

A MULTILEVEL ANALYSIS OF BLACK MALE SECONDARY
SCHOOL STUDENT DISCIPLINE AND ACHIEVEMENT IN
RELATION TO VIOLENCE EXPOSURE

by

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ABSTRACT

LAURIE ANN GARO. A multilevel analysis of Black male secondary school student discipline and achievement in relation to violence exposure.
(Under the direction of Dr. Chance W. Lewis)

This study examined school outcomes for Black male secondary school students in relation to neighborhood violence, focusing on Disproportionality in out of school suspension and below-proficiency achievement on selected standardized tests. Grounded in trauma and strain theories, student aggressive response to violence is attributed in part to post-traumatic stress disorder as triggered by traumatic experience but also as anger and frustration over unjust treatment. The study hypothesized neighborhood violence as moderator between Black males and disparities among the selected outcomes as advocacy for trauma-sensitive practices in lieu of exclusionary discipline.

Relative risk ratios calculated discipline and achievement disproportionality, while spatial and multi-level modeling methods examined statistical significant impacts of neighborhood violence exposure on student behavior (suspensions) and learning (test proficiency), considering also significance with individual, level-1 variables on special education, homelessness, arrest and unexcused absence. A neighborhood trauma vulnerability index (TVI), established via geographic information system, formed the level-2 variable in modeling of violence exposure on student outcomes.

Conclusions are that violence clearly serves as a moderator in the observed positive relationship between Black males and suspensions, and that future modeling include school-level moderator effects on discipline and achievement. Additionally, TVI model improvements are suggested to address violence specifically affecting Black

males, including indices of racial injustice as traumatic experience. Homelessness is recommended for inclusion in monitoring of discipline disproportionality, with suggested further study of traumatic occurrences uniquely encountered by Black males who undergo homelessness. Finally, results advocate for schools to incorporate trauma-sensitive practices responsive to Black male experience.

DEDICATION

I would like to dedicate this dissertation first to De'Markis Deon Houston Jr. (DJ), my two-year-old grandson, my heartbeat and my inspiration. As a very young Black male, you embrace life with love and affection, and the freedom to explore, flourish, and simply be your happy little self. You know not yet about racial hatred and injustice; oppression has nothing on you. If I could change one thing about the world, it would be to erase injustice such that you never have to experience its horrific effects. I pray that my work contributes to the transformation of schools ensuring that your educational experience is fair, non-biased, culturally supportive, and fosters your holistic development. Next, I dedicate this work to my lovely daughters, Marolyn Gabriella (DJ's "Titi") and Daiana Kayel (DJ's Mommy). Like DJ, you two reside forever in my heart and soul. For years, I fought to protect you and safeguard your educational experience such that your schools treated you fairly and prepared you to be independent, critical thinkers capable of taking on the world in whatever ways YOU chose. I watched you two little cuties thrive and blossom into amazing young women, courageous, strong-minded, gifted and caring. Unfettered, you proceed to be self-determined and to do what you know is good and right against all odds. I am so proud of you both.

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CHAPTER 1: INTRODUCTION

The School-to-Prison Pipeline

The “school-to-prison pipeline” is a critical issue among 21st century urban educators as it relates to the dual Disproportionality of Black male out-of-school suspensions (OSS) and juvenile incarceration in comparison to their counterparts from other ethnic/racial groups. As a working definition, “the school-to-prison pipeline is a system of laws, policies and practices that pushes students – disproportionately economically disadvantaged students, students of color and students with disabilities – out of school and into the juvenile and criminal systems” (Langberg, 2013). In a senate hearing on ways to end the “school-to-prison pipeline” Sen. Dick Durbin (D-Ill) has defined this pipeline as a “gateway to prison” from school that deprives children of “their fundamental right to education” (Brown, 2013, p. 3). Zero tolerance policies and resultant increased police presence in schools has escalated arrests as well as suspensions and expulsions (Brown, 2013; Dahlberg, 2012; Teske, 2011; Teske & Huff, 2011). According to Judges Steven Teske and J. Brian Huff, “a student arrested in school is twice as likely not to graduate and four times as likely if he or she appears in court” (Teske & Huff, 2011, p. 1).

There is strong, cyclic association of school failure and juvenile justice involvement that disproportionately affects Black children, particularly those in urban educational settings (Brown, 2013; Teske, 2011; Teske & Huff, 2011; Patton, Woolley, & Hong, 2012). Further, policies and practices that push students towards the school to

prison pipeline serve to alienate them from education and increase their risk for involvement in gang and/or gun violence (Allen & Lo, 2012; deMarrais & LeCompte, 1998; Patton, et.al, 2012). This, in turn, is costly to society in short term prison expenditures and long term recurring incarceration. School disciplinary measures that exclude students from the learning environment, e.g., out of school suspension, have been linked to student involvement in the justice system (CDF, 2007; Dahlberg, 2012; Garo, 2011a; Garo, 2011b; Justice Policy Institute, 2011; Langberg, 2013; Patton, et.al., 2012; Vanderhaar, Petrosko, & Munoz, 2013) and are thus a part of this pipeline.

“Schools have every right to hold disruptive youth accountable for their actions. However, criminalizing those actions and diverting kids away from school and into the juvenile or adult criminal justice system are harmful to everyone. Students who are arrested at school are three times more likely to drop out than those who are not. Students who drop out are eight times more likely to end up in the criminal justice system than those who remain in school and graduate, and the cost of housing, feeding and caring for prison inmates is nearly three times that of educating public school students” (Dahlberg, 2012, p. 5).

The Children’s Defense Fund (CDF, 2007, p. 113) notes that “...states with higher rates of out-of-school suspensions also have higher rates of juvenile incarceration and that racial disproportion in out-of-school-suspension is associated with a similar disproportion in juvenile incarceration.” There is an urgent call to address and end the pipeline (ACLU, 2013; CDF, 2007; Brown, 2013; Dahlberg, 2012; DignityInSchools.org, 2013; Langberg, 2013; Schiff, 2013; Teske, 2011; Teske & Huff, 2011; United States District Court Southern District of Mississippi, 2012; Vanderhaar, et.al., 2013) yet few in the pipeline literature discuss the impact of trauma from exposure to violence on student behavior and learning, nor the inclusion within schools of critical thinking and healing focused interventions in lieu of current disciplinary practices. A discussion of youth gun

violence, youth gangs, and the impacts on student well-being forms the groundwork for development and implementation of interventions that will interrupt the school-to-prison pipeline.

Youth Gun Violence and Youth Gangs

Youth violence, particularly gun violence, is an issue of paramount concern in our nation. The Centers for Disease Control (CDC) (2012, p. 1) indicate that youth violence is "...the second leading cause of death for young people between the ages of 15 and 24". In 2010, for example, an average of 13 youth, ages 10 to 24, were victims of homicide each day, and in 2011, an average of 1938 young people within the same age group were treated for physical assault injuries in emergency rooms per day (CDC, 2012). A 2011 national school survey revealed 33% of high school students reported being involved in a physical fight, and 5% reported carrying a weapon to school within 30 days prior to the survey (CDC, 2012). In the 1989-1995 National Crime Victimization Survey Student Supplement, a national representative sample of 23,933 12-19 year old enrolled students found that while .1% of students reported carrying a gun to school in 1995, between 5 and 30% of students reported seeing a gun at school or know of a student who brought a gun to school (Wilkinson & Fagan, 2001, p. 112).

Youth as both victims and perpetrators of violence reached peak numbers in 1993, and then fell off drastically by 2011 (Federal Interagency Forum on Child and Family Statistics, 2013) as illustrated in Figure 1. In the same study, it was found that Black non-Hispanic youth, and older youth, ages 15-17, were more likely to be victims of a serious violent crime. The Bureau of Justice analysis of the 1976 to 2005 homicide trends in the United States found that nearly 47 percent of all persons murdered within those years

were Black; 52 percent of those who did the killing were also Black (Davis & Page, 2013, p. 22). In addition, Davis and Page (2013, p. 22-23) reported that “African American males, ages fifteen to nineteen were almost five times as likely to be killed by firearms as their white peers and more than twice as likely as their Hispanic and Native American peers”.

While the trend lines reported by the Federal Interagency Forum on Child and Family Statistics (FIFCSF, 2013) show significant declines in youth violence over the past 20 years, inner city urban violence continues to regularly claim the lives of its youth, in particular, youth of color living in impoverished conditions. Recent (2012 – 2013) reports on urban gun violence show that gun homicide rates varied across urban areas with New York, Washington DC and several smaller sized cities experiencing near-record lows in 2012 while homicide rates continued to rise in Chicago, Detroit, New Orleans, Los Angeles, Houston, Phoenix, Philadelphia, Baltimore, and Miami, among others (Florida, 2013). In 2012, 108 Chicago area youth and children lost their lives to violence; of these, 100 were by gunshot (Black Star Project, 2013). Further, on 4th of July, 2013, 72 Chicago residents were shot; 12 killed (Lee, 2013). A 2010-2011 University of Michigan study of urban youths in Flint, Michigan, found that 1 in 4 youth carried a gun. Between February 2010 and September 2011, the researchers also interviewed 689 assault victims, ages 14-24 (Healy, 2013). A study by Mellander (in Florida, 2013) found that total gun deaths increased with city population and that 45% of gun homicide can be explained by population size. Analytic commentary on her findings indicate that “...many of the cities with high murder rates suffer from devastating inequality, concentrated poverty, and heavily damaged social infrastructures... all have large, very segregated black communities with a history of disinvestment, [and] outmigration...” (Florida, 2013, para 12). Within these cities, gun homicide is geographically concentrated inside those sections experiencing high rates of poverty.

Youth gangs are also of great concern for there is a strong association of youth gang activity and violent crime (Allen & Lo, 2012; Egley & Howell, 2012; Governor's Crime Commission, 2011; Hill, Lui & Hawkins, 2001; Howell, Egley & Gleason, 2002; McGarrell, Corsaro, Melde, Hipple, Cobbina, Bynum, & Perez, 2013; Swahn, Bossarte, West & Topalli, 2010). According to the 2011 National Youth Gang Survey (Egley & Howell, 2013), there were an estimated 29,900 gangs with approximately 782,500 gang members in various, predominantly urban police jurisdictions throughout the United States. Additionally, the survey noted a decrease in gang-related homicide from 2020 in 2010 to 1824 in 2011 with the decrease primarily occurring in smaller cities (Egley & Howell, 2013). The study indicated, however, that 12% of agencies reporting gang activity excluded data on juveniles (age 18 and younger), thus the above noted gang numbers are simply estimates. Hayes (2012) reported that in North Carolina there are some law enforcement and corrections agencies that do not provide data to the North Carolina gang database, entitled NC GangNET, and that there are differences in level of detail and accuracy of data provided by participating agencies. Nonetheless, NC GangNET reported that there are 10,445 gang members within the state, with an additional 3700 who were incarcerated at the time of the study (Hayes, 2012). Of these, 95% were male. The breakdowns by race/ethnicity and by age range are illustrated in Figures 2 and 3 respectively and make clear the dominance within African Americans and males, ages 18-25.

The news reports and research demonstrate that countless young lives continue to be lost to gun violence every day around the nation, particularly in impoverished urban areas and among young males of color. From their extensive research on urban youth

gun violence, Wilkinson and Fagan (2001, p. 109) sum up such violence as an epidemic, “...nothing less than an outbreak of a contagious disease.” With such devastating loss of young lives, we as a nation need better data on the reasons for such violence. As well, we need to determine the impacts on those children and youth whose lives are not lost but who contend with violence exposure on a daily basis. For this determination, an understanding of the traumatizing effects of violence exposure is warranted.

Exposure to Violence Impact on School Behavior and Learning

Children living in impoverished urban areas are often exposed to several forms of violence (Finkelhor, Turner, Ormrod, Hamby, & Kracke, 2009; Listenbee, Torre, Boyle, Cooper, Deer, Durfee, James, Lieberman, Macy, Marans, McDonnell, Mendoza & Taguba, 2012; Siegfried, Ko, & Kelly, 2004; Smithgall, Cusick & Griffin, 2011). Finkelhor, et.al, (2009) conducted a national survey of children’s exposure to violence. Of the over 4000 children ages birth to 17 (note: a parent or caretaker was interviewed for age 9 and under) surveyed, over 60% were exposed to violence within the past year either directly or indirectly, and 38.7% two or more direct victimizations. Researchers (Buffington, Dierkhising, & Marsh, 2010; Finkelhor, et al, 2009; Gorman-Smith & Tolan, 1998; Listenbee, et.al, 2012; Prowthrow-Stith & Spivak, 2004; Siegfried, Ko, & Kelly, 2004) have noted that although many children exposed to violence exhibit amazing resilience, many more suffer long lasting harm to their physical, mental and emotional well-being. The balance of risk vs. protective factors may influence whether a child experiences either short or long term trauma from such exposure (Howell, 2003). Aggression, for example, may result from the pain, fear, anger and grief children feel when chronically exposed to youth, family, and community violence, including drive by

shootings and murder of peers, in “toxic” environments plagued by poverty, alcohol and drugs, gangs, availability of guns, and social/cultural glamorization of violence (Prothrow-Stith & Spivak, 2004). “Children who have been hurt are more likely to hurt other children” (Prothrow-Stith & Spivak, 2004, p. 21).

When children are exposed to or victimized by violence, such experience can be traumatizing, with impact on child well-being. Trauma can be defined as consisting of two types of victimization: 1) Experiences or situations that are emotionally (and sometimes physically) painful and distressing, and that overwhelm an individual’s ability to cope; or 2) Chronic adversity, e.g., discrimination, racism, oppression, poverty (Rich, et.al, 2009, p. 4). In a study by the Justice Policy Institute (Adams, 2010) approximately 34% of adolescents surveyed have experienced at least one traumatic event. Adams (2010) also found that the rate of experiencing violence reaches 46.1 per 1000 for youth of color as compared with 42.1 per 1000 for white youth. Furthermore, research estimates that between 75 and 93% of youth entering the juvenile justice system each year have experienced trauma (Adams, 2010).

Posttraumatic Stress Disorder (PTSD), an anxiety disorder triggered by exposure to a traumatic experience, is commonly associated with violence-exposure (Bloom, 2013; Buffington, Dierkhising, & Marsh, 2010; Listenbee, et.al., 2012; Smithgall, Cusick & Griffin, 2011; Slovak, 2002; The Siegfried, Ko, & Kelly, 2004). Ford, Chapman, Hawke, and Albert (2007) indicate that post-traumatic stress can inhibit thinking and learning in children with impacts that include *attention deficit hyperactivity disorder (ADHD)* diagnoses and other learning disabilities, decreased cognitive abilities, substance abuse issues, and externalizing disorders like aggression, conduct problems, defiant and

oppositional behaviors when exposed to violence (Buffington, Dierkhising, & Marsh, 2010; Flannery, Wester & Singer, 2004; Federal Interagency Forum on Child and Family Statistics, 2013; Ford, et.al, 2007; Gorman-Smith & Tolan, 1998; Listenbee, et.al., 2012; Rasmussen, Aber & Bhana, 2004; Smithgall, Cusick & Griffin, 2011; Slovak, 2002; Siegfried, Ko, & Kelly, 2004; Thompson & Massat, 2005; Walker & Smithgall, 2009). “Traumatic experiences affect brain development in children” (Adams, 2010, p 2). The neurological, psychological and social effects of violence-related trauma may influence traumatized youth towards delinquency and resultant incarceration (Adams, 2010, p. 5). Within such facilities, correctional policies and practices may well further traumatize incarcerated youth (Adams, 2010, p. 6).

Chronic exposure to violence and associated traumatic impact disproportionately affects Black children (Adams, 2010; Garo, 2011 a; Garo, 2011b; Nicholson-Crotty, Birchmeier, & Valentine, 2009; Patton, 1998; Rich, Corbin, Bloom, Rich, Evans, & Wilson, 2009; Toldson & Lewis, 2012). The trauma experienced by these children may help explain in-school behaviors that are potentially misdiagnosed as disability or deviance and thus inappropriately disciplined by school personnel via “zero tolerance” policies. Figure 4 illustrates the school to prison pipeline process that may be initiated by, or become an outcome of violence exposure. An historical account of zero tolerance policy and practice in schools provides an understanding of the similarities between school and prison discipline and how such discipline unfairly and inappropriately punishes youth exposed to gun violence with measures that marginalize educationally and contribute to the school-to-prison pipeline.

History and Impact of Zero Tolerance Policies on School Experience for Black Male Students

The use of “zero tolerance” policies by schools can be dated back to the 1980’s when State and Federal law enforcement instituted a “war on drugs”. Soon after, the term was applied to numerous illegal acts including environmental pollution, trespassing and sexual harassment (Skiba, 2013; Teske & Huff, 2011). Zero tolerance is a “get tough” policy that basically involves swift punishment for what amounts to minor offenses in attempted efforts to deter crime or reduce the likelihood of reoccurrence (Braz & Williams, 2011). “Zero tolerance policies contribute to the existing racial and ethnic disparities in public education. These inequalities more often than not produce lower graduation rates among minority youth, which contributes to higher rates of criminality among these youth” (Teske & Huff, 2011, p. 15).

The “Broken Windows” theory of crime is noted by Teske and Huff (2011) as an impetus for zero tolerance towards minor offenses. This theory:

“... analogizes the spread of crime to a few broken windows in a building that go unrepaired and consequently attract vagrants who break more windows and soon become squatters. The squatters set fires inside the building, causing more damage or maybe destroying the entire building. The broken windows theory argues that communities should get tough on the minor offenses and clean up neighborhoods to deter serious crimes. Thus, it becomes necessary to punish minor offense violators” (Teske & Huff, 2011, p. 88).

By the 1990’s, this theory, with its zero tolerance approach to minor offenses, began to be applied to school disciplinary policies and practices. The Gun Free Schools Act was passed in 1994 by the Clinton Administration and Congress. The act required that firearms possession on school grounds be punished with a one-calendar year expulsion (Skiba, 2013). Increasingly, exclusionary tactics were employed whereby students were

suspended for up to 10 days for such minor infractions as profanity, fighting, smoking, truancy, and behaviors that disrupt classroom order and learning but are not against the law (Braz & Williams, 2011). As a result, annual short term suspensions have nearly doubled from 1.7 million in 1974 to 3.1 million in 2001 (Teske & Huff, 2011, p. 88). With zero tolerance came the introduction of the school resource officer, or police presence on campuses. Police have taken over the disciplinary role once held solely by school administrators; in consequence, there have been significant increases in student arrests and referrals to juvenile court, thus the term “school-to-prison pipeline” (Teske & Huff, 2011; Braz & Williams, 2011).

Schools should be places where children and youth can feel safe, receive nurturing attention and adult guidance towards healthy development, and connect socially and culturally within the curricula and the school community. Disruptive behaviors in school do indeed interfere with teaching and learning, and must be addressed. Teske (2011), though, found that many schools place an overreliance on zero tolerance methods of school discipline for disruptive behaviors as they are limited in resources to effectively handle disorderly students. “Being suspended even once in ninth grade is associated with a twofold increase in the likelihood of dropping out, from 16% for those not suspended to 32% for those suspended just once” (Losen & Martinez, 2013, p. 1); repeated suspension, therefore, can be assumed to increase risk for dropping out, and involvement in criminality (Teske & Huff, 2011). School experience for Black and other students of color is most adversely affected by zero tolerance discipline (Toldson & Lewis, 2012). Concerted efforts towards more effective interventions are needed in order to reverse the disproportionate prison-to-pipeline trend for Black male students (Toldson, McGee &

Lemmons, 2013). Given that the purpose of school is to educate, more so than to provide mental health and social services, Teske (2011) advocates that school systems connect with other youth-serving systems for assessment and treatment of the “underlying reasons for the disruptive behavior that can reverse the negative outcomes of zero tolerance” (Teske, 2011, p. 88). Vicki Spriggs, CEO of Texas Court Appointed Special Advocates (Listenbee, et.al, 2012), however, recommends the school environment as an ideal location for addressing troublesome behavior:

“Since all children are required to attend school, specially trained counselors should be available to work with children to help them process what is occurring in their lives. The goal...would be to identify stress and trauma symptoms in students; identify unsafe or potentially harmful situations in the home, school, or community that are creating trauma; and broker [appropriate] community services” (Listenbee, et. al., 2012, p. 68).

Further, Toldson and Lewis’ (2012) recommendations include establishment of clear, fair, consistent and strictly enforced rules that maintain a positive learning environment without disproportionately punishing Black males or any other group; provision of mentoring, tutoring and counseling to improve academic engagement for students who are slower learners or who come from stressful life situations and social inequalities that impact behavior and place them at greater risk for delinquency; provide teachers with cultural awareness training to counter “racially prejudiced hegemony” (Toldson & Lewis, 2012, p. 35); prioritize healthy and nurturing learning environments of teacher empathy, dignity and respect, and the belief in the excellence that resides within each and every child.

Given the confluence of traumatizing violence exposure, youth violence, and zero tolerance policies in schools, it is reasonable to assume that children exposed to violence

may well be at risk for involvement in violence and school disciplinary measures that marginalize students from education, and that Black children may be disproportionately affected. The spatial nature of each variable make geospatial analyses a relevant approach for evaluating the statistical significance of these relationships.

A Spatial and Multilevel Modeling Approach

Spatial Analysis enables the discovery of patterns and relationships among spatial data (Waller & Gotway, 2004). Such analysis of spatial patterns and relationships has been used extensively within various fields as will be discussed below; but to date has rarely been applied to education studies. The spatial analytical focus of this research thus brings a unique form of scientific inquiry to the field of education, enabling new perspectives in the understanding of current issues in education research.

Spatial analysis is made possible with geographic information system (GIS) software that handles locational information and characteristics or attributes related to mapped features (Pfeiffer, Robinson, Stevenson, Stevens, Rogers & Clements, 2008). Any data that is tied to a stable coordinate location (a point, a line or a polygon) can be analyzed within a GIS. A neighborhood, for example, has a name, covers a given area of land, and houses a population who fit within certain demographics. The name, size, and population data comprise the attributes or characteristics that describe that neighborhood. Within a GIS, neighborhoods can be selected, mapped and analyzed according to their attributes. They can be compared with other spatial layers of information to reveal correlations among variables. In education, for example, the per-pupil expenditure per school might be plotted on a neighborhood map indicating median household income in order to determine whether spending per pupil is greater or lesser within lower income

areas. Traditional statistical methods such as correlation, linear regression, principal component and factor analysis can also be applied to spatial data within a GIS, however, care must be taken to account for such spatial-related issues as spatial autocorrelation, or the correlation of data resulting from relative locational position (Griffith, 1996), and the “modifiable areal units problem” (MAUP) which refers to diverse political boundaries for which data are collected, and problems that may arise when working with data from different scales and levels of aggregation (Haining, 2010).

Goodchild and Janelle (2004) describe the importance of thinking spatially within the social sciences as well as in epidemiology. “...spatial data analyses suggest an emphasis on location in the conduct of analysis...[and results] are dependent in some way on the locations of the objects being analyzed...” (Goodchild & Janelle, 2004, p. 5). Location related, or spatial analysis may be evaluated in terms of proximity, comparative size, distance, direction, or clustering/dispersion. Spatial analyses dates back to John Snow’s 1854 map of cholera incidence and its spatial clustering around contaminated water pumps in the Soho district of London (Snow, 1936, in Goodchild & Janelle, 2004, p. 7). The map served as geo-spatial evidence of a causative means (i.e., contaminated well water) associated with the Cholera disease (Pfeiffer, et.al. 2008). According to Goodchild and Janelle (2004, p. 6), “...many other potential causes of disease have been investigated as a result of similar observations of anomalous clustering in cross-sectional data, suggesting causal mechanisms associated with residential or workplace locations that are in turn reflected in geo-referenced mortality or morbidity records”.

Spatial and spatial statistical analysis has been used extensively in the examination of violence (Messner & Anselin, 2004; Sampson & Morenoff, 2004; Tita &

Cohen, 2004), spatial disparity (Camara, Sposati, Koga, Monteiro, Ramos, Camargo, & Fuks, 2004; Rey, 2004; Hagenlocher, Delmelle, Casas & Keinberger, 2013), and in epidemiology (Dahly, Gordon-Larsen, Emch, Borja, & Adair, 2013; Delmelle, Cassell, Dony, Radcliff, Tanner, Siffel, & Kirby, 2013; Emch & Ali, 2003; Gatrell & Rigby, 2004; Hagenlocher, et.al, 2013; Root, & Emch, 2011). To date, however, such spatial analyses have had limited application within the field of education. The groundbreaking education-related spatial analysis within this study, therefore, opens the door for the use of GIS for solving education problems. The determination of student neighborhood violence exposure, for example, will model trauma vulnerability in relation to relevant mapped variables. Such techniques as hot spot density mapping and crime modeling have been utilized in studies of neighborhood level homicide (Messner & Anselin, 2004; Sampson & Morenoff, 2004). Neighborhood and census tract level socio-economic data will serve as variables within a multilevel analysis of spatial disparity as an indicator of student risk for or vulnerability to violence exposure. School data on discipline and academic achievement will serve as dependent variables within the multilevel analysis regarding statistical significance of the impact of violence exposure on student outcome. And given that the Centers for Disease Control (CDC) have formally categorized violence as a public health issue (Schweig, 2014), methods of spatial epidemiology have direct application to the analysis of student exposure to violence as a public health risk.

Numerous GIS data exist in Charlotte at the individual, neighborhood, school and school district level for mapping and modeling of spatially collected explanatory variables relating to school and juvenile or criminal justice outcomes for disproportionately suspended Black male students. These data are reviewed in Chapter 3.

Through spatial and multilevel statistical analysis, this study aims to explore the locational patterns of neighborhood violence, and the spatial associations of racial disparity in school discipline and of comparatively low academic achievement with exposure to violence. Multilevel modeling of the impact of violence exposure on individual outcomes will be represented spatially by neighborhood as well.

Purpose of the Study

The purpose of this study is to determine a course of action regarding in-school intervention to improve school experience and outcomes for Black male students who are involved in or exposed to gang and/or gun violence and potentially become “members” of the school-to-prison pipeline. The goals of the research are: a) To verify discipline Disproportionality and disproportionate violence exposure among Black males as compared with White males within CMS middle and high schools, b) To employ a multilevel and spatial statistical approach that explores significant spatial correlations between neighborhood violence exposure, discipline Disproportionality, academic difficulty and disproportionate arrests for middle and high school Black males as compared with White males; and c) To recommend behavioral, academic and administrative intervention strategies for schools that increase the likeliness of improvement in school outcomes for children exposed to violence.

Statement of the Problem

Zero tolerance discipline policies were instituted in public schools in the 1980’s to reduce the threat of violence and drug activity thus to enable safe school environments. Yet in countless public school districts these policies have instead served to increase the school to prison pipeline through criminalization of often minor disciplinary infractions,

and the increase in out of school suspension, arrest and incarceration of students who may or may not be involved in violent or drug related crime (Heitzeg, 2009; Mora & Christianakis, 2012; Scott & Saucedo, 2012). Zero tolerance practices were exacerbated during the 1990's when federal government enacted legislation increased criminalization of gang-related activities and made it easier to try and incarcerate juveniles within the adult criminal justice system (Heitzeg, 2009). Over time, lower income students, youth of color and students with disabilities, males in particular; have been disproportionately targeted by zero tolerance and resultant arrest and incarceration (Heitzeg, 2009; Mora & Christianakis, 2012; Scott & Saucedo, 2012) with little concern for root causes of disciplinary issues. Black males, for example, experience disproportionate violence exposure, thus potential trauma, with subsequent disciplinary inequity (i.e., disproportionate out of school suspensions or OSS), overrepresentation in special education, lower academic outcomes, and greater risk for delinquency (Garro, 2011 a; Garro, 2011b; Nicholson-Crotty, Birchmeier & Valentine, 2009; Toldson & Lewis, 2012). Research (Allen & Lo, 2012; deMarrais & LeCompte, 1999; Patton, Woolley, & Hong, 2012) has also demonstrated the link between community and school violence. Research (Allen & Lo, 2012; deMarrais & LeCompte, 1998; Patton, et.al., 2012) has also demonstrated the link between community and school violence and in-school behavior problems, as well as the co-occurrence of gang involvement, drug dealing and gun violence. "...community violence predicts increased behavior problems at school, which in turn, predicts poorer grades" (Patton, et.al, 2012, p. 393).

Black males and other youth of color are disproportionately affected by arrests by school resource officers/police (Dahlberg, 2012). Many arrests are for student

misbehaviors that are disruptive but can be handled by school personnel and parents, e.g., “public order offenses such as “disorderly conduct,” “disturbing a lawful assembly” and “violating codes of conduct,” or assault-related charges stemming from school yard fights” (Dahlberg, 2012, p. 9). The likelihood for Black males to endure violence related trauma, and to be further traumatized through inappropriate “treatment” provides evidence for schools to change the focus of discipline policies and practices toward a healing perspective that replaces overemphasis on punishment (e.g., OSS, expulsion, police arrest), medication and special education placements. This research aims to address through spatial analytical means, education system contributions to the young black male disproportionate predicament of school to prison pipeline for those young men involved in gang and/or gun violence.

Black and Latino males who originate from communities of concentrated poverty are more likely to adopt maladaptive coping strategies that result in their becoming both perpetrators and victims of violence (Adams, 2010; Allen & Lo, 2012; DeGruy, Kjellstrand, Briggs & Brennan, 2011; Noguera, 2003; Patton, et. al, 2012; Richardson, 2012). Violence exposure has health, education and employment consequences wherein Black males also experience high rates of chronic disease, disproportionately high suspensions, special education placements, low test scores, and high unemployment rates (Garro, 2011a; Garro, 2011b; Patton, et. al, 2012; Rich, et.al, 2009). Yet Toldson and Lewis (2012) indicate that “Black males with and without disabilities can excel in schools that have adequate opportunities for diverse learners and a structure that supports personal and emotional growth and development” (p. 9). For this, however, a shift is

needed away from zero tolerance and campus police presence and toward a host of preventative and rehabilitative strategies (Scott & Saucedo, 2012).

Theoretical Framework

This study is approached from a blended theoretical framework that infuses the underpinnings of Trauma Theory with that of Strain Theory. Trauma Theory explains the traumatic impact of violence on children's emotional well-being, and the association with post-traumatic stress disorder and related aggressive conduct. While useful in revealing potential misdiagnoses of behavior and the need for trauma-sensitive discipline practices in schools, the theory lacks awareness of the emotionally damaging impacts of implicit bias and racial injustice as forms of violence to which Black males are regularly subjected. The blended approach is therefore essential for this research given the Western and middle-class focus of Trauma Theory and the relevance of Strain Theory for explaining anger-based delinquency among Black males who become frustrated with the marginalizing effects of unfair school discipline. Each theory is explained below in detail with reference to its assets and limitations for this study.

Framework One: Trauma Theory

Trauma Theory provides a useful framework for understanding the impact of gun violence exposure on child well-being and for examination of school assumptions that may lead to disproportionate disciplinary and achievement issues for Black male students. According to Rich, Corbin, Bloom, Rich, Evans, and Wilson (2009) "African American males disproportionately experience violence; are 5 times more likely to be incarcerated than Whites; have high incidence of chronic disease; and have the highest unemployment rate" (p. 5). Additionally, Black and Latino males who come from

communities of concentrated poverty are more likely to be both perpetrators and victims of violence (Adams, 2010; Noguera, 2003). Bloom and Reichert (1998, p. 251) note that “...violent and traumatic events threaten the ability of human communities to foster health and resilience...”. Further, “...violence, like health, wealth, and political power, continue to be a central feature of the persistent inequality between racial groups in US society” (Noguera, 2003, pg. 128).

Trauma theory was developed by the health care community initially in connection with studies of Vietnam veterans and other war survivor groups (Bloom, 2013; Eaglestone, 2014). Trauma is a term that can apply to “experiences or events that (1) are repetitive, chronic, or prolonged; (2) involve harm, such as physical, sexual, and emotional abuse and/or neglect or abandonment by parents, caregivers and other ostensibly responsible adults; and (3) occur at developmentally vulnerable times in the person’s life, especially over the course of childhood, and become embedded in or intertwined with the individual’s development and maturation” (Bloom, 2013, p. 20). Chronic adversities such as discrimination, racism, oppression and poverty can be traumatic experiences as well (Rich, Corbin, Bloom, Rich, Evans, & Wilson, 2009). According to Bloom (2013, p. 23) trauma theory serves as “...an anchor for the integration of various psychological theories, techniques, and points of view, a possible unified field theory of human behavior...[to] formulate effective strategies to deal with violence...”

The main diagnosed mental illness stemming from trauma is Posttraumatic Stress Disorder (PTSD) which came to be known and used to assess mental illness related to exposure to war-like trauma (Bloom & Reichert, 1998; Rich, 2009). Through trauma

theory, we come to understand that PTSD is not a sickness due to a chemical imbalance in the brain; rather, it is a condition brought about by the traumatizing effect of violence and with subsequent impact on a person's physical, mental, and emotional health. Trauma theory, thus, has great relevance to the study of impacts of gun and other violence on child well-being. The theory "...represents a fundamental shift in thinking from the supposition that those who have experienced psychological trauma are either 'sick' or deficient in moral character to the reframe that they are 'injured' and in need of healing" (Rich, Corbin, Bloom, Rich, Evans, & Wilson, 2009, p. xvi).

Trauma theory provides a challenge to our understanding of child deviance at school in that mental health and criminal behavior are looked at as symptoms of the deeper trauma children are experiencing. "Trauma theory has taught us that...most psychiatric disorder is the culmination of 'normal reactions to abnormal situations,' situations largely created by the failure of our social systems to provide traumatized children with the protection and care to which they have a right" (Bloom, 1997, p. 11). While this study does not aim to predict or diagnose trauma, the theory will provide potential evidence of the traumatizing impact of violence exposure on student behavior and learning. Students who display such difficulties in school and who are living in neighborhoods designated as high violence exposure may thus be candidates for trauma assessment and trauma-informed intervention. It is important, however, to recognize the limitation with the original theory, namely that it was developed from a Eurocentric perspective (Craps, 2014; McNally, 2003) for application to a non-European group. As previously noted, trauma theory was born out of the sufferings of war survivors (Eaglestone, 2014; McNally, 2003; Stonebridge, 2014). The theory originators however,

have paid little attention to further cross-cultural engagement. “They marginalize or ignore traumatic experiences of non-Western or minority cultures; they tend to take for granted the universal validity of definitions of trauma and recovery that have developed out of the history of Western modernity; and ...the theory risks assisting in the perpetuation of the very beliefs, practices, and structures that maintain existing injustices and inequalities” (Craps, 2014, p. 46). McNally (2003) reveals the Western perspective from which diagnosis and treatment of PTSD was developed and is often implemented, and warns that psychiatric concepts from the West do not necessarily apply to non-Western cultures. “It is questionable whether the Western concept of PTSD captures the essence of the human response to trauma wherever and whenever it occurs. Moreover, many attempts to provide psychotherapeutic services to war-traumatized people throughout the developing world have failed, in part because the entire Western framework of diagnosis and psychotherapeutic treatment of trauma is utterly foreign to their cultures” (McNally, 2003, p. 283). When applying trauma theory to this study, therefore, recommendations for assessments and interventions with students of non-European origin will necessitate a culturally relevant approach.

Framework Two: Strain Theory

Strain theory lends constructive understanding of “deviant” or delinquent behaviors common in youth raised amid violence. Given the limitation of trauma theory noted above, namely, that its Eurocentric focus excludes traumatizing experiences of urban adolescent boys of color in the United States, strain theory focuses on family, school and community-based conditions that many urban adolescent boys experience. The premise of strain theory is that negative relationships, wherein the individual is not

being treated in ways s/he believes is fair, form a barrier or “blockage” to attaining the individual’s positive and highly valued goals in life (Agnew, 1985; Agnew, 1992). Additionally, these negative relationships, especially where violence or injustice is involved, may result in painful experiences that the individual wishes to avoid. Inability to avoid these painful relationships leads to frustration and anger that fuel involvement in delinquency as an escape mechanism or in attempt to achieve goals through illegitimate means (Agnew, 1992).

In its conception, strain theory emphasized attainment of socio-economic symbols of success as a major motivating force in society (Merton, 1938). Inability of an individual to attain such symbols of success may cause “frustration and thwarted aspiration [leading] to the search for avenues of escape from a culturally induced intolerable situation; or unrelieved ambition may eventuate in illicit attempts to acquire the dominant values...[inviting] exaggerated anxieties, hostilities, neuroses and antisocial behavior” (Merton, 1938, p. 680). Merton’s theory centers strongly on the disjunction between economic goals and educational success needed to achieve such goals (Farnworth & Leiber, 1989; Merton, 1938). Focus is on delinquency resulting from failure to attain middle class economic status rather than for reasons of poverty. The theory has been criticized for its emphasis on attainment of middle class values. It explains why middle class youth commit delinquent acts, but fails to address issues facing urban adolescent youth of color who may or may not aspire to the same life goals as their White counterparts.

Agnew (1985) developed a revised strain theory that accounts for criticism of the original concept. His revised theory provides an interesting relationship to trauma from

violence exposure in that it addresses angry and frustrated response to “aversive” relationships with members of family, community and school. The revised theory states that “...delinquency results from the blockage of pain-avoidance behavior” (Agnew, 1985, p. 151). Youth seek goals but also seek to avoid painful or aversive situations that may possibly be violent, threatening or otherwise emotionally upsetting. When their path of escaping such situations via legal means is blocked (i.e., blockage of pain-avoidance behavior) this leads to frustration which fuels anger and related aggression. The frustrated and angry adolescent then seeks to escape the pain through “anger-based delinquency” that may include violence (Agnew, 1985, p 162). The main assertions of the revised strain theory are that: a) environmental aversion has a significant positive effect on anger, thus involvement in anger-based delinquency is directly influenced by living among families and communities, and attending schools where the environment is “aversive” (negative relationships and treatment deemed as unfair); b) anger has a significant positive impact on measures of delinquency; and c) frustration is attributed to location in an aversive environment, where “environment” may be social (relationships) as well as locational (home, community, school) (Agnew, 1985). Strain theory may thus assist in understanding in-school insubordination occurring in part in consequence of unfair disciplinary practices. Students may well feel anger over inequitable discipline and “act out” in frustration that result from the inability to rectify such unjust practices. Likewise, strain theory lends deeper understanding of aggressive youth behaviors that might be borne out of response to aversive relationships that are violent in nature.

Hypotheses and Research Questions

To reiterate, the purpose of this study is to determine a course of action regarding in-school intervention to improve school experience and outcomes for Black male students who become “members” of the school-to-prison pipeline. A multi-level modeling approach involves analysis of relationships among relevant data variables occurring within nested hierarchy or levels. Where spatial in extent, the data are analyzed for multi-level spatial relationships. There may be, for example, a spatial relationship between neighborhood violence and OSS of individual students (Level 1) living within these violence-prone areas (Level 2). The relationship may be statistically significant, e.g., $p < .001$. Positive significance in this example, would state that students living in neighborhoods with high indices of violence experience high rates of OSS while a negative significance would indicate low rates of OSS in neighborhoods of high violence indices. The relationship may also be non-significant, e.g., $p > .05$. In each spatial relationship, significance levels will be specified in order to determine statistical significance. Where significant, the null hypothesis of no relationship can be rejected. An insignificant result indicates that the null hypothesis can be accepted in that any relationship between variables is likely to be by chance.

The hypotheses for this research are based upon comparisons between Black, White, and other Non-white males in respect to OSS, EOG/EOC test scores, each moderated by violence exposure. The research questions are designed to investigate the hypotheses using the spatial and multilevel modeling approach. The research questions and related hypotheses are thus:

- Question 1: What are the similarities and differences between Black and White and other Non-white male middle and high school students in regards to short term out of school suspensions (OSS) for subjective and non-subjective referrals within Charlotte-Mecklenburg Schools (CMS)?
- Hypothesis 1: Black male middle and high school students receive a greater share of short term out of school suspensions for subjective and non-subjective referrals within Charlotte-Mecklenburg Schools (CMS) as compared with White and other Non-white males.
- Question 2: To what extent does neighborhood level exposure to violence moderate the relationship between Black male middle and high school students and short term out of school suspensions (OSS)?
- Hypothesis 2: High levels of neighborhood violence moderate the effect of race on OSS such that increased violence leads to a stronger positive relationship between race (Black) and OSS.
- Question 3: What are the similarities and differences between Black and White male middle and high school students in regards to end of grade/end of course (EOG/EOC) test scores within Charlotte-Mecklenburg Schools (CMS)?
- Hypothesis 3: Black male middle and high school students receive a greater share of level 1 and 2 EOG/EOC test scores as compared with White and other Non-white students.
- Question 4: To what extent does neighborhood level exposure to violence moderate the relationship between Black male middle and high school students and EOG/EOC test scores?

- Hypothesis 4: High levels of neighborhood violence moderate the effect of race on EOG/EOC test scores such that increased violence leads to a stronger negative relationship between race (Black) and EOG/EOC test scores.

Assumptions

Spatial assumptions abound when combining data from differing scales and geographies as is explained under “Limitations” below. Likewise different agencies collect and record data at varied levels of detail. This study will assume that the agencies providing data have taken care to record statistics with consistency and concern for accuracy. Likewise it is assumed that the ISC-DAROC has taken equal care in compiling longitudinal data per student across agency, that a randomly assigned student identifier is accurate across time, and that the zip code and 2014 NPA have been carefully assigned and matched longitudinally. As is explained under limitations, for those students with a consistent zip code across time, it is assumed that they have not moved during the seven-year study time period.

Limitations

The main limitation to the study centers on the lack of time-series multi-level analyses. Discipline disparity and achievement gap for Black males are analyzed across the seven-year time frame of 2007 to 2014, and neighborhood TVI is compared bi-annually for 2008 to 2014. However, given time constraints relating to data challenges and study completion deadlines, the individual-level modeling of student outcome in relation to neighborhood violence exposure is only carried out for the 2013-2014 school year. Sloan, Jacques, Gallagher, Ward, Raaschou-Nielsen, Nordsborg and Meliker (2012) discuss the importance of including residential histories in the evaluation of chronic

disease. Using cancer as an example, they indicate that there is a lag between causative exposure and onset of the disease. In other words, a person does not contract cancer upon immediate contact with a cancer-causing agent; rather, the exposure must be chronic across time and space such that the disease has opportunity to become established. A similar analogy can be made for trauma from violence exposure. Although a catastrophic event may be traumatizing, it takes chronic exposure over time for PTSD to develop. A time-series analysis involving length of residence in high TVI neighborhoods would thus improve the reliability of this study's results based upon the hypothesis that longer exposure to high levels of TVI is positively related to OSS and negatively related to test scores.

Future time series modeling of individual student outcome in relation to neighborhood violence exposure, however, will be limited in terms of the method used to associate students with neighborhood of residence. Although de-identified in all other aspects, each students' randomly assigned identifier for years 2007 through 2014 will be linked to the respective 2014 neighborhood profile area (NPA) number, indicating the student neighborhood of residence during the 2013-2014 academic year. While this enables direct comparison with neighborhood quality of life variables for 2013-2014, a time series analysis would be based on the assumption that the students did not move during the entire seven-year period. To somewhat compensate, all other years of data would include the "current" zip code of residence, e.g., the 2007-2008 data for student #1 would include his zip code for that year along with his zip code and NPA for 2014. If student #1's zip code remained the same over time, it will be assumed that he did not move, and his 2007-2008 neighborhood TVI will correspond to the neighborhood he

lived in during 2014. Zip codes cover a much larger area, however, encompassing neighborhoods of varied quality of life. Theoretically, a student may have moved to another, possibly very different neighborhood within the same zip code, with a higher or lower TVI; such moves would not be detected, thus the limitation to the time-series analysis. Additionally, students whose zip code changed, and students who have experienced homelessness, would be excluded from the time series analysis. These shortcomings weaken the results pertaining to neighborhood tenure.

The study also does not include data on schools, thus the contributions of such factors as school discipline policies and practices, differential course offerings and school resources, per pupil funding, and school staffs attitudes will not be evaluated in terms of impacts on OSS and test scores for Black males. Nor will the potential mediating effect of parental or other family involvement be included in this research. The study is limited to evaluating of neighborhood and individual/family factors for which there are accessible data.

In addition to data concerns, there are some important limitations to note when working with differing geographic boundaries. The quality of life study utilized locally determined neighborhood boundaries for the City of Charlotte in 2008 and 2010. Beginning with 2012, neighborhood boundaries were changed to correspond with census block groups and covered the entire county. A students' neighborhood in 2010 may have been split into smaller units in 2012 thus potentially altering the quality of life variables to which the student is assigned over time in this study. Additionally, the determination of counts and rates is hampered by area size and configuration. Rates tend to be inflated when areas are very small or with widely varying base populations (Haining, 2010, p.

211). Likewise, counts may be diluted if data crosses over boundaries within a study area. The “modifiable areal units problem” (MAUP) calls attention to the issue of differing political boundaries for which data are collected, and problems that may arise when working with data from different scales and levels of aggregation. “...making statistical inferences about individuals based on aggregate data is flawed...called “ecological fallacy” (Haining, 2010, p. 213). Such is the case for comparing zip codes of previous year’s residence with the data for the 2014 NPA. As previously stated, a single neighborhood may be quite small while a zip code encompasses a large number of individual neighborhoods. Mapping will not aggregate neighborhood data by zip code, but a move within a zip code would result in potentially very different neighborhood level exposure. For this study, such difference would not be detected by movement within a zip code.

Delimitations

The study is limited to the types of school, crime, socio-economic and neighborhood data that are made available on male middle and high school students, as well as the way data are processed and included within the Charlotte neighborhood quality of life study.

Definition of Terms

Geographic Information System: The integration of hardware, relevant software and spatial data for the collection, management, analysis and display of all forms of geographically referenced information (ESRI, 2014). Through GIS, data can be compared, analyzed and visualized in ways the help answer questions, solve problems,

and discover spatial patterns and relationships. GIS has application within any field that comprises spatial data.

Spatial Statistics: Refers to the application of statistics to the analysis of geo-referenced data. (Griffith, 1996). Spatial statistical methods make use of locational information to detect patterns and relationships among variables across areas, to quantify these relationships and determine the level of correlation or statistical significance of association of variables that have spatial or coordinate location (Waller & Gotway, 2004). “Spatial statistics extends traditional statistics to support the analysis of geographic data. It provides techniques to describe the distribution of data in the geographic space (descriptive spatial statistics), analyze the spatial patterns of the data (spatial pattern analysis), identify and measure spatial relationships (spatial regression), and create a surface from sampled data (spatial interpolation, usually categorized as geo-statistics)” (http://apps.carleton.edu/collab/spatial_analysis/SpatialAnalysis/).

Multilevel Modeling: A statistical analytical method that accounts for the natural hierarchical structure of data pertaining to individuals (Subramanian, 2010). Multilevel modeling lends itself to the analysis of data that are nested within a hierarchical structure (Pfeifer, Robinson, Stevenson, Stevens, Rogers & Clemmons, 2008). An education-related example of hierarchical data is individual students that are nested within classrooms, and classrooms that are nested within schools (Bryk & Raudenbush, 1992).

Trauma: The definition of use for this study comes from Bloom (2013, p. 20) and is stated as “...experiences or events that (1) are repetitive, chronic, or prolonged; (2) involve harm, such as physical, sexual, and emotional abuse and/or neglect or

abandonment by parents, caregivers and other ostensibly responsible adults; and (3) occur at developmentally vulnerable times in a person's life, especially over the course of childhood, and become embedded in or intertwined with the individual's development and maturation". Trauma may be further categorized as acute, chronic or complex as defined below.

Acute Trauma: "A single traumatic event that is limited in time. An earthquake, dog bite, or motor vehicle accident are all examples of acute traumas" (Child Welfare Committee (CWC)/

National Center for Child Traumatic Stress Network (NCTSN) 2008, p. 6).

Chronic Trauma: "Chronic trauma may refer to multiple and varied (traumatic) events such as a child who is exposed to domestic violence at home, is involved in a car accident, and then becomes a victim of community violence, or longstanding trauma such as physical abuse or war." (CWC/NCTSN, 2008, p. 6).

Complex Trauma: "Complex trauma is a term used by some experts to describe both exposure to chronic trauma—usually caused by adults entrusted with the child's care, such as parents or caregivers—and the immediate and long-term impact of such exposure on the child." (CWC/NCTSN, 2008, p. 7).

Hypervigilance: "Abnormally increased arousal, responsiveness to stimuli, and scanning of the environment for threats. Hypervigilance is a symptom that adults and youth can develop after exposure to dangerous and life-threatening events...it is a symptom related to Post Traumatic Stress Disorder" (Buffington, Dierkhising, & Marsh, 2010, p. 3).

Fight, Flight or Freeze: Protective or defensive survival-like responses to perceived serious threat. In the case of violence exposure, traumatized youth may defend, run away, or camouflage themselves, or "...youth may perceive themselves as detached from their bodies (e.g., such as viewing themselves from the ceiling during stressful events) and feel as if they are in a dream or as if the experience is happening to someone else. Further, children may lose all memories or sense of the experiences happening to them, resulting in gaps in time or even gaps in their personal history.”(Marsh, Dierkhising, Decker & Rosiak, 2015, p. 6)

Executive Functioning: "...a cluster of abilities such as making, following, and altering plans; controlling and focusing attention; inhibiting impulsive behaviors; and developing the ability to hold and incorporate new information in decision-making” (National Scientific Council on the Developing Child (NSCDC), 2010, p. 3)

Posttraumatic Stress Disorder (PTSD): “Upon exposure to actual or threatening death, serious injury or sexual assault, the following symptoms persist beyond one month after the exposure: (1) experience intrusive re-experiencing symptoms (e.g., nightmares or flashbacks), (2) persistent avoidance of stimuli associated with the event(s) (e.g., person, place, object, thought, feeling or behavior) and/or numbing (e.g., lapses in memory and feelings of detachment), (3) negative alterations in cognitions and mood associated with the event(s), and (4) marked alterations in arousal and reactivity associated with the event(s) (e.g., hypervigilance) such as irritability and difficulty sleeping”(Marsh, Dierkhising, Decker & Rosiak, 2015, p. 6)

School discipline: methods used by school personnel to address student behavior perceived as disruptive to school operations; common methods include office referrals,

detention, out of school suspension, alternative school placement, expulsion and arrest by police. “Disciplinary practices are designed to teach the children how to reason...how to determine the proper behavior for themselves. Disciplinary situations are opportunities for teaching. The purpose of discipline is to achieve self-management” (Hale-Benson, 1990, p. 213). Kuttner (2012), however, describes a “...shift in school discipline toward zero tolerance policies and the increasing use of law enforcement tools and personnel in many public schools...teaching to the rules...rather than engaging young people in deep critical thinking... the goal of school rules becomes merely to follow the rules and to reinforce the schools’ authority, rather than to actually change behaviors or teach young people how to resolve conflict. This orientation toward discipline leads adults to focus on rules rather than root causes (such as life issues students might be dealing with), to not listen to students, and to discount student resistance to rules even when their complaints might be legitimate. This can lead...to the alienation, and the potential dropping out, of students who see the school as illegitimate in its use of power, or conversely, to students being socialized to simply obey rules uncritically” (Kuttner, 2012, pp. 271-272).

School engagement: “Engagement is associated with positive academic outcomes, including achievement and persistence in school; and it is higher in classrooms with supportive teachers and peers, challenging and authentic tasks, opportunities for choice, and sufficient structure” (Center for Mental Health in Schools, 2011, p. 2).

In-school intervention: utilizing the school time, facilities, staffing and logistics to provide mental health and positive behavioral services to students as alternatives to punishment style of discipline (Listenbee, et. al, 2012).

Creative or Expressive Arts Intervention: The therapeutic use of art, music, dance, poetry, and drama to stimulate healing among traumatized children and youth (Hollis & Garo, in press).

Resiliency: “A pattern of positive adaptation in the context of past or present adversity...it is the ability to ‘bounce back’ from difficult experiences” (Marsh, Dierkhising, Decker & Rosiak, 2015, p. 7)

School experience: includes a totality of academic, social and behavioral aspects of attending and participating in day to day schooling. deMarrais and LeCompte (1999) define schooling as “...the learning that takes place in formal institutions whose specific function is the socialization of specific groups within society. The purpose of schooling changes somewhat depending on the theoretical approach, e.g., functional, conflict, interpretive, or critical theory (deMarrais & LeCompte, 1999, p. 2), however, some common elements of schooling that children experience include the intellectual and behavioral aspects of attending school.

Exposure to gang and/gun violence: exposure to violence may include witnessing, participation in, or victimization by violence (Finkelhor, et.al, 2009) relating to gang involvement and/or involving a gun. Research (Buffington, Dierkhising, & Marsh, 2010; Siegfried, Ko, & Kelly, 2004) has demonstrated harmful and long lasting impacts of exposure to violence on adolescent behavior and academic achievement, including anxiety, depression, aggression and other violence, and increased risk for delinquency, arrest and incarceration.

Vulnerability: The concept of vulnerability comes out of geographic study of the hazards of a place. It is assessed by combining data on social, economic, and political

characteristics specific to a geographic region are in relation to their relative contribution to the determination of a population's vulnerability to a hazard of interest (Oulahen, et.al, 2015). Vulnerability is estimated based upon evaluating socio-economic, political and environmental variables in relation to the "capacity [of a person or group] to anticipate, cope with, resist and recover from a natural hazard" (Oulahen, 2015, p. 475).

CHAPTER 2: REVIEW OF LITERATURE

Overview

This chapter reviews the literature on previous work regarding zero tolerance in relation to school discipline disparities for Black males, and on trauma from violence exposure, with impacts on children's brain development and ultimately their behavior and learning. The chapter then delves into those aspects or dynamics within children's lives that serve to increase risk or resilience relating to trauma from violence exposure. School dynamics are covered first and include discussions around school violence, factors influencing student disengagement from schooling, and school connectedness. Family dynamics play a vital role in children's lives and are thus included next, covering issues of poverty, single parenting, absent fathers, domestic violence, and father incarceration, and concluding with family-related protective factors. Given the neighborhood focus on violence exposure within this research, community dynamics are covered relating to neighborhood concentrated poverty, impacts of drug dealing, gangs and guns, and the "Code of the Street" and tough front in relation to youth aggression as survival mechanisms. The section rounds out with a discussion of community level protective factors. Justice System dynamics relate to the prison side of the school-to-prison pipeline. Within this section are the topics of Disproportionate Minority Contact, distrust for law enforcement and incarcerated schooling as factors increasing risk for justice system involvement, while trauma-informed courtroom practices form the protective

contribution from law enforcement. The chapter concludes with an overview of literature relating to interventions that may serve to reduce the school-to-prison pipeline.

Zero Tolerance and Overuse of Black Male Out of School Suspensions

Chapter I presented a brief overview of the history of zero tolerance policies and practices within public schools and the link with the “school to prison pipeline” for Black male students. Briefly, zero tolerance policies were developed with the intent to reduce school violence and create safer environments for learning. The premise of zero tolerance was that tough handling of dangerous and disruptive school behavior through punishment and exclusion would result in removal of unsafe conditions and improved student behavior (Braz & Williams, 2011; Skiba, 2013). In reality, the policy served to greatly increase exclusionary discipline, police presence and student arrests, thereby evolving into a school-to-prison pipeline that overly targeted certain student groups (Braz & Williams, 2011; Kang-Brown, Polakaw-Suransky, 2000; Trone, Fratello & Daftary-Kapur, 2013; Teske & Huff, 2011). The literature reviewed herein largely supports this premise that zero tolerance policies lead to over reliance on out of school suspensions that disproportionately impact Black males and increase their risk for lowered academic achievement and involvement in delinquency. Beginning with the Civil Rights Project (<http://civilrightsproject.ucla.edu/>), this study of 26,000 U.S. middle and high schools estimated that well over 2 million students were suspended in the 2009-2010 school year, primarily for “... minor infractions of school rules, such as disrupting class, tardiness, and dress code violations, rather than for serious violent or criminal behavior” (Losen & Martinez, 2013, p. 1-2). The study also found that, as a national average, 36% of all

middle and high school Black male students with disabilities were suspended at least once in 2009-2010. National averages for all race/ethnicity, except Asian/Pacific Islander, increased between 1972-73 and 2009-2010, with Black students experiencing the highest rates and largest increase by far, as illustrated in Figure 5 where Black suspension rates are 11.8 and 24.3 respectively. Note also that 2009-2010 rates for Latino students slightly exceeds that of the Black 1972-73 rate, and Latino rates doubled over the time period, yet only increased by 1.1 for White students. Additionally, the Civil Rights Project data reveal that males are suspended at much higher rates than females with the exception of Black females whose rates are nearly double that of White males. These statistics are corroborated by Kang-Brown, Trone, Fratello & Daftary-Kapur (2013) in their Vera Institute of Justice research brief publication reporting on implications of zero tolerance in schools. Their findings indicate that neither schools nor students have benefited from zero tolerance policies, and Black and Latino students and students with special education or disability designation have fared much worse in comparison with White students (Kang-Brown, Trone, Fratello & Daftary-Kapur, 2013).

Skiba (2013) reported on research regarding the failure of zero tolerance policies to create safer school environments. His study revealed several findings concerning the impacts of zero tolerance approaches to school discipline, namely that: Black males are indeed overrepresented in out-of-school suspension and expulsion; such discipline is not due to issues of poverty or misbehavior among this population; exclusionary policies are often enforced for minor infractions that do not pose threat to other students; these policies do not equate with improvements in school behavior or reduction in school violence; and there is strong association between suspensions and expulsions and such

negative outcomes as lowered academic achievement, disengagement from school, dropping out and increased delinquency and juvenile justice involvement (Skiba, 2013).

Enforcement of zero tolerance policies via exclusionary practices varies across school districts with some parts of the country more strongly participatory than others ([http:// civilrightsproject.ucla.edu/](http://civilrightsproject.ucla.edu/); Kang-Brown, Trone, Fratello & Daftary-Kapur, 2013; Losen & Martinez, 2013). Data on rates for all race/ethnicity in 2009-10 indicated regional and within district variations whereby suspension “hotspots” and areas of low rates stood out among the records from several schools within urban school districts thus indicating variability in suspension policies within and between districts (Losen & Martinez, 2013). Within school districts, individual school characteristics, e.g., school governance, student demographic composition, teacher attitude and bias, may result in differing rates of out of school suspension. Toldson and Lewis (2012, p. 31) discuss 3 categories of behaviors for which students are subjected to zero tolerance disciplinary action. Category 1 consists of students with “delinquent behavior patterns” such as in-school possession of drugs, alcohol and weapons. This category tends to occur with the lowest frequency among all infractions (Dahlberg, 2012), and is the only category in which students truly break the law or exhibit behaviors that are harmful or dangerous to self and/or others. Their behaviors may possibly be symptoms of trauma from violence exposure (Bloom & Reichert, 1998; Rich, 2009). Category 2 is comprised of students who are generally disengaged from school. Truancy, tardiness, and late or missing assignments are among the behaviors associated with this group of students. Within Category 3 are those students who exhibit aggressive behavior towards school personnel and other students. Fighting, but without weapons, is prevalent within this category and

may well include students traumatized by exposure to violence who respond to their world with “hypervigilance” or aggressive alertness in the expectation of impending danger (Bloom & Reichert, 1998; Rich, 2009).

Zero tolerance policies that rely on punishment alone for behavior modification have proven to be ineffective in changing behavior (Adams, 2010; Allen & Lo, 2012; Dahlberg, 2012; Foucault, in Lemert, 2010; Losen & Martinez, 2013; Patton, et.al, 2012; Polakaw-Suransky, 2000; Teske, 2011; Teske & Huff, 2011; Toldson & Lewis, 2012). Punitive methods of discipline, e.g., suspension, expulsion, and/or arrest, are exclusionary, and disproportionately affect Black and other students of color. In this way zero tolerance policies contribute to disparities in academic outcomes for these students (Dahlberg, 2012; Losen & Martinez, 2012; Polakaw-Suransky, 2000; Toldson & Lewis, 2012). Teske (2011) reports that increased police presence on school campuses had led to an increase in student arrest and juvenile justice system involvement. Likewise, the disproportionate suspension of Black and Latino students has led also to the racial and ethnic disparities in the juvenile justice system. According to Teske & Huff (2011, p. 90) “...removing students from positive learning environments and criminalizing normative immaturity increases the risk of incarceration.” Their research also points to significant numbers of adult inmates who dropped out of school lending further evidence of a school-to-prison pipeline created by the marginalization of students via zero tolerance policies and school policing practices.

Exposure to Violence

When children are exposed to or victimized by violence, such experience can be traumatizing, with impact on child well-being. Trauma can be defined as consisting of

two types of victimization: 1) Experiences or situations that are emotionally (and sometimes physically) painful and distressing, and that overwhelm an individual's ability to cope; or 2) Chronic adversity, e.g., discrimination, racism, oppression, poverty (Rich, et.al, 2009, p. 4). In a study by the Justice Policy Institute (Adams, 2010) approximately 34% of adolescents surveyed have experienced at least one traumatic event. Adams (2010) also found that the rate of experiencing violence reaches 46.1 per 1000 for youth of color as compared with 42.1 per 1000 for white youth. Furthermore, research estimates that between 75 and 93% of youth entering the juvenile justice system each year have experienced trauma (Adams, 2010).

Exposure to violence has detrimental impacts on children's mental and emotional well-being. Howell (2003) describes the risk and protective factors that influence a child towards, or shield them from delinquency. Risk factors include community, family, school, peer and individual factors. Community factors involve availability of drugs and firearms, community norms towards drugs and guns, media portrayals of violence, transitory nature of a neighborhood, low neighborhood attachment and community disorganization, and extreme economic deprivation (Howell, 2003, p 105). School risk factors include academic failure beginning in late elementary school and lack of commitment in school. These are coupled with peer influences toward antisocial and rebellious behavior, and favorable attitudes towards such behavior (Howell, 2003). Buffington, Dierkhising, and Marsh (2010) of the National Council of Juvenile Family Court Judges (NCJFCJ) found a strong association between children witnessing domestic violence and becoming victims of abuse and neglect. Likewise, the abused parent often suffers from depression, anxiety, or grief at the loss of a loved one thus impacting their

ability to provide nurturing in an emotionally and physically safe home environment.

Abused parents are more likely to engage in substance abuse and to abuse their children, or to neglect them because of emotional unavailability. Children may join a gang and/or participate in substance abuse and other high-risk behaviors to seek the nurturing that is missing from parents (Howell, 2003).

Relation to Trauma

Exposure to violence and the link with trauma has been clearly demonstrated (Buffington, Dierkhising, & Marsh, 2010; Perry, 2003; Perry, 2007; Van der Kolk, 2014; Zyromski, 2007). “A key condition that makes [dangerous or threatening] events traumatic is that they can overwhelm a person’s capacity to cope, and elicit intense feelings such as fear, terror, helplessness, hopelessness, and despair” (Buffington, Dierkhising, & Marsh, 2010, p. 2). When children are exposed to violence, the resulting feelings of insecurity and powerlessness undercut the required development task of mastery and competence in their environment. Traumatic response is most serious when exposure is chronic and severe, leading to complex trauma which is associated with increased risk for delinquency and school failure (Buffington, Dierkhising, & Marsh, 2010). A main goal of this research is to make the case for in-school, trauma informed interventions for students who exhibit behavior and/or learning difficulties and who may have experienced violence exposure. Demonstration of the violence-trauma correlation is thus critical to this study. Presented here, therefore is a review of the research of several noted scholars regarding the relationship between violence exposure and trauma in regards to school experience among affected children and youth.

Trauma from violence exposure and its impact on children's behavior and learning has been given much attention in the domains of psychology/social work (Bethell, Newacheck, Hawes, & Halfon, 2014; Bloom, 2013; Cooley-Strickland, Griffin, Stuart, Bradshaw, & Furr-Holden, 2009; Duplechain, Reigner, & Abbot Packard, 2008; Flannery, Wester & Singer, 2004; Perry, 2003; Perry, 2007; Sanders-Phillips, 2009; Sanjnani & Johnson, 2014; Thompson & Massat, 2005; Van der Kolk, 2014; Walker & Smithgall, 2009; Zyromski, 2007), and criminal justice (Buffington, Dierkhising, & Marsh, 2010; Child Welfare Information Gateway, 2015; Dudley, 2015; Estrada, Gilreath, Astor, & Benbenishty, 2013; Finkelhor, Turner, Ormrod, Hamby, & Kracke, 2009; Ford, Chapman, Hawke, & Albert, 2007; Listenbee, Torre, Boyle, Cooper, Deer, Durfee, James, Lieberman, Macy, Marans, McDonnell, Mendoza, & Taguba, 2012; Marsh, Dierkhising, Decker, & Rosiak, 2015). Numerous studies disclose various maladaptive behaviors and learning difficulties as an outgrowth of exposure to violence (Bloom, 2013; Cooley-Strickland, Griffin, Stuart, Bradshaw, & Furr-Holden, 2009; Duplechain, Reigner, & Abbot Packard, 2008; Finkelhor, Turner, Ormrod, Hamby, & Kracke, 2009; Kliwer & Sullivan 2008; Perry, 2003; Perry, 2007; Sanders-Phillips, 2009; Sanjnani & Johnson, 2014; Siegfried, Ko, & Kelly, 2004; Thompson & Massat, 2005; Van der Kolk, 2014; Walker & Smithgall, 2009; Zyromski, 2007). Traumatic cognitive and behavioral responses to violence include PTSD, anxiety, depression, aggression, numbing, poor concentration and focus, cognitive developmental delays, feelings of hopelessness and poor physical health (Aisenberg & Mennen, 2000; Flannery, Wester & Singer, 2004; Margolin & Gordis, 2000; Rasmussen, Aber & Bhana, 2004; Thompson & Massat, 2005). Halliday-Boykins and Graham (2001, p. 396), for example,

studied the relationship between community violence exposure and violent behavior among youth. They found that “adolescents who were exposed to higher levels of community violence also engaged in higher levels of violent activity, associated with more deviant peers, and adhered more strongly to an aggressive cognitive style”. Walker and Smithgall (2000), in their study of educational underperformance among vulnerable children and youth in Chicago Public Schools, established that exposure to violence impacts children’s cognitive and behavioral functioning with rates of special education classification for neglected and abused children to be one and one half to two times as great as for their peers (Walker & Smithgall, 2009, p. 4). Aisenberg and Mennen (2000) indicate that schools frequently fail to accurately attribute behavioral challenges and poor academic performance to trauma from exposure to violence, resulting in misdiagnoses of hyperactivity, conduct disorder, and attention deficit hyperactivity disorder (ADHD). Perry (2007) corroborates these findings, noting that children exposed to chronic trauma are frequently diagnosed with ADHD when they are actually experiencing physiological hyperarousal and hypervigilance associated with the behavioral and cognitive disruption to brain development that results from chronic traumatic experience. Aisenberg and Mennen (2000) recommend assessments for exposure to community violence as a routine mental health screening within urban public schools, pointing out that the school environment has fewer stigmas than do mental health facilities.

Critical to the development of trauma informed intervention for violence exposure is an understanding of Post-Traumatic Stress Disorder (PTSD) and its impact on child well-being. As noted in Chapter 1, PTSD is a leading anxiety disorder triggered by exposure to a traumatic experience and is commonly diagnosed in children exposed to

violence (Bloom, 2013; Buffington, Dierkhising, & Marsh, 2010; Listenbee, et.al., 2012; Perry, 2003; Perry, 2007; Smithgall, Cusick & Griffin, 2011; Sanjnani & Johnson, 2014; Siegfried, Ko, & Kelly, 2004; Zyromski, 2007). Trauma theory informs that PTSD is not a mental illness; rather, it is a condition brought about by the traumatizing effect of violence and with subsequent impact on a person's physical, mental, and emotional health. When traumatized, a child may lose the ability to decipher between threatening and non-threatening situations and thus respond similarly to each (Bloom & Reichert, 1998). Such responses may include a fight or flight behavior, hyper-vigilant alertness in anticipation of violence, feelings of increased hostility, and fear for which the cause cannot always be identified (Bloom & Reichert, 1998; Patton, et. al., 2012; Perry, 2007; Rich, et. al, 2009). When at school, children do not "turn off" the fight or flight tendency, thus may well appear angry, irritable and disruptive in the eyes of teachers and other school staff. Children and youth traumatized into hyper-arousal often turn to dysfunctional activity such as substance abuse, violent acting out, risk-taking behaviors, sexual activity, eating disorders, or self-inflicted injury; these may serve as coping mechanisms or for temporary relief from the fear and uncertainty (Bloom & Reichert, 1998; Rich, et. al, 2009; Smithgall, Cusick & Griffin, 2011). The following discussion on trauma and its impact on brain development lends helpful background information for understanding traumatized children's behavior and learning challenges. This, in turn, contributes to the design of appropriate and effective interventions.

Trauma and Brain Development

While an in-depth coverage of brain structure and chemical composition is beyond the scope of this research, it is instructive to review the main operations of the

brain for understanding the potential impacts of trauma as relates to school behavior and academic achievement. The brain controls the functioning of all other parts of the body and is divided into sections or lobes, with each section housing unique structures and chemicals that handle specific functions. Primary life-sustaining bodily functioning such as breathing, blood circulation and blood pressure, heart rate and other vital organ function, and elimination, are well developed at full-term birth and reside in lower regions of the brain (Perry, 2007). The mid and upper portions of the brain contain higher order functions that include abilities to speak (language expression), to remember (memory functioning), to think abstractly, and to regulate emotions (Perry, 2007). These functions are primitive at birth and grow very rapidly within the first 3 years of life (CWIG, 2015; Perry, 2007). As these develop along with the baby, his/her emotions and perceptions are shaped by the experiences and influences encountered. According to Vander Kolk (2014, p. 56) “If you feel safe and loved, your brain becomes specialized in exploration, play and cooperation; if you are frightened and unwanted, it specializes in managing feelings of fear and abandonment.” Included also in this portion of the brain are executive functioning, defined as “...a cluster of abilities such as making, following, and altering plans; controlling and focusing attention; inhibiting impulsive behaviors; and developing the ability to hold and incorporate new information in decision-making...” (National Scientific Council on the Developing Child (NSCDC), 2010, p. 3). These contribute to academic and career success and support a child’s ability for healthy social interaction. With exposure to stress, a child may experience elevated levels of chemicals that trigger executive and emotional responses which identify whether the experience is safe or threatening. Under threatening situations, a message is sent that prepares the child

to respond to the danger. (NSCDC, 2010). Under conditions of duress, or chronic stress, neurochemical levels remain in a heightened state dominating a child's functioning and making it difficult to focus on such activities as learning in the classroom.

Given that the brain develops in sequential fashion, upper sections of the brain receive signals for formation based upon previously formed areas (Perry, 2007). Early childhood experiences may therefore positively or negatively affect the growth and development of the upper regions of the brain. Healthy stimulation, nurturing care and repetition of educational experience is needed for rapid and efficient brain development and foundational learning; absence of this stimulation (e.g., through child neglect), and particularly the presence of abuse, can greatly hinder such brain development with subsequent altering of higher order brain functions (Child Welfare Information Gateway (CWIG), 2015; Perry, 2007). Acute deprivation or neglect, for example, has been demonstrated to interfere with a child's brain development and the ways information is processed. Brain development, and ultimately, learning ability, may thus be adversely affected by exposure to violence especially when the child is very young, the exposure is chronic and relentless, and reliable adult caregivers are lacking (Buffington, Dierkhising & Marsh, 2010). Malnutrition during pregnancy and the first two years of life constitute acute deprivation that also impacts early brain development (Prado & Dewey, 2012). Such forms of neglect increase the risk for disruption of healthy physical, attentive, social, emotional, cognitive and behavioral functioning in the child (NSCDC, 2012; Perry, 2007). Likewise, the child's biological stress response ability within the brain may be disrupted, thereby increasing the risk for mental (e.g., anxiety and depression), physical (e.g., cardiovascular and other chronic health problems), and

emotional/interpersonal issues (i.e., increased negativity of outlook, low levels of enthusiasm, confidence and assertiveness, hyperactivity, and poor impulse control and reasoning) as the child grows and matures (NSCDC, 2012). By the time a child reaches school age, these deficits in brain development significantly increase the risk for behavioral and learning difficulties that affect education success and escalate destructive activities (e.g., substance abuse), disruptive conduct and delinquency, and dropping out of school with subsequent impacts on socio-economic condition (NSCDC, 2012; Prado & Dewey, 2012). A child's insubordinate classroom management and social interaction skills observed in school, therefore, may well have been shaped by adverse early childhood experiences.

Trauma and Academic Achievement

Studies show that abused children have more severe academic problems than their non-abused counterparts. As described above, child maltreatment (neglect and abuse) has the potential to change the structure and chemical activity within the brain with numerous effects on the child's cognitive, behavioral, and social-emotional functioning (CWIG, 2015; Thompson & Trice-Black, 2012). Such children are thus more likely to receive special education services, have below-grade-level achievement test scores, and have poor work habits; and they are 2.5 times more likely to fail a grade (Bethell, Newacheck, Hawes & Halfon, 2014; CWIG, 2015). Learning and behavioral difficulties may be related to stress from traumatic experience whereby chronic stress or recurring exposure to traumatic events or experiences may cause permanent memories that influence that child to remain in a relentless state of fear and interfere with concentration in class. Structural and chemical damage to areas of the brain that control executive functioning

may result in the learning difficulties, lesser academic achievement, diminished IQ, and declining attentiveness or focus (CWIG, 2015; NSCDC, 2010; NSCDC, 2012). A traumatized child may appear to have a learning disability when it is actually alteration of the brain's executive functioning (Perry, 2007). Addressing learning difficulties through “special education” will not attend to this structural and chemical injury to the brain.

Behavior may be further affected by violence in that the brain creates permanent memories of traumatic events. These memories leave the child hyper sensitive to imminent danger as perceived in such nonverbal clues as eye contact, swift movement or a touch on the arm or tap on the shoulder (CWIG, 2015). Resulting hyperarousal causes a child to be on the alert for threats and to potentially misinterpret nonverbal cues as threatening even in safe spaces such as school classrooms. Instead of paying attention to learning, the child may be focused on determining whether a situation poses danger. The lack of focus on learning causes the child to fall behind academically and to be labeled with a learning disability. This misdiagnosis overlooks that fact that the child's traumatized brain had developed in a way that keeps them on alert and unable to calm down and give attention to learning (Bloom, 2013; CWIG, 2015; NSCDC, 2010; Trosche, 2014).

The Adolescent Brain

Studies on the adolescent brain support the call for alternatives to zero tolerance approaches to school discipline. This applies to all teenagers but particularly those impacted by violence exposure and/or child maltreatment (neglect, abuse). Adolescent neuro-development of emotions occurs earlier than cognitive functioning. Adolescence involves the maturation of emotion regulation, behavior inhibition, decision making and

other cognitive function beyond a child's level, but not to that of adulthood (Kelley, Schochet, & Landry, 2004). Adolescent behavior includes risk taking, seeking exciting new stimulation via adventurous or risky behaviors, and lack of concern for outcome or consequence. These traits are beneficial to maturation yet also place adolescents at greater risk for harm via injury, arrest, even death (Kelley, Schochet, & Landry, 2004). Galvan (2012) notes that peer influence is strong and youth are more likely to engage in risk taking behaviors among peers involved in similar behavior. Steinberg (2004) studied adolescent decision making behaviors with results that corroborated with that of Galvan (2012). Behaviors such as drinking and drugs, driving too fast, and delinquency are most often accomplished in a group; carry an excitement level or euphoria that is spontaneous, not necessarily planned. Adolescents are more susceptible to coercion by peers under euphoric conditions or situations that seem exciting, tend to think in the moment, not the future, and have less ability with emotion regulation or with giving thought to the consequences of their actions (Steinberg, 2004; Galvan, 2012). They have strongly developed physical, concrete reasoning, math ability but the euphoria of risk taking supersedes their ability to weigh options and make decisions. Mature judgment takes time to develop and cannot be rushed with intervention education. Behavioral interventions should thus begin from the premise that adolescents are inherently more likely than adults to take risks. Steinberg (2004) recommends limiting adolescent group gatherings without adult supervision as these present youth with opportunities for immature judgments that have harmful consequences. Schools should therefore understand the need to alter the ways youth gather and have access to risk taking opportunities. Out of school suspension sends adolescents away from the watchful school environment and into a likely

unsupervised situation, thus creating more opportunity for immature adolescent risk taking behaviors. Keeping students in school under supervised instruction reduces such risk. Studies on the adolescent brain thus lend further credence to the inappropriateness of zero tolerance policies in school discipline (Teske, 2011). “Youth are biologically wired to exhibit risk-taking behaviors, impulsive responses, and exercise poor judgment...a zero tolerance policy that results in suspension and/or arrest of students for behavior that is neurologically normative at this age can exacerbate the existing challenges facing the youth” (Teske, 2011, p. 91). Rather, punishments for minor infractions should be replaced by interventions that take into account the lesser developed cognitive functioning of adolescents (Teske, 2011).

Schooling Dynamics

The term school-to-prison pipeline signifies the potential of schools to marginalize students from learning and subsequently limit their opportunities for meaningful employment and economic survival. Reliance on crime happens for many when other options are few. Discipline disparity and its relation to delinquency and incarceration have been discussed above. This section provides background on factors within schools that contribute to risk or resiliency in relation to the school-to-prison pipeline. Discussed are school violence and trauma, disengagement from learning, and school connectedness to counter risk and build resilience.

School Violence

Violence occurs in many venues where children spend time. While schools have the potential to provide safe haven for children experiencing violence at home or in the community, the school environment can also be a fearful place of violence and violent

victimization. According to the 2009 National Crime Victimization Survey (NCVS, 2011, pp. iii-iv) 1.4% of all students nationally, ages 12-18, reported being a victim of violent crime in school and 3.9% reported being victimized by any crime. Males and students in grades 9-11 reported the highest rates of victimization. The study does not differentiate responses by race/ethnicity. Among those reporting school-related violent victimization, 33% indicated they had been in a physical fight while 53.4% reported that drugs were available at school, and 22.9% reported that they were afraid of being attacked or harmed while at school. Higher percentages of those who reported being a victim of any crime also reported that their schools used security cameras and security guards or other police officials on campus. (NCVS, 2011, pp. iii-iv). These latter represent zero tolerance practices in school.

The impact of violent victimization on certain aspects of school outcome has been examined in the literature. Peguero (2011) studied the impact of violence and victimization at school on dropping out in relation to racial and ethnic composition. Findings were that 33% of all students experienced at least one form of victimization at school, with greater incidence among racial/ethnic minority groups. These students who were victimized at school were at higher risk for dropping out. This research, however, did not link violent victimization with trauma, nor consider that dropping out might be a symptom of trauma, potentially reduced through trauma informed practices.

In another study Estrada, Gilreath, Astor, and Benbenishty (2013) examined gang membership and associations with school violence perpetration and victimization. Their research found that gang membership significantly correlates with school risk behaviors but that the way a gang member interacts with others during school, e.g., risky peers and

deviant behaviors like truancy and substance abuse, was a much stronger indicator of whether the gang member was involved in school violence. Such violence may be reduced, therefore, by targeting intervention for such behaviors as truancy, substance use and association with risky peers (Estrada, et.al, 2013). Estrada, et.al, (2013) also do not link violent victimization with trauma, nor acknowledge the importance of trauma-informed intervention. More research is needed on links between school violence and trauma, related interventions for improved academic outcomes among students victimized by violence at school.

Student Disengagement

Numerous studies reveal school situations, policies and practice that serve to disengage African American students from schooling. These studies provide a frame of reference from which to develop more effective strategies for re-engaging such disengaged students. Positive school outcomes for African American children and youth are reliant on the skill with which the teaching staff and school climate demonstrate respect and understanding for students' home environment, cultural character and values practiced in their households. Tyler, Brown-Wright, Stevens-Watkins, Thomas, Stevens, Roan-Belle, Gadson, and Smith (2010) evaluated home-school dissonance, or the difference between the home environment and home treatment of children, and the climate and treatment students receive at school, as a predictor of poor school outcomes for African American high school students. Value systems are at odds between home and school when teachers de-value the student's cultural characteristics and attempt to correct or change the student to be more like the dominant culture or the culture familiar to the teacher. Analyses revealed that indeed home-school dissonance was correlated with poor

school-based student behavioral and academic outcomes for these students. Findings support the importance of teacher cultural sensitivity training in efforts to improve African American student engagement.

Dropping out of school has been correlated with a poor relationship with teachers which serves as a motivation to leave school. Butler, Robinson and Walton (2014) describe a “causal narrative” named the “perfect storm of discipline” (PSoD) that provides explanation for disproportionate, often unwarranted exclusion of Black males from school via out of school suspension, and the correlation of poor teacher relationships with students based on teacher characteristics. PSoD is comprised of the cool pose, teacher perception, and racial/group threat. Cool pose refers to the ways a young African American male presents himself as tough, fearless, ultra-confident, facing danger without emotion and giving the impression to peers and others of being “cool” and in control, and is exhibited via clothing, speech, walk, stance and gestures. As a coping mechanism, the cool pose provides African American males with a sense of dignity and pride, and a feeling of being in control in the face of “hegemonic systems” (Butler, Robinson & Walton, 2014, p. 158). To teachers and other school staff, however, it is often misinterpreted as insubordination and a defiant disrespect for authority.

Teacher perceptions of Black males tend to be stereotypical, shaped by media portrayal as violent, aggressive thug-like criminals. Those teachers who claim to be “color blind” may in actuality be refusing to appreciate the diversity of culture that exists among Black males. Their perceptions are instead shaped by racist ideology and privileged ethnocentrism and their “color blindness” limits their ability to acknowledge their unfair practices in school discipline (Butler, Robinson, & Walton, 2014). Finally,

racial/group threat represents teacher tendency to feel threatened by African American male students who challenge status quo or reject mainstream culture in favor of self-determination and unique cultural expression. Such students present a perceived threat to teachers' classroom management ability. Teachers feel more comfortable when the students conform to traditional or normative school culture (Butler, Robinson & Walton, 2014, p. 160).

Their (Butler, et.al, 2014) study is affirmed in the work of Beasley, Miller and Cokley (2014) who explain the psychosocial dynamics of Black males that contribute to an image that is often misinterpreted by teachers. Historical, social and cultural perspectives are presented as factors shaping an educational environment that views these students from a deficit perspective while ignoring institutional racism and related structural inequalities. Black male academic identity matches that of other children when starting school yet by 3rd or 4th grade they have faced enough negative stereotypes that they begin to disengage academically as a way to cope with the negativity they face in the school environment. Their psychological dis-identification with school gradually increases over time impacting self-identity with academics and overall scholarly achievement (Beasley, Miller & Cokley, 2014).

Beasley, Miller and Cokley (2014, p. 10-15) recommend key factors that build academic resilience among Black males by countering such negative images as 'pathological' and 'criminogenic', 'under-achieving', and otherwise 'dysfunctional': 1) racial identity development – academic resiliency is achieved through positive association with those of a common racial/ethnic heritage and the sense of group belonging that is realized; 2) athletic identity development – where athletic participation

is encouraged, praised, providing social integration, feelings of manhood and potential for higher education scholarship and professional sports, and keeps Black males engaged in healthy extracurricular activity provided educators also encourage balance with academics; 3) “acting Black” as a psychological phenomenon to counter the historical white supremacist notions that equate African Americans with lesser intellectual ability, and that promote the conception of high scholarly achievement as “acting White, thereby fueling dis-identification of Black males with academic achievement; 4) the “cool pose” (discussed by Butler, Robinson & Walton, 2014, above); and 5) alternative masculinities through critical analysis and exploration of academic talent as an approach for teachers that dispels negative Black male identities promoted by mainstream and popular culture, challenges limited representations of Black manhood, and enables student development of a healthy male image and broadened vision of masculinity.

As demonstrated by the literature, a thorough understanding of factors that disengage Black males from academic achievement is instrumental for intervening in the academic and disciplinary disparities these students experience with schooling. Much work is needed by schools to address the cultural dissonance between teacher and student, and to create environments of academic resiliency. It would be interesting to look at the works of Beasley, et.al, (2014) and Butler, et.al, (2014) in light of PTSD from violence exposure and the degree to which cool pose may be a form of hypervigilance or hyper awareness of potential threat posed by a negative and threatening school climate. Likewise, while aspects of racism are discussed, the extent that such racism exposure serves to traumatize African American youth towards PTSD is not incorporated into the conversation. Saunders-Phillips (2009) found that racial oppression can result in PTSD,

with symptoms similar to that of response to violence exposure, including difficulties in school with behavior and learning. The traumatizing impact of racism is, in fact, a neglected area of trauma research in general. Overall, none of the above studies addresses the potential for students to suffer traumatic response to disengaging school experiences.

School Connectedness

Building connections to schooling is a valuable strategy, often successful in engaging or re-engaging students, especially those from challenged situations. School offers the potential for children to gain self-efficacy and self-image, and develop interpersonal relationship skills as well as to enhance critical thinking, problem solving and decision making, communication methods, and learning of academic subject matter. Positive and respectful school climates that foster connectedness are academic achievement oriented, have encouraging teacher-student relationships, practice fair and consistent discipline, and involve family and community in school activities and decision making (Thompson, Overpeck, Ross, & Gross, 2006; Wilkinson-Lee, Zhang, Nuno & Wilhelm, 2011; Wilson, 2009). Numerous studies affirming school connectedness to address behavioral and academic challenges facing African American and other students exposed to violence are reviewed in this section, making a convincing case for connections to schooling over zero tolerance forms of school discipline.

Connection to school is a protective factor against the risk for violence among youth (Howell, 2003; Teske, 2011). School connectedness reduces school aggression, delinquency, truancy, and substance abuse, and results in fewer internalizing and externalizing problems associated with trauma and other emotional upset (Thompson, Iachan, Overpeck, Ross & Gross, 2006; Wilkinson-Lee, Zhang, Nuno & Wilhelm, 2011);

likewise, students tend to experience improved academic performance and greater likeliness to graduate when they feel connected to school. Such connection to schooling is more likely under culturally inclusive curricula and pedagogy, and when students feel they are in the presence of school personnel who genuinely care about them (Teske & Huff, 2011; Toldson & Lewis, 2012). Black males tend to have lesser connection to schooling for a variety of reasons including dissatisfaction with the unfair ways they are viewed and treated by school staff, curricula that is non-inclusive, teachers who misinterpret cultural expressions as threatening, lack of family/community socialization to the academic environment, and learning disability labeling based upon teacher misperceptions or staff misdiagnoses (Butler, Robinson & Walton, 2014; Thompson, Iachan, Overpeck, Ross & Gross, 2006; Toldson, McGee & Lemmons, 2013; Toldson & Lewis, 2012).

Building connection to schooling requires socially and culturally relevant approaches that help all students feel welcome as valued members of the student body. Frydenberg, Care, Freeman and Chan (2009), for example, measured school connectedness as consisting of student feelings of engagement and belonging, with a positive attitude and strong motivation for learning, believing that teachers are supportive, having a lot of student friendships, involvement with school-related activities and belief in the school rules. The authors (Frydenberg, et.al., 2009) found strong correlation between school connectedness, coping skills and well-being, noting that negative outcomes such as anxiety, depression, substance abuse, and overall lowered mental health and wellness were strongly associated with poor school connectedness.

Poor connection to schooling has also been associated with gang membership, high risk behaviors and school aggression and violence (Estrada, et.al, 2013; Wilson, 2009). Even in negative school climates, however, those students who remain connected to schooling exhibit non-aggressive behavior and lower victimization as compared with students who are not connected. School climate appears to impact the degree of school connectedness.

Teacher skill is strongly associated with effective connection to schooling and teacher-student relationships. Vidourek, King, Bernard, Murnan and Nabors (2011) identified three most frequently used strategies reported by teachers as being a positive role model for students, calling students by their first names, and enforcing rules of student respect. Teachers who felt positively connected to their students used connection-building strategies significantly more frequently than did teachers who did not feel such connection to their students. Training teachers on positively connecting students to school was associated with increased use of connection-building techniques in the classroom. Wilkinson-Lee, Zhang, Nuno and Wilhelm (2011) studied the relationship between family commitments, emotional distress and school connectedness. They found that students who have family responsibilities may experience increased emotional distress even in schools with positive climate, but that school connectedness significantly buffered the emotional distress students experienced when burdened with family obligations. They recommend that schools change policy to address the individual home setting as a method to increase school connectedness and achieve emotional health and academic success. Also related to family and neighborhood characteristics, Thompson, Iachan, Overpeck, Ross, and Gross, (2006) studied the hierarchical relationship between

individual student, school and neighborhood characteristics in relation to school connectedness. Greater school connectedness was observed with younger students, females, those already high performing academically, those involved in extracurricular activities, and those with greater parent involvement. McNeely, Nonnemaker and Blum (2002) examined school connectedness and school environment factors from a stage-environment fit theoretical framework. The premise of stage-environment fit is that student behavior, mental health and well-being, and stimulus to learn are "...influenced by the fit between the developmental stage of the adolescent and the characteristics of the social environment" (McNeely, Nonnemaker & Blum, 2002, p. 138). Within their study, schools with higher school connectedness were smaller in size, used positive classroom management practices, held tolerant discipline policies, encouraged participation in extracurricular activities, and were more racially and ethnically segregated. At more highly integrated schools, friendships tended to form along racial/ethnic lines thus creating internal segregation. This was exacerbated by tracking of minority students into lower level tracks. Students across race/ethnicity felt less connected to schooling in such environments. Students who were female and black felt comparatively lesser connection to schooling. Their study suggests that schools pay more attention to creating school environments that are fair, welcoming and that make use of culturally relevant policies and pedagogies. Research by McNeely and Falci (2004) found similar results, namely that teachers' fair and caring support is a crucial protective component of school connectedness. Overall, there is much that schools can do to contribute to resiliency in children traumatized by violence. Several such strategies for schools are presented at the end of this chapter. A review of family, community and justice system dynamics offers

windows into these areas of traumatized children's lives, lending vital information for deeper understanding of root causes of trauma and effective in-school intervention.

Family Dynamics

Family dynamics are important to the study of residential stability and healthy home environments that are conducive to positive child development. Many family dynamics contribute to a child's well-being outside school that also impact a child's behavior and learning in school. Strong families provide for children's physical, mental and emotional needs, and offer supportive and loving relationships among family members. Family stability contributes to children's emotional and behavioral health and well-being which in turn facilitates academic success (FIFCSF, 2013). Conversely, family instability increases risk for children to incur physical, mental and behavioral difficulties that ultimately affect school performance. Economic and social justice factors place Black children among the most adversely impacted by family characteristics that present challenges for maintaining stability. Such family issues include single-parent households, family poverty and poverty-related challenges, absent fathers and incarcerated parents (Beasley, Miller & Cokley, 2014; Federal Interagency Forum on Child and Family Statistics (FIFCSF), 2013; Luthar, 1999). Education interventions that encompass awareness of the multitude of family dynamics impacting a child's life will more effectively address and improve upon child experiences at school. For this reason, issues related to family dynamics that are critical to the academic functioning of Black children are briefly reviewed.

Family Poverty

Poverty has potential to severely impact children's cognitive, behavioral, and socio-emotional health and well-being (Federal Interagency Forum on Child and Family Statistics (FIFCSF), 2013). Children living in poverty are more vulnerable to the health and safety issues often encountered in impoverished environments. Likewise they are at increased risk for dropping out and subsequent under-or unemployment (FIFCSF, 2013; Luthar, 1999). As with other disparities, Black children are among those most greatly affected by poverty. In 2011, for example, 13 percent of White, non-Hispanic children lived in poverty compared with 39 percent of Black, non-Hispanic children and 34 percent of Hispanic children. Additionally, "...19 percent of Black, non-Hispanic children, 15 percent of Hispanic children, and 6 percent of White, non-Hispanic children lived in families with incomes below one-half of the poverty threshold in 2011" (FIFCSF, 2013, p. 14). Black children experience higher rates of health conditions such as asthma, tuberculosis, and other respiratory illness, allergies, lead poisoning and associated brain damage, all of which are exacerbated by environmental exposure to toxic substances in the air, soil, water supply and building materials within communities of concentrated poverty (Iruka, Winn & Harradine, 2014). These children also have lesser access to quality medical treatment associated with government assisted healthcare (Iruka, Winn & Harradine, 2014). Likewise, poverty affects mental health. Impoverished communities tend to have lesser institutional supports for mental health, thus impacting the emotional and behavioral health of their children, and increasing the risk for externalizing behavioral problems, academic difficulties, dropping out, and dysfunctional coping mechanisms (Luthar, 1999).

Food insecurity is related to poverty and is crucial in a family's ability to provide for the nutrition that children need for healthy development, brain function, and emotional well-being. Families need access to affordable food that is nutritionally balanced. A food insecure household lacks quality and quantity of food to meet children's daily recommended nutrition needs. Children in food insecure families may have to skip one or meals each day, placing them at great risk for health consequences and with impact on academic achievement in comparison with their well-fed student counterparts. For these children, school may be the only place where they receive nutritionally balanced meals.

Inadequate housing is an additional factor related to poverty and that disproportionately affect Black children. Housing issues facing these children include homelessness, overcrowded conditions in public housing complexes, instability associated with transiency, poor nutrition, exposure to hazardous waste and toxic substances, and lack of structured activity and adult supervision during after school hours (FIFCSF, 2013; Polakow, 2000). Affordable, quality child care is prohibitively expensive for low income families. There remains a direct link between quality early child care and school readiness. Pre-school children subjected to poor quality care are at greater risk for developmental delays that impact school success (Polakow, 2000).

Domestic Violence

Domestic violence is another epidemic among U.S. families where an estimated 10 million children witness such family violence annually (Meltzer, Doos, Vostanis, Ford & Goodman, 2009, p. 491). Domestic violence occurs in all communities however the difficult conditions of poverty often lead to a stressful home environment more conducive

to violent means of child discipline and conflict resolution (Vorrasi & Garbarino, 2000). Parents who are economically challenged and frustrated, and socially disenfranchised, are more likely to use violence as a means of coping with stress; this includes violent forms of child discipline. Likewise, children of impoverished families are more likely to experience child abuse and to witness or observe the outcome (e.g., bruises, and broken bones) of parental domestic violence in the home (Meltzer, et.al, 2009; Vorrasi & Garbarino, 2000). The witnessing of domestic violence can impact children's psychological, emotional and behavioral well-being (Meltzer, et.al, 2009). Children growing up among domestic violence are at greater risk for developing anxiety, depression, aggressive and anti-social behaviors, social skills deficits, cognitive difficulties that affect academic functioning, and increase risk for participating in delinquency (Meltzer, et.al, 2009; Thompson & Trice-Black, 2012; Vorrasi & Garbarino, 2000).

Social learning theory explains some children's adoption of violent ways as learned through the observation of violence among parents and experiencing of violence as a means of discipline and control (Vorrasi & Garbarino, 2000). Within the world of domestic violence, where violent methods of relating are role modeled, children learn that violence is acceptable as a means of dealing with anger and frustration, and of getting their way. Likewise, traumatic impact of violence on brain development has been well documented (CWIG, 2015; Meltzer, et.al, 2009; Perry, 2003; Perry, 2007; Thompson & Trice-Black, 2012; Van der Kolk, 2014), such that domestic violence may well influence greater neurobiological tendency for impulsive and aggressive behaviors in such children (Meltzer, et.al, 2009; Perry, 2003; Perry, 2007; Vorrasi & Garbarino, 2000). Pre-school

children in such homes may exhibit anxiety, fearfulness, and other depressive behaviors that affect school performance when they become of school age (Meltzer, et.al, 2009). Girls who witness or experience domestic violence feel anger yet have a tendency towards internalizing problems like anxiety and depression, while boys more frequently experience externalizing behaviors that include aggression, defiance and general disobedience. Both genders have increased risk for delinquency. Children who witness or are victims of domestic violence are at greater risk for developing PTSD that may persist into adolescence and adulthood (Meltzer, et.al, 2009). Thompson and Trice-Black (2012) recommend the school environment as an ideal setting for structured therapeutic activities for traumatized children given the ready accessibility of school mental health personnel and resources.

Single Parenting and Absent Fathers

Single parenting has direct relationship with poverty as single parent households, particularly female headed, are at greater risk for limited financial resources leading to poverty (FIFCSF, 2013). Family composition has changed dramatically over time such that society has seen a significant decrease in two parent households and dramatic rise in single parenting. This shift is particularly apparent for Black children. The 2013 key indicators of child well-being (FIFCSF, 2013, p. 2) state that in 2012 "...seventy-four percent of White, non-Hispanic, 59 percent of Hispanic, and 33 percent of Black children lived with two married parents". The majority of single parent households are headed by the female. Single parent female headed households are more likely to experience social and emotional issues, and poverty than their married counterpart households. (FIFCSF, 2013). Single mothers in poverty experience high rates of depressive symptoms in early

phases of childbirth as well as in post-partum. And depression adversely affects parenting such that mothers may be less attentive to their children, more disengaged and negative, less supportive, more likely to abuse drugs, and thus with greater tendency towards child neglect and maltreatment (FIFCSF, 2013; Luthar, 1999). Single parenting as a whole is more difficult when faced with the frustrations of un-, or under employment, limited funds for child care and basic needs, and the feelings of isolation and powerlessness of handling child rearing alone. In combination, these factors may increase the risk for child neglect or maltreatment (FIFCSF, 2013; Luthar, 1999; Polakow, 2000). Black children, disproportionately born to single mothers in poverty face higher risk for adverse social and economic consequences than children from two-parent households.

On the positive side, Black families tend to have stronger kinship networks that support single mothers and assist with child care and behavior discipline as compared with their low income White counterparts (Luthar, 1999). And their authoritative parenting style has shown positive outcomes with their children (Iruka, Winn and Harradine, 2014). As such, when controlling for SES, Black families fare better than White in terms of the impacts of poverty on measures of child health and well-being (Luthar, 1999).

Absentee fathers among African American families are a crisis of epic proportions (Black, 2008). Related to single parenting, female head of households for African American children was above 50 percent as compared with 26 percent for Hispanic and 15 percent for White children (Black, 2008). Approximately 50 percent of divorced fathers have regular contact with their children; fewer for never married fathers (Cartwright & Henriksen, 2012). The absence of a father in a child's life is detrimental to

the child's development, impacting school achievement. Children without a father have lower test scores, are at greater risk for repeating a grade and for exhibiting problematic classroom behavior (Black, 2008; Cartwright & Henriksen, 2012). Likewise, children's identity and psychosocial development and emotional wellness are affected by father absence in the home placing them at greater risk for depression and other emotional problems as well as high risk behaviors such as substance abuse, early sexual activity, and delinquency that often results in incarceration (Black, 2008; Cartwright & Henriksen, 2012). Approximately 30 percent of all U.S. Black males have been incarcerated; the rate is 60 percent for those who dropped out of high school (Cartwright & Henriksen, 2012, p. 30). An absentee father is a common family situation among the majority of incarcerated men, high school dropouts and pregnant teenagers (Cartwright & Henriksen, 2012). Fathers who are intermittent in the child's life exacerbate feelings of hurt and disappointment, and fear of abandonment, affecting the child's self-worth with higher risk for depression, or aggression (Wineburgh, 2000).

The impact of father absence differs by gender. For girls, a father provides a sense of safety and security, and positive feminine development. From the father they learn how to interact with men and what to expect in a relationship. Father absence may lead to poor relationships with male peers and the seeking of a father figure in older men, often resulting in early pregnancy and teenage single motherhood (Wineburgh, 2000). This ultimately affects education completion and increases the risk for raising children within the cycle of poverty.

Boys are more adversely impacted in development of self-esteem, male identity and ability to attain intimacy in their relationships as men (Wineburgh, 2000). Fathers play an

important role in modulating aggression, especially in young boys. In homes where the father is absent, boys may feel resentment that fuels anger and aggression (Sieber, 2008). These boys may grow to be ill-prepared for close relationships, including fatherhood, thus repeating the cycle of father absence (Sieber, 2008). Cultural and societal stereotypes that glorify male aggressiveness tend to be more extremely adopted among young males raised without their father. Termed “hypermasculinity”, young men may adopt “...an unconscious defensive maneuver, utilizing high levels of aggressiveness to counter insecurity about male identity. Father-absent boys may act out as an unconscious identification with fathers who have aggressive histories, thus enabling the child to maintain a link to the desired father even though he is not present” (Wineburgh, 2000, p. 261-262). These subconscious psychological responses assist educators to understand the tendency for gang involvement and other youth violence among Black male and other students with absent fathers.

The challenge of absent fathers can be overcome through family support, other mentorship, individual resiliency and college attendance. Cartwright and Henriksen (2012) reveal five major themes crucial to education success for this population: (a) a male role model or mentor was important for positive male development in the absence of the father, (b) a supportive mother who helped the son(s) navigate life, (c) a personal desire to achieve an education in the face of negative societal stereotypes, (d) respect for their fathers, and (e) individual resiliency (Cartwright & Henriksen, 2012, p. 34).

Wineburgh (2000) reviewed treatment options for children of absent fathers without the aforementioned positive supports. Therapeutic interventions that address feelings of hurt, anger, resentment, self-blame, disappointment and low self-esteem can further assist

children with absent fathers to disassociate with the negativity that fuels self-destructive, aggressive and alienating behaviors. Educator awareness and adoption of positive and therapeutic supports increases the potential for school success among children who are emotionally and behaviorally impacted by an absent father.

Incarcerated Fathers

An extremely painful form of father absence exists through father incarceration and adds to the traumatic burdens endured by children living without their father. Statistics on children with an incarcerated father are staggering. Over 1.5 million individuals were incarcerated in federal or state prisons and local jails by the end of 2008 (Geller, Cooper, Garfinkel, Swartz-Soicher, & Mincy, 2012). The majority of these were men and most had children under the age of 18 (Kjellstand, Cearley, Eddy, Foney, & Martinez, 2012; Mendez, 2000; Miller, 2001; Tripp, 2001). Fewer than 25% of incarcerated fathers are married and between 40 and 69% have children by more than one mother (Mazza, 2002; Tripp, 2001). Nearly 2 million children in the United States have a parent who is presently incarcerated; fathers make up 93% of incarcerated parents. (Mazza, 2002). As with absent fathers overall, Black children are most adversely affected. African American men, for example, form 12% of the total US population, but make up 48% of the prison population (Tripp, 2001). Over 750,000 Black children have a father who is in prison compared with 400,000 White children and 300,000 Latino children (Mazza, 2002).

Like exposure to violence, parent incarceration can be a traumatizing experience for children. Father incarceration impacts child social/emotional, psychological, educational and economic well-being (Dallaire & Wilson, 2010; Geller, Cooper,

Garfinkel, Swartz-Soicher, and Mincy, 2012; Mazza, 2002; Nesmith and Ruhland, 2008; Tripp, 2001). There is a stigma related to having an incarcerated parent that brings embarrassment upon children (Mazza, 2002). There may be economic consequences related to father incarceration from loss of the fathers financial contribution to child support; likewise, after release, a father may have difficulty finding employment (Dallaire & Wilson, 2010).

Coping mechanisms for children of an incarcerated father (or mother) are manifested in children's behaviors as a shield from further hurt. Children may be distant, argumentative, defiant, and exhibit higher rates of delinquency, psychosocial maladjustment and cognitive shortcomings (Dallaire & Wilson, 2010; Geller, et.al, 2012). Their schooling may be affected by lowered cognitive function and increased problem behaviors, leading to special education placements, suspensions, expulsions and delinquency (Dallaire & Wilson, 2010).

Similarities exist between the emotional and behavioral effects of trauma from violence exposure and from having an incarcerated parent; therefore it may be that having an incarcerated father is a traumatic experience for children. The neighborhood Quality of Life data being used for this study does not include or control for father incarceration. Yet the points raised in this section are important considerations in the study of trauma among children living in neighborhoods with high rates of violent crime. Given the large proportion of Black children with an incarcerated father, this issue must be a high priority focus within school-based trauma-informed intervention efforts.

Community Dynamics

This study examines the potential impact of trauma from neighborhood violence on student outcome, therefore a review of the literature on neighborhood or community dynamics is extremely relevant. Important issues include the impacts of neighborhood concentrated poverty on child well-being, community violence associated with drugs, gangs and guns, the tough posture, or code of the street adopted by youth for perceived survival among violence, and the protective factors that communities contribute to resiliency. There are overlaps between family and community; this section, however, will focus on community dynamics and how these may potentially impact behavior and learning.

Neighborhood Concentrated Poverty

A wealth of literature addresses neighborhood concentrated poverty, community violence and child well-being. Neighborhoods of concentrated poverty expose children to multiple factors that increase their risk for adverse physical/biological, social and emotional/behavioral outcomes (Vorasi & Garbarino, 2000). Vorasi and Garbarino (2000, p. 67) discuss a model that explains mediators between child poverty and youth violence whereby the mediators are perceived economic inequality, exposure to family violence, and participation in the illicit economy. Regarding economic inequality, children and youth who perceive they are poor and have less than their schoolmates may develop feelings of embarrassment and frustration that serve to instill shame and humiliation. Coupled with racism, poverty can leave a child feeling a “psychic annihilation”, a threatening psychological state of mind that provokes youth to seek power, control and respect, or a sense of dignity, through violence (Vorasi & Garbarino, 2000).

Exposure to family violence increases the risk for violence through the compounding of multiple factors associated with socio-economic stress. As with youth in poverty, impoverished living serves to increase feelings of humiliation and frustration among adults who may resort to violence as a means of coping with the stress. As such, children in communities of poverty experience higher rates of domestic abuse with associated impact on behavior (Vorasi & Garbarino, 2000). The third mediating factor, participation in the illicit economy, refers to involvement in drug dealing as a means of economic survival. When the youth are able to pay the rent and provide food and clothing for the younger children, families tend to accept rather than object to their child's involvement in drug dealing. And youth derive feelings of power, a level of esteem and respect through the ability to make large sums of money and provide for their families. Such youth often feel that school has nothing to offer them when they can be economically "successful" without an education. Given the illicit nature of drug dealing and associated lack of organized regulation, the drug trade is necessarily territorial and youth gangs must defend their own territory from outside "competition". Resultant turf wars and associated violence lead to serious injury or death, or arrest and incarceration (Vorasi & Garbarino, 2000).

A study by Santiago and Galster (2014) further demonstrates the links between poverty, community violence and violence-related outcomes for children and youth. They add that purely statistical and spatial statistical analysis of neighborhood effects on child well-being tends to reinforce negative images of impoverished neighborhoods and low-income families. These studies fail to represent the protective factors associated with families and communities, nor individual level resiliencies. Models on neighborhood

effects should also include the length of time living in “dangerous, disadvantaged neighborhoods” (Santiago and Galster, 2014, p. 36); this represents the duration of exposure to violence, and may thereby mediate the level of impact from this exposure on youth outcomes. Longitudinal studies that take account of years of individual level violence exposure are needed for reliable assessment of impacts of violence on youth outcomes. This study will incorporate length of neighborhood violent crime exposure for those students who are in 6th grade in 2007-08 as will be explained in Chapter 3.

A recent spatial analytical study by Boggess and Hipp (2010) linked neighborhood stability with home ownership and lowered violent crime. Their study suggests home ownership may serve as a relevant variable in this study’s assessment of neighborhood trauma vulnerability. Roy, McCoy and Raver (2014) later examined the correlation between residential mobility and child outcome. They found a statistically significant correlation between moving during early to middle childhood and negative outcomes in 5th grade. This relationship however, was found to be moderated by neighborhood poverty such that moves out of low poverty and moves into high poverty neighborhoods were found to be detrimental, while the reverse (moves from high to low poverty neighborhoods) were beneficial to student self-regulation. For the 6th graders to be studied in this research, attempts will be made to determine movement between neighborhood levels of violence exposure.

Research on the links between neighborhood violence exposure and school failure reveals an overrepresentation for African American children. Voisin, Bird, Hardesty, and Shiu (2011) examined gender differences in violence exposure and coping strategies among African American adolescents residing in a high violent crime section of

Southside Chicago. They concluded that boys were exposed to more dangerous forms of community violence as experienced through perpetration and victimization rather than witnessing; while females more often heard about violence or witnessed violence.

Females coped primarily through acceptance, self-defense and avoidance while males involved themselves in confrontation. Voisin, et.al, (2011) recommendations include Cognitive-Behavioral Intervention for Trauma as a school-based intervention for violence exposure, encouragement of community-based initiatives, and a call for aggressive strategies to limit gun access and use, particularly among juveniles.

Drug Dealing, Gangs, & Guns

Neighborhood gang violence has strong relationship with other forms of violence. Research has demonstrated strong co-occurrence of gang involvement, drug dealing and gun violence (Aisenberg & Mennen, 2000; Allen & Lo, 2012; deMarrais & LeCompte, 1999; Huebner, Varano & Bynum, 2007; Kellerman, Fuqua-Whitley & Parramore, 2004; McGarrell, Corsaro, Melde, Hipple, Bynum & Cobbina, 2013; Skogan, Harnett, Bump & Dubois, 2009) and of community and school violence, and behavior problems in school (Patton, Woolley, & Hong, 2012). Students who are involved in gangs, carry a weapon, sell drugs, keep the company of delinquent peers, and are violent towards one another are at higher risk for serious injury than peers who are not involved in such activities (Kellerman, Fuqua-Whitley & Parramore, 2004; Vorasi & Garbarino, 2000). It is imperative, therefore, to understand the mechanisms correlating gangs, guns and drugs and the potential traumatic impact on children and youth for the design and implementation of effective in-school interventions.

Kellerman, Fuqua-Whitley and Parramore (2004) discuss several factors regarding youth involved with gangs, guns and drugs. Gangs participate in the diffusion of guns into the hands of juveniles. There is a tendency for youth to view gun carrying as a symbol of status, power and respect. Juveniles obtain guns with ease on the streets. Those who are socialized into illegal gun ownership through gangs or other delinquent peers are likely to perceive owning a gun as necessary for protection. Drug dealing and gang membership are strongly associated with illegal gun acquisition and use in criminal activity. Gang retaliations are likely to result in serious injury with hospitalization, or death when a gun is involved. African American youth involved in gun violence considered such violence as a necessary part of daily life.

Wilkinson (2007) studied the social interactions among young adult Black and Latino men involved in urban violent crime. Her research contributes to an understanding of causation in youth violence, gang or otherwise, the complexity of the issue, and the need for careful, multi-faceted intervention. Among the major findings are: a) masculine identity, status and respect were identified as common triggers for violence among young males; b) presumed threatening situations invoke violent response; c) territoriality is a recurring stimulus for violence; d) the majority of conflict occurred in the presence of third-party bystanders, thus insuring witness of victory and resultant boost in respect for their “reputation” as dominant and in control; e) presence of weapons and/or drugs/alcohol increase the severity of violent outcomes; f) conflict occurs most often in public places with little or no adult monitoring; g) a group is more likely to be a violent aggressor if they perceive dominance; and h) due to lack of trust in the criminal justice system, youth prefer to “self-help” rather than go to police for assistance. Such in depth

analyses of the roots and reasons for youth violence demonstrate the inappropriateness of OSS as school discipline for it places students among gangs, guns and drugs.

“Code of the Street” and the Tough Front

The term “Code of the Street” was coined by Anderson (1999) in his ethnographic account entitled *Code of the Street: Decency, Violence and the Moral Life of the Inner City*. In *Code of the Street*, Anderson (1999) highlights life in areas of concentrated poverty, and provides valuable root-cause explanations for the youth violence that is so prevalent in urban schools and communities. The “code of the street” is described as a set of rules by which to conduct oneself for protection and to command respect, manifested in day to day violent interactions among residents (Anderson, 1999). Stewart and Simons (2009) explored Anderson’s (1999) “code of the street” theory with findings confirming that the stressors of poverty and violence influence youth to adopt this code of the street lifestyle for perceived survival. Allen and Lo (2012) also conducted research to evaluate the applicability of Anderson’s theory to the lives of African American men. The code represents “...the alienation of some inner-city Blacks from the rest of American society and from the dominant White society in particular” (Allen & Lo, 2012, p. 934). Harding (2009) conducted a study of the ways violence is socialized into the development of adolescent boys living in disadvantaged urban neighborhoods. Findings indicate that neighborhood identity and limited mobility tend to influence the social network of adolescent boys within the high poverty neighborhoods. Older peers provide security and protection from neighborhood level violence through direct intervention and by association with those with a reputation as tough and feared neighborhood leaders. Such older peers often lack positive role model character traits; rather they form

“alternative...cultural models” (Harding, 2009, p. 459) that influence substance abuse, early sexual contact and teenage pregnancy, and lack of interest in school.

Protective Factors

Anderson’s (1999) discussion of the “code of the street” also described the positive influence of family in protecting their children from the destructive forces of community violence. As noted by Anderson (1999), many “decent” parents from inner city neighborhoods care very much that their children focus on education and obey the laws and norms of wider society yet they often have a very difficult time guiding their children who are also influenced by their local surroundings, and who must be able to navigate the streets safely. Children of decent families must also rely on violence at times and are easily lured by the romanticism of the street life. Children do not automatically understand how to “code switch” from the street code to that behavior which is conducive to safe and nurturing learning environments. As Anderson informs us, these children often bring street style methods of resolving conflict to the classroom and schoolyard because it is what they know. By understanding the roots of such behavior, educators can translate problem behaviors into “teaching moments” such that children are taught healthier ways of interacting with teachers and peers.

Research by Galster and Santiago (2006) supported Anderson’s thesis by exploring low-income parent/caregiver perceptions of disadvantaged neighborhood character and how it may affect their children. Parents/caregivers believed that the degree to which neighborhood residents are able to enforce social norms determines a neighborhood’s collective efficacy for achieving positive outcomes for their children. Exposure to crime and violence, and peer influence were other barriers while quality

institutional resources influence children's positive outcomes. Effects of collective efficacy, peers, crime and violence have the greatest impact on children, however, parents and families can buffer these negative effects (Galster & Santiago, 2006).

Justice System Dynamics

The final section on dynamics influencing child outcome centers on the juvenile justice system. Reviewed here are literatures on juvenile justice factors that increase risk for negative student outcomes. These include Disproportionate Minority Contact (DMC), distrust for law enforcement, and incarcerated schooling. The section closes with a brief account of the trauma-informed court as a protective factor and a model for school discipline policy and practice.

Disproportionate Minority Contact (DMC)

Disproportionate minority contact refers to the over-representation of non-white persons (in this case, youth) in the juvenile justice system in relation the representation of White persons. DMC is measured as a relative rate index (RRI) which provides a comparison of the rates of juvenile justice processing for each Non-white group of youth to the rates of juvenile justice processing for White youth (Desai, Chapman, Falzer & Borum, 2012; OJJDP, 2015). If African Americans have a secure confinement RRI of 6.0 for example, it would mean that their processing into secure confinement is six times higher than for Whites, thus representing the disproportion. "Contact" refers to all stages of justice system involvement, e.g., arrest, court referral, diversion, secure detention or confinement, adjudication or guilty finding, charges or petition filed, supervised probation, and transfer to adult court (Kempf-Leonard, 2007; OJJDP, 2015). Significant occurrences of DMC exist as illustrated for example in Figure 6 where in 2010 the arrest

rates for Black youth were just above 9000/100000 as compared with about 4100/100000 for White youth. As such, states' reduction in DMC was named as one of the top five priorities in the 2014 reauthorization of the Juvenile Justice Delinquency Prevention act (OJJDP, 2015).

DMC is important to study as it relates to Black male distrust for law enforcement (also covered in this section), feelings of frustration, and contributions to the “psychic annihilation”, described previously. Additionally, it provides insight into disproportionate out of school suspensions and the prison side of the school-to-prison pipeline, for some of the same mechanisms are at work that unfairly punish and marginalize Black youth in schools and the justice system. There are two explanatory theoretical frameworks referenced in the DMC literature to describe the occurrence of this phenomenon (Desai, Chapman, Falzer & Borum, 2012; Lieber & Fox, 2005; OJJDP, 2015; Piquero, 2008). Piquero (2008) distinguishes between differential offending and differential treatment whereby differential offending or involvement focuses on individual juvenile offending behavior as relates to specific individual, family and community factors that condition youth toward delinquency. Differential treatment stands for the increased police presence, patrolling, profiling, arrest and processing of crimes among non-white communities (OJJDP, 2015; Piquero, 2008). Piquero (2008) reviews several studies that examined differential treatment vs. differential offending among police and court handling of non-white youth. General findings among these studies indicate that police officers hold many negative attitudes and stereotypes about non-white youth. Their treatment of juvenile offenders is often based upon the juveniles' previous records, and their race, demeanor and appearance that officers associate with delinquency, e.g., black male wearing a

‘hoodie’ and hanging out with friends on the street. Piquero’s (2008) review notes also the compounding effects of DMC on life outcomes of targeted youth including education (but without reference to the school to prison pipeline), employment, voting, and family relationships. Both the differential offending and differential treatment frameworks exist but neither, alone or together, sufficiently explains DMC (Desai, Chapman, Falzer & Borum, 2012; Lieber & Fox, 2005; Piquero, 2008).

Distrust for Law Enforcement

Wilkinson’s (2007) study on social interaction among young adult and urban Black and Latino men involved in violent crime previously noted that one of the issues enabling youth violence to thrive relates to youths’ preference to “self-help” rather than go to police for assistance. This is due to a lack of trust in law enforcement and disbelief that their safety and their needs are a priority (Wilkinson, 2007). The racial divide that exists between the justice system and the Black community, and subsequent distrust for law enforcement hampers efforts towards the school and community engagement and economic uplift needed to address the various dynamic forces facing Black males as presented thus far in this chapter. This section reviews some of the data and literature elucidating law enforcement behavior leading to Black male distrust.

Data on police shootings in 2014 through August 2015 reveal: a) the majority of violent crime is committed by White males but with Black male disproportionality; b) a larger share of police shootings occur with armed assailants but Black males had the lowest rates of weapons possession; c) there exists a large number of police shootings of unarmed Black men (Juzwiak & Chan, 2014; MappingPoliceViolence.org, 2015; Somashekhar, Lowery, & Alexander, 2015). MappingPoliceViolence.org (2015) reports

that more than 100 unarmed Black people were killed by police in 2014; five were female. A Washington Post article by Somashekhar, Lowery, and Alexander (2015) indicated that 585 people have been shot dead by police between January 1 and August 8, 2015. Of these, 561 were male, 141 were Black and male, 60 were unarmed, and 24 of the unarmed were Black males. 12 of the unarmed were said to show signs of mental illness (Washington Post, 2015). These data are summarized in Table 1. Further, Juzwiak and Chan (2014) reposted a series of tweets that named 76 unarmed Black men and women killed in police custody between 1999 and 2014. They indicate that the list is only a partial representation of police brutality incurred during that timeframe. Reviewed below are a few studies that examined law enforcement penchant to shoot and kill unarmed Black male victims. The research offers explanation for Black male distrust for law enforcement, and the existence of DMC for Black males in school discipline and juvenile justice system involvement.

Gill and Pasquale-Styles (2009) conducted a review of forensic records on 42 New York City gunshot deaths caused by police between January 1, 2003 and April 1, 2007. Their results revealed that 41 out of 42 were male, 26 were Black, 9 Hispanic and 7 White; 78% had used drugs or alcohol, and 7 persons had history of mental illness. A significant 90% of cases involved possession/use of a deadly weapon while 5 persons were completely unarmed. In a study investigating racial bias in the decision to shoot, Sadler, Correll, Park and Judd (2012) subjected a national sample of police officers to a video game simulation that contained photographs of young adult males who were Black, White, Latino and Asian; some carried guns while others held items such as cell phones and soda cans. Officers decision to “shoot” or “don’t shoot” were based on whether the

assailant in the photograph (the target) carried a gun. Results indicated that officers were faster at correctly shooting armed Black targets and to indicate “don’t shoot” for unarmed targets of another race. Sadler, et.al, (2012) surmise that officer racial attitudes and stereotypes play a role in decisions to shoot. Akinola & Mendes (2011) utilized similar game simulation to evaluate the effects of stress-induced cortisol increase on threat-related decision making in regards to the shooting of unarmed Black and White targets. Findings revealed that officers were more likely to shoot an armed target when the target was Black, but when unarmed, no significant difference was recorded for Black vs. White targets. Heightened cortisol was associated with fewer errors, or more accurate performance with armed targets, and ability to discriminate armed vs. unarmed improved when the target was Black. (Akinola & Mendes, 2011; Galvan, 2012; Perry, 2007; Van der Kolk, 2014).

Violence-related trauma and racial threat, each as manifested among police officers, are important factors illuminated in the above studies as relates to police-Black community relations. Police encounter violence regularly thus are susceptible to PTSD, just as are military personnel (Sanjani & Johnson, 2014). Thus it would make sense that they, too, may experience hypervigilance, and aggressive reactivity leading to “fight or flight” behavior similarly in threatening and non-threatening situations (Bloom & Reichert, 1998; NSCDC, 2010; Perry, 2007; Van der Kolk, 2014). The heightened hyper-vigilant state of armed police officers may be dangerous when it influences unwarranted aggression against unarmed citizens. Trauma among police officers and the children and youth they serve is addressed in a paper published for the Harvard University/National Institute of Justice *Executive Session on Policing and Public Safety*. In this report,

Dudley (2015) briefly notes that police may suffer from their own untreated childhood trauma and/or they may have developed trauma in response to the violence they endure as part of their work. He focuses primarily on the effects of childhood trauma on child/youth behavior for the purpose of improving the ways police perform their duties while simultaneously respecting citizens and avoiding unnecessary usage of deadly force. Dudley (2015), describes the potential for law enforcement to escalate defiant youth behaviors through encounters with traumatized adolescents that involve hostile attitudes, forceful language and aggressive behaviors on the part of the police. With increased police awareness of the impacts of childhood trauma, they may better understand how their own behavior can ignite aggression in youth and instead respond in ways that provide more calm forms of law enforcement and de-escalate aggressiveness (Dudley, 2015).

Incarcerated Schooling

The term *Incarcerated Schooling* is used here in reference to schools within prison as well as the alternative school placement of long term suspended or expelled students in those educational facilities with prison-like environments. Kim (2011) describes an image of alternative schooling as associated with warehousing of students that the regular public school has rejected. Such schools are thought of as a ‘dumping ground’ (Kim, 2011; Lehr, Tan & Ysseldyke, 2009) for students with disruptive and defiant behaviors and who are seen as troublesome and threatening to the safety of all other children. These alternative schools place all the ‘bad kids’ in one location, similar to the concept of prison which houses all law breakers within one institution. According to the National Center for Educational Statistics (NCES), as reported by Kim (2011, p.

78—79), there were 10,900 such public alternative schools and programs that nationally served approximately 612,900 students labeled as ‘at-risk’ during the 2000-2001 school year. Such schools are primarily located in urban school districts with high concentrations of poverty. Given the zero tolerance policies that result in disproportionate out of regular school suspending of urban Black male students, they form the largest share of this alternative schooling population (Johnson & Taliaferro, 2011).

Lehr, Tan and Ysseldyke (2009) in their synthesis of policy and research regarding alternative schools, offer that alternative schools tend to serve places of lowered expectation, operating on a ‘blame the victim’ ideology that ignores systemic contributions to these children’s educational dilemma (Kim, 2011). Reasons for transfer to such schools include possession, distribution or use of alcohol or drugs, physical fighting, chronic truancy, weapons possession (other than a firearm which results in complete expulsion), teen pregnancy and serious mental health diagnoses (Johnson & Taliaferro, 2011; Kim, 2011). Students attending these schools have higher reported rates of substance abuse, mental health diagnoses, violence, risky sexual behavior, and suicidal attempts (Johnson & Taliaferro, 2011; Lehr, Tan & Ysseldyke, 2009), with only about 12 percent being special education students with Individual Education Programs (IEP’s) (Lehr, Tan & Ysseldyke, 2009). Many alternative schools use the term ‘academically unsuccessful’ to indicate that their students have received low test scores, failing grades, low grade point average, low proficiency and credit deficits (Lehr, Tan & Ysseldyke, 2009). Added to these are students with chronic truancy, dropping out, homelessness or abuse, and those disenfranchised students labeled as ‘bad’, ‘problems’, ‘failure’, or otherwise ‘damaged’ (Johnson & Taliaferro, 2011). And several states have policies that

legislate alternative school settings for the segregation of “...potentially dangerous students and/or are for students who interfere with others’ learning” (Lehr, Tan & Ysseldyke, 2009, p. 26). Alternative schools typically provide short term placement, however over half of students stay in the alternative school setting for 6 months or longer (Johnson & Taliaferro, 2011). Although sometimes optional, most states *require* alternative school placement for long term suspended and expelled students. Some states require placement in alternative schools for suspension or expulsion for a felony charge, a physical assault or weapons charge. And certain states use alternative schools as interim re-entry placement for students returning from incarceration or long term suspension or expulsion. (Lehr, Tan & Ysseldyke, 2009). As such, these schools are treated as places to warehouse delinquents while their parents are at work, and operate under the assumption that these disenfranchised and ‘failing’ students would not succeed in the regular school setting. They are deemed to require simpler curricula that fit their lowered academic abilities rather than transformative pedagogical strategies that would focus on preparing them at educational levels comparable to those in regular public school.

Another alternative school image described by Kim (2011) is that of the juvenile detention center, established as an interface between school and prison for expelled students and adjudicated youth who would otherwise be sent to prison. Extreme enforcement of zero tolerance discipline and high-stakes testing are practiced in such facilities where the environment is harsh and prison-like. Security measures that include metal detectors, surveillance cameras, high chain link and sometimes barbed wire fencing, strong police presence, surprise ‘lockdown’ searches, and psychological regimentation are common to these schools. Further than the regular alternative school,

these detention centers warehouse students to keep them off the streets and prevent further crime and delinquency. While no study has specifically followed these students trajectory, research indicates that one-third of students who drop out of school end up in the criminal justice system (Kim, 2011, p. 80), lending further to the discussion of the school-to-prison pipeline. Although there have been attempts to improve alternative schools, most remain as places of educational inequity that serves to devastate the chances for their students' success beyond school. Students from these schools, for example, will not list alternative schools on job applications for they send signals of 'trouble maker' to potential employers. The research outlined by Lehr, Tan & Ysseldyke, (2009) and Johnson and Talieaferro (2011) indicate that while not all alternative schools fit this description, the 'dumping ground' for problematic students is the more common situation and apparent trend for the nations alternative schools.

The Trauma-Informed Courtroom

The National Council of Juvenile and Family Court Judges (NCJFCJ), in conjunction with the National Child Traumatic Stress Network (NCTSN) and the Office of Juvenile Justice and Delinquency Prevention (OJJDP) published (Buffington, Dierkhising & Marsh, 2010) a document designed for juvenile court judges that describes trauma and its links with delinquency. The document reminds judges that most youth who exhibit a pattern of delinquency and who are detained in juvenile detention centers have also been exposed to community and family violence and other traumatic experiences, along with chronic life adversities such as those related to poverty. Likewise is an association of trauma and mental health problems and associated behavioral difficulties along with issues of substance abuse and delinquency (Buffington,

Dierkhising & Marsh, 2010). One of the main functions of the juvenile court is to hold delinquent youth accountable with at the same time providing for their rehabilitation. This requires judges to take into account family history and other factors affecting the lives of the juveniles who enter their courtroom. An understanding of the link between traumatic exposure and delinquency is instructive in determining appropriate sentencing and intervention. Ten factors related to trauma and delinquencies are described within this document for referral by judges (Buffington, Dierkhising & Marsh, 2010, p. 5-12). Although written for use by courts and court judges, this information can readily be adapted to the school environment for application to the development of trauma-informed school discipline policy and practice.

In 2015, NCJFCJ and OJJDP produced another document outlining steps for trauma consultation within juvenile court (Marsh, Dierkhising, Decker & Rosiak, 2015). The framework was developed from a public health perspective involving the principles that the court and all of its stakeholders understand the importance of a healing focus, and the provision of an environment that promotes safety, agency and connectedness. The court-related system includes routine trauma screenings, incorporates culturally relevant evidence-based practices (EBP), provides resources and services to children and their families, addresses risk and protective factors, emphasizes the system-of-care approach, and provides staff with resiliency based treatment for secondary traumatic stress that occurs through servicing of traumatized clients (Marsh, Dierkhising, Decker & Rosiak, 2015). This trauma-informed system-of-care approach has ready application to schools where children are exposed to violence and trauma.

Addressing the School-to-Prison Pipeline

It is instructive here to reiterate the purpose of this study, namely, to determine a course of action regarding in-school intervention to improve school experience and outcomes for Black male students who are involved in or exposed to gang and/or gun violence and become “members” of the school-to-prison pipeline. The goals of the research are: a) To verify discipline Disproportionality and disproportionate violence exposure among Black males as compared with White males within CMS middle and high schools, b) To employ a multilevel and spatial statistical approach that explores significant spatial correlations between neighborhood violence exposure, discipline Disproportionality, academic difficulty and disproportionate arrests for middle and high school Black males as compared with White males; and c) To recommend behavioral, academic and administrative intervention strategies for schools that increase the likelihood of improvement in school outcomes for children exposed to violence. Chapter 5 will cover recommendations more fully, however, this section of the literature review is devoted to brief examination of some of the research surrounding schools as places with potential for trauma-informed intervention that ultimately serve to intervene in the school-to-prison pipeline.

Alternatives to Suspension

There are a number of positive behavior interventions that can be incorporated into daily school routines and drawn upon to handle minor behavior infractions. Student threat assessment is a problem solving approach to violence prevention and intervention in student misbehavior (Cornell & Lovegrove, 2013). Teacher professional development programs can be implemented that help teachers learn methods of positive behavior

intervention to reduce the disproportionality of suspensions and other exclusionary disciplinary practices (Gregory, Allen, Mikami, Hafen & Pianta, 2013; Vincent, Sprague, & Gau, 2013). Cultural responsiveness within school curricula and pedagogy are one form of positive intervention (Vincent, Sprague, & Gau, 2013). Restorative Justice Practices involve holding students accountable for their misbehavior by carrying out reparations towards those who have been harmed (Schiff, 2013). Restorative justice is a proven strategy used to successfully reduce school suspensions, expulsions and disciplinary referrals among school districts throughout the US (Schiff, 2013). Additional policies can be utilized to alter zero tolerance strategies, fund resources for safe and positive school climates, train school personnel, and create partnerships among schools, positive behavior support service providers, parents, community and faith based organizations.

Dunlevy (2014) reviews restorative justice as one method of in-school positive behavior support towards decreasing reliance on punitive student discipline. The author defines school-based violence as "...the intentional harm caused by any member (or members) of that group through systematic, physical, verbal, or attitudinal aggression (p. 57). "When a student uses violence to solve problems, the ethical system outlined in the school Discipline Code is in direct conflict with the ethical system of the student and often times, their family. If these competing systems are not negotiated, the most frequent disciplinary response utilized by schools is suspension" (p. 59). Dunlevy (2014) explains that restorative justice is not a stand-alone solution to school discipline, but a solid compliment to a positive-based set of disciplinary policies and practices. It can assist in improving school climate and learning, and foster empathy and responsibility within

students. Restorative justice practices may include circles which equalize power dynamics within group conferences; space within classrooms belongs to the group, rather than the person at the front of the class. Circles ensure that every participant is seen and heard. Restorative justice practices face some challenges. There exists vague wording both within school discipline codes and restorative justice practice documentation. Clear and thorough descriptions and definitions are needed to insure a common understanding especially in urban schools with great diversity among students. Sustainable restorative justice is dependent on a lasting cultural change within the school environment. Teacher and student turnover makes sustainability a challenge. And, of course, restorative justice applies when the student has committed acts that violate another person and not in the case of subjective discipline. Restorative justice aims to sensitize the ‘offending’ student to the harm that has been done, and to apply some form of justice towards the person(s) harmed. It does not directly address nor treat trauma that may be influencing behavior.

Therapeutic Interventions

Evidence Based Programming (EBP’s), as mentioned in previous sections of this chapter, are available to schools, alternative school settings, courts, community centers, juvenile detention, and any place that works with youth impacted by childhood trauma. The Centers for Disease Control have indicated that “...the most highly effective treatments for traumatic stress are cognitive behavioral treatment models. Typically, trauma-focused, evidence-based treatments include the following components: psycho-education, caregiver involvement and support, emotion regulation skills, anxiety management, cognitive processing, construction of a trauma narrative, and personal empowerment training” (Buffington, Dierkhising & Marsh, 2010, p. 9). Cognitive

Behavioral Intervention for Trauma in Schools (CBITS) has had documented success for group format therapy in school settings. Likewise, the Sanctuary Model, promoting change through nonviolent community building processes that focus on individual healing from trauma have been adapted to school settings with diverse populations (Bloom, 2013; Buffington, Dierkhising & Marsh, 2010).

Sanjnani and Johnson (2014), editors of *Trauma-informed Drama Therapy: Transforming Clinics, Classrooms and Communities*, devote this collection of chapters to the promotion of educational or ‘psycho-educational’ interventions that focus on such techniques as cognitive behavior change and memory desensitization. Cognitive behavior change emphasizes awareness of the impacts of trauma on thinking and behaving, on changing the ways a person thinks about themselves and their experiences, and making the personal choice to adopt new and healthier modes of behavior. Memory desensitization assists with the release of traumatizing experiences held in the memory due to trauma. The release removes the traumatic event from memory, thus freeing the person from threatening and fearful feelings that negatively impact behavior. Through drama therapy, the ways of thinking and behaving are addressed in relation to traumatic response to violence exposure by re-enactment of the event. During this process, problematic thoughts and behaviors are challenged as to the nature of trauma and the specifics of the traumatic event, while the effects on the person’s behavior are explained. During the process of talking through the memories, the person is taught new, healthier ways to respond to perceived threat, to address and release memories of the traumatic event, and to think in new ways that lead to positive and healthy decisions.

An example of a school-based therapeutic intervention for trauma is the Animating Learning by Integrating and Validating Experience (ALIVE) program, staffed by licensed clinicians and drama therapists, and implemented in ten New Haven Connecticut schools with plans to expand to schools in Bridgeport and other Connecticut cities (Sanjnani, Jewers-Dailley, Brilliante, Puglisi, & Johnson, 2014; www.Trauminformedschools.org). ALIVE serves students in Kindergarten through 12th grade with age appropriate trauma-informed and prevention focused support that includes screening for stressful experiences, stress reduction, child safety education, parent engagement, special summer programming in humanities and drama, professional development and stress-reduction support for teachers and other school staff, and a unique component called the “Miss Kendra Program”. Miss Kendra is a fictional person who has gone through her own set of hard life experiences and to whom children write letters about their own traumatic encounters. Staff respond by writing back to the students as if the response were from Miss Kendra. Such letter writing provides therapy for children in that they express their experiences and fears, and they feel validated through Miss Kendra’s acknowledgment and supportive affirmations. Classroom discussions then focus on taking proper care of oneself and one’s family, and on ways to stay safe among potentially dangerous situations. The program utilizes trauma-centered psychotherapy through early detection and screening to address the impacts of severe trauma, especially for children subjected to trauma by neglect and abuse but also through the witnessing of violence. Programs are integrated into the daily school activities.

“**ALIVE**’s vision is to create schools that support open conversations about the truth in our students’ lives, and thereby

liberate their energies and spirits for the important work of learning. By attending to students' stresses **before** they break down with symptoms and negative behaviors, **ALIVE** helps entire classrooms and school to maintain calm...**ALIVE** helps students see that their difficult experiences can be a source of knowledge, inspiration, and even career choice, rather than only suffering" (www.traumainformedschools.org).

Other work has been done regarding therapeutic interventions in schools and after school programs. Zyromski (2007) examined the role of school counselors in working within a multidisciplinary collaborative model to assist students with addressing and overcoming PTSD. The interdisciplinary collaborative model includes school counselors, social workers, psychologist, supportive administrators, and connections to community law enforcement, and youth resources for recreation and other extracurricular activities. Zyromski's (2007) study evaluated PTSD among urban African American and Latino youth living in areas of high poverty. Study findings indicate that PTSD indeed affects children exposed to violence and is more serious with increasing amounts of exposure and with co-or poly-victimization. PTSD affects children's brain development, emotional stability, and behavioral responses that include a range of internalizing and externalizing behaviors and involvement in violence (Adams, 2010; Perry, 2007; Van der Kolk, 2014; Zyromski, 2007). Additionally, the response of adults can impact a child's ability to cope and recover from trauma. African American and Latino youth more often live in impoverished urban settings as compared with White youth (Zyromski, 2007), thus have greater risk for witnessing, being victim of or experiencing violence and related trauma. Similarly, urban schools in high poverty areas experience more violence, thus students may be impacted daily by trauma while attending school (Zyromski, 2007). Zyromski's (2007) study recommends an interdisciplinary collaborative model for trauma-

intervention that includes school counselors, social workers, psychologist, supportive administrators, and connections to community law enforcement, and youth resources for recreation and other extracurricular activities. Such a model showed promise as intervention for children traumatized by violence.

Graham, Taylor and Hudley (2014) evaluated the outcomes of a small sample of African American boys who underwent an intervention aimed at instilling personal responsibility for behavior and academic outcomes. The participants were third- to fifth-grade African American boys labeled as aggressive who were attending a K-5 urban, economically depressed elementary school that offered an afterschool recreation program. The ethnic composition of the group was approximately 50% African American and 50% Latino. 93% of students were eligible for free/reduced lunch giving the school a Title 1 designation with low SES population. The basic assumption of the research was framed in attribution theory and assumed that within an achievement context "...an individual is faced with the option (decision) to ascribe responsibility for outcomes to the self (e.g., to lack of effort following failure) or to factors for which the individual cannot be held responsible (e.g., low aptitude, poor teaching") (Graham, Taylor & Hudley, 2014, p. 197). The intervention was demonstrated to be successful in improving beliefs about socially responsible behavior but not necessarily about academic achievement. Boys in the intervention group, however, did show an increase in social skills and academic motivation skills and were rated by their teachers as more cooperative and academically persistent. Although the program did not specifically address or treat trauma, the boys in the intervention group appeared less aggressive and more likely to accept responsibility for behavior and academic outcomes.

Cultural Connectedness

Cultural differences exist among our nation's students, and interventions for trauma do not always explicitly describe components that are specific to a child's culture. Literature discussed here provides a connection to culture that particularly pertains to African American children. A study by Tyler, Brown-Wright, Stevens-Watkins, Thomas, Stevens, Roan-Belle, Gadson, and Smith (2010), utilized multiple regression to analyze home-school dissonance, or the difference between the home environment and home treatment, and the climate and treatment students receive at school, as a predictor of poor school outcomes for African American high school students. Value systems are at odds between home and school when teachers de-value the student's cultural characteristics and attempt to correct or change the student to be more like the dominant culture or the culture the teacher is familiar with. Regression analyses revealed that indeed home-school dissonance was linked to poor school-based student outcomes for these students. Home-school dissonance was a significant predictor of multiple academic and psychological variables of students. These variables included disruptive classroom behavior, performance avoidance goal orientation, performance approach, academic cheating, and poor self-reports in math and English.

African-centered approaches that instill individual and community pride have been demonstrated to enhance self-esteem and form a community sense of belonging. The theory of Afrocentricity (Asante, 1998) explains how Eurocentric school curricula and pedagogy contribute to the alienation of Black children. A Eurocentric curriculum, for example, omits African contributions to history, thus denying African American children the opportunity to see themselves in the founding and making of history; their

foundational existence is denied. And a Eurocentric pedagogy ignores the African principles of interpersonal, community and spiritual relations essential within the Afrocentric world view. This leaves the child feeling socially estranged within the school setting and impacts learning, self-esteem and sense of belonging. “Afrocentricity liberates the African by establishing agency as the key concept for freedom” states Asante (1998, p. 21). African agency, often denied by Europeans, is central to Afrocentrism. Such agency is obtained through the lens of Afrocentricity. Alienation from schooling may thus occur in children of African descent when such schools do not offer an Afrocentric approach. Culturally relevant curriculum and pedagogy are essential to addressing alienation of African American students in schools. In her ‘Model for Culturally Appropriate Pedagogy’ for example, Hale (2001, p. 111-151) outlined a series of strategies for cultural relevance that, according to the theory of Afrocentricity, will decrease alienation and increase school performance and self-affirmation. Pedagogy should be designed with the understanding of the “rambunctious and outgoing nature of African American males” (Hale, 2001, p. 118). It must, for instance, incorporate movement, active learning activities, people orientation, with small class sizes that emphasize oral communication along with literacy, manipulatives in mathematics, scientific inventiveness and creativity, and emersion in the creative arts within the academic curriculum, e.g., eurhythmy, or dance-exercise movement to facilitate learning in math and language arts (Hale, 2001). While not specific to trauma, Afrocentric approaches offer long term solution to school gang/gun violence through the instilling of cultural pride, affirmation and self-worth, curriculum/pedagogical relevancy, and sense of belonging, all of which contribute to the power of learning through African agency.

Treatment of male aggression is more effective when culture and gender relevance are infused into the methods. Stevenson (2003) tested an intervention for building resiliency among young Black men exposed to chronic street, community and family violence, and involved in delinquency. PLAAY, which stands for ‘Preventing Long-term Anger and Aggression in Youth’, is a culturally relevant intervention developed from an in-depth analysis of violence issues in African American males, and tested with a group of such males in juvenile detention. The program incorporates “play” in the form of martial arts and basketball as therapy to work on anger management, and to teach self-control and alternative ways to resolve conflict. The idea for the project is based on the use of play to get children to open up and speak within therapy sessions, coupled with the therapeutic nature of sports for boys and young men. Housed within the athletics approach are several behavior modification modules, including Cultural Socialization or Cultural Pride Reinforcement (CPR), Talent nurturance through Martial Arts Anger Reduction (MAAR), Basketball to reinforce anger management or Teaching Emotional Empowerment through Athletic Movement (TEAM), Peer/Village Creation or Community Outreach through Parent Empowerment (COPE), and Rites of Passage Empowerment (ROPE) to end the program and establish formal aftercare. The program is evidence that culturally and gender relevant therapeutic approaches can indeed instill resiliency among violence-exposed young men.

From the perspective of “code of the street” culture of survival, Anderson (1999) offers some useful general recommendations to address alienation and despair often felt by youth living among violence. He suggests intensive intervention for children at a very early age with programs like Head Start, then continued intervention in these children’s

lives throughout their adolescent years. Economic development must come to poverty stricken communities through patient pre-job and on-the-job training, financial investment, and employment opportunities. Youth must be encouraged to regain a sense of hope.

Summary

This chapter has reviewed the literature of relevance for understanding the various factors relating to trauma from violence exposure and influencing student outcomes. Topics included zero tolerance in relation to school discipline disparities for Black males, and trauma from violence exposure, with impacts on children's brain development and ultimately their behavior and learning. The chapter also covered those dynamics within children's lives that serve to increase risk or resilience relating to trauma from violence exposure. School dynamics were discussed in relation to school violence, student disengagement from schooling, and school connectedness. The family dynamics section covered issues of poverty, single parenting, absent fathers, domestic violence, and father incarceration, and concluding with family-related protective factors. Given the neighborhood focus on violence exposure within this research, Community dynamics provided a neighborhood focus of relevance for the study of neighborhood-level violence. Topics covered were neighborhood concentrated poverty, drug dealing, gangs and guns, and the "Code of the Street" and tough front, with a concluding section discussing community level protective factors. Justice System dynamics and the relation to the prison side of the school-to-prison pipeline rounded out the dynamic factors affecting child outcomes in school as relates to trauma from violence exposure. Disproportionate Minority Contact was discussed and related to disproportionate out of school

suspensions. The distrust for law enforcement discussion included research relating to racial threat and to trauma among law enforcement along with trauma informed law enforcement practices for improved relations with Black male youth. Incarcerated schooling was examined in relation to zero tolerance practices and conditions similar to prison environments, disproportionately housing Black male youth. Trauma-informed courtroom practices were described as providing a system-of-care approach potentially adaptable by schools. The chapter concludes with an overview of literature relating to trauma-informed and culturally relevant interventions that may serve to reduce the school-to-prison pipeline and improve student outcomes particularly for Black males.

CHAPTER 3: METHODOLOGY

Research Design

Chapter 3 describes the methodology, data analyses and related methods for conducting this study. An overview of the research design is presented, followed by the study hypotheses and research questions. The spatial approach of the method is explained, and includes a description of school district under study and a discussion of neighborhoods as relates to data for the research. The framework for the multi-phase research method and related data collection procedures are detailed for the reader. Assumptions and limitations of the study are discussed at length and the chapter concludes with a synopsis of the data analysis procedure.

This study utilizes a quantitative research design involving relative risk ratios to examine disproportionality, followed by spatial statistical and multi-level modeling of secondary data (e.g., student discipline and achievement; neighborhood quality of life variables; crime statistics, etc.) to determine spatial and statistical relationships among variables concerning the impact of violence exposure on the schooling experience for the group under study, namely Black male middle and high school students attending Charlotte-Mecklenburg Schools (CMS). These approaches are vital for examining critical factors that will inform this study.

Dependent variables for the study include student behavior occurrences as measured by short term out of school suspensions (OSS) [per CMS criteria and regulations], and academic data on percent passing end of grade/course tests [North

Carolina academic standards]. A series of Independent or Explanatory Variables describe the demographic and socio-economic character of neighborhoods and individual students, institutional resources, and indices of violence taking place domestically, within neighborhoods and at schools. Relative risk ratios address research questions/hypotheses 1 (OSS) and 3 (test performance). A Geographic Information System (GIS) and Multilevel Modeling (MLM) provide the methods for spatial and multilevel statistical analysis and mapping to analyze questions/hypotheses 2 (OSS) and 4 (test performance).

The methods are sequenced such that OSS is examined first for disproportionality (relative risk ratios) and in relation to violence exposure (multi-level modeling), with the sequence repeated for disproportionality and in relation to violence exposure among test performance. The presentation of the methods in this chapter and the results in Chapter 4 begin with the GIS modeling of violence exposure, followed by relative risk ratios and multilevel modeling. The rationale for this ordering is that the GIS work is done only once and utilized to form level-2 in both sets of multilevel models, while the relative risk ratios and multilevel models are repeated as the above-noted sequence to address research question/hypothesis 1 and 2, and then research question/hypothesis 3 and 4. The next section outlines the hypotheses and research questions pertinent to the examination of violence exposure and schooling via this research design.

Hypotheses and Research Questions

As discussed in Chapter 1, the purpose of this study is to determine a course of action regarding in-school intervention to improve the schooling experience and outcomes for Black male students who may become “members” of the school-to-prison pipeline via the marginalizing impact of student discipline policies, and subsequent

juvenile justice system involvement. The multilevel modeling approach will explore statistical significance of spatial relationships of individual (level 1) OSS and academic achievement of students living within violence-prone areas, and neighborhood (level 2) violence. Where significant, the null hypothesis of no relationship can be rejected. An insignificant result indicates that the null hypothesis can be accepted in that any relationship between variables is likely to be by chance.

The hypotheses for this research are based upon comparisons between Black, White, and other Non-white males in respect to OSS, EOG/EOC test scores, each moderated by violence exposure. The research questions are designed to investigate the hypotheses using the spatial and multilevel modeling approach. The research questions and related hypotheses are thus:

- Question 1: What are the similarities and differences between Black and White and other Non-white male middle and high school students in regards to short term out of school suspensions (OSS) for subjective and non-subjective referrals within Charlotte-Mecklenburg Schools (CMS)?
- Hypothesis 1: Black male middle and high school students receive a greater share of short term out of school suspensions for subjective and non-subjective referrals within Charlotte-Mecklenburg Schools (CMS) as compared with White and other Non-white males.
- Question 2: To what extent does neighborhood level exposure to violence moderate the relationship between Black male middle and high school students and short term out of school suspensions (OSS)?

- Hypothesis 2: High levels of neighborhood violence moderate the effect of race on OSS such that increased violence leads to a stronger positive relationship between race (Black) and OSS.
- Question 3: What are the similarities and differences between Black and White male middle and high school students in regards to end of grade/end of course (EOG/EOC) test scores within Charlotte-Mecklenburg Schools (CMS)?
- Hypothesis 3: Black male middle and high school students receive a greater share of level 1 and 2 EOG/EOC test scores as compared with White and other Non-white students.
- Question 4: To what extent does neighborhood level exposure to violence moderate the relationship between Black male middle and high school students and EOG/EOC test scores?
- Hypothesis 4: High levels of neighborhood violence moderate the effect of race on EOG/EOC test scores such that increased violence leads to a stronger negative relationship between race (Black) and EOG/EOC test scores.

The term “moderate” is important to the understanding of the relationship between race, violence exposure, and student outcome as stated within these hypotheses. “...Moderator variables affect the strength and/or direction of the relation between a predictor and an outcome: enhancing, reducing, or changing the influence of the predictor” (Fairchild & MacKinnon, 2009, p. 4). In other words, violence exposure becomes the influence on outcome, rather than student race. It is the violence exposure that influences the relationship between student race and outcome. Additionally, violence exposure is expected to have a stronger moderation effect when said exposure is

chronic, or prolonged, as will be measured via neighborhood tenure, or the number of years a student has lived within a high-violent crime rate neighborhood.

Study Location

The study takes place within the neighborhoods and middle and high schools served by the Charlotte-Mecklenburg School System (CMS) in Charlotte, North Carolina. Charlotte is a major financial center and fast growing urban area within the southern US. During the decade of 2000-2010 Charlotte was one of the fastest-growing urban areas and the fourth fastest growing MSA within the United States (Delmelle & Thill, 2014). As of the 2010 census, Charlotte had a total population of 731,424. Demographically, 49% were White, 35% Black or African American, 13% Hispanic or Latino, 6% Some Other Race, 4% Asian, 2% two or More Races, and less than 1% of Native American Indian or Native Hawaiian Pacific Islander (U.S. Census, 2010). This compares with the 2000 census wherein 571,382 persons lived in Charlotte with a demographic breakdown of 59% White, 32% Black or African American, 7% Hispanic or Latino, 3% Asian, 3% Some Other Race, 1.5% two or More Races, and less than 1% of Native American Indian or Native Hawaiian Pacific Islander (U.S. Census, 2000). While Whites continue to dominate, the city of Charlotte grows increasingly diverse.

Charlotte Mecklenburg Schools (CMS) forms the public school district or LEA for the City of Charlotte and of Mecklenburg County. Historically, Black and White students attended separate schools. In 1954, the *Brown vs. Board of Education* Supreme Court case ordered desegregation of public schooling. Charlotte began its desegregation process in September of 1957 when four Black students were selected to attend four all-White schools. A 15 year old student named Dorothy Counts (now Dorothy Counts

Scoggins) became the first Black student to attend Harding High School, located in West Charlotte (Gaillard, 1988). As she entered the school she was met with unthinkable cruelty inflicted by White students, parents, and other community members. At the end of the fourth day, she could no longer take the brutal treatment and quit Harding High School to return to a Black school (Gaillard, 1988). Four years later, Darius Swann, a native of Charlotte, a missionary and scholar, and a friend and colleague of Dorothy Counts' father, filed a lawsuit against Charlotte-Mecklenburg Schools. By 1971, *Swann vs. Charlotte-Mecklenburg* ordered the City of Charlotte to implement busing as an instrument for integrating its public schools. Charlotte, thereby, became a national model for desegregation (Gaillard, 1988; Mickelson, 2001) with mandatory busing to attain school racial balance continuing in Charlotte-Mecklenburg from 1974 to 1992.

Attendance zones were drawn such that nearly all students experienced busing to schools outside their neighborhoods for at least some portion of their education. Distances traveled were not equitable, however, with Blacks, typically assigned to ride longer distances than Whites (Mickelson, 2001). And while improvements were noted in reducing the Black-White achievement gap, tracking of Black students into lower performance special education classes served to re-segregate students within integrated schools, and to exacerbate lower achievement for these students (Mickelson, 2001). By the early 1990's, under pressure from White middle class citizens, busing was replaced by "magnet" schools which offered specialized programs that attracted some White and Black students to apply for attendance outside their home neighborhood. Magnet schools were required to maintain racial balance through a race-based school assignment lottery, and bus transportation was provided to magnet schools from around the city. In 1999 a

group of White families filed a lawsuit to end race-based assignment when their children were denied a place in their magnet school of choice. These families were awarded damages, and by 2001 the original desegregation plan and race-based magnet assignment were dismantled in favor of neighborhood schools (Mickelson, 2001). Given the residentially segregated nature of Charlotte, the dismantling of desegregation resulted in a re-segregated public school system. The attendance plan was modified to offer students “school choice” within a selected set of schools forming an “attendance zone”, with bus transportation included. Every student was guaranteed placement in the home school but could elect to attend any other school within the attendance zone, provided space was available. Many schools have since remained segregated either in total population or via special education tracking, thus achievement for Black students has continued to lag behind their White counterparts. As with segregated, high poverty urban schools elsewhere, Charlotte’s segregated low income community schools have issues with teacher quality and resource equity (Kozol, 2005; Mickelson, 2001). Charlotte’s history of resistance to racial balance and education equality sets the stage for examination of conditions of discipline disparity within CMS.

Recent CMS history, within the years of this study, have seen nearly bi-annual adjustments to schools and school boundaries. The 2008 middle and high schools are reflective of the early 2000’s, and are illustrated in Figure 7, using assigned simple pseudo names in order to protect the confidentiality of the students attending these schools. In 2010 some schools had been closed or reorganized (e.g., K-8 or 6-12) with some boundaries redrawn. These schools and attendance zones are shown in Figure 8 with the neighborhoods as defined in 2008 and 2010. The 2012-2013 school year again

saw school changes in the form of closures and reorganization, with some boundary shifts. The 2012 and 2014 quality of life neighborhoods, extracted as per the 2008 outer extent, are represented in Figure 9 with the relevant schools and attendance zones for middle and high school.

Currently, CMS is the largest school district in North Carolina, having served 142,991 students in the 2013-2014 school year (NCDPI, 2015). Of these, 32,559 students were in middle school, with 40,135 attending high school (NCDPI, 2015). District-wide, the demographic breakdown of students in 2013-2014 was 41.3% African American, 30.8% White, 19.4% Hispanic, 5.5% Asian and 3.0% “Other”. A residentially segregated city, demographics differ greatly from area to area. Figure 10 portrays the segregated nature of Charlotte-Mecklenburg’s current 475 “neighborhood profile areas” where African American students are the majority within the schools along a crescent formed around the city center, while Whites dominate in the North and South-Southeast segments of the county. Other demographic variables that indicate socio-economic stress for children, e.g., neighborhood level poverty, persons receiving Food and Nutritional Services (FNS) or food stamps, Medicaid recipients, adolescent birth rates, persons without a high school diploma and un- or underemployment, are high within this same crescent as are the violent crime rate. Figure 11 to 13 demonstrate the repeated center city dominance for these high-stress variables. Impact of high stress variables on student outcomes is suggested in Figure 13 whereby the low percentages of students passing at the elementary, middle and high school levels parallel spatial patterns of neighborhood stress. Of particular relevance to this study is the comparison of violent crime rates in Figure 12 with school performance in Figure 10 as the spatial patterns indicate a negative

correlation between violent crime and achievement on standardized tests. These maps, however, generalize student data to the neighborhood level thus ruling out the testing for statistical significance of the negative correlation for individual children. The multi-level modeling of neighborhood violence with individual student achievement will enable the determination statistical significance of the effect of neighborhood level violence on individual school test performance. The model is explained in greater detail under *Research Method*.

Geographic Unit of Study

The geographic unit of study for this research is neighborhood boundaries within the city of Charlotte. Figures 7 to 9 depict neighborhood boundary configuration utilized in the study by year, while Figure 10 illustrates the entire, county-wide set of neighborhood profile areas currently used for collecting neighborhood-level data. Neighborhoods are important to the purpose of the study as research has demonstrated the link between economically stable neighborhoods and positive youth outcomes (Delmelle & Thill, 2014) and between neighborhood instability (e.g., poverty, crime, and residential turnover), family dysfunction and poor youth outcomes (Bogges & Hipp, 2010; Katz & Schnebly, 2011; Roy, McCoy & Raver, 2014). Given the positive association of poverty and high crime rates (Katz & Schnebly, 2011; Roy, McCoy & Raver, 2014), children from lower socioeconomic conditions are at greater risk for exposure to neighborhood level violence. And violence exposure has the potential to negatively affect child well-being with such traumatic responses as PTSD, anxiety, depression, aggression, numbing, poor concentration and focus, cognitive developmental delays, feelings of hopelessness and poor physical health (Aisenberg & Mennen, 2000;

Flannery, Wester & Singer, 2004; Gorman-Smith & Tolan, 1998; Lynch, 2003; Margolin & Gordis, 2000; Rasmussen, Aber, & Bhana, 2004; Thompson & Massat, 2005).

Neighborhoods thus form a useful geographic unit of analysis for this study.

Neighborhood boundaries as defined by the City of Charlotte have been mapped bi-annually by the Office of Metropolitan Studies, Urban Institute at UNC-Charlotte in conjunction with the City. Each neighborhood is identified by name and neighborhood statistical area (NSA) or neighborhood profile (NPA) number. A rich set of longitudinal variables have been collected and defined, measured or calculated per locally determined NSA from 2008 through 2010 for the City of Charlotte, and per census block group (NPA) in 2012 and 2014 for the entire county, and grouped within dimensions of social, economic, physical and crime characteristics. Although generalized to the neighborhood level, these variables enable the assignment of comparative neighborhood quality of life designations that include “challenged”, “transitioning”, and “stable”. Given the size variation among neighborhoods, there are some inherent inconsistencies in measuring spatial variation within neighborhood boundaries. Likewise, the number and configuration of neighborhoods has changed over time as has the method of collecting data and calculating variables. These data shortcomings are discussed further under *Limitations of the Study*. Individual student outcomes will be assigned to neighborhoods per given year as a means of maintaining individual student residential confidentiality.

Research Method

The multi-step research method employed in this study is explained in detail in this section with reference to the research questions and related hypotheses. Data collection and variable selection are elucidated with relevant literature rationale. Main

steps are then described and their order and interrelationships highlighted to bring context for addressing the potential impact of violence exposure on student outcomes as defined within the research questions. The section concludes by illuminating assumptions and limitations relating to the research methods particular to this study.

Spatial and Statistical Analysis Overview

The spatial and multilevel statistical analysis for this research comprises a three-step process as outlined in Figure 14, namely trauma vulnerability index (TVI) determination and mapping, relative risk ratio calculation and graphing, and multilevel modeling. The TVI process assigns a value per neighborhood indicating the relative risk for a child residing within a given neighborhood to experience violence-related trauma. Time series TVI patterns provide evidence for potential longer term exposure among children residing in higher TVI neighborhoods. The longitudinal pattern is then related to the time series relative risk ratios to examine potential co-occurrence of violence exposure and adverse outcome for Black males among other student racial/ethnic groups studied. And the 2014 TVI serves as the level-2 independent moderator variable in the multi-level models. Multilevel modeling examines the statistical significance of neighborhood violence exposure (TVI) with individual student outcomes or dependent variables (DV, e.g., OSS, EOG/EOC test results), and assessing also significance with individual student independent or predictor variables (IV). Model results indicate which DV-IV relationships are statistically significant as well as the extent to which the level-1 and level-2 relationships explain student outcome. Unexplained variance can then be hypothesized for contributions from additional independent variables, suggesting directions for future research. And the significant relationships may serve to influence

school policy and practice relating to student discipline and achievement, particularly among the group under study, namely Black male middle and high school students.

Trauma Vulnerability Assessment

This study utilizes a Geographic Information System (GIS) to establish a trauma vulnerability index that assesses student susceptibility to trauma based on the key neighborhood level crime and socio-economic variables within student neighborhoods of residence. A measure of neighborhood level trauma vulnerability may have utility in the estimation of the potential for students to experience trauma-related symptoms stemming from exposure to violence. Such information may then target relevant students (those living among trauma vulnerability and exhibiting challenges with behavior and/or learning) for trauma assessment and trauma-sensitive intervention. Neighborhood level trauma vulnerability also serves as the level-2 variable in the multilevel modeling of student outcome as relates to neighborhood violence exposure.

The concept of vulnerability is derived from geographic study of the hazards of a place. It is assessed by combining data on social, economic, and political characteristics specific to a geographic region are in relation to their relative contribution to the determination of a population's vulnerability to a hazard of interest (Oulahen, et.al, 2015). Vulnerability, then, is estimated based upon evaluating socio-economic, political and environmental variables in relation to the "capacity [of a person or group] to anticipate, cope with, resist and recover from a natural hazard" (Oulahen, 2015, p. 475). The trauma vulnerability index (TVI) to be derived for this study is informed by model development principals from three spatial-based vulnerability studies: a) the MOVE model (Vinchon, Carreño, Contreras-Mojica, Kienberger, Schneiderbauer, Alexander,

Barbat, Cardona, Decker, Eidsvig, Papathoma-Köhle, Miniati, Pratzler-Wanczura, Ulbrich, Vangelsten, & Welle, 2011), developed in Europe to evaluate residential susceptibility to impacts from natural hazards; b) an epidemiological study on socio-economic vulnerability to dengue fever in the city of Cali, Columbia, South America (Hagenlocher, Delmelle, Casas, & Kienberger, 2013); and c) an index of social vulnerability to flooding in metropolitan Vancouver, British Columbia, Canada (Oulahen, Mortsch, Tang & Hartford, 2015).

MOVE, which stands for *Methods for the Improvement of Vulnerability Assessment in Europe*, assesses "...vulnerability of a territory to a hazard as results from the interactions between environmental conditions and society: it is a combined effect of hazard exposure, sensitivity of the different components of the territory and society, and capacity or lack of resilience...disaster vulnerability correlates with physical susceptibility (including the built environment), environmental fragility, social-cultural issues and socio-economic contexts. In addition, vulnerability is heavily influenced by the lack of capacity to cope, recover, and adapt in the face of disaster risks" (Vinchon, et.al, 2011, p. 7). The MOVE model indicators of vulnerability fit within three conceptual framework categories: *exposure* to the hazard, *susceptibility* or fragility as measured by socio-economic variables, and lack of resilience, or the ability or lack thereof to anticipate, cope and recover from the hazardous event. While intended to model vulnerability to natural hazards, the framework is relevant to the examination of violence exposure, susceptibility and resiliency to trauma among neighborhood residents.

Hagenlocher, Delmelle, Casas, and Kienberger (2013), modified the MOVE model within an epidemiological study on socio-economic vulnerability to dengue fever

where vulnerability was defined as “...the predisposition of a system and its population of being adversely affected by the disease” (Hagenlocher, et.al, 2013, p. 4). Their model framework encompassed *susceptibility* as the socio-economic propensity to contract the fever and the *lack of resilience* as lacking capacity to anticipate, cope or recover from the disease (Hagenlocher, et.al, 2013, p. 4). Their model did not include *exposure*, although the mapping revealed exposure to conditions conducive to dengue fever-carrying mosquitoes. The project team (Hagenlocher, et.al, 2013) mapped the spatial extent of the disease, and then identified populations to target for prevention and intervention efforts based upon their relative vulnerability to dengue fever. They compared an “expert-based” and purely statistical model of socio-economic vulnerability determination and concluded that while results were similar, the expert-based model produced slightly stronger results. Thus, in the absence of local expertise, statistical methods of model development can be used, but with caution (Hagenlocher, et.al, 2013).

Oulahen, Mortsch, Tang and Hartford (2015) found similar results in their study on social vulnerability to flooding as determined through the assignment and weighting of several demographic, economic and infrastructure variables by principal components analysis and with recommendations from local practitioner focus group surveys (Oulahen, Mortsch, Tang & Hartford, 2015). Such an index is created from quantitative data but with qualitative input from relevant personnel in policy and practice. Oulahen, et.al, (2015) thus developed a social-vulnerability-to-hazards index that was based on spatial inequalities in socioeconomic character throughout the metropolitan area of Vancouver, British Columbia. Vulnerability to flooding was the hazard under investigation with the assumption that lower socioeconomic groups would endure greater

risk. A GIS mapped the hazard-related variables as well as the final composite social vulnerability to flooding. Oulahen, et.al, (2015) determined that local input is important to the process of weighting variables by order of importance in regards to their influence on the ability of a vulnerability index to meaningfully measure or otherwise indicate relative risk.

The above models provide examples of spatial vulnerability assessment for evaluating neighborhood level potential for vulnerability to trauma. Given that environmental trauma from community violence exposure is a form of hazard, youth violence is a recognized public health issue (Prothrow-Stith, 2004), and trauma falls under mental/behavioral health (CDC, 2012a; CDC 2012b), environmental and epidemiological applications of GIS are relevant to the study of vulnerability to violence-triggered trauma. The trauma vulnerability assessment thus incorporates elements from the aforementioned studies but with relevance to violence exposure and vulnerability to or resilience from trauma as indicated in the literature. The conceptual framework for the TVI initially included the three components from MOVE as relates to trauma from violence exposure, namely that higher risk for trauma is influenced by indices within the categories of exposure, susceptibility, and lack of institutional resilience. Data is available from the Charlotte Neighborhood Quality of Life Study that informs vulnerability of exposure to neighborhood level violence as well as socio-economic vulnerability of a neighborhood and evidence of the types of institutional resiliency or support services (or lack thereof) that may assist students in resisting or overcoming trauma.

TVI modeling variables

Data were selected from among the quality of life study variables to assess trauma vulnerability based upon the literature on children's violence exposure and trauma as was reviewed in Chapter 2 and is again described briefly within this section. The Urban Institute within Metropolitan Studies at UNC-Charlotte produces the Charlotte Neighborhood Quality of Life (QOL) study every two years. Researchers collect raw data and process it for publication as rates, percentages and median values, generalized to the neighborhood level. Individual confidentiality is thus maintained, making the data available to the public without the need for IRB approval. Beginning in 1998 and extending to 2014 and beyond, the bi-annual survey has been providing a measure of neighborhood quality of life by listing and mapping numerous variables that represent neighborhood demographic, economic, social, and physical and crime characteristics. Data consist of dbase (.dbf) or excel files containing neighborhood variables, each identified by neighborhood identification number. A GIS data layer outlining neighborhood boundaries is provided for each year of study to account for changes in neighborhood configuration over time. Given that 2007-2008 is the earliest school year for which CMS will provide data, this study will utilize the Quality of Life data for 2008, 2010, 2012 and 2014.

Quality of Life variables were initially categorized for TVI modeling under the three model parameters of exposure, susceptibility/fragility, and resiliency (or lack thereof), as per the literature (Vinceon, et.al., 2011; Hagenlocher, et.al., 2013). Variables for exposure may include those indicating exposure to violence (e.g., violent crime rates, drug arrest rate). Susceptibility/fragility comprise neighborhood economic

variables such as poverty determination (percent of persons receiving food stamps, now known as food and nutritional services; median household income), environmental health hazard (e.g., Lead Exposure among pre-1960 housing), and social variables that influence future potential for economic success (e.g., high school dropout rate, adolescent birth rate; third and sixth grade percent passing). Neighborhood level institutional resources such as number of school age programs, registered neighborhood and youth serving organizations, and access to health facilities and recreational opportunities, were also explored, for such variables may delineate pockets of greater and lesser resiliency to trauma or ability to cope and recover from traumatic violence exposure. Note that the model for this study is limited to the availability of variables within the Quality of Life Study that are also consistent across time. The staff charged with data collection and handling for the Quality of Life study changed hands in 2012 and new procedures were established, thus creating a gap between 2010 and 2012 in terms of the types of variables available as well as the geographic unit of analysis. According to Vincheon, et.al, (2011), data availability, accuracy and consistency are issues that constrain vulnerability studies. The 2012 and 2014 Quality of Life studies contain far greater variety of variables within each category, however, only those that exist also in 2008 and 2010 were selected for TVI modeling. In addition, the neighborhoods for 2012 and 2014 consist of block groups and encompass the entire county, while earlier data are collected for city-specific neighborhoods within the Charlotte city limits. For area consistency, all data are analyzed and mapped within the 2008 outer boundary, but uses Neighborhood Statistical Area (NSA) identifiers for 2008-2010, and Neighborhood Profile Area (NPA) identifiers for 2012 and 2014. All students were assigned a 2014 NPA, thus the 2014 neighborhoods

were “unioned” (a GIS operation that serves to combine attributes of two polygon layers) with 2008 and 2010 neighborhoods such that all earlier data also contain an NPA identifier. Additional limitations with these data are discussed in the *Limitations* section.

The selected quality of life variables were run through a series of statistical diagnostics as are standard in regression studies to determine their suitability for statistical modeling, and based upon criteria established by Hagenlocher, et.al. (2013), namely: there can be no more than 2 percent missing within a given variable with imputation of missing variables; data skewness must be less than 2 and kurtosis less than 3.5; and there must not be multicollinearity of the variable with other variables as determined by regression values of r of less than 0.9 and variance inflation factor (VIF) of less than or equal to 3.0. Table 2 records the results for those variables that passed these diagnostics. The final selected variables for modeling trauma vulnerability are: the violent crime rate (Violent), percent of persons receiving food and nutritional services (Food), the adolescent birth rate (Birth), and the percent of persons categorized as Black or African American (Black). Note that the Quality of Life Study offers public access data that does not require IRB approval. Each selected variable is described briefly with literature rationale:

Violent. The violent crime rate serves as the exposure variable as it provides a measure of violent crime incidence in relation to neighborhood population. It is calculated as the number of violent offenses within a fiscal year divided by the population for that year, then multiplied by 1000 to indicate the number of violent crimes occurring per 1000 persons per neighborhood. Violent offenses include aggravated assault, armed and strong arm robbery, homicide, negligent manslaughter, rape and attempted rape

(Quality of Life Explorer, 2017). The violent crime rate represents the violence exposure variable in relation to vulnerability for trauma (CWIG, 2015; Perry, 2007; Van der Kolk, 2014).

Food. The percent of persons receiving food and nutritional services is calculated at the population per neighborhood receiving Food and Nutritional Services (FNS) divided by the total neighborhood population and excludes neighborhoods with fewer than 5 FNS recipients (Quality of Life Explorer, 2017). This variable serves as an indicator of low income or poverty, for the determination of FNS benefits is determined by income and family size and is awarded to those families earning below 130 percent of the poverty line (Center on Budget and Policy Priorities, 2017, <http://www.cbpp.org/research/a-quick-guide-to-snap-eligibility-and-benefits>). As a poverty index, this variable contributes to the explanation of susceptibility, or lowered resiliency for children who may be traumatized by violence, for many of the stressors of poverty present challenges to health and wellness among children living under such conditions (FIFCSF, 2013; Ginwright, 2016; Iruka, Winn & Harradine, 2014).

Birth. The adolescent birth rate provides a measure of teen pregnancy and as such, is calculated at the number of births to females under age 19 divided by all births. The data are cumulative, representing births over a 24 month period and exclude areas with fewer than 5 births to adolescents (Quality of Life Explorer, 2017). The data contribute to the index for susceptibility for the increased health, social and economic risks associated with teen pregnancy and teen parenting. Children of teen parents, for example, face greater academic challenges, are more likely to live in poverty, to be involved in

delinquency and incarceration, and to become teen parents (Quality of Life Explorer, 2017).

Black. Calculated as the population within a neighborhood who self-identify as non-Hispanic Black (alone), divided by the total neighborhood population, percent of persons who are Black is included as a susceptibility variable in relation to stressors experienced through racial oppression. While Black families offer strong kinship networks that buffer violence exposure and increase resiliency (Anderson, 1999; Galster & Santiago, 2006; Uruka, Winn and Harradine, 2014), Black children often encounter racism and/or unfair treatment based on race when in school and outside their community. Racial and social injustices add to emotional stress (Agnew, 1985; Ginwright, 2016; Johnson & Taliaferro, 2011; Skiba, 2013; Vorasi & Garbarino, 2000) and can therefore contribute to trauma, particularly for children already experiencing exposure to multiple trauma-related risk factors (Adams, 2010; Howell, 2003; Sanders-Phillips, 2009; Perry, 2007). This variable, therefore, represents the emotional stressors of oppression faced by Black children that increase their susceptibility to trauma. Where high concentrations of Black children reside, it can be assumed that high proportions of race-based inequitable treatment has been experienced.

The Pre-Natal Care rate was initially selected for inclusion as an institutional resiliency variable that was statistically sound and that counters ill health effects related to poverty (FIFCSF, 2013), however, this variable was not collected and made available for 2008 and 2010. Thus, for longitudinal consistency, it was dropped from the TVI determination. Future TVI modeling should include pre-natal care. Additional variables for future modeling are discussed in Chapter 5. For the current study, however, violent

serves as the “exposure” variable in the TVI model while “susceptibility” is represented by the weighted accumulation of the Food, Birth and Black variables.

TVI Modeling Process

The TVI was accomplished by following a 9-step process: a) define model objectives and conceptual framework of model components; b) collect relevant data per framework component using the literature as rationale for variable selection; c) perform data transformation where needed and account for missing data; d) multivariate analysis for identifying the final set of indicators per framework component; e) normalization; f) weighting of variables; g) data aggregation; h) visualization (mapping); i) TVI to form level 2 in multi-level modeling analysis. This process is outlined as well in Figure 15; steps 3-9 are repeated for all four years of quality of life data (2008, 2010, 2012, and 2014).

Data transformation was conducted to locate missing data, and to impute data to remove or replace missing values or values of zero. A zero value may interfere with mathematical processing when the zero represents a divisor. In ArcGIS, such instances result in aborting of the calculations for remaining areas. Data normalization with a min-max normalization formula was applied to raw data (e.g., absolute numbers) to convert to a relative measure that takes into account an area (e.g., population density per square mile) or a total population (e.g., crime rate as the number of crimes committed per 1000 persons) (Hagenlocher, et.al, 2013). Neighborhood Quality of Life data for 2008 and 2010 were already transformed; 2012 and 2014 Quality of Life data were normalized. The min-max normalization process utilized Equation (1) to set all values within a variable to a number between 0 and 1 (after Hagenlocher, et.al, 2013):

$$X' = (x - x_{\min}) / (x_{\max} - x_{\min}) \quad (1)$$

Following data normalization, the selected model variables were be weighted to determine relative hierarchy of importance as contributors to the potential for students to be traumatized by neighborhood factors. Weighting of variables within vulnerability studies enable the establishment of a hierarchy of importance in terms of contributions to vulnerability. There are purely quantitative methods such as equal weighting, factor analysis, principal components analysis, multiple regression, and methods with a qualitative component, e.g., expert judgment, public opinion, analytic hierarchy process (AHP), conjoint analysis (Vinchon, et.al, 2011, p. 24) and the Delphi survey method (Oulahen, et. al, 2015). AHP is based on principals from mathematics, psychological decision making, and expert judgment, and has been applied to many business and government decision-making processes (Saaty, 2008). AHP offers the ability to consider qualitative knowledge of local situations and to apply literature recommendations on factors that contribute to trauma. Purely quantitative methods to weight variables (e.g., factor analysis, etc.) have limitation in that they do not adequately capture the human component of vulnerability nor the unique character of local environments (Hagenlocher, et.al, 2013; Oulahen, et.al, 2015; Saaty, 2008; Vinchon, et.al, 2011). Oulehan, et.al, (2015, p. 476) indicate that the selection and weighting of the variables for calculating the index is perhaps the most critical step in the process and will likely be debated by differing stakeholders. A single index value is a generalization process that cannot possibly represent the total character of any individual or group.

The selection and weighting of variables is a vital step in the development of a suitably representative index value per area and requires qualitative input based upon

local expert and stakeholder knowledge. Ouahen, et.al, (2015) initially utilized principal components analysis (PCA) to determine vulnerability variable selection whereby the PCA indicated those variables that accounted for the greatest share of variance among the data. Social vulnerability index maps were constructed from composite results. The researchers then held practitioner focus groups to gather professional estimations on the appropriateness of the quantitative model for representing local area vulnerability to flooding. Most practitioners found that the variables as selected by PCA were not entirely relevant to their local community conditions and recommended differing combinations of variables that were more reflective of actual situations facing neighborhood residents. Following the focus group survey results (Likert scale rating of variables), variables were ranked and accordingly weighted. The social vulnerability index was recalculated and remapped. The newly weighted maps, while spatially similar, revealed more detailed representation of the actual land use (e.g., industrial, commercial) than was evident by the purely quantitative method. The qualitatively weighted variables more meaningfully represented resident social vulnerability.

Hagenlocher, et.al, 2013, however, found that their comparison of statistical and expert-based methods of variable weighting led to similar output and suggested that "...in the absence of local expertise, statistical approaches could be used, with caution (Hagenlocher, et.al., 2013, p. 12). Ideally this research would benefit from the feedback of those professionals with expertise in trauma, however, such expert input was not readily available, thus a statistical approach, namely factor analysis, was utilized for weighting of TVI variables. Future research into the development of suitable TVI should

incorporate professional input and the analytic hierarchy process, and is discussed in Chapter 5.

Factor analysis is a statistical tool that can be used to understand variable contributions towards explaining a given phenomenon. Factor analysis is achieved by either reducing a large number of variables such that only the major contributors remain, or by examination of variable correlations and patterns revealed (Tabachnick & Fidell, 1989). Used here, factor analysis established the contribution of each neighborhood variable in explaining susceptibility and overall trauma vulnerability. Reduction of the number of variables was achieved earlier in the process by eliminating those factors that did not meet statistical tests for normality, linearity and multicollinearity. The factor analysis for the TVI model was conducted in a 2-step process beginning with weighting of the susceptibility variables, their subsequent weighted aggregation, and then factoring weights for the exposure variable, i.e., violent crime rate, with the aggregated susceptibility variable. Given the absence of suitable variables to represent the lack of resilience variable in the modeling process (i.e., inconsistency across time and/or absence of statistical validity), the final aggregation combined only exposure and susceptibility. Variables were factored within susceptibility and between exposure and susceptibility for each year of quality of life data, namely 2008, 2010, 2012 and 2014. For each year, the data were extracted then rotated with an “orthogonal” solution such that the factors are not highly correlated with one another (ResearchGate, 2016). A “varimax” (orthogonal) rotation was incorporated to produce a correlation matrix of observed variables and factors whereby the percent variance indicates the contribution of each variable toward explaining the relationship being observed among all variables (i.e., susceptibility factors,

and overall trauma vulnerability). Factor analysis results are listed by year in Table 3, indicating the weights used per variable per year in the calculation of TVI. The rotated and rescaled weights were applied first to determine the overall susceptibility variable, and again for calculating TVI based on exposure and susceptibility. As per Table 3, in the 2008 calculation of susceptibility Food was assigned a variable weight of 34.41, while Birth was weighted at 33.38, and Black at 32.21. The resulting susceptibility variable was then assigned equal weight with exposure (50% each).

Data aggregation was carried out mathematically by incorporating component variables e.g., aggregate of exposure variables with susceptibility variables, with relative weights applied to form a final composite value per neighborhood. The aggregation may follow an additive, geometric or multi-criteria approach (Vinchon, et.al, 2011). The TVI incorporated the weighted sum method used in the MOVE modeling as shown in Equation (2) whereby:

$$TVI = T_V = \sum_{i=1-n}^V F_{ViTi} \times W_{ViTi} \quad (2)$$

Trauma Vulnerability Index, T_V , is evaluated as the **weighted** sum:

Where V is the total number of descriptors of risk for trauma, T as considered in the analysis, F_{ViTi} are the component factors, and W_{ViTi} are their respective weights. The weights W_{ViTi} represent the relative importance of each factor as calculated by the Factor Analysis method.

Calculations were conducted in excel per year and then tabular joined to the Charlotte neighborhoods shapefile attribute table for mapping of TVI for 2008, 2010,

2012 and 2014. TVI serves as the level 2 variable in the multi-level modeling with individual student (level 1) data per set of academic years, e.g., 2007-08 and 2008-09 student data are modeled against the 2008 TVI, etc. The multi-level modeling process is described later in this section. Next is a description of the relative risk ratio, conducted to examine time series student outcomes for OSS and EOG/EOC test scores. The time series TVI may provide context for observed trends among these student outcomes.

Relative Risk Ratio

To answer the question “What are the similarities and differences between Black and White male middle and high school students in regards to short term out of school suspensions (OSS) for subjective and non-subjective referrals within Charlotte-Mecklenburg Schools (CMS)?”, OSS was represented as the relative risk ratio indicating potential disparity in OSS by race for male middle and high school students. The calculation of the relative risk ratio for OSS data serves to demonstrate where disproportionate representation of Black males exists among school disciplinary data. The measure was repeated for test scores in order to address the question “What are the similarities and differences between Black and White male middle and high school students in regards to end of grade/end of course (EOG/EOC) test scores within Charlotte-Mecklenburg Schools (CMS)? As with OSS, the risk ratio offers a measure of whether disproportionate representation of Black males exists in specified academic achievement. This study is interested in examining percent of students not passing EOG/EOC tests so as to explore potential impact of OSS on academic performance.

The relative risk ratio was initially developed for use in epidemiology to indicate the ratio of the proportions of cases having a positive outcome in two groups, a treatment

and a control group (ideadata, 2013; Meade & Emch, 2010; Mead, Florin & Gesler, 1988). The relative risk (RR) is the probability that a member of an exposed group will develop a disease relative to the probability that a member of an unexposed group will develop that same disease. Relative risk (RR) ratios are represented as small numbers above or below the value of 1. A relative risk of 1 means there is no difference in risk between the two groups. An RR of < 1 means the event is less likely to occur in the experimental group than in the control group. An RR of > 1 means the event is more likely to occur in the experimental group than in the control group.

In education research, the relative risk ratio concept has been modified to determine racial/ethnic Disproportionality in special education (Gregory, Skiba & Noguera, 2010), whereby measurement of the representation of a specific group within a given category is substantially different than the representation of other groups within that category. In response to the first research question in this study, for example, the ratio provides a measure of over or under representation of Black males in OSS as compared with all other males. Disproportionality can be measured by one of two methods, the composition index (CI), or the Risk Index (RI) and Risk Ratio (RR). CI offers a straightforward and intuitive calculation of the proportion of a specific group (e.g., Black males) represented within a given category (e.g., OSS) with the proportion that the specific group represents within the school enrollment (or the total population). If Black males form 40% of the school enrollment, we would expect them to comprise 40% of the suspensions. When instead, they form more than 40% of the suspensions, they are said to be overrepresented, or disproportionately represented among those suspended. CI has its limitations, however, making it less suitable as a measure of disproportionality.

There are no clear criteria for determining when a CI is meaningful or significant. And the composition of a group within the total enrollment impacts the effectiveness of the measure, particularly when the group is very small, e.g., less than 10 students, or extremely dominant (above 90%) as occurs in some urban settings (Skiba, Simmons, Ritter, Gibb, Rausch, Cuadrado & Chung, 2008).

A more rigorous method for measuring disproportionality is the risk index (RI) and relative risk ratio (RR) (Bollmer, Bethel, Garrison-Morgen, & Brauen, 2007; Gregory, Skiba & Noguera, 2010; Skiba, et.al, 2008). The RI measures the share a given group forms within a specified category as an estimate of risk for the outcome of that category for members within the group. RI for Black male OSS thus gauges Black male risk for receiving a suspension. The risk ratio (RR) is determined by comparison of the RI for the given group in the specified category, with the RI for one or more other groups. The Risk Ratio for the Black male Risk Index vs. the White male Risk Index, then, would indicate over or under representation of Black males suspended as compared to White males suspended. A Black-to-White male RR of 2.5, for example, would imply that Black males are 2.5 times more likely to be suspended than White males. The risk ratio has been recommended by the U.S. Department of Education Office of Special Education Programs as a method for understanding "...the relative risk of students receiving special education services for different racial and ethnic groups" (Gregory, Skiba & Noguera, 2010, p. 64), and offers guidance for states regarding the calculation of these measures, as noted by the Indiana University Equity Project, Needs-Based Problem Solving Using Data (Griffin, 2013) with the cautionary reminder that risk ratios are difficult to interpret in cases where there are fewer than 10 students within certain racial and ethnic groups.

For these situations a weighted risk ratio is recommended (Bollmer, et.al., 2007; Gregory, Skiba & Noguera, 2010).

Given the large numbers of males within most of the CMS racial/ethnic groups studied, the relative risk ratio was adopted for addressing research questions relating to disproportionality for Black males as applied to OSS and EOG/EOC test performance. Risk ratios were determined for Black vs. White males, for Black vs. non-Black males, with non-Black including White, and for each racial/ethnic group vs. all other groups combined. Specifically, the groups assessed by risk ratio are Black-White, Black-non Black (including White), American Indian-Non American Indian, Asian-Non Asian, Hispanic-non Hispanic, Multi-racial-non Multi-racial, and White-non White.

The formula used in calculating relative risk ratios in this study is adopted from the Indiana University Equity Project (Griffin, 2013: 9; Bollmer, Bethel, Munk & Bitterman, 2014: 16-17) and is conducted in two parts: the risk index (RI), and the risk ratio (RR). The risk index indicates the percentage of a given racial/ethnic group within a specified category. Using OSS as the category and Black males as the racial/ethnic group, the risk index will denote the risk that Black males will receive an out of school suspension. The risk index for a given school year is calculated for each racial/ethnic group included in the analysis, namely Black, White, Hispanic, American Indian, Asian and Multi-racial. The formula, Equation (3), used in this study is as follows, with Black male and Non-Black male OSS as an example:

$$\text{Black male OSS RI} = \frac{\text{Number of Black Male Suspensions}}{\text{Total Number of Black Male Students Enrolled}}$$

(3)

Non-Black male OSS RI = Number of Non-Black Male Suspensions

Total Number of Non-Black Male Students Enrolled

Where the total Non-Black male calculations comprise the sum of all other groups, e.g.,
 American Indian + Asian + Hispanic + Multi-Racial + White = Non-Black.

The risk ratio is then calculated by dividing risk indices and as such, provides a measure to compare the risk index of one racial/ethnic group with the risk index of a comparison group or of all other groups. In comparing risk indices between Black males and non-Black males, the risk ratio specifies how much more or less likely Black males are to be suspended than are non-Black males. Risk ratio results, thus determine whether Black males are more likely to be suspended and by how much. The risk ratio formula, Equation (4), using Black male vs. Non-Black male is:

$$\text{Black Male OSS RR} = \frac{\text{RI for Black Male OSS}}{\text{RI for Non-Black Male OSS}} \quad (4)$$

Risk ratio outcomes provide a measure of disproportionality for the given group in relation to the comparative group where a ratio of 1 means parity, while a value of <1 signifies underrepresentation of the racial/ethnic group under study, and a value of >1 denotes overrepresentation for that racial/ethnic group. Tables and graphs of results addressing research question and hypothesis 1, regarding OSS, and research question and hypothesis 3 relating to EOG/EOC standardized test performance, are found in Chapter 4. Further, in Chapter 4, the longitudinal risk ratios are visually related with TVI for comparative years to observe potential trends of neighborhood experience and student outcome across time.

Multi-Level Modeling

The spatial statistical method for determination of trauma vulnerability from violence exposure generalizes all data to the neighborhood level. Individual variations in response to neighborhood character are not accounted for within this method. While, for example, many students live within a given high-violent crime neighborhood, much individual-level variation in reactions to violence may exist within-neighborhood. Such variations are hidden when analysis is conducted at a single spatial level. Multi-Level Modeling (MLM) however, offers the ability to detect individual student differences in vulnerability or resilience to neighborhood level violence.

MLM, also referred to as Hierarchical Linear Modeling (HLM), is a statistical analytical method that accounts for the natural hierarchical structure of data pertaining to individuals (Subramanian, 2010). The lives of individuals are organized based on multiple parameters including families, neighborhoods, schools, other institutions or organizations, counties, etc. The nature of each level may vary as well over time. Links between these various levels of organization at different time periods can assist in determining the types and amounts of influence each level contributes to individual outcomes. Subramanian (2010, p. 507) defines multilevel modeling as "...statistical procedures that are pertinent when (i) the observations that are being analyzed are correlated or clustered, or (ii) the causal processes are thought to operate simultaneously at more than one level, and/or (iii) there is an intrinsic interest in describing the variability and heterogeneity in the phenomenon, over and above the focus on the average." Multilevel models account for individual variability in observed outcome as relates to individual predictors. In a simple linear regression, a single slope is obtained

measuring the relationship between two variables, with the intercept being the location of the Y-axis variable when the X-axis variable is zero. The line steepness indicates how quickly one variable increases or decreases in relation to the other with increase representing a positive relationship and decrease signifying a negative relationship. The multilevel model allows for different regression results per level-1 predictor across level-2 locations. There can be variance in slopes and intercepts within and between level-1 and level-2 groups, thus enabling distinctions between individuals who are nested within the same level-2 group.

The field of education forms a leading example of multi-level modeling (Bryk & Raudenbush, 1992; Raudenbush, Bryk, Cheong, Congdon, & duToit, 2004; Subramanian, 2010) given that students are organized or nested within schools, or in classrooms within schools. Students, for example, may form level 1 within an analysis, with classrooms and schools forming levels 2 and 3. Student outcome may vary not only on individual character and ability (student, level 1) but as well may depend upon the teacher (classroom, level 2) and school policies and practices (school, level 3). The neighborhood in which a student resides may impact student outcome through varying levels of exposure to the stressors of poverty and of violence. Classroom and school environment may or may not serve to mediate neighborhood effects on student outcome. For these reasons, MLM provides a useful method for analysis of student exposure to violence and its impact on individual behavior and learning.

As a potential example within this study, individual students living in the same neighborhood assume the same trauma vulnerability, yet may have very different suspension experience depending on descriptor variable (race) and individual predictors.

A student who has experienced homelessness and has been placed in special education may face more stressful challenges that affect behavior than would a student in a stable living situation and learning within non-EC classrooms. Statistical significance among IV's and DV suggest that the relationships are not randomly occurring, rather, that we can predict outcomes based on the observed relationship with IV's. It may be assumed, for this example, that homeless students who are placed, perhaps erroneously, into special education may manifest behaviors reflective of trauma and frustration.

The modeling conducted in this research comprises two levels, the individual student (Level-1), and the neighborhood of student residence (Level-2) for estimation of the neighborhood and individual effects on student outcome. School-level effects are not examined within this study; the limitations and recommendations for future research regarding school-level analyses are addressed in appropriate sections within Chapters 4 and 5. This section describes the model variables and the models utilized for testing the hypotheses.

Model Variables

The Institute for Social Capital, Data Research & Oversight Committee (ISC-DAROC) provided de-identified data for the years 2007-2008 through 2013-2014 under a limited license agreement for use in the research described within this dissertation. ISC obtains data from numerous agencies through data sharing agreements for deriving variables for their bi-annual Quality of Life studies, and for issuance to clients under strict, IRB-approved, limited licensing agreements.

Through the ISC, their Data Research & Oversight Committee (DAROC) insure data confidentiality and reliability such that a strict set of procedures and license

agreements accompanies any and all data requests. For this research, a data license request was submitted and approved by ISC, and then passed on to DAROC for final review and approval. A limited license agreement indicates all terms and restrictions regarding use of the data, and provides permission for its usage through 8/31/2018. The data were provided on an encrypted USB flash drive, delivered in person for upload and storage onto a secured and encrypted location on the UNC-Charlotte network (S drive) for data processing and analysis on the sole designated UNC-Charlotte desktop computer only (i.e., in the office of Laurie Garo). The original flash drive is stored in a locked cabinet in the Urban Education Collaborative.

Data used in this study include academic variables from Charlotte-Mecklenburg Schools (CMS) and juvenile justice/youthful offender involvement with Mecklenburg County Sheriff's Office (MCSO). Additional data promised within the limited license agreement comprise mental health diagnoses from Department of Social Services (DSS), plus homelessness and housing instability experiences provided by Charlotte Housing Authority (CHA), A Child's Place, and the Homelessness Management Information System (HMIS). HMIS also provides data on mental health diagnoses and treatments, experiences with child abuse and substance abuse, and HIV status. The additional data are not yet available, thus may be used for future research.

Although de-identified for this research, student data are geo-coded and geo-masked to the neighborhood level for 2013-2014, thus providing approximate locations of the home address, situated within a given neighborhood for association with 2014 Level 2 TVI. Where possible, every student is thus assigned a neighborhood profile area (NPA) identifier for their neighborhood of residence during the 2013-2014 school year.

Students with chronic homelessness in 2013-2014 may not have an NPA. Student data are geo-masked to the zip code level for all other years, thus lessening the spatial accuracy with which MLM can assess neighborhood level violence exposure. This lowered spatial accuracy is illustrated in Figure 16 where, for zip code 28214, trauma vulnerability for students attending High School ZA may range from a low TVI of 0.08 to a much higher index at 0.61. In generalizing to the zip code level, all within-zip code TVI would be averaged, thus every student attending High School ZA would be assigned the average TVI value. Students experiencing the higher TVI may not be provided the services commensurate with actual violence exposure. Analysis at the NPA level is thus much preferred for more accurate assessment of student experience and associated interventions.

Variables for MLM analyses were selected from among the current (CMS/MCSO) dataset and include individual (level 1) descriptive, predictor (IV) and outcome (DV) variables, as described below, and neighborhood (level 2) predictor variables (TVI) for the 2013-2014 school year which were previously described in section 3.5.3. The 2013-2014 school year was selected for MLM as the year with the most accurate indicator of neighborhood of residence. As previously noted, data for all other years are tied to the respective students' zip code of residence per year. Linkage of TVI with student data was therefore, most accurately achieved using the 2013-2014 data; this dataset provided the variables for multilevel modeling to test for research questions/hypotheses 2 (OSS as DV) and 4 (Test Performance as DV). The level-1 descriptor, predictor and outcome variables are briefly described below and include corresponding abbreviation within the database, encoding where relevant, and rationale

for inclusion at level-1. They are summarized in Figure 17, as descriptor, predictor, and outcome variables.

Individual Student ID (iscid). Every student is de-identified by exclusion of name, address and all other personal information. A randomly assigned unique student identification number was assigned to each student that enables tracking across time as well as matching with data from other databases, e.g., neighborhood of residence, juvenile arrest data, etc.

Race (race). The race variable is important in evaluating Black male outcomes in comparison with all other race/ethnicity. Race serves as a level-1 descriptor for testing significance of race with OSS, or with test performance. Likewise, race formed the within-level descriptor variable and group mean in the level-2 models testing for significant relationships with neighborhood TVI. Within the CMS database, race falls under the field heading of Ethnic_Code, where the code is a letter assigned to represent the description (e.g., B = Black or African American; W = White, etc.). Race [as indicated within the CMS database] is assigned a binary variable for this study where 1 = Black, 2 = White, 3 = Hispanic, 4 = Asian, 5 = American Indian, and 6 = Multiracial.

Grade Level (grade). Grade level is included as a variable for purposes of extracting students by grade for selected analyses. Grade 8 students, for example, are extracted for modeling of 8th grade test performance. Likewise, given the very low numbers of 8th grade students age 16 and up, models of 8th graders do not include the juvenile justice variable as a level-1 IV.

School Identifier (schid). Each middle and high school are assigned a 3-digit courier number attached to the LEA number. The numbering system is nationally recognized and

serves as a useful way to code school of attendance. Schid is not directly used in the multi-level modeling but is available for further modeling at an additional level such that students become nested within schools which are nested within neighborhoods. By incorporating school-level predictor variables, such modeling would enable determination of the amount of variance in student outcome that could be attributed to school factors.

Neighborhood Profile Area Identifier (npaid). Each neighborhood in the 2013-2014 quality of life database is assigned a unique identification number referred to as a Neighborhood Profile Area (NPA) identifier. NPA's are numbered consecutively from 1 to 459. The NPA identifier (npaid) enables linking with student TVI. Within all models, npaid served as the cluster or group variable, indicating that students are nested within neighborhoods. Models for English 2 and 8th grade Reading and Math include fewer NPA's given the smaller sample sizes resulting in some neighborhoods without a student taking a given exam.

Exceptional or Special Education Status (ec1). The exceptional or special education status (EC) serves as an important IV within all level-1 models given the disproportionality of special education placements of Black male students (Losen & Martinez, 2013; Patton, et. al, 2012; Rich, et.al, 2009), and the potential misdiagnosis of trauma as ADHD or other EC classification (Aisenberg & Mennen, 2000; Perry, 2007; Trosche, 2014). Students with an EC category (incorporated under the field heading of ec1) were coded with a binary variable indicating the type of EC classification, where 1 = Specific Learning Disabled, 2 = Serious Emotional Disability, 3 = Intellectual Disability,

4 = Other Health Impairment, 5 = Autistic, and 6 = Academically Gifted. Those without an EC status were assigned a zero (0).

McKinney-Vento Status (mcvento1). McKinney-Vento Homeless Program status indicates that a child has experienced homelessness or housing instability during the period denoted by the beginning and end dates. The McKinney-Vento Homeless Assistance Act with its provision on Education for Homeless Children and Youths (Subtitle B of Title VII of the McKinney-Vento Homeless Assistance Act), stipulates State educational agency policy that ensures access to free public education and all related services for all children of individuals experiencing homelessness (Department of Education, 2017). McKinney-Vento status is an important level-1 IV for this study because homelessness or housing instability may be a traumatic experience for children who experience stress, embarrassment and discrimination relating to a situation beyond their control (Rafferty, 1995); likewise, homelessness places children at greater risk for adverse physical and psychological responses to continual subjection to harsh living conditions (Dalton & Pakenham, 2001; Fantuzzo, et.al., 2012). Homeless students are at increased risk for academic and behavioral issues that interfere with education success (Dalton & Pakenham, 2001; Rafferty, 1995). Comparison with longitudinal student outcome data may possibly reveal lower outcomes during periods of homelessness. The homelessness status (mcvento1) was indicated with a dichotomous variable whereby students who experienced homelessness or housing stability within the school year = 1 and no homelessness/housing instability = 0.

Juvenile Justice System Involvement (arrest1). Data on juvenile justice involvement were provided to ISC by the Mecklenburg County Sheriff's Office (MCSO) and consist of

8987 records of misdemeanor and felony arrests for male students, age 16 and up, attending CMS between 2004 and 2015. Each record contains an individual student identifier (iscid), however, only those students attending from 2007-2008 and beyond were able to match with the CMS data. Those with their first arrest in 2013-2014 were included within the multilevel modeling analysis. Arrest data offer the opportunity to examine the school-to-prison pipeline in terms of statistically significant relationships between OSS and arrest. Likewise, time spent in juvenile justice confinement exposes students to potential re-traumatization from correctional facility staff as well as the stress of separation from family and other supportive networks (Adams, 2010). And statistically significant associations have been found between homelessness and arrest (Fielding & Forchuk, 2013). Arrest data (arrest1) were represented with a dichotomous variable where males with one or more arrest = 1, and males with no arrest = 0.

Days of Unexcused Absence (daysunex). The number of days with unexcused absence was selected as a variable that is indicative of disengagement from schooling. While the reasons for unexcused absence are unknown, the test for significance with other individual level IV's may offer clues as to the degree to which absence occurs because of personal issues, or other factors occurring outside of school. Homeless children, for example, face barriers to school access and attendance (Dalton & Pakenham, 2001; Rafferty, 1995). Statistical significance with DV's may also suggest detrimental school outcomes as explained in part by frequent absence from school, or may signal need for investigation of school policy and practice that serve to marginalize students from education (Butler, Robinson & Walton, 2014). The variable daysunex is simply

represented as the number of days absent without an excuse, ranging from 0 up through the maximum, and excludes days missed for OSS or other excused absence.

Days of Out of School Suspension (DAYSOSS). The number of days missed due to short term Out of School Suspension (OSS) serves as DV for modeling to answer research question 3 relating to TVI as moderator between Black male middle and high school students and short term OSS. This variable provides measures for the number of students suspended as well as the number of school days missed due to OSS. Further, it offers tests for OSS significance with race and level-1 IV's to determine the extent to which subgroups within race help explain the observed relationship between OSS, race, and TVI. And DAYSOSS forms a level-1 IV in the modeling of test performance and TVI such that statistical significance with percent not passing suggests a detrimental impact of OSS on academic achievement. DAYSOSS is represented as the number of days absent due to OSS, ranging from 0 to the maximum, and excludes days missed for other excused and unexcused absence.

English 2 performance (ENG2). The English 2 (ENG2) exam results were selected to represent high school English, however, data reveal that students in grades 6 through 12 take this exam. All students with a test result for English 2 were thus selected for modeling with ENG2 as DV for partial exploration of research question 4 which examines the extent to which TVI moderates the relationship between Black male middle and high school students and EOG/EOC test scores. Test results are represented in the database as the performance level assigned to each students' test outcome. Students passing at levels 1 and 2 equate with not-passing and were thus the focus of examining significance of a negative relationship between race (Black) and EOG/EOC test

performance. Scores of 3-5 represent students passing the exam. Note that scores for High School Algebra (Algebra 1) were only included in the CMS database for 2007-2008 through 2011-2012 and were thus not included in modeling of 2013-2014 data.

Descriptive statistics on variables for testing statistical significance for ENG2 are included in Chapter 4.

8th Grade Reading Performance (RD08). Test performance in 8th grade Reading was selected for MLM analysis because it is a test taken by large numbers of 8th grade students, and offers a measure of middle school performance during the critical year of transition into high school. Poor or failing grades in 8th grade have been related to failure to be promoted to 9th grade, or to falling behind in 9th grade with insufficient credits for promotion to 10th grade (Jerald, 2007). Poor academic performance in middle and early high school, along with poor attendance, are related to dropping out of high school (Jerald, 2007). For this reason, all 8th grade students with a test result in 8th grade Reading were selected for analysis even though students from other grades also took the test. 8th grade Reading is represented as RD08 and serves as DV in this set of models. As with ENG2, RD08 was coded according to the level of passing, from 1-5, with scores of 1 and 2 representative of not-passing. Modeling results for RD08 were incorporated into the analyses for research question and hypothesis 4. Descriptive statistics on variables for testing statistical significance for RD08 are provided in Chapter 4.

8th Grade Math Performance (MA08). Test performance in 8th grade Math offers another measure of 8th grade academic performance. Risk ratios for percent of students not-passing Math revealed lesser disproportion among non-White students as compared with risk ratios for 8th grade Reading (refer to Figures 4.xx and 4.xx), however, test

performance for Math reveals potential preparation for High School level mathematics.

As with 8th grade Reading, such results provide a measure of risk for dropping out of high school. All 8th grade students with a test result in 8th grade Math were selected for analysis. MA08 was coded according to the level of passing, from 1-5, with scores of 1 and 2 representative of not-passing, and with MA08 serving as DV in this set of models. Modeling results for MA08 were incorporated into the analyses for research question and hypothesis 4, and descriptive statistics on variables for testing statistical significance for RD08 are inserted in Chapter 4.

Trauma Vulnerability Index (TVI2014). Modeling at level-2 utilized the Trauma Vulnerability Index (TVI2014) for all 459 of the 2014 Quality of Life study neighborhoods. Derivation of TVI2014 was covered in sections 3.5.2 to 3.5.4 of this chapter. Within the student database, TVI scores were matched to student records using the VLookup tool in Excel and the NPA number (npaid) per student. TVI2014 was thus available for modeling student IV's and outcomes (DV's) in relation to trauma vulnerability within respective neighborhood of residence for 2013-2014.

In order to address the study hypotheses, data for the relevant variables were first screened for multivariate analysis. The descriptives for the model variables are listed in Tables 4, and Tables 7-9. As shown in these tables, TVI2014 comprises all 459 neighborhoods for OSS as DV, 448 neighborhoods for ENG2, and 317 for RD08 and MA08, indicating that some neighborhoods did not contain any students who took these tests during 2013-2014. All other variables are shown in relation to the total number of male students, grade 6-12 for 2013-2014 as evaluated in each set of models (N = 41181

for OSS analysis; N=5078, 784 and 805, for Eng2, RD08 and MA08 models, respectively).

The Level-1 sample for addressing the second research question and hypothesis, evaluating OSS and TVI, comprised the full 41181 male middle and high school students, and included the level-1 variables previously defined. Descriptive statistics per model variable where DaysOSS serves as the dependent variable are listed in Table 4. Race, EC status, and TVI2014 have skew and kurtosis values that are well within the acceptable limits for statistical analysis as was employed in the determination of neighborhood TVI (i.e., skew < 2 and kurtosis <= 3.5, after Hagenlocher, et.al, 2013). The DV and other predictor variables (IV's) are more highly skewed and with high kurtosis values.

To examine the high skew and kurtosis found among the DaysOSS, mcvento1 and arrest1 variables, OSS statistics were gathered within three groups: all males, males with one or more arrest, and males with McKinney Vento (MV) designation. Data for all school years, where applicable, were tabulated in order to determine whether the skewness of the data was random or consistent across time. Data in Table 5a indicate that while 64.6 to 68.3 % of students with one or more OSS were Black across the 2007-2008 to 2013-2014 time span, only 15.5 to 20.9 % of all students received one or more OSS. When evaluating OSS for all 41180 students in 2013-2014, 15.5% of students represents a small segment of the entire male grade 6-12 student enrollment, thus the data are skewed for that variable.

In Table 5b, OSS among males, age 16+, experiencing one or more arrest are noted for 2012-2013 and 2013-2014. The data was incomplete for earlier years. Among those students, 57.4 to 60.9 % of students received one or more OSS, and 79.9 to 80.8 %

of these students were Black. In terms of tabular statistics, there appears a much stronger relationship with OSS among students with one or more arrest as compared with all students. Similar statistics were collected for students with McKinney Vento designation, or homelessness, across all years (Table 5c). Overall, the number of students experiencing homelessness per year who also received one or more OSS fell between the other groups at percentages between 35.5 and 43.5. Of the three groups evaluated, the percent of students experiencing homelessness and with one or more OSS, and who were Black, revealed the highest percentages, at 82.4 to 90.2 %. Nonetheless, the total number of students within the latter two groups is very small (1848 and 1437 students respectively out of 41180 in 2013-2014), thus these groups also demonstrate high skew and kurtosis within the descriptive statistics in Table 2.

Research question and hypothesis 4, addressing test performance and TVI, were extracted from the full data set (N=41181) to form smaller subsets. The sample for English 2 includes all 5078 students, grades 6-12, who took the exam. The 8th grade samples selected only those in 8th grade with a relevant test result even though students in other grades also took the exam, thus explaining the much smaller samples of 784 (Reading) and 805 (Math). As previously noted, 8th grade is an important transition year, therefore the sample evaluated was restricted to 8th graders. Statistics on each sample are found in Table 9 which comprises the total sample and the numbers of students within each level-1 variable, including the number and percent of students who are Black. Black males formed approximately 42.5% of the total sample and of students with unexcused absence. Their share among homelessness, arrest and OSS ranged from 61 to 83%, while all males with an exceptional student classification were Black.

Descriptive statistics for each group are found in Tables 7 to 9. The English 2 data reveal statistical validity for ENG2, Race and ec1 (also TVI2014), with high skew and kurtosis for DaysOSS, Daysunex, mcvento1 and arrest1. Apart from Daysunex, the total numbers of students in the sample who fall within each of the variable categories is small as was demonstrated in Table 6, and data for Daysunex have a high variance about the mean. These factors may explain their lowered suitability for modeling. TVI2014 comprised 448 of the 459 neighborhoods for ENG2 modeling, indicating that there may be some neighborhoods where no students live (Table 7). Far fewer neighborhoods are evaluated for 8th grade tests. As shown in Tables 8-9, only 317 TVI2014 are evaluated in the modeling of 8th grade Reading and Math. Again, there appear to be many neighborhoods with no 8th grade test takers as residents. Additionally, the 8th grade samples do not include arrest because the arrest data are for males age 16 and above. Very few 8th graders are in that age range. DaysOSS and mcvento1 show high skew and kurtosis (Tables 8 and 9). Daysunex is also above the acceptable limit, but with much less variance than was revealed in the English 2 data set. This may be owing to the much smaller total number of students (approximately 800 as compared with over 5000), and to the evaluation of a single grade vs. all grades 6 through 12.

The Models

The multilevel modeling process consisted of preparing the data for analysis as was described above, establishing and running each model with MPlus software, and interpreting the output. A separate set of models was run and analyzed for research questions 3 and 4 with each set comprised of three separate models, ranging from simple to increasingly complex. For this study, these were the unconstrained, or null model, the

level-1 model, and the level-2 model. A set of MLM–relevant hypotheses were established based upon the initial research hypotheses after Woltman, Feldstain, MacKay and Rocchi (2012). MPlus also requires data to be grouped into clusters whereby the total number of observations (students) is assumed to be divided equally within each cluster. Among the entire data set of students for 2013-2014, there are 41181 male students (“observations”), with 6 “race” clusters, 75 school clusters and 459 NPA (neighborhood) clusters. The fewer the number of clusters (groups), the larger the number of students per cluster, thus theoretically, the less likely that the students within each cluster will be similar. When grouped into clusters by race, MPlus assumed 6864 students per race cluster. When schools form the cluster variable, 549 students can be assumed per school cluster, while for neighborhoods as the cluster variable, there are 90 students per NPA cluster. Neighborhoods have the fewest number of students per cluster thus have the greatest chance for members of the same neighborhood to be similar in outcome. Neighborhoods are also the level-2 variable in the study, making them the most ideal method of grouping students. Neighborhood id (npaid) therefore served as the cluster variable in all models.

The first set of multilevel models was run in order to address research question and hypothesis 2, which explores the question: to what extent does neighborhood level exposure to violence moderate the relationship between Black male middle and high school students and short term out of school suspensions (OSS)?; and with the hypothesis that high levels of neighborhood violence moderate the effect of race on OSS such that increased violence leads to a stronger positive relationship between race (Black) and OSS. The multilevel models were thus designed with DaysOSS as the Level-1 DV and

TVI as the Level-2 predictor or independent variable (IV). Additional, Level-1 predictor variables (IV's) were incorporated into the model to test for individual level moderators between race (Black) and OSS. The models, therefore attempt to determine the significant relationships within and between level 1 and 2 variables so as to determine the extent to which TVI and level-1 IV's influence OSS. In multilevel modeling terms, the hypothesis and the necessary model conditions for answering the research question are represented in Table 10 (adapted from Woltman, et.al, 2012, p. 58) such that the within and between- level variable relationships can be examined. The models and related output will address these hypotheses and conditions.

Modeling was performed to examine the hypotheses and model conditions with OSS as dependent variable. The initial model is referred to as the “unconstrained” or null model and is performed in order to “confirm that the variability in the outcome variable, by level-2 group, is significantly different than zero” (Woltman, et.al, 2012, p. 62). In other words, it determines whether the null hypothesis can be rejected. Key components to null model output are the chi-square test (χ^2) and the Interclass Correlation (ICC). A statistically significant χ^2 “...indicates that there is variance in the outcome variable by the level-2 groupings...” (Woltman, et.al., 2012, p. 62), and as such, provides evidence for group level differences sufficient to statistically justify the multilevel modeling (Woltman, et.al, 2012). It would demonstrate for this study, that variance in student outcomes by neighborhood are significant, thus there is statistical justification for running a MLM to examine individual outcomes in relation to neighborhood TVI (Woltman, et.al. 2012). The Intraclass Correlation (ICC) estimates the percentage of variance in the DV that is attributable to the group (level 2) membership vs. the individual (level 1) variables

(Woltman, et.al, 2012). When ICC indicates a fair chance for members of the same group to be similar, it provides further potential for the null hypothesis to be disproven and reason to continue with level 1 and 2 analyses. The null model is run only for descriptor and DV (e.g., race and OSS), without any IV's.

The level-1 model followed the null, and tested for within-and between variable variance across groups, along with the extent to which each level-1 predictor (IV) explains the variance in outcome (DV). In other words, level-1 modeling confirms or rejects hypotheses relating EC status, arrest, homelessness and unexcused absence with OSS by determining significant within and between group variance in OSS as measured by slope and intercept of each level-1 IV. The final model in the set incorporated TVI2014 as the level-2 predictor or IV and showed within and between level-1 IV variance as well as variance in outcome (OSS) as per the level-2 variable (TVI). The extent to which neighborhood level violence exposure is related to OSS is thus determined. Model output point out the significance of within and between level variance among variables at levels 1 and 2. This set of models thus examine the significance level of each relationship as well as the presence of interactions between predictor variables, and the extent to which certain predictor variables exhibit stronger contribution to OSS.

The set of models were run again to test the 4th hypothesis which states that high levels of neighborhood violence moderate the effect of race on EOG/EOC test scores such that increased violence leads to a stronger negative relationship between race (Black) and EOG/EOC test scores. As with OSS, a set of hypotheses and model conditions were established in relation to the specific tests. These are outlined in Tables 11 to 13 which state the relationships that were examined within each set of models.

Number of students passing English 2 (ENG2) per test level (levels 1-5) formed the DV for the first set of EOG/EOC models to analyze 5078 student records of ENG2 test takers from grades 6-12, but predominantly from grades 9-10. The models were repeated for number of students passing levels 1-5 for 8th grade Reading with 784 student records consisting only of 8th grade test takers, with a final set of models testing for 8th grade Math with 805 student records comprising 8th grade test takers (see also Table 6). Note that DaysOSS served as an IV within all three sets of models, and Arrest status was removed as an IV for the 8th grade Reading and Math models, given the age of students arrested (age 16 and above). The model series testing for test performance was repeated three times, each set incorporating a separate standardized test result.

All model results were tabulated, diagrammed and analyzed for statistical significance of the null model, level-1 intercept and slope variance, for within-and between group and level variance, and for significance at level-2. The output tables were analyzed following strategies employed by Woltman et.al. (2012) and Fantuzzo, et.al. (2012). Results and related analyses are presented in Chapter 4.

Assumptions

There are a number of assumptions connected with the use of secondary data sources. It is assumed that ISC has applied rigorous methods to ensure that the CMS data are de-identified, accurately geocoded by NPA and zip code, and carefully compiled across time such that education history may be obtained for any child within the database who attended more than one school year. The study assumes OSS as a representative measure of student behavior however; the limitation to this is noted in the next section. Likewise, it is assumed that EOG\EOC data are representative of student learning. This

study does not actually test for trauma among students exposed to violence, therefore, there is also the assumption based upon the literature, that a correlation between violence exposure and poor student outcome (high OSS, low test scores) signifies the potential for the student to be experiencing trauma related to the violence exposure, and that the trauma may impact students' outcomes.

Assumptions regarding the Charlotte Neighborhood Quality of Life Study are that the researchers were thorough in their collection of data and accurate in calculating rates, percentages and median values. The reader is referred to the limitations section, however, for issues relating to time series analysis with these studies. Crime data will likewise be assumed to have been thoroughly collected and accurately compiled and geo-coded. And the multilevel modeling approach is assumed to be a suitable method for examining neighborhood level violence exposure impact on individual level student outcome.

Limitations

There are a number of limitations inherent to spatial statistical analysis. First, the geographic unit of observation can greatly influence the level of detail and accuracy of spatial statistical analyses. In general, more detail can be observed from within smaller unit areas. Spatial variation within larger unit areas is masked through the process of cartographic generalization whereby an entire area is assigned a single data value. Data may also exhibit spatial similarity on either side of unit area boundaries, yet with greater variation among different sections within a single unit area. Results of this study thus represent one level of spatial analysis; the same study conducted at larger or smaller unit area geography would reveal a different set of outcomes.

Ecological Fallacy is another issue relating to spatial statistical analysis. “When modeling area-level variables, one must avoid committing the ecological fallacy – that is, avoid making inferences about individuals when one is investigating aggregations of individuals” (Meade & Emch, 2010, p. 346). When aggregating students by neighborhood, for example data about individuals is hidden, thus one cannot infer about any individual student based upon an aggregate value. Although the multi-level modeling enables analysis of individual’s within-neighborhood, each individual is assigned the same TVI score, thus assumed to experience the same level of vulnerability to trauma. The within-neighborhood variance in violence is not apparent in such analyses. Likewise, the aggregation of areas to different scales for analyzing larger zones is termed the “modifiable areal unit problem” (MAUP) (Meade & Emch, 2010, p. 454). Several neighborhoods fall within a CMS school attendance zone, for example. The aggregation of smaller unit areas (neighborhoods) within the larger unit area (attendance zone) serves to alter spatial variations that may be present within and between neighborhoods (Hagenlocher, et.al., 2013). Greater variance is visible when smaller areas are mapped; less variance occurs with the aggregation of smaller areas to larger mapping units. Additionally, mapping at the neighborhood level artificially bounds trauma vulnerability into statistical units irrespective of actual spatial distribution of violence and population vulnerabilities. Whereas violence may cluster across neighborhood boundaries and be sparse to non-existent within sections of neighborhoods, the artificial boundaries generalize a homogenous vulnerability value to an entire neighborhood. This serves to mask actual spatial distribution of violence and vulnerability/resiliency within and between neighborhood areas. The artificial areas are example of the aggregation problem

in spatial modeling. The “Endogeneity problem”, a matter of two-way causality, is a factor limiting accuracy of interpreting correlations. One may ask, for example, why certain people move to areas at risk for violence. It may be that a person can’t live elsewhere due to a felony record and might therefore move to low income area that houses a high population of felony holders. Those who want to sell drugs may move to areas where neighbors are less empowered to stop them. In other words, is it the environment that influences the violence or vice versa? The ecological fallacy states that correlations are especially affected by changes in aggregation.

Temporal variations in violence exposure and related residential trauma vulnerability are additional limitations to the study of violence exposure over time. Neighborhoods may change crime character over time. Although the quality of life data report on crime character by neighborhood every two years, tracking changes in neighborhood character as well as changes in student neighborhood of residence will nonetheless be challenging. In designing a multilevel model to assist school districts in assessing trauma vulnerability, it would require regular updates of the various model variables, as conditions of violence and other indices of vulnerability may change spatially over time within a two year span. As an example, the Charlotte-Mecklenburg Police Department studied the spatial relationship between drug markets and local street network accessibility (CMPD, 2005). In order to break up drug hotspots, large concrete barricades were erected at major drug market intersections, thus making it impossible for dealers to escape police patrol. The policing strategy effectively reduced drug dealing within a few blocks of the barricades but moved the hotspots to another set of intersections within an adjacent neighborhood. Children once vulnerable through

exposure to the original drug market location were no longer subjected to the same level of vulnerability. Violence exposure and vulnerability increased, however, for children living within the new drug hotspot. Such is an example of the need for continual monitoring of neighborhood conditions represented within the trauma vulnerability assessment.

Summary

Chapter 3 has provided a detailed account of the research design utilized in this study. The chapter began with a description of the study hypotheses and related research questions, and background on the study area and its geography, thus demonstrating the need for the study. The spatial characteristics of the area are described in terms of suitability for spatial analysis. Research methods and related data variables were explained and included literature rationale. Two sets of variables were described: a) the exposure and susceptibility variables used in modeling trauma vulnerability for the index that served as the level-2 variable in the multi-level model; and b) the individual descriptor and independent, i.e., level-1, and dependent variables for the multi-level model. The research methods applied to address the study hypotheses involved determination and mapping of a trauma vulnerability index, calculation and graphing of relative risk ratios for OSS and for performance in English 2, 8th grade Reading and 8th grade Math, and multilevel modeling of individual student independent and dependent variables in relation to neighborhood trauma vulnerability. Separate sets of models addressed OSS, and the three test results. Each method required data preparation, encoding and processing, with production of method-appropriate statistical output, tables, charts, and maps for interpretation and determination of findings. The step by step

processes, including relevant equations per method were detailed within this chapter with reference to figures and tables relating to study description and data preparation and analysis. A range of assumptions and limitations were discussed in relation to the research methods, the data, and geographic and temporal considerations. Study results and all output figures and tables are covered in Chapter 4.

CHAPTER 4: RESULTS

Chapter 4 presents the results of the study as was conducted using the research methods described in Chapter 3. As with Chapter 3, this chapter begins by analyzing results of the Trauma Vulnerability Indices (TVI) for 2008 through 2014, and then discusses longitudinal patterns in violence exposure for students attending middle and high schools within CMS. The observed patterns provide context with which schools may interpret and utilize TVI maps and data.

The second section within Chapter 4 offers in-depth analyses by research question and related hypothesis, with questions 1 and 3 referring to relative risk ratios, and questions 2 and 4 addressed via multi-level modeling. Questions 1 and 2 correspond to issues of OSS while 3 and 4 comprise academic achievement on standardized tests. The section is thus organized to first address disproportionality in OSS [research question/hypothesis 1] by examining corresponding time series relative risk ratios, followed by analysis of multi-level modeling with 2013-2014 OSS as the dependent variable [research question/hypothesis 2]. Results of each of three models, namely, null, level-1 and level-2, are evaluated for significance as relates to the hypotheses.

Disproportionality in achievement on the selected EOG/EOC tests are then assessed per test result (English 2, 8th grade Reading and 8th grade Math) by time series relative risk ratios [research question/hypothesis 3]. Multi-level modeling of 2013-2014 test performance (not-passing) as dependent variable [research question/hypothesis 4] is evaluated for all three models per standardized test, and then scrutinized for insights on

violence exposure's relationship with student academic outcomes. Finally, the chapter is summarized with brief introduction to the discussion and recommendations found in Chapter 5.

Trauma Vulnerability Index

The trauma vulnerability index (TVI) was derived for all four years of available neighborhood quality of life data (2008, 2010, 2012 and 2104) using the nine-step process described in Chapter 3. The results are presented in this section by data year using maps as illustration. Within each year, each of the four individual quality of life variables (i.e., violent crime rate, percent of persons receiving food and nutritional services, adolescent birth rate, and percent of residents who are Black) are mapped separately to illuminate spatial variations and pattern similarities among the variables. The TVI is mapped for illustration of the relative potential for a student residing in a given neighborhood to experience trauma based upon the weighted aggregation of the exposure (i.e., violent crime rate) and susceptibility variables. An index value is assigned to each neighborhood indicating vulnerability on a scale of 0-1 with higher vulnerability as the index value approaches 1. TVI values are grouped into classes and represented with a shade from light for less vulnerability to dark for greater vulnerability. TVI is also mapped with the middle and high school attendance zones that were valid during the year of the TVI data. The 2008 TVI, for example, is mapped with the attendance zones that were relevant for 2007-2008.

All maps are displayed using the Choropleth method of shading enumeration units (e.g., neighborhoods) according to the corresponding data range per enumeration unit (Dent, 1999). Individual variable maps are classified by standard deviation, using .5

standard deviations as the class limits. The maps thus indicate whether the variable within each neighborhood is above or below average. This enables illumination of concentrations of high (red-orange) and low (blue) values within each variable, and comparisons of increase or decrease across time in relation to mean values per variable. The method is best suited to data that are normally distributed (Slocum, 1999), thus for certain variables (e.g., percent births to adolescents), longitudinal analysis is comparatively less effective. All TVI data are classified using the quantiles method with 5 class breaks. The quantile method orders data low to high, then places an equal number of observations (e.g., neighborhoods) within each class (Slocum, McMaster, Kessler & Howard, 2005). The method is advantageous for comparing percentages of observations across data sets. Using 5 class breaks, for example, enables comparison of the top 20% within each of the variables aggregated to form TVI. The data median will be consistent across data sets as well, and spatial patterns across variables are easy to visualize when maps contain an equal representation of each shade on the map. When enumeration units are fairly similar in size, as is the case especially with the 2012 and 2014 maps, each class consumes approximately the same area on the map. (Slocum, et.al, 2005).

There are a few disadvantages to quantiles, however. The method does not consider how data are distributed along the line from low to high. Outliers thus tend to be grouped within the upper or lower class thus hiding their outlier status. A very large data range in the top class often results with quantiles, again, due to outliers. The data range for the top class in the 2010 Violent Crime Rate, for example, is 0.17 to 1.0 (Figure 18) while the highest class of 2010 TVI extends from 0.28 to 0.73 (Figure 19). In each other year, the upper class for TVI falls approximately between 0.48 and 0.85 (Figures 21, 24

and 26). Quantiles may also split like values into two separate classes. In a list of 100 counties, for example, a 5-class quantiles classification would place 20 counties in each class. If the counties in the list are ordered as 20 and 21, and each contained a value of .25, that value would be placed in class one (counties 1-20) and in class two (counties 21-40). Likewise, large gaps in data are not detected with the quantiles method. (Slocum, et.al, 2005). The method served well, however, given the number of maps and types of visual comparisons among and between variables across time.

Individual variable maps and maps of TVI were created for each year using consistent ColorBrewer (Brewer, 2017) color ramps per variable. ColorBrewer color ramps were designed to “...ensure that the character and organization of the colors on your map match the logic in your data” (Brewer, 2005, p. 115). A data set ranging from low to high is logically viewed with colors ranging from light to dark, termed “sequential” in the online ColorBrewer application (Brewer, 2017). The standard deviation shadings use a “diverging” scheme (Brewer, 2017) with light to dark shades at two ends of the scale, representing above and below mean values. Reds indicate above the mean thus concentrations of high value stand out on the map as dark red. TVI maps, also classified by quantiles method and shaded with a consistent color ramp, follow respective individual variable maps, and are displayed as well with the corresponding middle and high schools and attendance zones as per the year of TVI, e.g., the 2008 TVI are mapped with the school attendance zones as they were in 2007-2008. The remainder of this section of Chapter 4 provides assessment of the maps, and then closes with discussion of the potential applications and limitations of TVI mapping for schools, with recommendations for TVI modeling improvements covered in Chapter 5.

2008 TVI

The individual 2008 Quality of Life variables selected for the derivation of TVI are mapped in Figure 18. The maps reveal a within-data pattern that follows a lower income crescent, northeast to southwest of the city center, and the wealthier wedge directly south. While the variables are uniquely calculated, the individual representations of low to high by neighborhood varies greatly between maps, thus demonstrating the importance of variable weighting and aggregation for determining overall TVI. Neighborhoods West of the city center with the highest adolescent birth rates, for example, do not necessarily contain the highest rates of violent crime nor highest percent of residents who are Black. Nonetheless, the picture revealed within each individual variable per neighborhood provides an understanding of the final TVI result for 2008 (Figure 19). The variable weights as determined by the [rotated] factor analysis (Table 6) place nearly equal emphasis on each individual variable. Thus the highest TVI can be expected in neighborhoods with high rates within at least 2 of the 3 individual variables, together with a high violent crime rate.

On an individual variable basis (Figure 18), 2008 saw a fairly extensive set of neighborhoods along the crescent experiencing violent crime rates well above the city average. The pattern was much less vivid for percent or more persons receiving food and nutritional services. Those areas with higher than average values are along the central portion of the crescent. Large numbers of these same neighborhoods faced adolescent birth rates that were above average. And the percent of neighborhood residents who are Black is above average along the same crescent. The final TVI map reveals highest potential vulnerability for trauma within those neighborhoods that demonstrate higher

values (darker shades) within at least two of the individual variable maps. As illustrated in Figure 19, TVI values of 0.46 to 0.54 and 0.55 to 0.76 are primarily concentrated along the crescent formed from northeast to southwest of the city center with the highest values following the pattern of violent crime shown in Figure 18, thus highest potential vulnerability for trauma from violence exposure. The middle school attendance zones serving these central neighborhoods contain dense clusters of higher TVI neighborhoods as compared with attendance zones serving the northern, southern, and outer extent of east and west Mecklenburg County. High school attendance zones as designated in 2008, serve a larger and more TVI-diverse set of neighborhoods, although several schools fall within the high TVI crescent.

2010 TVI

Spatial patterns for the 2010 individual and overall TVI mapped variables display similarly to those of 2008 in that the above average neighborhoods follow the same inner city crescent. Below average values increased significantly, however, among all but the percent of persons receiving food and nutritional services. Violent crime appears to have dropped dramatically as did percent births to adolescents. High rates of violent crime in 2010 appear within very few neighborhoods along the crescent with much of the city below average. The adolescent birth rate decreased to form a pattern very similar to the violent crime rate for 2010. FNS recipients increased, encompassing a larger number of neighborhoods along the crescent (Figure 20). The overall TVI (Figure 21) reveals a crescent pattern similar to that of 2008, however, noting that several neighborhoods within the high class fell below 0.81. It is not clear from the map which neighborhoods experienced the drop but it is likely due to drops in violent crime rates for that year.

Attendance zone boundaries for both middle and high school show similar numbers of neighborhoods experiencing relatively high TVI, but with much lower overall TVI scores in 2010. The need for trauma-informed practices among these schools would appear to be less substantial if only evaluating the 2010 data. The representation of violent crime and overall TVI variables for 2012 and 2014 rebound at levels similar to those in 2008 thus making the 2010 results an anomaly.

2012 TVI

The 2012 individual quality of life variables for TVI aggregation reveal patterns and magnitudes similar to those of 2008 yet extending also into areas of the southern wealthy wedge and outer eastern and western neighborhoods (Figure 23). Some of the variation found in 2012 as compared with 2008 may be the result of mapping variables at smaller enumeration unit size. The neighborhoods designated in 2008 represent local, city-determined boundary definitions of neighborhoods while the 2012 data are mapped at the block group level. As illustrated in Figure 22, a single neighborhood by 2008 definition may encompass several block groups or sections of block groups. The 2008 map will generalize away local 2012 block group level variations within a given 2008 neighborhood boundary, mapping only the mean TVI among relevant block groups. In many cases, there appears uniformity in block group TVI within a 2008 neighborhood. As seen in the upper right side of the Figure 22 inset map, however, very low and moderately high TVI are adjacent within the 2008 neighborhood boundary, and much variation exists for other block groups within that neighborhood. These would be averaged within that neighborhood thereby rendering less accuracy in assessing of trauma vulnerability among students exposed at high levels of TVI.

An examination of the individual maps for 2012 (Figure 23) reveals increases in both magnitude and spatial extent for each of the variables as compared with 2008, again, owing at least in part to the smaller mapping unit that captures local variations within 2008 neighborhood boundaries. Violent crime rates jumped to the top class (darkest red) within some neighborhoods to the west, north and east of center city, and areas of above average violent crime in 2008 spread to consume neighborhoods within much of the crescent, extending to the outer edge of the county. Similar, though less extensive, was the spatial spread of persons reliant on food and nutritional services. Central neighborhoods with in 2008 transitioned to higher percentages in 2012. Neighborhoods experiencing highest percentages increased to consume the neighborhoods north to west of center city. Visually, therefore, 2012 appears to have seen a significant increase in persons experiencing low-to-poverty level income. The spatial distribution of adolescent births remained fairly constant from 2008 to 2012 although extending to the edge of the county in the west to southwest as did the Black population. Again, this may be due in part to the block group level mapping of 2012 data. The 2008 Quality of Life study contained neighborhoods with No Data; these disappeared in 2012.

The 2012 pattern of TVI (Figure 24) spread outward from center along the crescent following the increases in magnitude and spatial extent noted above for the 2012 violent crime rate and percent of persons receiving food and nutritional services. Increases in violence and poverty appear to contribute greatly towards vulnerability for students to experience trauma. A large number of middle and high schools are located within concentrations of moderate to high TVI neighborhoods (Figure 24) again making the case, at least visually, for trauma informed practices.

2014 TVI

The 2014 spatial patterns for individual variables and TVI mirror those of 2012 but with decreasing magnitude away from center city. The violent crime rate (Figure 25) remained strong along the central crescent where overall TVI affects children attending and living near centrally located schools. The pattern for percent of persons receiving food and nutritional services remained fairly constant yet with several neighborhoods decreasing in magnitude in 2014. The configuration for highest rates of adolescent births changed dramatically all along the crescent with far fewer births to adolescents occurring in 2014. The overall pattern of relative levels of teenage birth remained similar to previous years. The lessening of violent crime and poverty stressors resulted in a decrease in the maximum 2014 TVI as illustrated in Figure 26 where the crescent pattern continues but with the highest TVI in 2012 reducing somewhat in 2014 and with a corresponding lowering of TVI in neighborhoods at the outer edge of the crescent. The central middle and high school attendance zones continue to encompass clusters of higher TVI neighborhoods thus still illustrating potential need for inclusion of trauma informed practices (Figure 26).

This study has thus far compared neighborhood TVI across time for visual analysis of spatial patterns relating to violence exposure and related socio-environmental characteristics that may increase risk for trauma. The 2014 TVI will also serve as the level-2 independent variable in the multi-level modeling of individual level-1 independent variables and their relationship to dependent variables reflecting student outcome, i.e., OSS and test performance. The remainder of this chapter examines results within the context of the research questions and related hypothesis.

Research Question Analyses

This section discusses the results of risk ratio and multi-level modeling processes in relation to the four research questions and related hypotheses. Results for research questions/hypotheses 1 and 2 are discussed in relation to OSS as the dependent variable while research questions/hypotheses 3 and 4 examine academic achievement on three standardized tests, likewise serving as dependent variables. Test performance, measured as percent passing at levels 1 or 2, also considered as “not passing”, is investigated separately for English 2, 8th grade Reading, and 8th grade Math, through relative risk ratio assessments for research question/hypothesis 3 and for multi-level modeling to answer research question/ hypothesis 4. The section concludes by relating the historical context of observed longitudinal TVI-risk ratio patterns with the multi-level models to offer potential explanation for model results. Significance of the results and implications for school policy and practice are then discussed in Chapter 5 along with recommendations for model improvements and practical implementation.

Research Question/Hypothesis 1

The first research question and hypothesis are addressed by the initial calculation of relative risk ratios. The research question asks: What are the similarities and differences between Black and White and other Non-white male middle and high school students in regards to short term out of school suspensions (OSS) for subjective and non-subjective referrals within Charlotte-Mecklenburg Schools (CMS)? The corresponding hypothesis states that Black male middle and high school students receive a greater share of short term out of school suspensions for subjective and non-subjective referrals within

Charlotte-Mecklenburg Schools (CMS) as compared with White and other Non-white males.

The risk ratio for suspensions was calculated for Black-White, and for each race/ethnic group vs. all other groups for total males in grades 6-12 from 2007-2008 through 2013-2014. Student racial/ethnic composition by year, as listed in Table 14, demonstrate that Black males are the predominant group across all years, followed by White, then Hispanic males, with Asian and Multi-Racial males increasing across time and American Indian males holding fairly steady and forming the smallest group. Out of school suspension by racial/ethnic group among males, grades 6-12 in 2007-2008 through 2013-2014 are recorded in Table 15 and reveal large disproportion for Black males vs. all other groups as well as cyclic higher and lower OSS among all groups across time. Risk indices for each group are calculated by dividing data in Table 15 by data in Table 14, i.e., OSS/Population, and are displayed in Table 16 by group. Risk ratios (RR), calculated as $RI\text{-}group1/RI\text{-}group2$ (e.g., $RI\text{ Black}/RI\text{ White}$), are also shown in Table 16, revealing significantly high overrepresentation for Black-White followed by Black-Non-Black, with almost all other groups across time indicating underrepresentation in OSS. The tabulated results are illustrated in Figure 27 portraying disproportion for Black males as compared with all other groups.

As illustrated in Figure 27, a ratio of 1.0 represents parity or no difference, less than 1 means underrepresentation, and any ratio above 1.0 signifies overrepresentation as compared with all other groups. The red bar compares Black vs. White males across each of the seven school years. Black-non Black male risk ratios are represented in purple. The risk ratios for Black males (vs. White and vs. all non-Black) demonstrate disparities well

above 1.0. Black-non Black ratios range from just under 3.4 in 2009-2010 to approximately 3.85 in 2013-2014. Disparities are much greater when comparing Black to White males with ranges from 4.8 in 2009-2010 to 6.4 in 2013-2014. Multiracial ratios reach 1.0 in 2007-2008, rise just above 1.0 for the next two years, then drop to below parity for remaining years, with levels comparable to American Indian and Hispanic by 2013-2014.

The data reveal that Black male middle and high school students receive a greater share of OSS as compared with White and other non-White males. White and all non-White males, with the exception of Multiracial, however, show similarities in risk ratio in that all are underrepresented. Asian and White males are greatly underrepresented, remaining at or below .25 across the seven years. The relative risk ratio results thus verify rejection of the null hypotheses of no difference in short term out of school suspensions for subjective and non-subjective referrals within Charlotte-Mecklenburg Schools (CMS) as compared with White and other Non-white males.

Research Question/Hypothesis 2

The first set of multilevel models addressed research question/hypothesis 2, where the question asks: to what extent does neighborhood level exposure to violence moderate the relationship between Black male middle and high school students and short term out of school suspensions (OSS)?; and with the hypothesis that high levels of neighborhood violence moderate the effect of race on OSS such that increased violence leads to a stronger positive relationship between race (Black) and OSS. The multilevel models were thus designed with DaysOSS as the Level-1 DV and TVI as the Level-2 predictor or independent variable (IV). Additional Level-1 predictor variables (IV's) were

incorporated into the model to test for individual level moderators between race (Black) and OSS. These were described in depth in Chapter 3. The models examine relationship significance within and between level 1 and 2 variables so as to determine the extent to which TVI and level-1 IV's influence OSS. Table 10 details the level-1 and 2 hypothesis and the necessary model conditions for answering the research question, and the within and between level significance required for satisfying the stated hypothesis. Results from the three multi-level models, Null, Level-1 and Level-2, are discussed below in relation to the hypotheses and model conditions specified in Table 10.

Unconstrained or Null Model with DAYSOSS as DV

The unconstrained or Null model utilized a one-way analysis of variance (ANOVA) to estimate within and between group variance in OSS. As shown in Table 17, the Null model displayed an ICC of 0.063 meaning that 6.3% of the variance in DAYSOSS can be attributed to between neighborhood (level 2), or group membership, and 93.7% of the variance in DAYSOSS is between individual students (level 1). This does not make a strong case for level-2 analysis (multilevel modeling) however, additional output model fit indices showed significant, thus enabling rejection of the null hypothesis and demonstrating potential rationale for level-2 modeling. The chi-square showed significant at 0.000 ($p < .001$) with a Root Means Square Error of Approximation (RMSEA) of < 0.5 . The within level intercept was positive and statistically significant ($b = 19.493$, $p < .001$) as was the intercept variance ($b = 1.305$, $p < .001$) (see Table 20). From here, level-1 modeling was conducted for DAYSOSS as DV with race as the descriptor variable and *ec1*, *mcventol*, *arrest1* and *daysunex* as level-1 IV's.

Level-1 Model with DAYSOSS as DV

The level-1 model with DAYSOSS as DV was run first to as a series to test for race and the effect of each predictor variable (IV) on DAYSOSS, and then run with race against all IV's to test for the presence of interactions between predictor variables. Level-1 models addressed hypotheses 2-5 from Table 10, testing the extent to which each level-1 predictor is related to OSS after controlling for TVI. The ICC per individual predictor variable as listed in Table 18, indicate a small percentage of the variance in DAYSOSS can be attributed to each variable separately, ranging from 4.3% of the variance explained by days unexcused absence, to 6.2% of the variance explained by students receiving one or more arrests. The somewhat higher contribution of arrests in explaining OSS may in part contribute to understanding of the impact of OSS on the school to prison phenomenon. Arrest data include only ages 16+, therefore the ICC may in fact be higher for data that includes juvenile (under age 16) arrests. The sum total ICC explained by individual predictors is 21.9%. Given that 93.7% of the variance in DAYSOSS is attributed to between-individuals (refer to Null model ICC where $100 - 6.3 = 93.7$), 71.8% of variance remains unexplained by the level-1 model ($93.7 - 21.9 = 71.8$), meaning that other individual level predictors need to be tested for relationship with DAYSOSS. Nonetheless, the level-1 model was run with the existing variables to determine the significance level of within and between variables. The first model condition specified in Table 10, namely that there is systematic within- and between-group variance in OSS, is supported by these results.

All level-1 results are reported Table 17 and diagrammed in Figures 28 and 29. Parameter estimates and standard error are reported for intercept and residual variances, with significance indicated where applicable for interactions between descriptor (race)

and predictor variables. The full level-1 model results were positive and statistically significant for the within level intercept ($b=16.288$, $p<.001$) indicating within predictor-group [race] difference in DAYSOSS (Table 20). In other words, OSS is significantly related to Black males. This satisfies the second model condition (Table 10) of significant variance at the level-1 intercept.

In looking at between-level variance, or how much the mean DAYSOSS varies across groups (IV's), results (Table 20 and Figure 28) show significant negative slopes for DAYSOSS with race ($b= -1.687$, $p<.001$), ec1 ($b= -0.377$, $p<.001$), and mcvento1 ($b= -1.639$, $p<.05$). These results support model conditions relating to significant variance in level-1 slopes, indicating OSS as predicted by race, exceptional or special education status (ec1) and homelessness (mcvento1). The effect for race, ec1, and to a lesser, yet still significant level ($p<.05$), mcvento1, varies across groups (NPA's) with higher number of DAYSOSS among those with membership in Black race, exceptional or special education, and among those experiencing homelessness.

Variance in OSS is non-significant for students who have one or more arrests and unexcused absences. Additional significant between level relationships were revealed for race with exceptional or special education status at 0.122 ($p<.001$), homelessness with arrest (-1.396 , $p<.05$), and homelessness with days of unexcused absence (-0.070 , $p<.05$). The model thus discloses significant relationship between race (Black) and exceptional/special education status, and for homelessness with arrest (for age 16+), and homelessness with unexcused absence. The between level residual variances for level-1 slopes across groups revealed significance at $p<.001$ for DAYSOSS, for race, and across all predictor (IV) groups as described in Table 17 under Residual variance, and as

portrayed visually in Figure 29. The significant residual variance across all groups indicates that there is systematic variance in level-1 slopes that is not accounted for in the level-1 model (Woltman, et.al, 2012), thus making a case for one or more level-2 predictors to be added to the model. For this study, there is only one level-2 predictor, TVI2014, representing the trauma vulnerability index per neighborhood profile area (NPA). Results for the level-2 model are described next.

Level-2 Model with DAYSOSS as DV

The level-2 model incorporated TVI2014 as the level-2 variable with the NPA identifier as the group or cluster variable and race as the group mean variable. The model tested for variance within the four level-1 variables (ec1, etc.) and between each level-1 variable and TVI2014. This model addresses the hypothesis that TVI is related to OSS (Table 10) and also looks at the within-and between group variance in OSS in terms of the effect each level-1 has variable on TVI. The within-level intercept was significant at 18.605 ($p < .001$) indicating within group (neighborhood) variance in DAYSOSS (Table 20). As diagrammed in Figure 30, between-level effects of TVI2014 with DAYSOSS and level-1 predictors displayed significant for DaysOSS with race ($b = -0.737$, $p < .001$), ec1 ($b = 0.592$, $p < .001$), arrest1 ($b = 0.357$, $p < .05$), and daysunex ($b = 0.074$, $p < .001$). These results demonstrate further that DAYSOSS across groups (NPA's) are higher among those with membership in Black race, exceptional or special education, those with higher numbers of unexcused absence other than OSS, and to a lesser, yet still significant degree, among those students (age 16+) with one or more arrest. The relationship of OSS with neighborhood trauma vulnerability is thus also demonstrated for race [Black], ec1, arrest1, and daysunex. As with the level-1 model, residual variance (Figure 31) was

significant across DAYSOSS, race, and all level-1 predictor variables, indicating that a systematic variance in level-2 slopes remains unaccounted for (Woltman, et.al, 2012). Additional variables for level-2 that may account for the variance will be recommended in Chapter 5.

This section has tested the hypothesis that high levels of neighborhood violence moderate the effect of race on OSS such that increased violence leads to a stronger positive relationship between race (Black) and OSS. The hypothesis is based on the question: to what extent does neighborhood level exposure to violence moderate the relationship between Black male middle and high school students and short term out of school suspensions (OSS)? A set of multilevel models were established to test the hypothesis of neighborhood violence as moderator between race (Black) and OSS, with DAYSOSS as dependent variable. The models also included four individual student (level 1) predictor or independent variables, exceptional, or special education status (ec1), experiencing one or more arrest (arrest1), McKinney Vento status or experiencing homelessness (mcvento1), and days of unexcused absence (daysunex).

The null model indicated significant variance at the level-1 intercept and slope, and that 6.3% of the variance in DAYSOSS can be attributed to between neighborhood (level 2), or group membership. The combined variance in DAYSOSS attributable to level-1 IV's was 21.9% with level-1 modeling indicating systematic within and between group variance in OSS, and variance in level-1 intercept and slope predicted primarily by race (level-1 descriptor), exceptional or special education status, and homelessness, with additional significant between level relationships revealed for race with exceptional or special education status, homelessness with arrest, and homelessness with days of

unexcused absence. Level-2 model results showed significant variance at the within-level intercept and slope. The ICC at the null model level indicated 6.3% of variance in OSS attributable to between neighborhood (group) membership, however, the level-2 model produced an ICC indicating only 4%. Nonetheless, significant between-level variance with DAYSOSS and level 1 predictors displayed significant for neighborhoods with race, ec1, arrest1, and daysunex. Across groups (NPA's), DAYSOSS was revealed to be higher among those with membership in Black race, exceptional or special education, those with higher numbers of unexcused absence other than OSS, and among those students (age 16+) with one or more arrest. While the initial hypothesis relating TVI to OSS is not strongly supported by the results, the addition of level-1 IV's, when controlling for TVI, demonstrate that there are moderator effects additional to TVI that explain the relationship observed between race (Black) and OSS. Model results indicate 4 - 6.3% of the variance in DAYSOSS can be attributed to TVI, with 21.9% of the variance spread among the four IV's tested, signifying higher OSS for students with exceptional or special education status, who experience homelessness and arrest and who have unexcused absences. Implications of these results for school discipline will be discussed in Chapter 5.

Research Question/Hypothesis 3

The third research question and hypothesis are addressed by the set of relative risk ratios regarding performance on selected standardized tests. Research question 3 is stated as: What are the similarities and differences between Black and White male middle and high school students in regards to end of grade/end of course (EOG/EOC) test scores within Charlotte-Mecklenburg Schools (CMS)? The corresponding hypothesis is that

Black male middle and high school students receive a greater share of students passing standardized EOG/EOC tests at level 1 and 2 (or not-passing) as compared with White and all other non-White students. The hypothesis was explored by comparing student achievement in key EOG/EOC tests by race/ethnicity, expressed as percent passing levels 1 - 5. For purposes of comparing with OSS risk ratios, and so as to determine potential impact of disproportionate OSS on achievement, relative risk ratios were determined for students who passed at levels 1 and 2, the levels that reflect “not passing”. While the full data set included test scores from multiple subjects, relative risk ratios were calculated across all seven years for three of the most commonly taken tests, namely 8th grade Math and Reading, and English 2. Data for Algebra 1 were only available through 2011-2012, therefore were excluded from the analysis. Tables and graphs displaying ratios per race/ethnicity for the three tests across time are presented below with brief analysis following each graph.

Data for calculating risk ratios for 8th grade Math were prepared by extracting all 8th grade males with a test result in this subject, counting the totals passing at levels 1 or 2 across the 2007-2008 to 2013-2014 timeframe, and then determining risk indices (RI) and relative risk ratios (RR) for Black-White, Black-non-Black, and for each other group vs. all other groups. Table 19, student demographics, and Table 20, number of students passing 8th grade Math at levels 1 and 2 provide the data for calculating RI's and RR's as displayed in Table 21. Table 18 demonstrates predominance of Black and White students, followed by Hispanic. In Table 19, Black students by far outnumber the others in students not passing. The numbers not passing 8th grade Math across all groups rose dramatically

in 2012-2013, yet the risk ratios fell. Figure 32 illustrates the change in RR across groups over the seven-year time span.

Risk ratios for 8th grade math (Figure 32) reveal consistent over representation of students passing at levels 1 and 2 for Black males, particularly when compared with White males but also when compared with all non-Black male eighth graders. Black-White ratios start at 4.4 in 2007-2008, rising to 6.4 in 2009-2010, with a drop to at or below 3.0 in 2012-2013 and 2013-2014. Black-non Black ratios are consistently just above 2.4 across the 2007-2008 to 2011-2012 timeframe with drops to 1.8 in the remaining two school years. Disparity of just above 1.0 is represented for American Indian male eighth graders across 2007 – 2014. All other groups are at or below parity, most evidently for White males whose ratios are at or below .2 until 2012-2013 when their ratios rose to .4. This may partially explain the drop in relative risk ratios for Black-White in these same years.

Risk ratios for 8th grade Reading followed a process similar to that for 8th grade Math whereby all 8th grade males with a test result in Reading were selected, totals passing at levels 1 or 2 across the 2007-2008 to 2013-2014 timeframe were determined, and then RI and RR calculations were done for the same sets of comparison groups as for Math. Table 22, student demographics, and Table 23, number of students passing 8th grade Reading at levels 1 and 2 provide the data for calculating RI's and RR's as displayed in Table 27. Black and White students comprise the largest numbers of students (Table 22) while Black students form a noticeably larger proportion of students not passing (Table 23). This is graphically evident in Figure 33.

Eighth grade reading relative risk ratios (Figure 33) show stronger disparity for not-passing among more groups across all years as compared with Eighth grade math. Black-White and Black-non Black ratios again reveal the strongest disparities with Black-White overrepresentations of 2.3 in 2012-2013 to 4.7 in 2009-2010 while Black-non Black ratios range from 1.75 in 2013-2014 to 2.3 in 2009-2010. Hispanic eighth grade male risk ratios for reading are consistently above 1.0, reaching 1.4 in 2007-2008 through 2009-2010. Multiracial students not passing reading are also overrepresented at 1.4 in 2013-2014. Other groups are below parity but with ratios that are consistently higher than their respective performance in eighth grade math. American Indian students experience ratios above 1.0 for four of the seven years.

Calculation of risk ratios for English 2, unlike 8th grade subjects, comprised all male students, grades 6-12, who had an English 2 test result, as was explained in Chapter 3 (model variables). 8th graders were isolated in order to test for the critical year of transition to high school, while the English 2 exam, most often given in high school, was tested for a larger student sample. Table 25, English 2 student demographics, and Table 29, number of students passing English 2 at level 1 or 2 (i.e., not passing), form the data for calculating RI's and RR's as represented in Table 27. Note the predominance of Black and White students (Table 25) yet much higher numbers of Black students who did not pass English 2 (Table 26).

High School English, an exam primarily taken in grades 9 or 10, reveal Black-White ratios represent far greater over-representation than other groups. Black-White ratios range from a low of 2.85 in 2012-2013 to 5.4 in 2011-2012 with five of the seven school years showing ratios above 4.0. Black-non Black ratios also illustrate over-

representation at amounts ranging from 1.8 in 2012-2012 to 2.2 in 2008-2009. American Indian results also reveal over-representation across all years with ratios of 1.2 in 2013-2013 to 1.8 in 2007-2008. Hispanic results rise slightly above 1.0 in four of the seven years. All other results are at or below 1.0 with White males well below.

This section has discussed the similarities and differences between Black and White and other Non-White male middle and high school students with regards to EOG/EOC test scores within CMS for Eighth grade Math and Reading and for English 2. In comparing test score ratios for students over-represented as not passing, Black-White and Black-non Black ratios are consistently well over 1.0 across all subjects and all years, with variation in which years exhibit the highest ratios. For other non-white race/ethnicity, ratios range from just above to just below 1.0, with greater over-representation in reading/English than for math. White males demonstrate extreme under-representation across all subjects and all years. Relative Risk Ratio results as illustrated in Figures 32 to 34, support hypothesis 3, namely that Black male middle and high school students receive a greater share of level 1 and 2 EOG/EOC test scores as compared with White and other Non-white students. The disparities, however, are not as strong as those observed in the relative risk ratios for OSS.

Research Question/Hypothesis 4

Research question and hypothesis 4 address academic performance as measured by results on selected end of grade/end of course tests. Question 4 asks: To what extent does neighborhood level exposure to violence moderate the relationship between Black male middle and high school students and EOG/EOC test scores? The corresponding hypothesis states that high levels of neighborhood violence moderate the effect of race on

EOG/EOC test scores such that increased violence leads to a stronger negative relationship between race (Black) and EOG/EOC test scores. In order to answer this question and test the related hypothesis, the multilevel modeling studied significant relationships among three tests taken by larger numbers of students: English 2 (ENG2), comprising all grades but mainly 9th and 10th grade, plus Eighth grade Math (MA08) and Eighth grade Reading (RD08), evaluating eighth grade males only. Null, level-1 and level-2 models were conducted for each of the three test score dependent variables. In each case, the target student population (those students with test results in the specific exams) were selected from the full 2013-2014 database. Results for each set of models are discussed within relevant sub-sections below.

Multilevel Models with English 2 (ENG2) as DV

The data for modeling with English 2 as DV include 5078 male students, primarily in grades 9 and 10, but with selected students from all middle and high school grades taking the end of course test in 2013-2014. Among the 5078 males taking the English 2 exam, 44% were Black (Table 9). Also shown in Table 6, Black males formed 69% of students who were homeless, 65% of those arrested at least once, 65% of students with one or more OSS, 47% of students with one or more days unexcused absence, and 100% of students with exceptional or special education status. Relevant statistical descriptives for the modeling the variables were listed in Table 10 where ENG2 serves as DV, race as descriptor variable, DAYSOSS, dayxunex, ec1, mcvento1 and arrest1 form level 1 predictors (IV's) and TVI2014 is the level 2 predictor of English2 performance. The hypotheses and model conditions for this set of models were outlined in Table 14, testing for statistical significant relationships within and between level-1 IV's with ENG2 (DV),

and of TVI2014 with ENG2. The null, level 1 and level 2 model results are listed in Table 28, indicating the extent to which the model conditions are met in support of the hypotheses noted in Table 11. Level-1 and 2 model results are then illustrated in Figure 35. The results are described within the sections below.

Unconstrained or Null Model with ENG2 as DV

The unconstrained or Null model utilized a one-way analysis of variance (ANOVA) to estimate within and between group variance in ENG2 performance as percent passing at levels 1 or 2, thus “not passing”. The model displayed an ICC of 0.013 meaning that only 1.3% of the variance in ENG2 can be attributed to between neighborhood (level-2), or group membership, and 98.7% of the variance in ENG2 is between individual students (level-1). The case is quite weak for level-2 analysis (multilevel modeling). The chi-square and RMSEA also displayed as non-significant. The within level intercept was positive and statistically significant ($b=1.493$, $p<.001$) but the intercept variance ($b=0.003$, $p=0.087$) was non-significant. Level-1 modeling was nonetheless conducted for ENG2 as DV.

Level-1 Model with ENG2 as DV

The level-1 model with ENG2 as DV revealed an ICC of 0.065 (0.013 per IV), attributing only 6.5% of the variance in ENG2 performance to individual student predictor variables. This leaves 92.2% of variance to be attributed to other level-1 predictors and possibly to other school and neighborhood level predictors. As indicated in Figure 35, the within level residual variance showed significant ($b=1.478$, $p<.001$), however, all other within and between level intercept and slopes revealed non-significance. Among residual variances, ENG2 demonstrated significance ($b=0.002$,

$p < .05$) as did ENG2 with ec1 ($b = 0.000$, $p < .05$), and with DAYSOSS at $b = 0.000$ ($p < .001$).

Level 2 Model with ENG2 as DV

The level 2 model for ENG2, as can be expected, revealed an ICC of 0.013, meaning 1.3% of the variance in ENG2 performance can be attributed to neighborhood TVI. As shown in Figure 35, all other level-2 variances displaying non-significant apart from the ENG2 intercept variance at $b = 1.483$ ($p < .001$), and the ENG2 residual variances at $b = 3.088$ ($p < 0.001$), and $b = 0.019$ ($p < .001$).

Multilevel Models with Eighth grade reading (RD08) as DV

The data for students taking the 8th grade Reading exam in 2013-2014 consisted of 5906 males from grades 6-12. The data selected for analysis was narrowed to include only the 784 males in 8th grade who had a test result for 8th Grade Reading (RD08). This data set comprised 43% Black, with percent Black varying among the model variables. For example 44% of students with one or more days of unexcused absence were Black, while 100% of the students with exceptional or special education status were Black (Table 9). Descriptives for the model variables were noted in Table 11 where 8th Grade Reading (RD08) serves as DV, Race as Level-1 descriptor, with level-1 IV's of DAYSOSS, daysunex, ec1, and mcvento1, and TVI2014 as level-2 IV. The hypotheses and model conditions for this set of models was outlined in Table 15, examining for statistical significance among relationships within and between the level-1 IV's and RD08 (DV), and for TVI2014 with RD08. The null, level 1 and level 2 model results are tabulated within Table 29, and diagrammed in Figure 36. Results follow, indicating the extent to which the model conditions are met in support of the hypotheses.

Null Model with RD08 as DV

The unconstrained or Null model utilized a one-way analysis of variance (ANOVA) to estimate within and between group variance in RD08 performance as percent passing at levels 1 or 2, or “not passing”. The model displayed an ICC of 0.003 meaning that only 0.3% of the variance in RD08 can be attributed to between neighborhood (level 2), or group membership, and 99.7% of the variance in RD08 is between individual students (level 1). As with ENG2, the case is quite weak for level-2 analysis (multilevel modeling), however, the level-2 model for RD08 revealed an ICC 0.063 thus attributing 6.3% of variance in 8th grade Reading to group membership (neighborhood, level-2). The chi-square and RMSEA displayed as significant as well ($\chi^2 = 0.586$, $p < .001$). The within-level intercept was positive and statistically significant ($b = 1.801$, $p < .001$) but the intercept variance ($b = 0.017$, $p = 0.589$) was non-significant. Given the significant chi-square and within and between-level intercept, Level-1 modeling was conducted.

Level 1 Model with RD08 as DV

The level-1 model with RD08 as DV showed an ICC of 0.098, attributing 9.8% of the variance in RD08 performance to individual student predictor variables. The balance of 89.9% ($99.7 - 9.8$) of the variance to be accredited to other level 1 predictors and possibly to various school and neighborhood level predictors. The within level intercept variance displayed significant ($b = 1.380$, $p < .001$), as is shown in Figure 33. At level-1, all other within and between-level effects revealed non-significance.

Level 2 Model with RD08 as DV

The level 2 model for RD08 revealed an ICC of 0.063, whereby 6.3% of the variance in 8th grade Reading performance can be attributed to neighborhood TVI. This exceeds the variance of 0.003 obtained in the null model. The within-level intercept was significant at $b=1.760$ ($p<.001$) signifying that TVI is related to RD08. Intercept variance also showed significant for RD08 at $b=2.657$ ($p<.001$). The between-group slope for *mcvento1* on TVI2014 revealed significance at -3.227 ($p<.05$), demonstrating that homelessness is significantly related to trauma vulnerability at the 95% level, thus meeting the model conditions for homelessness. All other between-group intercepts, slopes and variances displayed non-significant at level-2 (Figure 36). At level-2, therefore, TVI showed significant at the within-level intercept and variance but not between groups, assigning 6.3% of the variance in the percent not-passing 8th grade reading to neighborhood trauma vulnerability. Between-group variance indicated that only homelessness is significantly related to 8th grade Reading performance.

Multilevel Models with 8th grade Math (MA08) as DV

A total of 805 students with end of grade test scores in 8th grade Math were selected for the final set of multilevel models. Of the 805 students, 42.11% were Black. Within other level-1 variables, 83% of homeless students were Black, while 44%, 62% and 100% were black among students with unexcused absence, OSS, and exceptional/special education, respectively (Table 6). The 8th grade Math descriptives for the model variables were noted in Table 9 where 8th Grade Math (MA08) serves as DV, Race as Level-1 descriptor, with level-1 IV's of DAYSOSS, daysunex, ec1, and *mcvento1*, and TVI2014 as level-2 IV. The hypotheses and model conditions for this set

of models were outlined in Table 12, where MA08 served as DV and the model tested for significant relationships of MA08 with level-1 IV's and with TVI2014. The null, level 1 and level 2 model results are tabulated in Table 30 and illustrated in Figure 37.

Description of the results follow, indicating the extent to which the model conditions are met in support of the hypotheses.

Null Model with MA08 as DV

The unconstrained or Null model utilized a one-way analysis of variance (ANOVA) to estimate within and between group variance in MA08 performance as percent passing at levels 1 or 2, or “not passing”. The model displayed an ICC of 0.253 (Table 180), much higher than null models for ENG2 and RD08. For MA08, the null model indicates 25.3% of the variance in MA08 can be attributed to between neighborhood (level 2), or group membership, leaving 74.7% of the variance in MA08 as potentially related to within and between level-1 IV's. This makes a stronger case for level-1 and 2 analyses of 8th grade Math percent not passing, especially in comparison with RD08 and ENG2 results. The chi-square and RMSEA for MA08 displayed as significant ($\chi^2 = 0.000$, $p < .001$). The within-level intercept was positive and statistically significant ($b = 1.615$, $p < .001$) as was the intercept variance ($b = 0.550$, $p < .001$). Level 1 modeling was therefore conducted for MA08 as DV, with race as the descriptor variable and ec1, mcvento1, daysunex and DAYSOSS as level-1 IV's.

Level 1 Model with MA08 as DV

The level-1 model with MA08 as DV exhibited an ICC of 0.138, attributing 13.8% of the variance in MA08 performance to individual student predictor variables. The balance of 60.9% ($74.7 - 13.8$) of the variance to be accredited to other level-1,

school and neighborhood level predictors. The within level residual variance showed significant ($b=1.314$, $p<.001$). DAYSOSS indicated significant ($b = -0.031$, $p<.05$) for between level effects with MA08. All other within and between-level effects, intercepts and slopes exhibited non-significant. The significant-only relationships are diagrammed in Figure 37. Apart from DAYSOSS, which showed to be significantly related to MA08 at $p<.05$, none of the other model conditions were met in relation to significant variance as being related to or predicted by level-1 IV's

Level 2 Model with MA08 as DV

The level-2 model for MA08 revealed an ICC of 0.020, ascribing only 2% of the variance in 8th grade Math performance as not-passing to neighborhood TVI. This is in stark contrast to the null model indication of 25.3% of the variance in MA08 can be attributed to between neighborhood (level-2) memberships. The within level intercept was significant at $b=2.086$ ($p<.001$), and intercept variance also significant for MA08 at $b=2.683$ ($p<.001$). All level-2 within and between-group slopes indicated non-significant.

Summation of Models in Relation to Research Question/Hypothesis 4

To repeat, research question 4 asks: To what extent does neighborhood level exposure to violence moderate the relationship between Black male middle and high school students and EOG/EOC test scores? Results varied widely as to the extent to which test performance may be explained by individual or group membership and by level-1 vs level-2 variables. Null models indicated that 1.3% of the variance in ENG2, 0.3% in RD08, and 25.3% of the variance in MA08 can be attributed to between neighborhood (level 2), or group membership. At level-1, these figures were 6.5% for ENG2, 9.8% for RD08, and 13.8 for MA08, while for level-2, respective results indicated

1.3%, 6.3% and 2.0%. All results showed non-significance for race however. Overall, results of the three sets of models are inconsistent and inconclusive as to the extent to which neighborhood violence moderates the relationship between Black male middle and high school students and EOG/EOC test scores.

The corresponding hypothesis #4 states that high levels of neighborhood violence moderate the effect of race on EOG/EOC test scores such that increased violence leads to a stronger negative relationship between race (Black) and EOG/EOC test scores. Model intercept and residual variances for ENG2, RD08 and MA08 each reveal significance with TVI2014 demonstrating that increased violence leads to a stronger negative relationship with EOG/EOC test scores across all male students tested. Race, however, was non-significant in all cases, thus the hypothesis that increased violence leads to a stronger negative relationship between race (Black) and EOG/EOC test scores must be rejected in favor of the null hypothesis of no difference in EOC/EOG test scores by race. Increased violence does not appear to lead to a stronger negative relationship between race (Black) and EOC/EOG test scores.

With respect to other level-1 IV's, ec1 showed significant for ENG2 while DaysOSS revealed significance with ENG2 and MA08, and mcvento1 demonstrated significant with TVI2014 among RD08 students. These level-1 IV's may in part explain or predict low test scores, however, they do not adequately support the stated hypothesis. For ENG2, there appears to be significant difference between test performance among ec1 students, and students suspended. Similarly, there is significant difference and for homeless students exposed to violence among RD08 test takers. Overall, there appears to be no difference in Black male test performance in relation to level-1 characteristics, with

variation in test results explained largely by violence exposure. The multi-level modeling results across tests are inconsistent and inconclusive in evaluating the disproportionate share of Black student's not-passing EOC/EOG tests.

Analysis of Longitudinal TVI-RR Patterns and Multi-level Models

The time series nature of the TVI and Risk Ratios lends historical context to the multi-level model results for 2013-2014. The risk ratios provide summation of all students within relevant categories (OSS, test performance) and cannot be associated with specific neighborhoods. The pattern of Black population distribution as illustrated in Figures 18, 20, 23, and 25 follows patterns comparable to violent crime and overall TVI across time. The risk ratios demonstrate disparity for Black males at any given time period, and consistently across time. Thus it is logical to compare corresponding TVI maps and RR graphs for patterns that may provide insights relating to observed modeling results. Concurring patterns may suggest that observed relationships in 2013-2014, are not a random occurrence, but rather exemplification of chronic co-occurring factors impacting school experience for Black male students.

The comparison of RR with TVI across time reveals corresponding patterns that may prove useful in explaining results of the multilevel models, especially for the largely significant results among models with OSS as DV. High neighborhood-level violence exposure and school-level disproportionality in OSS are clearly exhibited for Black males across time. Modeling of individual-level male students' OSS reveal significance with race [Black], all level-1 predictors, and neighborhood TVI for 2013-2014. Future modeling of student data for additional years will test the extent to which the longitudinal

trends may predict individual student outcome, and the need to address school discipline policy and practice for purposes of improved outcomes for Black males and all students.

The RR for test scores indicate that while Black males experience the highest disparity in percent of students not-passing, other groups reveal disproportionate test failure as well. The corresponding high patterns of TVI and low test performance across time are not as strong for Black males as were the patterns for OSS. Males of other race are experiencing testing difficulties as well, lending potential explanation to the lack of significance observed for modeling of standardized test performance.

Summary

Chapter 4 has reported the results of each aspect of the study beginning with the trauma vulnerability index and proceeding to discuss results of risk ratios and multilevel models within the context of the research questions and related hypotheses. Results of the Trauma Vulnerability Indices (TVI) were described and compared for 2008 through 2014, indicating longitudinal patterns in violence exposure useful for understanding student outcomes in relation to TVI. The chapter then explored results by research question and related hypothesis. Questions 1 and 2 corresponded to issues of OSS while 3 and 4 comprised academic achievement on standardized tests.

Results first addressed disproportionality in OSS [research question/hypothesis 1] by examining corresponding time series relative risk ratios. The hypothesis relating to disproportionality in OSS for Black males was supported. Next followed the analysis of multi-level modeling with 2013-2014 OSS as the dependent variable [research question/hypothesis 2]. Significance was demonstrated for TVI as moderator between race (Black) and OSS, with 6.3% of the variance attributed to neighborhood (group)

membership. Level-1 significance was also found between DaysOSS and race, special education and homelessness, as well as race with special education, and homelessness with arrest and unexcused absence. Results supported the second hypotheses of violence as moderator between race (Black) and OSS, with additional insight provided by level-1 predictors in explaining 21.9% of the variance in OSS.

Disproportionality in achievement on the selected EOG/EOC tests were then assessed for English 2, 8th grade Reading and 8th grade Math. Time series relative risk ratios supported the third hypothesis relating to disproportionality among Black males in percent not passing standardized tests. The results were not as strongly supported as with OSS, given that Hispanic and American Indian males also experienced overrepresentation among percent not passing in certain years. Multi-level modeling of 2013-2014 test performance (not-passing) as dependent variable [research question/hypothesis 4] was investigated for all three models per standardized test, and then scrutinized for insights on violence exposure's relationship with student academic outcomes. Results across all models were found to be inconsistent and inconclusive, thereby supporting the null hypothesis of no difference in percent not passing standardized tests for Black males. A discussion of the results, study limitations, implications of the study, and recommendations for model improvements and policy and program implementation are illuminated in Chapter 5.

CHAPTER 5: DISCUSSION

Overview

The purpose of this study has been to determine a course of action regarding in-school intervention to improve school experience and outcomes for Black male students who are involved in or exposed to gang and/or gun violence and potentially become “members” of the school-to-prison pipeline. The study goals were: a) To verify discipline Disproportionality and disproportionate violence exposure among Black males as compared with White males within CMS middle and high schools, b) To employ a multilevel and spatial statistical approach that explores significant spatial correlations between neighborhood violence exposure, discipline Disproportionality, academic difficulty and disproportionate arrests for middle and high school Black males as compared with White males; and c) To recommend behavioral, academic and administrative intervention strategies for schools that increase the likeliness of improvement in school outcomes for children exposed to violence.

Chapters 1 and 2 have laid the framework for the study via in-depth coverage of literature on violence exposure, trauma and its impacts on brain development, behavior, and academic achievement, and in- and out of school life characteristics that increase risk for trauma. The literature discussed issues of disproportionality for Black males within a context of zero tolerance policies which are particularly exclusionary for this population. The study is theoretically grounded in trauma and strain theories wherein student aggressive response to violence is attributed in part to post-traumatic stress disorder as

triggered by exposure to traumatic experience (Bloom, 2013) but also as anger and frustration over unjust treatment.

Four research questions with related hypotheses were proposed to explore disproportionality in student outcomes for Black males where outcomes were measured as out of school suspension (questions 1 and 2) and performance on selected standardized tests (questions 3 and 4). In Chapter 3, the disproportionality, and spatial and multi-level modeling research methods were detailed for addressing the research questions and related hypotheses. These covered GIS modeling of trauma vulnerability, relative risk ratio calculation of racial disproportionality, and multi-level modeling of student outcomes in relation to neighborhood TVI (level-2) and a set of individual, level-1 independent variables, with OSS and test performance serving as dependent variables. Results were then detailed in Chapter 4 with reference to relevant tables and figures. Results satisfy the first two research goals, namely, demonstration of disproportionality in student outcomes (OSS and EOG/EOC test performance) for Black males, and exploration of statistical significance among Black males for relationship of these student outcomes with neighborhood (level-2) trauma vulnerability, and selected individual (level-1) independent variables. Neighborhood trauma vulnerability was found to significantly explain a small proportion of the relationships between Black male OSS and test performance. The level-1 predictor variables showed stronger significance in relation to OSS than to test performance.

This chapter will now discuss the findings of the research questions/ hypotheses through the lens of the theoretical framework and other relevant literature as well as my own personal experience. Discussion is centered on trauma in relation to behavior and

learning, discipline disproportionality for Black male students and Black males who are homeless, and the school-to-prison pipeline. Methodological limitations are discussed and suggestions are offered for refining spatial and multi-level modeling by way of improved variable selection and enhanced model presentation. Chapter 5 concludes with significance of the findings for transforming school discipline policy and reducing the school-to-prison pipeline, and offers recommendations for trauma-sensitive and culturally responsive practice and for future research.

Review of Findings

Findings Related to Suspension

The first research question determined rejection of the null hypotheses of no difference in short term out of school suspensions for subjective and non-subjective referrals within Charlotte-Mecklenburg Schools (CMS) as compared with White and other Non-white males. The data reveal that Black male middle and high school students receive a much greater share as compared with all other groups of males across the 7-year time span. These results are in line with national-level research on racial disproportionality in school discipline for Black and Hispanic males and for special education students (American Institutes for Research (AIR), 2017; Carter, Skiba, Arrendondo & Pollock, 2016; Gregory, Skiba & Noguera, 2010; Losen & Martinez, 2013; The Equity Project, 2017; Vanderhaar, Petrosko, & Munoz, 2013; Wald, 2014). While the graph in Figure 27 confirms national level findings on disparities in OSS for Black males, it does not provide insight as to why the extreme disparity exists. Determining new strategies in school discipline policy and practice require knowledge of factors contributing to observed discipline inequities.

The literature on discipline disparities reviews a number of characteristics frequently cited as causal factors in explaining discipline disparities (Carter, et.al, 2014; Gregory, Skiba & Noguera, 2010; Mediratta & Rausch, 2016; Skiba & Williams, 2014; Wald, 2014). These include student socio-economic status and neighborhoods of chronic poverty and exposure to violent crime, with associated traumatic stress impacts on behavior (of relevance to this study); low academic achievement and related frustrations with school among Black students; perceived differential behavior by race or culture as identified by school staffs and office referrals; differential selection of Black students for office referrals; differential processing of suspensions for Black students; notions of school safety and order as being maintained via suspension and other methods of exclusionary discipline; and implicit bias as strongly contributing to stereotypes that lead to differential treatment by race, and ultimately to racial disparities in school discipline. Skiba and Williams (2014, p. 5) report that "...neither poverty nor differential rates of misbehavior explain racial and ethnic disparities in discipline...", that relationships do exist between poor academic achievement and behavior problems, and that increased diversity among teaching staff, reform of classroom management practices, and positive school climate result in reduction of racial disparities in school discipline. While certain of the above-mentioned demographic, community, and institutional characteristics may in part explain some of the disparity in student discipline, they collectively do not satisfactorily account for the longstanding disproportionality in suspending of Black males (Gregory, Skiba & Noguera, 2010). Multi-level modeling offers opportunity to evaluate additional contributing factors.

Multi-level modeling in relation to OSS and Black males (research question 2) attributed up to 6.3% of the variance in DaysOSS to TVI, with 21.9% of the variance spread among the four IV's tested, namely exceptional/special education status, homelessness, arrest, and days of unexcused absence. The hypothesis of neighborhood violence as a moderator is thus confirmed, however, the small percentage attribution of TVI to disproportionate OSS may in part be due to methodological and data limitations. Regarding data, the neighborhood violent crime rate, utilized as the sole "exposure" variable, for example, encompasses all violent crime as recorded by the police department, and calculated for the Quality of Life studies. The rate is not completely focused on those forms of violence which most directly impact children and youth, particularly Black male youth. An improved measure for the "exposure" variable in the model might encompass weighting and aggregation of additional measures of violence as are more relevant to children's neighborhood experience.

Calculation of a juvenile violent victimization rate (violent crime against juveniles in relation to the total juveniles per neighborhood), for instance, would more directly address student experience with violence via child maltreatment. Differentiation of victimization by race/ethnicity may disclose whether Black male juveniles are disproportionately victimized. Further, as indicated in the literature associating gangs, guns and drugs (Anderson, 1999; Allen & Lo, 2012; Huebner, Varano & Bynum, 2007; Kellerman, Fuqua-Whitley & Parramore, 2004; McGarrell et.al, 2013; Vorasi & Garbarino, 2000), youth in high poverty neighborhoods are often drawn to gang and gun violence and drug dealing for reasons of status, power and respect, perceived need for protection, sense of belonging, lack of trust in law enforcement, and as a means of

economic survival. Black children are overrepresented among these scenarios (Adams, 2010; Garo, 2011 a; Garo, 2011b; Nicholson-Crotty, Birchmeier, & Valentine, 2009; Rich, et.al, 2009). The neighborhood drug arrest rate would thus highlight the propensity for Black and other youth to be exposed to, and possibly recruited into drug-related violence.

Exposure alone does not fully explain youth involvement in violence. From a theoretical framework, trauma theory lends understanding to the association of PTSD-related behaviors (e.g., aggression, anxiety, depression, hypervigilance, etc.) with violence exposure (Bloom, 2013; Perry, 2007; Rich, et.al. 2009; Van der Kolk, 2014). Trauma theory correlates violence exposure with delays in executive functioning of the brain (Buffington, Dierkhising, & Marsh, 2010; Marsh, Dierkhising, Decker & Rosiak, 2015; NSCDC, 2010; Perry, 2003; Van der Kolk, 2014), thus impacting impulse control and influencing aggression, anxiety, and hypervigilance even while in the safety of the school environment (Bloom, 2013; Craig, 2008). In cases of violence exposure, therefore, it is important for school discipline policy to include identification of student vulnerability to trauma such that PTSD behaviors may be properly diagnosed and treated (Listenbee, et. al., 2012; Perry, 2007; Teske, 2011). Identification of student neighborhood of residence with corresponding TVI can provide school staff with an approximation of the level of violence to which a particular student may be experiencing. Moderate to high TVI suggests potential for student behavior to be symptomatic of trauma. As such, the student may be referred to relevant trauma-sensitive services.

Additional behavioral issues not determined by the current model might be discovered using a strain theory framework. To reiterate, strain theory attributes

delinquency as a form of pain avoidance when youth are confronted with injustice. Associated feelings of anger and frustration may lead to delinquent behaviors as an escape mechanism, or as a means to achieve unfulfilled economic goals (e.g., drug dealing) (Agnew, 1985). Anger and frustration over unfair disciplinary practices in school may ultimately result in further exclusion. This suggests that disproportionality be ascribed at least in part to strain theory which attributes student behavior as response to racial injustice.

The anger and frustration relating to unfair discipline practices (as per strain theory) may also be traumatic. Ginwright (2016, p. 3) speaks of structural oppression as including urban gun violence but also "...as actions from systems that injure young people...[with] negative impact on young people's social emotional health". Structural issues may encompass the realm of school, family, community and justice system dynamics discussed within the literature review. These encompass disengaging aspects of schooling (Beasley, Miller & Cokley, 2014; Butler, Robinson & Walton, 2014), family and community poverty and violence (Beasley, Miller & Cokley, 2014; FIFCSF, 2013; Iruka, Winn & Harradine, 2014; Thompson & Trice-Black, 2012; Vorrasi & Garbarino, 2000), inadequate access to environmentally safe housing and health care (FIFCSF, 2013; Luthar, 1999; Polakow, 2000), and absent and/or incarcerated parents (Black, 2008; Iruka, Winn and Harradine, 2014). These characteristics of "socially toxic environments" (Ginwright, 2016, p.3) also comprise racial and social injustices that harm emotional well-being and inhibit individual and collective hope, thereby hindering a community's ability to thrive (Ginwright, 2016). Exposure to racism, sexism, classism, homophobia, fears based on religious or national affiliation, and other forms of exclusion all serve as

socio-environmental stressors that propagate hopelessness, increase risk for PTSD and related behavior difficulties, and affect academic achievement (Ginwright, 2016; Rich, et.al, 2009; Saunders-Phillips, 2009). Further, Ginwright (2016) suggests that trauma results from ongoing and persistent exposure within a “Persistent Traumatic Stress Environment (PTSE)”, and recommends incorporating both individual and environmental (e.g., neighborhood, school) contexts when diagnosing trauma.

The current TVI model incorporates the percent of neighborhood population that is Black as a measure of group experience with structural oppression, but does not identify neighborhood level institutional (e.g., racial profiling) contributions toward injustice. The addition of more direct measures of racial and social oppression would help identify contributors to this aspect of socio-environmental adversity which traumatically impacts emotional health and wellness among youth. There is also need for closer examination of school factors that contribute to Black male disparities, and incorporation of these into multi-level modeling of student attitudes and behaviors in relation to teacher, classroom, school, and community level factors (Gregory, Skiba & Noguera, 2010). Various school-level measures of oppression, such as implicit bias among school staff (Wald, 2014), differential suspending of Black males for non-serious infractions, in-school, intersectional-motivated bullying, law enforcement presence and zero tolerance practice at school, may also be modeled at the school level. Certain of these would need to be collected via surveys. Inclusion of school-level variables within a multi-level model would further explain the variance in OSS not accounted for by neighborhood TVI.

Likewise inclusion of other school level predictors associated with disproportionality and with trauma (e.g., teacher attitudes, classroom management

strategies and pedagogical styles, school discipline policies, presence of bullying and/or gang violence, school nutrition and fitness activities, availability of extracurricular programming, access to trauma-sensitive mental health, etc.), will likely prove useful in explaining school contributions to observed discipline disparities. Future multi-level modeling, thus, should be undertaken at three levels, individual students (level-1) would be nested within schools (level-2) which are nested within neighborhoods (level-3).

Findings Related to Achievement

Black males were shown to demonstrate consistently higher below-proficiency test performance as compared with other groups, yet not as strongly disproportionate as with OSS. Some disparity was observed also for American Indian, Hispanic and Multi-racial males among those scoring below proficiency on the selected tests. Findings for performance at level 1 and 2 on English 2 showed significance for ENG2 with TVI, and with two of the level-1 predictors, namely ec1 and DaysOSS, indicating possible influence of suspension on achievement, and the disproportionality of OSS among special education students many of whom also perform below proficiency. It may be important to track test performance in relation to discipline, therefore, in order to detect influence of disproportionality on achievement.

Trauma theory offers some insight on observed significance of violence exposure with below proficiency test performance. Trauma has been shown to impact cognitive brain development in ways that result in the learning difficulties, lesser academic achievement, diminished IQ, and declining attentiveness or focus (FIFCFS, 2013; NSCDC, 2012; Perry, 2003; Perry, 2007; Smithgall, Cusick & Griffin, 2011) which can inhibit learning among traumatized children. As described in the literature review,

traumatized children are more likely to receive special education services, have below-grade-level achievement test scores, and have poor work habits; and they are 2.5 times more likely to fail a grade (Bethell, Newacheck, Hawes & Halfon, 2014; CWIG, 2015). Hypervigilance resulting from trauma serves to divert student attention away from learning while focused on protection from perceived danger (Bloom, 2013; CWIG, 2015; NSCDC, 2010) and may be misdiagnosed as ADHD (Perry, 2007; Trosche, 2014). Below-proficiency performance on standardized tests may therefore be partially explained by inattentiveness due to violence exposure.

Among results for 8th grade Reading, significance was revealed for RD08 with TVI and for Homelessness on TVI. Homelessness is again related to violence exposure, supporting the literature on child traumatic experiences associated with being homeless. Results showed significance with TVI and 8th grade reading and TVI and with Days OSS among students of 8th grade Math. Trauma from violence exposure may thus impact reading and math performance as well behavior. Overall, however, the extent to which level-1 and level-2 predictors account for the variance in test performance differed widely making overall conclusions difficult to substantiate. Data issues may provide partial explanation for the lack of significance observed between test scores and the level-1 predictors and for the degree of inconsistency within and between-subject.

Homelessness and Disproportionality

While the initial hypothesis relating TVI to OSS is moderately supported by the results, assessment of level 1 variables, when controlling for TVI, demonstrate that there are moderator effects additional to TVI that explain the relationship observed between race (Black) and OSS. The level-1 model disclosed significant relationships between race

(Black) and exceptional/ special education status, and between homelessness with arrest (for age 16+), and homelessness with unexcused absence. A review of data from Table 8 in Chapter 3 confirms the comparatively higher rates of suspension for Black and homeless male students as well as for Black and arrested. Longitudinal analysis of OSS in Table 8a indicates that between 15 and 21% of all males, grades 6-12, received one or more suspension during 2007-2008 through 2013-2014. Of these, between 65 and 68% were Black. Homelessness and OSS, however, reveal that between 36 and 44% of homeless students received one or more suspensions, and 82-90% of homeless with OSS were Black (Table 8c). Among students with one or more arrest (Table 8b), 57-60% received one or more suspension. Of these, approximately 80% were Black. While only two years of data were available for students arrests, those arrested showed the highest rates of suspension. Homeless students are next, and comprise of the highest proportions of Black males. Male OSS students who experience both homeless and arrest, in fact, consist predominantly of Black students; and homelessness and arrest were significantly related.

In referring to the literature, the links between suspension disproportionality, race/ethnicity and special education are well-documented (Kang-Brown, Trone, Fratello & Daftary-Kapur, 2013; Losen & Martinez, 2013; Skiba, et.al, 2008). Significance observed among homeless students, however, represents a gap in the disproportionality literature. Characteristics relating to concentrated poverty and of “street forms of behavior” (Mediratta & Rausch, 2016, p. 10) have been offered to explain discipline disparities, but only a few discuss the life stressors particular to homelessness as correlated with children’s adaptation in school. When a homeless student is suspended,

there may not be a physical place to go while out of school. A suspended homeless student may thus be further subjected to trauma and/or propensity for delinquency while on OSS. And Black males in CMS disproportionately populate the community of suspended homeless middle and high school males (Table 8c). It is crucial, therefore, to monitor suspension of homeless students as a unique group, and further, to investigate the conditions particular to homelessness that exacerbate trauma such that in-school approaches to school discipline will be responsive to the traumatizing characteristics unique to the homeless student experience.

There is research revealing the problematic and potentially traumatizing challenges of homelessness. Homeless students face difficulties relating to residency requirements and transportation (Rafferty, 1995). These affect attendance for homeless students. Murphy's (2011) research found strong associations between homelessness, low academic achievement, and loss of school time during residence transitions, and attendance at two or more different schools within a given school year. In the multi-level modeling of OSS, homelessness was found to be significant with unexcused absence. Rafferty's (1995) and Murphy's (2011) findings suggest that unexcused absence may actually result from transportation barriers and issues relating to housing and school transiency.

Homeless children face risk for stressors of instability that may impact health, mental and emotional wellness, and increase the risk for delinquency (Murphy, 2011; Dalton & Pakenham, 2002; Fielding & Forchuk, 2013). Dalton and Pakenham (2002) exposed linkage between homelessness, high threat appraisal (e.g., potential harm to safety and well-being, personal survival skills, and relationships with others) and low

self-esteem among a group of 78 Australian adolescents, age 13-18, living in homeless shelters. Many experienced physical, sexual and emotional abuse, and had difficulty with social adjustment and goal attainment. Ultimately, the greater the traumatic stress, the poorer was the adjustment among homeless adolescents. Their (Dalton & Pakenham, 2002) study highlights the difficulties of attaining basic needs for shelter, food, and clothing, healthcare, and regular sources of income while constantly exposed to adverse physical and psychological conditions.

In their study of 186 homeless Canadian youths, ages 16-25, Fielding and Forchuk (2013) demonstrated significant relationships between drug use and arrest, length of time homeless and arrest, and depression and arrest. Their sample included high school age youth but with 69% White and only 3% Black. The study used social control theory to describe the survival aspect of homeless living and increased risk for criminality, such as stealing, selling drugs and prostitution, to support basic needs. While non-US, and predominantly White, their study lends useful suggestions for level-1 indices (e.g., drug dealing and substance abuse) to include in future study of relationships of student homelessness with OSS and with arrest.

Among the literature studying student outcomes with regard to life risk factors, homelessness has been modeled with academic achievement and behavior, primarily among elementary age children, using multi-level modeling techniques involving individual, family and school level data (Fantuzzo & Perlman, 2006; Fantuzzo, et.al, 2012; Fantuzzo, LeBoeuf, Brumley & Perlman, 2013; Brumley, Fantuzzo, Perlman & Zager, 2015). Insights from these studies may inform the disproportionality literature and are thus reviewed below.

Fantuzzo and Perlman (2006) studied the relationship between out-of-home placement (foster care, group homes, other kinship or institutional care) with indices of academic achievement and school adjustment for second graders, controlling for age, race, poverty, and birth risks such as prenatal care and preterm/low birth weight. Achievement was measured by scores in early literacy, language, reading and science, while measures of classroom adjustment comprised work habits, social skills and suspension. They also examined homelessness (living in a homeless shelter) and child maltreatment (substantiated by the Department of Human Services) as mediating factors for predicting these academic outcomes among children with out-of-home placement. Study results showed significant mediating effects of both child maltreatment and homelessness on the relationships between out-of-home placement and all measures of academic achievement and school adjustment, especially among for boys, children of African American and Hispanic descent, and children in poverty and with birth risks. Their study provides impetus for future modeling that incorporates indices of birth risks, child maltreatment and homelessness in relation to modeling of violence with OSS and achievement.

In research by Fantuzzo, et.al, (2012), homelessness (defined as placement in a Department of Human Services emergency shelter) was incorporated within a cumulative risk variable that also included poverty, child maltreatment, low maternal education at birth, inadequate prenatal care, preterm/low birth weight, and lead exposure. Again, their research investigates the role of family risk for delays in brain development, and ultimately, student outcome. The cumulative risk scale was modeled with reading and mathematics academic achievement for third graders identified by gender and

race/ethnicity. Their study revealed significantly lower achievement scores for Black males as compared with White males when controlling for poverty status. Black males also showed exposure to significantly greater number of individual risks and higher cumulative risk. The highest prevalence rate for individual risk factors among Black males was inadequate prenatal care. This was followed by lead exposure, then low maternal education, and preterm/low birth weight, homelessness and child maltreatment. Each of these may inhibit development of the brain's cognitive and executive functioning, thereby affecting learning and behavior (Bloom, 2013; CWIG, 2015; Perry, 2007). Overall, Black male rates of cumulative risk were higher than national rates for all children.

Subsequent multi-level modeling by Fantuzzo, et.al, (2013) placed homeless students as the central focus of the study, and modeled academic and classroom engagement outcomes in relation to frequency of homelessness among third grade students. Of the total sample, 9.8% of students experienced homelessness. Of these, 92.7% were Black and 85.3% eligible for free or reduced lunch. Those figures compared with 66 and 69% respectively within the total third grade sample. As with the current study, Black students form a larger share of homeless and low/poverty income population than their share in the total population. Timing and frequency of homeless episodes, reading and math non-proficiency, truancy, and classroom engagement problems were variables within the study as were free or reduced lunch, inadequate prenatal care, preterm/low birth weight and child maltreatment. Their findings revealed significance of low test proficiency and classroom engagement problems with early and frequent homelessness and disproportionate exposure to familial variables of child maltreatment

and birth risks. Their (Fantuzzo, et.al, 2013) findings inform this study of the importance of modeling with child maltreatment as a measure of traumatic impact on behavior, and of including birth risks that may lead to developmental delays in both cognitive (learning) and executive (behavioral) functioning.

Brumley, et.al, (2015) conducted research similar to the above, but for first graders, comparing homeless and non-homeless groups of students receiving free and reduced lunch. Both groups were comparable in demographic composition at 67% Black. Though similar in design with Fantuzzo, et.al, (2013), their study added lead toxicity and teen mother as familial risk variables. They found higher rates of co-occurring risks among the homeless cohort as well as worse classroom social and academic engagement problems but no difference in reading achievement, the latter being low among both groups.

Moving away from quantitative methods, Shankar-Brown (2008) conducted an ethnographic study of the social and educational experiences of 15 children, age 5 to 18, living in an urban family emergency housing shelter. Relevant to this study, her conclusions indicate that homeless children experience unstable and stressful situations that include physical, sexual and emotional abuse and which force them into early adulthood; these children have physical ailments, mental illnesses, and multiple layers of unresolved trauma as a result of such adversities; they often employ escapism and socially disapproved behaviors, e.g., substance abuse, delinquency, etc., as coping mechanisms; homeless children have hopes and dreams like all children, yet harbor anger, resentment and sadness towards schools and other institutions;; schools create an unsupportive, negative and traumatizing environment for homeless children;

communication between homeless families and shelters with schools is minimal; parent/guardian level of literacy impacts that of their children; and poverty and homelessness disproportionately affect members of minority groups (Shankar-Brown, 2008). The ethnographic nature of the study enabled discovery of a multitude of traumatizing aspects related to homelessness not apparent within the quantitative studies and which substantiate the need for homelessness-responsive and trauma-sensitive approaches to school discipline.

These studies support the findings of this research which significantly relates homelessness with OSS, with special education and with arrest. In the study of disproportionality, homelessness should be recognized as a “disparity” group just as is race, gender, and special education status. Schools should monitor disproportionate OSS among children experiencing homelessness and develop behavior intervention strategies that address the unique and traumatizing experiences of homeless living.

School to Prison Pipeline

In review, “the school-to-prison pipeline is a system of laws, policies and practices that pushes students – disproportionately economically disadvantaged students, students of color and students with disabilities – out of school and into the juvenile and criminal systems” (Langberg, 2013). This study has verified discipline disproportionality for Black males and found significance for relationships between OSS with race (Black), special education and arrest, as well as between race (Black) with special education. The results provide evidence that exclusionary school discipline practices contribute to marginalization of Black males in education and to their involvement in the criminal justice system. The arrest data used in this study comprised ages 16 and above, thus

statistical significance between OSS and juvenile arrest could not be established from these results. Access to juvenile (age 15 and under) arrest data is required for understanding the longitudinal trajectory from school to prison. Future modeling with juvenile arrest may potentially lend further support to the school-to-prison pipeline concept.

The literature on multilevel modeling of homelessness (Fantuzzo & Perlman, 2006; Fantuzzo, et.al, 2013; Brumley, et.al, 2015) found significance between student behavior and familial risks relating to prenatal care, low birth weight, maternal education, teen birth, and child maltreatment, as well as lead exposure. These studies are in line with the Cradle-to-Prison concept proposed by the Children's Defense Fund (CDC, 2007). The cradle-to-prison focus encourages attention to the adversities children face when born into poverty. From conception, a child of poverty incurs numerous obstacles to healthy development which may hinder brain development and impede executive and cognitive functioning, thus behavior and learning (CWIG, 2015; Perry, 2003). Children's Defense Fund (CDC) calls for a birth to adulthood continuum of services to assist impoverished children and families with breaking the cycle of poverty. CDC also verifies the correlations of higher rates of OSS with higher rates of juvenile incarceration, and the disproportionate racial composition within each (CDC, 2007).

While results of this study correlate to some extent with the school-to-prison pipeline concept, more work is needed to investigate school, family, community, and justice system contributions to Black male educational marginalization and incarceration. Multi-level modeling of OSS with both juvenile and adult (age 16+) student arrests should be conducted, and include additional level-1 variables relating to individual

student and familial risks (maternal and birth related) and traumatic experiences (child maltreatment; homelessness). Likewise, modeling should incorporate school-level variables regarding teacher attitudes and classroom management practices as well as the extent to which PBIS and mental health services are offered and utilized. Improvements are needed also in the determination of neighborhood TVI. Likewise, in-depth analysis is needed to examine arrest characteristics in relation to neighborhood and school indices. The arrest database contains variables indicating number of arrests per year, types of arrest (misdemeanor vs. felony), and whether severity of crime committed increases over time (i.e., changes from misdemeanor to felony and grows increasingly violent) With availability of additional years of arrest data it would be possible to determine the age of first arrest, at least for some youth. The arrest variables can be linked to school and personal data, and neighborhood NPA (where possible) via unique student identifier in order to statistically demonstrate the extent to which each variable shows significance with arrest. Such a profile would assist in determining where along the developmental continuum that students became marginalized from schooling, as well as school contributions to the pipeline.

Limitations of the Study

There are several data and methodological issues that arose from the analysis that serve as limitations for interpreting study results. Data concerns include sample size and skewness as well as inconsistencies across time. Additionally, the current data are limited in ability to explain observed relationships between Black male middle and high school students with OSS and with below-proficiency performance on standardized tests. More types of data at differing levels are needed for improved ability to determine moderators

of Black male student outcome. School-level data on teacher style and classroom management, for example, may assist in explaining disproportionate suspension of Black males as well as below-proficiency achievement among all relevant groups. Further, more work is needed to evaluate changes in suspension in relation to modifications of school attendance zone boundaries, and the implications for school discipline policy.

Methodologically, multi-level modeling has requirements which, if not upheld, may lead to spurious results. Multi-level modeling involves selecting appropriate sample sizes for each level of analysis. Snijders (2005) indicates that there should be as many units as possible at the top level of the modeling hierarchy (i.e., level-2). Maas and Hox (2005) recommend 50 groups with 50 items per group as smallest sample size for level-2 modeling. For modeling of TVI, neighborhoods form the cluster or group variable. The number of neighborhoods from which students reside determines the number of groups for modeling while the average cluster size indicates average number of students within each group. In other words, at level-2, the model is examining relationships based upon the average number of students living in each neighborhood. Too few neighborhoods or too few students per neighborhood may result in errors.

For this study, there are 459 neighborhoods. The 2-level OSS model comprised all 41180 male students, grades 6-12 and assumed 89 students per neighborhood. ENG2 models comprised only 5078 students who live in 448 of the 459 neighborhoods, and assumed an average of 11 students per neighborhood. 8th grade models evaluated a sample of 784 Reading and 805 Math students, living among 317 neighborhoods. These models assumed an average cluster size of 2.4 students per neighborhood. Evaluating relationships for 2.4, or 11 students vs. 89 will produce different significance among the

results. Snijder (2005, p. 2), however, indicates that the average cluster size per level is not as critical for estimating power of the results. The overall sample size at each level is of main importance. At level-2, the number of neighborhoods was similar between OSS (459 neighborhoods) and ENG2 (448 neighborhoods) but the 8th grade exam students were modeled with far fewer neighborhoods (317). 8th grade results will be affected by the much smaller level-2 sample. In looking at level-1 significance in relation to sample size, the OSS sample is much larger at 41180 students, thus better able to examine significance among the level-1 predictor variables than can the smaller samples of 5078 (ENG2) and 784 to 805 students (RD08 and MA08, respectively). Based upon level-1 (individual student) sample sizes, therefore, it appears that even 5000 is too small for detecting moderator effects among the student-level independent variables. ENG2 comprised students from all grades who took the exam. By narrowing even further to only 8th grade, the power of the model to detect moderator effects of the level-1 variables is dramatically reduced. In order to improve results evaluating level-1 moderator effects relating to test scores, a much larger sample size is recommended. Modeling with data across several school districts within the state may likely produce better results, assuming that the level-1 data are available and consistently recorded.

The high skew and kurtosis for several of the variables, as indicated in Table 10 through Table 12, may provide further explanation for lack of significance of outcomes with level-1 predictor variables. DaysOSS, daysunex, mcvento1 and arrest1 are each highly skewed with extremely high kurtosis, indicating their lack of suitability for multivariate statistical analysis (Tabachnick & Fidell, 1989). As was explained in Table 8, the highly skewed nature of the data is reflective of a comparatively small portion of

the student population falling within these level-1 variable groups, thus the skew. Yet in each case, Black males form the dominant racial/ethnic group. In order to detect the disproportion and its impact on student outcome, it is therefore important to include these variables in the analysis, and to indicate the limitations noted in the descriptive statistics for use in a multi-level model. That there is not overwhelming statistical significance does not mean children are not affected by violence and other life stressors, but rather, that additional data may need to be collected, more levels of data may need to be included (e.g., school and classroom), and other methods of analysis might be explored. It should be noted as well that the OSS models found significance among highly skewed data because the sample size was much larger. As suggested above, multi-level modeling of test scores may prove more effective in determining significance when covering several school districts such that the sample of test takers is sufficiently large for detecting significance. The relevant level-1 predictor variables would need to be consistent across school districts. Slight shifts occurred in attendance zones in 2010 and in 2012. There were school closures and reconfigurations (e.g., change from K-5 to K-8 and 6-8 to 6-12 among selected low performing schools).

A further limitation to the study rests with the lack of time series comparison regarding changes in school attendance zone boundaries. Middle and high school attendance zones were illustrated for 2008 through 2014 in Figures 19, 21, 24 and 26 but were not compared for changing levels of TVI across time nor for potential change in OSS in relation to boundary shifts. The study is thus not able as yet to inform the school district of the potential impact of attendance zone shifts and school modifications on school discipline. It should be noted, however, that changes in boundaries and school

grade levels alone will not assist Black male students traumatized by violence, particularly those placed in special education classes. A shift to special education in a different school will not provide much change in student experience; it may, in fact exacerbate frustration if school bus rides are extended in time, or if the students are not particularly welcomed in the new environment. Trauma-sensitive practices are still needed to address traumatic experiences in students chronically exposed to violence.

Significance of the Study

This study is significant for its contributions to the literature on trauma, and on discipline and other disproportionality for Black males. The results confirm the need for discipline reform and trauma-sensitive practices in schools, and provide a springboard for future research. First, findings revealing a level of significance of TVI on OSS and on test scores validates the literature demonstrating traumatic impact from violence exposure and the fact that trauma affects behavior and learning. As such, the study lends impetus for inclusion of in-school interventions that are trauma-sensitive and mental health and wellness based.

The multi-level modeling method shows promise for in-depth study of the multitude of individual, family, school, community, and justice system contributions to individual student educational outcomes. By estimating the extent to which multiple levels of factors contribute to student outcome, schools will be better equipped to devise strategies for intervening on the school-to-prison pipeline.

This study also disclosed disproportionality in OSS among homeless students, predominantly Black, and significant relationships of homelessness with arrest and with unexcused absence. These results inform educators and researchers of the need for deeper

insights into the hardships presented by homelessness and how these serve as additional risks for behavior and learning challenges among homeless children. Given the disproportional representation of Black males among male homeless students, and the unexplained significance with violence, results also signal need to explore traumatic experiences unique to Black males that are not included within current definitions of violence. From a strain theory perspective, research is needed to explore traumatic impact of racial injustice and to demonstrate that social/emotional violence causes PTSD, thus impacts behavior and learning among Black males. As such, in-school, trauma-sensitive practices must be culturally responsive to the traumatic experiences of Black male middle and high school students.

Recommendations

The recommendations presented in this section propose a balance of research and practice wherein research is vital for improving our knowledge of the needs and for solutions-oriented approaches, while practice describes methods for actual implementation. Recommendations are based upon the results of this study, the theoretical framework and literature, and personal encounters with youth, mainly Black male, traumatized by violence.

I first discovered the school-to-prison pipeline and disproportionate involvement of Black male students in 2003 when I became a research analyst for Project Safe Neighborhoods, a national Department of Justice (DOJ) initiative to address neighborhood level gang and gun violence. I quickly switched from data analyst to a more solutions-based position as gang outreach specialist, and by 2006 I initiated the DOJ funded Youth Leadership Academy (YLA). Initially targeting high school students

experiencing high rates of OSS, the program quickly grew to embrace middle schoolers as well. We met each Saturday at a local high school for 4 hours, and included a 30-minute hot lunch. Predominantly Black, the YLA youth came from neighborhoods this study has designated as high TVI, and their individual life experiences were such that traumatic stress was inevitable. YLA offered a variety of life skills workshops, arts and sports enrichment, job skills development, field trips and community service opportunities, therapeutic group discussions, and a set of lessons we referred to as “Heritage Studies”. The latter encompassed revelation of rich histories of math, science, arts and architecture to instill awareness that intellect was their ancestral birthright. There was disclosure of the potentially damaging effects of slavery and Jim Crow on mental and emotional well-being, and frank discussions on gangs, drugs, youth violence and incarceration as well as detrimental music and media portrayals and advertisements. We countered damaging images through resiliency building activities that fostered positive racial identity. Facilitation was not easy, however; these young men did not seem used to structure and non-punishment forms of discipline. One day they all decided to act out to the extent that the facilitators threw up their hands and said they needed me to do something. Therefore, I brought them into a classroom, sat with them and said, “You are not in trouble. I am not going to lecture you or punish you. I am simply here to listen. Tell me what you need”. The first thing they said was that they need exercise! They described their experiences in special education classrooms as frustratingly chaotic with no opportunity for exercise or enrichment. Forced to be seated and do busy work for long hours amongst unruly fellow students, no learning was taking place. They sensed their own marginalization from schooling. To sit again for 4 hours on Saturdays was more than

they could take. It was clear to me that they experienced traumatic stress, strain, and pent up testosterone. Although they could not voice this as such, I was impressed with their awareness of the need to release pressure. From that day forward, therefore, we began every session with 30 minutes of basketball and noticed immediate improvement in attentiveness and participation in other activities. We had no more trouble; rather, these young men began to improve school grades and behavior, become excited about school and YLA, to value the mentorship, and demonstrated newfound leadership skills through an end-of-course capstone project. It was not the basketball alone, but rather, the fact that they were listened to and believed in that assisted their transformation. I know, from personal experience, that youth damaged by trauma can rebound through uplifting, culturally enriching and social justice focused curricula along with opportunities for expression and healing. Through their lens, I am able to envision the young men behind the data in this research. This chapter, therefore, includes practical recommendations for teacher education and professional development that arm educators with tools and perspectives that can potentially change school climate and improve outcomes for students traumatized by violence.

Discipline Policy and Practice

Neighborhood-level TVI provide a measure for schools to assess the need for trauma sensitive practices which have the capacity to assist students affected by violence, ultimately reducing student discipline infractions and increasing academic achievement on individual and school levels. Maps of neighborhood TVI illustrate spatial location and clustering of moderate to high TVI neighborhoods within an attendance zone as shown for example in Figure 38. High School O serves students from a broad spectrum of TVI

categories from very low to very high, while High School Z is comprised exclusively of high to very high TVI neighborhoods. High School Z may therefore have priority in trauma-sensitive designation, yet all schools will benefit from knowing which of their students need such services. By assigning each student in the database their NPA of residence, with corresponding TVI, the neighborhood level violence exposure, thus trauma vulnerability, can be ascertained for each student as needed. TVI must be updated annually as does the NPA for each student. Assigning NPA is difficult, however, in the case of homelessness or housing instability and high transiency. Although any location can be mapped, transiency places the need for regular student database updates such that current TVI of relevance to homeless students is readily available.

The American Institute for Research (AIR) prepared a risk assessment tool for the U.S. Department of Education (AIR, 2017) for use by the National Center on Safe Supportive Learning Environments in assisting schools with managing a variety of issues, including school discipline. The Safe Supportive Learning Environments site provides a wealth of online tools and information including webinars, conferences and learning events, grant information, and research and training materials in areas of school climate, engagement, safety, school environment (physical and instructional environments, physical and mental health, school discipline). One of the school discipline resources is a Risk Assessment Tool (AIR, 2017) that consists of an excel spreadsheet with separate tabs for entering school and individual student level data as well as for data entry on infractions, disciplinary actions, and various risk calculations. Each tab contains pivot tables and pre-programmed cells, formatted for easy data entry. Certain data may be typed in, for example, student ID. The ID automatically generates the student name and

grade. Individuals reporting infractions type in their name. Some categories have dropdown list of choices. For data entry on Infractions, for example, the person reporting selects from a long list of potential infraction types, e.g., Bullying (cyber, emotional, physical, verbal), Disruption (assembly, classroom), Dress code Violation, Offensive Language, Physical Violence: (Assault of Peer, Teacher, Dating Violence, Group Fight, etc.), and so on. Likewise, disciplinary actions are selected from a dropdown list, e.g., detention, in-school suspension, out-of-school suspension, expulsion, law enforcement referral, etc. Other data are entered from a dropdown menu as Yes/No, e.g., ELL/LEP Status, Disability Status, etc. Some cells take numbers, e.g., number of suspensions, while others calculate a result, e.g., total instructional days lost to suspension. A set of tabs calculate, graph, and analyze risk indices, relative risk ratios and risk gaps by race/ethnicity and disability status, based upon data entered in school, student, infractions and actions tabs. And tables and graphs are created to tabulate and track types and locations of infractions and totals for disciplinary action per infraction type, as well as total instructional days lost to various disciplinary actions. A section of one of the tabs for student level data is shown in Figure 39.

While excellently designed, and certainly a useful tool for monitoring discipline disparities and uses of zero tolerance vs. positive behavior practices, the tool does not examine impact of discipline on achievement, nor does it include student data that may help explain behavior, thus inform appropriate intervention. Referring to Figure 39, red blocks outline recommended trauma-sensitive expansion of this risk assessment tool such that student risk for trauma can be incorporated into the monitoring of school discipline. Additions are recommended based upon outcomes of this study, and involve a set of

profile tabs where individual students are linked across tabs via their unique student ID. First, student test proficiency on core standardized tests can be added to the individual student profile tab such that impacts of discipline measures on achievement can be monitored. Next are additions to the discipline profile for monitoring school-to-prison pipeline conditions. The addition of juvenile justice involvement at both juvenile and adult levels provides indication of delinquency across time for comparison with exclusionary discipline over the same time period. And a Reentry category denotes whether the student is returning from incarceration and may be in need of additional life skills supports.

Next, a new tab, Mental Health & Wellness Profile, is recommended such that student traumatic experience outside of school can inform in school forms of behavioral intervention and support. Assuming a neighborhood or block group level TVI can be established across urban school districts, the mental health and wellness profile can include a neighborhood or block group identifier field (column), the corresponding TVI for a given school year, and indications (Yes/No) on student referrals to mental health and wellness services as well as whether they have experienced homelessness (McKinney Vento), and are included in the Homelessness Management Information System. Teachers do not need to know the details of student referrals. Simply having such referrals is an indication that the student may be experiencing trauma or other mental or behavioral health issues, thus require appropriate interventions rather than exclusionary discipline. School psychologists, counselors and social workers may have access to detailed mental health data in order to determine the appropriate course of disciplinary action as is applicable. And the Student Outcomes profile may include whether the

student has received Trauma-sensitive intervention and at which tier. The tier level may be determined based upon data in the mental health and wellness profile. With these additions to this very valuable risk assessment tool, schools could determine whether trauma-sensitive approaches are being appropriately applied, and the extent to which these result in reduced discipline infractions over time.

Data monitoring alone, however, will not necessarily alter discipline disparities. Practical solutions are required for implementation in the classroom and at the school level. In their publication entitled *Inequality in School Discipline: Research and Practice to Reduce Disparities*, Skiba, et.al, (2016) prescribe a set of practical solutions and interventions that can be implemented in the classroom and school wide. Classroom solutions include relationship building, social emotional instruction, and culturally responsive approaches that acknowledge race and support cultural heritage, maintain high expectations across all groups, incorporate culturally relevant materials and methods, and are inclusive of family and community. At the school level are Positive Behavior Intervention Supports (PBIS), Threat Assessment and Restorative Justice Practices, each of which also acknowledge and support diversity and cultural heritage (Skiba, et.al, 2016). Although general, their document serves as a guidebook for school administrators in implementing new and relevant discipline strategies. A more detailed account of teacher training and professional development are covered at the end of this chapter.

Research on Racial/Social Injustice as Violence

The extreme disproportionality for Black males in school discipline and achievement suggests that racial injustice may play a role. The literature supports this premise by relating disengagement of Black males in schools with differential and unjust

treatment (Beasley, Miller & Cokley, 2014; Butler, Robinson & Walton, 2014), while strain theory uncovers the association of unfair treatment with anger, aggression and delinquency (Agnew, 1985). A number of school factors have also been correlated in the literature with school disengagement from schooling among Black males. These include home-school dissonance wherein school climate and teaching staff do not understand and respect the culture and values of the students (Tyler, et.al, 2010), poor relationships with teachers (Butler, Robinson & Walton, 2014), and teacher negative, deficit-oriented stereotypes of Black males (Beasley, Miller & Cokley, 2014). Likewise school violence and victimization, demonstrated to disproportionately affect Black males and other racial/ethnic minority groups has been linked with higher risk for dropping out (Peguro, 2011). Racial discrimination has been linked to PTSD (Saunders-Phillips, 2009) as indication of traumatic impact on Black student well-being. And zero tolerance practices contribute to higher dropout rates and incidence of criminality among Black and other minority group males (Teske & Huff, 2011). These factors need to be included as school-level independent variables within a multi-level model of Black male student outcome. Apart from school violence, however, none of these data are collected systematically across time and location for schools and school districts, thereby making inclusion as school-level variables in multi-level models problematic. Discussions are needed on types of variables to include and ways to methodically collect, record and disseminate this information.

There is a call for reforms in discipline that address implicit race-based bias and differential treatment by race/ethnicity (Carter, Skiba, Arredondo & Pollock, 2016; Gregory, Skiba & Noguera, 2010; Mediratta & Rausch, 2016; Skiba & Williams, 2014;

Wald, 2014). Black males have been disproportionately arrested in schools (Dahlberg, 2012) and incarcerated (Allen & Lo, 2012; DeGruy, Kjellstrand, Briggs & Brennan, 2011; Noguera, 2003; Patton, et. al, 2012). And incarceration can further traumatize young people (Adams, 2010). Additionally, racial injustice has been linked with PTSD as symptomatic of trauma (Saunders-Phillips, 2009). Much of the data available for quantitative study, however, reveals little in relation to racial injustice.

A recommended research strand emanating from this study, therefore, is to explore the relationships between racial injustice and trauma, and of these with discipline disparity and achievement for Black males. The purpose of such research would be to advocate for the formal recognition of racial (and social, e.g., gender/sexuality and other forms of oppression) injustice as a form of violence that traumatizes children and youth. Such injustice would then be included among currently accepted indicators of adverse childhood experiences, and trauma-sensitive and culturally responsive interventions be established as best practices for assisting students emotionally injured by harmful, racially motivated experiences.

Some potential research questions that may be explored in relation to this research strand might be: a) what are the ways racial injustice manifests within schools? b) What are the ways racial injustice manifests within neighborhoods? c) To what extent does racial injustice affect behavior? d) To what extent does in-school racial injustice moderate the relationship between Black male middle and high school students and short term out of school suspensions? e) To what extent does in-school racial injustice moderate the relationship between Black male middle and high school students and performance on standardized tests?

Data collection for such a study will likely involve surveys, given the paucity of such information among current school and community databases. An example of a national effort to collect such data could involve social media responses from students in urban school districts. Participating school districts and schools, for example, may be assigned unique Twitter accounts such that all participants per school will complete the survey using the same Twitter login and password. This would maintain participant confidentiality as all participants will be identified only by school. A short set of carefully constructed questions, each labeled with a uniquely assigned hashtag, would be answered by participants to indicate the types of injustice they experience in and around their school, and to ascertain the emotional impact (thus trauma) of the injustice. The survey would include a few open-ended questions for qualitative thematic analysis.

Results can be retrieved by hashtag and efficiently tabulated using the Tweet Sentiment Visualization tool (Healey, 2017). Among its capabilities, this tool tabulates frequency of responses by keyword, assigns pleasant to unpleasant “sentiment”, clusters tweets by topic, creates tag clouds, and provides the individual tweets. Thematically analyzed responses can be tabulated and used to establish a racial injustice index similar to the process involved in calculating TVI. By geocoding each school, district and school level maps would illuminate indices of racial injustice in urban school districts around the nation. The quantitative data can then be incorporated within multilevel models of individual student (level-1) data from school databases with school (level-2) data for purposes of addressing the other proposed research questions relating to racial injustice in schools and linkage with trauma and with school discipline and achievement. The qualitative results may offer further evidence of trauma.

Research on Homelessness among Black Males

Qualitative and quantitative study is needed to investigate disproportionality for Black males who are homeless. A number of variables relating to traumatic experiences challenging homeless children were presented in the literature (Fantuzzo & Perlman, 2006; Fantuzzo, et.al, 2012; Fantuzzo, et.al, 2013; Brumley, et.al, 2015; Shankar-Brown, 2008). These relate to child early health and development (e.g., prenatal care, low birth weight, lead exposure, etc.) and may be included as individual and familial risk factors when collected systematically across schools within a district. The Homelessness Management Information System (HMIS) is an important source for data on homelessness. HMIS collects and analyzes data on individuals and families who are homeless or at risk for being homeless (U.S. Department of Housing and Urban Development, 2015). Individual/family, service and housing data are included within the dataset. Relevant to schools and provision of educational services relating to behavior and learning are data on individual/family demographics, housing status, physical and developmental disabilities, chronic health conditions, mental health problems and services, substance abuse, experience with domestic violence and other abuse, and whether formerly in the care of child welfare, foster care or the juvenile justice system. Such data form indices of stressful and challenging life factors that place children at risk for developmental delays and difficulties in school. The HMIS data are available at local, state and national levels and could be accessed for understanding conditions of homelessness that present cognitive and/or behavioral challenge in school.

Qualitative research via ethnographic study is needed, however, to uncover the uniquely traumatizing experiences specific to Black males who are homeless. The case

for study of homelessness and disproportionality in OSS and arrest for Black males has been substantiated through the results of this study and supported by the literature. Much quantitative study exists, particularly for elementary age children (Brumley, Fantuzzo, Perlman & Zager, 2015; Dalton & Pakenham, 2002; Fantuzzo, LeBoeuf, Brumley & Perlman, 2013; Fantuzzo, et.al, 2012; Fantuzzo & Perlman, 2006; Fielding & Forchuk, 2013). Stone and Uretsky (2016) quantitatively examined middle and high school homelessness in relation to academic behavior and performance. No matter the student age, these quantitative studies were well-structured, and employed multi-level methods to evaluate homeless students within schools and in relation to school effects. Such studies, however, are reliant on availability of data, and involve coding for statistical analyses. Stone and Uretsky (2016), for example, created a standardized school index based upon percentages of total enrollment who were McKinney-Vento identified, English language learners, African American and Latino, and received free and reduced lunch. The index represented concentrations (or lack thereof) of historically underserved students. This study developed the trauma vulnerability index by aggregation of four variables reflecting exposure to violence and other forms of traumatic stress. Such indices are data dependent, and lack nuances of individual and group experience. Shankar-Brown (2008) utilized ethnographic methods to uncover actual lived experiences of a group of school age youth living in a homeless shelter. Her study offers insights into experiences particular to homelessness and their effects on emotional well-being. Although her work was not intended to examine trauma per se, the study does reveal ways that homelessness is indeed a traumatic experience. Likewise, she uncovers school insensitivities to the plight of homeless students and is thus able to offer advice to educators in relation to

homelessness. An ethnographic study of Black male middle and high school students who are homeless and enrolled in school would enable exposure of the challenging and often traumatic experiences related to homelessness specific to this population, how they manage to stay in school, barriers to attendance, and their experiences in the classroom, and with suspension and arrest.

Trauma-Sensitive & Culturally Responsive Practices in Schools

There is no shortage of literature on creating trauma-sensitive schools and helping teachers and school staff support children whose behavior and learning in school are impacted by traumatic experiences. Trauma-sensitive schools provide teachers and other staff with professional development regarding the impacts of trauma on learning. In addition to training, an action plan for trauma-sensitive schools comprises establishment of infrastructure for responding to traumatized children, specifics on classroom behavior management and academic instruction particular to the manifestations of trauma on behavior and learning, conflict resolution and calming strategies in the face of aggression among students, linkage with mental health professionals in and outside of school, provision of non-academic, therapeutic activities, inclusion of self-care strategies for teachers, and detailed school policies and protocols for handling trauma-related events and emergencies. The significance found in this study connecting violence exposure to observed relationships between Black males with high rates of OSS and low test proficiency lends further support for the implementation of trauma-sensitive schools. Details on establishing and operating trauma-sensitive schools are well documented in the literature (Cole, O'Brien, Gadd, Ristuccia, Wallace & Gregory, 2005; Murray, Rosanbalm, Christopoulos & Hamoudi, 2014; NCTSN, 2008; Skiba, et.al, 2016;

Wolpow, Johnson, Hertel & Kincaid, 2011) yet are beyond the scope of this study. A selection of the literature is shown in Figure 40. The remainder of this section is devoted to description of a proposed conceptual framework that is both trauma-sensitive and culturally responsive to the needs of Black males injured by racial injustice and other forms of violence. This framework is a blending of concepts from other scholars and is by no means comprehensive.

Since early 2000's, several authors (Ginwright, 2010; Ginwright, 2016; Oakes & Rogers, 2006; Stevenson, et.al, 2003) have created and tested intervention strategies specifically designed to support Black male youth who are exposed to, and often engaged in violence, and who end up suspended or expelled from regular schooling and incarcerated. This section will incorporate several of their ideas into framework that views trauma as violence against emotional well-being (Ginwright, 2016) and that traumatized children are injured and in need of healing (Bloom, 2013). The proposed healing-focused framework, as illustrated in Figure 41, addresses disproportionality among Black males from a dual perspective that is both student and staff centered. It involves student healing from trauma-inflicted wounds and restoration of hope (Ginwright, 2016) while simultaneously transforming school climate through a "healing justice" focus that includes staff self-care (Wolpow, Johnson, Hertel & Kincaid, 2011), critical spirituality (Dantley, 2010), and re-humanizing peoples marginalized by racism (Langer-Osuna & Nasir, 2016) via the African principle of "Ubuntu" (Tutu, 2007; Ginwright, 2016).

First, is an explanation of terminology named in Figure 41. Healing justice was named after environmental justice which confronts unjust exposure of marginalized

groups to environmental toxins, and advocates for restoration of individual health and creation of environmentally safe living communities. Healing justice confronts racial and social inequality and advocates for collective healing and restoration of hope by transforming institutions and social relationships that create or impart harm through injustice (Ginwright, 2016). Radical Healing, referred to as processes that restore individual and collective well-being (Ginwright, 2016, p. 8), takes place within a “healing justice” framework.

Ubuntu is an African principle describing “...the essence of what it is to be human” (Tutu, 2007, p. 3). People with Ubuntu are kind, generous, compassionate, and use their strengths to help others. They recognize the intricate interconnectedness of humanity and understand that human beings need one another in order to feel human. To dehumanize others is to dehumanize oneself (Tutu, 2007). An Ubuntu perspective in schools calls upon staff to view students with humanity, and to treat each student with dignity and respect even while instilling discipline. Students are taught to respect one another as well, to operate collectively rather than in opposition. Restorative justice practices are an example of Ubuntu, for those who inflict harm are placed in a position of feeling empathy for those they have harmed and remorse for wrongdoing, while those who are harmed are moved to forgive. The principle is important as well for re-humanizing students traumatized by racial injustice, and for redirecting staff towards recognition of their interconnectedness with students and the crucial role they must play as mentors rather than monitors of student behavior.

Critical spirituality is a leadership approach that commands critical self-reflection among school leaders, a process that encourages individuals to examine personal

assumptions and beliefs that are unfair toward others, and to acknowledge the ethical implications and effects of certain leadership practices (Dantley, 2010). Critical spirituality forces leaders to address their role as perpetrators of oppression through compliance with institutionally racist policies and practices such as zero tolerance approaches to discipline. These serve to marginalize and criminalize Black males thus are deemed unethical ways to treat human beings. Critical reflection on ethical approaches to discipline empowers school leaders to break from exclusionary practices and enables them to think in terms of social justice and radical healing. As such, they are moved to engage staff, students, parents and community members in dialog and action that transforms schools into places where healing takes place, and dignity and hope are restored (Dantley, 2010; Ginwright, 2016).

Teachers empowered through critical spirituality, Ubuntu character, and a radical healing focus can transform classrooms into exciting places of cooperative learning using curricular forms of healing. One method involves connecting students to social justice advocacy on topics of interest and relevance, e.g., racial profiling, police brutality, youth gun homicide, intersectional violence and education reform (Oakes & Rogers, 2006). Students develop political and social awareness, and learn to organize for justice, resistance, and collaborative action via critical thinking and communication through activism as curricular elements (Ginwright, 2010). Healing is fostered as well by inclusion of cultural practices that honor history and shared values, and that cultivate racial identity. These include acknowledgement of the importance of faith, participation in cultural and indigenous practices, and uses of performing arts as activism (Ginwright, 2016).

Included also in the framework are professional development that informs staff on trauma and ways to de-escalate aggression and foster healing, staff self-care to recover from compassion fatigue that often overwhelms persons in constant contact with traumatized children and youth (Ginwright, 2016), and a Multi-Tiered System of Supports that assist staff in identifying relevant, trauma-sensitive interventions. MTSS is a framework with three levels of instructional, assessment and intervention tools and strategies for creating and sustaining positive classroom and school climate (Lynch, 2016). These are called Tiers 1 through 3. The premise of the model treats all children as having risk for trauma and thus provides social emotional skills activities for everyone. The model also recognizes and provides services for those students exceptionally traumatized through poly-victimization and/or multi-risk exposure. Tier 1 supports are given to the entire student population, and are designed to develop the social and emotional skills of every student (Lynch, 2016; Skiba, et.al, 2016). Instruction is given during core learning time, such as homeroom such that all students receive the same services. Positive Behavior Interventions and Supports (PBIS) may also be included at Tier 1 to reinforce positive behaviors. Incorporation of cultural considerations for interpreting and addressing behaviors is crucial to the success of PBIS as intervention (Skiba, et.al, 2016). Tier 2 provides additional in-school supports for students who require more intensive behavioral, academic and mental health interventions. Separate individual or group sessions are required, incorporating psycho-educational activities that assist students with discovering sources of pain and strategies for overcoming adversities. Students living in conditions of high traumatic stress may require Tier 2 supports. School counselors, social workers and psychologists offer Tier 2 services on-site. Tier 3 services

are provided off-site for those few students needing intensive mental health therapy. Tier 3 supports are provided in partnership with mental health and community organizations offering specialized case management and therapeutic programs under the care of professionals. Within each tier, the culturally responsive elements of the framework should be incorporated such that students heal and school climate is transformed.

A Proposed Implementation Strategy

The design and implementation of trauma-sensitive and culturally responsive schools requires an overhaul of school climate and reeducation of school personnel. The task is immense, therefore the suggestions offered here provide only a starting point. Key elements for implementation center on funding, teacher training and professional development, male mentoring, and pilot studies to test classroom and school strategies.

Funding. The Every Student Succeeds Act (ESSA) of the U.S. Department of Education contains provision for discretionary “Integration of Schools and Mental Health Systems” funding to SEA’s and LEA’s. The purpose of the funding is to increase student access to quality mental health care via innovative programming that links school and mental health systems (U.S. Department of Education, 2017). The funding may support personnel training, crisis intervention services, linguistically appropriate and culturally competent program design, agency and school collaboration expenses, service implementation and effectiveness evaluation (U.S. Department of Education, 2017). The proposed framework fits within the funding guidelines for integrating schools and mental health systems and therefore would support its development and maintenance.

There are also state-funded agencies that offer guidelines and consulting assistance with the establishment of trauma-sensitive schools, and include specific

variations for elementary, middle and high schools. The Center for Child and Family Policy at Duke University, for example, has partnered with the National Child Traumatic Stress Network (NCTSN) to develop guidelines for North Carolina schools and school districts. These guidelines include recommendations for training and professional development, content on trauma and the concept of trauma-sensitive schooling, staff self-care, behavioral assessments, tiered system of interventions by grade level, suggested changes in school climate and structure, and ways to connect with family and community (Rosanbalm, 2016).

Teacher training and professional development. There must be two strands within training and professional development, training of teachers and administrators within colleges of education, and reeducation of existing school staffs via professional development. Whether training new teachers or re-equipping existing ones, the content within courses or workshops would be similar. University programs would involve development and/or modification of curricula with protocol relating to curriculum revision. Professional development strategies, to be most effective, would consist of a series of workshops held during times of teacher availability and offering stipends funded under ESSA. Professional development organizations can be hired to provide workshops that prepare teachers to be responsive to traumatized urban youth. Mee Productions (<http://www.meeproductions.com/mee-services.html>) is an example of such an organization, expert in training schools, organizations and corporations on issues relating to urban diversity as well as offering workshops and webinars on youth violence prevention and mental wellness, substance abuse/drug prevention and issues relating to challenges faced by foster youth.

Educator personal philosophy and approach are critical to relationship building and effectiveness with traumatized children. A professional ethics course (or inclusion within an existing course) that addresses implicit bias and encourages personal reflection is thus foundational. Content that provides a fusion of Ubuntu and Critical Spirituality will equip a cadre of teachers with a humanistic approach, and depth of understanding of their own biases and how these impact others. The readings and activities would encourage reflective self-critique and the development or redefinition of one's approach to education. Examples of resources to use in such a course include:

- Several works by Dantley (2003a; 2003b; 2003c; 2005; 2010) which offer educational leadership programs with curricular guidance on infusion of spirituality into leadership philosophy, style, and practice. School leaders are led to better understand traumatic stressors among urban youth yet also to confront their role as perpetrators of racial and social disparities and inequities that serve to further marginalize their students. The readings describe components of spirituality as different from religion, discuss manifestations of a spiritual focus in the handling of day to day schooling and in relationships with other staff and with students.
- Blue Mountain Arts Inc. (2007). *The words and inspiration of Desmond Tutu: Believe*. This short, easy to read book covers elements of the life of Archbishop Desmond Tutu and the role he played in the South African Truth and Reconciliation Trials following the dismantling of Apartheid. Tutu, himself, defines and describes Ubuntu. His story illustrates how one goes about living the

philosophy, and numerous of his quotes offer ways to embrace and practice Ubuntu in one's own life.

- Chapter 8 of Ginwright, (2016 p. 142-151) covers Ubuntuism. Key components of the chapter are that we are interconnected and that our own humanity is harnessed through collective action and service, that our humanity is thus intertwined and interdependent thus required to be kind and caring, generous and compassionate, that healing from what harms urban youths' emotional well-being is crucial to the process of social change, and that the adults who mentor and educate youth suffer also from toxic stressors, that they, too, must heal in order to foster the same among their students.

There need also be a course or series of workshops centered on trauma and trauma-sensitive and culturally responsive curriculum design and pedagogical style.

Trauma and Student Well Being (suggested course title) is an example of a core course that provides education students and teacher professionals with foundational knowledge about trauma and ways it affects brain development and impacts behavior and learning.

The course should provide a toolkit that assists new teachers with classroom effectiveness among traumatic stress. Several readings and resources exist for use in such a course. A few recommendations are:

- *Reaching and teaching Children who Hurt: Strategies for your Classroom* (Craig, 2008). This book offers excellent discussion of trauma with thorough coverage of recommended practical strategies for classroom management and assisting children traumatized by violence. It includes also self-care strategies for teachers. The book is ideally suited to elementary teachers. Craig's (2008) strategies do not

address racial or social injustice as violence, nor does it include culturally responsive methods most appropriate for Black male youth.

- *Black Youth Rising: Activism & Radical Healing in Urban America* (Ginwright, 2010). This volume illuminates foundations on urban structural oppression as violence, thus a precursor to traumatic stress. Additionally, the author discusses the types of approach necessary to address such trauma among urban Black youth in ways that foster their educational success.

Trauma sensitive and culturally responsive curriculum design and pedagogical style is another course topic or workshop series that instill relational pedagogy, described as “...removing psycho-spiritual obstacles that prevent teachers from establishing quality relationships with young people...relational teaching is established by building caring relationships ...teachers embrace an educational strategy that places emotion, love and care at the pedagogical center of teaching” (Ginwright, 2016, . 89-90). The strategy requires critical spirituality as a professional and personal philosophy. Examples of relevant readings and resources for such a course include:

- *Hope and Healing in Urban Education: How Urban Activists and Teachers are Reclaiming Matters of the Heart* (Ginwright, 2016) offers a philosophy of radical justice and radical healing and discusses in detail how these can be infused into curricula and pedagogy.
- *Learning Power: Organizing for Education and Justice* (Oakes & Rogers, 2006) offers numerous examples of social justice curricula and methods employed in Los Angeles to engage teachers, students, parents and other community members in social activism that transformed students while attempting school reform. The

examples can be modeled with adjustments to suit local students and address relevant social inequalities.

- *Models for Change: Systems Reform in Juvenile Justice* (National Council of LaRaza, 2011), illustrates a set of best practices that provides rehabilitation from the destructive effects of racial marginalization, instills in youth accountability for their actions, prepares them for informed decision making that improves their educational and life outcomes. While focused on Latinx populations, the message and methods apply as well to Black males. Key components are strong partnerships that involve grassroots community leaders as mentors, development of strong and caring interpersonal relationships with youth, and develop working relationships with local juvenile justice entities to help change their culture to one that understands the traumatic stressors faced by urban youth and educates and empowers them to modify policy and practice.
- *Something is Wrong: Exploring the Roots of Youth Violence* (Kaba, Mathew, Haines, 2010), is a brilliant and very detailed curriculum guide filled with classroom examples and materials categorized within four main topics: Understanding oppression, Types of violence encountered by young people, Activism, and Youth-led research and organizing, with additional sections covering varied curricular resources. The guide offers educators and students alike the tools and resources for evaluating youth violence from a trauma perspective. Although not specifically stated as such, the material bring to light the roots of youth violence as violent victimization of youth at home, in schools and community settings, and through injurious juvenile justice and other

governmental policies. Through the curriculum, youth “...develop critical thinking skills and socio-political consciousness about the root causes of violence [such that they are] more likely to become resisters of all forms of violence” (Kaba, Mathew & Haines, 2010, p. 8). The curriculum fosters literacy and artistry by engaging youth in reading, writing/critiquing, oral and artistic presentation.

Additional trauma sensitive and in-school therapeutic interventions were covered in Chapter 2 under Addressing the School-to-Prison Pipeline. These include such practices as drama therapy and African-centered programming and mentoring.

Male mentorship. Teacher training and professional development require practice beyond reading and class activities. Field-based training under the supervision of adult Black males offers the opportunity for direct feedback on practice effectiveness. The men may come from school or related professional backgrounds, or may be members of the communities where the youth live. A trauma-sensitive strategy for schools must also include the involvement of Black men as mentors to students. This is important for all young men but particularly for those confronted with situations relating to absent or incarcerated fathers. Left to fend for themselves, the lack of male mentorship adds another layer of anger and frustration-based trauma. Black male community elders can be brought into the school setting to work directly with male students on issues of urban hyper masculinity and transformation to a healthier masculine self-image (Ginwright, 2016).

Pilot Studies. Finally, pilot studies are needed to test out the effectiveness of professional development and the relevancy of newly established curriculum and pedagogy. Classroom-level control studies may be conducted in selected high TVI

schools such that experimental classrooms are provided trauma-sensitive methods by appropriately trained staff and supplemented by mentoring. Outcomes can be evaluated in comparison with control classrooms to determine overall effectiveness. Alternatively, an entire school might undergo trauma-sensitive implementation for comparison with a control school of similar populations. Demonstrated success creates impetus for increased funding to support the transformation of all schools to those which are trauma-sensitive and culturally responsive.

Conclusion

Issues that contribute to outcomes in OSS and achievement on standardized tests are complex and intertwined. Likewise, violence is multidimensional and manifested at multiple levels – individual, family, community, school, and other institutions. And each individual student is different in background, experience, and personal resiliency. No single characteristic can completely explain outcomes, therefore it is important to consider a multitude of relevant factors. Multi-level modeling provides a method to examine individual outcomes in relation to neighborhood (and school) factors, and to isolate independent variables, while controlling for others, to determine the extent to which each influences stated outcomes. That which remains unexplained by the tested factors leads to exploration of additional independent variables that may further assist in explaining outcomes and informing intervention.

Conclusions of this study are that violence clearly serves as a moderator in the observed positive relationship between Black males and suspensions, and that future modeling should include school-level moderator effects on discipline and achievement.

Additionally, TVI model improvements are needed to address violence specifically affecting Black males, including indices of racial injustice as traumatic experience. Advocacy is needed for inclusion of racial and social injustice among officially recognized adverse and traumatic childhood experiences. And more level-1 indices are needed for modeling student outcome in relation to that risks associated with brain development, from conception to adulthood. Homelessness is recommended for inclusion in monitoring of discipline disproportionality, with suggested further study of traumatic occurrences uniquely encountered by Black males who undergo homelessness. Finally, results advocate for schools to incorporate trauma-sensitive practices that are culturally responsive to Black male experience.

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APPENDIX A
CHAPTER 1 TABLES AND FIGURES

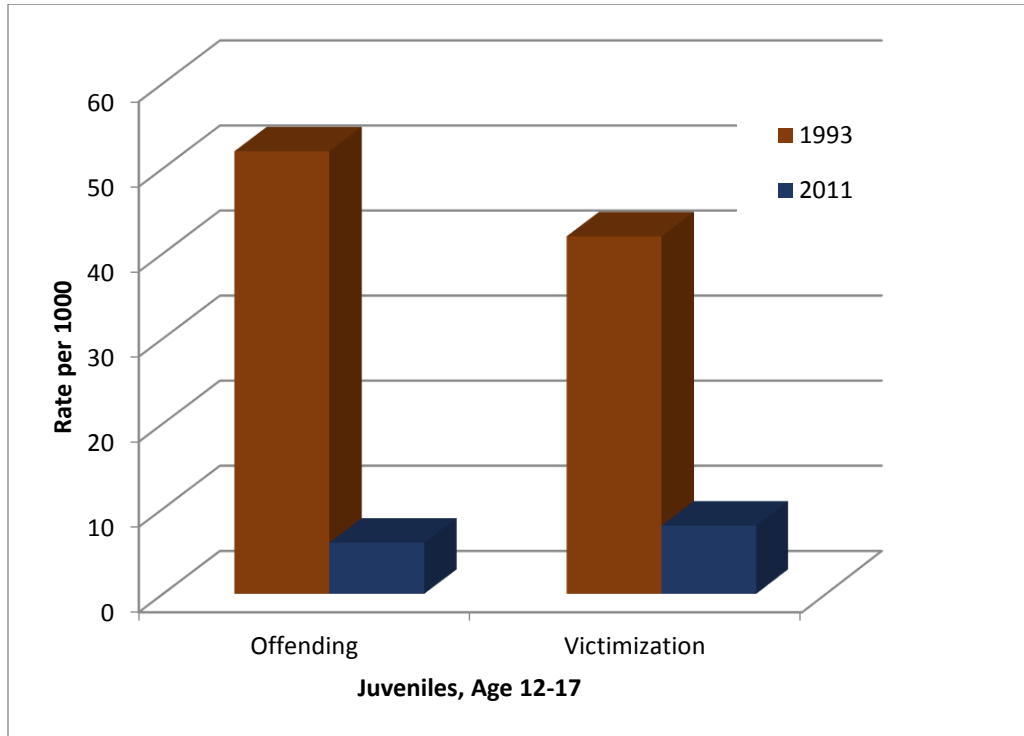


Figure 1. Offending and Victimization Rates for Juveniles, age 12-17 in 1993 and 2011
(Data source: Federal Interagency Forum on Child and Family Statistics, 2013).

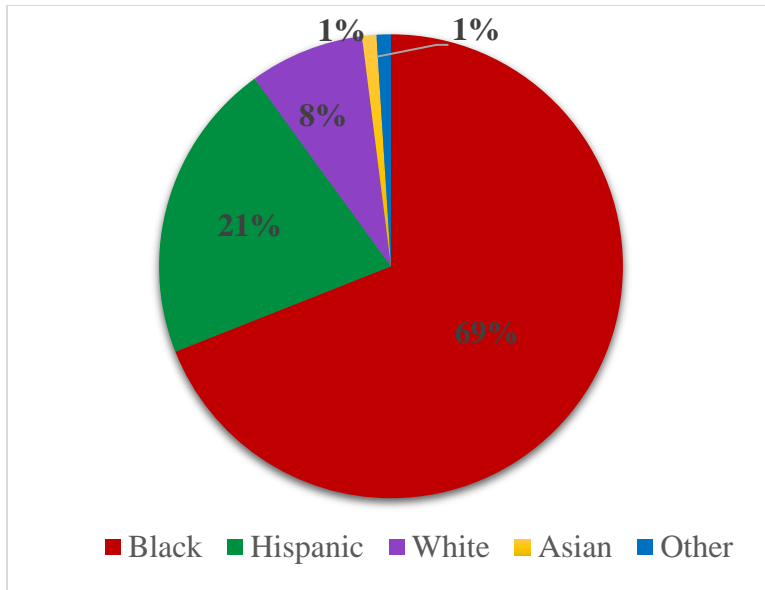


Figure 2. North Carolina Gang Involvement, Percent, by Race/Ethnicity in 2012 (Hayes, 2012)

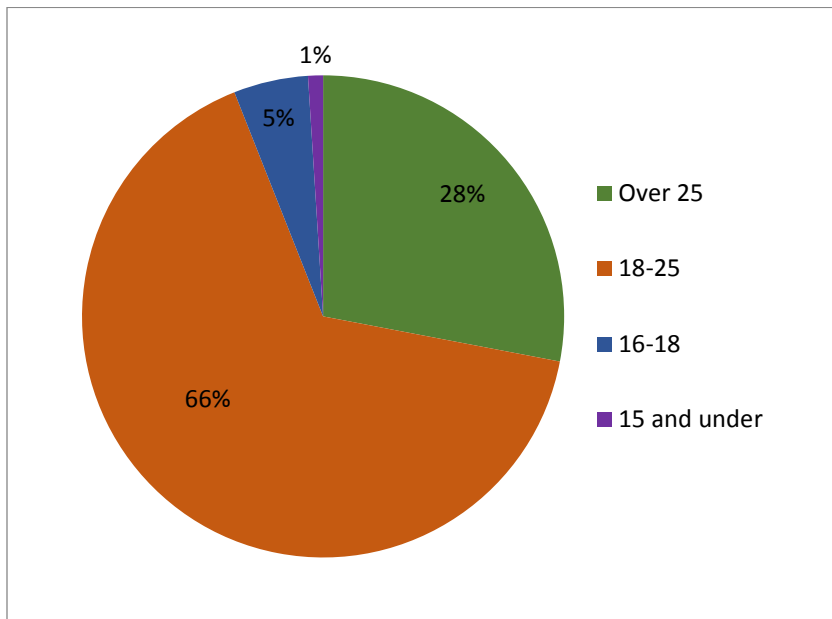


Figure 3. North Carolina Gang Involvement, Percent, by Age Range in 2012 (Hayes, 2012)

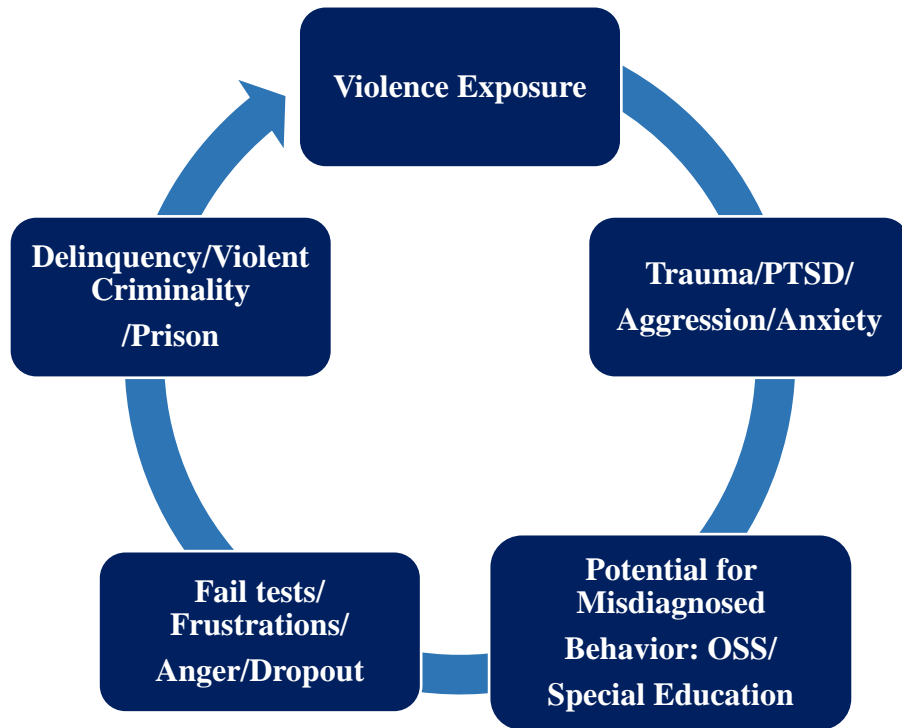


Figure 4. School to Prison Pipeline: A cycle of violence with impact on student outcomes.

APPENDIX B

CHAPTER 2 TABLES AND FIGURES

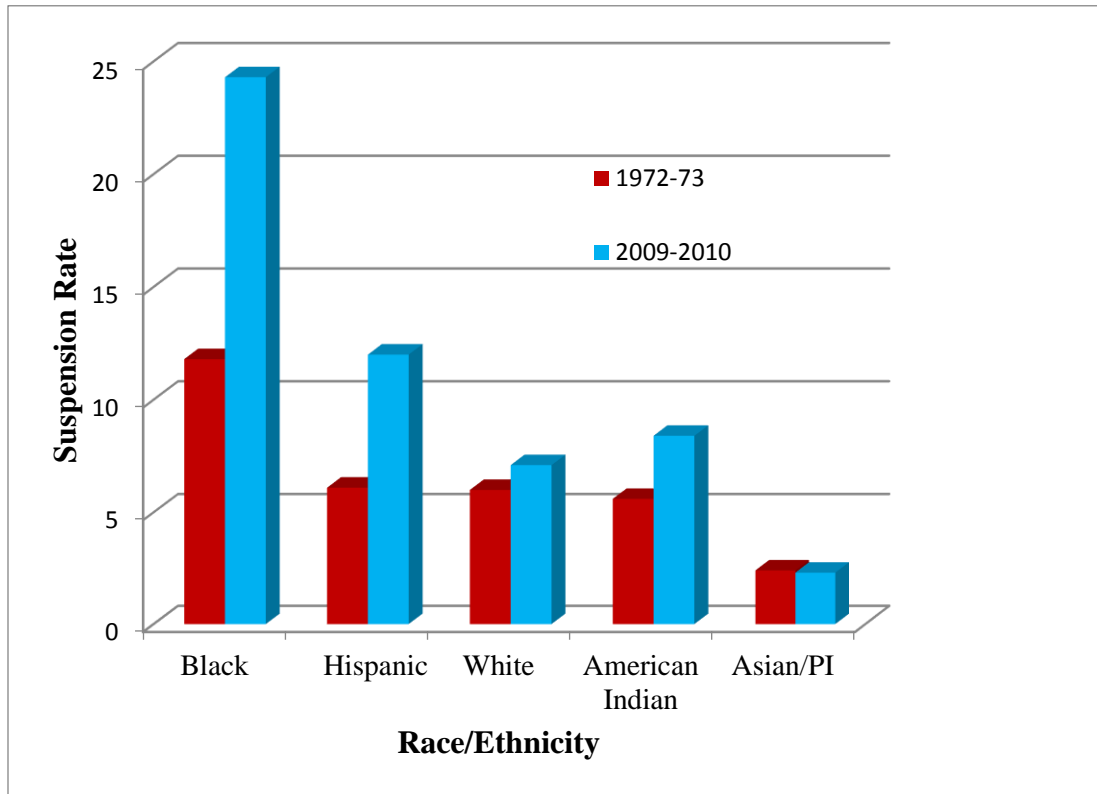


Figure 5. Change in Suspension Rates by Race/Ethnicity from 1972-73 to 2009-10
(Data source: Losen & Martinez, 2013, p. 2)

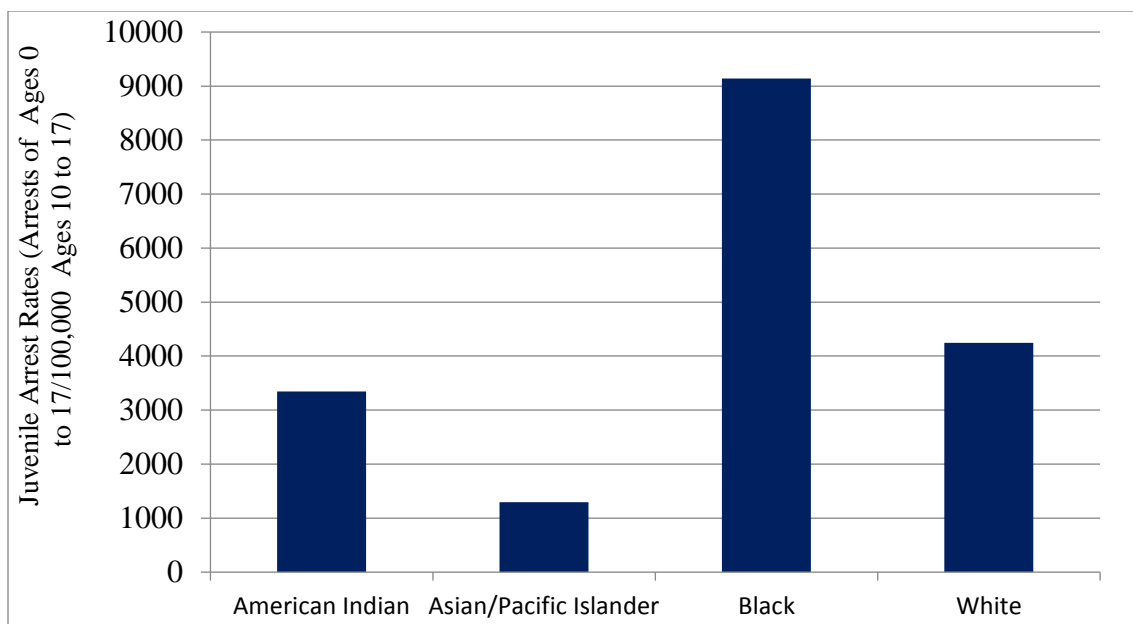


Figure 6. Juvenile Arrest Rate, 2010 by Race for ages 10 to 17.

Source: National Center for Juvenile Justice (December 16, 2014). Juvenile Arrest Rates by Offense, Sex, and Race, http://www.ojjdp.gov/ojstatbb/crime/excel/JAR_2012.xls.

Notes: Arrests are for “all crimes” excluding running away; Persons of Hispanic ethnicity may be of any race. Arrests of Hispanics are not reported separately.

Table 1. *Statistics on Males Shot Dead by Police from January 1 to August 8, 2015*

Race	2013 Percent of US Population by Race	Males shot dead (out of 561 total, Jan-Aug 2015)		Carried Deadly Weapon		Signs of Mental Illness within Race	
		Number	Percent	Number	Percent	Number	Percent
White	62.6	275	49	230	84	79	29
Black	13.2	141	25	97	67	16	11
Hispanic	17.1	90	16	68	76	16	18
Other							
Race	9.2	20	4	15	75	4	20
Unknown		35	6	31	89	7	20

Source: Somashekhar, Lowery & Alexander, 2015; U.S. Census, 2015.

APPENDIX C

CHAPTER 3 TABLES AND FIGURES

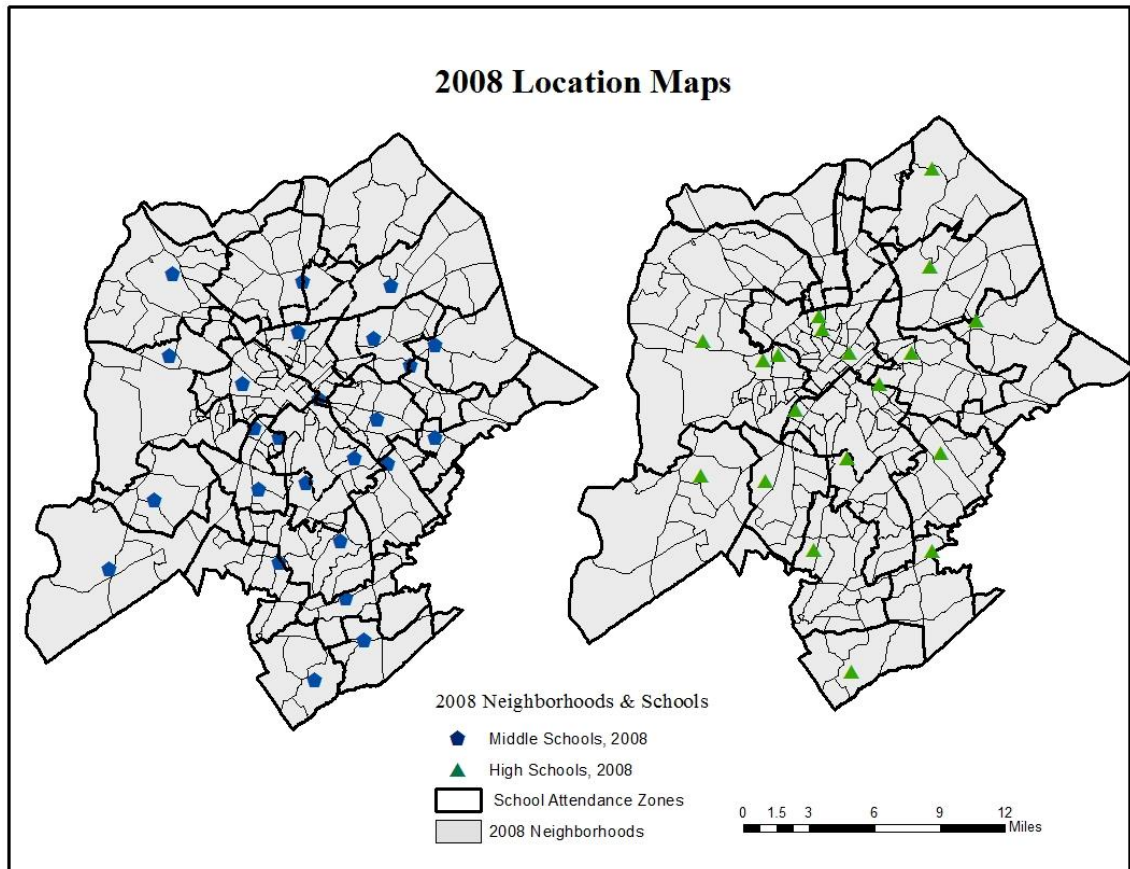


Figure 7. Location of 2008 Middle and High Schools and Related Attendance Zones within the 2008 Charlotte Neighborhoods. Source: Charlotte-Mecklenburg Schools, 2008

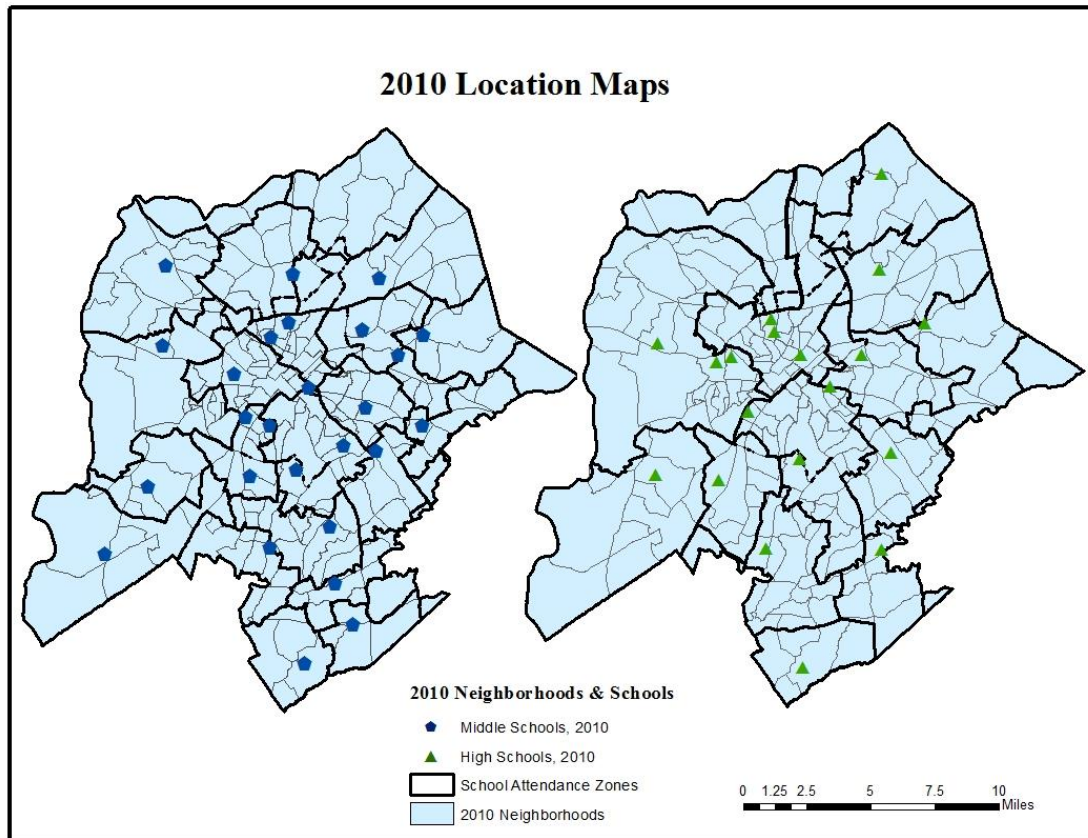


Figure 8. Location of 2010 Middle and High Schools and Related Attendance Zones within the 2010 Charlotte Neighborhoods

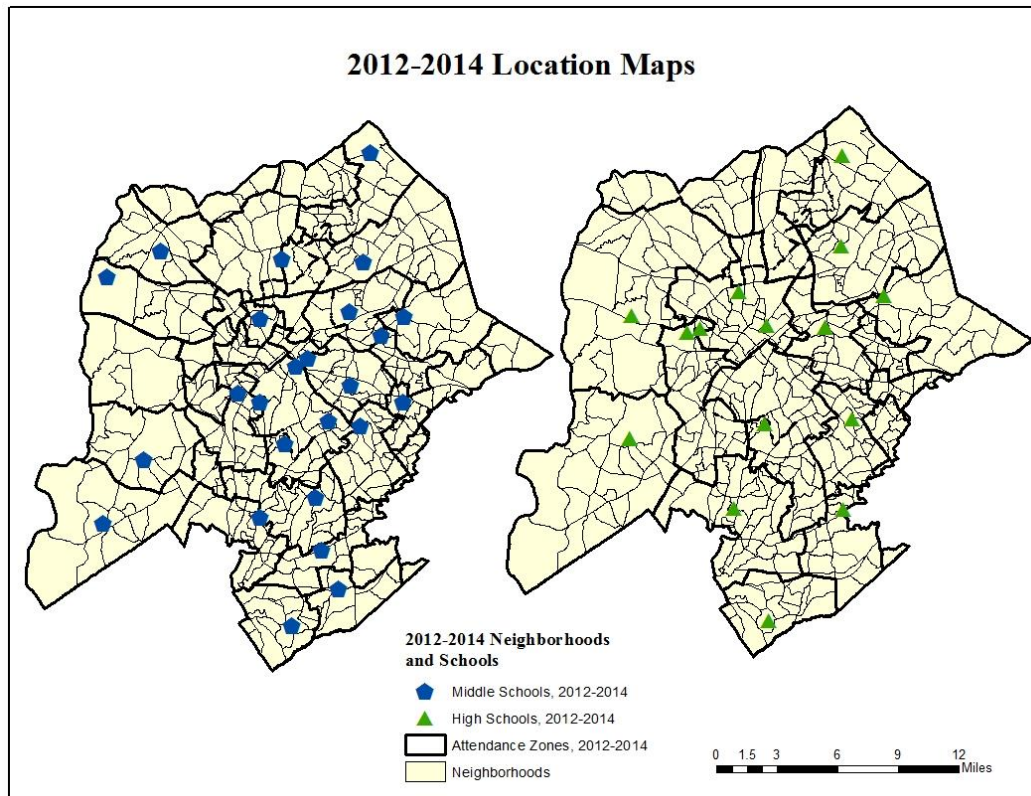
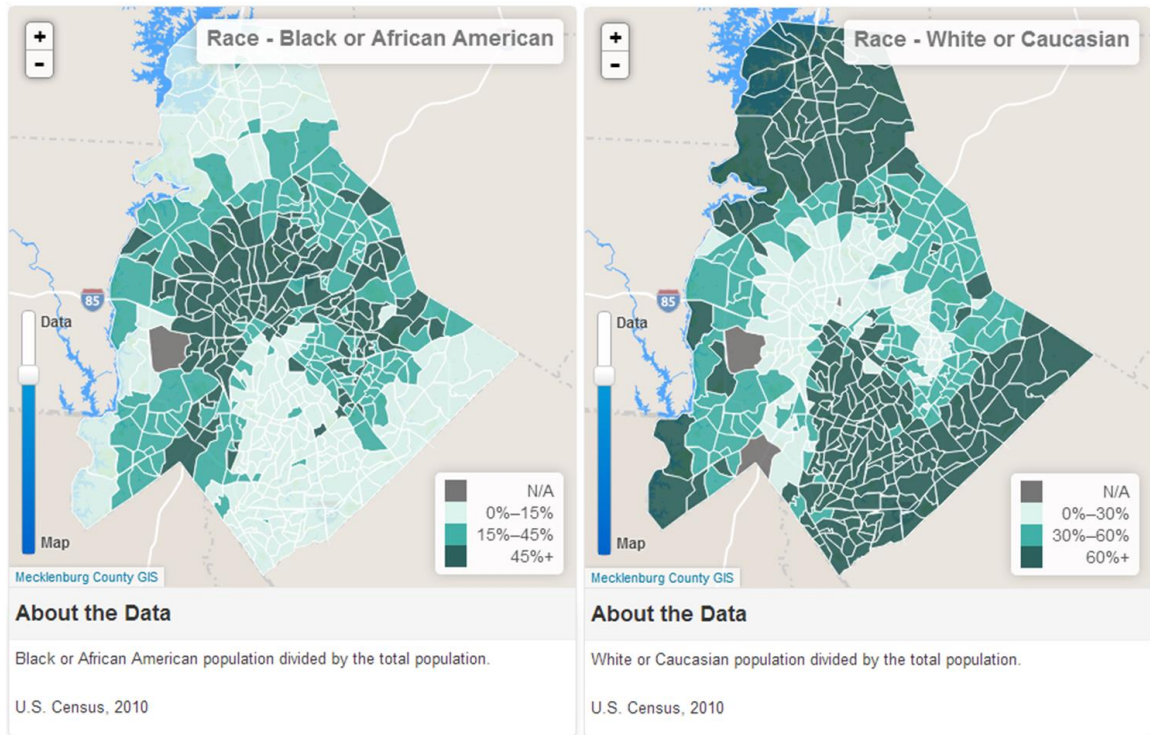
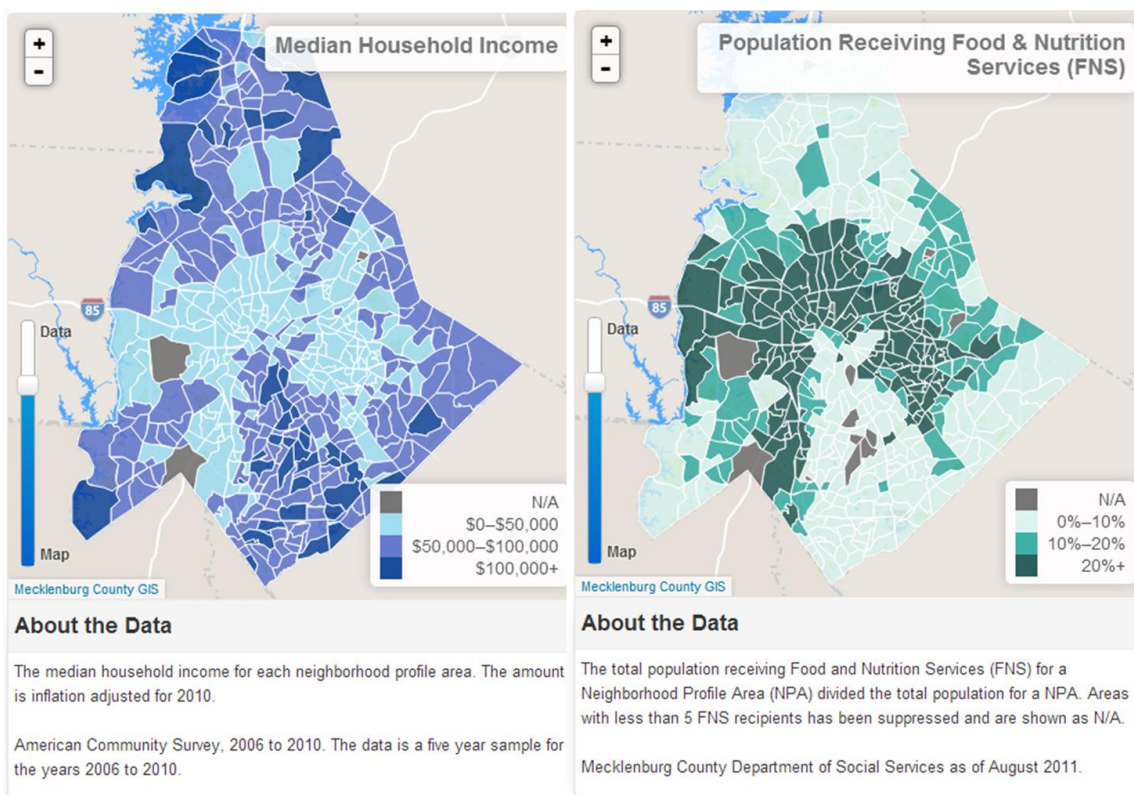


Figure 9. Location of 2012-2014 Middle and High Schools and Related Attendance Zones within the 2012-2014 Charlotte Neighborhoods. Source: Charlotte-Mecklenburg Schools, 2012-2014.



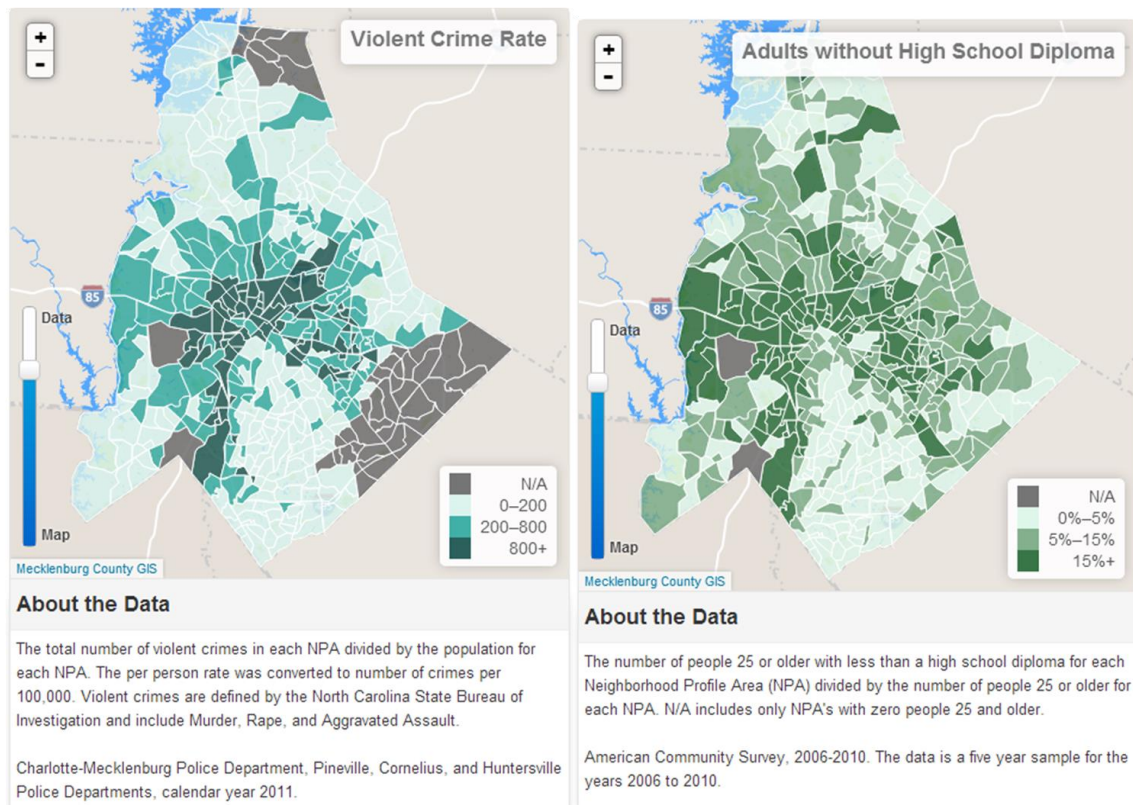
Quality of Life Dashboard: <http://maps.co.mecklenburg.nc.us/qoldashboard/>

Figure 10. Residential Segregation in the City of Charlotte and Mecklenburg County, North Carolina



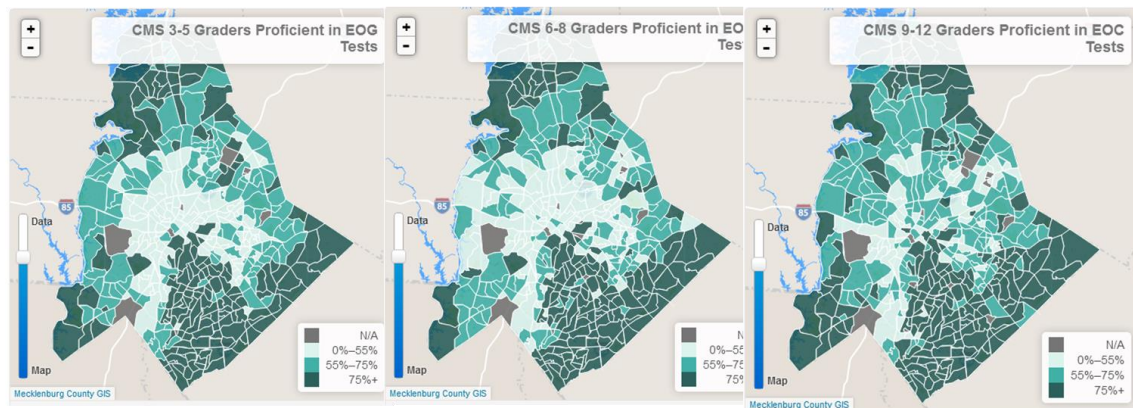
Quality of Life Dashboard: <http://maps.co.mecklenburg.nc.us/qoldashboard/>

Figure 11. Distribution of Wealth vs. Poverty in Charlotte and Mecklenburg County Neighborhoods



Quality of Life Dashboard: <http://maps.co.mecklenburg.nc.us/qoldashboard/>

Figure 12. Neighborhood Stressors – Violent Crime Rate and Underemployment



Quality of Life Dashboard: <http://maps.co.mecklenburg.nc.us/qoldashboard/>

Figure 13. Neighborhood Level Elementary, Middle and High School Performance on Standardized Tests in 2010-2011

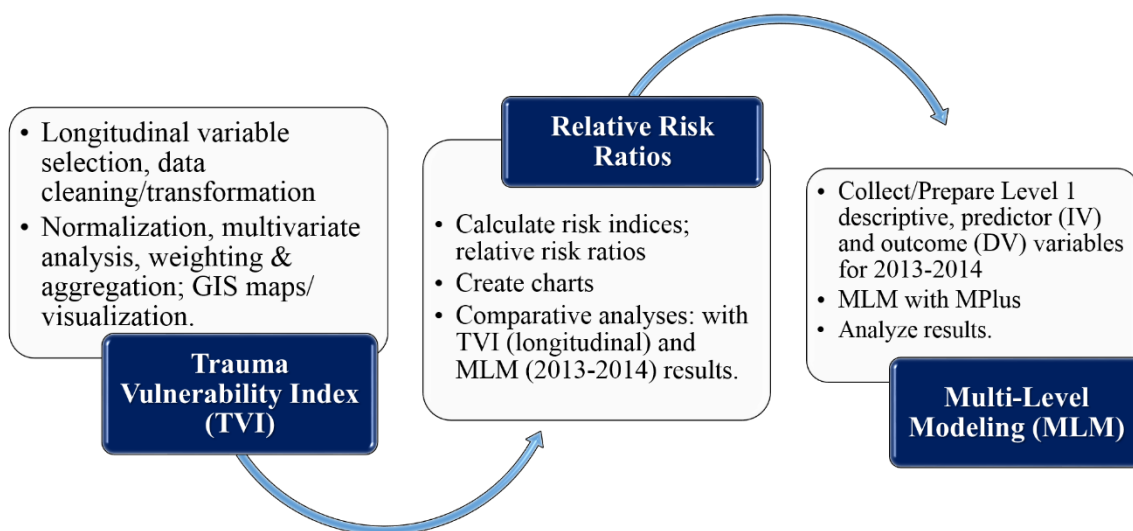


Figure 14. Overview of Spatial and Multilevel Statistical Analysis Process.

Table 2. Statistical Diagnostic Results for the Final Neighborhood Variables, 2008-2014

2008				
Diagnostic	Violent*	Food	Birth	Black
Valid Number	173	173	173	173
Missing	0	0	0	0
Mean	0.568	0.12831	0.073882	0.418729
Median	0.595	0.0973	0.0526	0.358938
Mode	0.5	.0017 ^a	0	.0051 ^a
Std. Dev	0.1865	0.129037	0.080696	0.3209876
Variance	0.035	0.017	0.007	0.103
Skewness	-0.486	2.061	1.648	0.433
Kurtosis	-0.365	6.788	4.112	-1.144
Multi Collinearity Test:				
r < 0.9	Yes	Yes	Yes	Yes
VIF <= 3.0	Yes	Yes	Yes	Yes
2010				
Diagnostic	Violent	Food	Birth	Black
Valid Number	173	173	173	173
Missing	2	2	2	2
Mean	0.096689	0.074594	0.188026	0.418729
Median	0.060909	0.0617	0.138	0.358938
Mode	.0036 ^a	0	.0348 ^a	.0051 ^a
Std. Dev	0.114364	0.077191	0.182356	0.3209876
Variance	0.013	0.006	0.033	0.103
Skewness	3.678	1.984	1.654	0.433
Kurtosis	23.109	5.565	3.464	-1.144
Multi Collinearity Test:				
r < 0.9	Yes	Yes	Yes	Yes
VIF <= 3.0	Yes	Yes	Yes	Yes
2012				
Diagnostic	Violent	Food	Birth	Black
Valid Number	408	408	408	408
Missing	0	0	0	0

Mean	0.537834	19.02107	4.799	35.201085
Median	0.597431	15.3	3.65	31.75
Mode	0	1.4	0	6.1
Std. Dev	0.246181	15.9362	4.9791	26.022375
Variance	0.061	253.965	24.791	677.164
Skewness	-1.145	1.064	1.068	0.595
Kurtosis	0.522	0.825	0.738	-0.522
Multi Collinearity Test:				
r < 0.9	Yes	Yes	Yes	Yes
VIF <= 3.0	Yes	Yes**	Yes	Yes

2014				
Diagnostic	Violent	Food	Birth	Black
Valid Number	406	406	406	406
Missing	0	0	0	0
Mean	0.390189	18.016	3.391	34.49174
Median	0.375761	14	2.15	31
Mode	0.2095	2	0	3.9
Std. Dev	0.204429	16.2056	3.9542	25.737
Variance	0.042	262.623	15.636	662.398
Skewness	0.274	1.251	1.26	0.601
Kurtosis	-0.784	1.632	1.406	-0.533
Multi Collinearity Test:				
r < 0.9	Yes	Yes	Yes	Yes
VIF <= 3.0	Yes	Yes**	Yes	Yes

a. Multiple modes exist. The smallest value is shown

* Violent = Violent Crime Rate;
 Food = % persons receiving Food and Nutritional Services;
 Birth = Adolescent Birth Rate;
 Black = Percent of Total Population that is Black.

** VIF for Food is between 3 and 3.6 when some of the other variables form the dependent.

Basis for Selection (after Hagenlocher, et.al., 2013):

Missing <2% with impute of missing using mean of surrounding values

Skewness < 2.0 and Kurtosis < 3.5

For all regression: r < 0.9 and VIF <= 3.0 therefore no multicollinearity

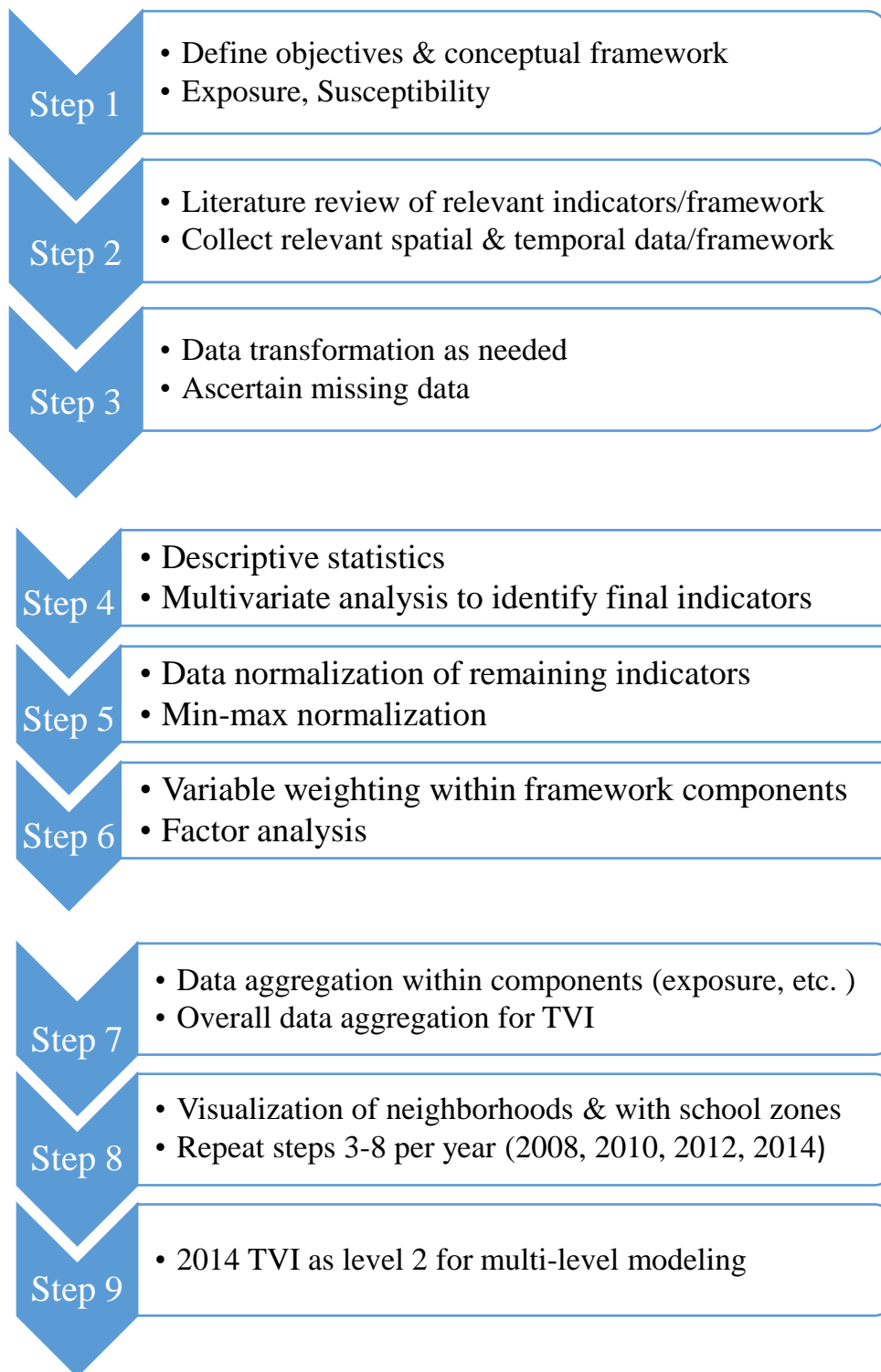


Figure 15. TVI process steps (after Vincheon, et.al, 2011; Hagenlocher, et.al, 2013)

Table 3. Factor Analysis Indicating Percent of Variance of Initial Extraction and Rotation Sums of Squared Loading for TVI Variables by year

	2008		2010		2012		2014	
	Initial Extractio n	Rotated & Rescaled *	Initial Extractio n	Rotated & Rescale d	Initial Extractio n	Rotated & Rescale d	Initial Extractio n	Rotated & Rescale d
Susceptibilit y								
Food	74.39	34.41	89.07	34.50	81.75	35.12	80.58	34.75
Birth	17.06	33.38	8.31	32.86	11.93	33.89	12.87	33.63
Black	8.55	32.21	2.62	32.64	6.32	30.99	6.55	31.62
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Final TVI **								
Exposure Susceptibilit y	88.47	50.00	80.90	50.00	79.68	50.00	88.56	50.00
	11.53	50.00	19.10	50.00	20.32	50.00	11.44	50.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Rotated and rescaled % variance used in aggregation for Susceptibility and for Final TVI

**Final factor analysis based on the rescaled % variance weighting for the susceptibility variable

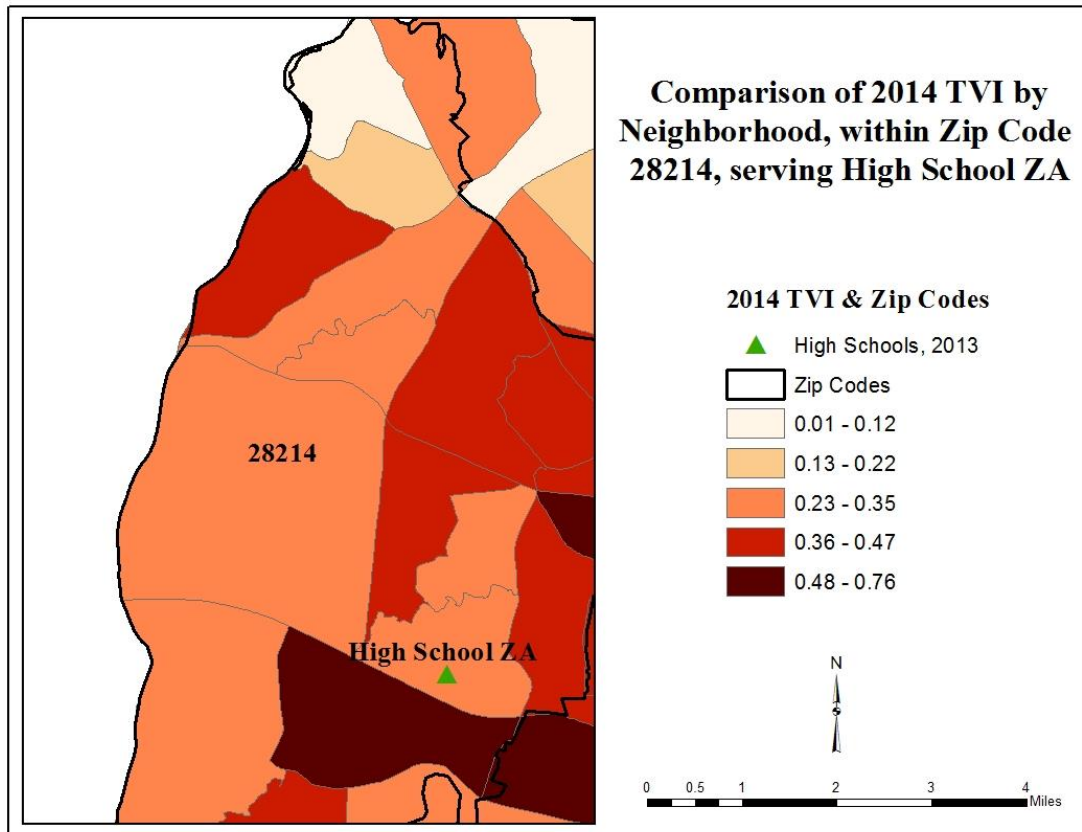


Figure 16. Comparison of the Range of TVI2014 for NPA's within Zip Code Boundaries

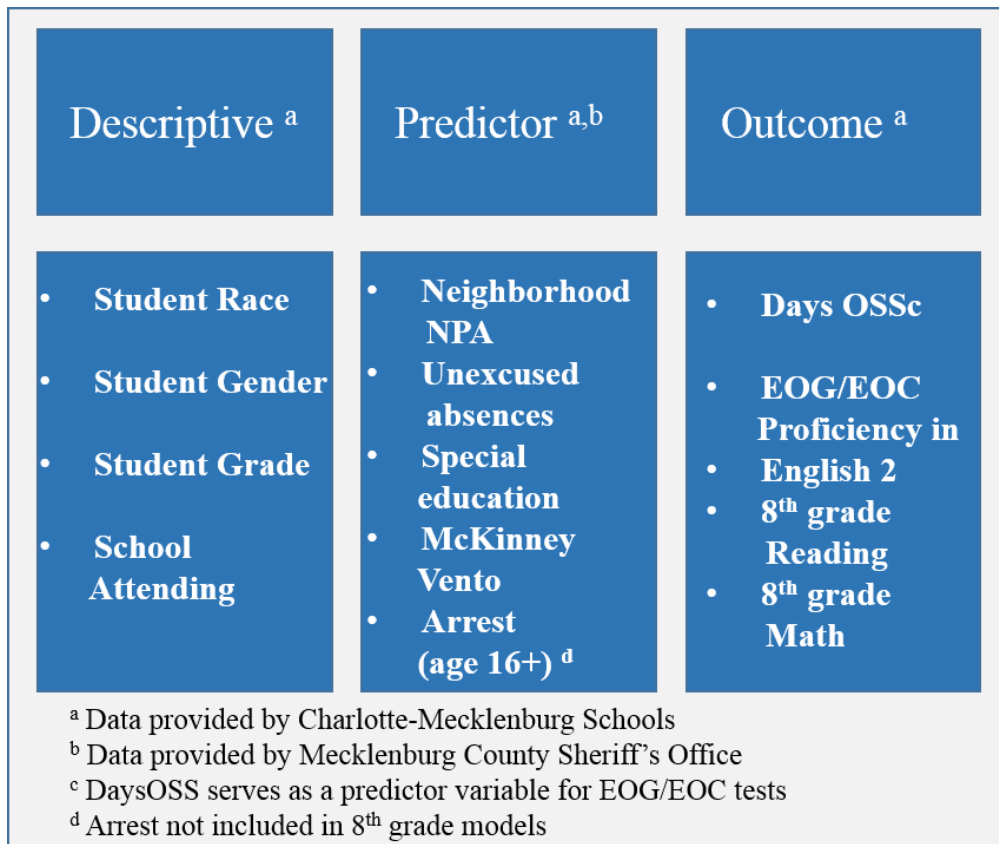


Figure 17. Level 1 Descriptive, Predictor and Outcome Variables for Multi-level modeling

Table 4. Descriptive Statistics per Model Variable for DAYSOSS as Dependent Variable

	N	Mean	Variance	Maximum ¹	Minimum	Skewness	Kurtosis
DAYSOSS	41181	1.24	20.631	93	0.00	6.300	55.059
Daysunex	41181	6.102	105.927	157	0.00	4.990	36.999
Race	41181	1.967	1.293			1.461	2.406
ec1	41181	0.957	4.1			1.865	1.718
mcventol	41181	0.035	0.034			5.069	23.694
arrest1	41181	0.045	0.043			4.397	17.331
TVI2014	459	0.272	0.039	0.758	0.00	0.412	-0.745

¹ Applies to data with numeric scale, interval or ratio. Not applicable to dummy variable data.

Table 5. Selected OSS statistics per relevant school year for a.) All males, grades 6-12, b.) Males age 16+ with one or more arrests, and c.) All males with McKinney Vento designation.

a. All males, grades 6-12					
School Year	Total	# students w/1+ OSS	Percent	# Black Students w/1+ OSS	% OSS-Black
2013-2014	41180	6380	15.49	4117	64.55
2012-2013	40029	7724	19.30	5234	67.76
2011-2012	39356	7880	20.02	5377	68.24
2010-2011	38438	7850	20.42	5307	67.61
2009-2010	37987	7855	20.68	5184	66.00
2008-2009	42627	7900	18.53	5253	66.49
2007-2008	37610	7877	20.94	5377	68.26

b. Students with 1+ Arrests – for 2012-2013 and 2013-2014

School Year	Total w/ 1+ Arrest	Student s w/1+ OSS	Percent w/ 1+ OSS	# Black Student s w/1+ OSS	% OSS-Black
2013-2014	1848	1061	57.41	858	80.87
2012-2013	2702	1648	60.99	1318	79.98

c. McKinney Vento Students (MV)

School Year	Total MV	MV Students w/1+ OSS	Percent w/ 1+ OSS	# Black MV Student s w/1+ OSS	% MV-OSS-Black
2013-2014	2871	950	33.10	840	88.42
2012-2013	1382	583	42.19	526	90.22
2011-2012	1241	504	40.61	446	88.49
2010-2011	1107	420	37.94	364	86.67

2009-2010	1074	416	38.73	350	84.13
2008-2009	1953	747	38.25	648	86.75
2007-2008	1225	533	43.51	464	87.05

Table 6. Statistics on Counts and Percentages among Male Students with Below Level Test Proficiency

Count/Percent	English 2 ^a	8th grade Reading ^b	8th grade Math ^b
N	5078	784	805
# Black	2218	333	339
% Black	43.68	42.47	42.11
#ec1 ^c	575	75	79
% Black	100.00	100.00	100.00
#mcventol	199	21	23
#Black	138	16	19
% Black	69.35	76.19	82.61
# Arrest1 ^d	232	7	7
#Black	151	5	5
% Black	65.10	71.43	71.43
#OSS ^e	812	144	152
#Black	531	88	94
% Black	65.40	61.11	61.84
# daysunex ^f	4062	661	680
# Black	1900	292	298
% Black	46.78	44.18	43.83

^a Includes students from grades 6-12 who took the English 2 exam; ^b Includes only 8th graders taking the Reading and Math exams; ^c excludes gifted students; ^d includes students age 16+; given the very low number in 8th grade, arrest1 was not included in modeling RD08 and MA08;

^e number of students with one or more out of school suspension;

^f number of students with one or more unexcused absence, not including OSS with daysunex ranging from 1 to 125 days of missed school.

Table 7. Descriptive Statistics per Model Variable for ENG2 as Dependent Variable

	N	Mean	Varianc e	Maximu m ¹	Minimum	Skewness	Kurtosis
ENG2	5078	0.356	0.229	5.000	1.000	0.601	-1.639
DAYSOSS	5078	1.295	23.688	72.000	0.000	6.438	54.918
Daysunex	5078	6.014	97.769	125.000	0.000	4.406	27.083
Race	5078	1.951	1.222			1.396	2.253
ec1	5078	0.929	3.987			1.907	1.887
mcventol	5078	0.039	0.038			4.749	20.553
arrest1	5078	0.046	0.044			4.351	16.932
TVI2014	448	0.272	0.039	0.758	0.000	0.42	-0.753

¹ Applies to data with numeric scale, interval or ratio. Not applicable to dummy variable data.

Table 8. Descriptive Statistics per Model Variable for RD08

	N	Mean	Variance	Maximum ¹	Minimum	Skewness	Kurtosis
RD08	784	2.774	1.887	5.000	1.000	0.124	-1.371
DAYSOSS	784	1.566	30.309	55.000	0.000	5.828	41.752
Daysunex	784	4.788	31.011	39.000	0.000	2.493	8.64
Race	784	1.977	1.285			1.484	2.604
ec1	784	0.916	4.054			1.937	1.955
mcventol	784	0.027	0.026			5.862	32.361
TVI2014	317	0.28	4.788	0.758	0.000	0.384	-0.770

¹ Applies to data with numeric scale, interval or ratio. Not applicable to dummy variable data.

Table 9. Descriptive Statistics per Model Variable for MA08

	N	Mean	Variance	Maximum ¹	Minimum	Skewness	Kurtosis
MA08	805	2.677	2.162	5.000	1.000	0.237	-1.466
DAYSOSS	805	1.656	33.314	55.000	0.000	5.698	39.191
Daysunex	805	4.800	30.761	39.000	0.000	2.463	8.510
Race	805	1.975	1.264			1.486	2.660
ec1	805	0.983	3.956			1.984	2.151
mcventol	805	0.029	0.028			5.659	30.029
TVI2014	317	0.282	0.040	0.758	0.000	0.373	-0.790

¹ Applies to data with numeric scale, interval or ratio. Not applicable to dummy variable data.

Table 10. Hypothesis and necessary conditions to answer the question: to what extent does neighborhood level exposure to violence [*and individual IV's] moderate the relationship between Black male middle and high school students and short term out of school suspensions (OSS)?

Hypotheses

TVI is related to OSS.

EC status is related to OSS after controlling for TVI.

Arrest status is related to OSS after controlling for TVI.

McKinney Vento status is related to OSS after controlling for TVI.

Days unexcused absence is related to OSS after controlling for TVI.

Model Conditions

There is systematic within- & between-group variance in OSS.

There is significant variance at the level-1 intercept.

There is significant variance in the level-1 slope.

The variance in the level-1 intercept is predicted by the level-1 IV's.

The variance in the level-1 slope is predicted by the level-1 IV's.

*EC status: student has a special education designation; Arrest status: student (age 16+) has one or more arrests; McKinney Vento status: student has a McKinney Vento designation, indicating experience with homelessness; Days unexcused absence: indicates the number of days a student missed school without an excuse and in addition to days missed for OSS.

Table 11. Hypothesis and necessary conditions to answer the question: to what extent does neighborhood level exposure to violence [*and individual IV's] moderate the relationship between Black male middle and high school students performance (not passing) on English 2 end of course tests?

Hypotheses

TVI is related to observed ENG2 performance.

DAYSOSS status is related to ENG2 after controlling for TVI.

EC status is related to ENG2 after controlling for TVI.

Arrest status is related to ENG2 after controlling for TVI.

McKinney Vento status is related to ENG2 after controlling for TVI.

Days unexcused absence is related to ENG2 after controlling for TVI.

Model Conditions

There is systematic within- & between-group variance in ENG2.

There is significant variance at the level-1 intercept.

There is significant variance in the level-1 slope.

The variance in the level-1 intercept is predicted by the level-1 IV's.

The variance in the level-1 slope is predicted by the level-1 IV's.

*ENG2 refers to the observed negative relationship between race (Black) and ENG2 test scores; DAYSOSS: number of days of school missed due to OSS; EC status: student has a special education designation; Arrest status: student (age 16+) has one or more arrests; McKinney Vento status: student has a McKinney Vento designation, indicating experience with homelessness; Days unexcused absence: indicates the number of days a student missed school without an excuse and in addition to days missed for OSS.

Table 12. Hypothesis and necessary conditions to answer the question: to what extent does neighborhood level exposure to violence [*and individual IV's] moderate the relationship between Black male middle and high school students performance (not passing) on 8th Grade Reading end of grade tests?

Hypotheses

TVI is related to RD08.

DAYSOSS status is related to RD08 after controlling for TVI.

EC status is related to RD08 after controlling for TVI.

McKinney Vento status is related to RD08 after controlling for TVI.

Days unexcused absence is related to RD08 after controlling for TVI.

Model Conditions

There is systematic within- & between-group variance in RD08.

There is significant variance at the level-1 intercept.

There is significant variance in the level-1 slope.

The variance in the level-1 intercept is predicted by the level-1 IV's.

The variance in the level-1 slope is predicted by the level-1 IV's.

*RD08 refers to the observed negative relationship between race (Black) and 8th Grade Reading test scores; DAYSOSS: number of days of school missed due to OSS; EC status: student has a special education designation; McKinney Vento status: student has a McKinney Vento designation, indicating experience with homelessness; Days unexcused absence: indicates the number of days a student missed school without an excuse and in addition to days missed for OSS.

Table 13. Hypothesis and necessary conditions to answer the question: to what extent does neighborhood level exposure to violence [*and individual IV's] moderate the relationship between Black male middle and high school students performance (not passing) on 8th Grade Math end of grade tests?

Hypotheses

TVI is related to MA08.

DAYSOSS status is related to MA08 after controlling for TVI.

EC status is related to MA08 after controlling for TVI.

McKinney Vento status is related to MA08 after controlling for TVI.

Days unexcused absence is related to MA08 after controlling for TVI.

Model Conditions

There is systematic within- & between-group variance in MA08.

There is significant variance at the level-1 intercept.

There is significant variance in the level-1 slope.

The variance in the level-1 intercept is predicted by the level-1 IV's.

The variance in the level-1 slope is predicted by the level-1 IV's.

* MA08 refers to the observed negative relationship between race (Black) and 8th Grade Math test scores; DAYSOSS: number of days of school missed due to OSS; EC status: student has a special education designation; McKinney Vento status: student has a McKinney Vento designation, indicating experience with homelessness; Days unexcused absence: indicates the number of days a student missed school without an excuse and in addition to days missed for OSS.

APPENDIX D

CHAPTER 4 TABLES AND FIGURES

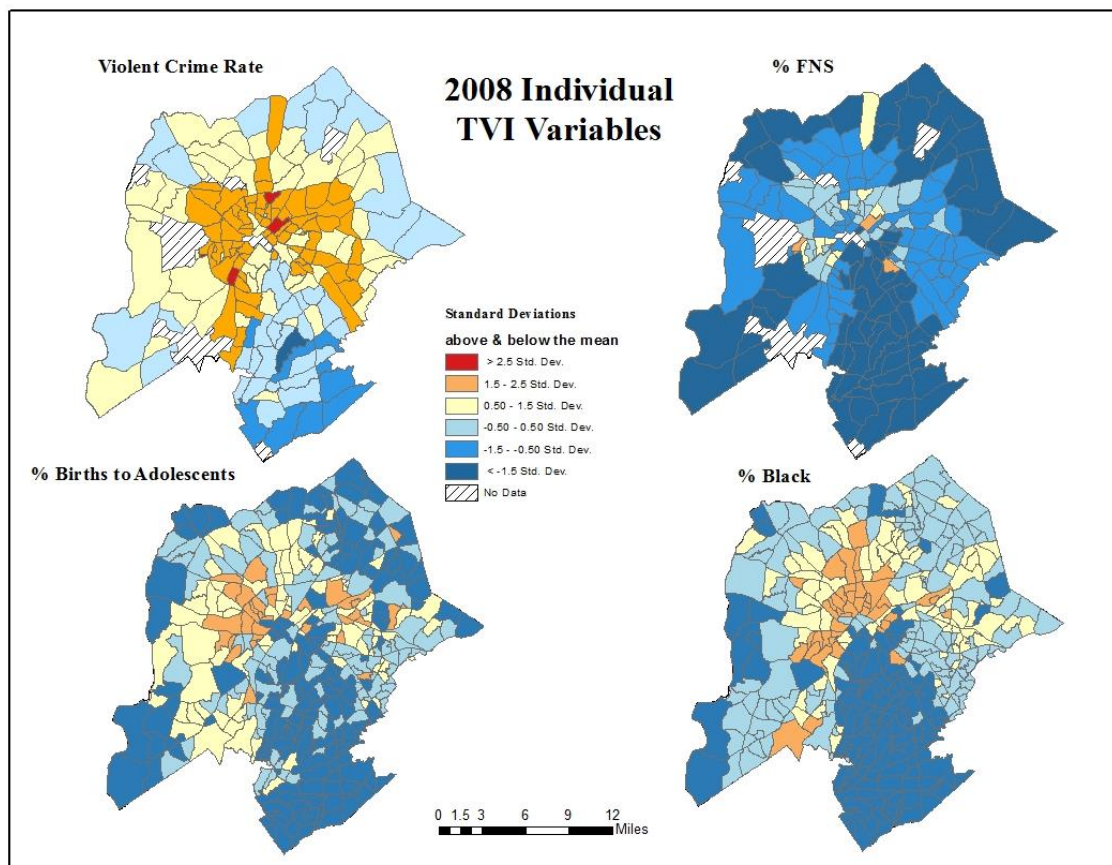


Figure 18. Comparison of the Individual 2008 Quality of Life Variables, Normalized but before Weighting and Aggregation. Source: Quality of Life Study, 2008.

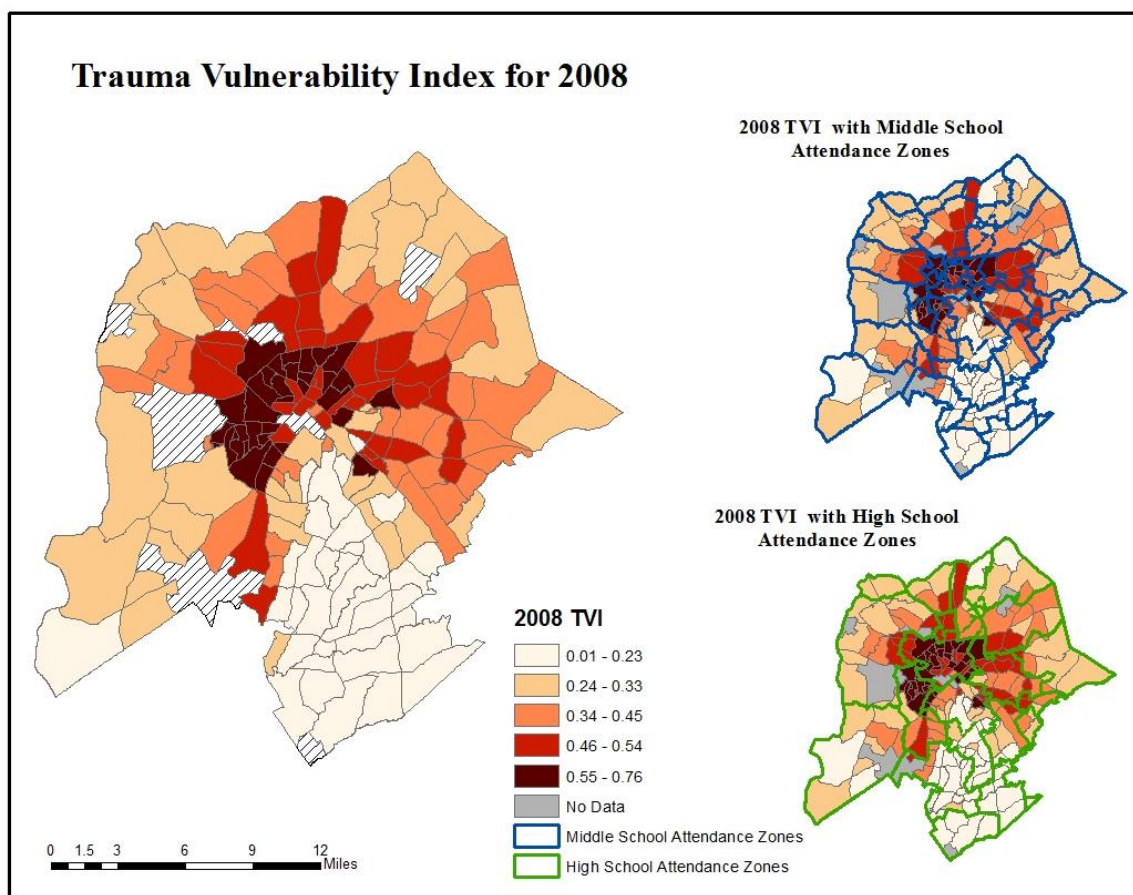


Figure 19. 2008 TVI Map with Variable Weighting and Insets with Schools and Attendance Zones for 2007-2008. Note: Susceptibility weighted and calculated at FNS 34, Birth 33, Black 32. TVI weighted and calculated at Violent 51, Susceptibility 49. Source: Quality of Life Study, 2008.

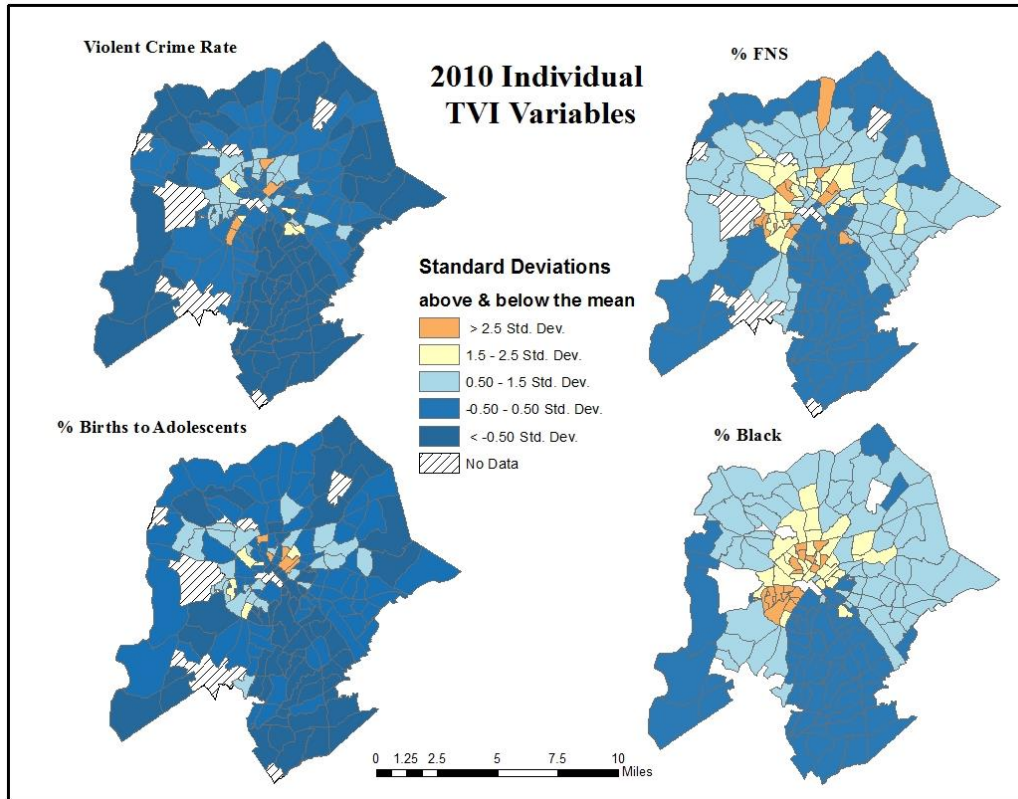


Figure 20. Comparison of the Individual 2010 Quality of Life Variables before Weighting and Aggregation (all normalized except % Births). Source: Quality of Life Study, 2010.

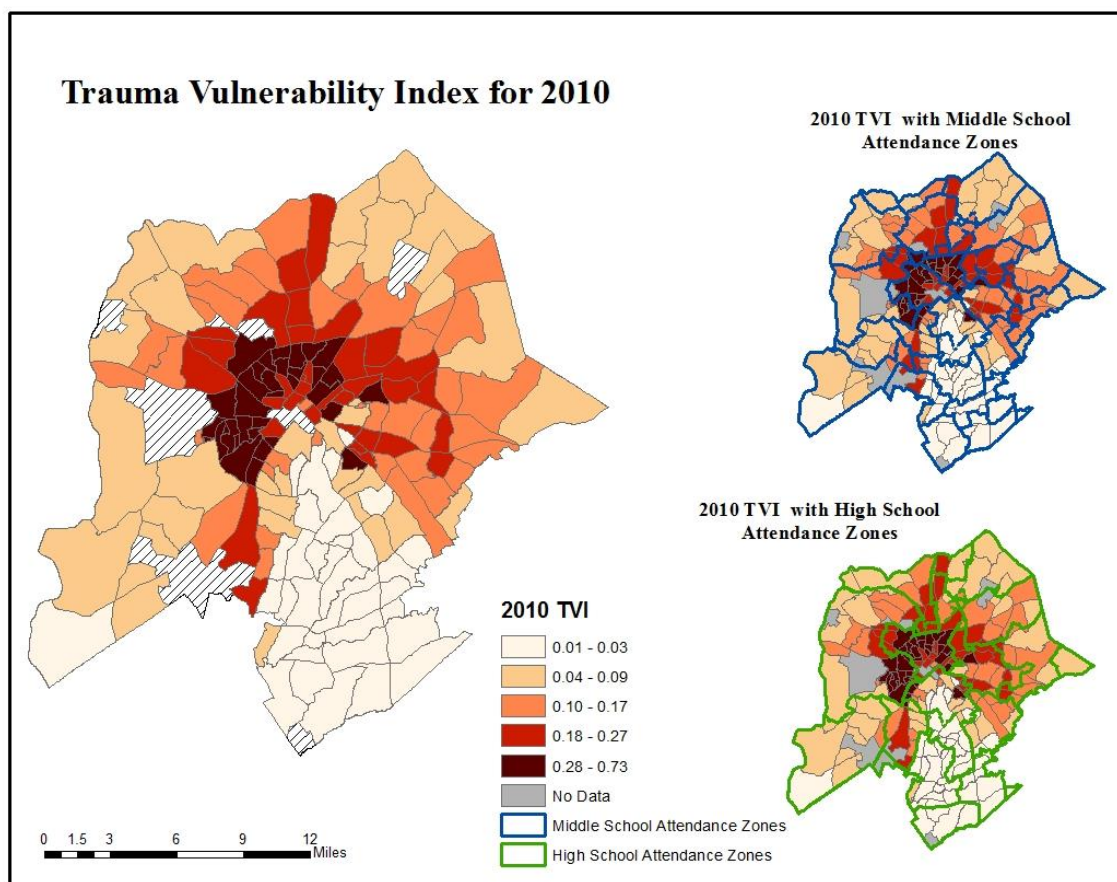


Figure 21. 2010 TVI Map with Variable Weighting and Insets with Schools and Attendance Zones for 2009-2010. Note: Susceptibility weighted and calculated at FNS 34, Birth 33, Black 33. TVI weighted and calculated at Violent 50, Susceptibility 50. Source: Quality of Life Study, 2010.

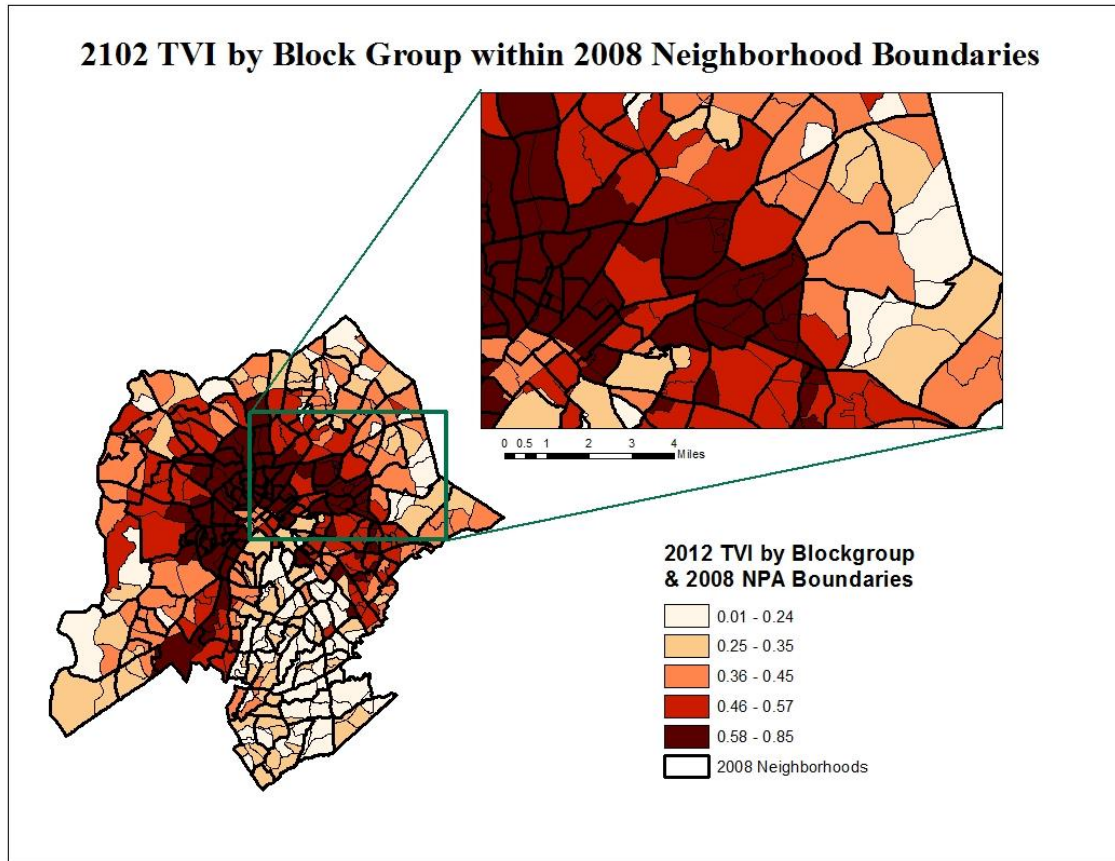


Figure 22. Comparison of TVI at the 2012 Block Group Level with 2008 Neighborhood Boundaries. Source: Quality of Life Study, ISC, 2008-2012.

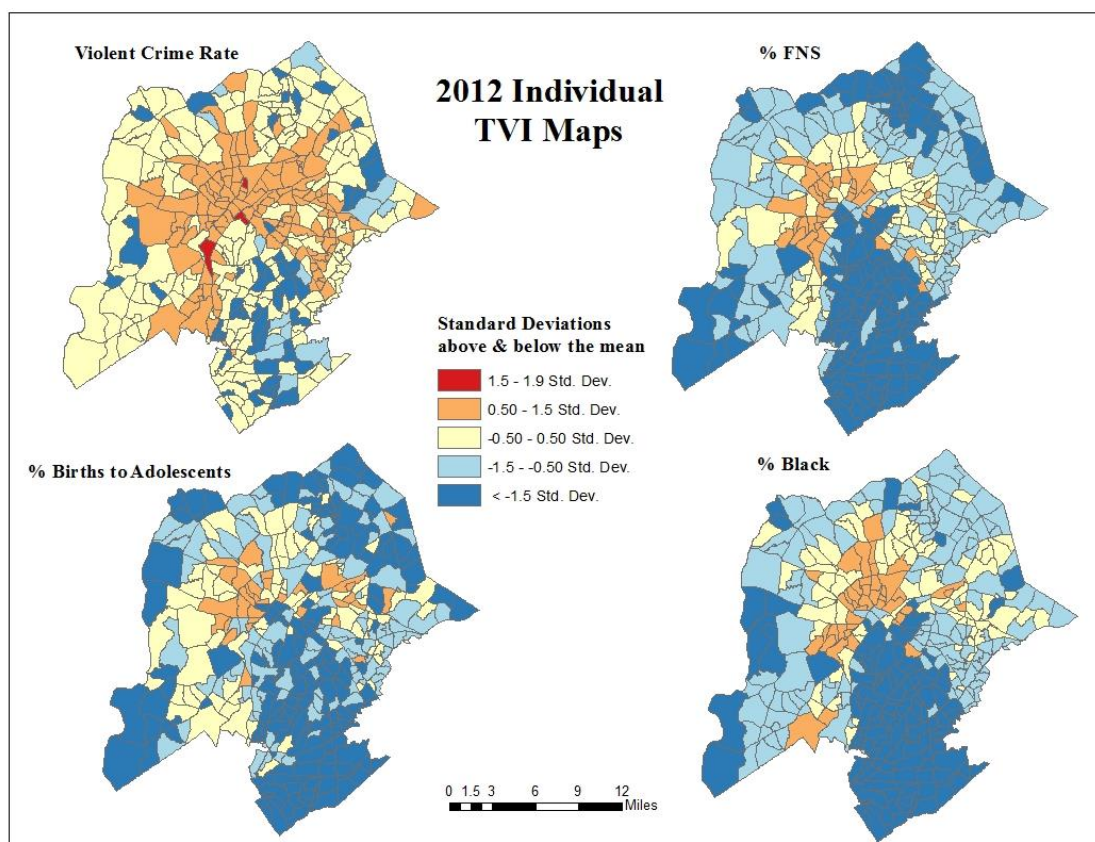


Figure 23. Comparison of the Individual 2012 Quality of Life Variables, Normalized but before Weighting and Aggregation. Source: Quality of Life Study, ISC, 2012.

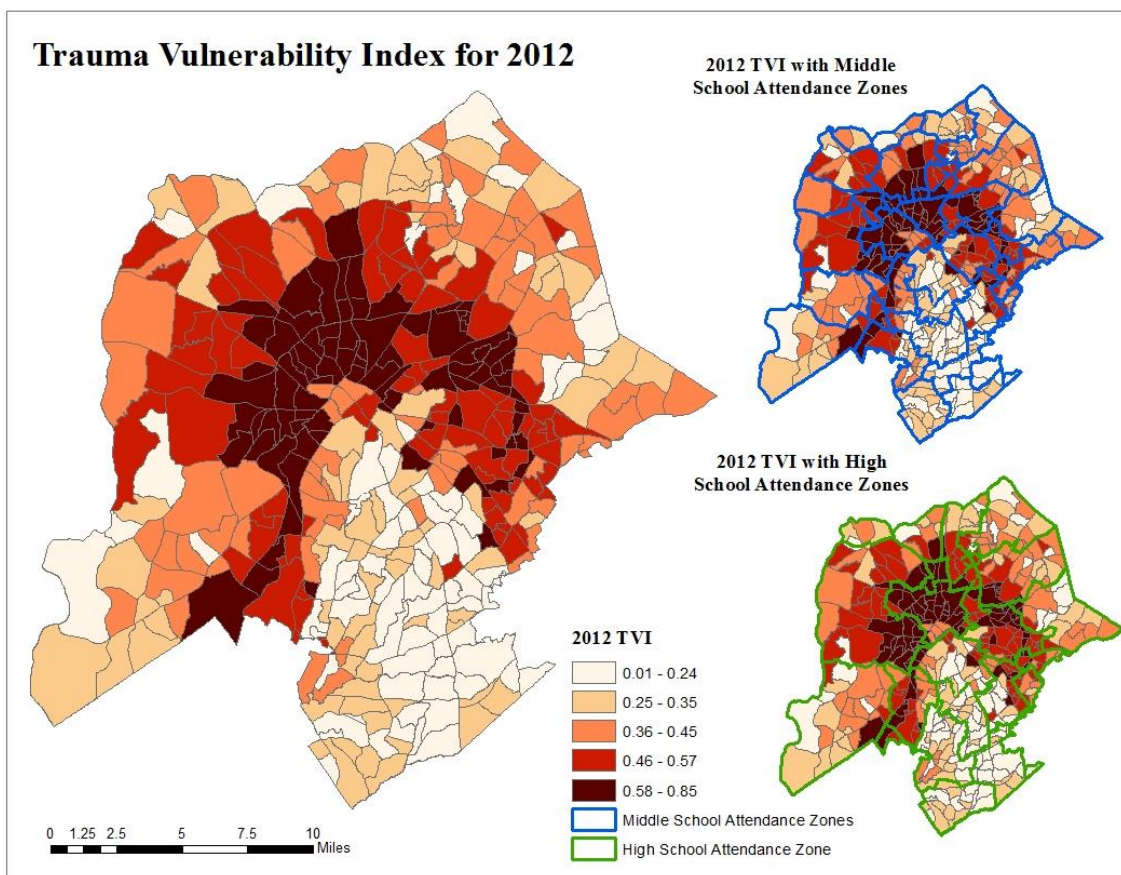


Figure 24. 2012 TVI Map with Variable Weighting and Insets with Schools and Attendance Zones for 2011-2012. Note: Susceptibility weighted and calculated at FNS 35, Birth 34, Black 31. TVI weighted and calculated at Violent 50, Susceptibility 50. Source: Quality of Life Study, 2012.

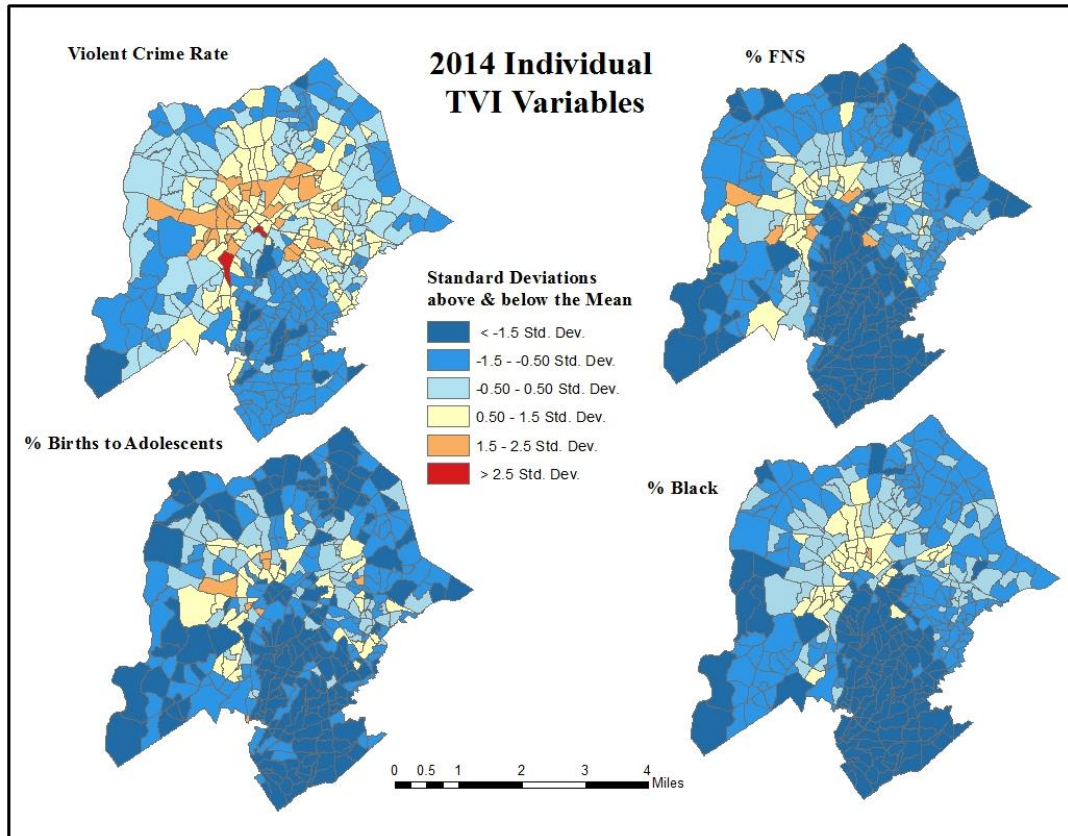


Figure 25. Comparison of the Individual 2014 Quality of Life Variables, Normalized But before Weighting and Aggregation. Source: Quality of Life Study, ISC, 2014

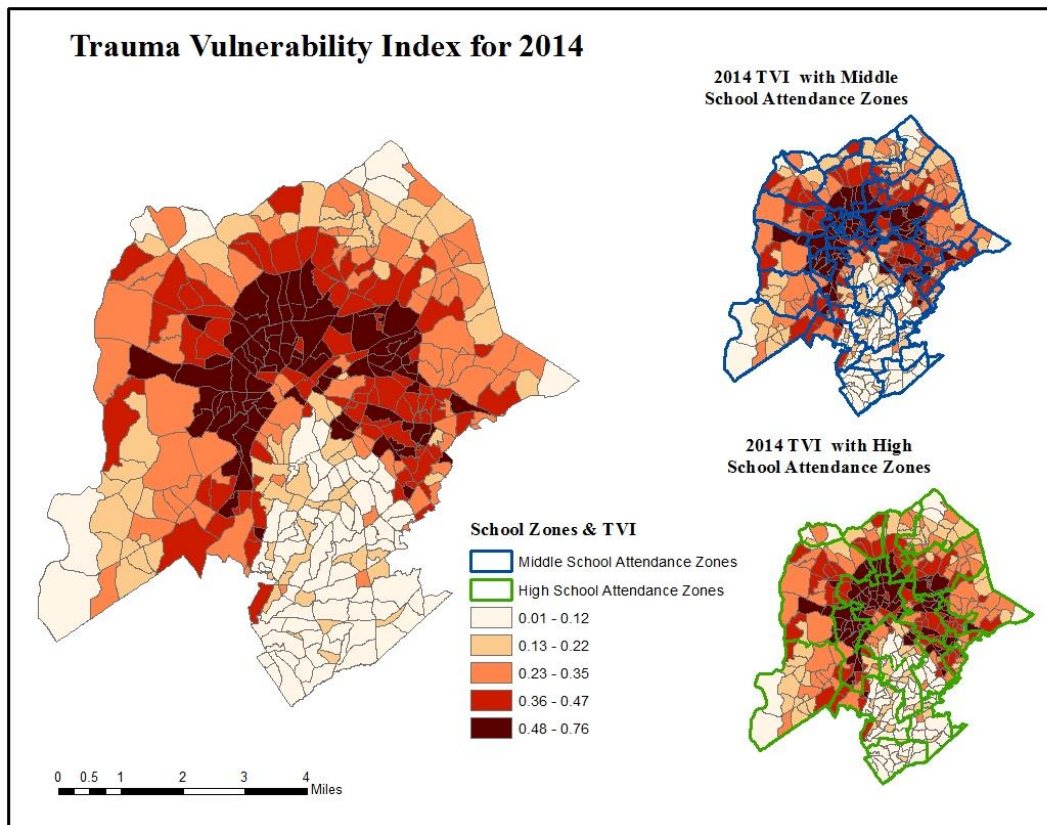


Figure 26. 2014 TVI Map with Variable Weighting and Insets with Schools and Attendance Zones for 2013-2014. Note: Susceptibility weighted and calculated at FNS 32, Birth 37; Black 31. TVI: Violent - 51; Susceptibility - 49

Table 14. Charlotte-Mecklenburg Schools Student Demographics, 2007-2008 to 2013-2014

EthnicDescription	20072008	20082009	20092010	20102011	20112012	20122013	20132014
African American	16839	19183	16847	17202	17459	17665	17898
American Indian	201	220	182	225	215	197	197
Asian	1618	1875	1806	1803	1934	2006	2161
Hispanic	4860	5792	5298	5594	6092	6567	7156
Multi-Racial	797	1112	1151	877	970	1068	1113
White	13295	14445	12703	12737	12686	12526	12648

Table 15. Charlotte-Mecklenburg Schools Out of School Suspensions, 2007-2008 to 2013-2014

EthnicDescription	20072008	20082009	20092010	20102011	20112012	20122013	20132014
African American	14713	18483	17510	18514	16185	14656	10070
American Indian	108	97	119	138	115	97	50
Asian	188	221	230	274	276	203	138
Hispanic	2043	2708	2589	3087	2662	2588	1775
Multi-Racial	440	772	841	568	385	440	289
White	2167	2805	2781	2694	2143	1749	1130

Table 16. Risk Index (RI) and Risk Ratio (RR) Comparisons, 2007-2008 to 2013-2014

Ethnic Description	20072008	20082009	20092010	20102011	20112012	20122013	20132014
RI Black	0.8737	0.9635	1.0394	1.0763	0.9270	0.8297	0.5626
RI White	0.1630	0.1942	0.2189	0.2115	0.1689	0.1396	0.0893
RR Black-White	5.3606	4.9618	4.7475	5.0885	5.4878	5.9419	6.2975
RI Black	0.8737	0.9635	1.0394	1.0763	0.9270	0.8297	0.5626
RI Non-Black ^a	0.2381	0.2816	0.3103	0.3184	0.2549	0.2270	0.1453
RR B-Non B	3.8721	3.6546	3.6372	3.3805	3.3494	3.4209	3.6693
RI American Indian	0.5373	0.4409	0.6538	0.6133	0.5349	0.4924	0.2538
RI Non- American Indian	0.5226	0.5893	0.6335	0.6578	0.5532	0.4930	0.3271
RR AI-NonAI	1.0281	0.7482	1.0321	0.9324	0.9670	0.9988	0.7760
RI Asian	0.1162	0.1179	0.1274	0.1520	0.1427	0.1012	0.0639
RI Non-Asian	0.5410	0.6102	0.6589	0.6824	0.5743	0.5136	0.3413
RR A-Non-A	0.2148	0.1932	0.1933	0.2227	0.2485	0.1970	0.1871
RI Hispanic	0.4204	0.4675	0.4887	0.5518	0.4370	0.3941	0.2480
RI Non-Hispanic	0.5379	0.6075	0.6571	0.6756	0.5743	0.5124	0.3433
RR H-Non-H	0.7815	0.7696	0.7436	0.8169	0.7608	0.7692	0.7226
RI Multi Racial	0.5521	0.6942	0.7307	0.6477	0.3969	0.4120	0.2597
RI Non-Multi Racial	0.5221	0.5857	0.6306	0.6578	0.5570	0.4952	0.3286
RR MR-NonMR	1.0575	1.1854	1.1587	0.9846	0.7126	0.8320	0.7902
RI White	0.1630	0.1942	0.2189	0.2115	0.1689	0.1396	0.0893
RI Non-White	0.7194	0.7906	0.8420	0.8786	0.7358	0.6539	0.4320
RR W-NonW	0.2266	0.2456	0.2600	0.2407	0.2296	0.2135	0.2068

^a Non-Black includes White and all Non-White students; "Non" in subsequent calculations refers to all students outside the group under study, e.g., Hispanic-non-Hispanic compares Hispanic with all other students.

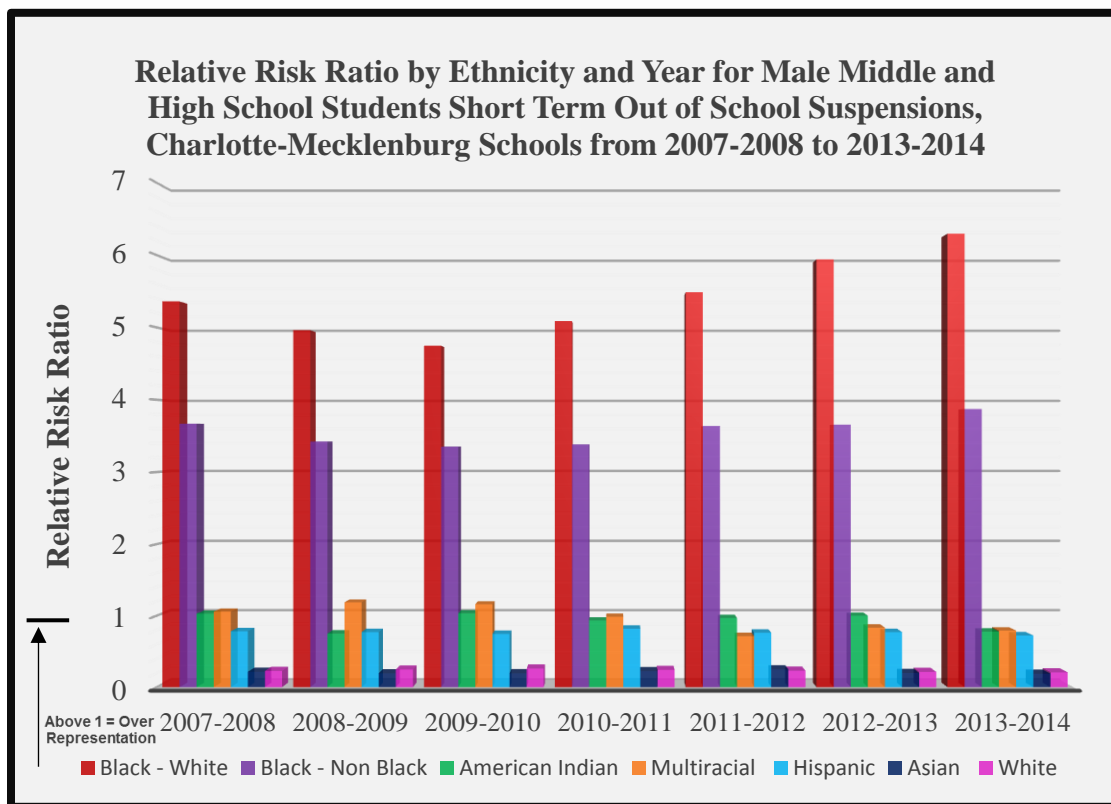


Figure 27: Relative Risk Ratio by Race/Ethnicity for Short Term Out of School Suspensions, 2007-2008 to 2013-2014.

Table 17. Relationship between Risk Factors (Predictors) and DAYSOSS (Outcome) All Male Students, Grades 6-12 (exception: Arrest1 for age 16+)

Parameter	Null		Level 1		Level 2	
	Parameter Estimate	SE	Parameter Estimate	SE	Parameter Estimate	SE
ICC	0.063		0.039		0.063	
Chi-Square (Test of Model Fit)	0.000***					
df	0.000					
RMSEA	0.000					
Within Level Effect						
Intercept	19.493	0.137***	16.288	0.116***	18.605	0.131***
Between Level Effect						
DAYSOSS with						
Race			-1.687	0.170***	-0.737	0.073***
ec1			-0.377	0.086***	0.592	0.083***
mcventol			-1.639	0.648*	-0.283	0.286
arrest1			0.417	0.291	0.357	0.167*
daysunex			0.008	0.016	0.074	0.009***
on TVI2014					0.071	0.306
Race with						
ec1			0.122	0.029***		
mcventol			0.402	0.233		
arrest1			-0.154	0.107		
daysunex			-0.01	0.006		
on TVI2014					-0.178	0.262
ec1 with						
mcventol			0.158	0.135		
arrest1			-0.09	0.091		
daysunex			0.001	0.004		
on TVI2014						
mcventol with						
arrest1			-1.396	0.655*		

daysunex on TVI2014		-0.070	0.033*		-2.464	1.403
arrest1 with daysunex on TVI2014		0.015	0.016		-0.807	0.769
daysunex on TVI2014					-0.033	0.034
Intercept variance	1.305	0.110***				
Residual variance:						
DAYSOSS		4.944	0.494***		1.327	0.110***
Race		0.602	0.106***		0.808	0.074***
ec1		0.069	0.027***		0.462	0.083***
mcventol		12.015	8.008***		9.668	1.618***
arrest1		1.256	0.63***		1.762	0.469***
daysunex		0.012	0.027***		0.013	0.001***
Model summary						
AIC	239952.313	233922.717			238536.571	
BIC	239978.191	234164.237			238605.577	
Sample-Size Adjusted BIC	239968.657	234075.253			238580.153	
Number of Parameters	3	28			8	
Number of Clusters	459	459			459	
Avg cluster size	89.719	89.719			89.719	

Note. *p<.05. **p<.01. ***p<.001; ICC = Intraclass Correlations indicating proportion of variance accounted for by the model; df = degrees of freedom; SE=StandardError; RMSEA (Root Mean Square Error Of Approximation); CFI=comparative fit index; N = 41181; AIC=Akaike information criterion; BIC=Bayesian Information Criterion; Neighborhood profile area identifier (npaid) = Cluster variable.

Table 18. ICC for Separate Level 1 Model per Individual Student IV.

IV	ICC
daysunex	0.043
ec1	0.055
mcvento1	0.059
arrest1	0.062

L1 Model – Results for DaysOSS

Neighborhood

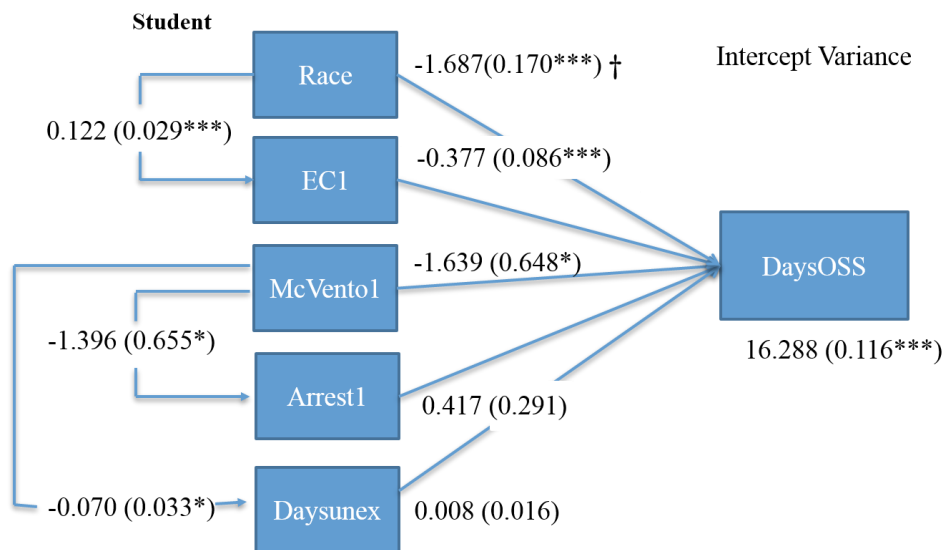


Figure 28: Intercept Variance Diagram for Level-1 Model with DaysOSS as DV

[†] parameter estimate (standard error); *p<.05, **p<.01, ***p<.001

L1 Model – Results for DaysOSS

Neighborhood

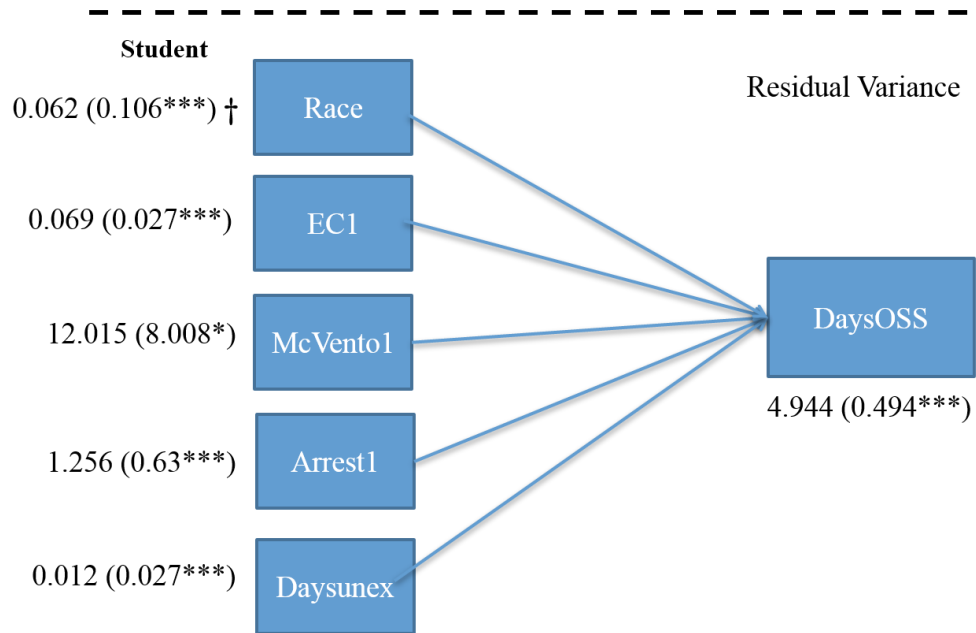


Figure 29: Residual Variance Diagram for Level-1 Model with DaysOSS as DV
 † parameter estimate (standard error); *p<.05, **p<.01, ***p<.001

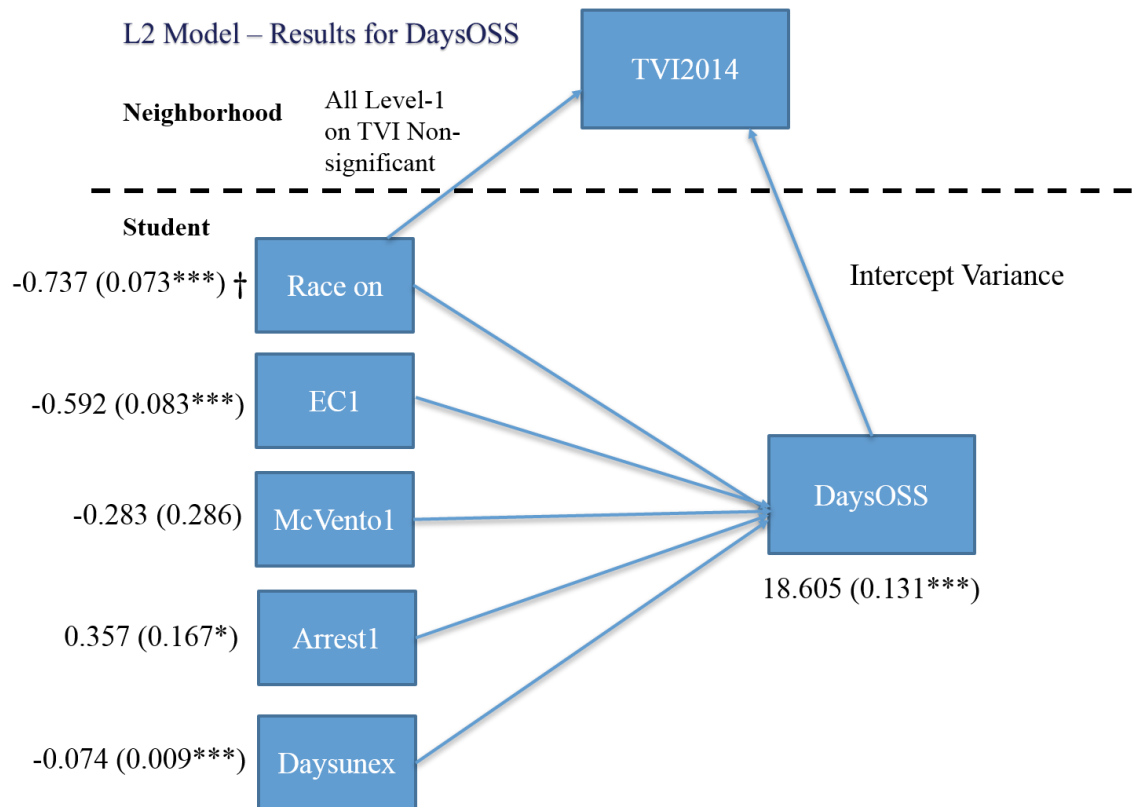


Figure 30: Intercept Variance Diagram for Level-2 Model with DaysOSS as DV
 † parameter estimate (standard error); *p<.05, **p<.01, ***p<.001

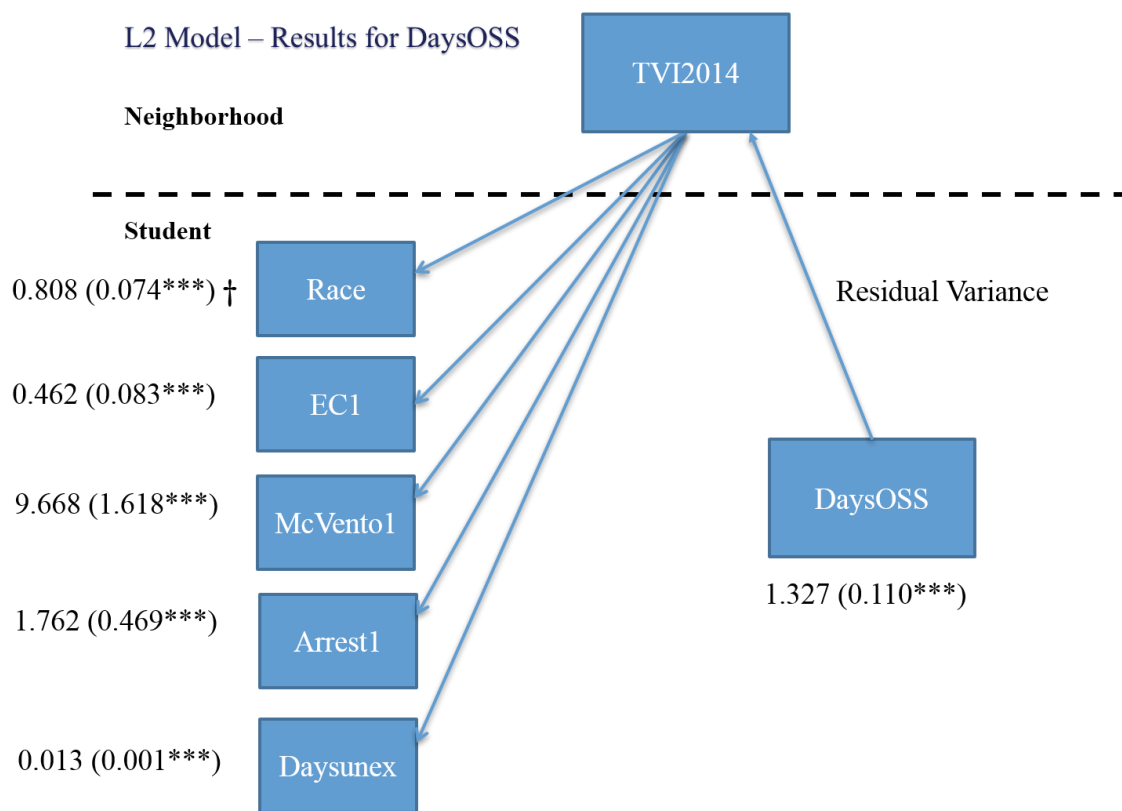


Figure 31: Residual Variance Diagram for Level-2 Model with DaysOSS as DV

Table 19. Charlotte-Mecklenburg Schools Eighth Grade Math Student Demographics, 2007-2014

Ethnic Description	20072008	20082009	20092010	20102011	20112012	20122013	20132014
African American	2008	2207	1961	2112	2120	2075	2198
Indian	18	27	27	20	32	20	21
Asian	204	197	247	224	251	257	268
Hispanic	571	680	700	708	851	844	1017
Multi-Racial	116	137	150	148	130	129	158
White	1590	1545	1611	1547	1610	1583	1582

Table 20. Charlotte-Mecklenburg Schools Number of 8th Grade Males with Percent Passing Eighth Grade Math at Level 1-2, 2007-2014

Ethnic Description	2007200 8	2008200 9	2009201 0	2010201 1	2011201 2	2012201 3	2013201 4
African American	866	786	506	523	497	1646	1589
American Indian	6	7	5	3	6	12	14
Asian	30	26	32	23	19	97	79
Hispanic	213	205	158	147	158	617	660
Multi- Racial	24	28	14	16	9	70	74
White	156	101	66	75	68	478	377

Table 21. Percent Passing Eighth Grade Math at Levels 1-2: Risk Index (RI) and Risk Ratio (RR) Comparisons, 2007-2014

Ethnic Description	20072008	20082009	20092010	20102011	20112012	20122013	20132014
RI Black	0.4313	0.3561	0.2580	0.2476	0.2344	0.7933	0.7229
RI White	0.0981	0.0654	0.0410	0.0485	0.0422	0.3020	0.2383
RR Black-White	4.3957	5.4479	6.2983	5.1078	5.5506	2.6270	3.0336
RI Black	0.4313	0.3561	0.2580	0.2476	0.2344	0.7933	0.7229
RI Non-Black ^a	0.1717	0.1419	0.1005	0.0997	0.0905	0.4497	0.3953
RR B-Non B	2.5123	2.5095	2.5662	2.4829	2.5914	1.7640	1.8289
RI American Indian	0.3333	0.2593	0.1852	0.1500	0.1875	0.6000	0.6667
RI Non-American Indian	0.2871	0.2405	0.1662	0.1654	0.1514	0.5949	0.5321
RR AI-Non AI	1.1608	1.0782	1.1142	0.9067	1.2388	1.0085	1.2530
RI Asian	0.1471	0.1320	0.1296	0.1027	0.0757	0.3774	0.2948
RI Non-Asian	0.2940	0.2452	0.1684	0.1685	0.1556	0.6070	0.5454
RR A-Non-A	0.5002	0.5382	0.7695	0.6095	0.4865	0.6218	0.5405
RI Hispanic	0.3730	0.3015	0.2257	0.2076	0.1857	0.7310	0.6490
RI Non-Hispanic	0.2749	0.2305	0.1559	0.1580	0.1446	0.5667	0.5046
RR H-Non-H	1.3570	1.3080	1.4478	1.3142	1.2841	1.2900	1.2861
RI Multi Racial	0.2069	0.2044	0.0933	0.1081	0.0692	0.5426	0.4684
RI Non-Multi Racial	0.2895	0.2416	0.1687	0.1672	0.1538	0.5964	0.5346
RR MR-Non-MR	0.7148	0.8459	0.5532	0.6465	0.4502	0.9099	0.8761
RI White	0.0981	0.0654	0.0410	0.0485	0.0422	0.3020	0.2383
RI Non-White	0.3905	0.3239	0.2318	0.2217	0.2036	0.7344	0.6597
RR W-Non-W	0.2513	0.2018	0.1768	0.2187	0.2074	0.4111	0.3612

^a Non-Black includes White and all Non-White students; "Non" in subsequent calculations refers to all students outside the group under study, e.g., Hispanic-non-Hispanic compares Hispanic with all other students.

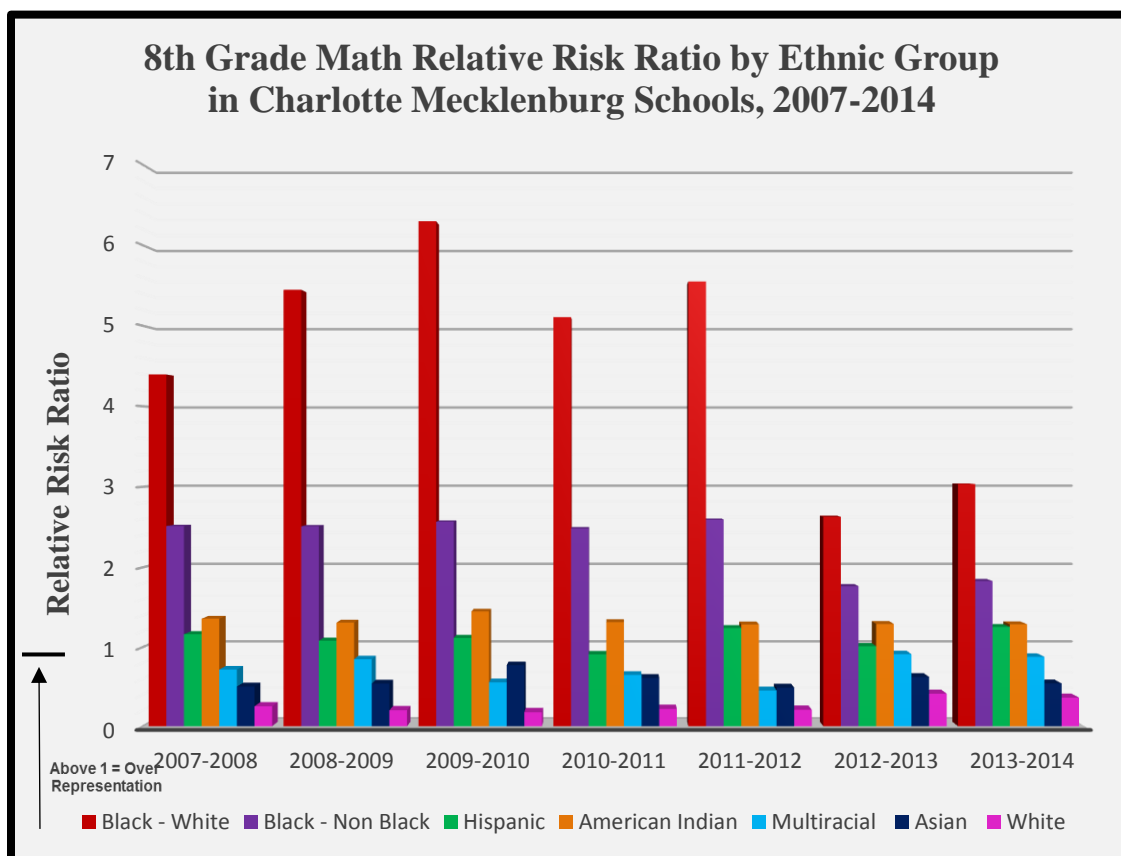


Figure 32: Relative Risk Ratio by Race/Ethnicity for 8th Grade Math, 2007-2008 to 2013-2014

Table 22. Charlotte-Mecklenburg Schools Eighth Grade Reading Student Demographics, 2007-2014

Ethnic Description	20072008	20082009	20092010	20102011	20112012	20122013	20132014
African American	1963	2017	1955	2089	2092	2068	2191
American Indian	17	28	26	20	32	20	20
Asian	204	194	238	216	239	239	260
Hispanic	589	617	683	686	827	809	956
Multi-Racial	110	128	152	147	131	130	155
White	1588	1522	1609	1537	1604	1574	1580

Table 23. Charlotte-Mecklenburg Schools Number of 8th Grade Males with Percent Passing Eighth Grade Reading at Level 1-2, 2007-2014

Ethnic Description	20072008	20082009	20092010	20102011	20112012	20122013	20132014
African American	1290	1016	923	928	947	1552	1430
American Indian	10	11	4	5	9	13	14
Asian	76	62	63	60	60	118	103
Hispanic	389	294	291	278	327	566	559
Multi-Racial	47	35	37	37	25	73	64
White	361	186	161	146	160	506	373

Table 24. Percent Passing Eighth Grade Reading at Level 1-2, Risk Index (RI) and Risk Ratio (RR) Comparisons, 2007-2014

Ethnic Description	20072008	20082009	20092010	20102011	20112012	20122013	20132014
RI							
Black	0.6572	0.5037	0.4721	0.4442	0.4527	0.7505	0.6527
RI							
White	0.2273	0.1222	0.1001	0.0950	0.0998	0.3215	0.2361
RR							
Black- White	2.8908	4.1218	4.7183	4.6766	4.5381	2.3345	2.7647
RI							
Black	0.6572	0.5037	0.4721	0.4442	0.4527	0.7505	0.6527
RI Non- Black ^a	0.3521	0.2362	0.2053	0.2018	0.2051	0.4603	0.3746
RR B- Non B	1.8665	2.1322	2.2995	2.2009	2.2073	1.6304	1.7422
RI							
America n Indian	0.5882	0.3929	0.1538	0.2500	0.2813	0.6500	0.7000
RI Non- America n Indian	0.4856	0.3557	0.3181	0.3099	0.3104	0.5840	0.4918
RR AI- Non AI	1.2113	1.1043	0.4837	0.8066	0.9060	1.1130	1.4233
RI							
Asian	0.3725	0.3196	0.2647	0.2778	0.2510	0.4937	0.3962
RI Non- Asian	0.4914	0.3576	0.3200	0.3112	0.3133	0.5890	0.4978
RR A- Non-A	0.7581	0.8937	0.8272	0.8925	0.8014	0.8382	0.7959
RI							
Hispani c	0.6604	0.4765	0.4261	0.4052	0.3954	0.6996	0.5847
RI Non- Hispani c	0.4596	0.3368	0.2985	0.2933	0.2931	0.5612	0.4717
RR H- Non-H	1.4371	1.4146	1.4274	1.3815	1.3492	1.2468	1.2396
RI Multi Racial	0.4273	0.2734	0.2434	0.2517	0.1908	0.5615	0.4129

RI Non-Multi Racial	0.4875	0.3584	0.3197	0.3116	0.3135	0.5849	0.4951
RR MR-Non-MR	0.8765	0.7630	0.7615	0.8079	0.6087	0.9600	0.8340
RI White	0.2273	0.1222	0.1001	0.0950	0.0998	0.3215	0.2361
RI Non-White	0.6285	0.4752	0.4316	0.4142	0.4119	0.7110	0.6058
RR W-Non-W	0.3617	0.2572	0.2319	0.2293	0.2422	0.4522	0.3897

^a Non-Black includes White and all Non-White students; "Non" in subsequent calculations refers to all students outside the group under study, e.g., Hispanic-non-Hispanic compares Hispanic with all other students.

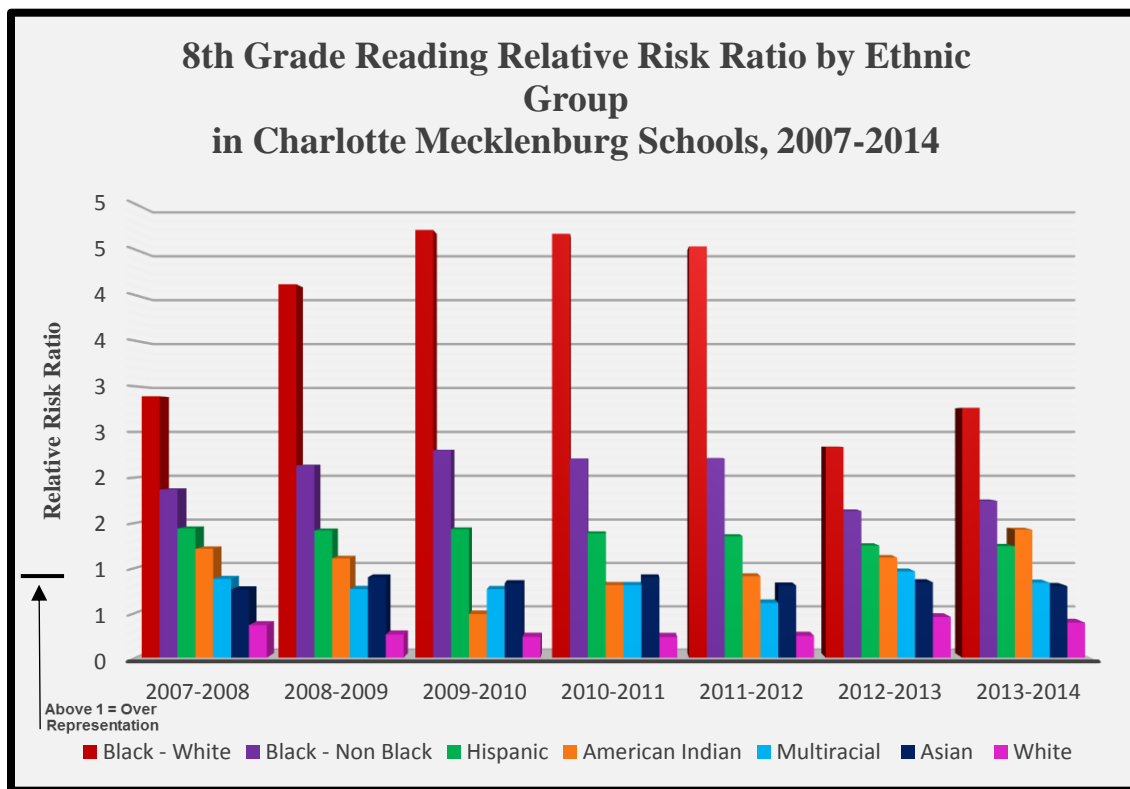


Figure 33: Relative Risk Ratio by Race/Ethnicity for Eighth Grade Reading, 2007-2008 to 2013-2014.

Table 25. Charlotte-Mecklenburg Schools English 2 Student Demographics, 2007-2014

Ethnic Description	20072008	20082009	20092010	20102011	20112012	20122013	20132014
African American	1840	1980	1999	2441	2334	2109	2172
Indian	25	17	25	18	37	19	26
Asian	201	212	202	237	244	261	286
Hispanic	486	547	646	789	716	712	852
Multi-Racial	85	116	136	137	124	137	126
White	1541	1601	1591	1587	1680	1549	1615

Table 26. Charlotte-Mecklenburg Schools Number of Students with Percent Passing English 2 at Level 1-2, 2007-2014

Ethnic Description	20072008	20082009	20092010	20102011	20112012	20122013	20132014 ^a
African American	586	582	453	686	707	1390	1084
Indian	7	2	5	7	2	10	10
Asian	36	31	21	46	51	126	98
Hispanic	182	154	159	190	228	408	363
Multi-Racial	20	14	13	18	17	62	32
White	101	108	75	99	85	384	221

^a ENG2 in 2012-13 and 2013-14; ENG in other years

Table 27. Percent Not Passing English 2 Risk Index (RI) and Risk Ratio (RR)
Comparisons, 2007-2014

Ethnic Description	20072008	20082009	20092010	20102011	20112012	20122013	20132014
RI Black	0.3185	0.2939	0.2266	0.2939	0.2896	0.6591	0.4991
RI White	0.0655	0.0675	0.0471	0.0589	0.0536	0.2479	0.1368
RR Black-White	4.8592	4.3574	4.8072	4.9877	5.4077	2.6586	3.6471
RI Black	0.3185	0.2939	0.2266	0.2939	0.2896	0.6591	0.4991
RI Non-Black ^a	0.1480	0.1239	0.1050	0.1285	0.1384	0.3697	0.2492
RR B-Non B	2.1520	2.3715	2.1582	2.2868	2.0932	1.7828	2.0025
RI American Indian	0.2800	0.1176	0.2000	0.1892	0.1111	0.5263	0.3846
RI Non-American Indian	0.2227	0.1995	0.1576	0.2038	0.2096	0.4971	0.3560
RR AI-Non AI	1.2571	0.5897	1.2688	0.9283	0.5301	1.0588	1.0805
RI Asian	0.1791	0.1462	0.1040	0.1885	0.2152	0.4828	0.3427
RI Non-Asian	0.2253	0.2018	0.1603	0.2045	0.2090	0.4980	0.3569
RR A-Non-A	0.7950	0.7245	0.6484	0.9221	1.0298	0.9694	0.9600
RI Hispanic	0.3745	0.2815	0.2461	0.2654	0.2890	0.5730	0.4261
RI Non-Hispanic	0.2031	0.1877	0.1434	0.1937	0.1950	0.4839	0.3420
RR H-Non-H	1.8435	1.4997	1.7160	1.3699	1.4817	1.1841	1.2457
RI Multi Racial	0.2353	0.1207	0.0956	0.1452	0.1241	0.4526	0.2540
RI Non-Multi Racial	0.2228	0.2013	0.1598	0.2051	0.2116	0.4985	0.3587
RR MR-Non-MR	1.0560	0.5996	0.5983	0.7076	0.5866	0.9078	0.7080
RI White	0.0655	0.0675	0.0471	0.0589	0.0536	0.2479	0.1368
RI Non-White	0.3151	0.2726	0.2164	0.2741	0.2775	0.6164	0.4584
RR W-Non-W	0.2080	0.2474	0.2178	0.2150	0.1930	0.4022	0.2985

^a Non-Black includes White and all Non-White students; "Non" in subsequent calculations refers to all students outside the group under study, e.g., Hispanic-non-Hispanic compares Hispanic with all other students.

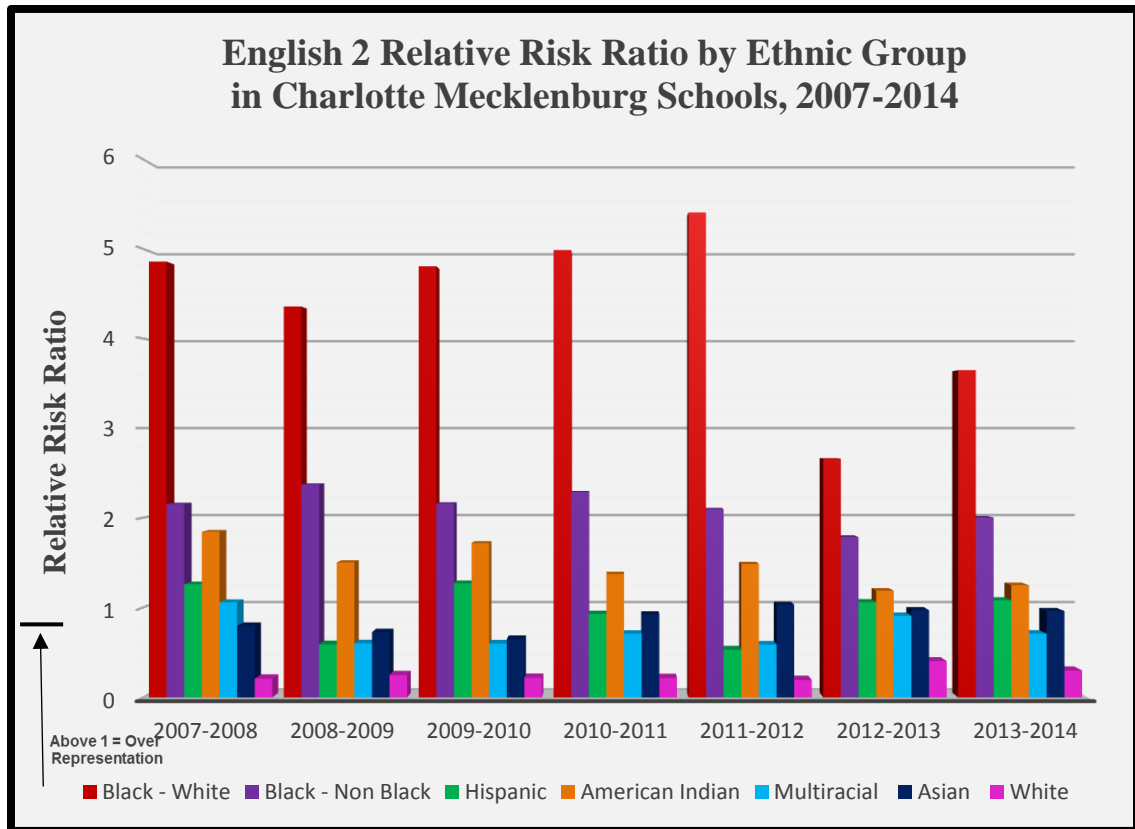


Figure 34: Relative Risk Ratio by Race/Ethnicity for English 2, 2007-2008 to 2013-2014

Table 28. Relationship between Risk Factors (Predictors) and ENG2 (Outcome) All Male Students, Grades 6-12 taking English 2 exam

Parameter	Null		Level 1		Level 2	
	Parameter Estimate	SE	Parameter Estimate	SE	Parameter Estimate	SE
ICC	0.013		0.065		0.013	
Chi-Square (Test of Model Fit)	0.000					
df	0.000					
RMSEA	1.000					
Within Level Effect						
Intercept/	0.227	0.031***	1.478	0.031***	1.483	0.031***
Residual Variance						
Between Level Effect						
ENG2 with						
Race			-0.001	0.005	0.001	0.028
ec1			-0.003	0.013	0.002	0.004
mcventol			-0.019	0.054	0.002	0.086
arrest1			-0.022	0.075	0.003	0.021
daysunex			0.000	0.001	0.000	0.002
DAYSOSS			0.002	0.003	0.001	0.001
ENG2 on					-	
TVI2014					0.128	0.163
Race with						
ec1			0.000	0.002		
mcventol			-0.002	0.014		
arrest1			-0.001	0.011		
daysunex			0.000	0.000		
DAYSOSS			0.000	0.001		
Race on TVI2014					0.066	0.084

ec1 with				
mcventol	0.003	0.001		
arrest1	0.002	0.024		
daysunex	0.000	0.000		
DAYSOSS	0.000	0.001		
ec1 on TVI2014			0.034	0.055
mcventol with				
arrest1	0.021	0.107		
daysunex	0.000	0.001		
DAYSOSS	-0.002	0.004		
mcventol on TVI2014			0.658	0.642
arrest1 with				
daysunex	0.000	0.001		
DAYSOSS	-0.002	0.007		
arrest1 on TVI2014			-	
daysunex with			0.136	0.381
DAYSOSS	0.000	0.000		
TVI2014				
daysunex on TVI2014			0.003	0.010
DAYSOSS on TVI2014			-	
			0.033	0.026
				0.027
Intercept variance	0.003	0.002		
ENG2			3.088	0.043***
Race			-	
			0.027	0.021
ec1			-	
			0.013	0.029
mcventol			-	
			0.279	0.224
arrest1			0.028	0.153
daysunex			0.003	0.003
DAYSOSS			0.007	0.009
Residual variance:				
ENG2	0.002	0.001*	0.019	0.006***
Race	0.001	0.006	0.001	0.015

ec1		0.001	0.000*	0.000	0.003
mcventol		0.058	0.117	0.023	0.135
arrest1		0.035	0.096	0.015	0.012
daysunex		0.000	0.000	0.000	0.000
DAYSOSS		0.000	0.000***	0.000	0.000
Model summary					
AIC	16495.313	16549.272		16540.703	
BIC	16514.910	16784.441		16723.618	
Sample-Size Adjusted BIC	16505.377	16670.045		16634.644	
Number of Parameters	3	10		28	
Number of Clusters	448	448		448	
Avg cluster size	11.333	11.33		11.33	

Note. *p<.05. **p<.01. ***p<.001; ICC = Intraclass Correlations indicating proportion of variance accounted for by the model; df = degrees of freedom;

SE=StandardError; RMSEA (Root Mean Square Error Of Approximation); N = 5078; AIC=Akaike information criterion; BIC=Bayesian Information Criterion; Neighborhood profile area identifier (npaid) = Cluster variable.

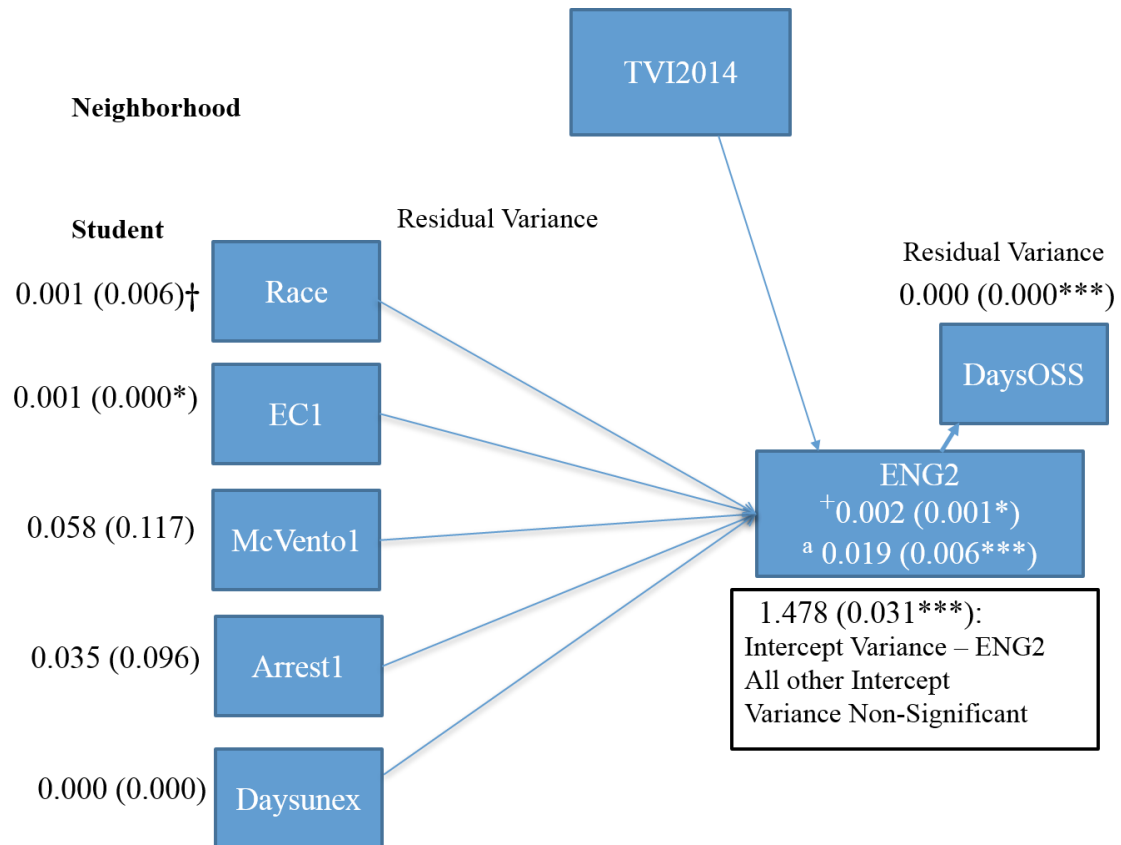


Figure 35. Level-1 and Level-2 Model Diagram of Intercept and Residual Variance Results for ENG2 as DV . [†] parameter estimate (standard error); *p<.05, **p<.01, ***p<.001; ⁺Residual variance for Level-1 ENG2; ^aResidual variance for Level-2 ENG2

Table 29. Relationship between Risk Factors (Predictors) and RD08 (Outcome): All Male Students, Grade 8, taking Eighth grade reading exam

Parameter	Null		Level 1		Level 2	
	Parameter Estimate	SE	Parameter Estimate	SE	Parameter Estimate	SE
ICC	0.003		0.098		0.063	
Chi-Square (Test of Model Fit)	0.586***					
df	0.000					
RMSEA	0.000					
Within Level Effect						
Intercept/	1.801	0.076***	1.380	0.078***	1.760	0.102***
Residual Variance						
Between Level Effect						
RD08 with						
Race			-0.014	0.064	-0.005	0.045
ec1			0.003	0.030	-0.001	0.019
mcventol			-0.182	0.527	-0.005	0.253
daysunex			0.000	0.024	-0.001	0.001
DAYSOSS			-0.015	0.013	-0.001	0.004
RD08 on TVI2014					0.294	0.407
Race with						
ec1			0.000	0.011		
mcventol			-0.004	0.527		
daysunex			0.000	0.024		
daysoss			-0.015	0.013		
race on TVI2014					-0.341	0.337
ec1 with						
mcventol			-0.002	0.073		
daysunex			0.000	0.003		
daysoss			0.000	0.002		
ec1 on TVI2014					0.027	0.154

mcventol with				
daysunex		0.002	0.059	
daysoss		0.013	0.060	
mcventol on				
TVI2014			-3.227	1.513*
daysunex with				
daysoss		0.000	0.001	
daysunex on				
TVI2014			0.010	0.038
DAYSOSS on				
TVI2014			0.067	0.076
Intercept variance	0.017	0.032		
RD08			2.657	0.100***
Race			-0.024	0.106
ec1			-0.051	0.085
mcventol			0.908	0.540
daysunex			0.004	0.010
daysoss			-0.012	0.023
Residual variance:				
RD08		0.247	0.354	0.018
Race		0.005	0.017	0.013
ec1		0.001	0.010	0.001
mcventol		0.200	1.054	0.227
daysunex		0.000	0.003	0.000
daysoss		0.001	0.001	0.000
Model summary				
AIC	2605.655	2588.858	2637.395	
BIC	2619.544	2719.461	2748.500	
Sample-Size Adjusted BIC	2610.017	2630.547	2672.290	
Number of Parameters	3	28	24	
Number of Clusters	317	43	317	

Avg cluster size	2.388	18.233	2.473
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Note. *p<.05. **p<.01. ***p<.001; ICC = Intraclass Correlations indicating proportion of variance accounted for by the model; df = degrees of freedom; SE=StandardError; RMSEA (Root Mean Square Error Of Approximation); N = 784; AIC=Akaike information criterion; BIC=Bayesian Information Criterion; Neighborhood profile area identifier(npaid) = Cluster variable.

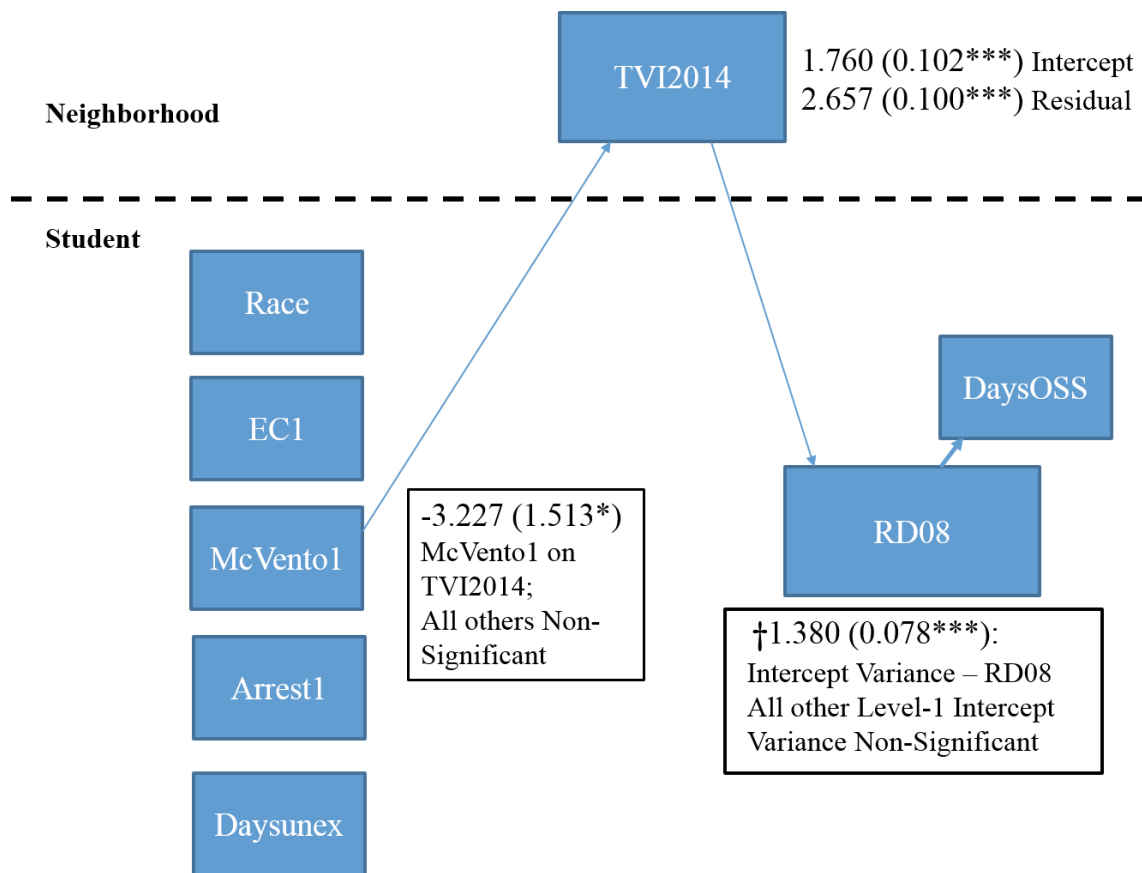


Figure 36. Level-1 and Level-2 Model Diagram of Intercept and Residual Variance Results for RD08 as DV.

† parameter estimate (standard error); * $p < .05$, ** $p < .01$, *** $p < .001$

Table 30. Relationship between Risk Factors (Predictors) and MA08 (Outcome) All Male Students, Grade 8, taking Eighth grade math exam

Parameter	Null		Level 1		Level 2	
	Parameter Estimate	SE	Parameter Estimate	SE	Parameter Estimate	SE
ICC	0.253		0.138		0.020	
Chi-Square (Test of Model Fit)	0.000***					
df	0.000					
RMSEA	0.000					
Within Level Effect						
Intercept	1.615	0.083* **	1.314	0.085* **	2.086	0.115***
Between Level Effect						
MA08 with						
Race			-0.050	0.113	-0.003	0.022
ec1			-0.013	0.060	-0.001	0.007
mcventol			-0.326	0.209	-0.004	0.337
daysunex			-0.015	0.04	-0.000	0.001
DAYSOSS			-0.031	0.015*	-0.001	0.007
MA08 on TVI2014					0.277	0.446
Race with						
ec1			-0.007	0.015		
mcventol			-0.002	0.194		
daysunex			0.000	0.010		
daysoss			0.001	0.006		
race on TVI2014					-0.408	0.371
ec1 with						
mcventol			0.001	0.062		
daysunex			0.000	0.008		

daysoss		0.000	0.006		
ec1 on TVI2014				-0.087	0.181
mcvento1 with					
daysunex		0.010	0.016		
daysoss		0.022	0.013		
mcvento1 on					
TVI2014				-2.213	1.581
daysunex with					
daysoss		0.001	0.001		
daysunex on					
TVI2014				0.092	0.101
DAYSOSS on					
TVI2014				0.067	0.076
Intercept variance	0.550	0.147*			
MA08		**		2.683	0.113***
Race				-0.044	0.110
ec1				0.006	0.103
mcvento1				0.718	0.536
daysunex				-0.003	0.007
daysoss				-0.031	0.031
Residual variance:					
MA08		0.553	0.459	0.012	0.011
Race		0.027	0.037	0.011	0.038
ec1		0.002	0.044	0.001	0.009
mcvento1		0.249	0.220	0.245	0.629
daysunex		0.000	0.001	0.000	0.000
daysoss		0.002	0.002	0.001	0.005
Model summary					
AIC	2754.214	2649.076		2788.62	
BIC	2768.286	2780.42		2899.946	
Sample-Size					
Adjusted BIC	2758.76	2691.504		2823.736	
Number of					
Parameters	3	28		24	

Number of Clusters	43	43	317
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Avg cluster size	18.721	18.721	2.410
------------------	--------	--------	-------

Note. * $p < .05$. ** $p < .01$. *** $p < .001$; ICC = Intraclass Correlations indicating proportion of variance accounted for by the model; df = degrees of freedom; SE=StandardError; RMSEA (Root Mean Square Error Of Approximation); N = 805; AIC=Akaike information criterion; BIC=Bayesian Information Criterion; Neighborhood profile area identifier (npaid)= Cluster variable.

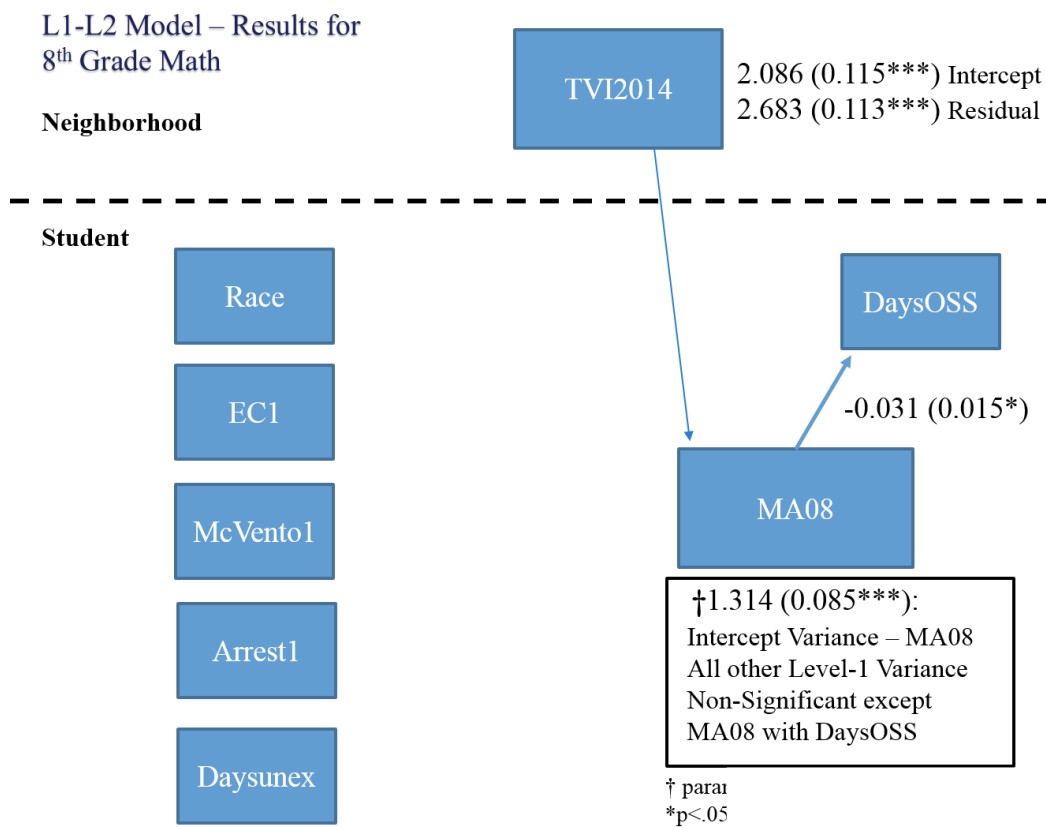


Figure 37. Level-1 and Level-2 Model Diagram of Intercept and Residual Variance Results for MA08 as DV. † parameter estimate (standard error); * $p < .05$, ** $p < .01$, *** $p < .001$

APPENDIX E

CHAPTER 5 TABLES AND FIGURES

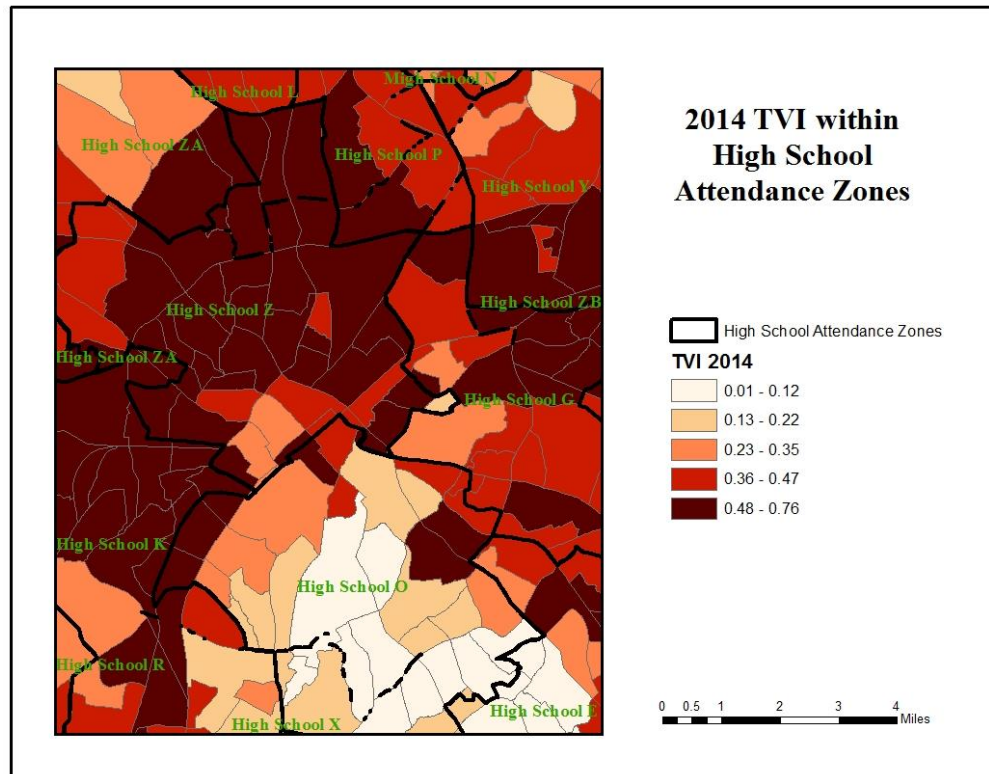


Figure 38. Comparison of TVI 2014 for Neighborhoods within Selected High School Attendance Zones. Source: Quality of Life Study, ISC, 2014

Student Profile										
Student ID	Last Name	First Name	Grade	Race/Ethnicity	Gender	ELL/LEP Status	Section 504 Only Status	Disability Status	Co-Occurring Disabilities?	*
0										
0										
0										
0										

*Add relevant test performance data to the student profile

Discipline Profile																	
Total Incidents	One or More Incidents?	More than One Incident?	More than Three Incidents?	Corporal punishment	In School detention	In School suspension	Total Out of School Suspensions	Out of School Suspension (multiple)	Out of School Suspension (single)	Total Suspensions (In and Out of School)	Referral: Law Enforcement	School-Related Arrest	Expulsion with Educational Services	Expulsion without Educational Services	Juvenile Arrest (under age 16)	Arrest Age 16+	Reentry
0	No	No	No	0	0	0	0	No	No	0	0	0	0	0	0	0	No
0	No	No	No	0	0	0	0	No	No	0	0	0	0	0	0	0	No
0	No	No	No	0	0	0	0	No	No	0	0	0	0	0	0	0	No
0	No	No	No	0	0	0	0	No	No	0	0	0	0	0	0	0	No

Mental Health & Wellness Profile						
NPA	TVI [Year]	CIS ^a Referral	DSS ^b Referral	McKinney Vento	HMIS ^c Data	Other Referrals
0	0	No	No	No	No	No
0	0	No	No	No	No	No
0	0	No	No	No	No	No
0	0	No	No	No	No	No

^a CIS = Communities in Schools
^b DSS = Department of Social Services
^c HMIS = Homelessness Management Information System

Denotes recommended trauma-sensitive additions to existing risk assessment table

Student Outcomes								
Total Instructional Days Lost to Suspension	Percentage of Total Instructional Days Lost to Suspension	Trauma Sensitive Intervention Tier [1-3]	Discharge Status	Discharge Type	Transfer Status	Transfer Type	Transfer Destination	Re-enrolled Post Discharge/Transfer
0	0.0%	0	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
0	0.0%	0	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
0	0.0%	0	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
0	0.0%	0	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!

Note: Each profile is linked by a unique Student ID

Figure 39. Disciplinary Disparities Risk Assessment Tool developed to assist school administrators in monitoring Disproportionality, (American Institutes for Research, 2014) with recommended Trauma-Sensitive additions as demarcated by red blocks.



Figure 40. Examples of literature that provide a framework for establishing Trauma-sensitive practices in schools.

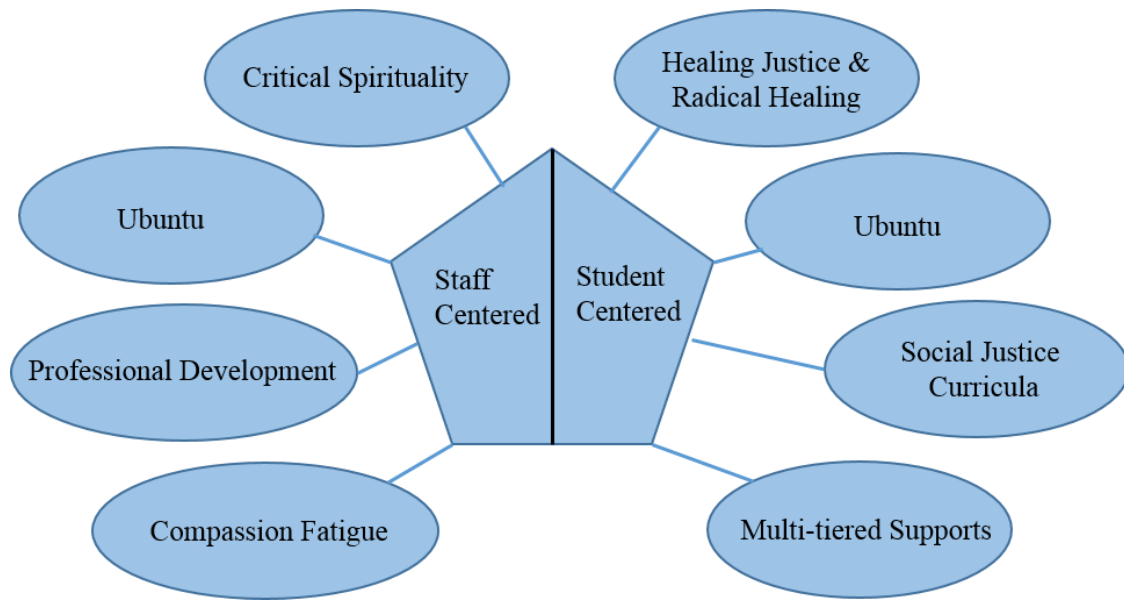


Figure 41. Proposed trauma-sensitive and culturally responsive framework