Understanding the Association Between Community Violence Exposure and Adolescents' Academic Functioning

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Understanding the Association between Community Violence Exposure and Adolescents' Academic Functioning

Qualifying Paper

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Abstract

Objective: This study examined the association of adolescent community violence exposure (CVE) and academic functioning in order to investigate emotion regulation and inattention as potential mediators. *Method:* Data were drawn from a sample of 598 Black (42%) and Hispanic (43%) adolescent boys (49%) and girls living in New York City. A meditation with regression analysis addressed the potential mechanisms, emotion regulation and inattention, through which CVE related to adolescents academic functioning. *Results:* Findings indicated that higher rates of CVE were negatively associated with school engagement, but not emotion regulation and inattention, resulting in no case for mediation. Contrary to predictions, emotion regulation and inattention did not mediate the path to which CVE was associated to school engagement. However, CVE, emotion regulation and inattention uniquely predicted academic functioning. *Conclusions:* Findings are discussed in terms of how traumatic exposures such as community violence disrupt brain and body regions responsible for emotion regulation and inattention, all of which have important implications for interventions targeting social emotional learning and academic success and functioning for adolescents.

Introduction

There is a growing body of literature documenting the incidence and prevalence of youth exposure to community violence, as well as its influence on an array of developmental outcomes (Buka, Stichick, Birdthistle & Earls, 2001; Cooley-Strickland et al, 2009; Fitzpatrick & Boldizar, 1993; Gorman–Smith & Tolan, 1998; Rosenthal, 2000). What is less well understood, however, is role of exposure to community violence, as an experience of trauma, on academic functioning and the specific mechanisms that link the two. In this paper I address this gap in the literature by examining the association of community violence exposure (CVE) on academic functioning through the role of emotion regulation and inattention as mediators. In the remaining pages of this introduction, I begin by summarizing literature on the incidence and prevalence of CVE and its links to major developmental domains. I then review what is known about the role of CVE in academic functioning specifically. From there, I consider key mechanisms that may link CVE to academic outcomes, in the process making the case that CVE is a form of trauma that plays out in a set of biologically-based processes (emotion regulation and inattention) central to the developmental stage of adolescence and their academic success. I propose it is these processes that account for the association between CVE and academic outcomes.

Background and Context

Community Violence Exposure

Community Violence Exposure (CVE) is typically defined as witnessing of or victimization by a violence-related act such as shooting, mugging, illegal drug activity, physical fighting, or some other similar act within one's home, school, or neighborhood

by a known or unknown perpetrator (Shahinfar, Fox, & Leavitt, 2000). Studies of the

impact of CVE on adolescent outcomes have shown a link between chronic and acute

exposure to community violence and trauma-specific consequences. For example, PTSD

symptoms include cognitive, behavioral, and social difficulties; increases in intrusive

thoughts, hypervigilance, hyperarousal, emotional numbness, and avoidance; as well as

social and emotional withdrawal (Buka, et al., 2001; McLaughlin et al., 2013). Further,

research indicates CVE to be a commonly reported traumatic experience among

adolescents (Costello, Erkanli, Fairbank & Angold, 2002). A relatively recent national

telephone survey examining violence, abuse and crime exposure among children and

adolescents revealed that 60% of the representative sample reported at least one incident

of direct (being a victim of violence) or indirect (witnessing or exposure to violence)

exposure to community violence in the past year (Finkelhor, Turner, Ormrod, & Hamby,

2009). In addition, adolescents ages 14-17 were more likely exposed than were younger

children (Finkelhor et al, 2009). Particularly troubling is that adolescents who report at

least one direct or indirect incident of exposure to community violence are at increased

risk for subsequent exposure (Finkelhor et al., 2009). Among this group, minority

youth—who often reside in urban areas where crime and exposure to violence are high—

are exposed to community violence at higher rates in comparison to their non-minority

group peers (Buka et al., 2001; Henrich, Schwab-Stone, Fanti, Jones & Ruchkin, 2004;

Overstreet, 2000). For example, Fitzpatrick and Boldizar (1993) report that in a sample of

221 African American adolescents, more than 70% were *victims* of violence in their

community, while a whopping 85% of adolescents reported *witnessing* violence in their

community.

Much of the literature to date links adolescent exposure to community violence to a host of negative psychological outcomes, in particular to internalizing (e.g., anxiety) and externalizing (e.g., aggression) outcomes (Cooley-Strickland et al, 2009; Fowler, Tompsett, Braciszewski, Jacques-Tiura & Baltes, 2009; Gorman–Smith & Tolan, 1998). In consequence, high and/or recurring incidents of exposure to community violence have been described as a form of trauma (Costello et al., 2002). Through its influence on psychological functioning, exposed youth are also at heightened risk for academic failure (McCoy, Roy, & Sirkman, 2013; Schwartz & Gorman, 2003). However, to date, research on the associations between CVE and academic outcomes are less prevalent than those exploring CVE and mental health. Thus, questions continue to remain about the long-term impacts of CVE on adolescent academic functioning, as well as knowledge of key developmental mechanisms linking CVE to academic functioning. For the purposes of the study, it is important to note that I operationalize academic functioning to include both performance and school engagement.

Community Violence Exposure and Academic Functioning

Research indicates that exposure to community violence disrupts learning (Sharkey, Tirado-Strayer, Papachristos, & Raver, 2012). Studies suggest an association between CVE and school success (Bowen & Bowen, 1999; McCoy et al.,2013; Sharkey, 2010), thus resulting in negative school outcomes (Bowen & Bowen, 1999). For example, Bowen and Bowen (1999), using a nationally representative sample of 2,099 middle and high school students, found that students had more difficulty avoiding school behavior problems when they encountered violence in their neighborhoods and schools. In addition, student attendance and student perceptions of how they were doing in school

were lower for students who had high levels of CVE. In a more recent study with a sample of 500 urban schools, McCoy et al., (2013) examined the reciprocal relationship between neighborhood crime and school-level academic achievement, finding that crime, particularly violent crime in the school neighborhood, was associated with declines in academic achievement among students over time. Similarly, Sharkey (2010) reported that recent community homicides substantially reduced performance on cognitive assessments in a sample of predominantly African-American, 5-17 year olds. Moreover, in a study examining the relationship between exposure to community violence and academic outcomes in 118 adolescents found that CVE was associated with lower school engagement and served as a mediator between CVE and GPA (Borofsky, Kellerman, Baucom, Oliver & Margolin, 2013).

Academic performance and school engagement serve as important constructs of academic functioning. Academic performance often includes standardized assessments, which in social science research is considered to be a traditional metric of academic functioning. School engagement represents students' emotional, behavioral and cognitive connection to school, thus, playing a role in overall academic functioning (Fredricks, Blumenfeld & Paris, 2004). As noted above, the research evidence clearly suggests an association between CVE and poorer academic functioning. However, much of this work uses cross-sectional data in childhood, with less examining longitudinal associations of CVE and academic functioning in adolescence—a transitional stage of cognitive and social development. Furthermore, key developmental mechanisms that explain how CVE influences poorer academic functioning have not been specified.

Mechanisms Explaining the Relationship between CVE and Academic Functioning

      Community Violence Exposure and Trauma. The extant literature does not

address directly the mechanisms that are likely to play an important role in the

relationship between CVE and academic functioning—but there is sufficient research and

theory to begin hypothesize the mechanisms. Prior studies offer insights into possible

pathways by which adolescent CVE disrupts academic functioning. One possible link

between CVE and academic functioning may be the experience of trauma, which can

disrupt important cognitive functions, such as memory, attention and reasoning, as well

as managing and modifying emotions.

      Trauma is a form of stress that disrupts the body and brain regions responsible for

regulating emotions and attention. Specifically, repeated exposure to threatening

environments disrupts the natural processes of neural activation in response to threat

(Perry, Pollard, Blakley, Baker & Vigilante, 1995). In particular, recurrent exposure to

threat activates the stress response system in the brain (i.e., the "fight or flight" system),

which can result in a form of hyper-vigilance to danger or risk over time. With time,

those who are chronically exposed to such forms of stress can be more likely to respond

with dysregulation, aggression, lack of focus, or significant fear to even minor stressor.

What is not well understood is how such cognitive and emotion functions (e.g., attention

and emotion regulation) in the context of CVE are related to academic functioning.

      Linking Trauma to Academic Functioning. By postulating CVE as experiences

of trauma, we need to investigate two key brain-related processes that are themselves

closely tied to academic functioning: emotion regulation and attention. Emotion

regulation and attention are both understood to be part of the broader construct of self-

regulation. Self-regulation itself is a complex construct in which multiple domains (behavior, cognitive, emotion) are relevant. Self-regulation, broadly defined, is the ability to regulate ones emotions, behaviors, and thoughts in order to meet the setting- or situation-specific demands and goals (Gross, 2013; McCoy, 2013). Much of the work on self-regulation sits in various fields of psychology, such as clinical, health, cognitive, and developmental (Gross, 1998) which results in little direct consistency with regard to definition and measurement (McCoy, 2013). In the paragraphs below I provide definitions of emotion regulation and inattention relevant to this paper and summarize: (1) the literature linking them to academic success, (2) the growing body of research on adverse experiences in the filed of developmental psychopathology and neuroscience documenting these important processes and (3) the few studies exploring these processes as mediating the relationship between CVE and academic functioning.

Emotion Regulation. For the purposes of this work, emotion regulation is defined as the ability to manage emotions and their related actions in ways that allow one to interact in his or her social environment in adaptive ways (Gross, 1998; Gross, 2013; McCoy, 2013; Zeman, Cassano, Perry-Parrish, & Stegall, 2006). Emotion regulation supports the development of positive peer and adult relationships as well as cognitive processing and behavior skills that are necessary for school success (Graziano, Reavis, Keane, & Calkins, 2007). For example, with a sample of 325 five-year-olds, Graziano et al., (2007) found that emotion regulation predicted academic success in the classroom as well as math and literacy standardized test scores. Their findings indicated that children who have a difficult time regulating emotions have trouble connecting in the classroom through social and behavioral mechanisms which in turn disrupts their academic

functioning (Graziano et al., 2007). In addition, emotion regulation has been found to be associated with academic achievement (Gumora & Arsenio, 2002).

A growing body of research on traumatic adverse experiences has begun to examine emotion dysregulation as a mechanism linking child maltreatment to psychopathology (Kim & Cicchetti, 2010; Maughan, & Cicchetti, 2002; McLaughlin, Peverill, Gold, Alves, & Sheridan, 2015). For example, in a sample of 421 children, 215 of whom were maltreated, Kim and Cicchetti (2010) found that maltreatment was associated with emotion dysregulation, which, in turn, was associated with higher externalizing symptomology. Moreover, another recent study on the effect of child maltreatment on brain functioning, a sample of 42 adolescents ages 13-19 were asked to participate in Functional Magnetic Resonance Imaging (fMRI). In this case, researchers set out to understand the neural systems underlying emotion regulation. Results revealed that when presented with neutral, negative, and positive emotional stimuli, adolescents with a history of maltreatment, in comparison to their non-maltreated peers, exhibited heightened emotional responses to negative environmental cues; that is, greater activation in the amygdala, the area of the brain responsible for processing of memory, decision-making, and emotional reactions, thus recruiting PFC regions in a greater effort to control emotions in comparison to their non-maltreated peers (McLaughlin et al., 2015).

Inattention. Inattention is defined as having difficulty with cognitive regulation, which may impede individuals' ability to control their behavior or interact in their social environment in adaptive ways (McCoy, 2013; McCoy, Raver, & Sharkey, 2015; Razza, & Brooks-Gunn, 2010; Sharkey et al., 2012). Sharkey et al. (2012) examined whether CVE predicted child behavior and functioning in the classroom. Results indicated that

when children were assessed using a set of cognitive and academic tests within a week of the exposure to community violence, they exhibited lower levels of attention and impulse control as well as lower levels of early math and vocabulary skill. Studies show that attention is often tied to academic outcomes (NICHD Early Child Care Research Network, 2003; Razza, & Brooks-Gunn, 2010; Razza, & Brooks-Gunn, 2012). High levels of attention can influence student engagement and concentration in the classroom, as well as build positive peer and adult relationships, allowing students to build academic skills (Razza & Brooks-Gunn, 2012). Consequently, high levels of inattention place students at risk for decreased motivation and energy, which, in turn, can negatively affect student academic outcomes (McCoy et al., 2015).

Studies on adverse experiences, specifically deprivation (lack of expected cognitive and social inputs) have highlighted abnormalities in neural functioning, specifically reductions in cortical thickness in the prefrontal cortex (PFC), a region responsible for regulating attention (McLaughlin, Sheridan, Winter, Fox, Zeanah, & Nelson, 2014). Studies on institutional rearing and poverty have explored inattention as an underlying mechanism linking deprivation to negative developmental outcomes. For example, children raised in institutional settings are at an increased risk for developing ADHD (Kreppner, O'Connor & Rutter, 2001; McLaughlin et al., 2014; Stevens et al., 2008). Specifically, in a sample of 58 children ages 8 to 10 years old raised in an institutionalized setting in Romania, McLaughlin et al. (2014) reported higher levels of inattention and impulsivity in comparison to non-institutionalized children from the same community, in addition to a reduction in cortical thickness in the prefrontal cortex. Literature on socio-economic status have highlighted differences in executive

functioning, which involves working memory, planning and organizing, all of which serve as risk factors for inattention (Hackman, Farah, & Meaney, 2010).

To date, few studies have begun to examine the association between other forms of trauma, such as CVE and these key brain related processes emotion regulation and attention that are likely closely tied to academic success. There are a small number of studies, however, that attempt to explore this relationship separately. In a cross-sectional study of 285-inner city children in grades 4-6, the association between CVE and social adjustment in peer groups showed that emotion dysregluation mediated the link between exposure to community violence and negative social adjustment (Schwartz & Proctor, 2000). When presented with emotionally negative stimuli, children who experience high rates of CVE were more likely to focus on negative images, as well as incorrectly label facial expressions, such as fear (McCoy, Roy, & Raver, 2016). A separate study suggests that these children are at increased risk for poor attention skills (Sharkey et al., 2012). In addition, CVE has been linked to intrusive and reoccurring thoughts and activation of cognitive attentional systems, which can lead to an increase in hypervigilance, intrusive thoughts, and attention to threat as noted above (McCoy et al., 2016). Moreover, the recurrence of trauma can result in a decrease in brain activation used to sustain attention and processing (McCoy et al., 2015).

Thus, from the above review, it can be assumed that such disruptions in emotion regulation and attention, in turn, can place adolescents at risk for difficulties with academic functioning. Moreover, this growing body of research suggests emotion regulation and attention as important potential mechanisms in exploring the association between CVE, a form of trauma and stress, to academic functioning. Lastly, children's

ability to regulate their emotions and attention must increase over time to ensure adaptive

functioning in new developmental periods (e.g., adolescence) and contexts (e.g., the

increasingly demanding academic context of school) (Zeman et al., 2006). And yet, many

of studies examining emotion regulation and attention have focused on young children,

with relatively less exploring the role of emotion regulation and attention on academic

outcomes among adolescents.

The Present Study

As is evident from this brief review of the literature, adolescence is a period

during which exposure to trauma, such community violence, has a direct and profound

impact on psychosocial and academic outcomes. However, there is little research that

explores mediators – those processes that link exposure to outcomes—in particular those

processes that account for the link between CVE and academic functioning. My

literature review focused on two important possibilities that arise from our understanding

of the impact of stress and trauma on brain function and behavior: emotion regulation and

attention.

The present study seeks to address these gaps in the literature by investigating the

association of CVE on adolescent academic functioning, using a sample of 598 urban

youth, with a baseline age of 12 years old. Specifically, this study examines both the

direct associations of CVE on academic functioning, focusing on emotion regulation and

inattention as two potential mechanisms. Consist with Shahinfar, et al., (2000), I

operationalize CVE as witnessing of and/or direct victimization of a violence related act,

such as in the home, school, or neighborhood by a known or unknown perpetrator.

Throughout the study, I rely on adolescent report of incidence of both witnessing and victimization of exposure to community violence.

The purpose of this study is to address several gaps in the knowledge base about the consequences of exposure to community violence for adolescents ages 12 years old at baseline. Specifically, this study builds on and expands the existing body of literature by examining: (1) the association of CVE with academic functioning, and (2) the role of two key mediators, emotion regulation and attention, in this relationship. I addressed these areas using data drawn from the longitudinal evaluation of the 4Rs Program (Jones, Brown Hoglund & Aber, 2010). The evaluation of 4Rs involved data collection with a large sample of urban youth and their primary caregivers. These existing data provided a relatively unique opportunity to examine the short-term longitudinal association of CVE on adolescent academic outcomes, as well as key mediating processes.

Conducting such research with adolescents is particularly important since this developmental stage brings with it a new level of agency, autonomy and responsibility, which may also place adolescents at heightened risk of exposure to community violence as they navigate their communities with less supervision from adults, as they once required as children. Second, as much of the adolescent brain and body is undergoing significant change, stress or trauma exposure experienced during this period can disrupt areas of the brain and body that have not yet fully matured, potentially sidetracking healthy development (Armsworth & Holaday, 1993; Romeo, 2010). Third, adolescence marks a period of heightened cognitive development and school attainment during this period has important implications for future health and well-being (Dianda, 2008). Thus,

better understanding key challenges faced by many in their homes and communities,

including CVE, that may have negative implications on academic performance is crucial.

Research Questions

Following the conceptual mediating model presented below in Figure 1, my

research questions are structured in a manner that build from simple direct associations to

establish mediation. They are as follows:

1. What are the associations between adolescent community violence exposure,
    emotion regulation, inattention and academic functioning?

2. What are the associations between adolescent emotion regulation, inattention
    and academic functioning?

3. Is the association between adolescent community violence exposure and
    academic functioning partially <u>explained</u> by emotional dysregulation and
    inattention in middle school? In other words, is the relationship between
    community violence exposure and academic functioning mediated by
    emotional dysregulation and inattention?

For research question 1, I hypothesize that adolescent community violence

exposure will predict lower levels of emotion regulation, higher levels of inattention, and

lower Math and ELA standardized test scores and lower school engagement in the

classroom.

For research question 2, I hypothesize that emotion regulation will positively

predict Math and ELA standardized test scores and school engagement in the classroom,

where students with higher levels of emotion regulation will have higher Math and ELA

scores on standardized tests and school engagement. Inattention will negatively predict

Math and ELA standardized tests scores and school engagement, where students with higher levels of inattention will have lower Math and ELA standardized tests scores and lower school engagement.

Finally, for research question 3, I hypothesize that the relationship between adolescent community violence exposure and academic functioning is partially mediated by emotion regulation and inattention. Specifically, I expect that adolescent exposure to community violence will lead to lower levels of emotion regulation and increased inattention, which in turn will lead to lower Math and ELA standardized test scores and school engagement.

The conceptual mediating model that provides the foundation for the study is illustrated schematically in Figure 1.
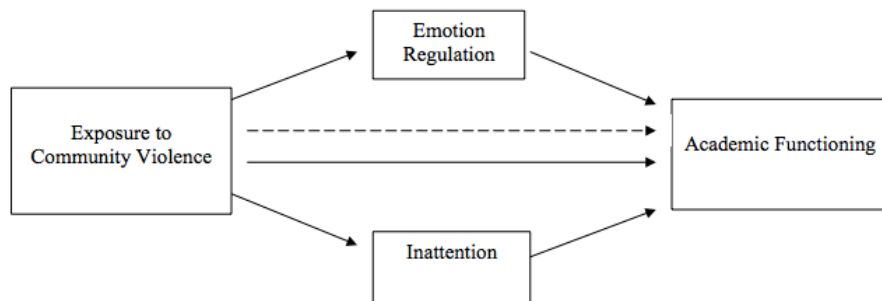
Figure 1. Conceptual mediating model for the relationship between adolescent exposure to community violence and academic functioning as mediated by emotion regulation and inattention.

Method

The 4Rs Program (Reading, Writing, Respect and Resolution) is a whole-school intervention that embeds strategies to promote conflict resolution skills and social-emotional learning in a "balanced literacy" reading curriculum (Aber, Brown & Jones, 2003). In the winter of 2004, 18 representative and closely matched NYC elementary schools were randomized to the 4Rs preventive intervention or to standard practice. In

2007 researchers completed 6 waves of data collection with approximately 900 children

following them from grade 3 to 5 (for further information on sample selection and effects

of the intervention in elementary school, see Brown, Jones, LaRusso & Aber, 2010;

Jones, et al., 2011, 2010). Children then made the transition from elementary to middle

school (i.e., from 5th to 6th grade). Two follow-up waves of data were collected for the

entire sample, one in middle school (wave 1) and one in high school (wave 2). At these

time points, caregivers and adolescents who were located and then agreed to participate

were scheduled for an in person data collection interview with a trained researcher.

During the data collection visit, both caregivers and adolescents were interviewed.

Participants

Of the 900 adolescents and their caregivers who participated in the longitudinal

evaluation of the 4Rs program, ~660 were located at follow-up. The most common

reason for incomplete information was the inability to contact families who participated

in the previous waves of data collection as well as parents declining to participate in the

study but allowing their children to participate. In my primary analyses I employ listwise

deletion and exclude adolescents without parent report (due primarily to parental non-

consent at follow-up).

The present sample contains 598 adolescents, with a mean child age of 12.96

years. Forty-nine percent of the sample was male. Adolescents were primarily Black

(42.11%) and Hispanic (42.95%). The primary language spoken at home was English

(74.18%). The majority of the adolescents in the sample came from a single parent

household (38.38 %) or a married parent household (38.55%), while the rest of the

sample came from separated (5.85%), divorced (6.02%), widowed (1.55%), or living

together (8.95%) household. Of the parents who participated in the study, 32.24% of

parents had less than a high school education. The majority of the families in the sample

were recipients of the federal free or reduced lunch program (76.22%). Finally, the

majority of the respondents for the caregiver interviews were mothers (85.69%). Table 1

details the demographic characteristics of the sample.

Procedures

Caregiver and adolescent data were collected by a team of trained researchers.

Adolescents and caregivers were assessed two times over a period of four years with one

data collection point in 7th grade of middle school (wave 1) and a second in 9th grade of

high school (wave 2). Detailed contact and middle school enrollment information was

gathered during the last wave of the 4Rs Elementary School Study. Caregivers were

mailed information about the study as well as consent forms. Families who did not return

the consent forms were contacted via telephone inviting them to participate in the study.

Consented families were then contacted via phone at each primary data collection point

by researchers to arrange in-person data collection interviews. During the visits,

adolescents and caregivers provided written assent before participating in the session.

Trained field staff then administered the one-hour structured interviews where caregivers

and adolescents were asked about family demographic characteristics, family and

community relationships, child behavior, and academic ability. At the end of the

interview, caregivers and adolescents were compensated for their participation in the

study.

Measures

Although a large number of measures were obtained for the longitudinal follow-

up overall, I am using a small number selected for their relevance to my study and the

domains of interest in this paper. The variables include Math and ELA scores from New York State standardized tests, school engagement in the classroom, community violence exposure, emotion regulation, and inattention.

Outcome: Academic Functioning. I included two measures of academic functioning: academic performance and school engagement. To represent academic performance I used students' scaled scores on the New York State standardized assessment of Math (range=480-775) and ELA (range= 515-790) achievement at wave 2. To assess school engagement, I used a student self-reported subscale of the School Engagement Questionnaire at wave 2. Positive behavioral engagement (Furrer & Skinner, 2003) was measured using a Likert scale ranging from 1 (*Disagree A Lot*) to 4 (*Agree A Lot*) and included the following five items: "I try hard to do well in school"; "I join in on class discussions"; "In class I work as hard as I can"; "I pay attention in class;" "When I am in class, I listen very carefully." In the present study the measure had an acceptable internal consistency (alpha =.72). Scores were calculated by using means where high scores reflect student positive behavioral engagement whereas low scores reflect behavioral *dis*engagement.

Primary Predictor: Community Violence Exposure. To assess community violence exposure I use adolescents' completed Survey of Community Violence Exposure at wave 1, a self-report assessment of the incidence of both witnessing (12-items) and victimization (12-items) (Richters, & Saltzman, 1990). These items ask about exposure to community violence within the last two years. Response categories regarding frequency during the past two years were: 0= "no" and 1 = "yes." For the purposes of this study the total (witnessing and victimization) number of exposure items were summed as

a measure of incidences of community violence exposure. Example questions include: "In last two years seen someone chased by gang or individual?" In last two years have you been chased by gang or individual?" and "In last two years seen someone's house broken into?" In this sample CVE in wave 1 ranged from a low of 0 (no CVE) to a high of 15 (incidences of CVE), with a mean of 4.08.

Mediators: Emotion Regulation. To assess adolescent ability to manage emotions in social settings, I use parents' completed Social Competence Scale at wave 1 (Emotional Regulation Skills Scale; Conduct Problems Prevention Research Group, 1999). The Social Competence Scale is a 13-item measure that assesses a child's prosocial behaviors, communication skills, and self-control. The scale yields two subscales; the Prosocial/Communication Skills Scale (5 items) and the Emotional Regulation Skills Subscale (8 items). For the purposes of the current study, I focus on the Emotional Regulation Skills Subscale. The emotion regulation subscale uses a Likert scale ranging from 1 (*Never*) to 4 (*Almost always*). Example items include: "Can accept things not going own way," "Expresses needs and feelings appropriately," and "Is aware of the effect of behavior on others." In the present study the measure had an acceptable internal consistency (alpha =.83). Scores were calculated by using means where higher scores reflect regulated emotions and behavior, whereas lower scores reflect emotion dysregulation or low emotion regulation.

Inattention. To assess inattention in adolescents, parents were asked to complete the National Institute of Mental Health Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000), which is a highly structured diagnostic instrument designed for use by non-clinicians to

assess a range of child and adolescent diagnoses. Parent interviews assessed the presence

of internalizing (Major Depression/Generalized Anxiety Disorder and PTSD) and

externalizing disorders (Conduct Disorder, Oppositional Defiant Disorder and ADHD)

over their lifetime and in the past year in adolescents. For the purpose of this study, I

focus on the ADHD diagnostic section of the DISC at wave 1, which contains two

subsections: Inattention (11 items) and Hyperactivity/Impulsivity (13 items). The DISC

has well established internal consistency, reliability and validity (Shaffer et al., 2000).

The current study included the inattention and hyperactivity/impulsivity symptom count

for adolescents at wave 1. Responses were assigned a score of 0= for no symptom and

1=yes for symptom. Example items include: "Trouble keeping mind on task for more

than a short period of time"; "Often tried to avoid doing things that required paying

attention"; "Often disliked doing things that required paying attention"; "Fidgety/ restless

in past year"; Was in a dangerous situation in past year because wasn't thinking." the

measure had an acceptable internal consistency (alpha =.89). Scores were calculated by

using means where higher scores reflect more inattention symptoms, whereas lower

scores reflect low inattention.

Covariates. Our analyses will make use of child and family socio-demographic

covariates. These characteristics were selected on the basis of past literature showing

their association with community violence exposure and academic functioning. All

characteristics were measured at wave 1. Indicators were created to distinguish boys from

girls (0=girls and 1=boys). A measure of SES was based on free or reduced price lunch

(0= non-recipient and 1=recipient). Race/ethnicity was coded according to child report as

Black/African American, Hispanic or Latino, and White or Other.

Data Analytic Plan

To understand the relationship between adolescent CVE, emotion regulation, inattention, Math and ELA standardized test scores and school engagement, I will address my primary research questions using the classic Baron and Kenny (1986) four-step approach for testing mediation with linear regression models. Several simple regression analyses will be conducted and the statistical significance of the coefficients will be examined at each step: (1) CVE predicting each academic outcome. This step establishes that there is an association to be mediated; (2) CVE predicting each mediator. This step involves testing the mediator as an outcome variable; (3) the mediators predicting each academic outcome, controlling for CVE. Assuming that there are significant relationships from step 1 to step 3, I will proceed to step 4; (4) multiple regression analyses with CVE predicting each academic outcome, controlling my mediators. To establish that complete mediation exists, the effect of CVE on each academic outcome, controlling my mediators, must be zero. To establish that partial mediation exists, the effect of CVE on each academic outcome, controlling my mediators, must be attenuated relative to the effect identified in step (1). Thus, if all four steps are met, then the findings will be consistent with my hypothesis that the relationship between adolescent CVE and academic functioning is mediated by emotion regulation and inattention. If only one or two of the steps are met, there is no case to be made for mediation. It is important to note here that meeting the above steps does not conclusively establish that mediation has occurred because these data are correlational and the mediator and outcome variables are sequenced based on theory.

Data analysis involved the use of StataMP (Version 14). Analyses were conducted in several phases beginning with comprehensive descriptive and psychometric analysis with my primary constructs at each time point (e.g., CVE, emotion regulation, inattention, and academic functioning). I addressed my primary research questions using linear regression models building from simple direct associations of the predictors on each outcome to more complex mediation models (plan for mediation is described above), in which I examine emotion regulation and inattention as mediators of the impact of adolescent CVE on academic outcomes.

First, I ran the appropriate univariate, bivariate, and multivariate descriptive and inferential statistics. In the first model (labeled Model 1 in Table 7, 8, and 9 respectively), I examined the relationship between the primary predictor variable, CVE at wave 1 and the outcome variables, math score, ELA score, and school engagement at wave 2 using a simple linear regression. I then added control variables (labeled Model 2 in Tables 7, 8, 9): gender, SES, and race (coded as dummy variables: Black, Hispanic, White, and Other) in order to investigate the primary relationships of interest once the control variables were added. Next, in Tables 10 and 11 (Model 1) I examined the relationship between the primary predictor variable, CVE and the mediator variables, emotion regulation and inattention, at wave 1 using a simple linear regression. I then added control variables (labeled Model 2 in Tables 10 and 11): gender, SES, and race in order to investigate the primary relationships of interest once the control variables were added. Going back to Tables 7, 8 and 9, in the next models (labeled Models 3 and 4) I added the mediators, emotion regulation and inattention at wave 1 individually, along with the control variables. In the final model, Model 5, both mediators are included along with the

control variables. We compared the models using regression coefficient *t*-tests and nested

F-tests when appropriate.

Results

Preliminary Analyses

Table 2 presents descriptive statistics and sample sizes for all primary variables

for both waves, with means and standard deviations for CVE, emotion regulation,

inattention, Math, ELA and school engagement. Depending on the number of cases

available for each of the primary measures, the sample size varies. Based on adolescent

report of CVE at wave 1, about 6% of adolescents reported no exposure to community

violence. Of the adolescents who report at least one or more exposures to community

violence, the average incidence of exposure to violence is 4.35 events over the last two

years. As illustrated in Table 2, based on parent report, the average level of emotion

regulation of adolescents in wave 1 was 2.72 (SD=0.60; range=1.00-4.00), the average

inattention symptom count was 0.15 (SD=0.19; range= 0.00-0.95). Adolescents had mean

math scores of 658.42 (SD= 38.00; range=500-780) and mean ELA scores of 646.61

(SD=27.87; range=480-785) and reported an average of 3.55 for school engagement

(SD= 0.40; range=1.60-4.00).

Table 3 presents correlations among the primary variables along with sample size.

I observed significant associations across the constructs of interest. As expected, I found

a negative correlation between CVE and emotion regulation, ($r = -0.12$, $p < .001$) and a

positive correlation between CVE and inattention, ($r = 0.14$, $p< .001$). I found exposure

to community violence and school engagement to be negatively correlated, ($r = -0.17$, $p <$

.001). Emotion regulation, Math and ELA were positively correlated, ($r = 0.17$, $p < .001$;

$r = 0.18$, $p < .001$, respectively). School engagement was positively correlated to

emotion regulation and negatively correlated to inattention, (r = 0.13, $p < .001$; r = -0.16, $p < .001$). Inattention, Math and ELA were negatively correlated, (r = -0.20, $p <. 001$; r = -0.15, $p < .001$).

There were some differences in CVE, inattention symptoms and standardized Math and ELA scores across gender, race/ethnicity, and SES. As shown in Table 4, t-tests revealed a statistically significant association of gender (M = 4.32, SD =2.99), t(596) = 1.99, $p < 0.05$, with boys reporting higher average rates of exposure to community violence, higher average inattention symptom counts (M = 0.17, SD = 0.20), t(585) = 2.30, $p < 0.05$, and lower average ELA scores than girls (M = 643.38, SD = 29.30), t(538) = -2.70, $p < 0.05$. As shown in Table 5, there was a statistically significant association between SES and inattention (M = 0.12, SD =0.16), t(564) = -2.16, $p < 0.05$, with school lunch recipients having higher average rates of inattention compared to non-recipients. Similarly there was an association of SES on ELA test scores, with school lunch recipients having lower average ELA scores compared to non-recipients (M = 652.25, SD = 32.65), t(518) = 2.19, $p < 0.05$. A one-way analysis of variance revealed significant differences between the racial/ethnic groups for several variables, F(5, 583) = 2.89, p < .01. As shown in Table 6, White race/ethnic group had the lowest exposure to community violence as well as higher math scores on average, F(5, 525) = 4.05, $p < .001$ and ELA scores F(5, 525) = 5.54, p < .001.

Primary Analyses

In the following paragraphs, I report the results of a series of linear regressions designed to address my primary research questions. I report the results by question, and refer to the relevant tables and models throughout.

Question 1. What are the associations between adolescent community violence exposure, emotion regulation, inattention and academic functioning?

Academic Functioning. The first goal of the present study was to examine the relationship between CVE and academic functioning (Math, ELA and school engagement) using standardized achievement measures of Math and ELA, as well as a measure of school engagement. As shown in Tables 7, 8, & 9 (Model 1), there was a statistically significant and negative association between CVE in wave 1 and each of the academic outcomes in wave 2. As expected, CVE was related to poor academic functioning across outcomes. After controlling key covariates (gender, SES, race/ethnicity, see Model 2) however, CVE remained a statistically significant predictor of school engagement only [$b = -.02$, $t(430) = -2.85$, $p < .05$], explaining a statistically significant proportion of its variance [$R^2 = .05$, $F(6, 430) = 4.17$, $p < .01$].

Emotion Regulation and Inattention. Next, I examined whether CVE predicted the two mediators, emotion regulation and inattention after controlling race, gender and SES. As shown in Tables 10 and 11 (Models 2), as hypothesized, community violence exposure was a significant predictor of emotion regulation [$b = -.57$, $t(559) = -2.84$, $p < .01$] and inattention [$b = 2.09$, $t(551) = 3.34$, $p < .01$], explaining a statistically significant proportion of the variance in both [emotion regulation: $R^2 = .04$, $F(6, 559) = 4.74$, $p < .001$; inattention: $R^2 = .05$, $F(6, 551) = 5.36$, $p < .001$]. Adolescents with higher levels of community violence exposure were reported by parents to have lower levels of emotions regulation and higher levels of inattention.

Question 2. What are the associations between adolescent emotion regulation, inattention and academic functioning?

Next, I examined whether the two mediators, emotion regulation and inattention, were associated with the academic functioning variables (Math, ELA, and school engagement). As shown in Tables 7, 8, 9 (Models 3), after controlling for race, gender and SES, emotion regulation significantly predicted standardized Math [$b = 12.67$, t(499) $= 5.80$, $p < .001$] and ELA scores [$b = 6.18$, t(499) $= 3.43$, $p < .01$], but was not associated with school engagement in the classroom. Emotion regulation also explained a statistically significant proportion of the variance in Math [$R^2 = .10$, $F(7, 499) = 8.75$, $p < .001$] and ELA scores [$R^2 = .09$, $F(7, 499) = 7.80$, $p < .001$]. Adolescents with higher emotion regulation performed higher on standardized test scores for Math and ELA.

Inattention (Model 4), after controlling for race, gender and SES, was also a statistically significant predictor of standardized Math [$b = -30.71$, t(492) $= -4.38$, $p < .001$] and ELA scores [$b = -15.29$, t(492) $= -2.66$, $p < .01$], but, as with Emotion Regulation, was not associated with school engagement in the classroom. Inattention explained a statistically significant proportion of the variance in Math [$R^2 = .08$, $F(7, 492) = 6.54$, $p < .001$] and ELA scores [$R^2 = .09$, $F(7, 492) = 7.09$, $p < .001$]. Adolescents with higher levels of inattention symptoms performed worse on standardized math and ELA tests.

Before moving to Question 3, the test of mediation, I provide a brief summary of the effects reported so far. Adolescent self-reports of CVE in wave 1 was statistically significantly and positively associated with parent reported emotion dysregulation and inattention in wave 1, and self-reports of disengagement in wave 2. In addition, parent reported emotion regulation and inattention in wave 1 were associated with standardized tests of Math and ELA in wave 2, but not with student self-reports of engagement. As

mediation can only be examined in the context of direct associations, the primary

candidate for a test of mediation is the association between CVE and student self-reports

of engagement in school.

      Question 3. Is the association between adolescent community violence exposure

and academic functioning partially <u>explained</u> by emotional dysregulation and inattention

in middle school? In other words, is the relationship between community violence

exposure and academic functioning mediated by emotional dysregulation and inattention?

      As shown in Table 9, Model 5, after including both mediators (emotion regulation

and inattention), as well race, gender and SES, the association between CVE and school

engagement remains statistically significant and negative [$b = -0.01$, t(419) = -2.53, $p <$

.05]. CVE explained a statistically significant proportion of the variance in school

engagement [$R^2 = .06$, $F(8, 419) = 3.29$, $p < .01$]. However, neither emotion regulation

nor inattention is statistically significant predictors of school engagement. Thus, given

the Baron and Kenny (1986) four-step approach to testing mediation, the criteria suggest

no case for mediation.

Discussion

      This study examined the relationship between community violence exposure

(CVE) and academic functioning in a large sample of adolescents residing in an urban

area. While the relationship between CVE and academic functioning has been previously

described, little research has explored the mechanisms that underlie the relationship

between CVE and its association with academic functioning in adolescents. Therefore,

while previous research has simply observed the association of CVE on academic

functioning, here I attempted to unpack the pathways in which CVE negatively predicts academic outcomes in later adolescence.

The study was conducted with adolescent boys and girls age 12-17 living New York City schools at two waves over a period of four years. Structured home interviews assessed adolescent self-report of CVE and parent report of emotion regulation and inattention at wave 1 and New York State standardized assessment of Math and ELA achievement as well as adolescent self-report of school engagement at wave 2. Specifically, I examined if adolescent CVE was associated with lower standardized Math and ELA scores as well as lower school engagement. In addition, I conducted meditational analyses with regressions to determine the salient underlying mechanisms by which CVE relates to academic functioning. The two mechanisms examined in the mediation model were emotion regulation and inattention.

While the relationship between adolescent CVE and academic functioning was not mediated by emotion regulation or inattention, several important findings nevertheless emerged. First, I found CVE, after controlling key covariates (gender, SES, race/ethnicity) to predict only school engagement, where higher rates of exposure to community violence were associated with lower school engagement. Second, I found a direct association between CVE and both emotion regulation and inattention. Adolescents with higher levels of CVE were reported by parents to have lower levels of emotions regulation and higher levels of inattention. Third, emotion regulation and inattention had a direct association to Math and ELA standardized test scores, but was not associated with school engagement. Adolescents with higher emotion regulation performed higher

on standardized test scores for Math and ELA, while adolescents with higher levels of inattention performed lower on Math and ELA.

Due to the lack of significant relation between CVE and adolescent's academic functioning, specifically for Math and ELA standardized test scores, I was unable to conduct meditational analyses to examine emotion regulation and inattention as potential mechanisms by which CVE is associated with Math and ELA standardized test scores as well school engagement. Contrary to my hypothesis, I found that emotion regulation and inattention did not mediate the relation between CVE and academic functioning.

Thus, these finding suggests that CVE, emotion regulation and inattention uniquely predict academic functioning. Specifically, CVE has a significant direct association with adolescents' positive behavioral engagement in the classroom. These findings are consistent with previous research showing that the higher the rates of CVE, the less the student is engaged in school (Borofsky et al., 2013). Furthermore, emotion regulation and inattention have important implications for students' abilities to perform well on standardized Math and ELA tests, but were not associated with student's positive behavioral engagement. Consistent with previous literature, these findings further solidify the importance of emotion regulation and attention in the academic setting (Graziano, et al., 2007; Gumora & Arsenio, 2002; McCoy et al., 2015; NICHD Early Child Care Research Network, 2003; Razza, & Brooks-Gunn, 2010; Razza, & Brooks-Gunn, 2012; Sharkey et al., 2012). Lastly, CVE suggests disruptions in emotion regulation and inattention, thus corroborating with the current research on trauma. Results indicate that repeated exposure to threatening environments, like CVE, disrupts neural activation in response to threat (Perry, Pollard, Blakley, Baker & Vigilante, 1995).

Limitations

Although this work provides an important step toward understanding the ways in which CVE predicts adolescent academic functioning, it has several limitations. First, throughout the analysis, I saw direct associations between CVE and my mediators, as well as a direct association between my mediators and academic functioning (Math and ELA, but not school engagement), but not a direct association between CVE and academic functioning (Math and ELA) with the exception of school engagement. The Baron and Kenny (1986) four-step approach for testing mediation, although a classic approach, limits my ability to further explore mediation due to its overly conservative requirement that the association between my predictor variable, CVE and my outcome variables, Math, ELA and school engagement, be significant in order to conclude that mediation exists. Thus, future work should consider testing for mediation using the Structural Equation Model (SEM) approach, which has shown to be a superior method to testing mediation as it focuses on indirect paths and not on the total association between the predictor variable and outcome variables (Kline, 2016). In addition, the SEM approach can be particularly useful in that it allows for multiple mediators and outcomes to be included in a single model, which could yield slightly different results (Kline, 2016). Second, the study relies on parent report for emotion regulation and inattention. In addition, I rely on self-reported measures of CVE among adolescents. Research has indicated that, often, studies on community violence exposure rely heavily on self-report, which can have the potential to be under or over reported, and look less to unbiased measurement strategies of community violence exposure (McCoy et al., 2015). Moreover, because the study is essentially a correlational study, I cannot be certain that

any associations of exposure to community violence on academic functioning are not due to some other unmeasured variable/s, thus no causal claims can be made. Lastly, the sample is not representative of the population in the United States; therefore results from the study are not generalizable. Future research should aim to examine the extent to which community violence exposure is associated with academic functioning among other urban youth.

Implications and Future Directions

There are a number of attributes of this study that advance the field and the knowledge in this domain and that have implications for further research. First, the study is the only one to my knowledge to explore the mechanisms that underlie the relationship between CVE and its association with academic functioning among adolescents; little research has tried to unpack the pathways in which CVE is negatively associated with academic outcomes in later adolescence. In addition, the study makes use of multiple reporters, serving as a strength in which minimizes the chances of inflation of the relation between these variables (McCoy et al., 2013). Furthermore, the limited and more recent work on CVE and academic outcomes has relied heavily on crime data from police departments, which provides an objective, but limited perspective on exposure to CVE (McCoy et al., 2013; McCoy et al., 2015; Sharkey, 2010; Sharkey, Schwartz, Ellen & Lacoe, 2014). This current study is important in that it uses adolescent actual reports of CVE, which adds a significant contribution to the literature on CVE and academic outcomes (Cooley-Strickland et al., 2009; Henrich et al., 2004; Schwartz & Gorman, 2003).

In addition to the implications for future research, the study has important implications for school-based prevention and intervention approaches. In recent years, the growing concern for youth exposed to trauma has had an impact on the increase of school-based interventions. Research has found a growing need to address trauma symptoms in the classroom, which can often be misidentified as behavior problems and the role teachers can play in identifying these students (Kincaid & Wolpow, 2010). In addition, although many youth report exposure to community violence, research suggests that often these youth fail to meet the criteria for referral for treatment (Saltzman, Layne, Pynoos, Steinberg & Aisenberg, 2001). Furthermore, often parents and students are unaware of the negative consequences of CVE (Saltzman et al., 2001). As a result, school-based interventions have aimed to help traumatized youth learn through whole school wide trauma sensitive approaches—that is helping students feel safe at school, with the support of all school staff, as well as collaboration with community members and families, so that students can focus on learning (Cole, et al., 2005). In recent years, we have also seen a growth in interventions aimed at social emotional learning (SEL) in schools to address behavioral issues that can disrupt learning (Jones & Bouffard, 2012). However, much of the SEL efforts have been restricted to pre-school and elementary aged children and make use of only classroom curriculum (Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011). Thus, additional work is needed to design effective interventions aimed at adolescence, a critical transition period of heighted exposure to community violence emotional awareness and changes in behavior and social relationships (Zeman et al., 2006). Such interventions or prevention approaches should target effective and developmentally appropriate strategies to reduce disruptions in

learning that can be incorporated as a school-wide approach, specifically for urban adolescents who are already at heightened risk of being exposed to community violence. For example, one first step might be to include professional development training for whole school staff, specifically schools serving youth who are most vulnerable to trauma, around enhancing and supporting adult social emotional development to serve as role models to the youth in the schools. Furthermore, although the study fails to identify emotion regulation and inattention as mediating the association between CVE and academic functioning, I do find unique associations between CVE an my mediators, as well as mediators on academic functioning, specifically, Math and ELA standardized test scores. As a result, this work helps inform educators, caregivers and practitioners of the ways in which CVE can impede students ability to regulate emotions, focus their attention and engage in the classroom, as well as the important role emotion regulation and attention play on academic performance (i.e. Math and ELA), ultimately, enabling them to better support their development during this period of development.

All in all, further research is needed to continue to unpack the ways in which CVE is associated with academic functioning in adolescence using more rigorous statistical methods such as SEM. The pathway to which CVE contributes to lower academic functioning still remains unclear. My findings, however, are consistent with the small number of studies exploring CVE and emotion regulation and attention (McCoy et al., 2015; McCoy et al., 2016; Schwartz & Proctor, 2000; Sharkey et al., 2012) and begin to expand upon earlier work that has explored the association between CVE and academic outcomes. The findings in the study emphasize the importance of being able to regulate emotions and attention in the classroom as it relates to adolescent academic functioning

and the ways in which traumatic experiences like CVE can disrupt learning, that is the

ability to engage in the classroom. But, the findings also raise new questions, such as how

might distinguished forms of CVE (e.g. victimization versus witnessing) uniquely relate

to emotion regulation, inattention and academic functioning? What are protective and risk

factors at the school level that could mitigate or exacerbate the association between CVE

and academic functioning?

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Appendix A
Tables

Table 1

Descriptive Statistics of Demographic Characteristics for Children and their Parents in the Sample

Characteristics	Percentage (*n*)	M (SD)
Age		12.96 (.81)
Gender		
% Male	49.16 (294)	
% Female	50.84 (304)	
Child Race/ethnicity		
% Black	42.11 (248)	
% Hispanic	42.95 (253)	
% Asian	3.90 (23)	
% American Indian or Alaska Native	2.04 (12)	
% White	3.23 (19)	
% Other	5.77 (34)	
Parent Education		
% Less than High School	32.24 (187)	
% High School or GED	23.28 (135)	
% Some College	19.14 (111)	
% College	21.38 (124)	
% Graduate School	21.38 (23)	
Parent Marital Status		
% Single	38.38 (223)	
% Married	38.55 (224)	
% Separated	5.85 (34)	
% Divorced	6.02 (35)	
% Widowed	1.55 (9)	
% Living together	8.95 (52)	
% Other	0.69 (4)	
Primary Language Spoken at home		
% English	74.18 (431)	
% Spanish	20.65 (120)	
% Other	5.15 (30)	
School Lunch		
% Non-recipient	23.78 (137)	
% Recipient	76.22 (439)	

Table 2

Descriptive Statistics for all Primary Variables

	Wave 1			**Wave 2**		
Measure	*Mean*	SD	*N*	*Mean*	SD	*N*
Independent variable						
1. CVE (C)	4.08	2.91	598	4.09	3.07	456
Mediators						
2. Emotion Regulation (P)	2.73	0.60	592	2.78	0.63	464
3. Inattention (P)	.15	.19	591	.11	.161	520
Dependent variables						
4. Math	658.42	38.00	540	662.90	30.50	536
5. ELA	646.61	27.87	540	647.28	24.95	537
6. School Engagement (C)	3.55	0.40	598	3.50	0.46	457

(P) = parent report; (C) = child report
*p<0.05, **p<0.01, ***p<0.001

Table 3

Correlations Among Primary Variables and Sample Size

Variable	1	2	3	4	5	6
1. Community Violence Exposure (C)	-					
2. Emotion Regulation (P)	-0.12*** (592)	-				
3. Inattention (P)	0.14*** (587)	-0.43*** (583)	-			
4. Math	-0.06 (540)	0.17*** (534)	-0.20*** (529)	-		
5. ELA	-0.01 (540)	0.18*** (534)	-0.15*** (529)	0.67*** (537)	-	
6. School Engagement (C)	-0.17*** (598)	0.13*** (592)	-0.16*** (587)	0.08* (540)	0.03 (540)	-

(P) = parent report; (C) = child report
*$p<0.05$, **$p<0.01$, ***$p<0.001$

Table 4

Results of t-tests for Primary Variables by Child Gender

Variable	Group						95% CI for Mean Difference	t	df
	Male			Female					
	M	SD	n	*M*	SD	n		*t*	*df*
Community Violence Exposure	4.32	2.99	294	3.85	2.81	304	.00, .94	1.99*	596
Emotion Regulation (P)	2.68	0.59	291	2.76	0.61	301	-.17, .01	-1.59	590
Inattention (P)	0.17	0.20	287	0.13	0.18	300	.00, .06	2.30*	585
Math	656.33	41.12	268	660.48	34.61	272	-10.57, 2.26	-1.27	538
ELA	643.38	29.30	270	649.84	26.03	270	-11.14, -1.77	-2.70*	538
School Engagement (C)	3.53	0.41	294	3.57	0.38	304	-.10, .02	-1.16	596

(P) = parent report; (C) = child report
*$p<0.05$, **$p<0.01$, ***$p<0.001$

Table 5

Results of t-tests for Primary Variables by School Lunch Recipient

Variable	**Group**								
	Non-recipient			Recipient			95% CI for Mean Difference		
	M	SD	n	*M*	SD	n		*t*	*df*
Community Violence Exposure (C)	3.65	2.57	137	4.18	2.98	439	-1.08, .02	-1.87	574
Emotion Regulation (P)	2.81	0.59	137	2.70	0.60	437	2.64, 2.76	1.86	572
Inattention (P)	0.12	0.16	135	0.16	0.20	431	-.08, -.00	-2.16*	564
Math	665.02	40.20	112	657.44	37.31	407	-.37, 15.53	1.87	517
ELA	652.25	32.65	112	645.81	25.92	408	.67, 12.21	2.19*	518
School Engagement (C)	3.54	0.38	137	3.55	0.41	439	-.09, .06	-0.40	574

(P) = parent report; (C) = child report
*p<0.05, **p<0.01, ***p<0.001

Table 6

One-way Analysis of Variance for Variables by Child Race/Ethnicity

Variable	Group										
	Black			Hispanic			White				
	M	SD	n	*M*	SD	n	*M*	SD	n	F	*df*
Community Violence Exposure (C)	4.49	3.08	248	3.79	2.77	253	2.53	2.14	19	2.89**	5, 583
Emotion Regulation (P)	2.68	0.61	245	2.73	0.59	250	2.91	0.48	19	1.76	5, 577
Inattention (P)	0.15	0.18	244	0.16	0.21	248	0.1	0.14	18	1.5	5, 572
Math	658.49	35.59	225	654.28	40.75	223	683.77	28.04	18	4.05***	5, 525
ELA	647.68	22.74	225	642.31	31.06	222	669.78	33.84	19	5.54***	5, 525
School Engagement (C)	3.56	0.38	248	3.52	.42	253	3.65	0.42	19	0.3	5, 583

(P) = parent report; (C) = child report
*p<0.05, **p<0.01, ***p<0.001

Table 7

Results of Fitting a Taxonomy of Multiple Regression Models for Math Standardized Test Scores, CVE, Emotion Regulation, Inattention, Gender, School Lunch and Race in a Sample of n=598 Urban Adolescents Residing in New York

	Math Parameter estimate *(se)*				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
CVE (C)	-1.056[*]	-0.833	-0.568	-0.472	-0.389
	(0.453)	(0.463)	(0.452)	(0.458)	(0.450)
Gender (C)		2.664	1.538	2.369	1.904
		(2.645)	(2.580)	(2.620)	(2.579)
School Lunch (P)		-1.648	-1.374	-0.340	-0.331
		(3.209)	(3.115)	(3.149)	(3.095)
Black (C)		-25.44[***]	-22.97[**]	-25.17[***]	-23.37[**]
		(7.375)	(7.171)	(7.196)	(7.082)
Hispanic (C)		-26.07[***]	-24.48[***]	-25.30[***]	-24.34[***]
		(7.318)	(7.107)	(7.143)	(7.022)
Other (C)		-15.67[*]	-15.93[*]	-17.18[*]	-17.43[*]
		(7.948)	(7.713)	(7.763)	(7.628)
Emotion Regulation (P)			12.67[***]		10.44[***]
			(2.184)		(2.365)

Inattention (P)				-30.71***	-18.02*
				(7.009)	(7.459)
Intercept	667.3***	690.5***	653.4***	692.1***	660.5***
	(2.301)	(7.509)	(9.691)	(7.352)	(10.18)
R^2	0.010	0.049	0.109	0.085	0.120
(df_1, df_2)	1, 534	6, 502	7, 499	7, 492	8, 490
Model F-test	5.429*	4.308***	8.754***	6.541***	8.375***

Standard errors in parentheses
(P) = parent report; (C) = child report
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8

Results of Fitting a Taxonomy of Multiple Regression Models for ELA Standardized Test Scores, CVE, Emotion Regulation, Inattention, Gender, School Lunch and Race in a Sample of n=598 Urban Adolescents Residing in New York

	ELA Parameter estimate (*se*)				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
CVE (C)	-0.894[*]	-0.651	-0.535	-0.483	-0.449
	(0.370)	(0.377)	(0.375)	(0.380)	(0.379)
Gender (C)		8.099[***]	7.518[***]	7.979[***]	7.718[***]
		(2.151)	(2.143)	(2.176)	(2.170)
School Lunch (P)		-3.690	-3.539	-2.831	-2.834
		(2.607)	(2.584)	(2.610)	(2.598)
Black (C)		-19.88[***]	-18.62[**]	-19.76[***]	-18.88[**]
		(5.991)	(5.948)	(5.965)	(5.946)
Hispanic (C)		-20.04[***]	-19.24[**]	-19.48[**]	-18.99[**]
		(5.946)	(5.896)	(5.921)	(5.896)
Other (C)		-12.48	-12.58[*]	-13.41[*]	-13.52[*]
		(6.458)	(6.399)	(6.436)	(6.405)
Emotion Regulation (P)			6.184[***]		5.146[**]
			(1.804)		(1.982)
Inattention (P)				-15.30[**]	-9.003
				(5.749)	(6.212)

Intercept	651.0***	667.7***	649.7***	668.4***	652.8***
	(1.879)	(6.103)	(8.014)	(6.097)	(8.528)
R^2	0.011	0.077	0.099	0.092	0.104
(df_1, df_2)	1, 535	6, 502	7, 499	7, 492	8, 490
Model F-test	5.841*	6.973***	7.797***	7.087***	7.108***

Standard errors in parentheses
(P) = parent report; (C) = child report
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9

Results of Fitting a Taxonomy of Multiple Regression Models for School Engagement, CVE, Emotion Regulation, Inattention, Gender, School Lunch and Race in a Sample of n=598 Urban Adolescents Residing in New York

	School Engagement Parameter estimate (*se*)				
Variable	Model 1	Model 2	Model 3	Model 4	Model 5
CVE (C)	-0.0226**	-0.0212**	-0.0207**	-0.0189*	-0.0190*
	(0.00726)	(0.00742)	(0.00744)	(0.00750)	(0.00750)
Gender (C)		0.0610	0.0595	0.0463	0.0477
		(0.0439)	(0.0442)	(0.0446)	(0.0447)
School Lunch (P)		0.0183	0.0192	0.0110	0.0100
		(0.0530)	(0.0530)	(0.0532)	(0.0533)
Black (C)		-0.00899	-0.00205	-0.0683	-0.0644
		(0.120)	(0.120)	(0.124)	(0.124)
Hispanic (C)		-0.171	-0.171	-0.230	-0.232
		(0.120)	(0.120)	(0.123)	(0.123)
Other (C)		0.0287	0.0271	-0.0340	-0.0345
		(0.132)	(0.132)	(0.136)	(0.136)
Emotion Regulation (P)			0.0399		0.0248
			(0.0368)		(0.0411)
Inattention (P)				-0.107	-0.0709
				(0.116)	(0.128)
Intercept	3.597***	3.618***	3.501***	3.695***	3.620***
	(0.0369)	(0.122)	(0.162)	(0.126)	(0.178)
R^2	0.021	0.055	0.059	0.056	0.059
(df_1, df_2)	1, 455	6, 430	7, 427	7, 421	8, 419

Model F-test	9.671^{**}	4.173^{***}	3.856^{***}	3.600^{***}	3.291^{**}

Standard errors in parentheses
(P) = parent report; (C) = child report
$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 10

Results of Fitting a Taxonomy of Multiple Regression Models for CVE, Emotion Regulation, Gender, School Lunch and Race in a Sample of n=598 Urban Adolescents Residing in New York

	Emotion Regulation Parameter estimate (*se*)	
Variable	**Model 1**	**Model 2**
Emotion Regulation (P)	-0.619**	-0.570**
	(0.196)	(0.201)
Gender (C)		-0.428
		(0.241)
School Lunch (P)		0.365
		(0.285)
Black (C)		1.725*
		(0.685)
Hispanic (C)		1.041
		(0.682)
Other (C)		1.653*
		(0.741)
Intercept	5.785***	4.209***
	(0.548)	(0.904)
R^2	0.017	0.048
(df_1, df_2)	1, 590	6, 559
Model *F*-test	9.987**	4.738***

Standard errors in parentheses
(P) = parent report; (C) = child report
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11

Results of Fitting a Taxonomy of Multiple Regression Models for CVE, Inattention, Gender, School Lunch and Race in a Sample of n=598 Urban Adolescents Residing in New York

	Inattention Parameter estimates (*se*)	
Variable	**Model 1**	**Model 2**
Inattention (P)	2.201***	2.098***
	(0.610)	(0.628)
Gender (C)		-0.394
		(0.244)
School Lunch (C)		0.359
		(0.288)
Black (C)		1.949**
		(0.702)
Hispanic (C)		1.216
		(0.700)
Other (C)		1.842*
		(0.759)
Intercept	3.755***	2.129**
	(0.152)	(0.713)
R^2	0.022	0.055
(df_1, df_2)	1, 585	6, 551
Model F-test	13.02***	5.360***

Standard errors in parentheses
(P) = parent report; (C) = child report
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Appendix B
Variable Codebook

Descriptive/Covariate Variables		
	c_sex	Child sex at wave 1
	c_ethrace_rec	Child ethnicity or racial group at wave 1 recoded
	c_blck	Child ethn/race recoded as dummy variable for Black
	c_hisp,	Child ethn/race recoded as dummy variable for Hispanic
	c_whte	Child ethn/race recoded as dummy variable for White
	c_other	Child ethn/race recoded as dummy variable for Other
	p_lang_rec	Parent report of Primary language spoken in home at wav 1 recoded
	p_slunch_rec	Parent report of Free or reduced lunch at child school at wave 1 recoded
	p_edu	Parent education at wave 1
	P_mstatus	Parent Marital status at wave 1
	p_child_age	Parent report of child Age in years at wave 1
Predictor Variable		
	c_cveT_w1	Child report of CVE - Incidence (sum) of both Witnessing and Victimization
Mediator Variables		
	p_child_eregM_w1	Parent report of Emotional Regulation Mean (q# b1_2, 5, 8, 14, 20, 23, 35, 37)
	P_child_inattenM_w1	Parent report of Attention- constructed scale for the DISC_Attention
Outcome Variables		
	c_MATH_w2	Math scale score at wave 2 (high school)
	c_ELA_w2	ELA scale score at wave 2 (high school)
	c_sengagemetM_w2	Constructed scale for the school engagement mean questionnaire