08	-.04	.21**	1						
6. 7th Internalizing (c)	.12	.09	.50**	-.42**	-.16*	1					
7. 8th Internalizing (c)[a]	.14	.23**	.32**	-.40**	-.23**	.59**	1				
8. 7th Aggression (p)	-.07	-.06	.28**	-.16**	.03	.26**	.47**	1			
9. 8th Aggression (p)[a]	-.01	-.11	.26**	-.11	.04	.21**	..24**	.69**	1		
10. 7th Delinquency (c)	.21**	.16*	.35**	-.31**	-.17*	.30**	..23**	.22**	.22**	1	
11. 8th Delinquency (c)[a]	.27**	.10	.14	-.14	-.17*	.13	.27**	.20*	.28**	.40**	1
M	2.44	1.02	.343	18.44	-.09	-.01	.00	.31	.31	5.79	9.52
SD	4.00	2.43	.413	4.28	.70	.87	.86	.32	.30	9.52	8.89

Note. M = mean. SD = standard deviation. (c) = child report. (p) = parent report. 7th Family Support, 7th Internalizing, and 8th Internalizing standardized using z-scores. 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). Internalizing levels derived from Children's Depression Inventory (CDI) and How I Feel Questionnaire—Anxiety (HIF) composite. Aggression levels from the Child Behavioral Checklist (CBCL) aggression subscale. Delinquency levels from the Juvenile Delinquency Scale (JDS).

[a] variables examined as covariates

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

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	10	11
1. 7th ETV - Witness (c)		1	.42**	.08	.03	-.16	.07	.13	.15	-.01	.30**	.26**
2. 7th ETV - Victim (c)		.76**	1	.01	.02	-.03	.05	.20*	-.04	-.09	.28**	.14
3. 7th Posttraumatic Stress (c)		.20	.27**	1	-.11	-.08	.54**	.31**	.35**	.36**	.32**	.13
4. 7th Family Cohesion (c)		-.05	-.12	-.23*	1	.18*	-.39**	-.40**	-.08	-.13	-.37**	-.31**
5. 7th Family Support (c)		.01	-.15	.02	.32**	1	-.22*	-.24*	-.06	-.03	-.32**	-.30**
6. 7th Internalizing (c)		.19	.09	.40**	-.45**	-.08	1	.57**	.29**	.30**	-.29**	.24**
7. 8th Internalizing (c)[a]		.16	.36**	.36**	-.32**	-.25*	.52**	1	.51**	.38**	.40**	.43**
8. 7th Aggression (p)		-.18	-.12	.08	-.18	.09	.08	.28*	1	.72**	.24*	.23*
9. 8th Aggression (p)[a]		-.03	-.15	-.10	-.01	.25	-.04	.17	.68**	1	.25*	.25*
10. 7th Delinquency (c)		.16	.07	.44**	-.41**	-.05	.40**	.11	.20	.31*	1	.47**
11. 8th Delinquency (c)[a]		.25*	.06	.20	.06	.02	.06	.07	.25	.43**	.32**	1
Males	M	2.27	1.06	.27	18.96	-.11	-.13	-.13	.27	.29	7.38	7.08
	SD	4.61	2.84	.35	3.81	.77	.87	.78	.28	.23	12.49	9.92
Females	M	2.43	2.43	.35	18.17	-.12	.08	.12	.34	.35	4.31	5.84
	SD	3.60	3.60	.47	4.46	.69	.82	.91	.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. 7th Family Support, 7th Internalizing, and 8th Internalizing standardized using z-scores. 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). Internalizing levels derived from Children's Depression Inventory (CDI) and How I Feel Questionnaire—Anxiety (HIF) composite. Aggression levels from the Child Behavioral Checklist (CBCL) aggression subscale. Delinquency levels from the Juvenile Delinquency Scale (JDS).
[a] variables examined as covariates
** $p < .05$; * $p < .01$

Regression Analyses

The first aim of the current study was to examine the relation between family functioning (i.e., family cohesion and daily family support) and posttraumatic stress, internalizing, 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 four outcomes (child-reported delinquency, posttraumatic stress, and internalizing symptoms and parent-reported aggression). To examine the relation between family functioning, concurrent posttraumatic stress, and subsequent aggression, delinquency, and internalizing symptoms, 3 longitudinal and 1 regression equations were tested for the overall sample 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 ($\beta = -.139$, $p < .05$). When examined separately by gender, year 1 family cohesion significantly explained 5% of the variance in posttraumatic stress for males ($\beta = -.228$, $p < .05$), while it did not account for significant variance among females. 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.

Furthermore, it was hypothesized that diminished family functioning would predict higher subsequent internalizing outcomes. All internalizing regression models

included year 1 internalizing symptoms as a baseline control. Year 1 family cohesion

was significantly predictive of year 2 internalizing, accounting for 3% of the variance for

the overall sample ($\beta = -.187$, $p < .01$). Examined separately in males and females, family

cohesion only emerged as significant predictor of year 2 internalizing for females ($\beta = -.209$, $p < .05$), explaining 4% of change in variance. Year 1 daily family support was also

significantly predictive of year 2 internalizing symptoms ($\beta = -.143$, $p < .05$), accounting

for 2% of the variance in the overall sample. Daily family support also significantly

predicted internalizing for males ($\beta = -.216$, $p < .05$) explaining 5% of the variance, while

this prediction was not significant among females in the sample.

Finally, 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. Neither family cohesion nor daily family support

accounted for significant variance in year 2 aggression in the overall sample or for males

and females 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. 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 males. Similarly, while daily family support did not

explain a significant change in delinquency for males, 3% of the variance in year 2

delinquency was significantly accounted for among females ($\beta = -.177$, $p < .05$).

Mediation Analyses

The second aim of the current study was to determine the indirect (pathway from *X* to *Y* through *M*) and mediating function of posttraumatic stress between exposure to community violence and subsequent externalizing and internalizing outcomes, and whether family functioning acts as a moderator at each pathway in the proposed model. In order to address the first specific hypothesis under this aim, multiple regression analyses were conducted in order to determine the four conditions for mediation established by Baron and Kenny (1986) were met. In conjunction, using the computational PROCESS bootstrapping procedure for SPSS (Hayes, 2012), three models were estimated to determine the total, direct, and indirect effects of both victimization and witnessing violence on internalizing symptoms, aggression, and delinquency through posttraumatic stress symptoms. Covariates included year 1 internalizing, aggression, and delinquency in models whereby corresponding year 2 variables were measured as the outcome, and these three variables were included in the model simultaneously with the other predictors.

Using bootstrapping, the simple indirect effect of 7th grade witnessing violence on subsequent 8th grade aggression through 7th grade posttraumatic stress was significant (see Figure 3), as indicated by bias-corrected bootstrap-confidence intervals (CI) for the product of these pathways that do not include zero. The estimate of the indirect effect of witnessing on aggression was quantified as the product of the OLS regression coefficient estimating posttraumatic stress from witnessing (path a in Figure 3) as well as the logistic regression coefficient estimating aggression from posttraumatic stress (path b in Figure 3). The PROCESS method with 10,000 bootstrap samples showed a significant positive
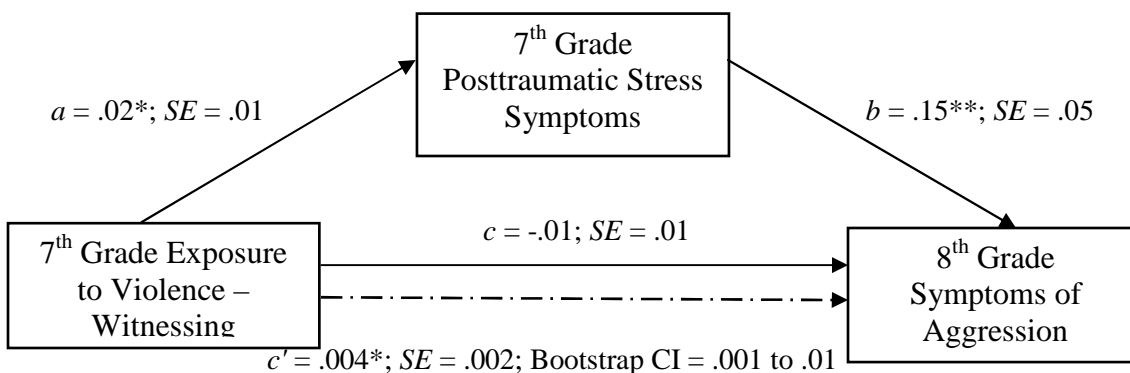
indirect of witnessing violence on aggression through posttraumatic stress symptoms (point estimate = .004, 95% percentile CI .0003 to .0110). Thus, it appears that 7th grade witnessing levels exert an indirect effect on 8th grade aggression through posttraumatic stress, with increased violence exposure associated with increased posttraumatic stress, which subsequently is associated with increased aggression.

As noted above, the indirect effect using a causal steps approach was also evaluated. Simple regressions revealed that witnessing violence was not significantly associated with subsequent levels of aggression (Step 1). However, recent methodological research recommends against requiring the evidence of simple link between predictor and outcome as a precondition (Hayes, 2013), as "correlation is neither a necessary nor a sufficient condition of causality" (Bollen, 1989). Witnessing violence was significantly and positively associated with levels of posttraumatic stress (Step 2). Further regression analyses revealed that 8th grade aggression was significantly and positively predicted by 7th grade levels of posttraumatic stress (Step 3) after controlling for 7th grade aggression. Finally, when posttraumatic stress levels and violence witnessing were regressed simultaneously on aggression, posttraumatic stress remained a significant predictor, whereas the association between witnessing violence and aggression was statistically nonsignificant (Step 4). Using Sobel normal theory tests, this indirect effect was approaching significance ($p < .10$).

Using the same process outlined above, a significant positive indirect effect of 7th grade witnessing violence on subsequent 8th grade internalizing symptoms through 7th grade posttraumatic stress symptoms was found (point estimate = .011, 95% percentile CI .0006 to .0257). These results are presented in Figure 4. As for all other tested models, a

causal steps approach was utilized to test this model as well. Simple regressions revealed that witnessing community violence was not significantly predictive of aggression (Step 1), though this link is no longer considered a requirement for mediation as mentioned previously. Further regressions showed a significant and positive link between witnessing and posttraumatic stress (Step 2). 8th grade level of aggression was significantly predicted by posttraumatic stress (Step 3) when 7th grade level of aggression as a covariate. Finally, posttraumatic stress levels remained a significant predictor when 7th grade aggression and witnessing were included simultaneously, whereas witnessing remained nonsignificant (Step 4). Sobel normal theory tests revealed an indirect effect approaching significance ($p < .10$). While the more stringent causal steps approach indicated a partial effect, bootstrapping tests of indirect effects suggest that increased witnessing violence in 7th grade is associated with increased levels of posttraumatic stress, which then increases internalizing symptoms in 8th grade. Posttraumatic stress did not mediate any other violence exposure to adjustment outcome relationship.

Figure 3. Path coefficients for simple mediation analysis on symptoms of aggression (N = 116)

$a = .02^*$; $SE = .01$

$b = .15^{**}$; $SE = .05$

7th Grade Posttraumatic Stress Symptoms

7th Grade Exposure to Violence – Witnessing

8th Grade Symptoms of Aggression

$c = -.01$; $SE = .01$

$c' = .004^*$; $SE = .002$; Bootstrap CI = .001 to .01

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. 7th grade aggression was included as a covariate but is not visually represented here. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Figure 4. Path coefficients for simple mediation analysis on internalizing symptoms (N = 191)
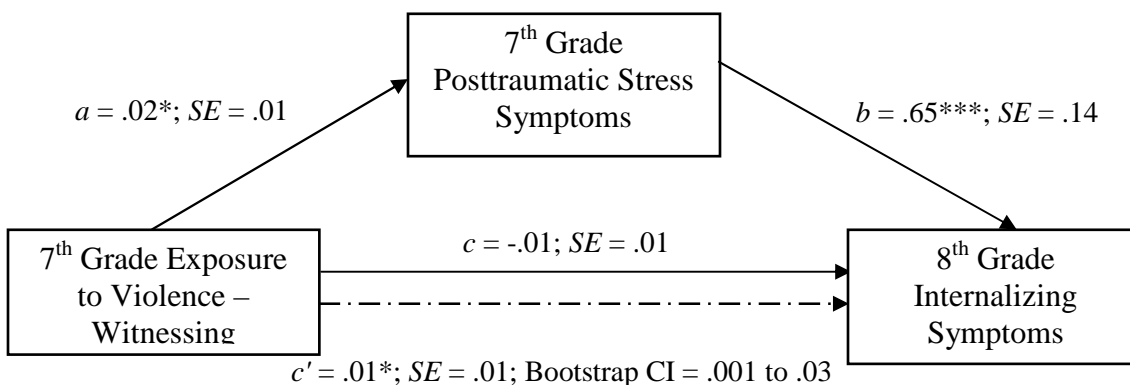
$a = .02^*$; $SE = .01$

$b = .65^{***}$; $SE = .14$

7th Grade Posttraumatic Stress Symptoms

7th Grade Exposure to Violence – Witnessing

8th Grade Internalizing Symptoms

$c = -.01$; $SE = .01$

$c' = .01^*$; $SE = .01$; Bootstrap CI = .001 to .03

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. 7th grade internalizing 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 second specific hypothesis (2-1) under the second aim of the current study was that the strength of the mediated relationship between exposure to violence and adjustment through posttraumatic stress would be dependent on level of family functioning. 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. 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. While traditional moderator models have tended to rely on the moderate, relatively high, and relatively low levels of the moderator, characterized by the mean and one standard deviation above and below the mean, for probing an interaction, there is no guarantee that all three of these arbitrarily selected values will fall within the range of data. This is particularly relevant in the distribution of the moderator variable is skewed, which may present a poor representation of the data. In contrast, using the 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). Given these advantages, the PROCESS method was utilized to test the models of moderation.

Moderation models were tested to determine whether the relations between the predictor and outcome variables in pathways *a*, *b*, and *c* (see the guiding model in Figure 1) were moderated by the two family functioning variables (i.e., family cohesion and daily family support). 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 7th grade exposure to violence or 7th grade posttraumatic stress and subsequent 8th grade adjustment difficulties. Thus, for all other significant moderation models, family cohesion or daily family support exhibited a protective-stabilizing effect.

Table 3. Significant overall conditional effects for the entire sample

Independent Variable	Dependent Variable	Moderator	Coefficient for Interaction	R^2 Change	p
7th ETV – Witnessing	8th Delinquency	Family Cohesion	-.1037	.0248	.0185
7th ETV – Witnessing	8th Delinquency	Daily Family Support	-.9053	.0856	.0000
7th ETV – Witnessing	8th Internalizing	Family Cohesion	.0077	.0135	.0450
7th ETV – Victimization	8th Aggression	Family Cohesion	.0058	.0206	.0412
7th ETV – Victimization	8th Delinquency	Daily Family Support			
7th Posttraumatic Stress	8th Aggression	Family Cohesion	-.0290	.0373	.0036
7th Posttraumatic Stress	8th Internalizing	Family Cohesion	-.0734	.0261	.0090

Note. 7th = 7th grade (time 1). 8th = 8th 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). Internalizing levels derived from Children's Depression Inventory (CDI) and How I Feel Questionnaire—Anxiety (HIF) composite. 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
Males	7th ETV – Witnessing	8th Internalizing	Family Cohesion	.0209	.0546	.0209
Females	7th ETV – Witnessing	8th Delinquency	Family Cohesion	-.1570	.0662	.0021
Females	7th ETV – Witnessing	8th Delinquency	Daily Family Support	-1.2804	.1863	.0000
Females	7th Posttraumatic Stress	8th Delinquency	Daily Family Support	6.7102	.0363	.0324
Females	7th Posttraumatic Stress	8th Aggression	Family Cohesion	-.0302	.0389	.0178

Note. 7th = 7th grade (time 1). 8th = 8th 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). Internalizing levels derived from Children's Depression Inventory (CDI) and How I Feel Questionnaire—Anxiety (HIF) composite. Aggression levels from the Child Behavioral Checklist (CBCL) aggression subscale. Delinquency levels from the Juvenile Delinquency Scale (JDS).

In order to address specific hypothesis 2-2a, 2-2b, and 2-2c under the second aim of the current study, the conditional effects for each pathway (*a*, *b*, and *c*) in each significant mediation model were explored. As previously outlined, two mediation models emerged as significant: 1. Witnessing → Posttraumatic Stress → Internalizing, and 2. Witnessing → Posttraumatic Stress → Aggression. Hypothesis 2-2a speculated that the strength of the relationship between exposure to violence and posttraumatic stress would depend on level of family functioning (*X* → *M*; pathway *a*). Family cohesion did not, however, exhibit an overall moderating effect between 7th grade violence exposure and concurrent posttraumatic stress. Though a significant interaction was not demonstrated, the conditional effects of witnessing violence on posttraumatic stress at five different levels (10th, 25th 50th 75th and 90th percentiles) of family cohesion were examined to further understand this pathway in the significant mediation model. Results indicated a significant relation between the variables when family cohesion was low, moderate, high, and very high (Figure 5 and Table 5). Surprisingly, while children and adolescents from families very low in cohesion reported more posttraumatic stress symptoms as was predicted, this group was the only group that showed no significant association between witnessing and concurrent posttraumatic stress. The overall interaction between family cohesion and witnessing violence in pathway *a* was not significant with posttraumatic stress as an outcome.

The first significant mediation model indicated a significant indirect effect of witnessing violence on subsequent aggression symptoms through posttraumatic stress. As previously discussed, family cohesion did not appear to moderate pathway *a* (i.e., *X* → *M*). Hypothesis 2-2b speculated that family functioning would significantly moderate

pathway b ($M \rightarrow Y$). Indeed, family cohesion did significantly moderate the relation between 7th grade posttraumatic stress and subsequent 8th grade aggression. As reported in Table 3, the coefficient for the product of family cohesion and posttraumatic stress predicting aggression was .0290, which is statistically different from zero ($p < .05$). The R-square increase due to the interaction is .0036, suggesting that approximately 4% of the variance in aggression is uniquely attributable to the interaction between posttraumatic stress and family cohesion. The conditional effects of 7th grade posttraumatic stress at five different levels of family cohesion (10th, 25th, 50th, 75th, and 90th percentiles) indicated that higher levels are associated with 8th 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 6 and Figure 6). The relationship between posttraumatic stress and aggression was stronger as family cohesion decreased.

Figure 5. Moderation of the direct effect of witnessing community violence in 7th grade on 7th grade posttraumatic stress symptoms by level of family cohesion

Table 5. Relation between 7th grade witnessing violence and posttraumatic stress, moderated by family cohesion

Level of Moderator	Conditional Effect	p
Very Low (10th percentile)	.0120	.2519
Low (25th percentile)	.0164	.0135
Moderate (50th percentile)	.0197	.0018
High (75th percentile)	.0219	.0041
Very High (90th percentile)	.0241	.0128

Figure 6. Moderation of the direct effect of posttraumatic stress in 7th grade on 7th grade aggression by level of family cohesion

Table 6. Relation between 7th grade posttraumatic stress and 8th grade aggression, moderated by family cohesion

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

Hypothesis 2-2c under the second aim of the current study speculated that the strength of the relationship between exposure to violence and externalizing would depend on the level of family functioning ($X \rightarrow Y$; pathway c). This moderating relationship did not emerge in the relation between witnessing community violence and subsequent aggression. The conditional effects of 7th grade witnessing at five different levels of family cohesion (10th, 25th, 50th, 75th, and 90th percentiles) did not suggest that differing levels were associated with more 8th grade aggression. Though no significant interaction was demonstrated, these results are presented in Figure 7 and Table 7 in order to present all pathways in the significant mediation models.

The second significant mediation model indicated a significant indirect effect of witnessing violence on subsequent internalizing symptoms through posttraumatic stress. As indicated in the previous paragraph, family cohesion did not appear to moderate pathway a (i.e., $X \rightarrow M$). However, as stipulated in hypothesis 2-2b, further moderation analyses revealed that family cohesion did significantly moderate pathway b ($M \rightarrow Y$), or the relation between 7th grade posttraumatic stress and subsequent 8th grade internalizing symptoms. As can be seen in Table 3, the coefficient for the product of family cohesion and posttraumatic stress predicting internalizing symptoms was -.0734, which is statistically different from zero ($p < .01$). The R-square increase due to the interaction is .0261, indicating that approximately 3% of the variance in internalizing is uniquely attributable to the interaction between posttraumatic stress and family cohesion. The conditional effects of 7th grade posttraumatic stress at five different levels of family cohesion (10th, 25th, 50th, 75th, and 90th percentiles) suggested that higher levels are associated with more internalizing symptoms, but only when family cohesion ranges

from very low to high. When family cohesion is very high, posttraumatic stress was no

longer predictive of internalizing symptoms (see Table 8 and Figure 8). The relation

between posttraumatic stress and internalizing became successively stronger as family

cohesion diminished.

Figure 7. Moderation of the direct effect of witnessing community violence in 7th grade on 8th grade aggression by level of family cohesion
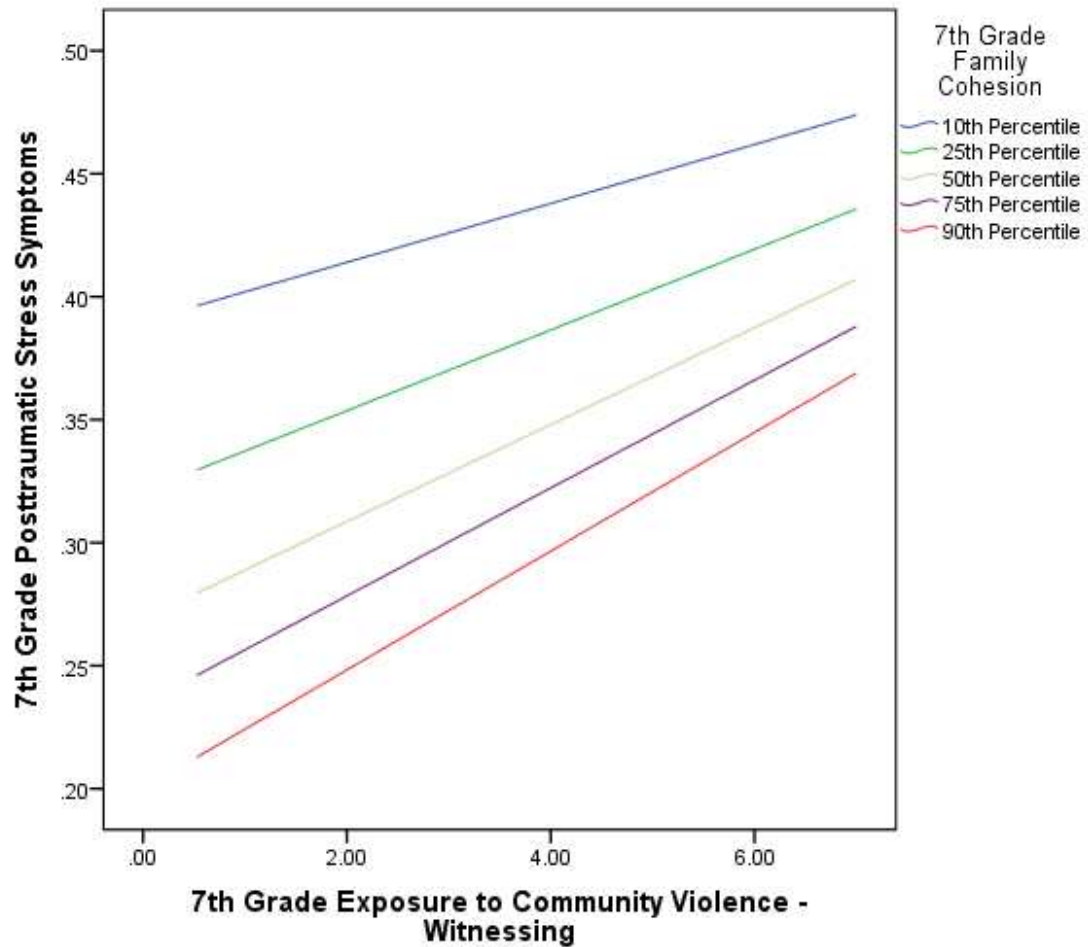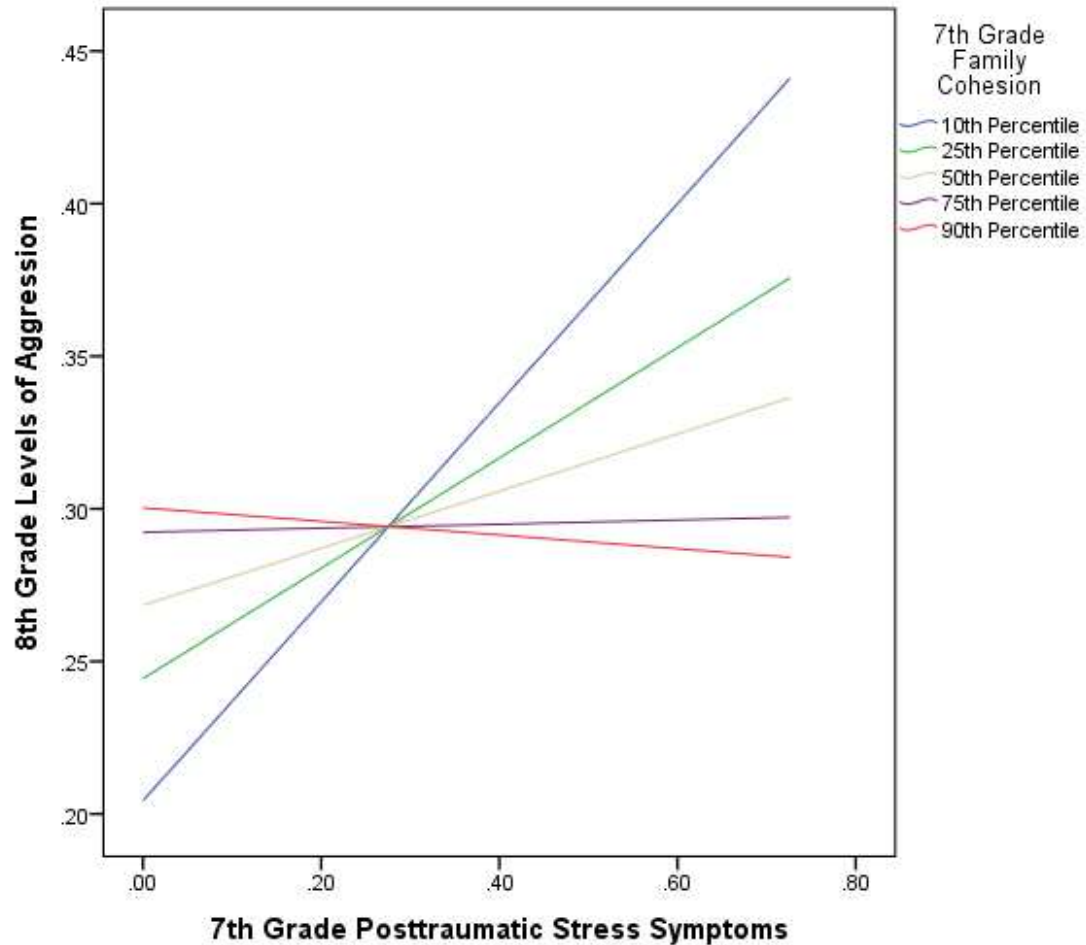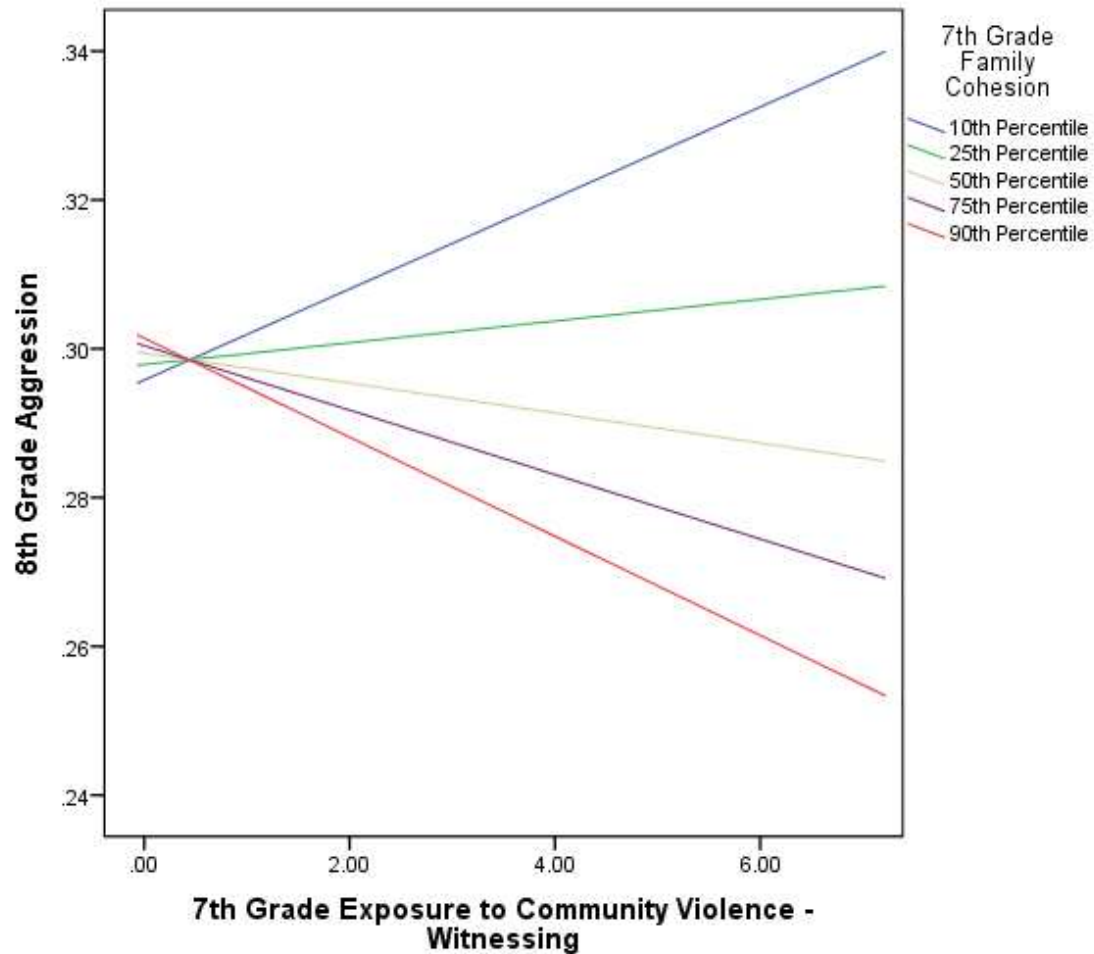

Table 7. Relation between 7th grade witnessing community violence and 8th grade aggression, moderated by family cohesion.

Level of Moderator	Conditional Effect	p
Very Low (10th percentile)	.0061	.6575
Low (25th percentile)	.0015	.8643
Moderate (50th percentile)	-.0020	.7823
High (75th percentile)	-.0043	.6070
Very High (90th percentile)	-.0067	.5335

Figure 8. Moderation of the direct effect of posttraumatic stress in 7th grade on 8th grade internalizing symptoms by level of family cohesion

Table 8. Relation between 7th grade posttraumatic stress and 8th grade internalizing symptoms, moderated by family cohesion

Level of Moderator	Conditional Effect	p
Very Low (10th percentile)	1.0393	.0000
Low (25th percentile)	.8191	.0000
Moderate (50th percentile)	.5256	.0003
High (75th percentile)	.3789	.0250
Very High (90th percentile)	.3055	.1015

Hypothesis 2-2c projected that the relation between exposure to violence and subsequent adjustment problems would depend on the level of family functioning. Significant moderation by family cohesion was indeed found at pathway c in this model ($X \rightarrow Y$), or the relation between witnessing community violence and subsequent internalizing symptoms. As represented in Table 3, the coefficient for the product of family cohesion and witnessing violence was .0077, which is statistically different from zero ($p < .05$). The R-square increase due to the interaction was .0135, indicating that a little over 1% of the variance in internalizing is uniquely attributable to the interaction between witnessing violence and family cohesion. The conditional effects of 7th grade witnessing at five different levels of family cohesion (10th, 25th, 50th, 75th, and 90th percentiles) suggested that higher levels are associated with more internalizing symptoms, but only when family cohesion was in the very low and low range. When family cohesion was moderate, high, or very high, violence witnessing was no longer predictive of internalizing symptoms (see Table 9 and Figure 9). The relation between witnessing and internalizing becomes successively stronger as family cohesion diminishes.

Figure 9. Moderation of the direct effect of witnessing community violence in 7th grade on 8th grade internalizing symptoms by level of family cohesion
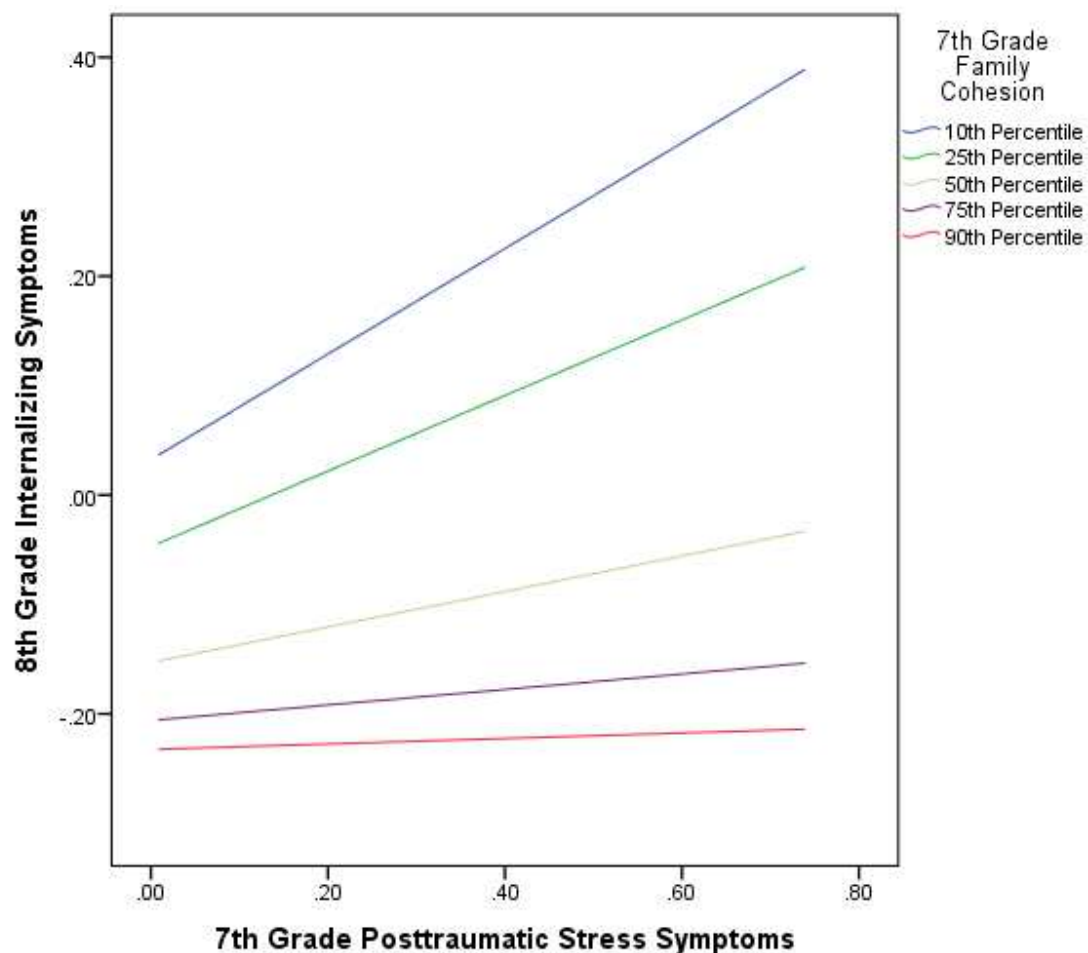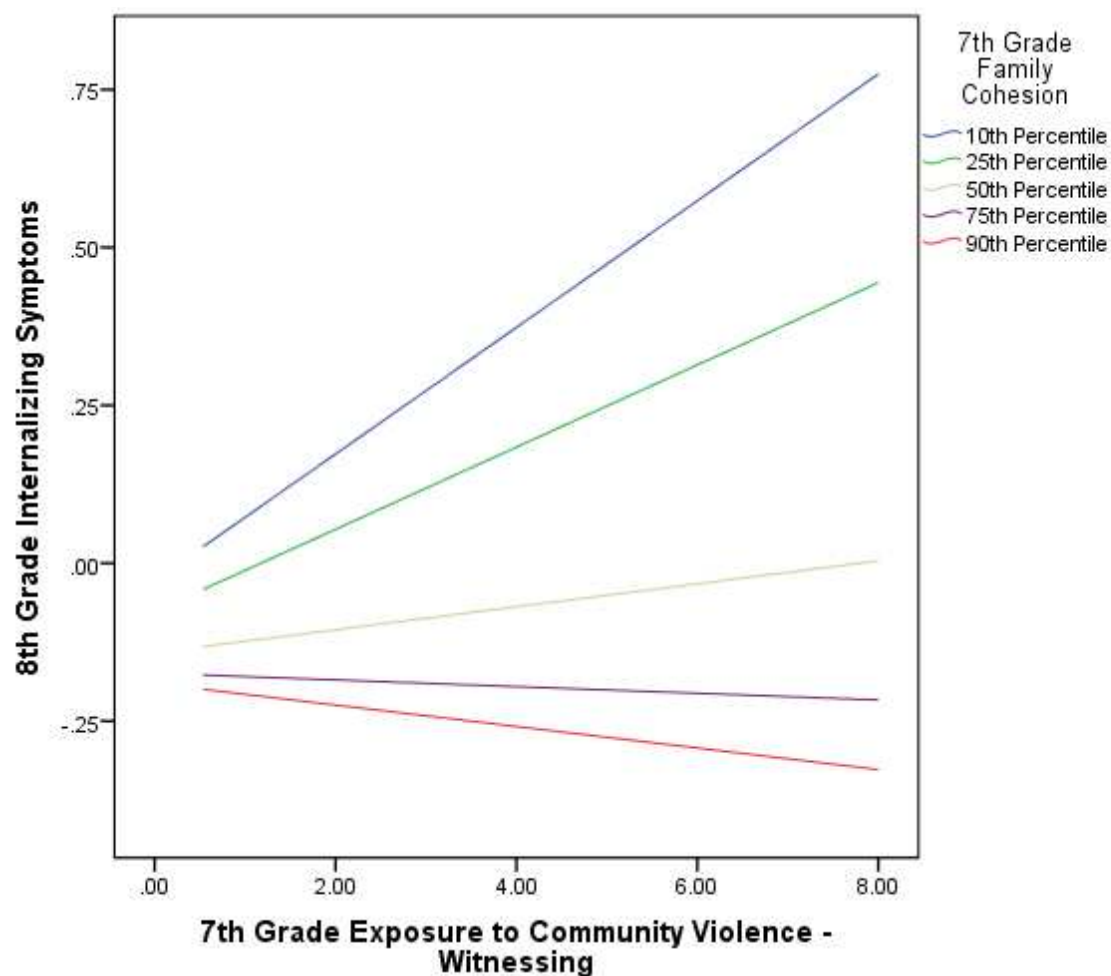

Table 9. Relation between 7th grade witnessing community violence and 8th grade internalizing symptoms, moderated by family cohesion

Level of Moderator	Conditional Effect	p
Very Low (10th percentile)	.1003	.0003
Low (25th percentile)	.0651	.0005
Moderate (50th percentile)	.0182	.2215
High (75th percentile)	-.0053	.7699
Very High (90th percentile)	-.0170	.4076

Moderated Mediation of Significant Models

The mediation analyses provided evidence of a significant positive indirect effect of 7th grade violence witnessing on 8th grade aggression throughout posttraumatic stress, with violence exposure associated with increased posttraumatic stress, which in turn was related to increased levels of aggression (hypothesis 2-1). Moderation analyses did not demonstrate that the link between 7th grade violence witnessing and 8th grade aggression was dependent on levels of family cohesion. The direct effect of 7th grade posttraumatic stress on 8th grade aggression depended on the level of family cohesion, however, with posttraumatic stress symptoms leading to more aggression among children from families lower in cohesion, while children from families higher in cohesion showed no association between the two. Thus, putting the mediation and moderation results together for this particular model suggests that the mediation is partially moderated. That is, the indirect effect of witnessing violence on aggression through posttraumatic stress partially depended on level of family cohesion. In this scenario, it is recommended to estimate the conditional indirect effects using a bootstrap confidence interval (CI) in order to test whether these indirect effects differ from zero at particular values of the moderator under study (Preacher et al., 2007). The SPSS PROCESS procedure was utilized using 10,000 bootstrap estimates for the creation of 95% bias-corrected CIs for the conditional indirect effects. The 10th, 25th, 50th, 75th, and 90th percentiles were used to represent very low, low, moderate, high, and very high values of family cohesion, respectively.

Table 10 presents the point estimates and 95% CIs for the conditional indirect effects of this Witnessing → Posttraumatic Stress → Aggression model. As can be seen in this table, the indirect effect of 7th grade witnessing on 8th grade aggression was

significantly positive among those from families moderate in cohesion (.0026, 95% CI: .0001 to .0088). This indirect effect was not significantly different from zero among children and adolescents from families very low, low, high, or very high in cohesion. Thus, higher levels of witnessing violence related to increased concurrent posttraumatic stress, which subsequently increased 8th grade aggression symptoms for children in moderately cohesive families. This mediation is only significant among children from approximately the 50th percentile in cohesion due to the significant pathway a $(X \rightarrow M)$ relationship and partially significant pathway c relationship $(M \rightarrow Y)$ that did not consistently emerge among those from families higher or lower in cohesion.

Table 10. 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
10th (13.00)	.0064	.0109	-.0350 to .0134
25th (16.00)	.0019	.0030	-.0024 to .0108
50th (19.00)	.0026	.0019	.0001 to .0088
75th (22.00)	.0007	.0020	-.0025 to .0069
90th (23.00)	-.0025	.0031	-.0117 to .0024

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

The second significant mediation model provided evidence of a positive indirect effect of 7th grade violence witnessing on 8th grade internalizing symptoms through posttraumatic stress, with violence exposure related to increased posttraumatic stress,

which in turn was linked to increased levels of subsequent internalizing symptoms. The moderation analysis showed that the relation between 7th grade community violence witnessing and 8th grade internalizing was dependent on levels of family cohesion, with a significant positive association for children from very low and low cohesion families, and no link for children from moderate, high, and very high cohesion families. Moreover, the direct effect of 7th grade posttraumatic stress on 8th grade internalizing depended on level of family cohesion, with posttraumatic stress symptoms predicting internalizing more significantly among those from families lower in cohesion, while children from families very high in cohesion showing no significant association. These two processes suggested that the indirect effect of witnessing violence on internalizing symptoms through posttraumatic stress depended on level of family cohesion—or, that the mediation is moderated. As with the previous tested model, conditional indirect effects using a bootstrap confidence interval (CI) were estimated in order to test whether these indirect effects differ from zero at particular values of the family cohesion.

Table 11 presents the point estimates and 95% CIs for the conditional indirect effects of this Witnessing → Posttraumatic Stress → Internalizing model. As can be seen in this table, the indirect effect of 7th grade witnessing on 8th grade internalizing was positive among those moderate (.0100, 95% CI: .0014 to .0246) high (.0147, 95% CI: .0048 to .0340) and very high (.0155, 95% CI: .0042 to .0373) in family cohesion. Thus, higher levels of witnessing violence related to more posttraumatic stress, which in turn increased the likelihood of developing subsequent internalizing problems in children from moderate, high, and very high family cohesion. This indirect effect was not significantly different from zero among children from very low (-.0101, 95% CI: -.0473

to .0169) and low (.0017, 95% CI: -.0136 to .0197) cohesion families. Again, this

surprising finding was due to the finding that no relation emerged between witnessing

violence and concurrent posttraumatic stress in children from very low and low cohesion

families, though incidence of posttraumatic stress was indeed higher among these

children. No other significant moderated mediation models emerged for the entire

sample, nor when examined separately by gender. These results are discussed below.

Table 11. Conditional indirect effects of witnessing community violence on subsequent
internalizing symptoms through posttraumatic stress symptoms at levels of family
cohesion

Family Cohesion Percentile	Point estimate effect	Bootstrap SE	95% Bias-corrected bootstrap confidence interval
10th (13.00)	-.0101	.0159	-.0473 to .0169
25th (16.00)	.0017	.0082	-.0136 to .0197
50th (19.00)	.0100	.0057	.0014 to .0246
75th (22.00)	.0147	.0070	.0048 to .0340
90th (23.00)	.0155	.0080	.0042 to .0373

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

CHAPTER FOUR

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 relationship between exposure to community violence (i.e., witnessing or victimization) and subsequent internalizing (i.e., anxiety and depression) and externalizing (i.e., aggression or delinquency) symptoms across 7th to 8th 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 significantly predicted concurrent posttraumatic stress and subsequent delinquency and internalizing symptoms, though the presence and strength of the relationship 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 7th grade and increased aggression and internalizing symptoms in 8th grade, and the strength of these indirect effects depended on the level of family cohesion.

The first specific aim of the present study was to investigate the association between family functioning and posttraumatic stress, internalizing, and externalizing symptoms. Consistent with previous research demonstrating a negative relation between family functioning and subsequent maladaptive outcomes (e.g., Hammack et al., 2004; Paxton et al., 2004; Kliewer et al., 2004; Reese et al., 2000), the present study found that both family cohesion and daily family support predicted decreased levels of delinquency, internalizing, and posttraumatic stress, but not aggression. Regression analyses indicated that 7th grade family variables explained between 2-5% of the variance across these outcomes after controlling for year 1 base-rate levels of the outcome variable. There was substantial variability in regards to what predictor variable and data collection method predicted which outcomes. Both family cohesion (data gathered via questionnaire self-report) and daily family support (data gathered via the experience sampling method) significantly and negatively predicted subsequent internalizing symptoms for the entire sample, while family cohesion alone was predictive of concurrent posttraumatic stress in the entire sample. Surprisingly, neither family functioning variable demonstrated a variation in 8th grade aggression. This non-significant finding may be related to the lesser power available with a smaller number of parents completing the measurement of aggression. Gender played a role in the nature of the significant negative relationship of family functioning to outcomes. While diminished family cohesion predicted increased internalizing among males but not females, daily family support predicted internalizing among females but not males. Both family variables predicted of 8th grade delinquency among females, but did not appear to influence male delinquency in the sample.

There are several explanations for these disparate findings across gender that may prove recurrent throughout following analyses. The third specific aim of the current study was to test for potential differences in gender by performing separate analyses at each step in the analytic process given existing evidence suggesting probable differences in the way that young males and females experience and react to exposure to community violence. In general, previous research on the topic has reported gender differences in the symptomatology exhibited in adolescents following violence exposure, with females endorsing more internalizing symptoms and males endorsing more externalizing symptoms (Springer & Padgett, 2000; Eiser, et al., 1995; Achenbach, 1991). Accordingly, the finding in the current study that family variables generally predict a change in internalizing symptoms for males (i.e., anxiety, depression, posttraumatic stress) and externalizing symptoms in females (i.e., delinquency), while at first may be counterintuitive, is not entirely surprising. It is possible that delinquent behavior among males and the experience of posttraumatic stress (a set of symptoms which are primarily internalizing in nature), anxiety, and depression among females 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 addressing the effects of exposure to violence and later mental health prevention and intervention among males and females.

Hypotheses 2-2 of the current study outlined predictions for the moderating effects of family functioning between violence exposure, posttraumatic stress, and adjustment difficulties. It was anticipated that differing levels of family functioning would influence the strength of the relation between 1) exposure to community violence

and posttraumatic stress, 2) posttraumatic stress and subsequent internalizing and externalizing outcomes, and 3) exposure to community violence and subsequent internalizing and externalizing outcomes. 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 support demonstrates a protective-stabilizing effect in the development of subsequent or comorbid delinquency, aggression, depression, and anxiety. While the pattern of these effects differed based on predictor, outcome, and gender of the participant, the overall findings 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 multi-method 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 was predicting 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. All further conditioned effects included witnessing as a predictor. While 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.

The results of this study partially supported the hypothesis of posttraumatic stress acting as a causal meditational chain in the relation between exposure to violence and various internalizing and externalizing outcomes. Two significant models 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 adjustment difficulties in adolescence. Witnessing violence in 7th grade exerted an indirect effect on 8th grade aggression and internalizing symptoms through posttraumatic stress. Thus, increased witnessing of violence in the community appeared to predispose adolescents to more severe posttraumatic stress symptoms which, in turn, contributed to increased aggression, anxiety, and depression. The formal test of these indirect effects using the bootstrapping approach was significant. The traditional causal steps approach (i.e., Baron & Kenny, 1986) was approaching significance for each outcome, though validity and utility of this method has been questioned (Hayes, 2013; Shrout & Bolger, 2002).

These findings are consistent with previous research linking posttraumatic stress and aggression (Stewart, Sherry, Stevens, & Wekerle, 2011; Kerig, Vanderzee, Becker, & Ward, 2012). The posttraumatic stress symptoms of re-experiencing and hyperarousal may contribute to a difficulty in regulating emotions and behaviors, conceivably contributing to subsequent externalizing problems. Additionally, previous studies have found a significant predictive relationship between posttraumatic stress and internalizing symptoms, such as depression and anxiety (Smith, Smith, & Earp, 1999; Vernberg &

Varela, 2001). As theorized by Mazza and Reynolds (1999), symptoms of

posttraumatic stress including intrusive thoughts, avoidance, and re-experiencing

traumatic events may contribute to a sense of helplessness and perception that the world

is inherently dangerous, thus exacerbating depressive symptoms among youth.

Furthermore, flashbacks, hyperarousal, and intrusive thoughts may contribute to a

heightened chronic state of fear and distress, corresponding to hallmark symptoms of

anxiety (van der Kolk & McFarlane, 1996). These findings advance the trauma and

exposure to violence literature by longitudinally demonstrating the mediating role of

posttraumatic stress and its effect on both internalizing and externalizing symptoms by

both child and parent report.

The moderated mediation analyses were conducted to empirically test the degree

to which the relationship between witnessing violent acts and aggression/internalizing

was direct or mediated via posttraumatic stress symptomatology while also depending on

levels of family cohesion and daily family support. The indirect effect of 7th grade

witnessing violence on 8th grade aggression through posttraumatic stress was not

conditioned on daily family support. In contrast, the indirect effect of 7th grade witnessing

violence on 8th grade aggression though 7th 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. As indirect effects are calculated as the product of the

regression coefficients estimating pathway a ($X \rightarrow M$) and pathway b ($M \rightarrow Y$), it is important to consider each link when investigating potential moderated mediation. Neither family cohesion nor daily family support emerged as a significant overall moderator in pathway a, the relation between witnessing and posttraumatic stress. However, the link between violence exposure and concurrent posttraumatic stress was significant for every level of cohesion *except* for children from very low cohesion families. Thus, 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 7th grade posttraumatic stress and 8th grade aggression was only significant 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 emphasizes the protective role of family functioning following the presentation of posttraumatic stress.

A similar finding emerged when examining the conditional indirect effects of 7th grade violence witnessing on 8th grade internalizing symptoms through posttraumatic stress. These indirect effects were not conditioned on daily family support, but were conditioned on family cohesion. An indirect effect of witnessing violence on internalizing through posttraumatic stress was stronger, however, for adolescents from families that were moderate to very high in cohesion. Again, this pattern of results was contrary to

predicted models, which anticipated greater indirect effects for children from families

that were reportedly *lower* in cohesion. However, after examining the conditioned

relation in both pathways, that is, exposure to violence to posttraumatic stress and

posttraumatic stress to internalizing, the finding is less surprising. The relation between

7th grade posttraumatic stress and 8th grade internalizing was moderated by family

cohesion in the expected fashion. Low cohesion strengthened the association while highly

cohesive families negated the relation. However, as in the previously discussed model,

family cohesion did not moderate the relation between witnessing and posttraumatic

stress, though it did appear that this relationship was weaker for children from families

with diminished cohesion. Though the overall effects are non-significant, a third variable

or amalgamation of deleterious variables may be driving the degree of posttraumatic

stress for children from families very low and low in cohesion rather than simply levels

of exposure to violence in 7th grade. One possibility is that the negative family

environment itself is contributing to levels of posttraumatic stress over and above degree

of exposure to violence. This finding highlights the importance of family functioning in

preventing the development of subsequent anxiety and depressive symptoms following

both exposure to violence and the presentation of posttraumatic stress among adolescents.

These results, when considered in light of a risk and resilience framework

(Luthar, Cicchetti, & Becker, 2000) and ecological system's theory (Bronfenbrenner,

1979) suggest the importance of examining the deleterious effects of community violence

in the context of the family environment. While the link between violence exposure and

deleterious outcomes has been well established in previous literature, the degree of this

relationship 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, may relate to effectiveness in attending to environmental stress present in disadvantaged environments (Reese, Vera, Simon, & Ikeda, 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).

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 internalizing and externalizing outcomes. Garbarino (2008) describes 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 emotional or behavioral problems. The moderated mediation analyses, however, seem to imply that families functioning at moderate to very high levels of cohesion exhibit indirect effects of violence exposure to aggression and internalizing symptoms through posttraumatic stress. Children from families lower in cohesion do not demonstrate these indirect effects, as violence exposure and concurrent posttraumatic stress symptoms are not significantly related. This might

suggest that, for some children and adolescents, the family environment itself is a more socially toxic environment than the presence of surrounding community violence. One possibility is that family cohesion and daily family support serve as a proxy of a lack of domestic violence. As previous research has demonstrated that deficient parental monitoring and faulty discipline methods are related to maladaptive developmental outcomes (e.g., Goldner et al., 2011), so to may very low family cohesion or support act as the primary predictor of posttraumatic stress beyond the protective-stabilizing effect observed among children from families higher in functioning.

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 while 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. Consequently, it is not possible to determine whether violence exposure was a causal predictor of concurrent posttraumatic stress. While a predictive relationship between 7th grade posttraumatic stress levels and subsequent adjustment difficulties in 8th grade was able to be examined, determining the cause of the initial development of posttraumatic stress and its symptomatology as a causal mediator between violence exposure and deleterious outcomes is difficult. Exploring exposure to violence and the development of posttraumatic stress across three periods of time would allow for such causal claims. Moreover, the measure utilized to gather information concerning posttraumatic stress assessed the severity of symptom

clusters forming the construct of posttraumatic stress rather than 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., Mazza & Reynolds, 1999; Garbarino, 1995). Nevertheless, it is possible that these two groups may have significantly differed from one another had such a comparison been possible.

Although the data under study were longitudinal and multi-method, a variable sample size made detecting interaction and indirect effects difficult in some cases. This was particularly relevant when examining effects separately by gender. Additionally, parent report was significantly lower than adolescent report of adjustment difficulties, so a lower *N* was noted in parent report of adolescent aggression symptoms. Moreover, daily family support, while offering a rich set of data utilizing the experience sampling method with adolescents, was incomplete for a subset of the participants. While the bootstrapping method is more appropriate for smaller sample sizes, there is question of whether this smaller sample is representative of the larger population. Another potential limitation of the current study was its homogenous sample with regard to race, social class and geographical location. While 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.

Strengths of the Current Study

The current study is strengthened by its focus on a population exposed to chronically high levels of violence. Much of the existing trauma literature focuses on type I, or single-event traumatic experiences. Furthermore, these studies have been conducted among limited and most frequently European American samples (Luthra et al., 2008), while 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 by design. Moreover, these studies often only examine a single outcome variable without potential moderating mechanisms. The current study examined the direct, indirect, and conditional effects of exposure to violence, posttraumatic stress, family functioning, and maladaptive adjustment in a more comprehensive model. Furthermore, significant mediation was found across both parent and child report, solidifying the importance of data collection from multiple sources when possible. Finally, the current study is strengthened by its investigations into how relations among the selected variables differ by gender. In general, family functioning variables demonstrated a moderating effect in the relation between exposure to violence and internalizing among males, and externalizing among females. As previously discussed, this is an important finding in light of the gender differences in prevalence rates for these problems and may have implications for prevention and intervention.

As suggested by Aisenberg and Ell (2005), the current study examined the effects of exposure to violence in the context of the child's environment in order to provide a more contextualized understanding of the relation between variables. 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 significantly different findings, suggesting that both family cohesion and support influence the development of posttraumatic stress and other deleterious outcomes in distinct ways. 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 multi-method 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 design, it would be useful to examine the relation among these variables across three time points. While the mediating role of posttraumatic stress can be asserted by using two assessment points, as was the case in the current design, the addition of a third time point would allow for a causal exploration of the link between exposure to violence and posttraumatic stress among this sample. 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 terms of measurement, future investigators should consider conducting diagnostic interviews in order to identify a discrete diagnosis of posttraumatic stress, anxiety, and depression. 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 and internalizing. Obtaining observational samples of family interaction may provide a rich understanding of family functioning. Finally, future studies should continue to utilize a multimethod, multi-reporter, context-comprehensive approach within this historically underserved, high risk, and under researched population in order to illuminate the understanding of the effects of chronic exposure to violence and potential mental health prevention and intervention models.

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. It is essential for mental health providers working with African American youth to understand the influence of chronic exposure to community violence and its link to posttraumatic stress. Should signs of posttraumatic stress emerge among these children, a comprehensive assessment of aggression, depression, and anxiety should follow.

Given the moderating impact of family cohesion and daily family support found

between violence exposure and posttraumatic stress, internalizing, 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 and internalizing outcomes among youth

exposed to violence.

REFERENCES

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.

American Psychiatric Association. (2000). Diagnostic and statistical manual of mental disorders (4th edition: Text revision). Washington, DC: Author.

Baglioni, C., Battagliese, G., Feige, B., Spiegelhalder, K., Nissen, C., Voderholzer, U., Lombardo, C., ... Riemann, D. (2011). Insomnia as a predictor of depression: A meta-analytic evaluation of longitudinal epidemiological studies. *Journal of Affective Disorders, 135,* 10-19.

Barkin, S., Kreitetr, S., & DuRant, R. H. (2001). Exposure to violence and inten- tions to engage in moralistic violence during early adolescence. *Journal of Adolescence*, *24*, 777-789.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182.

Bell, C. C., & Jenkins, E. J. (1993). Community violence and children on Chicago's southside. *Psychiatry, 56,* 46–54.

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.

Bollen, K.A., (1989). Structural equations with latent variables. New York, NY: John Wiley and Sons.

Briere, J. (1996). *Trauma Symptom Checklist for Children: Professional Manual.* Florida: Psychological Assessment Resources Inc.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

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.

Burton, D., Foy, D., Bwanausi, C., Johnson, J., and 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.

Centers for Disease Control. (2008). *National Center for Injury Prevention and Control, Office of Statistics and Programming. Web-based Injury Statistics Query and Reporting System* (WISQARS). Retrieved August 12, 2012 from http://www.cdc.gov/ncipc/wisqars/

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.

Davidson, J. R., & Foa, E. B. (1991). Diagnostic issues in posttraumatic stress disorder: considerations for the DSM-IV. *Journal of Abnormal Psychology, 100,* 3, 346-55.

Dodge, K. A., & Pettit, G. S. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Developmental Psychology, 39*, 349-371.

Eiser, C., Havermans, T., and Eiser, J. (1995). The emergence during adolescence of gender differences in symptom reporting. *Journal of Adolescence, 18*, 307–316.

Farrell, A. D., & Bruce, S. E. (1997). Impact of exposure to community violence on violent behavior and emotional distress among urban adolescents. *Journal of Clinical Child Psychology, 26,* 2-14.

Feldman, R. S. (2007). *Child development, 4th Ed*. Upper Saddle River, NJ: Prentice Hall.

Fitzpatrick, K. M., & Boldizar, J. P. (1993). The prevalence and consequences of exposure to violence among African American youth. *Journal of the American Academy of Child and Adolescent Psychiatry, 32*, 424–430.

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., Kuperminc, 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 Adolescents, 33*(1), 59-69.

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.

Garbarino, J. (1995). The American war zone: What children can tell us about living with violence. *Journal of Developmental & Behavioral Pediatrics, 6*, 431–435.

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.

Garbarino, J., Dubrow, N., Kostelny, K., and Pardo, C. (1992). *Children in Danger: Coping With the Consequences of Community Violence*. Josey-Bass, San Francisco.

Garbarino, J., Sebes, J., & Schellenbach, C. (1984). Families at Risk for Destructive Parent-Child Relations in Adolescence. *Child Development, 55,* 1, 174-183.

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.

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 & Adolescent Psychology, 33,* 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.

Halpern, L. F. (2004). The relations of coping and family environment to preschoolers' problem behavior. *Journal of Applied Developmental Psychology, 25*, 399- 421.

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.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. Communication Monographs, 76, 408–420.

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: Guilford Press.

Hill, H. M., & Madhere, S. (1996). Exposure to community violence and African American children: A multidimensional model of risks and resources. *Journal of Community Psychology, 24,* 26-43.

Hindelang, M. J., Hirschi, T., & Weis, J. G. (1981). Measuring delinquency. Beverly Hills, CA: Sage Publications.

Horowitz, K., Weine, S., & Jekel, J. (1995). PTSD symptoms in urban adolescent girls: Compounded community trauma. *Journal of the American Academy of Child and Adolescent Psychiatry, 34(10),* 1353-1361.

Hukkelberg, S. S., & Jensen, T. K. (2011). The dimensionality of posttraumatic stress symptoms and their relationship to depression in children and adolescents. *Journal of Traumatic Stress, 24,* 3, 326-33.

Jenkins, E. J., & Bell, C. C. (1994). Violence exposure, psychological distress, and high risk behaviors among inner-city high school students. In S. Friedman (Ed.), *Anxiety disorders in African-Americans* (pp. 76–88). New York: Springer.

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.

Kilpatrick, D. G., Ruggiero, K. J., Acierno, R., Saunders, B. E., Resnick, H. S., & Best, C. L. (2003). Violence and risk of PTSD, major depression, substance abuse/dependence, and comorbidity: Results from the national survey of adolescents. *Journal of Consulting and Clinical Psychology, 71*(4), 692-700.

Kliewer, 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.

Kliewer, W., Lepore, S. J., Oskin, D., & Johnson, P. D. (1998). The role of social and cognitive processes in children's adjustment to community violence. *Journal of Consulting and Clinical Psychology, 66,* 199–209.

Kassam-Adams, N., Marsac, M. L., & Cirilli, C. (2010). Posttraumatic stress disorder symptom structure in injured children: Functional impairment and depression symptoms in a confirmatory factor analysis. Journal of the American Academy of Child & Adolescent Psychiatry, 49, 616– 625. doi:10.1097/00004583-201006000-00010

Kohl, K., Gross, I., & Richards, M.H. (under review). Posttraumatic Stress as a Mediator of Exposure to Community Violence and Depressive Symptoms in Urban African American Youth.

Rollins, M., Romero, E., Deane, K.C., Richards, M.R. (under review). Post-Traumatic Stress Symptom Clusters as Predictors of Externalizing Problems Among Urban Low-Income African-American Youth.

Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., et al. (1990). Trauma and the Vietnam War generation: Report on the findings from the National Vietnam Veterans Readjustment Study. New York: Brunner/Mazel.

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.

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.

Mallinckrodt, B., Abraham, W. T., Wei, M., & Russell, D. W. (2006). Advances in testing the statistical significance of mediation effects. *Journal of Counseling Psychology, 53*, 372- 378.

Masten, A., Morison, P., Pelligrini, D., & Tellegen, A. (1990). Competence under stress: Risk and protective factors. In: J. Rolf, A. S. Masten, D. Cicchetti, K. Nuechterlein, & S. Weintraub (Eds.), Risk and protective factors in the development of psychopathology (pp. 236–256). Cambridge, England: Cambridge University Press.

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.

Meiser-Stedman, R., Smith, P., Glucksman, E., Yule, W., & Dalgleish, T. (2008). The posttraumatic stress disorder diagnosis in preschool- and elementary school-age children exposed to motor vehicle accidents. American Journal of Psychiatry, 165, 1326–1337. doi:10.1176/appi.ajp.2008.07081282

Moos, R. H., & Moos, B. S. (1986). *Family Environment Scale manual* (2nd ed.). Palo Alto, CA: Consulting Psychologists Press.

The National Center for Children Exposed to Violence. Community violence. Retrieved from http://www.nccev.org/violence/community.html

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.

Ollendick, T. H. (1996). Violence in youth: Where do we go from here? Behavior t herapy's response. *Behavioral Therapy, 27*, 485– 514.

Olson, D. H., McCubbin, H., Barnes, H., Larsen, A., Muxem, A. and Wilson, M. (1983). Families: what makes them work. Beverly Hills, CA: Sage.

Quamma, J. P., & Greenberg, M. T. (1994). Children's experience of life stress: The role of family social support and social problem- solving skills as protective factors. *Journal of Clinical Child Psychology, 23*, 295–305.

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.

Perry, B. D., Pollard, R. A., Blakley, T. I., Baker, W. L., & Vigilante, D. (1995).

Childhood trauma, the neurobiology of adaptation, and ''use-dependent'' development of the brain: how ''states'' become ''traits.''. *Infant Mental Health Journal, 16*, 271–289.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, *42*, 185-227.

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 Review, 3,* 61–77.

Richters, J. E., & Martinez, P. (1990). Checklist of children's distress symptoms. Child and Adolescent Disorders Research Branch, National Institute of Mental Health.

Ruchkin, A., Henrich, C., Jones, S. M., Vermeiren, B., & Schwab-Stone, M. (2007) Violence expo- sure and psychopathology in urban youth: The mediating role of posttraumatic stress. *Journal of Abnormal Child Psychology, 35*, 578–593.

Saigh, P. A., & Bremner, J. D. (1999). *Posttraumatic stress disorder: A comprehensive text*. Boston: Allyn and Bacon.

Saigh, P. A., Yasik, A. E., Oberfield, R. A., Halamandaris, P. V., & McHugh, M. (2002). An analysis of the internalizing and externalizing behaviors of traumatized urban youth with and without PTSD. *Journal of Abnormal Psychology, 111*(3), 462-470.

Scarpa, A. (2001). Community violence exposure in a young adult sample: Lifetime prevalence and socioemotional effects. *Journal of Interpersonal Violence, 16*, 36-53.

Scheeringa, M. S., Wright, M., Hunt, J., & Zeanah, C. H. (2006). Fac- tors affecting the diagnosis and prediction of PTSD symtomatology in children and adolescents. *American Journal of Psychiatry, 163*, 644–651. doi:10.1176/appi.ajp.163.4.644

Shields, N., Nadasen, K., & Pierce, L. (2008). The effects of community violence on children in Cape Town, South Africa. *Child Abuse and Neglect, 32,* 5, 589-601.

Shrout, P.E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods, 7*, 422–445.

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.

Smetana, J. G. (1995). Conflict and coordination in adolescent/parent relationships. In *Close Relationships and Socioemotional Development*, Shulman, S. (Ed). Norwood, NJ: Ablex, pp. 155-184.

Smith, P. H., Smith, J. B., & Earp, J. A. (1999). Beyond the measurement trap: A reconstructed conceptualization and measurement of women battering. *Psychology of Women Quarterly, 23*, 177-193.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology, 13*, 290–312.

Sowell, E. R., Thompson, P. M., Tessner, K. D., & Toga (2001). Mapping continued brain growth and gray matter density reduction in dorsal frontal cortex. Inverse relationships during postadolescent brain maturation. *The Journal of Neuroscience, 21,* 8819-8829.

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.

Spielberger, C. D., Edwards, C. D., Montuori, J., & Lushene, D. (1973). *How I Feel Questionnaire (State–Trait Anxiety Inventory for Children).* Palo Alto, CA: Counseling Psychologists Press.

Steinberg, L. (2007). Risk taking in adolescence: New perspectives from brain and behavioral science. *Current Directions in Psychological Science, 16,* 55-59.

Steinberg, L., & Silverberg, S. B. (1986). The vicissitudes of autonomy in early adolescence. *Child Development, 57,* 841-851.

Taylor, R. D. (1996). Adolescents' perceptions of kinship support and family management practices: Association with adolescent adjustment in African American families. *Developmental Psychology, 32*, 687–695.

Terr, L. C. (1991). Childhood traumas: An outline and overview. *American Journal of Psychiatry, 148,* 10-20.

Tolan, P. (1988). Socioeconomic, family, and social stress correlates to adolescent antisocial and delinquent behavior. *Journal of Abnormal Child Psychology, 16*, 317–331.

Tolan, P. H., Gorman-Smith, D., Huesmann, L. R., & Zelli, A. (1997). Assessing family processes to explain risk for antisocial behavior and depression among urban youth. *Psychological Assessment, 9,* 212–223.

United States Department of Justice: Bureau of Justice Statistics, (2002). http://www.ojp.usdoj.gov/bjs/cvict_v.htm#age. Washington, DC: Author.

van der Kolk, B. A., & McFarlane, A. C. (1996). *The black hole of trauma*. New York: Guilford.

Vernberg, E. M., & Varela, R. E. (2001). Posttraumatic stress disorder: a develop- mental perspective. In M. W. Vasey, & M. R. Dadds (Eds.), The developmental psychopathology of anxiety (pp. 386–406). New York: Oxford University Press.

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.

Zinzow, H. M., Ruggiero, K. J., 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*, 441-450.

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