# Chicago Youths' Community Violence Exposure: Spatial Dynamics of Violence and Psychological Functioning

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## SUMMARY

This study explored where and when community violence exposure (CVE) matters for psychological functioning in a sample of low-income, racial/ethnic minority youth (*M)* age = 16.04, 53.3 % female, 65.8% Black, and 26.9% Hispanic) living in Chicago. CVE was measured with violent crime data that was geocoded in terms of distance from youths' home and school addresses, then calculated in terms of three distinct spatial dynamics, including chronicity, pervasiveness, and spatial proximity. I tested the relationship between each CVE spatial dynamic and state and trait anxiety and behavioral and cognitive dysregulation while controlling for direct violent victimization (DVV) to examine how objective CVE occurring within youths' neighborhood context matters beyond direct violence exposure. Results from hierarchical multiple regression analyses revealed that long-term chronic, pervasive, and spatially proximal CVE was related to increases in behavioral dysfunction while delineated home and school-based CVE interacted to predict trait anxiety. Measuring CVE within both home and school neighborhoods at specific spatial measurements and time frames is critical to understand and prevent the consequences of CVE. The results infer that mental health supports are needed for all youth who inhabit and attend schools in violent neighborhoods and not just those who are directly victimized.

# Chicago youths' exposure to community violence: Contextualizing spatial dynamics of violence and psychological functioning

## Introduction

Violence exposure and its negative impacts on American youth is recognized as a national crisis (Finkelhor, Turner, Ormrod, Hamby, & Kracke, 2009). According to the National Survey of Children's Exposure to Violence, while violence has decreased over past decades, nearly 60% of American youth have been exposed to some form of violence within the prior year (Finkelhor, Turner, Shattuck, Hamby, & Kracke, 2015). National surveys also revealed that youth who are exposed to violence at least once in their lifetime are likely to experience chronic exposure, such that 86% of youth who report lifetime violence exposure also reported experiencing violence in the past year (Finkelhor et al., 2015). The rate for violence exposure among youth living in urban communities is astoundingly high, with potentially 85% of urban youth witnessing and 69% of youth directly experiencing violence in their lifetime (as cited in McDonald & Richmond, 2008). In recent years, 72 violent crimes occurred in the average Chicago public school's proximate neighborhood annually (Burdick-Will, 2016).

Community violence exposure (CVE) is defined as violence experienced directly and indirectly in or near the home and school neighborhoods (Scarpa, 2003). This operationalization best captures how violence is experienced broadly within relevant intersections of youth's social ecologies. A growing body of literature has revealed that CVE is detrimental to youth psychological outcomes in an array of domains, including cognitive, emotional, and behavioral functioning (Scarpa, 2003). CVE is also linked to the presence of psychopathological symptoms of posttraumatic stress disorder, anxiety, and depression (Fowler et al, 2009; McDonald & Richmond, 2008). However, despite a robust body of literature revealing relationships between

CVE and youth psychological development, research has yet to delineate spatial and temporal elements of CVE. That is, *where* and *when* CVE occurs might have substantial implications to guide future research and intervention/prevention initiatives.

The goal of this study is to investigate where and when CVE relates to psychological outcomes in a sample of Chicago youth living in low-income, high crime communities. It proposes that CVE is negatively associated with two key areas of youths' psychological functioning: anxiety and self-regulation. Importantly, three distinct spatial dynamics of CVE are explored to test in what ways home and school neighborhood-based CVE matters for youths' psychological functioning. This includes to what extent CVE is *chronic* (e.g., frequency of exposure), *pervasive* (e.g., experienced in multiple contexts), and *proximate* (e.g., closeness to youths' home or school). This is accomplished by geocoding violent crime statistics obtained from the Chicago Data Portal onto youths' home and school addresses and calculating precise measures of each spatial dynamic. Moreover, models are adjusted for youths' self-reported direct violent victimization (DVV), therefore exploring how violence occurring within youth neighborhoods is related to psychological outcomes beyond subjective, individual-level exposure.

## Literature Review

### Why does CVE matter for youth psychological functioning?

It has been hypothesized that CVE impairs psychological outcomes through disruptions in biological, cognitive, and emotional development. At the biological level, CVE is significantly related to youth health and developmental functioning via increased cortisol levels and allostatic load leading to atypical biological constraints, such as elevated heart rate and sleep disturbance

(McCoy, 2013). Early childhood is a particularly important developmental window when neurodevelopmental processes are impaired by chronic stress caused by CVE and can lead to cascading impairments in cognition and emotion regulation. Indeed, a study by Sharkey et al. (2012) examined the effect of local, recent homicides in Chicago (i.e., homicides occurring one week prior to assessment near the home address), finding that greater numbers of homicides predicted deficits in impulse control and attention in a sample of over 400 preschoolers. Another study conducted in Chicago found that fifth and sixth grade children in high-crime neighborhoods were faster to pay attention to emotionally-negative stimuli compared to children living in lower-crime neighborhoods (McCoy, Roy, & Raver, 2015).

Disruptions in biological, cognitive, and emotional processes might lead to deficits in youths' behavioral regulation. Difficulties in deploying and shifting attention might explain why youth exposed to community violence display increased behavioral reactivity and automaticity (McCoy, 2013). A study by Janocz and colleagues (2008) investigated school-based CVE in a sample of over 1,100 seventh graders found that violent interactions lead to aggressive behavior and disliking of school, while witnessing violence was the strongest predictor of poor behavioral adjustment. Similarly, a review by Scarpa (2003) argued that CVE increases violent behavior through similar mechanisms that increase allostatic load as well as cognitive impairments. However, this relationship may not be unidirectional. A longitudinal study following 582 urban adolescents found that aggressive behavior in elementary school predicted CVE in later adolescence, inferring that there are possibly reciprocal relationships between aggressive behavior and violence exposure (Lambert, Ialongo, Boyd, & Cooley, 2005).

Regarding the clinical implications of CVE, numerous studies have demonstrated deleterious associations on youth mental health. A metanalysis by Fowler et al. (2009) examined

114 studies which tested relationships between varying forms of CVE and psychopathological symptoms. The authors found that direct victimization most strongly predicted symptoms of posttraumatic stress disorder (PTSD) and externalizing symptoms (e.g., delinquency, aggressive behavior). In contrast, the authors found that witnessing violence most strongly predicted externalizing symptoms and both witnessing and "hearing about" violence predicted internalizing symptoms (e.g., depression, anxiety). Another metanalysis by McDonald and Richmond (2008) examined 26 studies focusing on CVE in urban communities and similarly found robust relationships with PTSD and aggressive symptoms among youth. However, studies from this metanalysis did not delineate forms of exposure (i.e., witnessing vs. direct violent victimization), making it difficult to consider how those elements of CVE alter the relationships.

Research has revealed that youth also become normalized to chronic and long-term CVE. The pathologic adaptation model (PAM) posits that chronically victimized youth become "desensitized"; this model is based upon a body of research that revealed that while CVE is related to increases in aggressive behavior, other research has found that youth report less psychological distress in response to chronic CVE (Ng-Mak, Salzinger, Feldman, & Stueve, 2004). In their mixed methods study of 471 urban sixth grade children and their parents, Ng-Mak and colleagues found that CVE was linearly related to aggressive behavior and had a curvilinear relationship with psychological distress, such that distress increased initially but declined as self-reported CVE increased (2004). Two studies with a sample of 285 African American and Latino boys found that CVE had a similar curvilinear relationship with depressive symptoms and a linear relationship with aggressive behavior (Gaylord-Harden, So, Bai, Henry, & Tolan, 2017a); furthermore, depressive symptoms mediated the relationship between CVE and aggressive

behavior (Gaylord-Harden, So, Bai, Tolan, 2017b). These studies reveal that some youth may become emotionally numb to CVE despite increases in behavioral maladaptation.

**Why explore the spatial dynamics of CVE?**

As previously defined, CVE encompasses direct and indirect violent experiences in or near the home and school environments. Direct exposure includes instances such as being physically harmed or assaulted. Indirect forms of violence exposure include experiences such as witnessing a violent action but can also be extended to mere awareness that violence is occurring in the home or school neighborhood. While some researchers and practitioners are more concerned with violence that is experienced directly, this perspective is limited when one wants to fully understand the multifaceted impacts of CVE and the ways it permeates neighborhoods and communities. For example, merely *knowing* that violence is occurring in one's school had negative associations on student's psychological wellbeing, even if youth were not directly victimized (Janosz et al., 2008). In addition, while violence is incredibly prevalent, more youth are indirectly exposed to violence compared to direct victimization. In a nationally representative sample, approximately 41.2% of children surveyed in 2015 experienced direct victimization in the previous year, compared to 57.7% who were exposed to any kind of violence, including witnessing violence (Finkelhor et al., 2015).

These distinctions between direct and indirect violence exposure make it critical for researchers to utilize a transactional/bioecological model to understand how varying levels and contexts of exposure affect youth development (Bronfenbrenner & Morris, 2006; Cicchetti & Lynch, 1993; McCoy, 2013). Indeed, while individual-level exposure is important, the neighborhood contexts that youth inhabit are also critical for development and functioning. Bronfenbrenner's bioecological model of development posits that youth are embedded in, and

develop within, intersecting social systems such as family, school, neighborhood, and culture (Bronfenbrenner & Morris, 2006). Therefore, to understand how youth function within violent communities, one must strive to capture an understanding of their whole experience from a perspective that addresses the neighborhood context of where and when CVE occurs. This perspective postulates that the three spatial dynamics of CVE (chronicity, pervasiveness, and proximity) may be unique in how they affect individuals and communities (McCoy, 2013).

Firstly, CVE may vary in *chronicity*, or the period of time during which CVE occurs and/or is operationalized. For example, whether CVE captures a specific period of time (e.g., the past year) or reflects lifetime exposure. Therefore, neighborhood and violence researchers must consider how chronic violent experiences shape youth development in comparison to acute or single instances of trauma. Previous research has found that chronic CVE molds neighborhood contexts by reducing social efficacy and cohesion, which may shape the way community members perceive their neighborhoods (Leventhal, Dupéré, & Shuey, 2015). A notable qualitative study conducted in Chicago found that parents of adolescents perceived there to be "no safe havens" anywhere in the city (Voisin, Berringer, Takahashi, Burr, & Kuhnen, 2016, p. 528). This supports the notion that even if youth are not directly victimized, they are residing in communities that they may perceive as hostile and unsupportive. As such, measuring chronic instances of neighborhood violence is essential to understand how it relates to psychological development.

Secondly, the transactional/bioecological approach urges researches to examine how different realms of youths' neighborhood contexts vary in the chronicity of CVE and in turn, how these spaces may affect youth development. This highlights the second element of CVE, *pervasiveness*, such that individuals may encounter CVE in multiple environments, such as

witnessing violence in both the home and school neighborhoods. Context-specific exposure is particularly important in urban communities where youth are embedded in several neighborhood spaces. For example, many Chicago youth do not attend schools in their immediate home communities. The Chicago Public School (CPS) system and availability of many charter school options allow students to be admitted to schools outside of their home neighborhood boundaries (CPS, 2017). Therefore, the school neighborhood may be much safer or more dangerous than the home neighborhood and traveling to and through communities to attend school can be an obstacle itself.

Finally, the transactional/bioecological model suggests that *proximity* of exposure must be explored by neighborhood and violence researchers. Proximity of CVE can be measured in two ways. It can refer to levels of victimization, which vary from direct victimization (i.e., most proximal exposure), to witnessing, and to simply "knowing about" or "hearing about" violence (i.e., most distal exposure). Alternatively, CVE may be spatially proximal (i.e., on the street outside one's home) or more distal (i.e., two blocks away). Research in Chicago found that violent crime was spatially concentrated, and that clustered violence is uniquely predicted by income inequality, neighborhood social cohesion, and efficacy (Morenoff, Sampson, & Raudenbush, 2001). These analyses revealed that while crime in general was found everywhere throughout Chicago, specific violent crimes were spatially concentrated; between 1996 and 1998, approximately 70% of all homicides occurred in only 32% of Chicago neighborhoods. However, currently the bulk of CVE research has only examined how differentiating levels of victimization (i.e., witnessing vs. direct victimization) relate to adolescent psychological functioning leaving the implication of spatial proximity of CVE largely unexamined.

It is important to consider the spatial dynamics of CVE because the three specified dimensions may uniquely relate youth development and would pose implications for future research, practice, and policy. While no studies have examined each spatial dynamic concurrently, some research has attempted to delineate how contextually-dependent violence influences youth psychological outcomes. One study by Mrug, Loosier, and Windle (2008) investigated violence experienced in the home, school, and neighborhood, and found that each context uniquely predicted psychological outcomes in a sample of 602 African American adolescents. Interestingly, the authors found that higher neighborhood violence was only directly related to greater violent fantasies, but it moderated the relationship between violence experienced at school and youths' externalizing symptoms (i.e., delinquency and aggressive fantasies). Specifically, when neighborhood violence was low but school violence was high, youth reported more aggressive fantasies and delinquency. Additionally, neighborhood violence moderated the relationship between violence experienced at home and internalizing symptoms (i.e., depression and anxiety) such that when neighborhood violence was low and home violence was high, youth reported more depression and anxiety. This study is influential in that it attempts to partition youth social ecologies into three distinct settings (home, school, and neighborhood), finding not only context-specific exposure to be important, but also meaningful interactions between context of exposure and psychological functioning.

An additional gap in the literature relates to the method in which CVE is measured, which has been largely inconsistent across a variety of theoretical and methodological conceptualizations (Kennedy & Ceballo, 2014). One issue is that much research has relied on youth self-report data alone, and while subjective experiences of CVE are important, using them exclusively limits our ability to examine the neighborhood context of CVE for two key reasons.

First, youth self-reports of CVE are prone to bias because youth may over or underreport their own exposure to violence and similarly, over or underestimate violence that occurs in the neighborhood (McCoy, 2013). This is of concern for research in urban contexts because chronic exposure to violence may alter youths' perceptions. Secondly, these measures may make it difficult to delineate spatial dynamics of CVE, specifically in their ability to compare the local context of exposure. If a survey asks a participant to respond to the question, "How often has someone chased you?" without additional inquiry, it may be difficult to know where this happened and therefore, how the context of this exposure is meaningful.

**The Current Study**

The current study explores the relationship between CVE and youths' psychological functioning, specifically in terms of anxiety and self-regulation, with a special consideration of the importance of where and when CVE occurs. A major strength of this study is the multi-faceted, complex way in which CVE is defined and measured. Grounded in a transactional/bioecological perspective, the use of objective, violent crime data, in combination with youths' subjective, self-reports of DVV, recognizes that both have unique implications for positive youth development. That is, this study explores how merely living and attending schools in violent neighborhoods is related to psychological development and functioning beyond the influence of direct violence exposure. Moreover, this study is the first of its kind to delineate and compare how each distinct spatial dynamic of CVE (chronicity, pervasiveness, and spatial proximity) relate to youths' psychological outcomes. By comparing precise measures of CVE, this study tests which measures are most predictive across different domains of psychological functioning (i.e. state anxiety, trait anxiety, behavioral dysregulation, cognitive dysregulation). There are three main research questions that guide this research:

*Question 1) How will varying time frames of chronicity (i.e., frequent exposure) predict psychological functioning?*

*Question 2) How do different locations of exposure (home vs. school neighborhood) accumulate or interact to predict psychological functioning?*

*Question 3) How do varying levels of spatial proximity (i.e., closer to home or school) predict psychological functioning?*

This study is exploratory in nature and because of this the hypotheses described below are preliminary. I expect that each spatial dynamic will be uniquely related to youths' psychological functioning and not all outcomes will be related to CVE equally. First, I hypothesize that longer periods of CVE (i.e., more chronic exposure) will be most predictive of outcomes and that these relationships will be most pronounced for behavioral dysregulation. I hypothesize this because long-term chronicity may be a more accurate reflection of how often CVE occurs in youths' neighborhood contexts. In addition, the PAM would suggest that youth become desensitized to CVE and therefore may not report emotional duress, while at the same time reporting more maladaptive behavior. Second, I hypothesize that youth with more pervasive CVE (i.e., chronic within both the home and school neighborhoods) will have the most robust negative associations with behavioral dysregulation. However, given the findings of Mrug and colleagues (2008), it was possible that an interaction of home and school CVE would reveal a unique pattern for trait anxiety, such that when community violence was more prevalent in one neighborhood context and not the other, general levels of anxiety may be worse. Third, I hypothesize that the most spatially proximal exposure (closest to the home and school) will be most strongly related to youth psychological functioning, based on theoretical assumptions that more proximal processes have a more direct relationship with development (Bronfenbrenner &

Morris, 2006; Cicchetti & Lynch, 1993). Finally, I hypothesize that DVV will be detrimental for each psychological outcome, such that more self-reported DVV will be related to worse psychological functioning.

## Methods

### Sample

This study uses data from the Chicago School Readiness Project (CSRP), a longitudinal sample of predominately low-income, African American (65.8%) and Hispanic (26.9%) Chicago youth assessed six times over the course of a decade (for additional study details, see Raver et al., 2008). The CSRP began as a teacher-training, socioemotional and behavioral intervention designed to promote school readiness among low-income children. Two cohorts of children (N = 602, 53.3% female) and caregivers were recruited from Head Start Centers located in seven of Chicago's most disadvantaged neighborhoods. Children and families were assessed when children were in preschool (Wave 1, N=602), kindergarten (Wave 2, N=398), third (Wave 3, N=505), fifth (Wave 4, N=491), ninth/tenth (Wave 5, N=469), and tenth/eleventh (Wave 6, N = 437) grades. In waves 1-4, data collection spanned a two-year period so that the two cohorts of children were assessed when they were in the same grade; in waves 5-6 data collection took place at one point in time when the two cohorts of youth were in different grades. This study uses a subsample of 314 youth who had valid data at both $9^{th}$-$10^{th}$ (Wave 5) and $10^{th}$-$11^{th}$ (Wave 6) grade assessments. The mean age for the sample was 15.32 years old (*SD* = 0.81) at wave 5 and 16.04 years old (*SD* = 0.77) at wave 6. For a descriptive table of the sample characteristics, see Table 1 in the *Appendix A*.

### Procedures and Measures

At waves 5 and 6 both parents and youth participated in the study. Parents were interviewed via phone and youth were administered assessments via computer delivered in person by project staff at youths' schools.

**Community Violence Exposure (CVE).** Crime statistics were obtained from the Chicago Data Portal (Chicago Data Portal, 2015; Chicago Data Portal, 2016). Data from this source is updated daily and include all incidents that involve police, even if an arrest was not made. Each crime report includes the date, time, location, type of crime, whether an arrest resulted or not, and whether it was considered a domestic incident. All violent crime, as defined by the Chicago Police Department and Illinois Uniform Crime Reporting codes, was downloaded and analyzed. This included all murder, rape, assault, robbery, and battery that occurred during the 12 months prior to the exact date of the wave 6 assessment.

This data was mapped and geocoded onto youth's home and school addresses using ArcGIS Version 10.4.1, to create three different spatial boundaries which linked violent crime in home and school neighborhoods. First, I drew spatial boundaries at one and two-block radii around each home and school address to reflect Chicago's urban landscape. An average block in Chicago is approximately 660 feet long (Heramb, 2007), therefore the one-block boundary was drawn with a radius of 660 feet around each home and school address and the two-block boundary was drawn with a radius of 1320 feet. The last spatial boundary was drawn around the youths' home and school census tracts to compare the more proximal boundaries to a spatial range used more commonly in research. Geocoding techniques joined all violent crime that occurred within the one-block, two-block, and census tract perimeters around home and school addresses to the respective boundaries. The count of all geocoded violent crime in each spatial

boundary was divided by the number of days during that time frame to capture the temporal elements of each spatial dynamic measure.

It is of interest to compare delineated and aggregated home and school-based CVE, therefore some of the spatial dynamic measures include aggregated home and school violent crime frequencies. For any measures that would be combined (i.e., total one-block, total two-block, and total census), duplicate crimes that occurred in both home and school spatial boundaries were removed so that crime frequencies were not inflated. This process recognized that a single exposure to a violent crime in more than neighborhood context does not equate "double exposure." Furthermore, this highlighted a known obstacle that has been studied in spatial dynamic research, spatial autocorrelation, which proposes that two spatially orientated variables in close physical relation to each other will naturally have a high correlation, violating parametric assumptions of independence (Worrall & Pratt, 2004). In fact, neighborhoods should be considered interdependent because what happens in one neighborhood space can affect changes in another (Morenoff, Sampson, & Raudenbush, 2001). Unfortunately, spatial autocorrelation can increase the risk of multicollinearity which can drastically alter parameter estimates and directions (O'Brian, 2007). After geocoding, the number of duplicate violent crimes ranged from 1.2% at the total one-block boundary, 2.9% at the total two-block boundary, and 2.4% at the total census tract boundary. This low concentration revealed that youth did not live and attend schools near each other. Reducing the number of duplicate crimes to represent single exposure could not completely address spatial autocorrelation but the low occurrence of duplicates indicated that the risk of it is low. Furthermore, preventative steps were taken to adjust the models appropriately for parametric testing (see details in the Analytic Plan).

After removing duplicate violent crimes, the data was aggregated to create distinct measures of CVE spatial dynamics. Chronic CVE was operationalized by quantifying exposure across different periods of time. *Long-term chronicity* was calculated by taking total violent crime in the home and school two-block boundaries and dividing that by 365 days, exactly one year prior to the assessment date at wave 6. *Mid-term chronicity* follows the same calculation with a six-month time frame, and *short-term chronicity* follows the same process for a one-week time frame. Pervasive CVE compared the unique home and school context. *Home-based CVE* is calculated by taking the frequency of all violent crime in the previous year at just the home two-block spatial boundary, one year prior to assessment at wave 6, whereas *school-based CVE* measures the one-year frequency of the school two-block boundary. Lastly, proximal CVE captured differing levels of closeness to crime. *Most distal CVE* included the frequency of violent crime of both home and school census tracts, one year prior to assessment. *Most proximal CVE* measured frequency at a one-block radii of both home and school addresses, one year prior to assessment. (See Table 3 in Appendix A for a brief review of how each measure was calculated.)

**Self-report direct violent victimization (DVV)**. Youth self-report DVV was analyzed as a separate index in the analyses to test the predictive power of CVE beyond personal victimization, assessed at wave 5. This included three questions: *In the last 6 months… Have you been hit, kicked, or hurt by another kid? Have you been hit, kicked, or hurt by an adult? Have you been in a physical fight?* (Cronbach's alpha = 0.72). Youth responded with either *yes* or *no* (yes = 1, no = 0) and a sum of this data was computed as a measure of DVV.

**Psychological functioning.** I operationalize psychological functioning in terms of anxiety and self-regulation. These constructs were further specified by using measures of state

and trait anxiety and behavioral and cognitive dysregulation. It is important to compare these two different types of anxiety and self-regulation because it is hypothesized that CVE might impair specific domains differently. Parallel measures of each outcome were collected at both waves 5 and 6 which allowed me to examine how CVE related to current psychological functioning above and beyond prior levels.

***State anxiety*.** Anxiety was measured using the State-Trait Anxiety Inventory for Children (STAIC; Speilberger, Gorsuch, Lushene, Vagg, & Jacobs, 1973). State anxiety refers to short-term or current levels of anxiety. There are 20 items that make up the state scale, Cronbach's $\alpha = 0.72$. An example item is, "*I feel… very calm, calm,* or *not calm".* Responses were coded on a Likert scale ranging from 1 – 3. Ten items from the state scale were reverse coded, such as: *I feel… Very upset* (coded as 3), *Upset* (coded as 2), or *Not upset* (coded as 1). A mean of this scale was computed, with a higher mean score indicating worse state anxiety.

***Trait anxiety***. Trait anxiety is operationalized as stable, general levels of anxiety. From the STAIC, there were 20 items that reflect trait anxiety, Cronbach's $\alpha = 0.72$. An example item from the trait scale is *"I worry about making mistakes… hardly ever, sometimes,* or *often".* Responses were scored on a Likert scale from 1 – 3 and no items were reverse coded. The items were aggregated into a mean score, with a higher value indicating worse trait anxiety.

***Behavioral dysregulation*.** Self-regulation outcomes are computed by averaging items from two different measures of psychological functioning, the Barratt Impulsiveness Scale (BIS-11; Patton, Stanford, & Barratt, 1995) and the Behavior Rating Inventory of Executive Function (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000). Behavioral dysregulation includes six items from the BIS and eight items from the BRIEF, Cronbach's $\alpha = 0.72$. An example of a behavioral dysregulation item from the BIS includes: *I act on impulses… Rarely/Never, Occasionally,*

*Often,* or *Almost always/Always.* The survey was originally coded on a Likert scale from 1 – 4 but was recoded to range from 0 - 3 and standardized on a scale of 0 – 1. Standardizing aggregates from the BIS and BRIEF allowed each scale to contribute equally to the behavioral and cognitive dysregulation outcome variables. An example of an item from the BRIEF: *I do not think of consequences before acting…. Never, Sometimes,* or *Often*. Similarly, these items were coded as a Likert scale ranging from 0 - 2 but were then standardized on a 0 – 1 scale. For the outcome variable, a mean score was computed with a higher score indicating more behavioral dysregulation.

***Cognitive dysregulation.*** Similar calculations were conducted for the cognitive dysregulation. There were seven items from the BIS and seven from the BRIEF, Cronbach's $\alpha$ = 0.72. An example item from the BIS includes, "*I plan things carefully… Rarely/Never, Occasionally, Often,* or *Almost always/Always".* Most items were reverse coded on a Likert scale (*Rarely/Never* = 3; *Almost always/Always* = 0) and standardized to be on a 0 – 1 scale. Only one item was not reverse coded: *I don't "pay attention" … Rarely/Never* (coded as 0), *Occasionally* (coded as 1), *Often* (coded as 2), or *Almost always/Always* (coded as 3). An example item from the BREIF includes "*I have a short attention span… Never, Sometimes,* or *Often".* These items were coded as a Likert scale ranging from 0 – 2 and were standardized on a 0 – 1 scale. A higher score indicates more cognitive dysregulation.

**Demographic covariates**. Sample and study demographic data was utilized as covariates. This includes youths' *race/ethnicity* (e.g., Black, Hispanic, White, or Other; Black = 1, Non-Black = 0), *gender* (female = 1; male = 2), CSRP study *treatment* (e.g., treatment vs. control; treatment = 1, control = 0), and CSRP study *cohort* (cohort 1 or 2; cohort 1 = 1, cohort 2 = 2). Due to the high correlation of participant age and CSRP cohort status, age is not included as

a covariate (see the Pearson correlation in Appendix B Table 3). Each of these sample and study demographics were obtained at baseline (wave 1). Given the fact that violence and poverty tend to co-occur (Aisenburg & Herrenkohl, 2009), I included measures of family-level and neighborhood-level poverty. Obtained from parent self-report at wave 6, the families' *income-to-needs ratio* was calculated as the ratio of family income relative to the federal income standard, normed for family size. A ratio of 1 reflects the cutoff for living in poverty as defined by federal standards, therefore a ratio of less than 1 signifies living in poverty (McCoy, Roy, & Raver, 2016). *Neighborhood poverty* is operationalized in terms of youth's residential census tract using data obtained from the 2016 American Community Survey and defined as the percent of all individuals living at or below the federal poverty level (Social Explorer, 2018).

**Analytic Plan**

The study employed residualized change, hierarchical multiple regression (HMR) models to test the proposed relationships. Each of the four outcomes, state anxiety, trait anxiety, behavioral dysregulation, and cognitive dysregulation, were analyzed separately to test how CVE relates to each. The resulting 28 HMR models tested how each spatial dynamic of CVE relates to psychological outcomes beyond the association of self-reported DVV, the corresponding measure of psychological functioning at wave five, and demographic covariates. The following section outlines each research question and corresponding analyses.

*Question 1) How will varying timeframes of chronicity (i.e., frequent exposure) predict psychological functioning?* This analysis tests for how varying time frames of chronicity related to psychological functioning, specifically long-term chronicity, mid-term chronicity, and short-term chronicity. Each psychological outcome measure was regressed on each measure of CVE

chronicity in three separate models in addition to DVV and sample covariates. Model details are as follows:

$$Model\ 1:\ Y = B_0 + BX_{Long\text{-}term\ chronicity} + BX_{DVV} + S + e$$

$$Model\ 2:\ Y = B_0 + BX_{Mid\text{-}term\ chronicity} + BX_{DVV} + S + e$$

$$Model\ 3:\ Y = B_0 + BX_{Short\text{-}term\ chronicity} + BX_{DVV} + S + e$$

Where $Y$ is the psychological outcome at wave 6, $B$ is the intercept, $X_{Longterm,,}$ $X_{Midterm,}$ and $X_{Short\text{-}term}$ is chronicity over one-year, six-months, and one-week before wave 6 psychological assessment, $X_{DVV}$ is self-reported DVV at wave 5, $S$ is sample covariates and wave 5 psychological functioning, and $e$ is the error term.

*Question 2) How do different locations of exposure (home vs. school neighborhood) accumulate or interact to predict psychological functioning?* For this set of analyses, I tested for how home-based CVE and school-based CVE related to psychological outcomes while controlling for the other, and how they interact together. The proposed analytic strategy is:

$$Model\ 4:\ Y = B_0 + BX_{home} + BX_{School} + BX_{DVV} + S + e$$

$$Model\ 5:\ Y = B_0 + BX_{home} + BX_{school} + BX_{home}xBX_{school} + BX_{DVV} + S + e$$

Where $Y$ is the psychological outcome at wave 6, $B$ is the intercept, $X_{Home}$ is home-based CVE and $X_{School,}$ is school-based CVE at wave 6, $X_{home}xBX_{school}$ is the home and school-based CVE interaction term, $X_{DVV}$ is total self-reported DVV at wave 5, $S$ is sample covariates and wave 5 psychological functioning, and $e$ is the error term. These models were also compared to model 1, which aggregated home and school-based CVE, to examine how different contexts of violence related to psychological outcomes.

Spatial autocorrelation is a risk for model 5 because a high correlation between home and school-based CVE could violate parametric assumptions of independence. The low percentage of duplicate crimes (2.9%) in these boundaries is heartening, but to further assess this risk, Pearson's correlation will test the for the relationship between home and school-based CVE, in addition to all other predictor variables, and variance inflation factors (VIF) will be calculated for all model parameters. Additionally, to reduce multicollinearity, home and school-based CVE will be centered in model 5.

*Question 3) How do varying levels of spatial proximity (i.e., closer to home or school) predict psychological functioning?* For these analyses, I included measures of most distal CVE and most proximal CVE in addition to DVV, sample covariates, and previous years psychological functioning. These models were compared to model 1, which aggregated violent crime at a two-block range, to examine how different ranges of spatial proximity related to psychological outcomes.

*Model 6:* $Y = B_0 + BX_{Distal} + BX_{DVV} + S + e$

*Model 7:* $Y = B_0 + BX_{Proximal} + BX_{DVV} + S + e$

Where $Y$ is the psychological outcome at wave 6, $B$ is the intercept, $X_{Distal}$ is the home and school census tracts frequency of CVE and $X_{Proximal,}$ is the home and school one-block range frequency of CVE, $X_{DVV}$ is total self-reported DVV at wave 5, $S$ is sample covariates and wave 5 psychological functioning, and $e$ is the error term

## Results

Descriptive analyses for each CVE and DVV predictor variable revealed that the distributions of each independent and dependent variable were relatively normal, see Table 2 in

Appendix A. The distribution of school-based CVE was slightly more asymmetric (skew = 1.11) and peaked (kurtosis = 1.41) in comparison to the other CVE predictors, but was still at an acceptable range for parametric statistics. State anxiety had a slightly asymmetric distribution (skew = 1.80) but is also at an appropriate level. Table 4 in Appendix B shows Pearson correlations for all predictor variables of interest. As suspected, home and school-based CVE were highly correlated, $r = 0.34$, $p < .001$, revealing that youth who live in more violent neighborhoods also attend school in more violent neighborhoods. Diagnostic tests revealed that variance was not grossly inflated, all parameters in each model had a VIF $\leq 2.0$, including model 5 where high multicollinearity was a risk. Only CVE and DVV variables that are statistically significant or at the trend level of significance are summarized here. Appendix B includes all model results in detail organized by the spatial dynamic predictor variables.

Only behavioral dysregulation was significantly related to chronic CVE, see Table 5. Specifically, long-term chronicity significantly, positively predicted behavioral dysregulation, $B = 0.07$, $Adj.\ R^2 = 0.26$, $p < .01$, 95% CI [0.02, 0.12], which indicated that more chronic, long-term CVE is related to more behavioral dysregulation. Interestingly, mid-term chronicity yielded a nearly identical relationship, $B = 0.07$, $Adj.\ R2 = 0.26$, $p < .01$, 95% CI [0.02, 0.12]. This revealed that within a six-month time frame, chronicity also significantly predicted worse behavioral dysregulation. There was relatively no difference between the coefficients and predictive power of models 1 and 2, which suggested that long-term and mid-term chronicity are comparable metrics. This partially supported hypothesis 1, which specifically proposed that long-term, chronic CVE would significantly increase behavioral dysfunction, but it is inferred that this metric can be measured at either one-year or six-month time frames.

Models that examined pervasiveness are displayed in Table 6. Interestingly, there was a significant interaction for trait anxiety, $B = -0.69$, *Adj.* $R^2 = 0.25$, $p < .05$, 95% CI [-1.34, -0.04], visually depicted in Figure 1. Graphing the data at the interquartile range revealed that when home and school-based CVE were low, trait anxiety was also low. However, when home-based CVE was lowest, at the 25$^{th}$ percentile, and school-based CVE was highest, at the 75$^{th}$ percentile, trait anxiety was the highest, $B = 0.27$, $p < .05$. This indicates that trait anxiety was worse when youth lived in a relatively less violent neighborhood than where they attended school. Additionally, when home-based CVE was highest, at the 75$^{th}$ percentile, trait anxiety decreased as school-based CVE increased, but this relationship was non-significant. The significant interaction supported hypothesis 2, which proposed that state anxiety would be implicated by an interaction of home and school-based CVE, but the directionality of this relationship was novel.

Home and school-based CVE were at trend level significance with behavioral dysregulation (see Table 6). School-based CVE had a trend-level significant relationship with behavioral dysregulation, $B = 0.07$, *Adj.* $R^2 = 0.25$, $p = 0.09$, 95% CI [-0.01, 0.13], which indicated that higher school-based CVE was related to worse behavioral dysregulation. There was trend-level significance for the main effect of home-based CVE, $B = 0.07$, *Adj.* $R^2 = 0.25$, $p = .08$, 95% CI [-0.01, 0.14], inferring that when all other effects are controlled, increases in home-based CVE were related to worse behavioral dysregulation. Likewise, there was also trend-level significance for the main effect of school-based CVE, $B = 0.07$, *Adj.* $R^2 = 0.25$, $p = .06$, 95% CI [-0.00, 0.14], such that school-based CVE is related to higher levels of behavioral dysregulation. Notably, these results were less predictive in comparison to the aggregate home and school context (review model 1 in Table 5). This infers that pervasive CVE (i.e., most

chronic in both contexts) had a stronger relationship with behavioral dysregulation than just the home or school neighborhood CVE alone, supporting hypothesis 2.

Models that tested for varying spatial proximities are displayed in Table 7. Only behavioral dysregulation was significantly related to most distal CVE, $B = 0.05$, *Adj.* $R^2 = 0.25$, $p < .05$, 95% CI [0.01, 0.09]. This indicated that higher levels of CVE in home and school census tracts was related to higher levels of behavioral dysregulation. It is interesting to recognize that this result was less predicative than long-term chronicity, which included a more spatially proximal measure of home and school neighborhoods (the two-block spatial boundary; review Table 5). There was trend level significance for the relationship between most proximal CVE and behavioral dysregulation, $B = 0.16$, *Adj.* $R^2 = 0.25$, $p = .05$, 95% CI [-0.00, 0.32], which indicates that CVE in very close proximity to home and school locations is related to higher levels of behavioral dysregulation. Nonetheless, this relationship was less pronounced than long-term chronicity. There was also a trend-level relationship between proximal CVE and cognitive dysregulation, $B = 0.13$, *Adj* $R^2 = 0.28$, $p = 0.10$, 95% CI [-0.02, -0.27], such that higher levels of proximal CVE were related to greater cognitive dysregulation. These results did not support hypothesis 3, which suggested that the most proximal spatial boundary would yield the strongest relationship with psychological function; in fact, it was the second most proximal boundary where the strongest results were found.

In every model, DVV significantly predicted trait anxiety, behavioral dysregulation, and cognitive dysregulation, with only slight variation in the predictive power of each parameter (review Tables 5 – 7). In general, DVV was significantly related to trait anxiety, $B = 0.08$, $p < .001$, such that higher DVV was associated with higher trait anxiety. DVV was positively, significantly associated with behavioral dysregulation, $B = 0.03$, $p < .01$, indicating that more

DVV was related to worse behavioral dysregulation. Lastly, DVV significantly, positively predicted cognitive dysregulation, $B = 0.02$, $p < .05$, such that more DVV was related to worse cognitive dysregulation. The only psychological outcome that was consistently not significantly predicted by DVV was state anxiety. This gives mixed support to the final hypothesis that proposed that DVV would be predictive of all psychological outcome.

## Discussion

Neighborhoods are critical for youth functioning because they mold many factors and relationships that set the stage for development, peer relationships, family functioning, and social networks (Leventhal, Dupéré, & Shuey, 2015). This study uses a comprehensive definition of CVE rooted in a transactional/bioecological perspective that asserts that the broader neighborhood context is important for adolescent well-being, in addition to direct experiences of violence. It is one of the first studies to precisely measure and analyze CVE spatial dynamics concurrently and examine how they relate to adolescent psychological development. These findings reveal that specific spatial and temporal conceptualizations of CVE across multiple neighborhood contexts have unique implications for adolescent anxiety and self-regulation. The findings conclude that violence occurring within home and school neighborhoods, even beyond youth perception and personal victimization, is detrimental for youth. As previously considered, not all psychological outcomes were impaired similarly; behavioral dysregulation was uniquely related to specific measures of time, context, and space. Trait anxiety was strongly predicted by the interaction of home and school-based CVE, such that anxiety was highest when home neighborhood violence was low but school neighborhood violence was high.

Across all measures of psychological functioning, behavioral dysregulation had the strongest relationship with long-term chronic CVE, which aligns with previous research that

finds that CVE is strongly related to behavioral maladaptation (Ng-Mak et al., 2004). Nonetheless, less work has demonstrated how CVE is related to self-regulatory abilities of adolescents, particularly regarding if self-regulation is related to desensitization to CVE. While previous work has demonstrated that emotional desensitization mediates the relationship between CVE and behavioral maladaptation (Gaylord-Harden et al., 2017b), it is unclear how behavioral self-regulatory abilities relate to this process. One study found in a sample of 429 7-13-year-old children who reported high levels of CVE and had poor behavioral self-regulatory skills had more aggressive beliefs in the following year (Goldweber, Bradshaw, Goodman, Monahan, & Cooley-Strickland, 2011). Therefore, it could be that behavioral dysregulation plays a moderating role in desensitization, but further work is needed in this area. Moreover, while behavioral dysregulation is robustly related to CVE, cognitive dysregulation was not, highlighting how specific self-regulatory abilities may be context dependent. This notion is understudied, but previous research has found that in highly disadvantaged communities, adolescent's self-regulatory abilities can relate to specific environments and social contexts (Mason et al., 2010).

While most community violence research only measures violence occurring in the home, or does not probe for specific neighborhood context, this study successfully delineated and compared the home and school neighborhoods. This process revealed an important distinction; behavioral dysregulation is most related to violence occurring within both neighborhood contexts but not either one in isolation. This finding proposes that only examining the home or not probing for local context is a narrow focus that will miss meaningful results. Indeed, school neighborhoods are places where youth may spend a considerable amount of time and socialization and therefore should be considered an integral part of social ecologies. Future

research should employ data collection and analytic techniques that will capture school-based CVE in addition to home-based CVE in order to understand how such interacting neighborhood processes relate to development.

Comparing delineated home and school neighborhood-based CVE also found that trait anxiety was highest when adolescents attended schools in neighborhoods that are more violent than the home neighborhood. This poses implications for the PAM which would suggest that when CVE is most pervasive, youth experience less emotional duress. The results of this study infer that youth do not report increased anxiety when CVE is most prolific across multiple contexts, but they are *not* desensitized when CVE is chronic in just one context, particularly school neighborhoods. This can elude to perceptions of neighborhood safety, a critical psychological need that is inhibited by CVE (Overstreet & Braun, 2000; Schwab-Stone et al., 1995). It is possible that when a student must travel to a dangerous neighborhood to attend school, their general levels of anxiety increase because they are aware that they are comparatively less safe than they are at home. One study in Philadelphia found that adolescents perceived less safety when traveling to school through high crime areas (Wiebe, Gui, Allison, Anderson, & Richmond, 2013). Therefore, anxiety may increase because youth are aware that they are in or traveling through a relatively less safe space, but there is likely something particularly salient about school neighborhoods. Previous research has found that in Chicago, school-based CVE is related to decreases in school-level academic achievement (Burdick-Will, 2016), and that school neighborhood-based violent crime inhibited perceptions of school safety and academic outcomes, (McCoy, Roy, & Sirkman, 2013). These studies not only emphasize the importance of school neighborhoods for adolescent development, but also infer how the neighborhood climate may mediate these relationships. Indeed, schools may be a significant

source of support for victimized youth or may serve as a "safe haven" against the harmful nature of community violence (Henrich, Schwab-Stone, Fanti, Jones, & Ruchkin, 2004, p. 330). Further research is needed to clarify the interrelated nature of school-based CVE, perceptions of safety, and youth well-being.

It is additionally informative for the PAM to examine how some measures of violence did not significantly predict psychological functioning, particularly state anxiety. In fact, an important pattern emerged, such that state anxiety is the only measure not significantly predicted by either CVE or DVV and had a consistent *negative* relationship with DVV. That is, despite non-significance, DVV is related to lower levels of state anxiety. In some models, trait anxiety also has a negative relationship with CVE. These findings align with previous research that has yet to find robust, linear relationships with other internalizing symptoms (Fowler at al., 2009). This study may have not found such a relationship because it utilizes linear regression models and anxiety may have a more curvilinear relationship with CVE and DVV, such as other internalizing symptoms like psychological distress (Ng-Mak et al., 2004) and depression (Gaylord-Harden et al., 2017a). Indeed, one study found that self-reported CVE was curvilinearly related to anxious/depressive behaviors (Kennady & Ceballo, 2016). However, it is important to consider that all the research reviewed in this paper on the PAM has relied on subjective, self-report CVE. This study suggests that inhabiting and attending schools in high violent crime neighborhoods may produce desensitization similarly with state or trait anxiety.

It was hypothesized that the most proximal measure of CVE would produce the most robust relationship with psychological impairment, following a line of reasoning that would suggest that more proximal processes have a more direct relationship with development (Bronfenbrenner & Morris, 2006; Cicchetti & Lynch, 1993). However, it is the second most

proximal boundary, the two-block aggregate, that is the most predictive of behavioral dysregulation. This distinction may be a function of how adolescents inhabit neighborhood space. A two-block distance is still quite proximal to the home or school, likely encompassing neighborhood space that youth physically navigate on a habitual basis, but a one-block boundary may not reflect adolescent's independent behavior. The spatial distances in this study were not drawn haphazardly; the one and two block distances were drawn to mirror the Chicago urban landscape and census tracts were utilized to compare such approaches to more commonly used spatial boundaries. Other research has found that youth spend active and leisure time in spatial ranges comparable to the two-block home boundary (Chambers et al., 2017; Loebach & Gilliland, 2016; Colabianchi et al., 2014). Unsurprisingly, many researchers note that census tracts are quite arbitrary and do not accurately reflect how adolescents inhabit and develop within neighborhood space (Morenoff et al., 2001; Chambers et al., 2017; Colabianchi et al., 2014). A more proximal boundary than a census tract may more accurately reflect habitual behavior in neighborhood space, but one too close to home or school may not reproduce adolescents' autonomy. Future research investigating other spatially linked attributes of neighborhoods should draw spatial boundaries carefully to reflect habitual youth behavior and the urban landscape.

DVV robustly predicts a range of psychological outcomes, concurring with a large body of previous literature (Fowler et al., 2009). However, it is important to note that despite consistent, strong relationships between DVV and these outcomes, long-term chronic CVE had a somewhat stronger correlation with behavioral dysregulation. While this difference is small, it highlights how simply living and attending schools in highly violent neighborhoods is just as critical as subjective, direct experiences of violence for behavioral self-regulation. This is an alarming result because far more youth live and attend schools in violent neighborhoods than

youth who are directly victimized. Furthermore, given the importance of self-regulation for many long-term outcomes (McCoy, 2013), this notion infers a cascade of unfortunate negative consequences for adolescents who develop in chronically violent neighborhoods. Future research must continue to assess these two indices separately to further understand how CVE occurring broadly within neighborhoods shapes developmental functioning and how to prevent ensuing impairments.

**Implications**

This study has important methodological implications for the operationalization and measurement of neighborhoods and CVE. The results found that there was no difference in how long-term or mid-term CVE chronicity impacted behavioral dysregulation; therefore, future studies employing a similar geospatial methodology could measure chronic CVE at either one-year or six-month windows of time. Furthermore, future research should continue to examine both home and school neighborhoods separately and in combination to test how each neighborhood context influences psychological functioning and other areas of development. The two-block spatial boundary had the strongest relationship with behavioral dysregulation, demonstrating that the commonly used census tract may not be the best boundary for determining exposure. These findings reiterate the importance of neighborhoods and CVE for youth development and highlight some of the complexities that researchers need to consider. A similar methodology should be used to assess how other neighborhood features, such as objective, spatially linked features of neighborhood disadvantage (e.g., closed schools, abandoned buildings), may influence other areas of youth development and functioning. This study was possible using publicly available, block-level XY coordinate data on violent crime statistics. A barrier to such research is that in many cities, urban or not, this type of data may not be available. The public availability of data on crime and other community characteristics offers researchers, public interest

groups, and community organizations alike numerous opportunities to understand their communities better and to advocate for change.

The study proposes a pressing need for developmentally appropriate, universal prevention strategies. These services should be available before youth reach adolescence because developmental impairments due to CVE begin early (Berkowitz, 2003). Suggestions include working with community partners and practitioners to design and implement support programs in neighborhoods and schools with more chronic, spatially clustered violent crime. School-based mental health support services have been found to be particularly effective at buffering against the negative consequences of CVE (Gaias, Johnson, White, Pettigrew, & Dumka, 2019) and may be prime locations to administer universal prevention initiatives (Dodington et al., 2012). Given that youth merely must live or attend school in high violent crime neighborhoods to be influenced negatively, it is also suggested that prevention strategies aim to reduce the chronicity of crime. This study found that neighborhood poverty was extremely correlated with CVE, aligning with previous research which found that violent crime is predicted by concentrated disadvantage and income inequality (Morenoff, Sampson, Raudenbush, 2001). If one desires to prevent the negative sequalae of living in high violent crime communities, public policy leaders must attempt to improve the economic well-being and prosperity of such neighborhoods.

**Limitations**

Despite its many strengths, this study also has some limitations. First, it may be that linear models do not provide the best fit for the questions of interest. I would suggest replicating this study by using quadratic models for state and trait anxiety. If doing so detects a significant relationship, this would mean that simply living or attending school in a violent neighborhood also produces a similar emotional desensitization effect as does subjective experiences of CVE.

Because of neighborhood interdependence, parametric testing may not be appropriate for this line of inquiry. Diagnostic tests revealed that there was no variance inflation that would have significantly violated parametric assumptions, but researchers have critiqued the usage of parametric testing in spatial dynamic research. Previous research has successfully conducted spatial dynamic research using first-order Markov models and Hierarchical Bayesian estimation which do not require an assumption of independence (Verbitsky & Raudenbush, 2009). This research found that the first-order Markov, Bayesian approach was the best method to estimate the parameters in comparison to Ordinary Least Squares regression and another Bayesian estimation approach. Other research designs utilize nested, hierarchical models in spatial dynamic research, which was not possible with the geospatial techniques used in this research design. I suggest that this study be replicated with Bayesian techniques to compare these different analytic approaches and to find the best estimation method.

One last limitation comes at the expense of one of this study's major strengths. While the use of precise, geocoded data allows one to examine spatial dynamics of CVE, it does not capture youths' perceptions of neighborhood violence. This study demonstrates to researchers, practitioners, and community advocates that even if youth do not perceive or are personally exposed to violence, they are still impacted by it. However, it is missing the critical element of youth voice. Qualitative research can enlighten such findings by exploring how CVE impacts youth beyond DVV, like this study, but could additionally examine how perceptions of danger or violence might also influence psychological functioning. It is imperative to consider that youth may live in an objectively violent (i.e., high violent crime) neighborhood, but may not themselves consider it "dangerous." Indeed, qualitative work has found that not all youth consider such neighborhoods as dangerous or report their neighborhoods to be both "safe" and

"unsafe" (Teitelman et al., 2010). These perceptions should be explored to better understand how youth function within objectively violent neighborhoods, which would advance research, policy, and practice.

## Conclusion

This study asked where and when CVE matters for psychological outcomes in a sample of low income, racial/ethnic minority Chicago adolescents. In doing so, this study identified that certain domains of psychological functioning are related to CVE. It found that behavioral dysregulation is influenced by CVE when measured at long-term intervals and semi-proximal ranges of both the home and school neighborhoods. Trait anxiety was only influenced by an interaction of home and school-based community violence. This enlightened the PAM by asserting that desensitization does not occur when one looks at only one neighborhood context and proposes that future work needs to compare the home and school neighborhood context in conjunction. The results implicate that merely living and attending schools in violent neighborhoods are detrimental, and support for general well-being is critical to optimize adolescent development in these contexts.

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B.S. Psychological Sciences, *August 2015*

*Minor:* Human Development and Family Studies

## PUBLICATIONS IN PROGRESS

**DaViera**, A., Roy, A., (Manuscript in preparation) Chicago youth's exposure to community violence: Exploring spatial dynamics of violence and psychological functioning.

**DaViera**, A., Roy, A., Uriostegui, M., & Fiesta, D., (Manuscript in preparation). Safe spaces embedded in dangerous contexts: Exploring safety and resilience in chronically violent neighborhoods.

**DaViera**, A., Roy, A., (Manuscript in preparation). Previous violence exposure and prosocial behavior: Ecological momentary assessment and item response theory methods uncover youth resilience.

Roy, A., Isaia, A., Poulos, C., Eisenberg, Y., & **DaViera**, A. (Manuscript in preparation). Redefining exposure: Using mobile technology to explore when and where Chicago adolescents are exposed to neighborhood characteristics.

## RESEARCH PRESENTATIONS

**DaViera**, A., Roy, A., (August, 2019). *Exploring violence and daily behavior with ecological momentary assessment methods.* Poster accepted, to be presented at the American Psychological Association (APA) 2019 Convention, Chicago, IL.

**DaViera**, A., Uriostegui, M., Roy, A., Fiesta, D., (June, 2019). *Safe spaces embedded in dangerous contexts: Exploring safety and resilience in chronically violent neighborhoods*. Oral

presentation accepted, to be presented at the Society for Community Research and Action (SCRA) 2019 Biennial Conference, Chicago, IL.

**DaViera**, A., Roy, A. (March, 2019). *Exploring the social context of community violence exposure in Chicago and adolescent psychological functioning.* Poster presented at the Society for Research in Child Development (SRCD) Biennial Meeting, Baltimore, MA.

**DaViera**, A., Fiesta, D., Roy, A., & Villasanta, S. (October, 2018). *How do youth safely navigate daily life when "Somebody's always dying"? Exploring youth perceptions of danger, safety strategies, and travel patterns in Chicago*. Oral presentation at the annual Midwest ECO conference, Chicago, IL.

**DaViera**, A., Roy, A. (April, 2018). *Chicago community violence: Exploring relationships between violence exposure, health risk behaviors, and adolescent academic outcomes*. Poster presented at the annual Midwestern Psychological Association (MPA) Conference, Chicago, IL.

**DaViera**, A. (March, 2018). *Community violence in Chicago: Where and why it matters for adolescent academic outcomes.* Data blitz presentation at the University of Illinois at Chicago Cross-Program Conference, Chicago, IL.

## CURRENT RESEARCH EXPERIENCE

**Environment, Health, and Development Laboratory, University of Illinois at Chicago,**
Research Assistant, responsibilities include: *2017-Current*

- Analyze a variety of quantitative and qualitative data using geospatial analysis, multivariate statistics, hierarchical linear and non-linear modeling, item response theory, and grounded theory coding analysis
- Manage, collect, and coordinate quantitative and qualitative data collection efforts
- Communicate with and engage research participants
- Supervise and mentor undergraduate research assistants

## PREVIOUS TEACHING EXPERIENCE

**University of Illinois at Chicago, Department of Psychology**
Teaching assistant. Classes include:

- Community Psychology *Spring and Fall 2018*
- Introduction to Psychology *Fall 2017*

## PREVIOUS RESEARCH EXPERIENCE

**Ounce of Prevention Fund**, **Chicago, IL** *2015 - 2017*
Research assistant, Research and Evaluation Division. Responsibilities include:

- Quantitative and qualitative data collection, input, and management

- Support program evaluation and data utilization at *Educare Chicago*
- Create and follow data cleaning and research best practice protocols
- Recruit, communicate with, and engage study participants
- Provide administrative assistance to the research and evaluation team as needed

**Developmental Studies Laboratory**, **Purdue University** *2015*
Research assistant for Dr. Sara Schmitt. Research projects include:

- Data entry and management
- Participant outreach and communication
- Check direct child assessments and data for error and fidelity

## RELEVANT WORK EXPERIENCE

**Educational Testing Services** *2016 - 2017*
SAT essay rater. Responsibilities include:

- Rate and score SAT essays via computer software adhering to a standard scoring procedure
- Read and analyze essay responder's reading comprehension, analytic reasoning and grammar competency

**Learning, Laughing, Loving Childcare**, Lafayette, IN *2015*
Childcare assistant. Responsibilities included:

- Lead and supervise social and learning activities for 0 – 5-year-old children
- Created a safe, nurturing, and clean environment for children and parents

**Purdue University Humanities, Social Sciences, and Education Library**, West Lafayette, IN *2011-2015*
Library assistant. Responsibilities included:

- Shelving, managing, and organizing library materials and spaces
- Assisting patrons with searching for materials and navigating research databases
- Provided front desk and phone assistance
- Provided administrative support to library staff

## PREVIOUS VOLUNTEER EXPERIENCE

**Lafayette Urban Ministry Homeless Shelter**, Lafayette IN *2015*
Case manager. Responsibilities included:

- Conduct entrance interviews, follow up appointments, and exit interviews with homeless guests
- Assess guests' needs and collaboratively create goals
- Compile and disseminate community resources to guests

**21st Century Scholars**, West Lafayette IN *2012 - 2014*

College Success Advocate for and as a recipient of the *21st Century Scholarship*. Responsibilities included:

- Mentor younger students in the program on academic probation
- Teacher's assistant for an online college-readiness course
- Participating in bi-weekly meetings with other college success advocates
- Organizing and planning social and volunteer events for the program

## AWARDS AND ACHIEVEMENTS

**PULSE Award** for outstanding student library assistant, Purdue University Libraries *2015*

**National Society of Leadership and Success**, member *2014*

**Bernice A. Carroll Award, Feminism, Social Justice and Peace Studies**, 1st place essay *2012*

## REFERENCES

**Amanda L. Roy, PhD** – Assistant Professor, Department of Community and Prevention Research, *University of Illinois at Chicago.* Current advisor.

- alroy28@uic.edu, 646-761-8156

**Amanda Stein, PhD**- Director, Research & Evaluation, *Ounce of Prevention Fund.* Former supervisor.

- astein@ounceofprevention.org, 773-690-4067

**Todd Jackson, M.Ed**- Research Associate III, Research and Evaluation, *Ounce of Prevention Fund.* Former colleague.

- toddj@ounceofprevention.org, 773-358-6475

**Sara Schmitt, PhD**- Assistant Professor, Department of Human Development and Family Studies, *Purdue University*. Former professor and supervisor.

- saraschmitt@purdue.edu, 765-494-4139

TABLE I. SAMPLE AND STUDY CHARACTERISTICS

| | |
|---|---|
| Total Sample (with valid data at both timepoints) | N = 314 |
| Gender | 53.3% Female, 46.7% Male |
| Ethnicity | 65.6% Black, 26.9% Hispanic |
| Age (at Wave 7) | *M* = 16.18 years, *SD* = 0.77 |
| Income to Needs Ratio | *M* = 0.86, *SD* = 0.62 |
| CSRP Treatment | 51.2% Treatment, 48.8 % Control |
| CSRP Cohort | 57.1% Cohort 1, 42.9 % Cohort 2 |

TABLE II. DESCRIPTIONS OF EACH CVE SPATIAL DYNAMIC MEASURE.

| Measure | Neighborhood context | Spatial boundary | Timeframe |
|---|---|---|---|
| Long-term Chronicity | Home and school | Two-block (1320 ft.) | One year |
| Mid-term Chronicity | Home and school | Two-block (1320 ft.) | Six months |
| Short-term Chronicity | Home and school | Two-block (1320 ft.) | One week |
| Home-based CVE | Home | Two-block (1320 ft.) | One year |
| School-based CVE | School | Two-block (1320 ft.) | One year |
| Most distal CVE | Home and school | Census tract | One year |
| Most proximal CVE | Home and school | One-block (660 ft.) | One year |

TABLE III. INDEPENDENT AND DEPENDENT VARIABLE DESCRIPTIVES

| Parameter | *M* | *SD* | Min-Max | Skew | Kurtosis |
|---|---|---|---|---|---|
| Long-term chronic CVE | 0.82 | 0.43 | 0.00-1.90 | 0.47 | -0.49 |
| Mid-term chronic CVE | 0.76 | 0.39 | 0.02-1.81 | 0.47 | -0.50 |
| Short-term chronic CVE | 0.82 | 0.56 | 0.14-3.14 | 0.99 | 0.56 |
| Home-based CVE | 0.49 | 0.29 | 0.02-1.56 | 0.57 | -0.29 |
| School-based CVE | 0.38 | 0.25 | 0.00-1.44 | 1.11 | 1.41 |
| Distal CVE | 0.91 | 0.46 | 0.12-2.37 | 0.56 | -0.28 |
| Proximal CVE | 0.23 | 0.12 | 0.01-0.65 | 0.72 | 0.25 |
| DVV | 1.06 | 0.92 | 0.00-3.0 | 0.58 | -0.42 |
| State Anxiety | 1.51 | 0.27 | 1.00-2.60 | 0.80 | 1.80 |
| Trait Anxiety | 1.74 | 0.42 | 1.00-3.00 | 0.34 | -0.44 |
| Behavioral Dysregulation | 0.27 | 0.17 | 0.00-0.92 | 0.80 | 0.62 |
| Cognitive Dysregulation | 0.37 | 0.16 | 0.00-0.86 | 0.19 | -0.25 |

TABLE IV. PEARSON CORRELATIONS AMONG ALL VARIABLES OF INTEREST

| | Treatment | Cohort | Gender | Black | Neighborhood Poverty | Family Income | Age | DVV | State Anxiety | Trait Anxiety | Beh. Dys. | Cog. Dys. | School-based CVE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Treatment | **1** | | | | | | | | | | | | |
| Cohort | 0.04 | **1** | | | | | | | | | | | |
| Gender | 0.08* | 0 | **1** | | | | | | | | | | |
| Black | 0.17 | 0.55*** | 0 | **1** | | | | | | | | | |
| Neighborhood Poverty | -0.07 | .26*** | 0 | 0.38*** | **1** | | | | | | | | |
| Family Income | 0.05 | -0.06 | 0.02 | -0.02 | -0.12** | **1** | | | | | | | |
| Age | 0 | -0.63*** | 0 | -0.36*** | -0.18*** | 0.11* | **1** | | | | | | |
| DVV | 0.03 | 0.10* | 0.05 | 0.13** | -0.02 | 0 | -.11* | **1** | | | | | |
| State Anxiety | 0.03 | -0.01 | -0.15** | -0.09+ | -0.16** | 0.06 | -0.03 | 0.07 | **1** | | | | |
| Trait Anxiety | -0.04 | -0.02 | -0.22*** | -0.09+ | -0.14* | 0.07 | -0.03 | .20*** | 0.40*** | **1** | | | |
| Behavioral Dysregulation | 0 | 0.07 | 0.11* | 0.04 | -0.07 | -0.02 | -0.16** | .28*** | 0.22*** | 0.36*** | **1** | | |
| Cognitive Dysregulation | 0.02 | -0.05 | 0.01 | -0.10* | -0.14* | -0.03 | -0.05 | .25*** | 0.30*** | .41*** | 0.06*** | **1** | |
| Long-term Chronic CVE | -0.03 | 0.36*** | -0.04 | 0.49*** | .52*** | -0.07 | -.23*** | 0.11* | -0.04 | -0.05 | 0.05 | -.09+ | N/A |
| Mid-term Chronic CVE | -0.01 | .34*** | -0.04 | 0.49*** | .51*** | -0.06 | -.21*** | 0.11* | -0.05 | -0.06 | 0.05 | -.09+ | N/A |
| Short-term Chronic CVE | -0.06 | 0.25*** | -0.02 | 0.35*** | .43*** | -0.03 | -.18*** | 0.08 | -0.04 | -.09+ | 0 | -0.08 | N/A |
| Home-based CVE | -0.02 | 0.33*** | -0.04 | 0.45*** | .57*** | -0.09 | -.23*** | -0.02 | -.11* | -.12* | 0.02 | -.09+ | 0.34*** |
| School-based CVE | -0.05 | 0.27*** | -0.01 | 0.38*** | .27*** | -0.07 | -.19*** | .21*** | 0.02 | 0.01 | .11* | -0.03 | **1** |
| Most Distal CVE | 0.05 | 0.288*** | 0 | 0.46*** | .37*** | -.1+ | -.15** | 0.05 | -0.07 | -0.07 | 0.06 | -.09+ | N/A |
| Most Proximal CVE | 0 | 0.33*** | 0 | 0.45*** | .49*** | -0.05 | -.21*** | 0.14* | -0.02 | -0.08 | 0.06 | -0.03 | N/A |

***p < 0.001, **p < 0.01, *p < 0.05, +p < 0.1

Notes. “N/A” is in place of some of CVE measures; these correlations are not appropriate because they represent spatial ranges that overlap with each other, i.e., long-term chronic CVE is the frequency of all violent crime in two-block radii of home and school one year prior to psychological assessment and mid-term chronic CVE is the frequency of all violent crime in two-block radii of home and school six months before assessment. Review the Methods section for more details. It was of analytic importance to test the correlation between home and school-based CVE, which is included in the table. Age is highly correlated with CSRP Cohort (the year in which CSRP preschoolers were recruited into the study), thus is not included in any of the regression models.

TABLE V. MEASURES OF COMMUNITY VIOLENCE CHRONICITY PREDICTING PSYCHOLOGICAL FUNCTIONING

| | **State Anxiety** | | | **Trait Anxiety** | | | **Behavioral Dysregulation** | | | **Cognitive Dysregulation** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 1** | **Model 2** | **Model 3** | **Model 1** | **Model 2** | **Model 3** | **Model 1** | **Model 2** | **Model 3** |
| (Intercept) | 0.866*** | 0.866*** | 0.855*** | 1.237*** | 1.239*** | 1.216*** | 0.065 | 0.063 | 0.082+ | 0.219*** | 0.221*** | 0.225*** |
| | (0.116) | (0.116) | (0.116) | (0.156) | (0.157) | (0.159) | (0.043) | (0.043) | (0.044) | (0.042) | (0.042) | (0.043) |
| Gender | -0.048+ | -0.048+ | -0.042 | -0.129** | -0.129** | -0.124** | 0.032+ | 0.032+ | 0.033+ | 0.009 | 0.009 | 0.007 |
| | (0.028) | (0.028) | (0.028) | (0.042) | (0.042) | (0.043) | (0.016) | (0.016) | (0.017) | (0.015) | (0.015) | (0.015) |
| Black | 0.004 | 0.005 | -0.002 | -0.050 | -0.047 | -0.039 | -0.023 | -0.023 | -0.006 | -0.049* | -0.047* | -0.047* |
| | (0.040) | (0.040) | (0.039) | (0.060) | (0.061) | (0.059) | (0.023) | (0.023) | (0.023) | (0.022) | (0.022) | (0.021) |
| Income: Needs | -0.006 | -0.006 | -0.009 | -0.020 | -0.020 | -0.019 | -0.004 | -0.004 | -0.004 | -0.011 | -0.011 | -0.010 |
| | (0.017) | (0.017) | (0.017) | (0.025) | (0.025) | (0.026) | (0.010) | (0.010) | (0.010) | (0.009) | (0.009) | (0.009) |
| Study Cohort | 0.010 | 0.010 | 0.005 | 0.018 | 0.019 | 0.017 | 0.024 | 0.025 | 0.026 | 0.010 | 0.011 | 0.014 |
| | (0.034) | (0.034) | (0.033) | (0.051) | (0.051) | (0.052) | (0.020) | (0.020) | (0.020) | (0.018) | (0.018) | (0.019) |
| Study Treatment | 0.014 | 0.014 | 0.015 | -0.061 | -0.061 | -0.068 | -0.014 | -0.015 | -0.016 | -0.021 | -0.021 | -0.022 |
| | (0.028) | (0.028) | (0.028) | (0.042) | (0.042) | (0.043) | (0.016) | (0.016) | (0.017) | (0.015) | (0.015) | (0.016) |
| Neighborhood Poverty | -0.165 | -0.162 | -0.147 | -0.319 | -0.307 | -0.218 | -0.203** | -0.197** | -0.148+ | -0.187** | -0.175* | -0.149* |
| | (0.129) | (0.128) | (0.126) | (0.194) | (0.193) | (0.194) | (0.075) | (0.075) | (0.076) | (0.070) | (0.070) | (0.070) |
| Last Yr. Psych Functioning | 0.516*** | 0.516*** | 0.524*** | 0.440*** | 0.440*** | 0.450*** | 0.433*** | 0.434*** | 0.412*** | 0.516*** | 0.515*** | 0.512*** |
| | (0.058) | (0.058) | (0.059) | (0.061) | (0.061) | (0.062) | (0.058) | (0.058) | (0.060) | (0.057) | (0.057) | (0.059) |
| Direct Violence Exposure | -0.008 | -0.008 | -0.014 | 0.082*** | 0.082*** | 0.082*** | 0.028** | 0.028** | 0.031*** | 0.021* | 0.021** | 0.022** |
| | (0.014) | (0.014) | (0.014) | (0.022) | (0.022) | (0.022) | (0.009) | (0.009) | (0.009) | (0.008) | (0.008) | (0.008) |
| Long-term CVE Chronicity | 0.001 | | | -0.018 | | | 0.069** | | | 0.020 | | |
| | (0.041) | | | (0.063) | | | (0.025) | | | (0.023) | | |
| Mid-term CVE Chronicity | | -0.001 | | | -0.032 | | | 0.073** | | | 0.013 | |
| | | (0.045) | | | (0.070) | | | (0.027) | | | (0.025) | |
| Short-term CVE Chronicity | | | 0.001 | | | -0.067 | | | 0.015 | | | -0.005 |
| | | | (0.028) | | | (0.043) | | | (0.017) | | | (0.016) |
| R2 | 0.264 | 0.264 | 0.264 | 0.263 | 0.263 | 0.266 | 0.280 | 0.279 | 0.255 | 0.294 | 0.292 | 0.290 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adj. R2 | 0.241 | 0.241 | 0.241 | 0.241 | 0.241 | 0.243 | 0.259 | 0.257 | 0.232 | 0.273 | 0.271 | 0.268 |
| Num. obs. | 300 | 300 | 291 | 309 | 309 | 300 | 312 | 312 | 303 | 313 | 313 | 304 |
| RMSE | 0.234 | 0.234 | 0.232 | 0.362 | 0.362 | 0.364 | 0.141 | 0.141 | 0.143 | 0.131 | 0.131 | 0.132 |

***p < 0.001, **p < 0.01, *p < 0.05, +p < 0.1

Note: Last Yr. Psych Functioning is the participants score on the exact same psychological measure and calculation from the previous year. Standard errors are in parentheses below each coefficient.

TABLE VI. MEASURES OF COMMUNITY VIOLENCE PERVASIVENESS PREDICTING PSYCHOLOGICAL FUNCTIONING

| | State Anxiety | | Trait Anxiety | | Behavioral Dysregulation | | Cognitive Dysregulation | |
|---|---|---|---|---|---|---|---|---|
| | **Model 4** | **Model 5** | **Model 4** | **Model 5** | **Model 4** | **Model 5** | **Model 4** | **Model 5** |
| (Intercept) | 0.913*** | 0.880*** | 1.230*** | 1.102*** | 0.081+ | 0.054 | 0.232*** | 0.219*** |
| | (0.118) | (0.126) | (0.160) | (0.170) | (0.045) | (0.050) | (0.043) | (0.048) |
| Gender | -0.052+ | -0.050+ | -0.133** | -0.125** | 0.028+ | 0.030+ | 0.010 | 0.010 |
| | (0.028) | (0.028) | (0.043) | (0.043) | (0.017) | (0.017) | (0.015) | (0.015) |
| Black | 0.017 | 0.012 | -0.051 | -0.076 | -0.012 | -0.018 | -0.045* | -0.048* |
| | (0.041) | (0.042) | (0.063) | (0.063) | (0.024) | (0.025) | (0.022) | (0.022) |
| Income: Needs | -0.011 | -0.012 | -0.020 | -0.027 | -0.005 | -0.006 | -0.014 | -0.015 |
| | (0.017) | (0.017) | (0.026) | (0.026) | (0.010) | (0.010) | (0.009) | (0.009) |
| Study Cohort | -0.003 | -0.002 | 0.018 | 0.022 | 0.018 | 0.020 | 0.008 | 0.009 |
| | (0.035) | (0.035) | (0.053) | (0.053) | (0.021) | (0.021) | (0.019) | (0.019) |
| Study Treatment | 0.016 | 0.013 | -0.059 | -0.068 | -0.013 | -0.015 | -0.024 | -0.025 |
| | (0.028) | (0.029) | (0.044) | (0.043) | (0.017) | (0.017) | (0.015) | (0.016) |
| Neighborhood Poverty | -0.168 | -0.176 | -0.255 | -0.289 | -0.216** | -0.223** | -0.210** | -0.214** |
| | (0.136) | (0.137) | (0.206) | (0.206) | (0.080) | (0.080) | (0.073) | (0.074) |
| Last Yr. Psych Functioning | 0.504*** | 0.508*** | 0.440*** | 0.446*** | 0.431*** | 0.430*** | 0.511*** | 0.511*** |
| | (0.058) | (0.059) | (0.062) | (0.061) | (0.059) | (0.059) | (0.058) | (0.058) |
| Direct Violence Exposure | -0.011 | -0.010 | 0.077*** | 0.080*** | 0.028** | 0.029** | 0.021** | 0.021** |
| | (0.015) | (0.015) | (0.023) | (0.022) | (0.009) | (0.009) | (0.008) | (0.008) |
| Home CVE | -0.024 | -0.020 | -0.097 | -0.078 | 0.063 | 0.067+ | 0.031 | 0.033 |
| | (0.065) | (0.111) | (0.099) | (0.168) | (0.039) | (0.065) | (0.035) | (0.060) |
| School CVE | 0.027 | 0.032 | 0.073 | 0.108 | 0.062+ | 0.070+ | 0.007 | 0.011 |
| | (0.062) | (0.131) | (0.095) | (0.201) | (0.037) | (0.078) | (0.033) | (0.071) |
| Home x School CVE | | -0.161 | | -0.693* | | -0.163 | | -0.078 |
| | | (0.218) | | (0.330) | | (0.129) | | (0.118) |
| R2 | 0.263 | 0.265 | 0.268 | 0.279 | 0.276 | 0.280 | 0.298 | 0.299 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Adj. R2 | 0.237 | 0.236 | 0.243 | 0.252 | 0.251 | 0.252 | 0.275 | 0.273 |
| Num. obs. | 292 | 292 | 301 | 301 | 304 | 304 | 305 | 305 |
| RMSE | 0.234 | 0.235 | 0.365 | 0.363 | 0.142 | 0.142 | 0.130 | 0.130 |

***p < 0.001, **p < 0.01, *p < 0.05, +p < 0.1

Note: Last Yr. Psych Functioning is the participants score on the exact same psychological measure and calculation from the previous year. Standard errors are in parentheses below each coefficient.

TABLE VII. MEASURES OF COMMUNITY VIOLENCE SPATIAL PROXIMITY PREDICTING PSYCHOLOGICAL FUNCTIONING

| | **State Anxiety** | | **Trait Anxiety** | | **Behavioral Dysregulation** | | **Cognitive Dysregulation** | |
|---|---|---|---|---|---|---|---|---|
| | **Model 6** | **Model 7** | **Model 6** | **Model 7** | **Model 6** | **Model 7** | **Model 6** | **Model 7** |
| (Intercept) | 0.868*** | 0.863*** | 1.242*** | 1.240*** | 0.056 | 0.074+ | 0.222*** | 0.219*** |
| | (0.117) | (0.116) | (0.158) | (0.156) | (0.044) | (0.043) | (0.043) | (0.042) |
| Gender | -0.048+ | -0.048+ | -0.128** | -0.128** | 0.030+ | 0.030+ | 0.009 | 0.008 |
| | (0.028) | (0.028) | (0.042) | (0.042) | (0.017) | (0.017) | (0.015) | (0.015) |
| Black | 0.007 | -0.005 | -0.048 | -0.041 | -0.023 | -0.014 | -0.044* | -0.052* |
| | (0.041) | (0.039) | (0.062) | (0.060) | (0.024) | (0.023) | (0.022) | (0.021) |
| Income: Needs | -0.007 | -0.007 | -0.021 | -0.020 | -0.003 | -0.005 | -0.011 | -0.012 |
| | (0.017) | (0.016) | (0.025) | (0.025) | (0.010) | (0.010) | (0.009) | (0.009) |
| Study Cohort | 0.010 | 0.006 | 0.017 | 0.022 | 0.029 | 0.026 | 0.012 | 0.008 |
| | (0.033) | (0.033) | (0.051) | (0.051) | (0.020) | (0.020) | (0.018) | (0.018) |
| Study Treatment | 0.014 | 0.014 | -0.060 | -0.061 | -0.018 | -0.015 | -0.021 | -0.022 |
| | (0.028) | (0.028) | (0.043) | (0.042) | (0.017) | (0.017) | (0.015) | (0.015) |
| Neighborhood Poverty | -0.160 | -0.215+ | -0.329+ | -0.274 | -0.153* | -0.173* | -0.162* | -0.206** |
| | (0.121) | (0.128) | (0.181) | (0.192) | (0.071) | (0.075) | (0.066) | (0.069) |
| Last Yr. Psych Functioning | 0.515*** | 0.516*** | 0.440*** | 0.438*** | 0.429*** | 0.426*** | 0.513*** | 0.521*** |
| | (0.058) | (0.058) | (0.061) | (0.061) | (0.058) | (0.058) | (0.058) | (0.057) |
| Direct Violence Exposure | -0.008 | -0.010 | 0.081*** | 0.084*** | 0.030*** | 0.028** | 0.021** | 0.019* |
| | (0.014) | (0.014) | (0.022) | (0.022) | (0.009) | (0.009) | (0.008) | (0.008) |
| Most Distal CVE | -0.005 | | -0.018 | | 0.050* | | 0.002 | |
| | (0.035) | | (0.054) | | (0.021) | | (0.019) | |
| Most Proximal CVE | | 0.140 | | -0.192 | | 0.159+ | | 0.125+ |
| | | (0.136) | | (0.210) | | (0.082) | | (0.076) |
| R2 | 0.264 | 0.267 | 0.263 | 0.265 | 0.275 | 0.271 | 0.292 | 0.298 |
| Adj. R2 | 0.241 | 0.244 | 0.241 | 0.243 | 0.253 | 0.249 | 0.271 | 0.277 |
| Num. obs. | 300 | 300 | 309 | 309 | 312 | 312 | 313 | 313 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RMSE | 0.234 | 0.234 | 0.362 | 0.361 | 0.141 | 0.142 | 0.131 | 0.130 |

***p < 0.001, **p < 0.01, *p < 0.05, +p < 0.1

Note: Last Yr. Psych Functioning is the participants score on the exact same psychological measure and calculation from the previous year. Standard errors are in parentheses below each coefficient.

FIGURE I. DELINEATED HOME AND SCHOOL-BASED CVE PREDICTING TRAIT ANXIETY.