Document Title:	**Exposure to Violence, Trauma, and Juvenile Court Involvement: A Longitudinal Analysis of Mobile Youth and Poverty Study Data (1998-2011)**
Author(s):	**Anneliese Bolland, Ph.D., John Bolland, Ph.D.**
Document Number:	**254496**
Date Received:	**January 2020**
Award Number:	**2016-MU-MU-0068**

Research Projects Final Technical Report

Exposure to Violence, Trauma, and Juvenile Court Involvement: A Longitudinal Analysis of Mobile Youth and Poverty Study Data (1998-2011)

Principal Investigators:

Dr. Anneliese Bolland (PI), Institute for Communication and Information Research, The University of Alabama, Box 870172, Tuscaloosa, AL 35487-0172; tel: 205-348-1235; email: acbolland@ua.edu

Dr. John Bolland (co-PI), Institute for Social Science Research, The University of Alabama, Box 870216, Tuscaloosa, AL 35487-0216; tel: 205-348-1235; email: john.m.bolland@gmail.com

This project was supported by Grant # 2016-MU-MU-0068, awarded by the Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this publication/program/exhibition are those of the author(s) and do not necessarily reflect those of the Department of Justice.

TABLE OF CONTENTS

TABLE OF CONTENTS
Tables and Figures

TABLES

FIGURES

TABLE OF CONTENTS
Appendices

APPENDICES TABLES

Abstract

An examination of predominantly African American adolescents who live in extreme poverty suggests that exposure to violence is positively related to involvement in the juvenile court system, and partially mediated by psychological factors, particularly hopelessness; thus, practitioners should take care to target more than just traumatic stress as a result of exposure to violence in African American impoverished youth.

Research Overview

The uncertainty associated with poverty creates existential challenges for day-to-day survival of children growing up poor. One area where this is particularly the case is exposure to violence and how it may portend future involvement in the juvenile court system. Additionally, exposure to violence is related to psychological and behavioral maladjustment. This study explores these factors as well as identifies approaches to intervention.

Research Design

Data used in this study were collected as part of the Mobile Youth and Poverty Study, a community-based longitudinal cohort study of adolescents living in extreme poverty in the Mobile, AL, Metropolitan Statistical Area (MSA). Data sources include annual surveys of adolescents living in the most impoverished neighborhoods in the MSA between 1998 and 2011; school records for these youth available between 1998 and 2011; and juvenile court records for these youth, also available between 1998 and 2011. Factors used in this study include exposure to violence, psychological adjustment, social support, family control, juvenile court involvement, and academic progress.

Because the data were nested within respondent, they were analyzed using linear mixed models and structural equation models. In analyzing juvenile court outcomes, statistical models used a Granger causal framework, in which the outcome measured at time $t+1$ was estimated as a function of both independent variables and the outcome variable measured at time t. Although this does not guarantee causality, it provides stronger causal inference than would otherwise be possible.

Research Findings

Results from this study indicate that exposure to violence (both witnessing violence and violent victimization) does influence juvenile court involvement for adolescents who live in extreme and concentrated poverty. Additional findings show that (a) simple exposure to violence (one incident or source) does not differ from more complex exposure to violence with respect to court outcomes; (b) psychological adjustment and academic progress partially mediate the relationship between exposure to violence and court outcome severity; (c) the mediating effects of psychological adjustment affect boys and girls differently, but these differences are not consistent across types of psychological adjustment; and (d) the mediating effects of psychological maladjustment differ as a function of age, but again these differences are not consistent across types of psychological adjustment.

Policy/Practice Implications

Findings from this research study suggest that interventions targeting negative outcomes associated with exposure to violence potentially should occur at multiple levels: as policy changes by governmental and quasi-governmental units; at the neighborhood level in the form of community building programs; at the school level, in the form of policy changes and primary prevention programs; at the family level, in the form of creating greater household stability; and at the individual level through therapeutic treatment. However, the lack of clear pattern for age or gender effects suggest that programs must be tailored to specific needs and circumstances. The results also suggest that there is not a single program or approach that has the potential to effectively address the problem, and that given the lack of evidence-based programs effectively address the most important psychological adjustment mediators (i.e., hopelessness), solutions should involve new and innovative approaches.

Introduction

Poverty, Exposure to Violence, and Trauma

Violence, particularly among youth, has been termed a scourge on American society (Hogeveen, 2007). However, its consequences are not randomly distributed through the population. Rather, they tend to be concentrated in poor, minority urban neighborhoods (Peterson & Krivo, 2009); indeed, poverty has been implicated as a major cause of violence (Bensing & Schroeder, 1060; Blum et al., 2000; Bullock, 1955; Coulton, Korbin, Su, & Chow, 1995; Kposowa, Breault, & Harrison,1995; Limber & Nation, 1998; Oberwittler, 2007), and poor neighborhoods have been likened to war zones (Garbarino, 1995). This is particularly troubling because poverty in the US is at one of its highest levels since the late 1960s, and the concentration of African American and Latino poverty is considerably higher than it was in 1970 (Jargowsky, 1997; Jargowsky, 2003; Kneebone, 2014). Moreover, poverty rates (particularly concentrated and extreme poverty) are unlikely to change (other than at the margins).

The uncertainty associated with poverty creates existential challenges for day-to-day survival of children growing up poor. One area where this is particularly the case is exposure to violence and the psychological and behavioral adjustment that it causes. While exposure to violence is not a particularly prevalent source of trauma for middle-class youth, it is an important source of trauma for economically disadvantaged youth (Dubrow & Garbarino, 1989; Mathews, Dempsey, & Overstreet, 2009; Ruchkin, Henrich, Jones, Vermeiren, & Schwab-Stone, 2007), and it is relatively common in impoverished urban neighborhoods (McGill et al., 2014).

Numerous studies show that exposure to violence is a prominent aspect of life in economically disadvantaged neighborhoods (Buka, Stichick, Birdthistle, & Earles, 2001; Cedeno, Elias, Kelly, & Chu, 2010; Kaynak, Lepore, & Kliewer, 2011). Survey data from the Mobile Youth Survey (MYS), which was collected annually between 1998 and 2011 from a large sample of impoverished adolescents living in Mobile, AL, and informs this study, are consistent with these other studies. Across years, 26.8% of respondents reported witnessing someone being cut, stabbed, or shot during the previous three months; 33.8% reported that a friend or family member had been cut, stabbed, or shot during the previous year; and 14.1% reported that a knife or gun had been brandished against them during the previous three months. All three were statistically significant predictors of growth in reported trauma symptoms (ps < .0001). Additionally, these three measures of violence are significant predictors of (a) growth in carrying, brandishing, and using a knife or gun and (b) alcohol and marijuana use (ps < .0001).

It is therefore surprising that exposure to traumatic events is not considered more often in studies of pathways to juvenile justice involvement. This is not strictly true: a large number of studies (Abram et al., 2004; Ford, Chapman, Hawke, & Albert, 2007; Shufelt & Cocozza, 2006; Wasserman & McReynolds, 2011) show that large proportion of justice-involved youth had been exposed to traumatic events prior to their justice involvement. However, these studies have an inherent bias, in that the sample is not representative of the population. In contrast, prospective studies showing the prevalence of trauma-exposed youth (Herrera & McCloskey, 2001), or youth with psychiatric disorders (Copeland, Miller-Johnson, Keeler, Angold, & Costello, 2007), who later become justice-involved are rare. Moreover, these studies are largely limited to showing *that* a relationship exists rather than *why*.

Objectives

This study has three objectives: (a) better understand how traumatic events increase the risk of juvenile justice involvement for vulnerable adolescents; (b) identify developmental points where interventions can most effectively reduce this risk; and (c) identify classes (i.e., types) of intervention that might be most effective for these adolescents. Our study links data from multiple sources (e.g., longitudinal survey responses, juvenile court and school records) of over 8,000 adolescents living in impoverished neighborhoods living in Mobile, AL between 1998 and 2011. Unlike most other studies, we use a prospective population-based design.

Prospective, population-based studies of factors leading to juvenile justice involvement are rare, for two reasons. First, only a portion of youth ever become involved in the juvenile justice system; so, if the purpose of a study is to examine juvenile justice involvement as an outcome, the size of the sample must be very large. Second, it is difficult to obtain juvenile justice records for specific cases, because these records are generally sealed. Yet, administrative records provide a more accurate measure of both the assignation and timing of events (e.g., arrest) than are available through self-report; on the other hand, administrative records typically are unable to provide experiential information, such as exposure to traumatic events and psychological or behavioral responses to these events. We have combined administrative and self-reported survey data to develop a more complete understanding of how contextual factors and events influence psychological and behavioral change (Winokur, Li, & McEntire, 2002), and ultimately court involvement.

Specifically, we explored the direct and mediated pathways among exposure to violence, psychological adjustment (including, but not limited to, traumatic stress), academic progress, and juvenile justice involvement while controlling for social support, family control, and demographic factors. The longitudinal nature of the data, coupled with effective control of socioeconomic status through study design, allow much stronger causal inference than would otherwise be possible. By studying developmental factors and psychological adjustment across a range of adolescent years (10-17), we are able to suggest when and how programmatic interventions can be most successful.

Model and Research Questions

To address gaps in the literature, we must explore *why* exposure to violence results in risk behaviors among impoverished adolescents and *how* this leads to juvenile justice involvement. Figure 1 presents a model showing the pathways among these constructs and outcomes. Gender, both as a main effect and as a moderator, is ubiquitous in this model; however, it is not explicitly listed in Figure 1. To make this figure less cluttered, the effects of gender are implicitly expressed as simple arrows affecting constructs and relationships, but without a specific origination referent. Thus, the short arrow with no variable-of–origin influencing the exposure-to-violence – court-involvement relationship in Figure 1 indicates the effect of gender on the relationship, or more specifically, an exposure-to-violence × gender interaction affecting court outcome severity. The first and most important hypothesized pathway involves the direct relationship between exposure to violence and juvenile justice involvement, and motivates the first research question: *Does exposure to violence affect juvenile court involvement among adolescents living in high-poverty neighborhoods?* The reasons underlying this relationship are explored by other pathways in the model and additional research questions.

Given the level of violence in economically disadvantaged neighborhoods, we might expect exposures to violence to not be isolated events. In this study, while we expect that

polyvictimization (see Finkelhor, Ormrod, & Turner, 2007) is indeed widespread, we are more interested in multiple exposures to violence (MEV). Several researchers have found that increased exposure to violence was indeed associated with increases in psychological maladjustment (e.g., Margolin, Vickerman, Oliver, & Gordis, 2010; Suliman et al, 2009). Additionally, multiple studies of cumulative risk suggest that as risks increase, negative outcomes, including increased likelihood of externalizing behavior (e.g., Fleckman, Drury, Taylor, & Theall, 2016), violent behavior (e.g., Stoddard et al., 2013), and stress symptoms (e.g., Heinze, Stoddard, Aiyer, Eisman, & Zimmerman, 2017) also increase. This leads us to dig deeper into the relationship between exposure to violence and juvenile justice involvement with the second research question: *Does exposure to multiple violent events lead to greater juvenile justice involvement than exposure to single violent events?*

By definition, a traumatic event is one that provokes feelings of fear, helplessness, or horror (American Psychiatric Association, APA, 2013) and has been further defined by the National Child Traumatic Stress Network (2003) as an acute or chronic life event that adversely affects physical or emotional well-being. Exposure to traumatic events may result in post-traumatic stress disorder (PTSD), with symptoms that include difficulty sleeping, difficulty concentrating, irritability, re-experiencing the event through nightmares or flashbacks, and attempts to avoid reminders of the event (APA, 2013). While relatively few traumatic events result in a PTSD diagnosis (Yehuda, 2002), such events can disrupt normal development during childhood and adolescence (Margolin, 2005) and may result in major depression, panic disorder, and generalized anxiety disorder (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). It is therefore clear that trauma is not a single psychological response to a traumatic event but rather a cluster of psychological (mal)adjustments to a traumatic event which includes traumatic stress, feelings of hopelessness (Bolland, 2003; Joiner & Wagner, 1995; Lorion & Saltzman, 1993; Nurius, Russell, Herting, Hooven, & Thompson, 2009), worry and anxiety (Ladouceur, Blais, Freeston, & Dugas, 1998; Martinez & Richters, 1993; Putwain, 2007; Pynoos & Nader, 1988; Richters & Martinez, 1993; Schwab-Stone et al., 1995, and low self-worth (Copeland-Linder, Lambert, & Iolongo, 2010; Harter & Whitsell, 2003; McMahon, Felix, Halpert, & Petropoulos, 2009; Turner, Finkelhor, & Ormrod, 2010), and belief in the code of the street (Anderson, 1999; Brezina, Agnew, Cullen, & Wright, 2004; Drummond, Bolland, & Harris, 2011; Stewart & Simons, 2006). We hypothesize that these adjustments, and the risk behaviors they generate, mediate the relationship between exposure to violence and juvenile justice involvement.

Additionally, exposure to violence is associated with negative school outcomes, both academic (Bowen & Bowen, 1999; Delaney-Black et al., 2002; Henrich, Schwab-Stone, Fanti, Jones, & Ruchkin, 2004; Hurt, Malmud, Brodsky, & Giannetta, 2001; McEvoy & Welker, 2000; Schwartz & Gorman, 2003) and behavioral (Bowen & Bowen, 1999; Hurt et al., 2001; Kennedy & Bennett, 2006; Mathews et al., 2009; Ramirez et al., 2012; Stoddard et al., 2013; Wright, Fagan, & Pinchevsky, 2013). Further, children who live in economically disadvantaged communities are more likely to repeat a grade (or not have normative academic progress) or drop out of high school compared to their more economically advantaged peers (Child Trends, 2012; Rumberger, 1995). Those who have a lack of normative academic progress are more at risk for dropping out of high school (Allensworth & Easton, 2005; Andrew, 2014). Two important factors related to normative academic progress are (a) school grades (Bowers, Sprott & Taff, 2012) and (b) behavior (Balfanz, Herzog, & Mac Iver, 2007; Pressler, Raver, Friedman-Krauss, & Roy, 2016). And a number of studies demonstrate that poor school outcomes (both academic

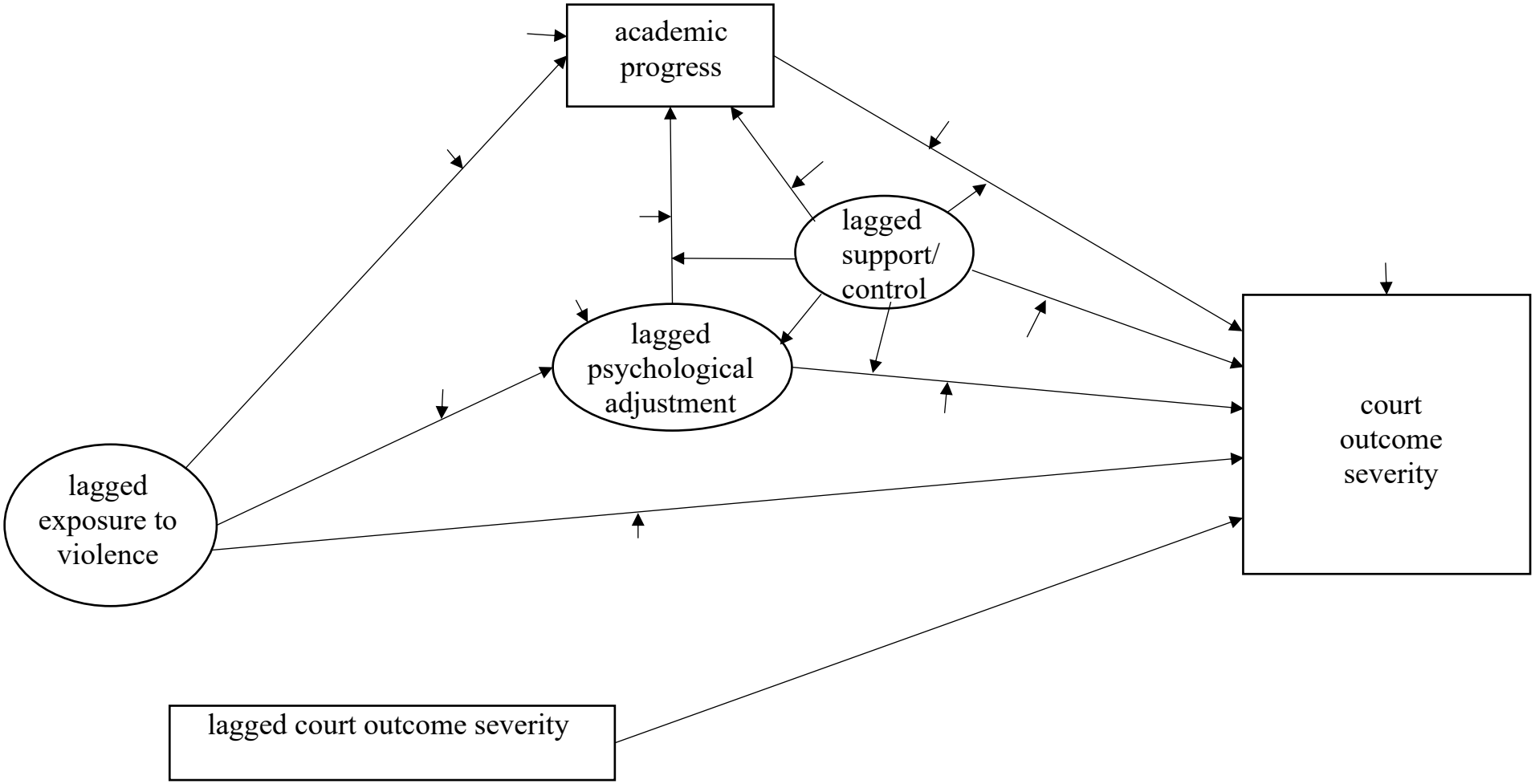
and behavioral) lead to juvenile justice involvement (Balfanz, Spiridakis, Neild, & Legters, 2003; Buka et al., 2001; Heitzeg, 2009; Losen, Hewitt, & Kim, 2010).

Finally, all of these hypothesized relationships are inevitably moderated by risk and protective factors associated with the individual child and his or her environment. In fact, Perfect and colleagues (2016) suggest that additional analysis of the mediators and moderators associated with trauma affect outcomes. The relationship between exposure to violence and psychological adjustment and behavior is affected by development and gender (Crick, Ostrov, & Werner, 2006). For example, exposure to violence is more likely to predict depressive symptoms in girls than boys (Moses, 1999); and girls who were exposed to violence are more likely to report anxiety than boys (White, Bruce, Farrell, & Kliewer, 1998). On the other hand, boys may be more likely to embrace a "code of the street" mentality than girls (Latzman & Swisher, 2005). Psychological response to trauma exposure is also moderated by family and neighborhood support (Bacchini, Esposito, & Affuso, 2009; Jain & Cohen, 2013; Ludwig & Warren, 2009). Washington and colleagues (2017) found in a review of literature that generally positive parenting in the African American community is related to fewer symptoms of depression and anxiety in children and adolescents. On the other hand, Williamson and colleagues (2017) found inconsistent results in their review of literature on parenting and PTSD in childhood. Further, Hair, Moore, Garrett, Ling, & Cleveland (2008) found that the relationship between psychological (mal)adjustment and risk behaviors is moderated by parental support. Finally, Chung and Steinberg (2006) studied how neighborhood disorder was related to youth offending behaviors and found a complex system where community connectedness is related to both prosocial and antisocial outcomes related to adolescents. Similarly, when neighborhoods function as true communities, where there are feelings of support, residents can be empowered individually and collectively (Hawkins & Catalano, 1992), resulting in hope (Cohen & Phillips, 1997). It is therefore not unreasonable to hypothesize that the relationships between exposure to violence, psychological adjustment, and educational outcomes on the one hand and juvenile justice involvement on the other are moderated by demography and social support. This leads to our final research questions:

(3a) *How does psychological adjustment mediate the direct pathway between exposure to violence and juvenile justice involvement?*

(3b) *How does normative academic progress mediate the relationship between psychological adjustment and juvenile justice involvement?*

(3c) *How are the direct and indirect paths in the model moderated by demography, social support, and family control?*



Note: arrows without originating referents indicate gender effects

Figure 1. Model depicting direct and indirect effects of lagged exposure to violence on court outcome severity

Methods

Study Location

The study was conducted using data collected in the Mobile, Alabama, Metropolitan Statistical Area (MSA). The City of Mobile (2015 population = 195,111; 2014 poverty rate = 23.4%) anchors the MSA. In 1990, 42% of African Americans in the MSA lived in high-poverty census tracts, placing Mobile third in the nation in this measure of concentrated poverty (Jargowsky, 1997). Despite court-ordered busing and full implementation of a consent decree in 1998, the county-wide school district has remained largely segregated (Frankenberg, 2009).

Recruitment and Data Collection Procedures

We began the Mobile Youth Survey (MYS) in 1998 by sampling adolescents from 13 neighborhoods representing 23 block groups in 14 census tracts. These neighborhoods were selected because they had the lowest median household income in the MSA (based on the 1990 Census). The median 1990 poverty rate for these neighborhoods was 77.25, and the median household income that year was $5,190; the population in the typical target neighborhood was 100% African American. Seven of the neighborhoods were public housing developments; the other six consisted of privately-owned housing. Five of the neighborhoods were located in Prichard, and eight were located in Mobile.

Selected demographic characteristics of these 13 neighborhoods, derived from the 2000 census, are reported in Table 1 (several neighborhoods share census tracts). The targeted neighborhoods were overwhelmingly African American (median = 97%). Poverty rates in the 13 neighborhoods ranged between 31.5% and 81.4%, with a median poverty rate of 57.2% and a median extreme poverty (i.e., <50% of the poverty level) rate of 30%. The increase no doubt reflects a true economic improvement in the lives of neighborhood residents. But it also reflects a change in the boundaries of several census tracts and block groups.

During the summer of 1998 (Wave 1), the Mobile Housing Board provided us with names of adolescents who lived in public housing units and their addresses; in addition, the Prichard Housing Authority provided us with addresses of public housing unit where adolescents lived. We randomly selected approximately half the units in the seven public housing neighborhoods in Mobile and Prichard for recruitment. In the six private housing neighborhoods, approximately half the houses and apartments were randomly selected for recruitment. We attempted to make contact with residents in each of these targeted residences, explain the study, determine whether eligible youth lived in the residences and, if so, obtain parental consent for them to participate and schedule a time and place for them to be surveyed. Additionally, we posted notices in each of the 13 study neighborhoods inviting neighborhood youth to come to survey sites if they wanted to participate; this plus word of mouth, resulted in a number of participants who had not been actively recruited. Because we had not obtained parental consent for these youth, study personnel accompanied them to their homes to explain the study to parents and obtain consent.

Surveys were conducted in community centers, churches, schools, and other buildings in the study neighborhoods. Study participants were scheduled to come to the survey sites on particular days and at particular times; on arrival, they were checked in and assigned to rooms, such that no room contained more than 20 participants. The survey questions were read aloud to the group, who were asked to follow along in their response booklets and bubble in appropriate answers to each question. Individual participants who had difficulty keeping up were invited to work in

even smaller groups with study personnel, who were able to provide them with more attention and work with them at a more leisurely pace. In some cases, when participants were not able to come to the survey site, they were surveyed in their homes.

In 1999 (Wave 2), we attempted to resurvey each of the 1998 participants (who were still under 19 years of age), and we recruited a new cohort (including youth who had been contacted the previous year but who had not been surveyed). After conducting the survey in 1998 without incident (e.g., no drug busts had occurred the day after we had surveyed youths about, including many other things, their drug use behavior), we had gained legitimacy and trust, and word had spread among neighborhood residents. Thus, the response rate increased among actively recruited youth, and the proportion of passively recruited youth increased as well. During each subsequent year between 2000 and 2011, we engaged in a similar procedure. By 2011, the vast majority of the MYS participants lived in 50 identifiable low-income neighborhoods.

Response rate is difficult to determine because the exact sampling frame is unknown. However, we estimate that in 1998, the active recruitment response rate in public housing neighborhoods ranged between 59% and 67%, and the active recruitment response rate for nonpublic housing neighborhoods ranged between 64% and 72% (see Bolland, 2007, and Appendix B for a discussion of how these figures were obtained). Since 1998, the active recruitment response rate has approached 90% each year.

Initial MYS Sample

The initial MYS sample consisted of approximately 12,500 participants who produced approximately 36,000 annual data points (see Appendix A). However, we were forced to eliminate observations, and sometimes entire cases, because we could not confirm their identities. This is a problem for almost all community-based longitudinal studies, particularly those involving youth, because cases cannot be definitively and independently confirmed.

Our first challenge was to identify youths who actually existed in Mobile and match MYS participants to these people. The first step in this process was to identify the people, which we did using several databases: Mobile County Public School System (MCPSS) records, Mobile County Juvenile Court (MCJC) records, Mobile Housing Authority records, records from a Mobile Police Department prevention program (Family Intervention Team or FIT Program) that served the areas we studied, and the LexisNexis public records database (however, only people aged 18 and older are included in this database). We assumed that anyone who was included in these databases was a real person. These databases provided date of birth, address, and some other demographic information (although in some cases, data were missing, e.g., the LexisNexis database provided data of birth only for some people).

The second step was to match MYS participants with people in the databases. The MYS coversheet asked participants to print their names, their addresses, and their birthdates. We assumed that if the name and date of birth matched a name in one of the databases, a match had occurred. In cases where we found only a slight discrepancy (e.g. date of birth did not match but was very close to correct; e.g., 03/05/1994 vs. 04/05/1994, 08/19/1998 vs. 08/19/1999), we also assumed a match. In cases where a larger discrepancy occurred (e.g., 11/14/1987 vs. 12/15/1988), we assumed a match if we could confirm and match a different piece of information (e.g., address). We were able to match the vast majority of cases based on these criteria. However, in cases where we found a more egregious discrepancy in birth date, or where we found a minor discrepancy in birth date and could not match a different piece of information, we

deferred our match decision.

Like almost all other longitudinal studies, and particularly like other community (rather than clinical) based longitudinal studies, the MYS had a high degree of dropout, with approximately one third of all participants contributing only a single data point. In some cases, dropout was structurally imposed: participants could continue in the study only until they were 19.25 years of age. Thus, approximately 10% of the sample aged out of the study each year rather than dropped out. But even with this relatively high level of attrition, two thirds of MYS participants contributed data during two or more years. For those participants who were not already matched, we had additional opportunities to match them to people in the databases. So, for example, an MYS participant in 2001 might have given an egregiously discrepant birth date, but in 2002 the birth date did match. In this case, we confirmed the case but only if the handwriting during the two years was sufficiently similar for us to confirm that the same person completed both cover sheets.

A third possibility exists for confirming the identity of a MYS participant. Assume an adolescent was home schooled (therefore did not show up in the MCPSS database), had never been arrested (therefore did not show up in the juvenile court database), did not live public housing (therefore did not show up in the housing authority database), had not been targeted for prevention by the FIT Program (therefore did not show up in its database), and was born in late 2001 (therefore did not show up in the LexisNexis database). This person exists, but he or she does not show up in any of our available databases. We would confirm him or her if the information provided on two-or-more cover sheets match *and* the handwriting on those cover sheets is similar.

All MYS participants who could not be confirmed in one of these ways were eliminated from the MYS data for analysis. Altogether, this resulted in the elimination of over 1,000 cases; the vast majority of these had only a single observation. These were obviously real people; most often, they likely misrepresented themselves because they were skeptical of our promise of anonymity, or they claimed a different name so that they could participate twice and be paid twice, or because they were just goofing off. No doubt, we also eliminated some cases that were not bogus, but we suspect that these were few and far between. Our decision rules were conservative, which meant more cases were eliminated from the analysis but greater confidence in the cases that were retained.

In addition to eliminating entire cases, sometimes observations were eliminated if we had doubts about the authenticity of the observation. Observations were flagged for further examination if there was egregious discrepancy in date of birth or in spelling of the name, particularly the last name. When this occurred, we compared the handwriting in the discrepant observation; in a few cases, where we concluded that the handwriting was the same, we assumed that it was due to a mental error or goofing off. Most of the time, however, the handwriting did not match and we eliminated the observation. To this point, the total MYS sample consists of 11,582 youths who produced 35,295 annual data points.

Table 2 shows the initial size of each cohort, and the number of respondents from each cohort who contributed two, three, …, twelve annual data points (footnote: the maximum number of data points a participant could legitimately contribute is 10, so more than 10 data points from a given person is only possible if that person misrepresented his or her age), as well as demographic statistics for each cohort. Retention rates are higher than Table 2 might initially suggest, because during any given year the number of participants who age out of the sample averages 10.2% (i.e., 100% of respondents age out over an 11-year period). The mean annual

follow-up rate, discounting those who aged out of the study, equals .65; not surprisingly, as the number of active enrollees increases each year and they move to new neighborhoods, the follow-up rates generally decline over time (from 74.2% in wave 2 to 63.1% in wave 14).

The sample is very homogeneous in several areas: poverty, municipal jurisdictions, and court jurisdiction. By any measure, MYS participants were impoverished. Table 2 shows that each year, between 80.6% and 90.2% of participants received free school lunches. Examination of a sample of free/reduced cost lunch applications from the Mobile County Public School System (MCPSS) shows the monthly earned household incomes of MYS households who qualified for free lunch in 2005-06 (M = \$415, SD = \$682) was lower than those for non-MYS participants (M = \$814, SD = \$837). Methodological challenges related to measuring and controlling for SES plague much of social science research: SES affects most of the social science constructs we examine, but the measurement and meaning of SES is ethereal and poorly understood, leading it typically to be measured incompletely, mismeasured, or measured not at all (Braveman et al., 2005; Oakes & Rossi, 2003; Shavers, 2007). In these cases, residual confounding occurs (Kaufman & Cooper, 2001; Kaufman & Poole, 2000), with resulting misinterpretation of results. As an alternative to statistical control, in this study, we limit the impact of residual confounding by severely restricting heterogeneity of SES (Geronimus & Korenman, 1993; Rosenbaum, 2005). Certainly, municipalities and court jurisdictions are better understood than SES, but which characteristics make them similar or different are not well understood. We resolve this by restricting the study to three municipal jurisdictions and a single court jurisdiction.

Table 1

Description of MYS Target Neighborhoods: 2000 Census

	Census tracts (Block groups)	Population	African-American population	Poverty rate (individuals)	Extreme poverty rate (individuals)	Median household income
Non-public housing						
Plateau[a]	12	2,511	88%	56.7%	28.3%	$13,810
Harlem[b]	39.02 (1)	1,203	85.6%	47.1%	11.2%	$18,426
Martin Luther King[a]	4.01 (2, 3, 4) 5 (1)	2,827	97.2%	49.5%	30.6%	$12,157
Snug Harbor[b]	43 (1)	535	100.0%	65.2%	24.2%	$11,597
Alabama Village[b]	47 (1) 48 (1, 2)	2,565	84.5%	70.7%	39.0%	$10,793
Trinity Gardens[a]	39.01 (1, 2, 3)	2,479	97.9%	31.5%	12.2%	$18,374
Public housing						
Orange Grove[a]	4.01 (1, 2) 4.02 (1, 2)	3,517	98.7%	76.3%	59.2%	$6,696
Josephine Allen Homes[a]	12	2,511	88.8%	56.7%	28.3%	$13,810
Roger Williams Homes[a]	6 (2, 3)	2,326	97.2%	56.7%	30.3%	$11,236
Oaklawn Homes[a]	13.02 (2)	1,816	98.2%	44.2%	22.9%	$14,648
R.V. Taylor Plaza[a]	15.01 (2, 4) 15.02 (1)	3,139	95.6%	64.6%	36.9%	$9,963
Gulf Village[b]	48 (1)	943	94.7%	81.4%	44.1%	$8,783
Bessemer Apartments[b]	40 (4)	1,487	98.0%	57.7%	30.3%	$11,950

[a]Mobile; [b]Prichard

Table 2

Mobile Youth Survey Multiple Cohort Design

	Cohort														
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
N_{total}	1,717	2,372	2,129	2,389	2,175	2,220	2,263	2,583	2,324	3,009	2,819	3,078	3,241	2,976	35,295
$N_{new\ cohort}$	1,717	1,137	561	806	604	603	490	692	565	989	747	1,006	988	677	11,582
Data points															
1	331	297	136	207	148	145	79	136	137	241	217	337	473	677	3,561
2	346	195	84	122	98	109	68	116	85	213	161	322	515	0	2,434
3	254	148	68	103	77	70	67	97	107	214	179	347	0	0	1,731
4	238	124	62	96	63	54	65	104	82	187	190	0	0	0	1,265
5	171	119	54	62	50	68	55	82	90	134	0	0	0	0	885
6	166	84	40	67	40	46	57	97	64	0	0	0	0	0	661
7	87	66	56	55	47	53	62	60	0	0	0	0	0	0	486
8	79	39	25	42	39	37	37	0	0	0	0	0	0	0	298
9	31	39	26	39	34	21	0	0	0	0	0	0	0	0	190
10	9	21	7	11	8	0	0	0	0	0	0	0	0	0	56
11	4	5	3	2	0	0	0	0	0	0	0	0	0	0	14
12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Descriptive statistics															
Mean age	13.50	13.06	12.45	12.65	12.21	12.30	12.2	12.66	12.73	12.91	12.92	13.08	13.00	12.83	
% Male	50.4	53.0	51.3	49.6	50.3	51.7	48.5	53.9	50.1	50.2	49.7	48.6	52.2	50.9	
% African American	94.1	92.3	91.6	91.7	88.3	91.5	93.9	92.3	94.4	92.6	91.8	90.9	92.9	92.8	
% Multiracial	4.4	6.2	6.1	6.7	9.2	7.1	5.0	7.2	5.0	6.6	8.0	8.0	6.6	6.5	
% Public housing	62.0	57.2	55.8	44.7	49.3	50.8	52.7	31.4	25.7	19.1	18.8	15.5	[a]	[a]	
% Free lunch	88.5	87.2	86.2	84.6	82.3	85.6	86.1	84.8	80.6	82.2	84.1	82.1	87.6	90.2	

[a]not available

Data Sources

Availability. All data analyzed in this study are part of the Mobile Youth and Poverty Study (MYPS) archive (see Appendix A). As such, they have been collected, cleaned, and stored in electronic files that can be merged at the individual, school, and/or neighborhood level based on based on established identification numbers. The data used for this study include MYS data; administrative and student records from the MCPSS; and administrative records from the MCJC. Electronic files were obtained from MCPSS (1998-2011 and MCJC (1999-2011) under terms of signed partnership agreements between The University of Alabama (UA) and each agency.

Quality. MYS data are self-reported, and therefore subject to limitations of any self-reported data (see ***Strengths and Limitations***). All administrative records (MCJC, MCPSS) meet State and Federal standards of quality control.

Exclusion Criteria

MYS observations were excluded from analyses for this study if they did not meet an internal consistency criterion. The format of the questions about 20 risk behaviors asked each year by the MYS allows us to check consistency of responses. Each behavior was assessed by two or more questions: the first asked whether the respondent *ever* engaged in the behavior; the other question(s) asked whether the respondent engaged in the behavior during increasingly more recent time periods (e.g., 90 days, 30 days, 7 days). A response pattern is inconsistent if the respondent reported that he or she had *never* engaged in the behavior in response to the first question and that he or she *had* engaged in the behavior during at least one recent time period in response to other question(s). Inconsistent responses may be an indication that respondents were impaired or fatigued, or that they misinterpreted the questions, or that they did not take the task seriously. Any of these explanations would raise questions about the validity of the data of respondents who were consistently inconsistent in their response patterns across behaviors. We excluded a respondent's entire wave of data if he or she was inconsistent across more than three waves of data. This resulted, on average, in the exclusion of 7.32% of the observations each year.

The second exclusion criterion concerns age. In Alabama, adolescents are transferred to adult court at age 18. Thus, their data were excluded for any year when they were 18 or older. The third exclusion criterion involved enrollment in the MCPSS. Our computation of academic progress is dependent on records from the MCPSS; therefore academic progress for any adolescent who was never enrolled in the school system is undefined. To solve this problem, all data for adolescents who were never enrolled in the MCPSS were excluded.

Study Sample

After exclusions, the sample for the study consists of 9,215 adolescents (aged 9-17) who participated in the MYS. Respondents provided an average of 2.56 annual data points, for a total of 23,569 data points.

Measures

All measures used in these analyses, except for those describing academic progress and court involvement, are based on questions from the MYS questionnaire. Information about the scales used in the analyses for this study (e.g., items that comprise each scale, reliability coefficients for the scales, sources of the scales, and notes about the scales) are included in Appendix C. The SPSS code used to generate each scales is available in the Data Archive.

Short-term stability coefficients (five-week test-retest reliability, from a study using the same questions with approximately 50 adolescents comparable to the MYS sample conducted in Huntsville, AL in 1998) are provided for some of the MYS measures used in this study (see Appendix C). Internal reliability coefficients (Cronbach's α, specified across waves of MYS data) are provided for all MYS scales used in this study (see Appendix C).

Psychometric properties are not as robust as we might expect; but two factors may explain this. First, given the homogeneity of the MYS sample, correlations tend to be attenuated (e.g., they are not artificially inflated by uncontrolled or poorly controlled SES, Umlauf, Bolland, Bolland, Tomek, & Bolland, 2015). Moreover, many of the questions on the MYS use a two-category response option (agree–disagree), acknowledging the cognitive challenges for many of the MYS participants. The resulting lack of variance at the individual item level also leads to attenuated correlations (Muthen, 1990; Vargha, Rudas, Delayney, & Maxwell, 1996).

Demographic measures. Demographic characteristics were measured using data from the MYS (see Appendix C, Tables C1, C2, and C3). We include measures of race, age, and gender in analyses. Descriptive statistics for this study are reported in Table 3. These and all other descriptive statistics include only observations that are not excluded based on the exclusion criteria.

Psychological adjustment. Psychological adjustment was measured by items on the MYS. Six psychological adjustment scales were included in analyses in this project: (a) hopelessness, (b) worry, (c) traumatic stress, (d) global self-worth, (e) behavioral self-worth, and (f) street code. All items, response options, as well as reliability information are presented in Appendix C. Descriptive statistics for each psychological adjustment scale are reported in Table 3.

Hopelessness. Hopelessness was measured using six items adapted from Kazdin and colleagues (1983) and DuRant and colleagues (1994) where respondents were asked to agree (= 1) or disagree (= 0) with items such as "all I see ahead of me are bad things, not good things" (see Appendix C, Tables C7 and C8)[1]. Resulting is a scale ranging from 0 to 6 where higher scores indicate higher levels of hopelessness.

Street code. Street code was measured using eight items adapted from Bandura (1973). Although these items were originally designed to measure attitudes about violence, they reflect the *street code* construct developed by Anderson (1999) and are used to measure that construct. Respondents were asked to agree (= 0) or disagree (= 1) with items such as "it is not possible to avoid fights in my neighborhood" (see Appendix C, Tables C13 and C14). The resulting scale ranges from 0 to 8, with higher scores indicating higher levels of street code.

Self-worth. Self-worth was measured using nine items adapted from Harter (1982) resulting in two scales: (a) global self-worth and (b) behavioral self-worth. Global self-worth was measured using four items and behavioral self-worth was measured using five items. Participants were asked to select one of two statements that was most like them (e.g., "I usually don't like the way I behave" (= 0) or "I usually like the way I behave," (= 1) see Appendix C, Tables C11 and C12). Resulting are a (a) global self-worth scale ranging from 0 to 4 where higher scores indicate

[1] Response option coding for all MYS measures does not match the response options provided in Appendix C. Response options values in Appendix C represent the values as they appear on the MYS Questionnaire. These values have been recoded for analysis purposes. For ease of interpretation, response options of 1 and 2, for example, were recoded as 0 and 1. Syntax for this recoding and in some cases, reverse coding, is provided in the Data Archive.

higher levels of global self-worth and (b) a behavioral self-worth scale ranging from 0 to 5 where higher scores indicate higher levels of behavioral self-worth.

Worry. Worry was measured using nine items adapted from Small and Rogers (1995) where respondents were asked how much they worried about various things such as getting good grades and getting a good job (a) not at all (= 0), (b) some (= 1), or (c) very much (= 2). For one item, "how much do you worry about getting good grades?," respondents were also given a choice to respond that they were not in school (see Appendix C, Tables C9 and C10). Resulting is a scale ranging from 0 to 18 where higher scores indicate higher levels of worry.

Traumatic stress. Traumatic stress was measured using seven items developed for the MYS where respondents were asked how much they experienced stress (reflected in, for example, trouble sleeping at night when bad things happen to a family member or friend). Responses are (a) almost never (= 0), (b) sometimes (= 1), or (c) very often (= 2) (see Appendix C, Tables C15 and C16). The resulting scale ranges from 0 to 14, with higher scores indicating higher levels of traumatic stress.

Social support. Social support was measured by items on the MYS. Three social support scales were included in analyses in this project: (a) maternal warmth; (b) positive neighborhood connectedness, (c) negative neighborhood connectedness. All items, response options, as well as reliability information are presented in Appendix C. Descriptive statistics for all social support scales are reported in Table 3.

Maternal warmth. Maternal warmth was measured using six items on the MYS adapted from Lamborn and colleagues (1991) where respondents were asked to think about the person most like a mother to them and then to agree (= 1) or disagree (= 0) with items such as "I can usually count on her to help me out if I have some kind of problem" (see Appendix C, Tables C17 and C18). Respondents were also able to respond "I don't have anyone who is like a mother to me" to each of the items. Resulting is a scale ranging from 0 to 6 where higher scores indicate higher levels of maternal warmth. A response of "I don't have anyone who is like a mother to me" was treated as missing. Because other MYS questions asked about mother figure, we created a single variable called NoMom, and if it were missing for a particular case, all responses to questions about mother figure were considered to be missing.

Neighborhood connectedness. Neighborhood connectedness was measured using 11 items on the MYS adapted from Glynn (1981) and Perkins and colleagues (1990); because some of the questions were worded positively and some negatively, two subscales were created: neighborhood connectedness$_{positive}$ was measured using six positively worded items, and neighborhood connectedness$_{negative}$ was measured using five negatively worded items. Participants were asked to agree (= 1) or disagree (= 0) with items such as "I feel I am an important part of my neighborhood" (see Appendix C, Tables C19 and C20). Negative items were reverse coded to create the neighborhood connectedness$_{negative}$ scale. The neighborhood connectedness$_{positive}$ scale ranges from 0 to 6, with higher scores indicating more positive feelings about the neighborhood. The neighborhood connectedness$_{negative}$ scale ranges from 0 to 5, with higher scores indicating greater absence of negative feelings about the neighborhood. Thus, higher scores on both neighborhood connectedness scales reflect higher levels of neighborhood connectedness.

Family control. Family control was measured by items on the MYS. Two family control scales were included in analyses in this project: (a) curfew and (b) parental monitoring. All

items, response options, as well as reliability information are presented in Appendix C. Descriptive statistics for all family control scales are reported in Table 3.

Curfew. Curfew was measured using four items on the MYS adapted from Lamborn and colleagues (1991) where respondents were asked to indicate whether they were not (= 1) or were (= 0) allowed to stay out in various circumstances (e.g., after dark on school nights, see Appendix C, Tables C21 and C22). Resulting is a scale ranging from 0 to 4 where higher scores indicate more curfew rules.

Parental monitoring. Parental monitoring was measured using six items on the MYS adapted from Lamborn and colleagues (1991) (see Appendix C, Tables C23 and C24). Participants were asked two questions about whether their parent(s) knew who they hung out with and where they were outside of school hours (no = 0, yes = 1). Then, they were asked how much their parent(s) *really* new about what they did or where they were (a) outside of school hours, (b) at night, and (c) generally how they spend their time with response options (a) they don't know (= 0), they know a little (= 1), or they know a lot (= 2). Participants were also able to respond that they do not go out at night (coded as "2" or the same as "they know a lot). Finally, participants were asked how much their parent(s) tried to find out how they spend their time with response options (a) they don't try (= 0), (b) they try a little (= 1), or (c) they try a lot (= 2). Resulting is a scale ranging from 0 to 12 where higher scores indicate higher levels of parental monitoring.

Table 3
Descriptive Statistics for MYS Derived Measures

	Frequency	Percentage	*M*	*SD*
Demographic variables				
Race				
African American	21,846	94.40		
White	121	0.50		
Multiracial	1,133	4.90		
Other	49	0.20		
Gender				
Boy	11,473	49.20		
Girl	11,863	50.80		
Age			13.09	2.00
Age groups				
1 (9-11 year olds)	6,178	26.21		
2 (12-13 year olds)	6,773	28.74		
3 (14-16 year olds)	10,618	45.05		
Psychological adjustment				
Hopelessness			1.328	1.680
Code of the street			3.586	2.188
Behavioral self-worth			3.142	1.351
Global self-worth			3.259	0.990
Worry			7.008	4.166
Traumatic stress			6.640	3.194
Social support				
Maternal warmth			5.266	1.160
Neighborhood connectedness$_{positive}$			4.014	1.824
Neighborhood connectedness$_{negative}$			2.962	1.520
Family control				
Curfew			2.402	1.315
Parental monitoring			9.224	2.746

Note. Descriptive statistics are based on observations rather than cases. Because observations are not independent, care should be exercised in interpreting these results.

Exposure to violence. Exposure to violence was measured by items on the MYS. Two exposure to violence scales were included in this study: (a) witnessing violence and (b) violent victimization. Descriptive statistics for exposure to violence scales are presented in Table 4.

Witnessing violence. An MYS question asked respondents "During the past 3 months (90 days), did you see someone being cut, stabbed, or shot?" Response options were (a) no; (b) yes, just once; and (c) yes, more than once. The witnessing violence scale was constructed based on these responses, with scale values equal to 0 = no, 1 = yes, just once, and 2 = yes, more than once (see Appendix C, Table C4).

***Violent victimization*.** The violent victimization scale was constructed from three MYS questions. First, respondents were asked "In the past 3 months (90 days), did someone pull a knife or a gun on you?" Response options were (a) no; (b) yes, just once; and (c) yes, more than once; this reflects *weapon brandishment*. Second, respondents were asked "In the past year (12

months), did someone cut or stab you bad enough that you had to see a doctor? Third, respondents were asked "In the past year (12 months), did someone shoot a gun at you?" Response options for the second and third questions were the same as for the first (see Appendix C, Tables C5 and C6).

In constructing the violent victimization scale, we began by combining the second and third questions, such that *cut/shot at* = 2 if the respondent answered yes, more than once to either question; *cut/shot at* = 1 if the respondent answered yes, just once to either question and yes, more than once to neither question; *cut/shot* = 0 if the respondent answered no to both questions. Finally, the *violent victimization* scale was created by combining the *weapon brandishment* and the *cut/shot at* measures, such that *violent victimization* = 4 if *cut/shot at* = 2; *violent victimization* = 3 if *cut/shot at* = 1; *violent victimization* = 2 if *weapon brandishment* = 2 and *cut/shot at* = 0; *violent victimization* = 1 if *weapon brandishment* = 1 and *cut/shot at* = 0; *violent victimization* = 0 if *weapon brandishment* = 0 and *cut/shot at* = 0.

We acknowledge the non-alignment of the timing in the response options for the weapon brandishment and cut/shot at variables. With additional analysis, we have found that this non-alignment is not negligible, however should not invalidate the results (see Appendix C).

***Multiple exposures to violence*.** To assess multiple exposures to violence (MEV), three scales were created from the exposure to violence variables. First, *sources* of MEV during the previous time period (MEV_s) was measured from the witnessing violence and violent victimization scales, such that (a) $MEV_s = 0$ if neither witnessing violence nor violent victimization occurred; (b) $MEV_s = 1$ if either witnessing violence *or* violent victimization occurred; and (c) $MEV_s = 2$ if both witnessing violence *and* violent victimization occurred. Second, incidents of MEV during the previous time period (MEV_i) was measured from the same two scales, such that $MEV_i = 0$ if neither witnessing violence nor violent victimization occurred; (b) $MEV_i = 1$ if a single incident of witnessing violence *or* violent victimization occurred; and (c) $MEV_i = 2$ if more than one incident of witnessing violence *or* more than one incident of violent victimization occurred. Finally, combined MEV during the previous time period (MEV_c) was measured using MEV_s and MEV_i, such that $MEV_c = 0$ if both $MEV_s = 0$ *and* $MEV_i = 0$; (b) $MEV_c = 1$ if either $MEV_s = 1$ *or* $MEV_i = 1$; (c) $MEV_c = 2$ if either $MEV_s = 2$ *or* $MEV_i = 2$; and (d) $MEV_c = 3$ if both $MEV_s = 2$ *and* $MEV_i = 2$. Lower designations of MEV are always superseded if conditions for a higher designation hold. Descriptive statistics are presented in Table 4.

An analysis was conducted to determine the effect of age on witnessing violence, using a linear mixed model as implemented in SAS PROC MIXED, with restricted maximum likelihood, a first-order autoregressive covariance structure, and random intercepts. Degrees of freedom were estimated using a procedure developed by Satterthwaite (1941) coupled with an inflation of the estimated variance-covariance matrix of the fixed and random effects, as detailed by Kenward and Roger (1997). Results showed a nonsignificant linear effect, but a significant quadratic effect ($b = 0.003$, $se = 0.001$, $t = 2.84$, $p = .005$, Figure 2a). Witnessing violence is at its highest level for nine year olds and decreases through age 13 before rising again at age 14 and 15, and then decreases again at age 16. A similar analysis was also conducted to determine the effect of age on violent victimization. Results showed a significant linear effect. While witnessing violence decreases from nine years old to ten years old, it then increases with year of age thereafter ($b = 0.063$, $se = 0.004$, $t = 17.75$, $p < .001$, Figure 2b).

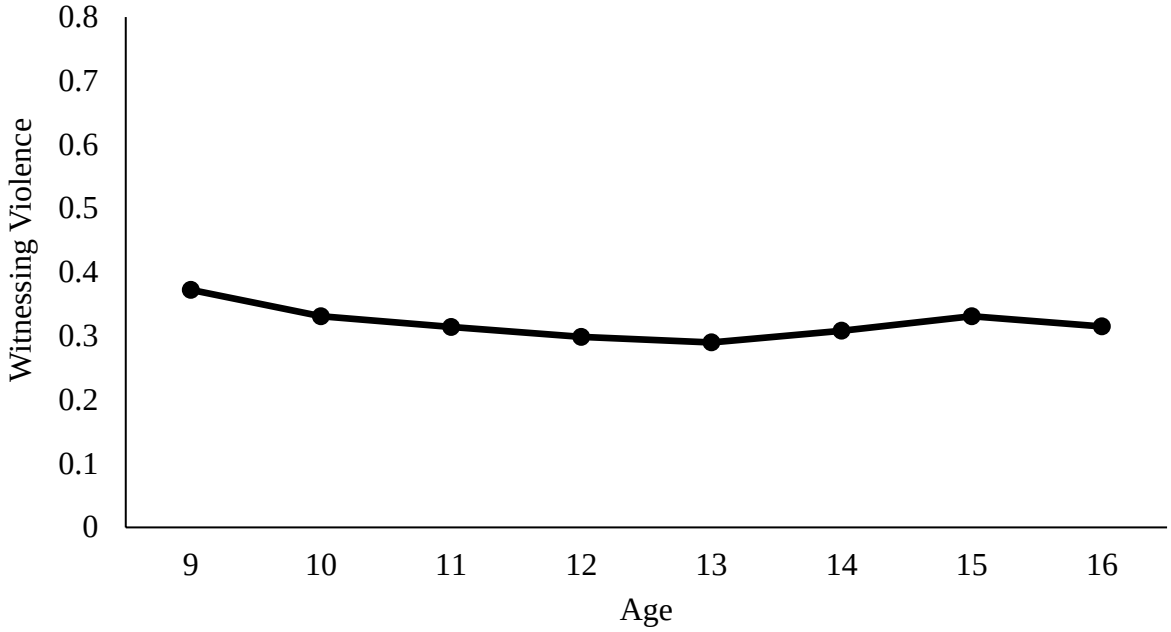


Figure 2a. Witnessing Violence as a Function of Age.

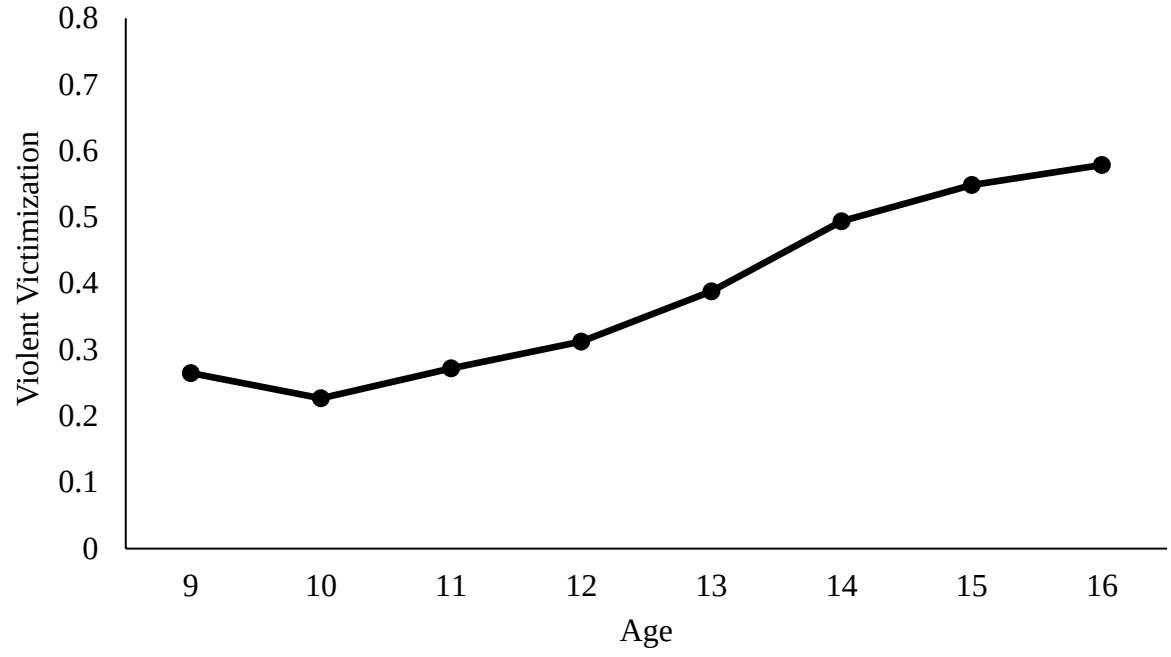


Figure 2b. Violent Victimization as a Function of Age.

Table 4
Exposure to Violence Descriptive Statistics

	Frequency	Percentage	*M*	*SD*
Exposure to violence				
Witnessing violence			0.31	0.591
0: not in the past 90 days	17,600	75.5		
1: once in the past 90 days	4,148	17.8		
2: more than once in the past 90 days	1,568	6.7		
Weapon brandished against			0.13	0.392
0: not in the past 90 days	20,939	89.6		
1: once in the past 90 days	1,906	8.2		
2: more than once in the past 90 days	513	0.2		
Cut, shot, or shot at			0.13	0.411
0: not in the past year	20,752	89.4		
1: once in the past year	1,833	7.9		
2: more than once in the past year	623	2.7		
Violent victimization			0.41	1.024
0: not in the past 90 days/year (qualified with time frame)	19,586	83.8		
1: brandishment one time (90 days)	1,153	4.9		
2: brandishment more than once (90 days)	188	0.8		
3: cut or shot once (year)	1,833	7.2		
4: cut or shot more than once (year)	623	2.7		
Multiple exposures to violence (MEV)				
$MEV_{sources}$			0.41	0.653
0: No victimization	15,610	67.8		
1: One source of victimization	5,291	23.0		
2: More than one source of victimization	2,111	9.2		
$MEV_{instances}$			0.41	0.653
0: No victimization	15,610	67.8		
1: One instance of victimization	5,280	22.9		
2: More than one instance of victimization	2,122	9.20		
$MEV_{combination}$			0.51	0.837
0: No victimization	15,610	67.8		
1: One source or instance of victimization	4,119	17.9		
2: More than one source *or* more than one instance of victimization	2,333	10.1		
3: More than one source *and* more than one instance of victimization	950	0.4		

Note. Descriptive statistics are based on observations rather than cases. Because observations are not independent, care should be exercised in interpreting these results.

Normative academic progress. Normative academic progress was measured using the Mobile County Public School System records (see Appendix D). For this project, one variable was used to measure academic progress. Descriptive statistics for normative academic progress are reported in Table 5.

Table 5
Normative Academic Progress Descriptive Statistics

	Frequency	Percentage	*M*	*SD*
Academic progress			4.03	1.109
0: Dropout	869	3.8		
1: 4+ years behind normative progress	28	0.1		
2: 3 years behind normative progress	497	2.1		
3: 2 years behind normative progress	3,222	14.2		
4: 1 year behind normative progress	9,507	42.0		
5: Normative progress or high school graduate	8,501	37.6		

Note. Descriptive statistics are based on observations rather than cases. Because observations are not independent, care should be exercised in interpreting these results.

Juvenile court involvement. Juvenile court involvement was measured using the Mobile County Juvenile Court records (see Appendix E). For this project, particular attention was paid to (a) court offenses identified as Crimes against a Person (CAP) and to (b) the severity of disposition and/or court action after offense. With respect to the court outcomes, the highest level of severity is noted as residential placement. Descriptive statistics for court involvement variables are reported in Table 6. It is important to note that the descriptive statistics reflect observations.

Table 6
Juvenile Court Involvement Descriptive Statistics

Court outcomes	Frequency	Percentage	*M*	*SD*
Number of crimes against a person offenses within wave			0.04	0.246
0	22,395	96.5		
1	674	2.9		
2	120	0.5		
3	25	0.1		
4	3	0.00		
5	1	0.00		
Court outcome severity			0.5	1.544
0: No offense within wave	21,070	89.4		
1: Released without transfer or referral	274	1.2		
2: Nolle Prosse, dismissed with conditions	4	0.00		
3: Lecture and release	259	1.1		
4: Informal adjustment	593	2.5		
5: Released with transfer or referral	115	0.5		
6: Probation supervision or fined	1,112	4.7		
7: Residential placement[a]	142	0.6		

[a]This category also includes other, but less frequent, severe outcomes including transfer to criminal court (see Appendix E).
Note. Descriptive statistics are based on observations rather than cases. Because observations are not independent, care should be exercised in interpreting these results.

Analytic Procedures

Before discussing specific procedures used to analyze data to address the three research questions, several general issues regarding our analysis should be discussed. First, in addressing all of the research questions, primary variables of interest involve exposure to violence: for research questions 1 and 3, these primary variables are witnessing violence and violent victimization, and for research question 2, the primary variable is multiple exposures to violence. In addition to the primary variables, models also include demographic variables. Analyses for the first two research questions include race, gender, and age as demographic variables. Race is a categorical variable with four levels. Gender is also categorical; but because it is treated as dichotomous, it is treated as ordered rather than categorical in all the analyses (this has the effect of simplifying interaction effects). Age is more complex in that adolescent development is

generally recognized as a nonlinear function of age (e.g., Nook, Sasse, Lambert, McLaughlin, & Somerville, 2018). Thus, we decomposed age into two components: age_{lin} and age_{quad}, where quadratic age = age × age. In addition to treating demographic variables as main effects, they are also considered in interaction with the primary variables.

Research question 3 requires a more complicated structural equation model (SEM) to analyze the data. As with the first two research question, the model includes primary variables and demographic variables; but it also includes psychological adjustment variables and academic progress as mediators, and social support and family control variables as moderators of these mediators. Thus, in order to simplify the analysis, race was excluded as a demographic factor, for two reasons. First, it was not statistically significant in any of the analyses that addressed the first two research questions; second, because it is categorical, it would have added considerably to the number of model parameters (increasing the number of parameters by over 150). Additionally, we excluded age from the SEM analysis. Based on the way that academic progress is calculated, it is correlated with age (r = .340); by including it in the analysis, it would have attenuated results associated with education. However, we ran a supplemental analyses for each of the individual model components; for those where academic progress was not an outcome variable, we included age_{lin} and age_{quad} as predictors. Presentation of the supplemental analyses are included in the results section.

Again because of the complexity of the analyses for research question 3, we did not consider CAP as an outcome. This outcome reflects the behavior of adolescents and charges brought against them as a result of these behaviors.[2] It therefore has little to do with the workings of the court. Due to the sheer volume of the SEM results, we only examined court outcome severity.

In all analyses, we used all available MYS data. Because MYS participants typically participated in more than one year of data collection, observations are not independent, and any analysis that does not acknowledge this non-independence is inappropriate. Thus, in all analyses we controlled for non-independence, typically by using a linear mixed model or a generalized linear mixed model.

Further, in all of the analyses, outcome variables (i.e., CAP and court outcome severity for the first two research questions, academic progress and court outcome severity for research question 3) were measured at time t+1, while predictor variables were measured at time t. For all analyses predicting CAP or court outcome severity, we employed a Granger causality (Granger, 1969) framework (although not a strict Granger causality test). Strictly speaking, a variable X Granger causes another variable Y if Y can be better predicted from previous values of X and Y than from previous values of Y alone (Freeman, 1983). Typically, previous values of X and Y reflect a time series, and econometric statistical tests consider the autoregressive structure of the prior data. In contrast, we consider only a single prior data point for X and Y, which simplifies the analysis greatly (but also limits its power). In this way, our approach resembles a cross-lagged panel design (Shingles, 1976).

Specifically, we consider the general regression equation

$$\hat{Y}_{t+1} = a + b_1 Y_t + b_2 X_t$$

[2]The correspondence is not perfect, however, in that (a) not all criminal behaviors are detected by police and perpetrators apprehended, and (b) charges may be adjusted by the court.

where Y_{t+1} = the dependent variable at time t+1, Y_t = the dependent variable at time t, and X_t = the dependent variable at time t. We can conclude that X Granger causes Y if b_2 is statistically significant. By including b_1Y_t on the right hand side of the equation, b_2 reflects the slope of X_t on the residualized value of Y, or in effect, change in Y between t and t+1 and acceleration in the trajectory of Y. Van Meter (1974) concluded that this measure of change was preferable to either simple gain scores (i.e., $Y_{t+1} - Y_t$) or percentagized gain scores (i.e., $(Y_{t+1} - Y_t) \cdot Y_{t+1^{-1}}$).

Despite the name, Granger Causation does not reflect the law-like necessity that theoretical causation requires (Pearl, 2000); rather, it should be viewed as a form of statistical association in which temporal precedence—one of the strongest requirements, but not the only requirement, for causation—is demonstrated. Any causal interpretation is subject to several limitations: (a) temporal precedence does not guarantee causality; (b) any contemporaneous causal relationship between X and Y will be overlooked; (c) in the presence of measurement error, feedback loops between prior values of X and Y may be mistaken for causation; and (d) some omitted variable Z may, in fact, cause both X and Y.

This latter concern is somewhat mitigated, however, by the likelihood that X_t is correlated with X_{t+1}, that Y_t is correlated with Y_{t+1}, and that any unobserved variable, Z_t is correlated with Z_{t+1}. Thus, if Z_{t+1} is correlated with Y_{t+1}, Z_t is correlated with Y_t; as a result, the potential confounding effects of Z_{t+1} is at least partially controlled through Y_t. For more discussion on how this is particularly relevant for poverty research, see Duncan and colleagues (1998) and Raver (2004).

Two final notes are of importance. First, this approach is inherently more conservative than one using only contemporaneously-observed variables (Keele & Kelly, 2006). The essential reason is as noted previously: Y_t is likely correlated with Y_{t+1}, and as this correlation increases, modeled effects become increasingly attenuated. Second, and perhaps most important, model estimates for CAP and court outcome severity essentially represent year-to-year changes in the outcome variables as a function of the predictor variables. As a result, estimates are often small, in that they do not reflect absolute levels of outcome variables but rather their residualized change.

Finally, interaction terms calculated multiplicatively potentially confound results, because $a \times b$ is correlated with both a and b. Aiken, West, and Reno (1991) show that this multicollinearity can be eliminated by centering each of the interaction terms at its mean. This was done for all variables except gender: its dichotomous quality (0, 1) resolves the multicollinearity problem without the need for centering. In creating figures to help interpretation of significant interaction effects, uncentered variables were used in the analyses.

When significant interactions occurred, typically the results were plotted so that the direction of the interaction was clear. To determine plot points, analyses were run estimating the outcome variable as a function of one of the interaction variables in its uncentered form and other interaction variables dichotomized (or in the case of age, trichotomized). For gender, dichotomization was obvious; for other variables, cutpoints were determined based on a median split (or a value approximating the median as closely as possible). Thus, if we found a three-way interaction (e.g., between hopelessness, gender, and age), we estimated the model using only hopelessness as an independent variable for each of the 2 × 3 levels of gender × age; the intercept and slope derived from each analysis were used to calculate a regression line predicting the outcome variable as a function of levels of the independent variable (e.g., hopelessness) for each gender × age condition. We deviated from this plan only in the case of plotting (a) CAP and

(b) court outcome severity, where as an additional control variable we included (a) lagged CAP and (b) lagged court outcome severity in the model.

In estimating the models to obtain plot coordinates, we estimated linear mixed models for all analyses involving variables other than CAP and court outcome severity. Model specifics are provided for each analysis. For these models, and for the figures derived from them, the estimated outcome describes the actual level of the outcome variable. For analyses involving CAP and court outcome severity, we estimated generalized linear mixed models to obtain plot coordinates. These are confounded by two factors, however. First, they represent Granger-adjusted estimates, which essentially reflect residualized change rather than exact actual values of the outcome variable. Second, because the generalized model estimates are logarithms, they cannot be interpreted in the same way as estimates using linear mixed models. For example, the slope coefficients (b) must be exponentiated to obtain values that reflect the actual relationship between the independent and dependent variables in the original units of each. But in doing so, we obtain values that are centered on 1.0, such that the estimate of $Y \mid X_{i+1} = (Y \mid X_i) \bullet \exp(b)$. Thus,

1. if $\exp(b) = 1$, the regression line is flat.
2. if $\exp(b) < 1$, the regression line is negative; for example, if $\exp(b) = .95$, then a one unit increase in X results in a 5% decrease in Y (i.e., $Y \mid X_{i+1} = (Y \mid X_i) \bullet .95$).
3. if $(\exp(b) > 1$, the regression line is positive; for example, if $\exp(b) = 1.10$, then a one unit increase in X results in a 10% increase in Y (i.e., $Y \mid X_{i+1} = (Y \mid X_i) \bullet 1.1$).

Because both the exponentiated value of b and the Granger-adjustment reflect change units, it is not entirely clear how to interpret the actual value of Y in the presented figures.

Research questions 1 and 2. Two models were run: (a) with CAP as the outcome variable; and (b) with court outcome severity as the outcome variable. CAP was computed as a count variable, and therefore should roughly follow a Poisson distribution; however, the 0 value was severely inflated (approximately 96% of the cases). These models were estimated using a Laplace approximation to maximum likelihood (as implemented in SAS PROC GLIMMIX) with repeated measures and random intercepts. The models fit unstructured covariance matrices, parameterized through their Cholesky roots; the error distribution was assumed to be negative binomial (which is similar to, but theoretically better justified than a zero-inflated Poisson distribution) with a log link function. Degrees of freedom were determined using containment. Court outcome severity is heavily skewed right, reflecting the fact that during any given year, the vast majority of MYS participants did not have any court contact. These models also used a Laplace approximation to maximum likelihood with repeated measures and random intercepts. The models fit unstructured covariance matrices, parameterized through their Cholesky roots; the error distribution was again assumed to be negative binomial, with a log link function. Degrees of freedom were determined using containment.

Research question 3. The three components of research question 3 can best be examined simultaneously using a single structural equations model. The SEM was estimated using MPlus (Version 8). All predictor variables were centered on their grand means. Although the data are nested within respondents, the research questions do not involve cross-level relationships. Therefore, the nesting was most easily acknowledged using TYPE = COMPLEX, wherein nonindependence of observations is treated as an artifact of survey sampling strategy. Model estimation used maximum likelihood with robust standard errors. In this analysis, court outcome

severity is treated as a count variable with a negative binomial distribution; all other variables are treated as if normally distributed. The latter assumption is no-doubt violated for several of the variables; however, in a separate study (Bolland, Besnoy, Tomek, & Bolland, 2019), analyses treating the error distribution for hopelessness as negative binomial produced almost identical results to analyses that treated it as normal. We assume that the same holds for the other psychological adjustment variables and for academic progress.

The estimated model generally conforms to the model in Figure 1, with two caveats. First, the ellipses in the figure, which generally correspond to latent variables, actually reflect specific variables that comprise the construct. MPlus does not allow use of latent variables, particularly as interaction effects, in the analyses that we ran. Second, the social support/family control ellipse reflects two constructs, which are generally used together. However, we expect that family control should have little impact on psychological adjustment, and therefore the support/control→ psychological adjustment relationship is limited to support→psychological adjustment in the estimated model.

Results

Presented in this section are comprehensive results responding to Research Questions 1, 2, and 3. Recognizing that these results are comprehensive and complex with many factors included, summaries of the results are presented at the beginning of the **Discussion** section following the results section.

Research Question 1: *Does exposure to violence affect juvenile court involvement among adolescents living in high-poverty neighborhoods?*

Crimes against a person. Using the framework specified in the ***Analytic Procedures*** section, and controlling for lagged (time *t*) crimes against a person (CAP) and demographic measures, witnessing violence was a statistically significant and positive predictor of contemporary (time *t*+1) CAP (Table 7). Additionally, the violent victimization × gender × age_{lin} interaction statistically predicted CAP. Analyses were run to estimate CAP for each of the six gender × age groups for each point along the *X* axis. To accomplish this, generalized linear mixed models were estimated using procedures very similar to those for the main analysis. For each gender × age group, an intercept (*a*) and a slope (*b*) for violent victimization were obtained. To obtain *Y* coordinates for each of the *i* values of *X*, we calculated $Y = \exp(a + bX_i)$; the linearity assumption is used in all subsequent analyses to determine plot coordinates for interaction effects, except as explicitly noted. The number of crimes against a person increased as a function of violent victimization for all groups. The oldest group of boys ($\exp(b_o) = 1.08$) and youngest group of girls ($\exp(b_y) = 1.00$) showed the smallest change in CAP. The two middle groups showed slight increases, with girls exhibiting more of an increase ($\exp(b_m) = 1.24$) than boys ($\exp(b_m) = 1.16$) *relative to their intercept.* Finally, the youngest age group of boys ($\exp(b_m) = 1.33$) and oldest group of girls ($\exp(b_m) = 1.68$) exhibited the largest increases in CAP.

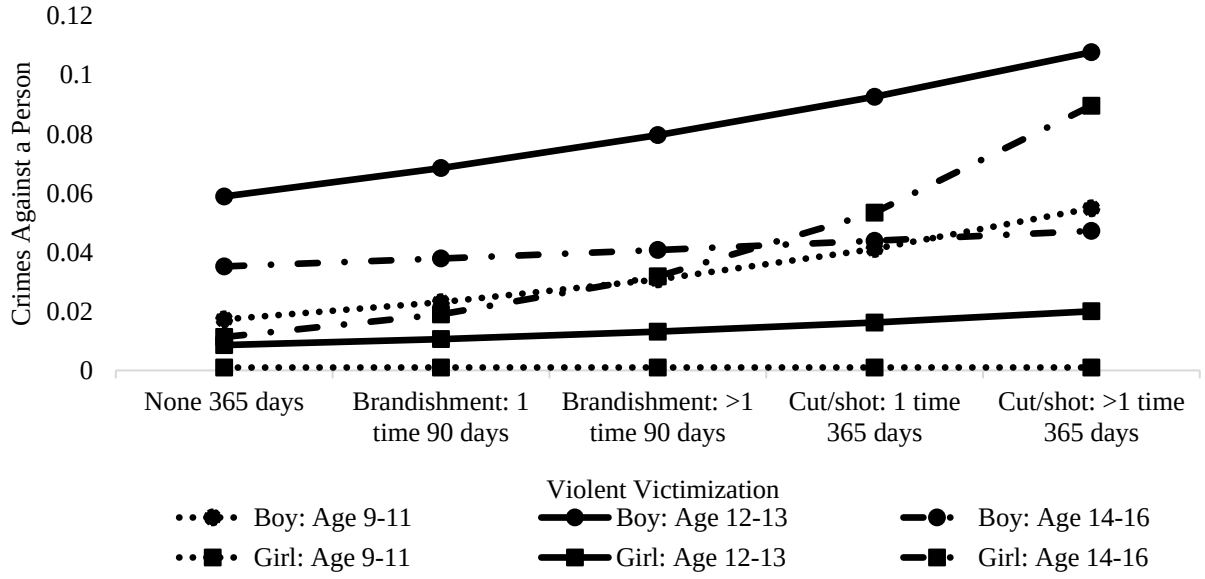


Figure 3. Crimes Against a Person as a Function of Violent Victimization, Gender, and Age.

Table 7

Crimes Against a Person as a Function of Exposure to Violence and Demographic Characteristics

Effect	**Race[a]**	***b***	***SE***	***df***	**t**	***p***	**exp(*b*)**
Intercept		-1.6200	1.0148	8865	-1.60	.1104	0.1979
Crimes against a person[a]		0.8598	0.1460	13337	5.89	<.0001	2.36269
Witnessing violence[b]		0.3882	0.1635	13337	2.37	.0176	1.47432
Violent victimization[b]		0.04685	0.08577	13337	0.55	.5849	1.04796
Gender[a]		-0.5428	0.1111	13337	-4.88	<.0001	0.58112
Race	1	-1.1776	1.0130	13337	-1.16	.2451	0.30802
Race	2	-1.2030	1.2470	13337	-0.96	.3347	0.30029
Race	3	-1.0489	1.0374	13337	-1.01	.3120	0.35032
Race	4	0	.	.	.	.	1
Age[b]		-0.00189	0.03201	13337	-0.06	.9530	0.99811
Age_{quad}[b]		-0.1732	0.01723	13337	-10.05	<.0001	0.84097
Witnessing violence × gender		-0.2161	0.2473	13337	-0.87	.3821	0.80565
Witnessing violence × age		0.09218	0.06422	13337	1.44	.1512	1.09656
Witnessing violence × age_{quad}		0.006265	0.03582	13337	0.17	.8611	1.00628
Witnessing violence × gender × age		-0.05391	0.09935	13337	-0.54	.5874	0.94752
Witnessing violence × gender × age_{quad}		0.000261	0.05494	13337	0.00	.9962	1.00026
Violent victimization × gender		0.2745	0.1489	13337	1.84	.0654	1.31587
Violent victimization × age		-0.06667	0.03459	13337	-1.93	.0539	0.9355
Violent victimization × age_{quad}		0.005900	0.01858	13337	0.32	.7508	1.00592
Violent victimization × gender × age		0.1509	0.07578	13337	1.99	.0464	1.16288
Violent victimization × gender × age_{quad}		-0.06014	0.04010	13337	-1.50	.1337	0.94163

[a]Lagged variable, [b]Lagged and centered variable

Court outcome severity. A similar model was estimated for court outcome severity. The relationship between witnessing violence and court outcome severity was positive and statistically significant (Table 8). The main effect for violent victimization was not statistically significant, but the violent victimization × gender × age interactions (i.e., for both the linear and quadratic components of age) were statistically significant. To determine the plot coordinates for the six gender × age groups, models similar to those used to determine plot coordinates for CAP were run; results are specified in Figure 3. The relationship between violent victimization and court outcome severity is positive for all six groups. Court outcome severity increased as a function of violent victimization for all groups, with the middle age group of boys ($\exp(b_m) = 1.243$) and girls ($\exp(b_m) = 1.205$) showing large absolute increases, but smaller increases relative to the magnitude of their intercepts. The oldest age group of boys ($\exp(b_o) = 1.146$) showed the least change as a function of their intercept and the youngest age group of girls ($\exp(b_y) = 1.469$) showed the highest change in court outcome severity as a function of their intercept. Finally, the youngest boys ($\exp(b_y) = 1.286$) and the oldest girls ($\exp(b_o) = 1.389$) showed increases generally between these two. The middle group and youngest group of boys showed similar changes as a function of their intercepts, though the middle group of boys started and finished at higher levels of court outcome severity than the youngest group of boys. The youngest group of girls demonstrated the largest absolute change in court outcome severity as a function of violent victimization, however, remained at the lowest level of court outcome severity throughout the levels of victimization.

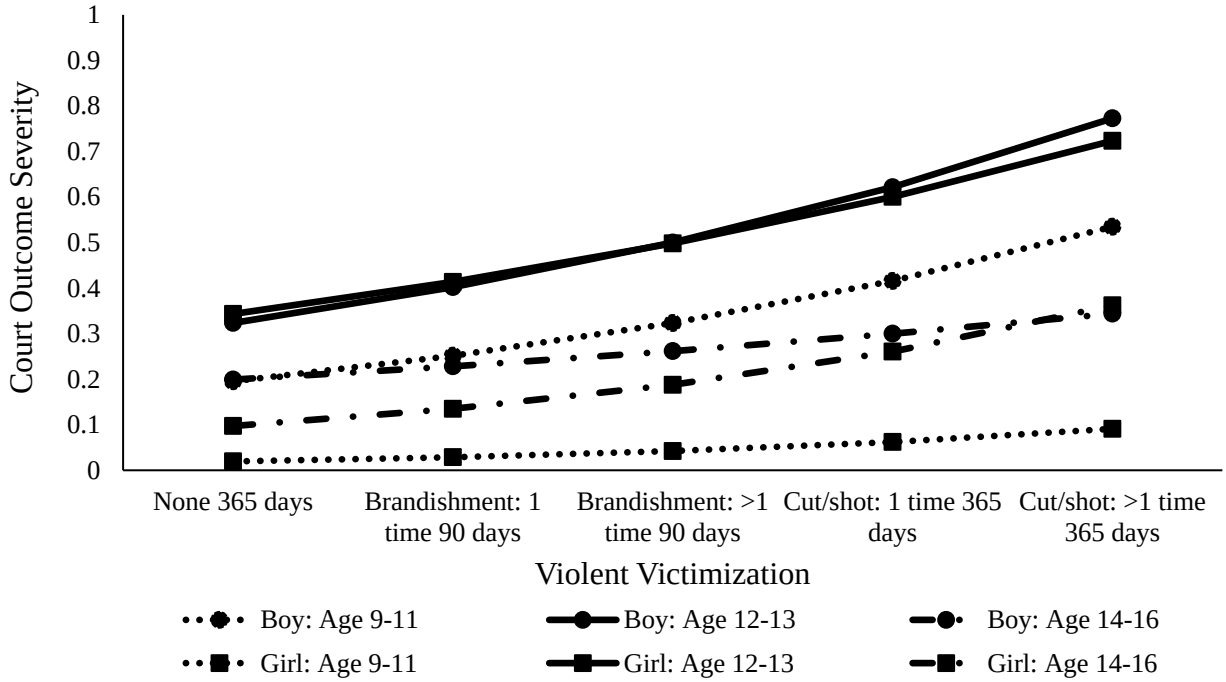


Figure 4. Court Outcome Severity as a Function of Violent Victimization, Gender, and Age.

This resource was prepared by the author(s) using Federal funds provided by the U.S. Department of Justice. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Table 8

Court Outcome Severity as a Function of Exposure to Violence and Demographic Characteristics

Effect	**Race**[a]	***b***	***SE***	***df***	**t**	***p***	**exp(*b*)**
Intercept		-1.620	1.015	8865	-1.60	.110	0.198
Court outcome severity[a]		0.860	0.146	13337	5.89	<.0001	2.363
Witnessing violence[b]		0.388	0.164	13337	2.37	.018	1.474
Violent victimization[b]		0.047	0.086	13337	0.55	.585	1.048
Gender[a]		-0.543	0.111	13337	-4.88	<.0001	0.581
Race	1	-1.178	1.013	13337	-1.16	.245	0.308
Race	2	-1.203	1.247	13337	-0.96	.335	0.300
Race	3	-1.049	1.037	13337	-1.01	.312	0.350
Race	4	0.000	.	.	.	.	1.000
Age[b]		-0.002	0.032	13337	-0.06	.953	0.998
Age_{quad}[b]		-0.173	0.017	13337	-10.05	<.0001	0.841
Witnessing violence × gender		-0.216	0.247	13337	-0.87	.382	0.806
Witnessing violence × age		0.092	0.064	13337	1.44	.151	1.097
Witnessing violence × age_{quad}		0.006	0.036	13337	0.17	.861	1.006
Witnessing violence × gender × age		-0.054	0.099	13337	-0.54	.587	0.948
Witnessing violence × gender × age_{quad}		0.000	0.055	13337	0.00	.996	1.000
Violent victimization × gender		0.275	0.149	13337	1.84	.065	1.316
Violent victimization × age		-0.067	0.035	13337	-1.93	.054	0.936
Violent victimization × age_{quad}		0.006	0.019	13337	0.32	.751	1.006
Violent victimization × gender × age		0.151	0.076	13337	1.99	.046	1.163
Violent victimization × gender × age_{quad}		-0.060	0.040	13337	-1.50	.134	0.942

[a]Lagged variable, [b]Lagged and centered variable

Research Question 2: *Does exposure to multiple violent events lead to greater juvenile justice involvement (either directly or indirectly) than exposure to single violent events?*

To address this question, three models were estimated for each of the two outcomes (CAP, court outcome severity); each used the lagged outcome variable as a statistical control on the right side of the equation. The first pair of models considered multiple *sources* of exposure to violence, as specified in the definition of the MEV_s. The second pair of models considered multiple *incidents* of exposure to violence, as specified in the definition of MEV_i. The third pair of models considered a *combination* of sources and incidents, as specified in the definition of MEV_c.

Multiple sources of exposure to violence. An analysis was conducted to determine how sources of multiple exposures to violence (MEV_s) affect CAP, treating MEV_s as a linear variable. A main effect for MEV_s was statistically significant (b = 0.256, se = 0.088, df =13,207, t = 2.90, p = .004). However, this assumes that the relationship between MEV_s and CAP is linear. To test this assumption, we conducted a supplemental analysis to test whether this assumption is valid. Specifically, we re-estimated the previous model, but treated MEV_s as a categorical variable (Table 9); if the results for MEV were statistically significant, we also estimated least-squares means for each category of MEV_s and conducted post-hoc comparisons among categories of MEV using Tukey's HSD procedure as adjusted by Kramer (1956) for unbalanced designs. This analysis showed a significant main effect for MEV_s treated as a categorical variable (F = 3.29, p = .037). The post-hoc comparison of means shows that CAP when MEV_s = 0 differs from CAP when MEV_s = 1 (b = -0.304, se = 0.127, t = -2.39, p = .044) and when MEV_s = 2 (b = -0.654, se = 0.204, t = -3.20, p = .004), but that CAP does not differ for MEV_s = 1 versus MEV_s = 2 (b = -0.350, se = 0.221, t = -1.58, p = .253). This shows that there is an effect for no victimization versus victimization, but that multiple sources of victimization do not contribute more to CAP than a single source. Thus, for CAP, conclusions about MEV_s simplify to those obtained previously, as reported in Research Question 1.

Table 9
Crimes Against a Person as a Function of Sources of Victimization and Demographic Characteristics

Effect	***df***	***F***	***p***
Crimes against a person[a]	1, 13199	36.97	<.0001
Multiple Exposures to Violence ($MEV)_s$[a]	2, 13199	3.29	.037
Gender[a]	1, 13199	6.96	.008
Age[b]	1, 13199	0.21	.650
Age_{quad}[b]	1, 13199	46.52	<.0001
Race	3, 13199	0.45	.718
MEV_s × gender	2, 13199	0.78	.459
MEV_s × age	2, 13199	0.02	.981
MEV_s × age_{quad}	2, 13199	1.29	.276
MEV_s × gender × age	3, 13199	0.76	.516
MEV_s × gender × age_{quad}	3, 13199	1.85	.135

[a]Lagged variable, [b]Lagged and centered variable

Next, an analysis was conducted to determine how MEV_s affect court outcome severity, treating MEV_s as a linear variable. A main effect for MEV_s was statistically significant (b = 0.204, se = 0.077, df =13,341, t = 2.65, p = .008). However, this too assumes that the relationship between MEV_s and court outcome severity is linear. To test this assumption, we conducted a supplemental analysis, treating MEV_s as a categorical variable (Table 10). This analysis showed a significant main effect for MEV_s treated as a categorical variable, was statistically significant (F = 4.18, p = .015). The post-hoc comparison of means shows that court outcome severity when MEV_s = 0 differs from court outcome severity when MEV_s = 1 (b = -0.461, se = 0.066, t = -6.99, p < .0001) and when MEV_s = 2 (b = -0.568, se = 0.107, t = -5.33, p < .0001), but that court outcome severity does not differ for MEV_s = 1 versus MEV_s = 2 (b = -0.107, se = 0.115, t = -0.93, p = .620). This again shows that there is an effect for no victimization versus victimization,

but that multiple sources of victimization do not contribute more to court outcome severity than a single source. Thus, for court outcome severity, conclusions about MEV_s simplify to those obtained previously as reported in Research Question 1.

Table 10
Court Outcome Severity as a Function of Sources of Victimization and Demographic Characteristics

Effect	***df***	***F***	***p***
Court Outcome Severity[a]	1, 13333	313.48	<.0001
Multiple Exposures to Violence $(MEV)_s$[a]	2, 13333	4.18	.015
Gender[a]	1, 13333	4.01	.045
Age[b]	1, 13333	0.05	.817
Age_{quad}[b]	1, 13333	89.53	<.0001
Race	3, 13333	0.43	.733
MEV_s × gender	2, 13333	1.64	.194
MEV_s × age	2, 13333	1.15	.317
MEV_s × age_{quad}	2, 13333	2.88	.056
MEV_s × gender × age	3, 13333	1.17	.318
MEV_s × gender × age_{quad}	3, 13333	3.37	.018

[a]Lagged variable, [b]Lagged and centered variable

Multiple incidents of exposure to violence. Results are similar for the relationship between instances of multiple exposures to violence (MEV_i) and CAP. A main effect for MEV_i (treated as a linear variable) was statistically significant (b = 0.212, se = 0.091, df =13,208, t = 2.32, p = .020). To test the linearity assumption, we re-estimated the previous model, treating MEV_i as a categorical variable (Table 11); we also estimated least-squares means for each category of MEV_i and compared them using a post-hoc analysis. This shows a non-significant main effect when MEV_i is treated as a categorical variable (F= 2.76, p = .063). Even so, given the conservative nature of these analyses and the fact that this omnibus test produced a result where $p < .10$, we chose to conduct post-hoc tests. The post-hoc comparison shows that CAP when $MEV_i = 0$ differs from CAP when $MEV_i = 1$ (b = -0.382, se = 0.128, t = -2.99, p = .008) and when $MEV_i = 2$ (b = -0.615, se = 0.174, t = -3.53, p = .001), but that CAP does not differ for $MEV_i = 1$ versus $MEV_i = 2$ (b = -0.233, se = 0.194, t = -1.20, p = .453). This shows that there is an effect for no victimization versus victimization, but that multiple instances of victimization do not contribute more to CAP than a single instance. Thus, as with sources of MEV, the analysis of instances of MEV for CAP simplifies to results reported in Research Question 1.

Table 11
Crimes Against a Person as a Function of Instances of Victimization and Demographic Characteristics

Effect	***df***	***F***	***p***
Crimes against a person[a]	1, 13199	36.56	<.0001
Multiple Exposures to Violence $(MEV)_i$[a]	2, 13199	2.76	.063
Gender[a]	1, 13199	7.29	.007
Age[b]	1, 13199	0.19	.661
Age_{quad}[b]	1, 13199	47.08	<.0001
Race	3, 13199	0.48	.697
MEV_i × gender	2, 13199	0.59	.556
MEV_i × age	2, 13199	0.07	.94
MEV_i × age_{quad}	2, 13199	1.57	.209
MEV_i × gender × age	3, 13199	0.45	.720
MEV_i × gender × age_{quad}	3, 13199	1.53	.204

[a]Lagged variable, [b]Lagged and centered variable

Next, an analysis was conducted to determine how MEV_i affect court outcome severity, treating MEV_i as a linear variable. A main effect for MEV_i (treated as a linear variable) was statistically significant (b = 0.255, se = 0.080, df =13,341, t = 3.20, p = .001). A subsequent analysis, treating MEV_i as categorical (Table 12), also showed a significant main effect (F = 6.30, p = .002). A post-hoc comparison of means shows that court outcome severity when MEV_i = 0 differs from court outcome severity when MEV_i = 1 (b = -0.465, se = 0.067, t = -6.93, p < .0001) and when MEV_i = 2 (b = -0.567, se = 0.097, t = -5.86, p < .0001), but that court outcome severity does not differ for MEV_i = 1 versus MEV_i = 2 (b = -0.102, se = 0.107, t = -0.96, p = .605). This shows that there is an effect for no victimization versus victimization, but that multiple instances of victimization do not contribute more to court outcome severity than a single instance. Thus, again, conclusions about MEV_i simplify to those obtained previously as reported in Research Question 1.

Table 12

Court Outcome Severity as a Function of Instances of Victimization and Demographic Characteristics

Effect	***df***	***F***	***p***
Court Outcome Severity[a]	1, 13333	315.51	<.0001
Multiple Exposures to Violence $(MEV)_i$[a]	2, 13333	6.30	.002
Gender[a]	1, 13333	7.54	.006
Age[b]	1, 13333	0.05	.824
Age_{quad}[b]	1, 13333	97.40	<.0001
Race	3, 13333	0.39	.764
MEV_i × gender	2, 13333	2.02	.108
MEV_i × age	2, 13333	0.90	.405
MEV_i × age_{quad}	2, 13333	4.69	.009
MEV_i × gender × age	3, 13333	2.02	.108
MEV_i × gender × age_{quad}	3, 13333	3.60	.013

[a]Lagged variable, [b]Lagged and centered variable

Multiple sources and incidents of exposure to violence. Finally, an analysis was conducted to determine how sources *and* instances of multiple exposures to violence (MEV_c) affect CAP and court outcome severity, treating MEV_c as linear. First, with respect to CAP, a main effect for MEV_c was statistically significant (b = 0.20, se = 0.068, df =13,207, t = 2.97, p = .003). The model was re-estimated with MEV_c as a categorical variable (Table 13). Specifically, we re-estimated the previous model, but treated MEV_c as a categorical variable. This analysis shows a non-significant main effect when MEV_c is treated as a categorical variable (F= 2.46, p = .061). Even so, given the conservative nature of these analyses and the fact that this omnibus test produced a result where $p < .10$, we chose to conduct post-hoc tests. A post-hoc comparison of means shows that CAP when $MEV_c = 0$ does not differ from CAP when $MEV_c = 1$ (b = -0.240, se = 0.148, t = -1.62, p = .366) and when $MEV_c = 3$ (b = -0.634, se = 0.305, t = -2.08, p = .160), but that CAP does differ when $MEV_c = 2$ (b = -0.631, se = 0.170, t = -3.71, p = .001). Further, CAP does not differ for $MEV_c = 1$ versus $MEV_s = 2$ (b = -0.390, se = 0.204, t = -1.92, p = .221), or between $MEV_c = 1$ versus $MEV_s = 3$ (b = -0.394, se = 0.325 t = -1.21, p = .620), or finally between $MEV_c = 2$ versus $MEV_c = 3$ (b = -0.003, se = 0.335, t = -0.01, p = 1.0). This shows that there is an effect for multiple sources *or* instances of victimization versus no victimization, but no other comparison was significant. As before, the linearity assumption does not hold, but the relationship between combined MEV and CAP is more complex than other relationships we explored in this section.

Table 13
Crimes Against a Person as a Function of Sources and Instances of Victimization and Demographic Characteristics

Effect	***df***	***F***	***p***
Crimes against a person[a]	1, 13194	35.68	<.0001
Multiple Exposures to Violence $(MEV)_c$[a]	2, 13194	2.46	.061
Gender[a]	1, 13194	5.17	.023
Age[b]	1, 13194	0.16	.694
Age_{quad}[b]	1, 13194	4.08	<.0001
Race	3, 13194	0.47	.707
MEV_c × gender	2, 13194	0.61	.607
MEV_c × age	2, 13194	0.11	.956
MEV_c × age_{quad}	2, 13194	1.32	.266
MEV_c × gender × age	3, 13194	0.87	.481
MEV_c × gender × age_{quad}	3, 13194	1.50	.199

[a]Lagged variable, [b]Lagged and centered variable

With respect to court outcome severity, as before, a preliminary analysis, treating MEV_c as a linear variable, was conducted. The main effect for MEV_c was statistically significant (b = 0.182, se = 0.061, df =13,341, t = 3.00 p = .003). A further analysis, treating MEV_c as categorical (Table 10), showed a statistically significant main effect for MEV (F = 3.51, p = .015). A post-hoc comparison of means shows that court outcome severity when MEV_c = 0 differs from court outcome severity when MEV_c = 1 (b = -0.451, se = 0.073, t = -6.21, p < .001), when MEV_c = 2 (b = -0.477, se = 0.094, t = -5.06, p < .0001), and when MEV_c = 3 (b = -0.653, se = 0.149, t = -4.39, p < .0001). Court outcome severity does not differ for MEV_c = 1 versus MEV_s = 2 (b = -0.027, se = 0.108, t = -0.25, p = .995), or between MEV_c = 1 versus MEV_c = 3 (b = -0.202, se = 0.158 t = -1.28, p = .577), or finally between MEV_c = 2 versus MEV_c = 3 (b = -0.175, se = 0.169, t = -1.04, p = .726). This, again, shows an effect for no victimization versus victimization, but not between different levels of victimization. Thus, for court outcome severity, conclusions about MEV_c simplify to those obtained previously as reported in Research Question 1.

Table 14
Court Outcome Severity as a Function of Sources and Instances of Victimization and Demographic Characteristics

Effect	***df***	***F***	***p***
Court Outcome Severity[a]	1, 13327	314.36	<.0001
Multiple Exposures to Violence $(MEV)_c$[a]	2, 13327	3.51	.015
Gender[a]	1, 13327	4.26	.039
Age[b]	1, 13327	0.02	.892
Age_{quad}[b]	1, 13327	62.44	<.0001
Race	3, 13327	0.41	.743
MEV_c × gender	2, 13327	1.40	.240
MEV_c × age	2, 13327	0.67	.569
MEV_c × age_{quad}	2, 13327	2.30	.076
MEV_c × gender × age	3, 13327	1.38	.240
MEV_c × gender × age_{quad}	3, 13327	3.37	.009

[a]Lagged variable, [b]Lagged and centered variable

Research Question 3: (3a) *How does psychological adjustment mediate the direct pathway between exposure to violence and juvenile justice involvement?;* (3b) *How does normative academic progress mediate the relationship between psychological adjustment and juvenile justice involvement?;* (3c) *How are the direct and indirect paths in the model moderated by demography, social support, and family control?*

Psychological Adjustment. The first set of results (Tables 15-20) shows the effects of exposure to violence (witnessing violence, violent victimization) and social support (maternal warmth, neighborhood connectedness) on the six psychological adjustment variables (hopelessness, street code, behavioral self-worth, global self-worth, worry, and traumatic stress).

Hopelessness. Table 15 shows that both exposure to violence variables are positively and statistically associated with hopelessness (i.e., as exposure to violence increases, hopelessness increases). Gender was negatively associated with hopelessness, indicating greater hopelessness for boys than for girls. Maternal warmth and both neighborhood connectedness variables were statistically significant predictors of hopelessness, as were the gender interactions with the two neighborhood support variables. The main effects indicate that maternal warmth helps offset the effect that exposure to violence has on hopelessness, as does neighborhood connectedness. The two interaction effects are shown in Figures 9 and 11. For the first, the relationship between neighborhood connectedness (positive feelings toward neighborhood) and hopelessness is essentially flat for girls (b = 0.005) but negative for boys (b = -0.017). For the second, the relationship between neighborhood connectedness (absence of negative feelings toward neighborhood) and hopelessness negative for both girls (b = -0.274) and boys (b = -0.356); the decline is steeper for boys than for girls. A comparison of the two figures shows that the effect of negative neighborhood connectedness is stronger than the effect of positive neighborhood connectedness.

A supplemental analysis was conducted using a linear mixed model (LMM) as implemented in SAS PROC MIXED, with restricted maximum likelihood, a first-order autoregressive covariance structure, and random intercepts. Degrees of freedom were estimated using a procedure developed by Satterthwaite (1941) coupled with an inflation of the estimated variance-covariance matrix of the fixed and random effects, as detailed by Kenward and Roger (1997). Results showed similar main effects as the SEM analysis. Additionally, we found significant linear (b = -0.064, se = 0.008, t = -8.25, p < .001) and quadratic (b = 0.024, se = 0.004, t = 5.95, p < .001) age effects. Hopelessness decreased monotonically as a function of age, with the steepest decreases occurring during the earliest ages (Figure 5 shows unsmoothed means). We found several significant interaction effects involving age.

1. Witnessing violence × age_{lin} (b = -0.033, se = 0.009, t = -3.64, p < .001; Figure 7). Hopelessness as a function of witnessing violence is most rapid for the youngest (b_y = 0.299) and middle (b_m = 0.266) age groups, and slowest for the oldest age group (b_o = 0.188).
2. Violent victimization × gender × age_{lin} (b = 0.030, se = 0.012, t = 2.49, p < .05; Figure 8). Hopelessness among the three male age groups (b_y =0.179, b_m = 0.190, b_o = 0.147) and for the two older female age groups (b_m = 0.206, b_o = 0.165) increases at a similar rate as a function of violent victimization. For the youngest group of girls, the rate of increase is considerably lower, approaching zero (b_y = 0.045).

3. Maternal warmth × age_{lin} (b = 0.019, se = 0.006, t = 2.98, p < .01; Figure 6). Hopelessness declines at identical rates as a function of maternal warmth for the two younger age groups (b_y = -0.180, b_m = -0.180); for the oldest age group, the descent occurs at a less rapid rate (b_o = -0.112).
4. Neighborhood $connectedness_{positive}$ × gender × age_{quad} (b = 0.007, se = 0.003, t = 2.13, p < .05; Figure 10). For all three male age groups, hopelessness shows a marginal and similar decline as a function of positive neighborhood connectedness (b_y = -0.012, b_m = -0.030, b_o = -0.028; the youngest group of girls shows a similar decline (b_y = -0.013). For the oldest group of girls, the relationship is inconsequently positive (b_o = 0.006). Only for the middle group of girls does the relationship, which is negative, attain even modest proportions (b_m = -0.056.).
5. Neighborhood $connectedess_{negatve}$× age_{quad} (b = -0.009, se = 0.003, t = 3.45, p < .001; Figure 12). Hopelessness as a function of negative neighborhood connectedness declines sequentially from the youngest age group to the oldest age group (b_y = -0.400, b_m= 0.330, b_o = -0.300).
6. Neighborhood $connectedess_{negatve}$× gender × age_{lin} (b = 0.023, se = 0.007, t = 3.38, p < .001; Figure 13). Among all six age × gender groups, hopelessness declines as a function of negative neighborhood connectedness. Among boys, the decline is most steep for the youngest age group (b_y = -0.426), while for the two older groups of boys it is similar but less rapid (b_m =-0.362, b_o = -0.369). For girls, the decline is less steep than for boys; the negative slope is most rapid for the youngest group of girls (b_y = -0.376), and is sequentially less rapid for each increasing age group (b_m = -0.293, b_o = -0.229). Notably, for adolescents who have negative feelings about their neighborhoods, there exist large gender and age differences in levels of hopelessness. However, for adolescents who do not have negative feelings about their neighborhoods, these gender and age differences almost completely disappear.

Table 15
SEM Estimates: Determinants of Hopelessness at Time t

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Gender (G)	-0.310	0.026	-11.817	<.001
Exposure to violence				
Witnessing violence (WV)	0.151	0.029	5.150	<.001
Violent victimization (VV)	0.081	0.016	5.145	<.001
G × WV	0.031	0.041	0.746	.455
G × VV	0.004	0.027	0.149	.882
Social support				
Maternal warmth (MOM)	-0.115	0.015	-7.678	<.001
Neighborhood $connectedness_{positive}$ (NHP)	-0.028	0.011	-2.606	.009
Neighborhood $connectedness_{negative}$ (NHN)	-0.377	0.012	-30.972	<.001
G × MOM	-0.026	0.021	-1.211	.226
G × NHP	0.057	0.014	3.962	<.001
G × NHN	0.087	0.017	5.187	<.001

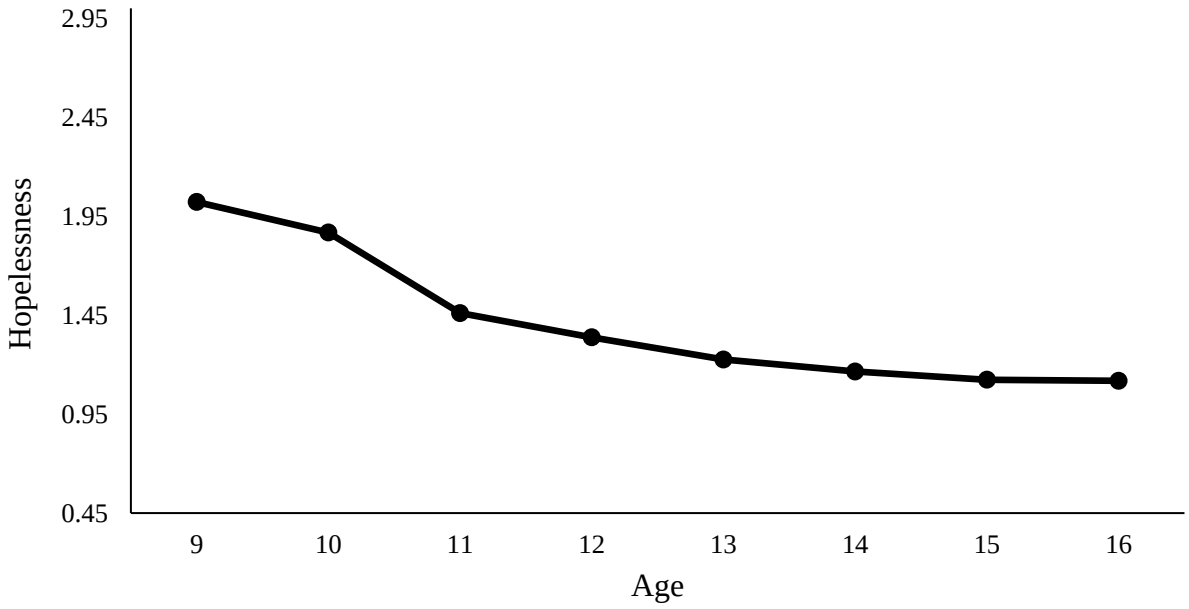


Figure 5. Hopelessness as a Function of Age.

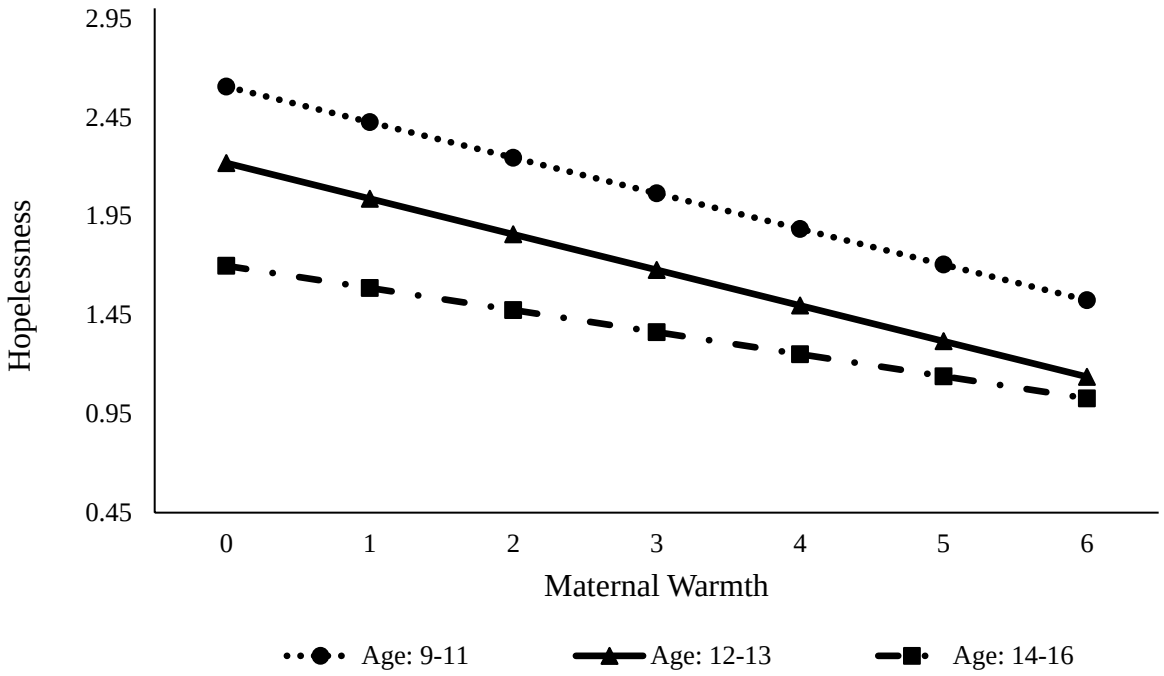


Figure 6. Hopelessness as a Function of Maternal Warmth and Age.

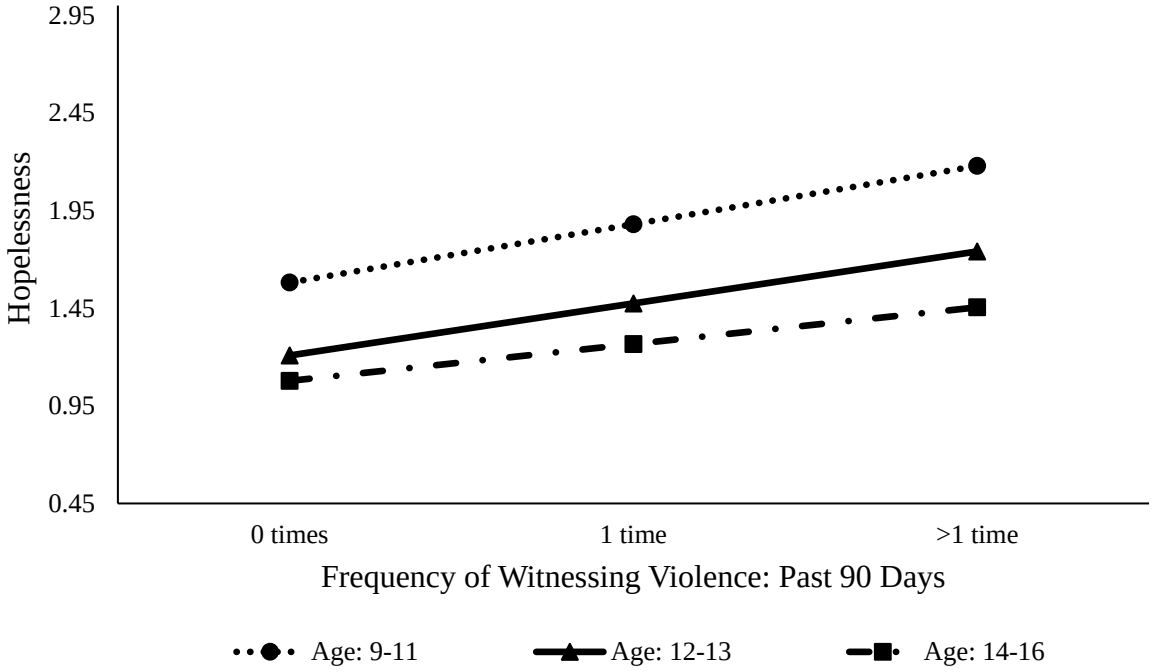


Figure 7. Hopelessness as a Function of Witnessing Violence and Age.

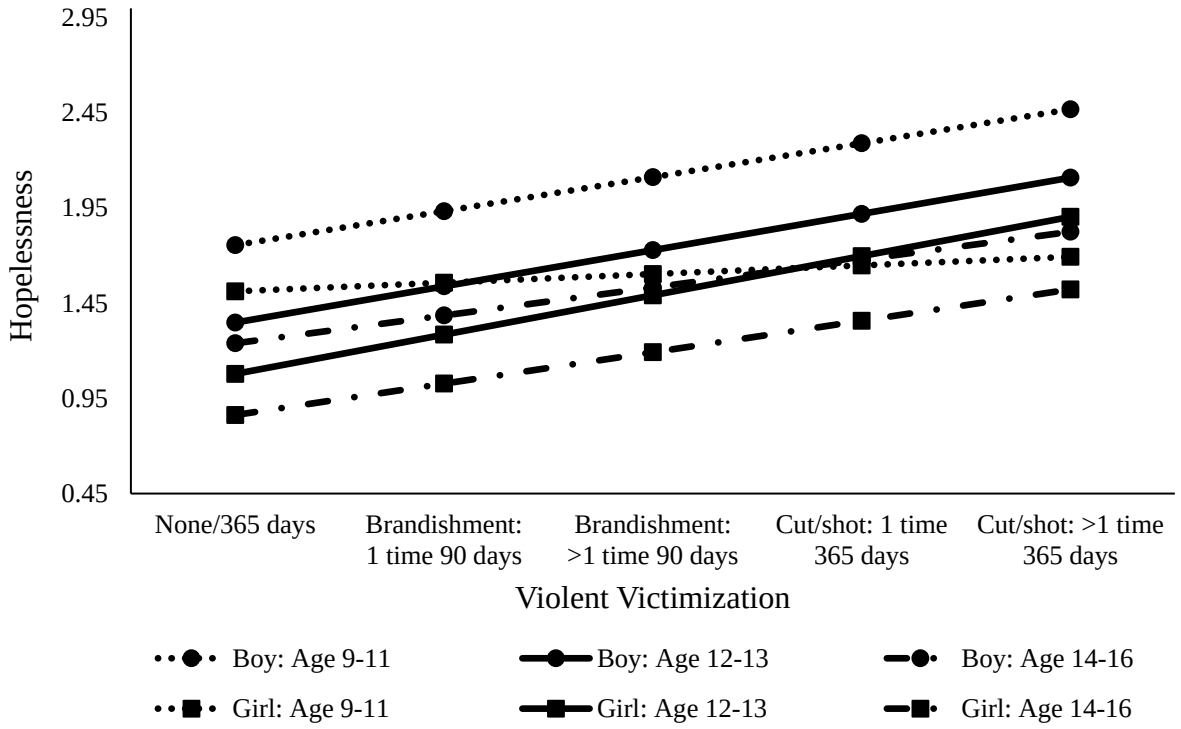


Figure 8. Hopelessness as a Function of Violent Victimization, Gender, and Age.

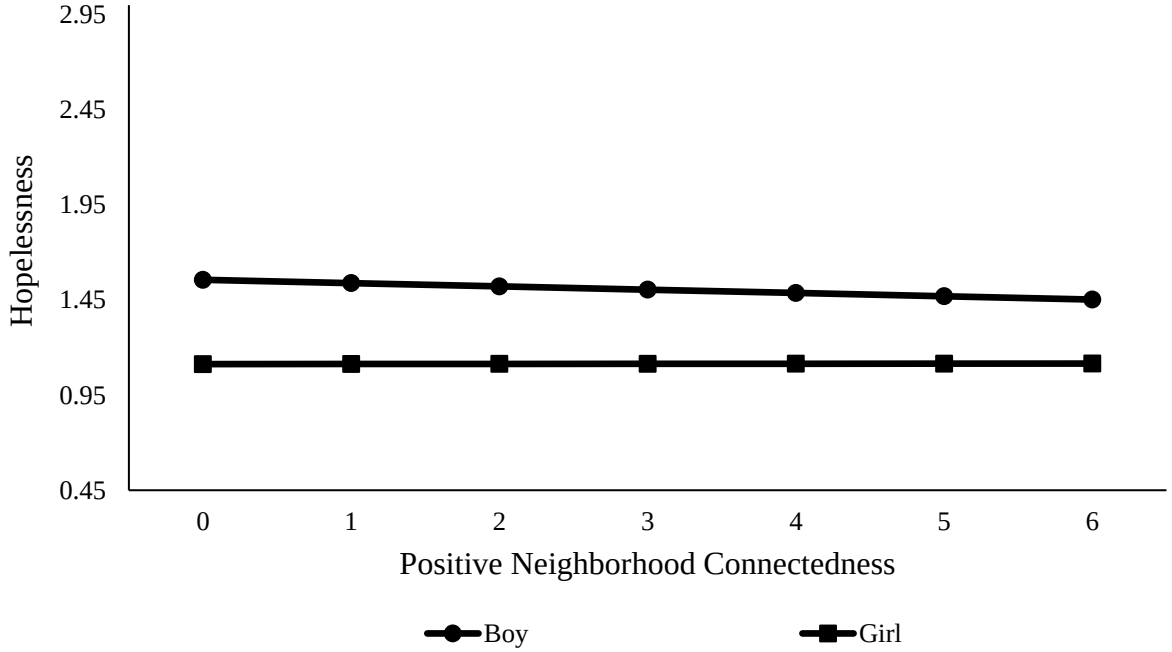


Figure 9. Hopelessness as a Function of Positive Neighborhood Connectedness and Gender.

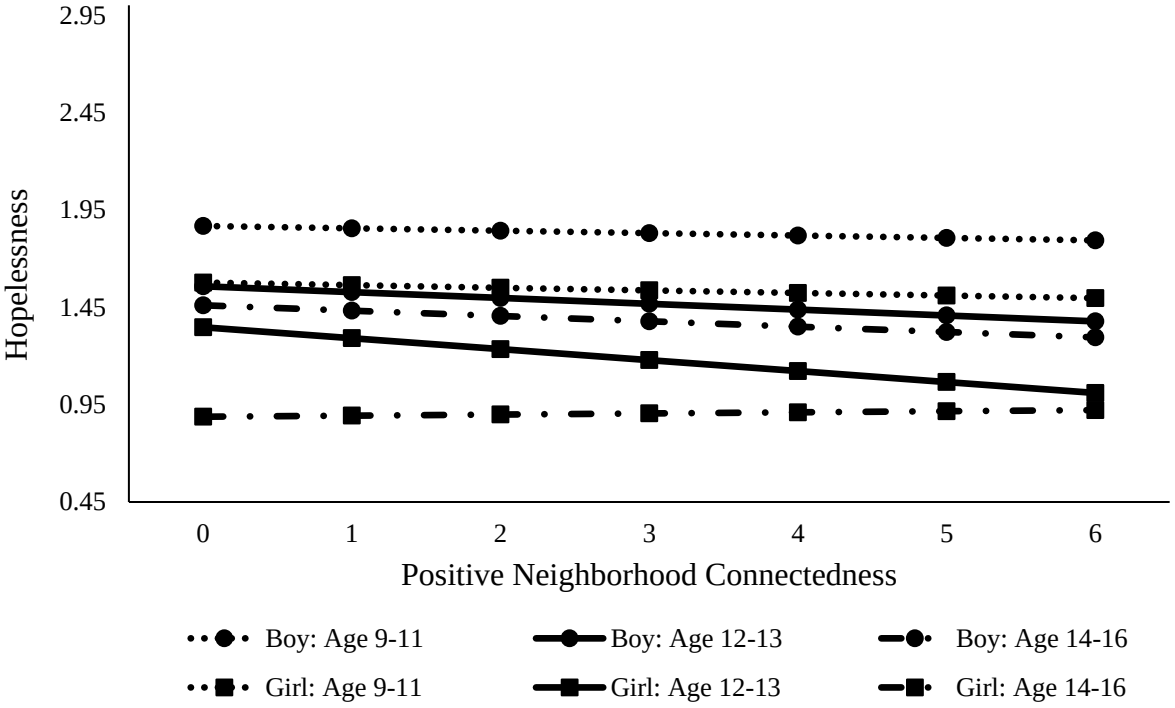


Figure 10. Hopelessness as a Function of Positive Neighborhood Connectedness, Gender, and Age.

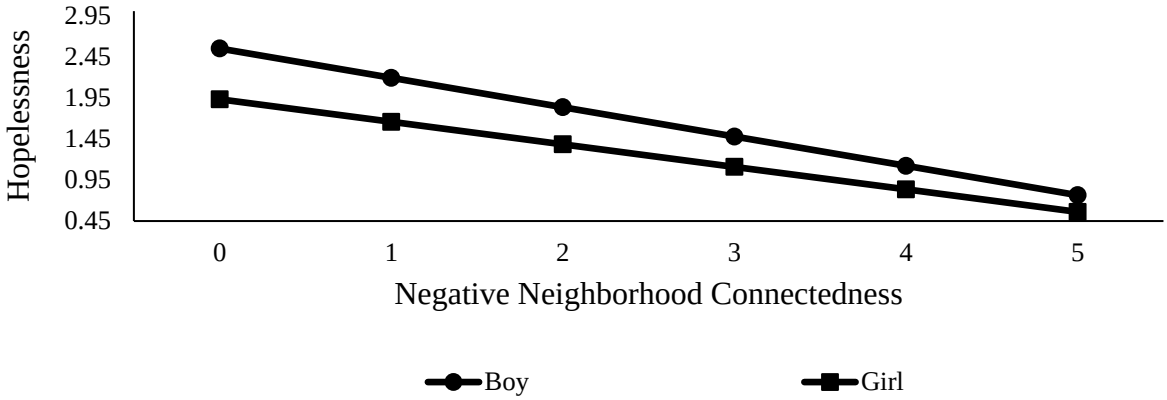


Figure 11. Hopelessness as a Function of Negative Neighborhood Connectedness and Gender.

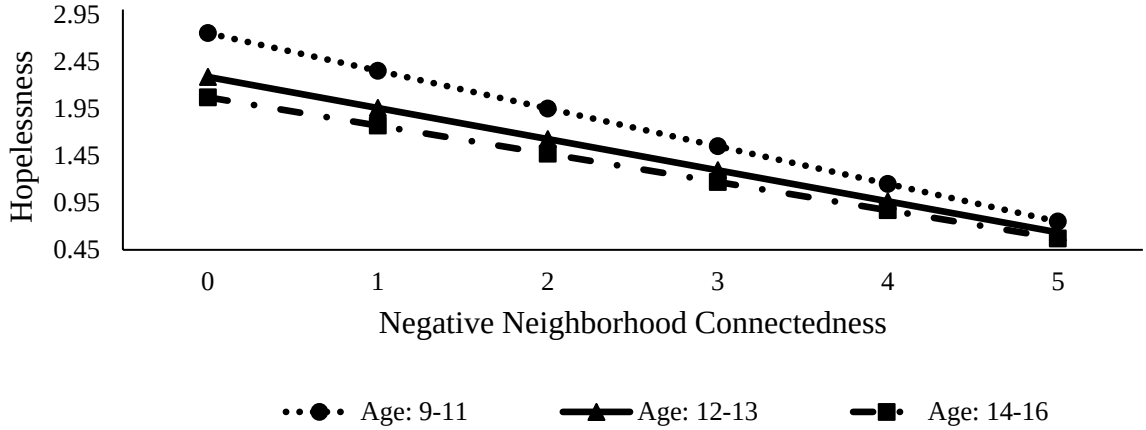


Figure 12. Hopelessness as a Function of Negative Neighborhood Connectedness and Age.

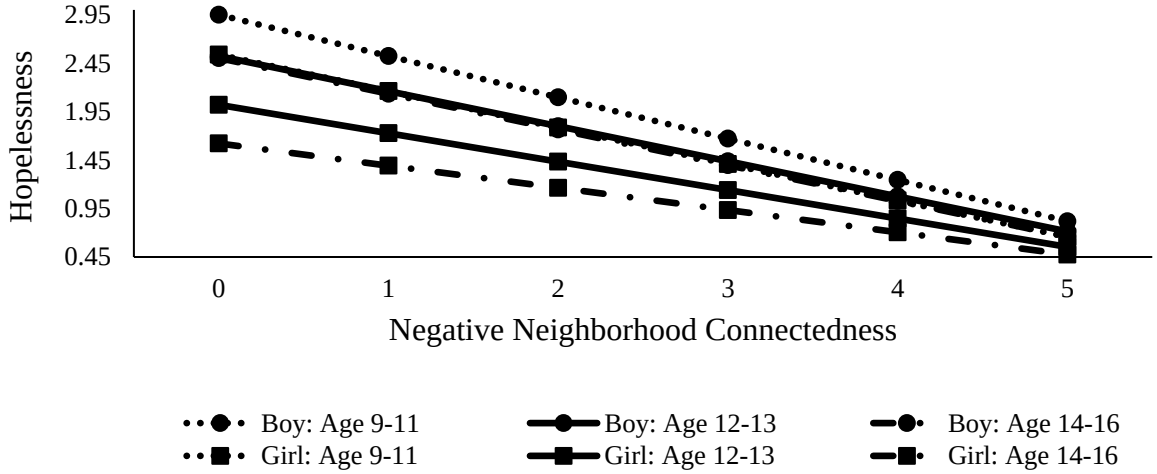


Figure 13. Hopelessness as a Function of Negative Neighborhood Connectedness, Gender, and Age.

Street code. Table 16 shows a similar result for street code, with both exposure to violence variables predicting increases in street code beliefs. Also like the results for hopelessness, maternal warmth and neighborhood connectedness$_{negative}$ are protective factors against street code beliefs. However, neighborhood connectedness$_{positive}$ is a risk factor for street code beliefs. This may reflect the potential confounding effect of neighborhood gangs. Gang membership can create a sense of neighborhood belonging and positive feelings of neighborhood connectedness for adolescents. But this could be a negative rather than a positive influence on their behavior. Gang connections may be particularly relevant for the development of street code beliefs. Neighborhood connectedness$_{posative}$ and neighborhood connectedness$_{negative}$ both interact with gender to affect street code. Figure 15 shows that for boys the relationship between positive neighborhood connectedness and street code is stronger than for girls (b = 0.155 versus b = 0.098). Figure 16 shows that, for negative network connectedness, the effect for boys is also greater than the effect for girls (b = -0.368 versus b = -0.306).

A supplemental analysis showed statistically significant linear (b = 0.026, se = 0.010, t = 2.52, p < .05) and quadratic (b = -0.019, se = 0.005, t = -3.60, p < .001) for age. Further examination shows that street code beliefs increase monotonically though not linearly through age 13, then decrease monotonically albeit slowly through age 14 (Figure 16). Two age interactions were also statistically significant.

1. Witnessing violence × age$_{lin}$ (b = 0.034, se = 0.012, t = 2.80, p < .01); Witnessing violence × age$_{quad}$ (b = -0.015, se = 0.007, t = -2.37, p < .05; Figure 17). The effect of witnessing violence on street code increases as a function of age (b_y = 0.534, b_m = 0.755, b_o = 0.833
2. Neighborhood connectedness$_{positive}$ × age$_{lin}$ (b = 0.011, se = 0.006, t = 2.02, p < .05; Figure 18). Street code as a function of positive neighborhood connectedness increases most rapidly for the oldest age group and least rapidly for the youngest age group b_y = 0.122, b_m = 0.124. b_o = 0.145). The effect size appears to be quite small, however.

Table 16
SEM Estimates: Determinants of Street Code at Time t

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Gender (G)	-0.286	0.034	-8.415	<.001
Exposure to violence				
Witnessing violence (WV)	0.464	0.037	12.418	<.001
Violent victimization (VV)	0.305	0.020	15.591	<.001
G × WV	0.016	0.053	0.295	.768
G × VV	0.003	0.034	0.099	.921
Social support				
Maternal warmth (MOM)	-0.137	0.019	-7.199	<.001
Neighborhood connectedness$_{positive}$ (NHP)	0.143	0.013	10.680	<.001
Neighborhood connectedness$_{negative}$ (NHN)	-0.326	0.016	-21.027	<.001
G × MOM	0.022	0.026	0.833	.405
G × NHP	-0.022	0.018	-1.227	.220
G × NHN	0.024	0.021	1.100	.271

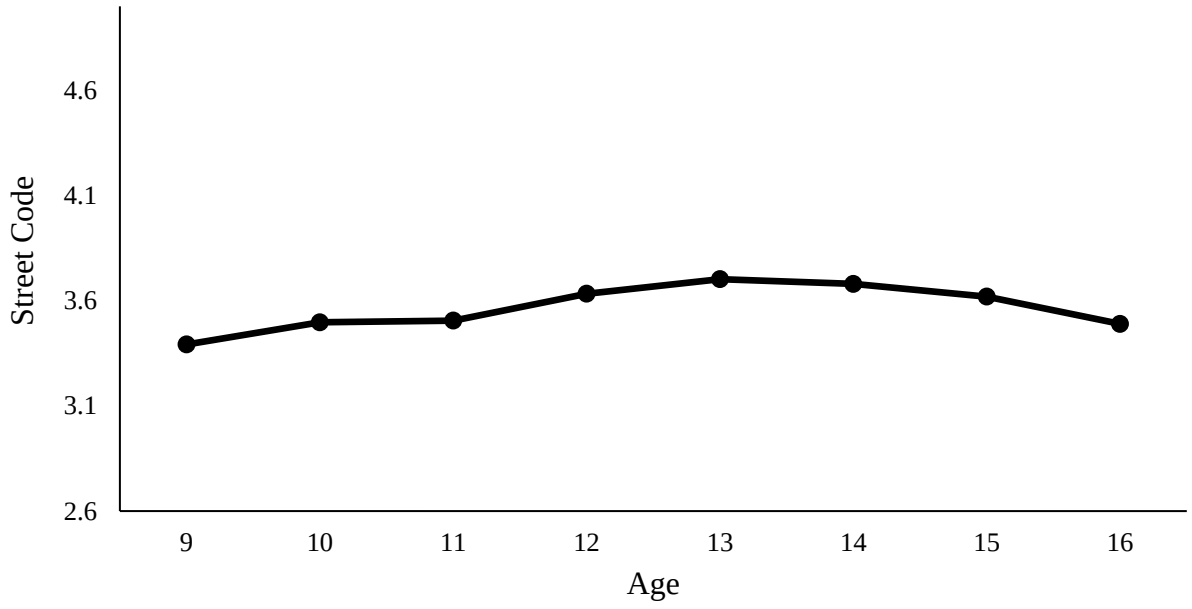


Figure 14. Street Code as a Function of Age.

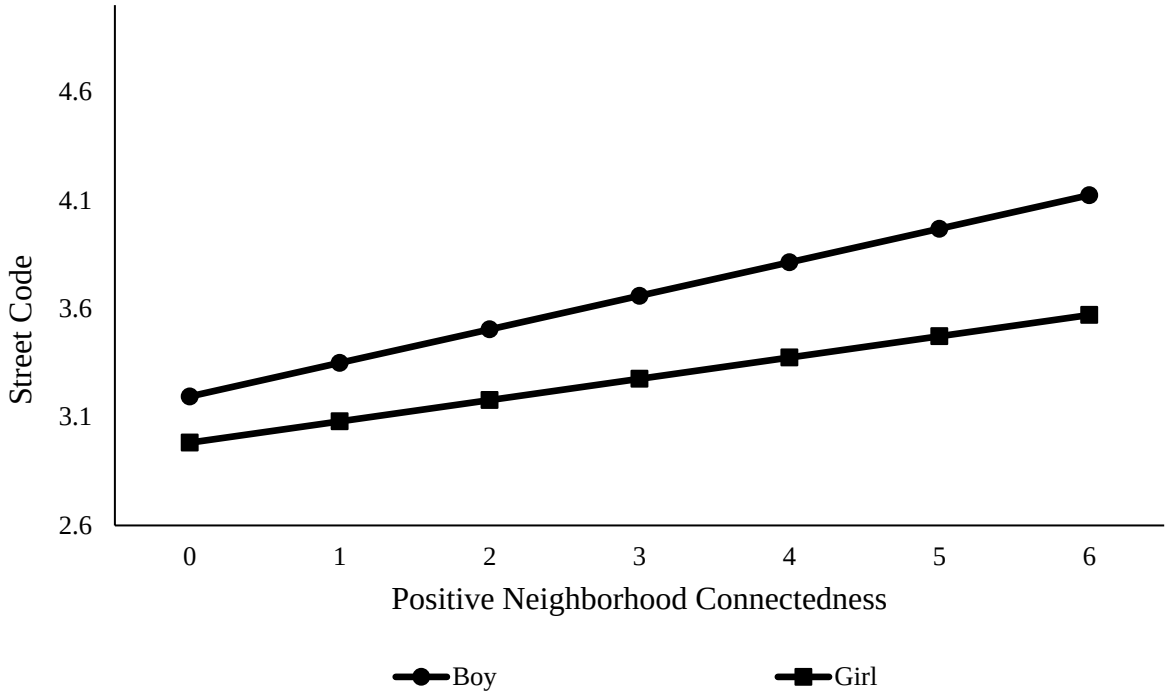


Figure 15. Street Code as a Function of Positive Neighborhood Connectedness and Gender.

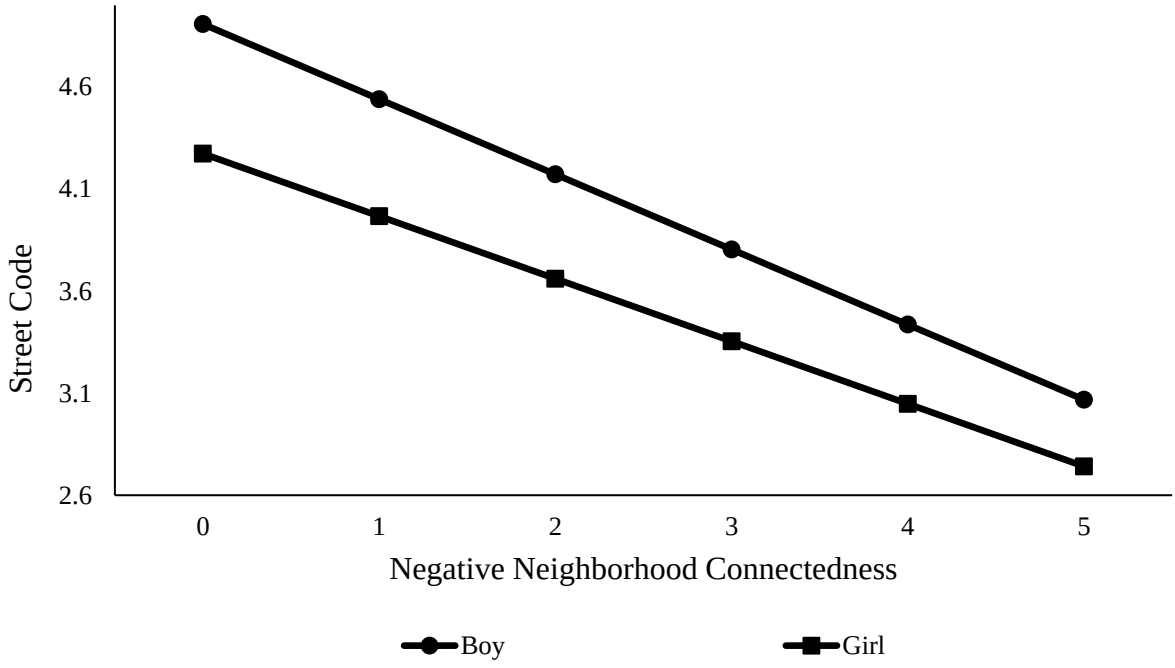


Figure 16. Street Code as a Function of Negative Neighborhood Connectedness and Gender.

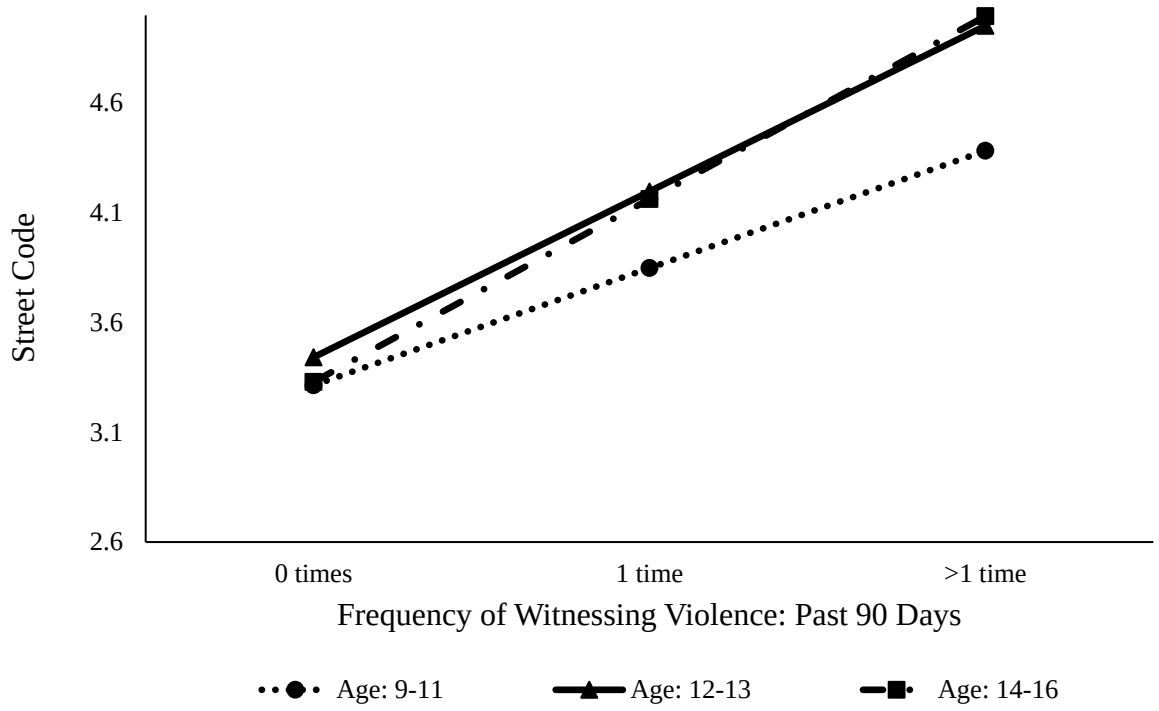


Figure 17. Street Code as a Function of Witnessing Violence and Age.

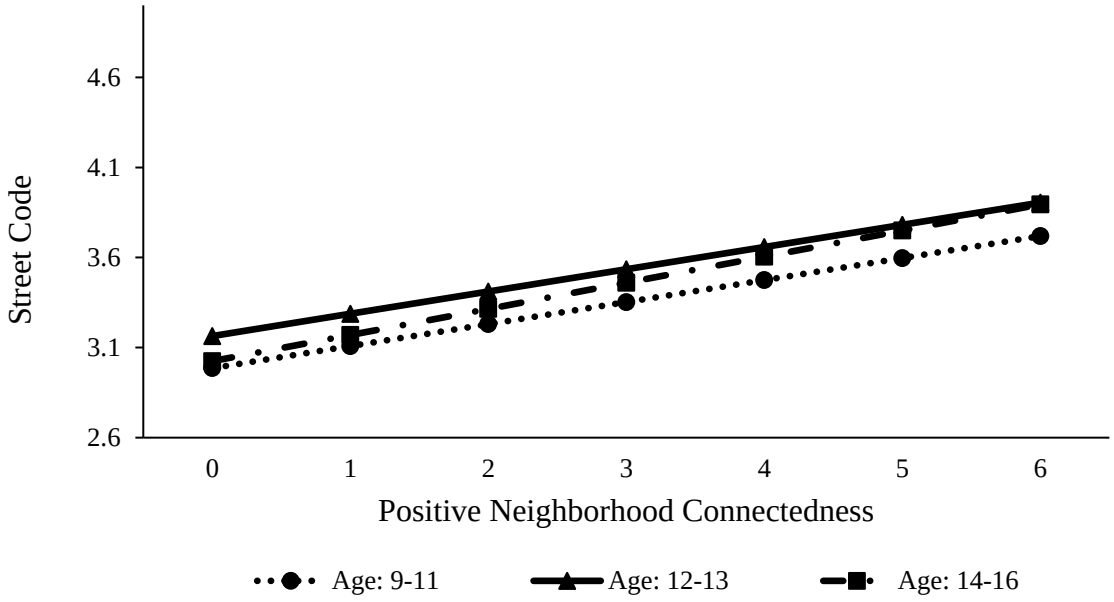


Figure 18. Street Code as a Function of Positive Neighborhood Connectedness and Age.

Behavioral self-worth. Table 17 shows SEM results for behavioral self-worth. Gender had a significant positive main effect on behavioral self-worth, indicating that girls had higher levels of behavioral self-worth than boys. Both witnessing violence and violent victimization had a negative effect on behavioral self-worth. All three of the social support variables have a positive and significant effect on behavioral self-worth. In addition, we found a positive maternal warmth by gender interaction, and a positive neighborhood $\text{connectedness}_{\text{positive}}$ by gender interaction. The former result (Figure 20) reflects a stronger positive maternal warmth effect for girls (b = 0.168) than for boys (b = 0.137), while the latter (Figure 22) reflects a stronger positive neighborhood $\text{connectedness}_{\text{positive}}$ effect for boys (b = 0.057) than for girls (b = 0.027).

A supplemental LMM analysis showed a significant positive effect for age_{lin} (b = 0.062, se = 0.006, t = 9.54 p < .001) and for age_{quad} (b = 0.010, se = 0.005, t = 2.13, p < .05); behavioral self-worth remains more-or-less constant through age 14, then begins increasing at age 15 (Figure 19). The analysis also yielded several significant age interactions.

1. Maternal warmth × gender × age_{quad} (b = -0.009, se = 0.004, t = -2.25, p < .05; Figure 21). Behavioral self-worth as a function of maternal warmth increases at a very similar rate for all three age groups of boys (b_y =0.128, b_m = 0.133, b_o = 0.141). For all three female age groups, the slope is greater than for any male age group. It is highest for the middle age group (b_m = 0.208), lower for the youngest group of girls (b_y = 0.176) and the oldest group of girls (b_o = 0.145). The trend lines for the oldest group of boys and the oldest group of girls are nearly coincident.
2. $\text{Neighborhood connectedness}_{\text{positive}}$ × age_{lin} (b = -0.008, se = 0.004, t = -2.37, p < .05; Figure 23. The relationship between behavioral self-worth and positive neighborhood connectedness is positive for all three age groups. The steepest increase occurs for the youngest age group and the magnitude of the effect decreases sequentially with age (b_y = 0.067, b_m = .046, b_o = .027). The effect of age on the relationship between positive neighborhood connectedness and age is moderate for youths who have no positive feelings about their neighborhood, but it becomes inconsequential for adolescents who feel very positive about their neighborhood.
3. $\text{Neighborhood connectedness}_{\text{negative}}$ × gender × age_{quad} (b = -0.014, se = 0.006, t = -2.45, p < .05; Figure 24). Absence of negative feelings about the neighborhood is positively related to behavioral self-worth for all six gender × age groups. For boys, the strength of the relationship increases as a function of age (b_y = 0.064, b_m = 0.076, b_o = 0.104); for girls, the strength of the relationship decreases as a function of age (b_y = 0.127, b_m = 0.100, b_o = 0.089.

Table 17
SEM Estimates: Determinants of Behavioral Self-Worth at Time t

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Gender (G)	0.075	0.024	3.158	.002
Exposure to violence				
Witnessing violence (WV)	-0.140	0.023	-5.987	<.001
Violent victimization (VV)	-0.106	0.012	-8.677	<.001
G × WV	-0.011	0.035	-0.326	.744
G × VV	-0.043	0.022	-1.932	.053
Social support				
Maternal warmth (MOM)	0.110	0.012	9.141	<.001
Neighborhood connectedness$_{positive}$ (NHP)	0.057	0.008	7.125	<.001
Neighborhood connectedness$_{negative}$ (NHN)	0.084	0.009	9.353	<.001
G × MOM	0.041	0.018	2.349	.019
G × NHP	-0.051	0.011	-4.532	<.001
G × NHN	0.012	0.013	0.899	.369

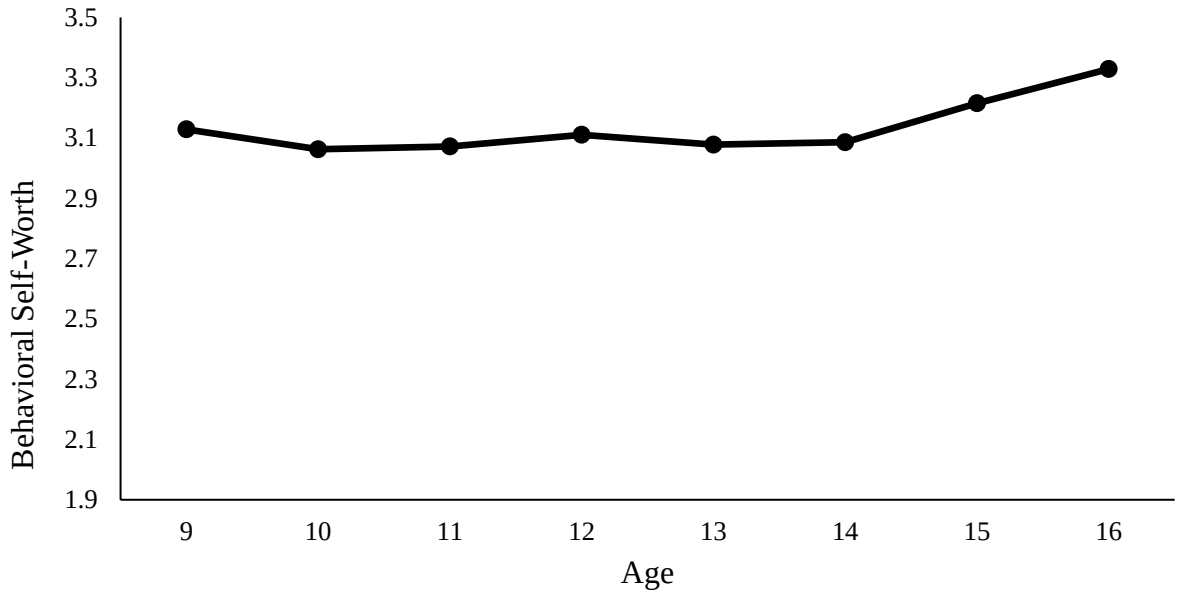


Figure 19. Behavioral Self-Worth as a Function of Age.

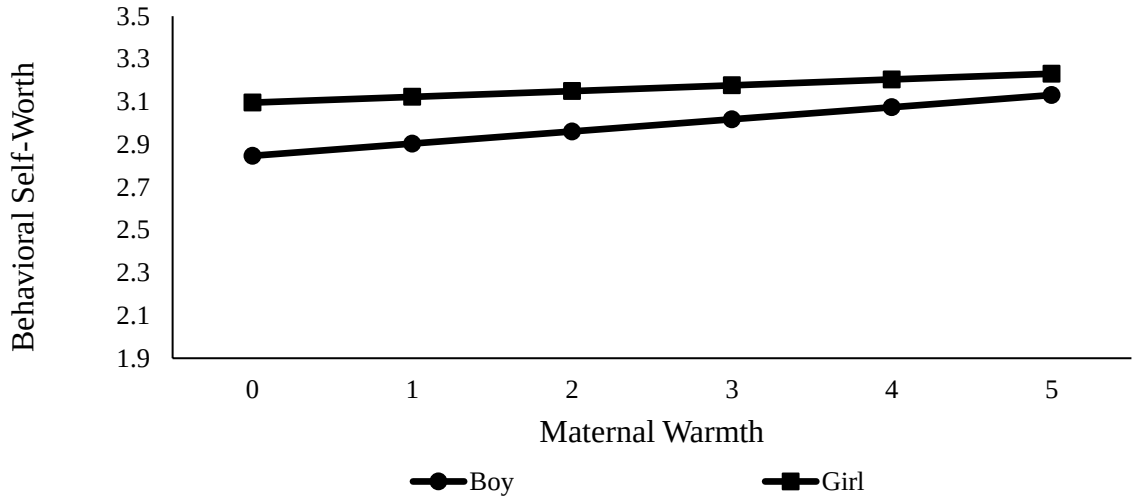


Figure 20. Behavioral Self-Worth as a Function of Maternal Warmth and Gender.

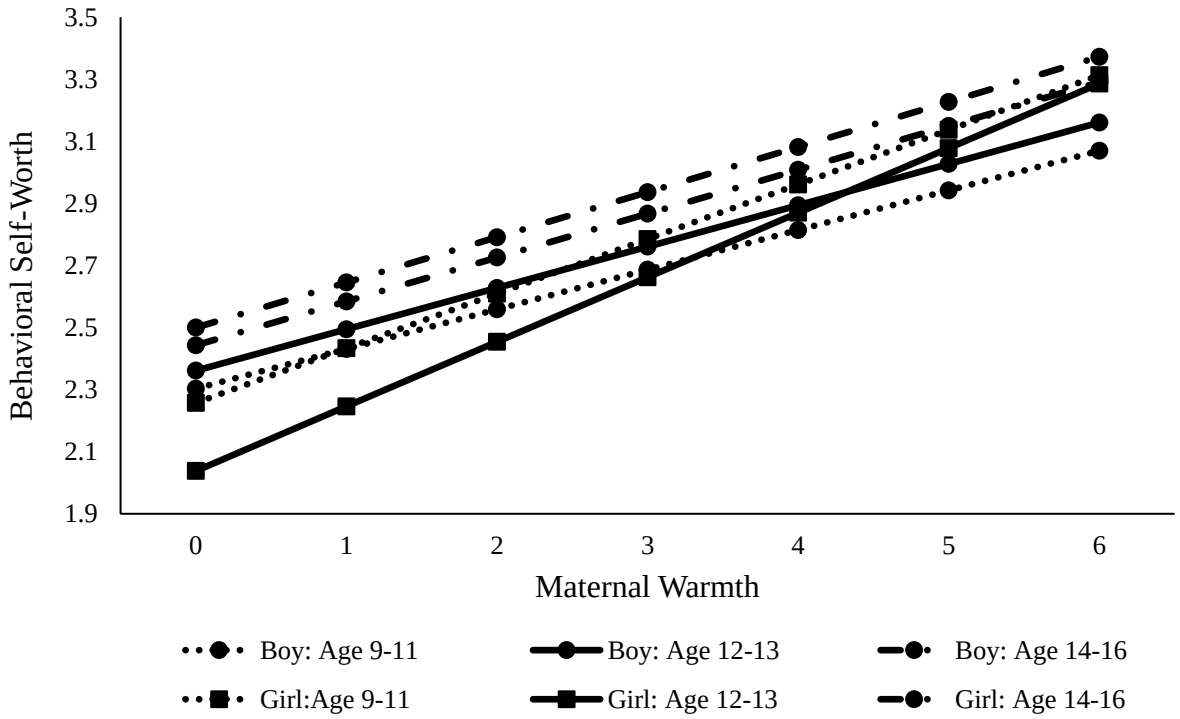


Figure 21. Behavioral Self-Worth as a Function of Maternal Warmth, Gender, and Age

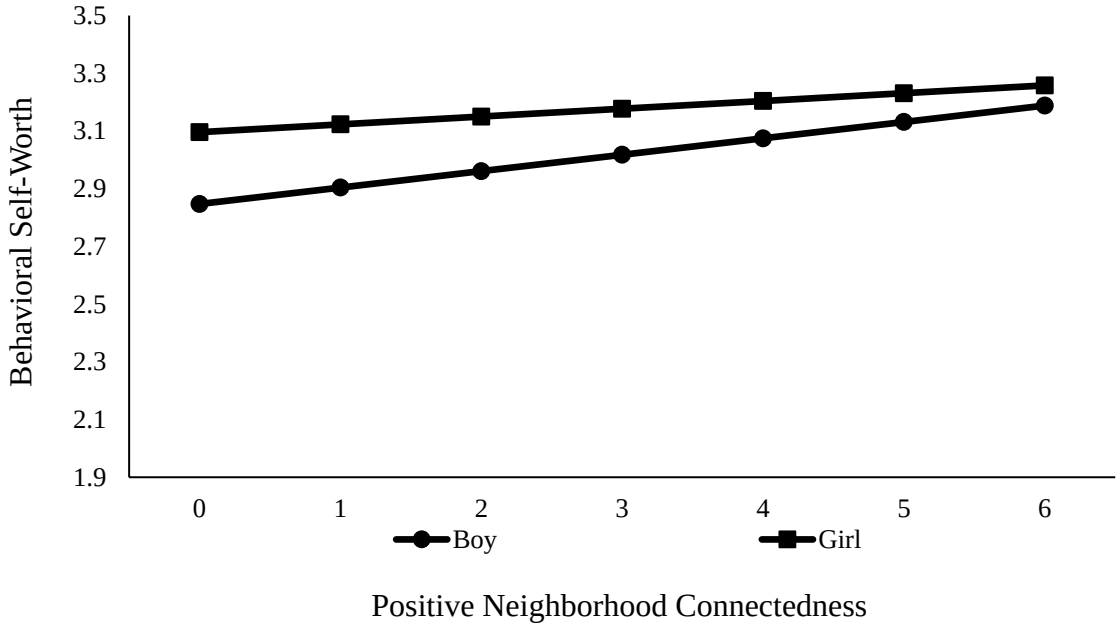


Figure 22. Behavioral Self Worth as a Function of Positive Neighborhood Connectedness and Gender.

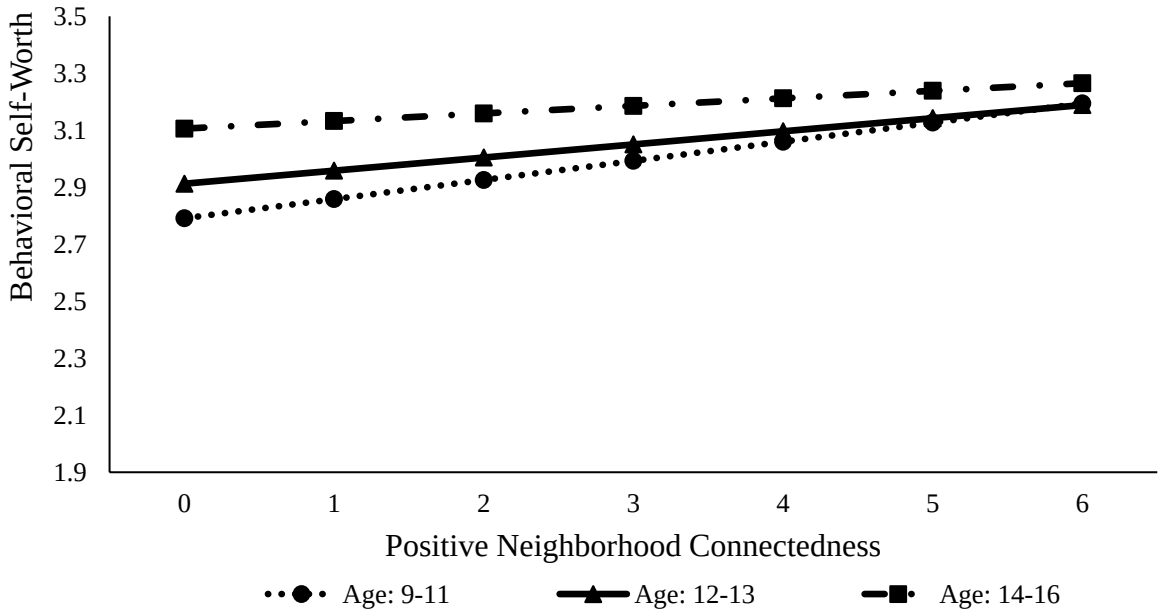


Figure 23. Behavioral Self-Worth as a Function of Neighborhood Positive Connectedness and Age

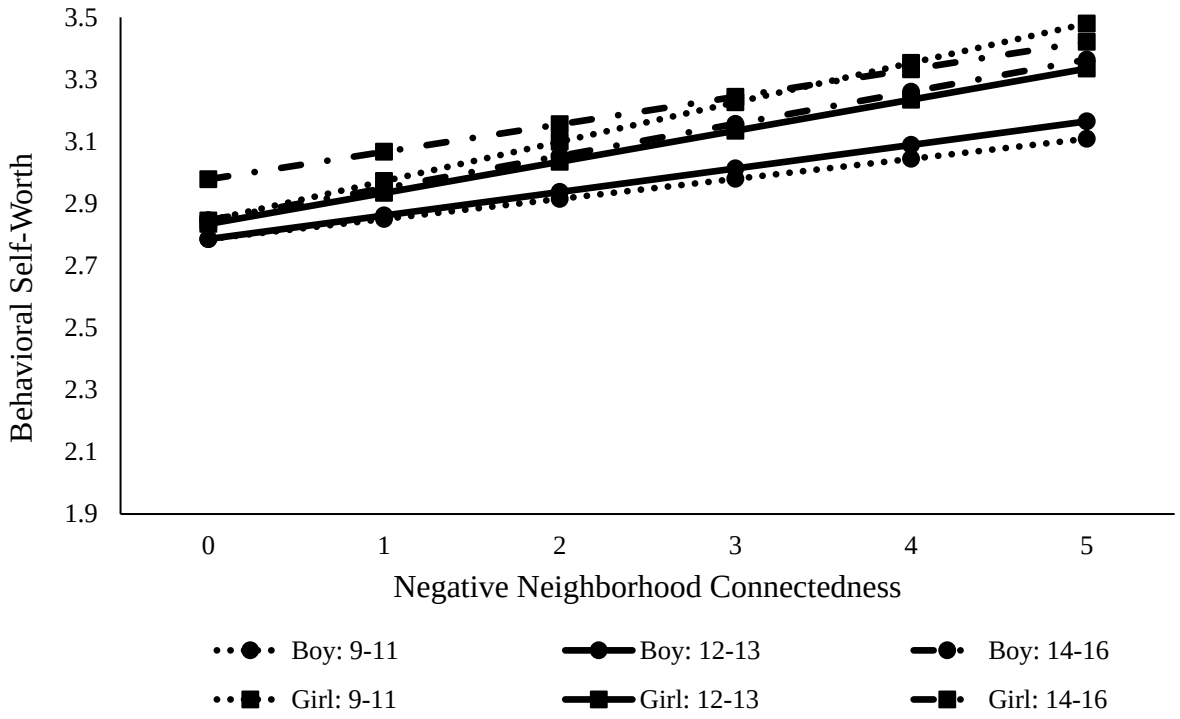


Figure 24. Behavioral Self-Worth as a Function of Negative Neighborhood Connectedness, Gender, and Age.

Global self-worth. Table 18 shows the SEM results for global self-worth. As with behavioral self-worth, girls have a higher level of global self-worth than boys; moreover, both witnessing violence and violent victimization are negatively associated with global self-worth, and all three of the social support variables are positively related to global self-worth. Results also show a significant interaction between violent victimization and gender (Figure 26): girls had a slightly greater loss of global self-worth as a function of violent victimization than boys (b = -0.127 versus b = -0.094). Results also showed a significant neighborhood connectedness$_{positive}$ × gender interaction (Figure 28): positive feelings about one's neighborhood had a stronger effect on global self-worth for boys than for girls.

The supplemental LMM analysis showed significant positive main effects for age$_{lin}$ (b = 0.026, se = 0.005, t = 5.41, p < .001) but not for age$_{quad}$. Global self-worth generally increases throughout the age range (Figure 25); except for the change between ages 14 and 15, the increase is monotonic. We found two statistically significant age interactions.

1. Violent victimization × gender × age$_{lin}$ (b = -0.014, se = 0.007, t = -1.99, p < .05; Figure 27). Global self-worth decreased as a function of violent victimization for all six gender × age groups. The steepest decline occurred for the youngest group of boys (b_y = -0.127) and for the oldest group of girls (b_o = -0.144). The older two groups of boys (b_m = -0.105, b_o = -0.094) and the two younger groups of girls (b_y = -0.114, b_m = -0.111) showed similar declines. The size of the effect appears to be limited, however.
2. Neighborhood connectedness$_{positive}$ × gender × age$_{lin}$ (b = -0.014, se = 0.006, t = -2.45, p < .05; Figure 29). Global self-worth increased as a function of positive neighborhood connectedness at a more-or-less consistent rate for all six gender × age groups. For boys, the largest increases occurred for the younger age groups (b_y = 0.060, b_m = 0.060), while the smallest increase occurred for the oldest age group (b_o = 0.049). For girls, the steepest increase occurred for the youngest age group (b_y = 0.05), less so for the other two age groups (b_m = 0.043, b_o = 0.048). All of these effects appear to be very small, however.

Table 18
SEM Estimates: Determinants of Global Self Worth at Time t

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Gender (G)	0.039	0.017	2.357	.018
Exposure to violence				
Witnessing violence (WV)	-0.052	0.017	-3.090	.002
Violent victimization (VV)	-0.068	0.009	-7.270	<.001
G × WV	-0.025	0.025	-0.985	.325
G × VV	-0.037	0.018	-2.032	.042
Social support				
Maternal warmth (MOM)	0.082	0.009	8.806	<.001
Neighborhood connectedness$_{positive}$ (NHP)	0.048	0.006	7.998	<.001
Neighborhood connectedness$_{negative}$ (NHN)	0.104	0.007	15.864	<.001
G × MOM	0.023	0.013	1.688	.091
G × NHP	-0.018	0.008	-2.192	.028
G × NHN	-0.004	0.009	-0.378	.705

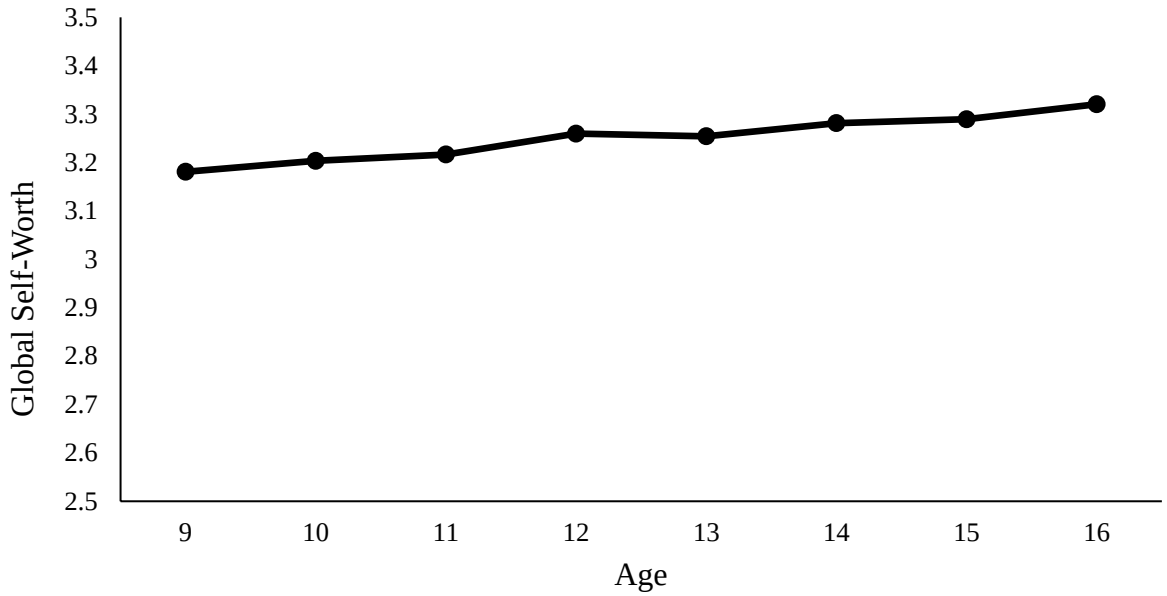


Figure 25. Global Self-Worth as a Function of Age.

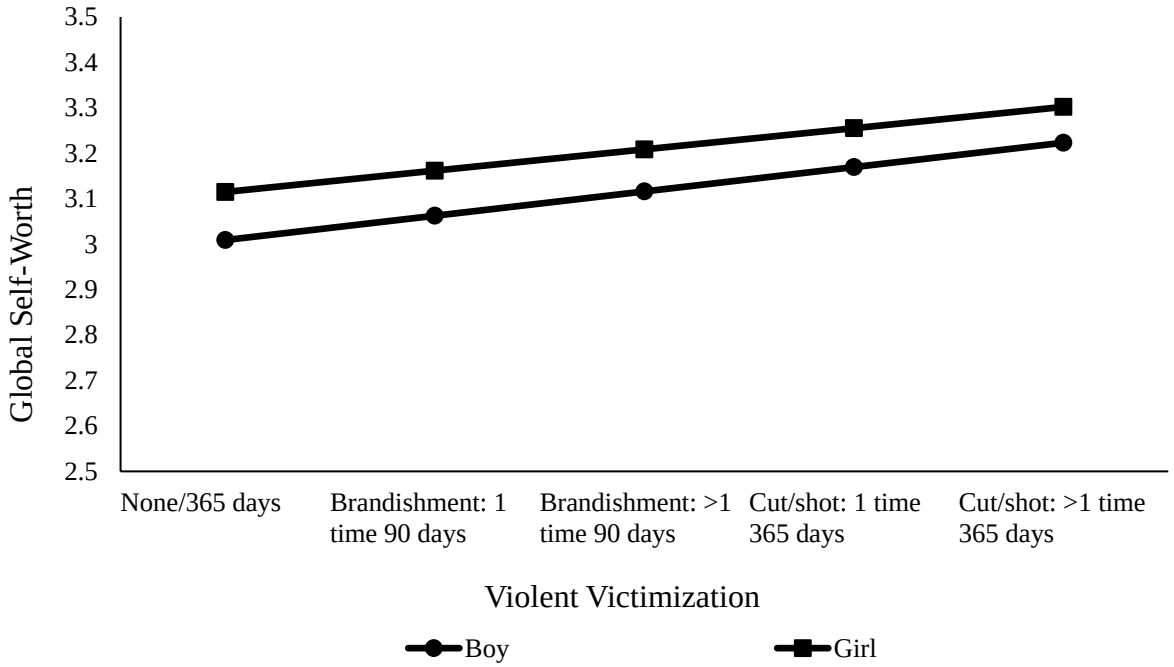


Figure 26. Global Self-Worth as a Function of Violent Victimization and Gender.

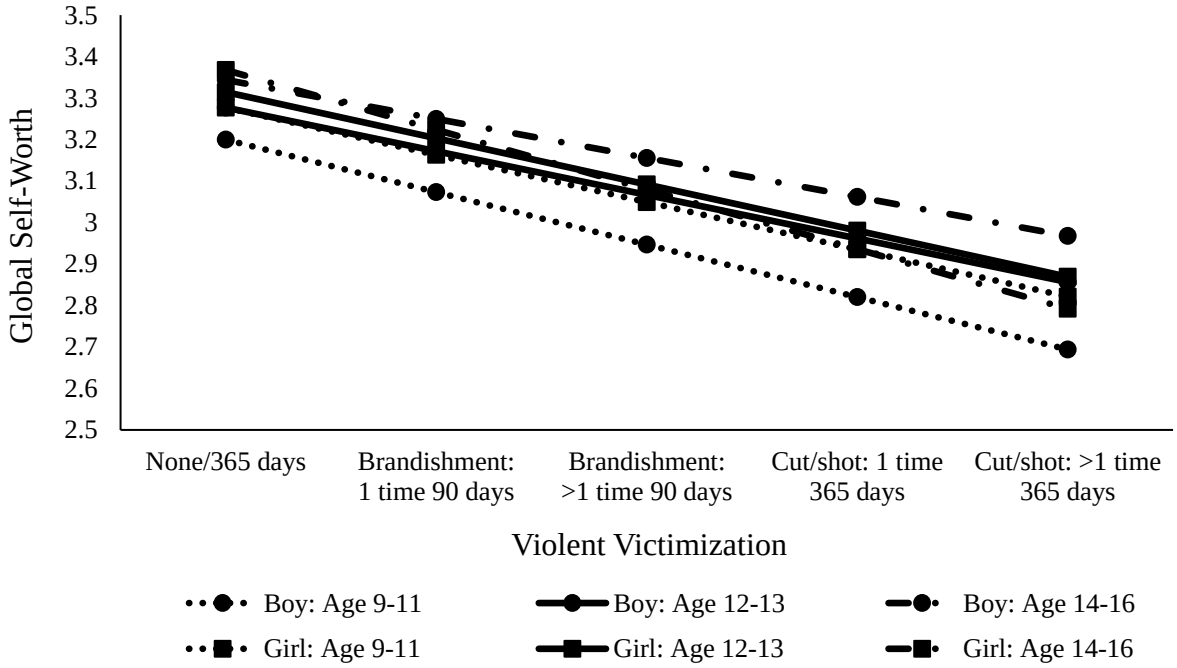


Figure 27. Global Self-Worth as a Function of Violent Victimization, Gender, and Age.

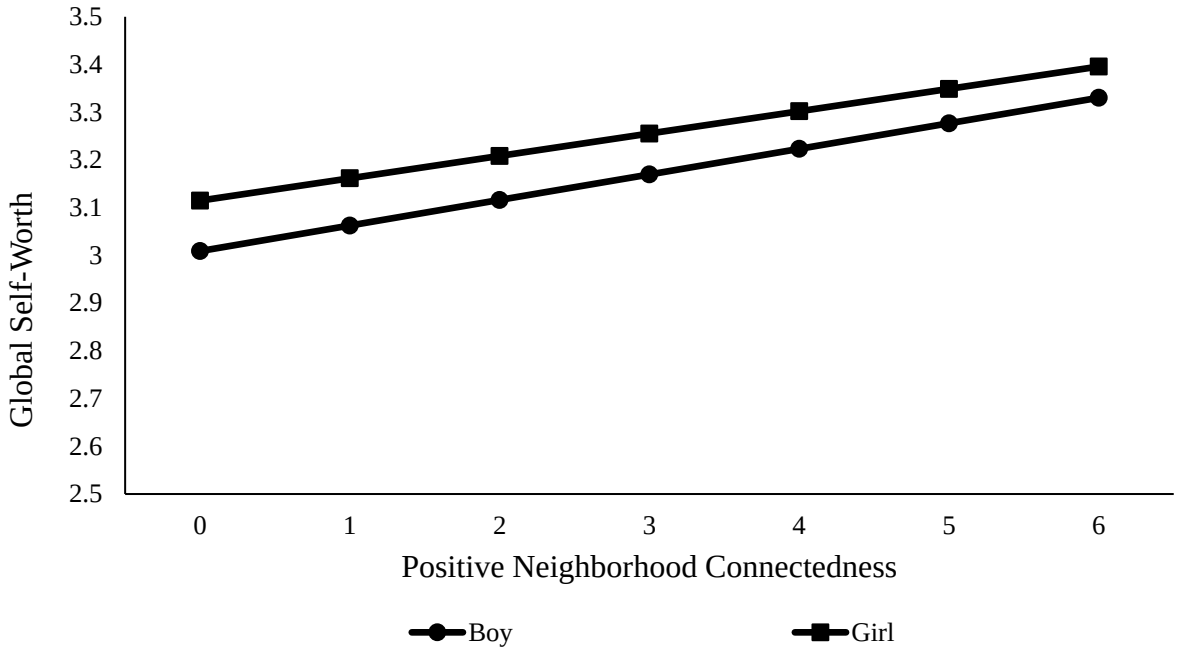


Figure 28. Global Self-worth as a Function of Positive Neighborhood Connectedness and Gender.

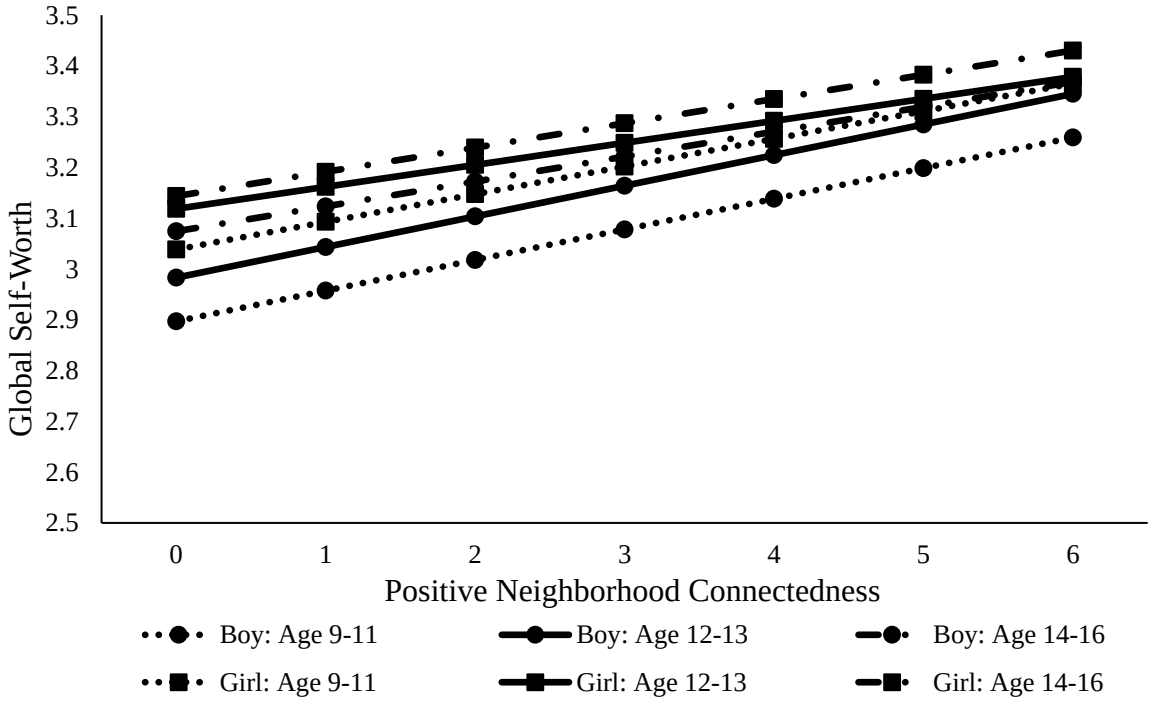


Figure 29. Global Self-worth as a Function of Positive Neighborhood Connectedness, Gender, and Age.

Worry. Table 19 shows SEM results for worry. Gender had a negative main effect on worry, indicating that boys worry more than girls. We also found a significant and positive main effect for witnessing violence, and a significant and negative main effect for violent victimization; thus, witnessing violence is associated with higher levels of worry, but violent victimization is associated with lower levels of worry. A similar conundrum occurred for neighborhood connectedness, where positive connectedness was associated with greater worry but absence of negative connectedness was associated with greater worry. We found a significant witnessing violence × gender interaction (Figure 31): witnessing violence has a greater effect on worry for girls (b = 0.640) than for boys (b = 0.280). Similarly, we found significant neighborhood connectedness by gender interactions (Figures 34, 36). Even though the positive neighborhood connectedness × gender interaction was significant in the MPlus results, the interaction effect is severely attenuated when only positive neighborhood connectedness is included in the model: the slope for boys (b = 0.083) and the slope for girls (b = 0.084) are virtually identical. In contrast, the absence of negative neighborhood connectedness has a stronger ameliorative effect on worry for girls (b = -0.614) than for boys (b = -0.527).

The supplemental LMM analysis showed a significant negative main effect on worry for age_{lin} (b = -0.667, se = 0.019, t = -35.83, p < .001), but not for age_{quad}. Further examination shows that worry decreases monotonically as a function of age (Figure 30). Several interactions involving age were statistically significant.

1. Witnessing violence × age_{lin} (b = -0.047, se = 0.021, t = -2.19, p < .05; Figure 32). The effects of witnessing violence on worry are greatest for the two younger age groups (b_y = 0.560, b_m = 0.575), and less substantial for the oldest age group (b_o = 0.330). Interestingly, the effect for the two younger age groups is greater than for the oldest age group, even though the intercepts for the two younger age groups are higher than for the oldest age group for the youngest age group. Effects are statistically significant for all age groups.
2. Violent victimization × gender × age_{lin} (b = 0.062, se = 0.028, t = 2.21, p < .05; Figure 33). For boys, the strongest relationship between violent victimization and worry occurs in the middle age group (b_m = 0.145), with increases in worry as a function of violent victimization occurring as a slower rate for the other two age groups (b_y = 0.087, b_o = 0.052). For girls, the increase occurs most rapidly among the two older age groups (b_m = 0.220, b_o = 0.257). For the youngest girls, worry decreases as a function of violent victimization (b_y = -0.081).
3. $Neighborhood\ connectedness_{positive}$ × gender × age_{lin} (b = -0.28, se = 0.014, t = -2.02, p < .05; Figure 35). For the youngest age group, the relationship between positive neighborhood connectedness and worry are similar (for girls, b_y 0.192; for boys, b_y = 0.148). For the oldest age group, the slopes for boys (b_o = -0.013) and girls (b_o = -0.016) are identical and flat. For the middle age group, the relationship between positive neighborhood connectedness and worry differ for boys (b_m = 0.091) and girls (b_m = 0.002), with the former accelerating at a faster pace than the latter.
4. $Neighborhood\ connectedness_{negative}$ × gender × age_{quad} (b = 0.13, se = 0.006, t = 2.01, p < .05; Figure 37). For all six gender × age groups, the relationship between absence of negative feelings about the neighborhood and worry is negative. Among boys, the relationship is strongest for the middle age group (b_m = -0.490), and it is less strong but approximately equal for the other two age groups (b_y = -0.406, b_o = -0.409). For girls, the

strongest relationship also occurs for the middle age group (b_m = -0.605), and it is less strong for the other age groups (b_y = -0.479, b_o = -0.472).

Table 19
SEM Estimates: Determinants of Worry at Time t

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Gender (G)	-0.348	0.075	-4.613	<.001
Exposure to violence				
Witnessing violence (WV)	0.323	0.076	4.255	<.001
Violent victimization (VV)	-0.206	0.037	-5.594	<.001
G × WV	0.250	0.110	2.270	.023
G × VV	0.111	0.065	1.712	.087
Social support				
Maternal warmth (MOM)	0.024	0.037	0.650	.516
Neighborhood connectedness$_{positive}$ (NHP)	0.067	0.025	2.619	.009
Neighborhood connectedness$_{negative}$ (NHN)	-0.537	0.029	-18.335	<.001
G × MOM	-0.009	0.053	-0.168	.867
G × NHP	0.074	0.035	2.106	.035
G × NHN	-0.111	0.042	-2.645	.008

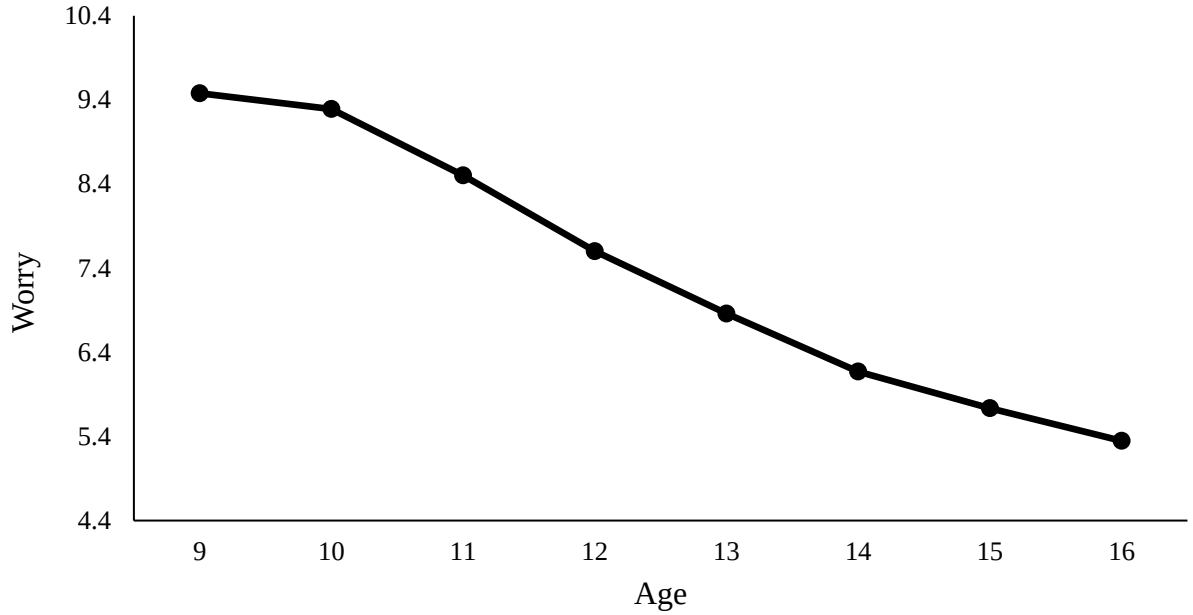


Figure 30. Worry as a Function of Age.

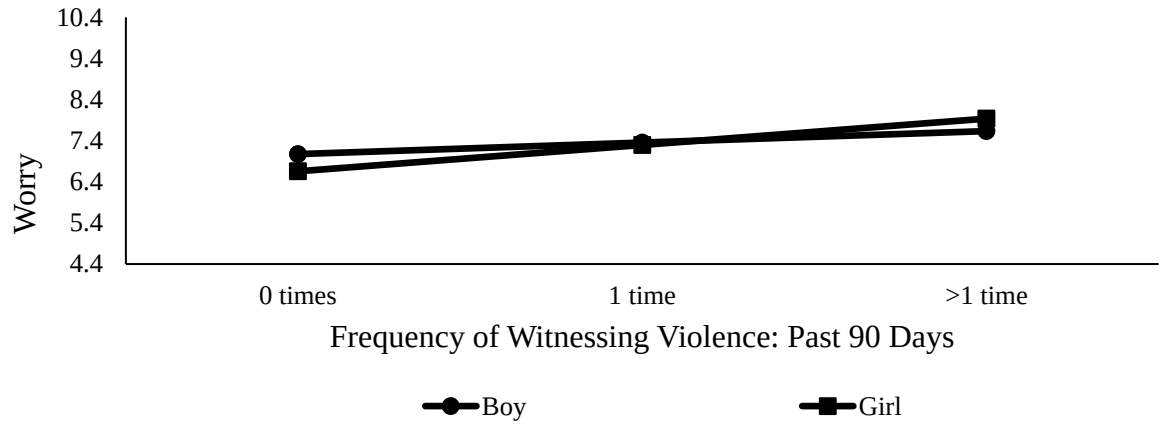


Figure 31. Worry as a Function of Witnessing Violence and Gender.

Figure 32. Worry as a Function of Witnessing Violence and Age.

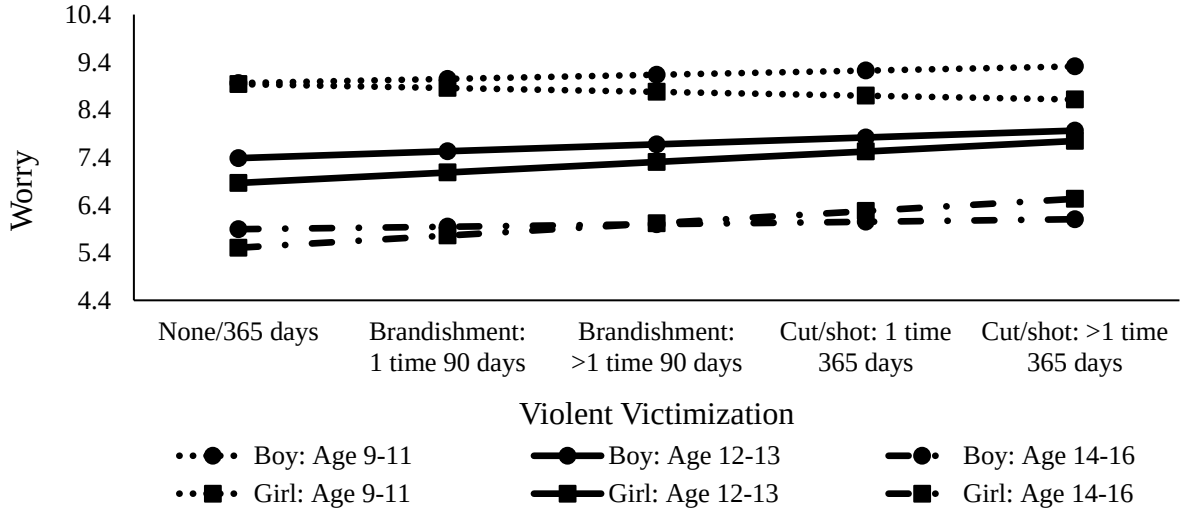


Figure 33. Worry as a Function of Violent Victimization, Gender, and Age.

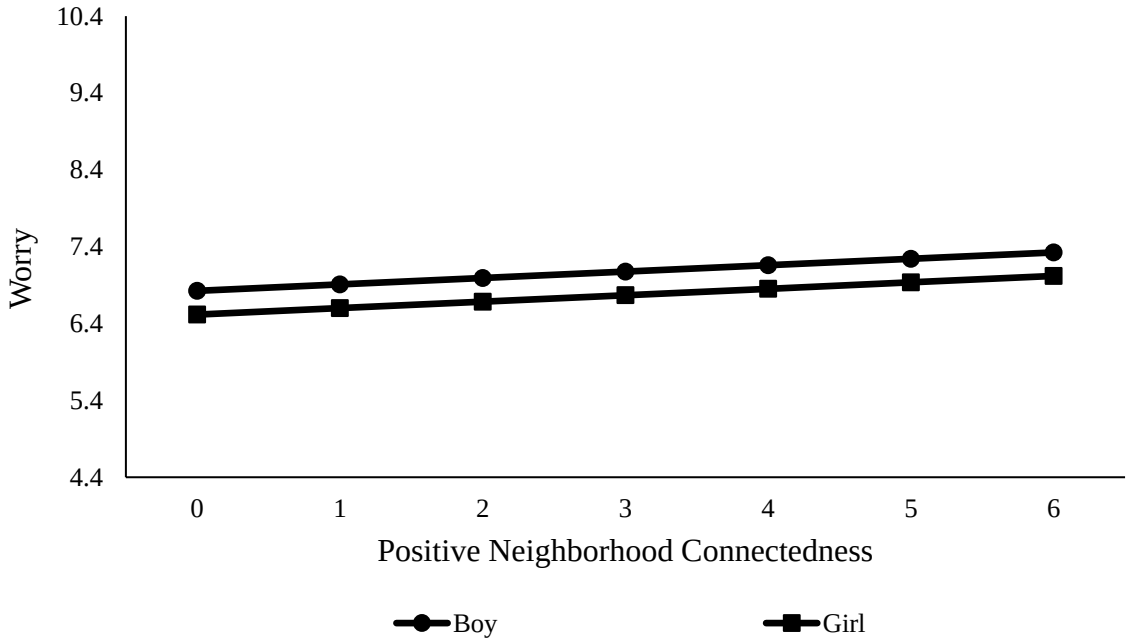


Figure 34. Worry as a Function of Positive Neighborhood Connectedness and Gender.

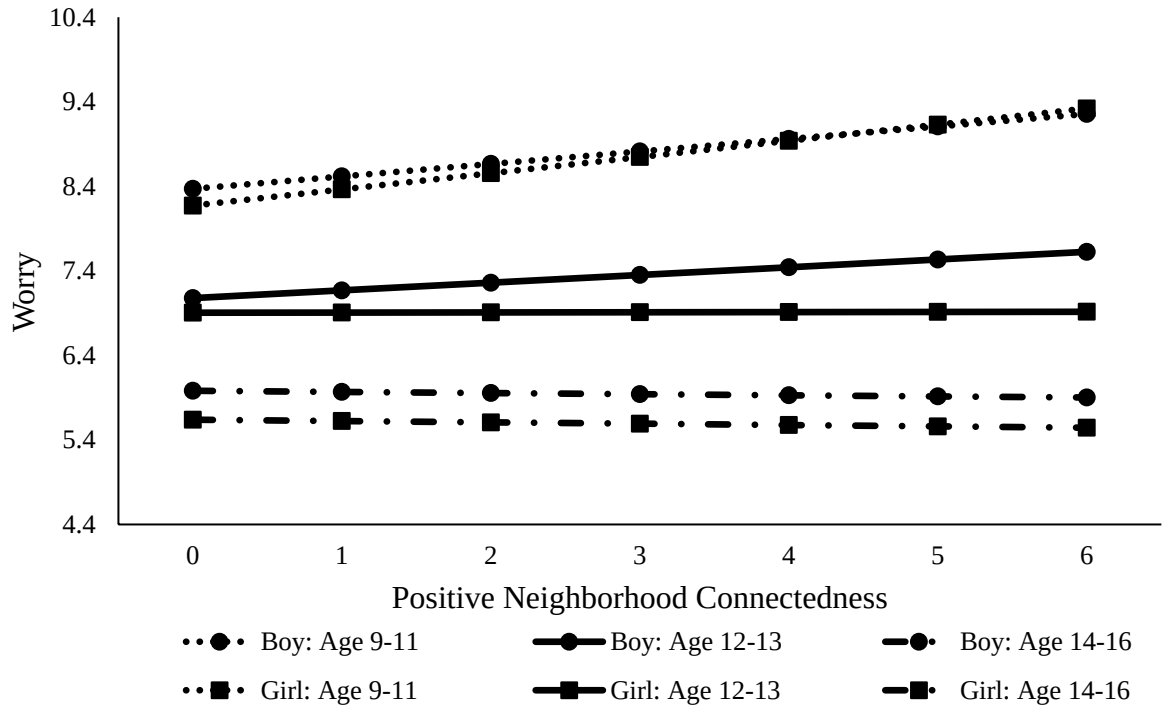


Figure 35. Worry as a Function of Positive Neighborhood Connectedness, Gender, and Age.

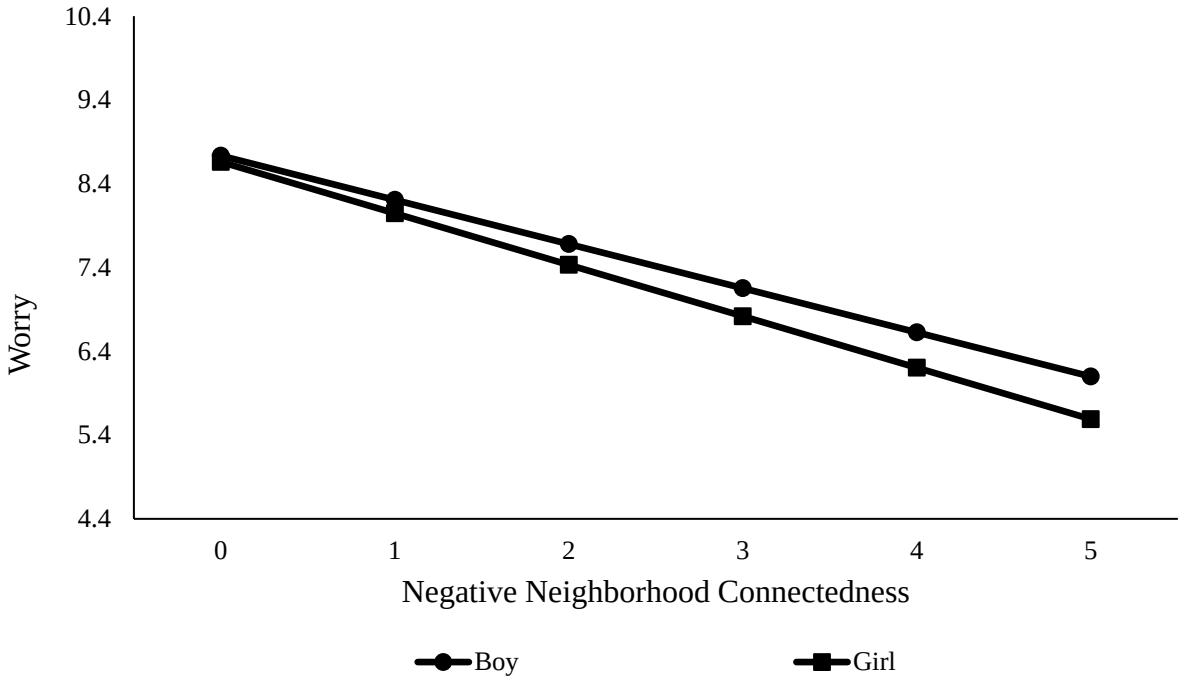


Figure 36. Worry as a Function of Negative Neighborhood Connectedness and Gender.

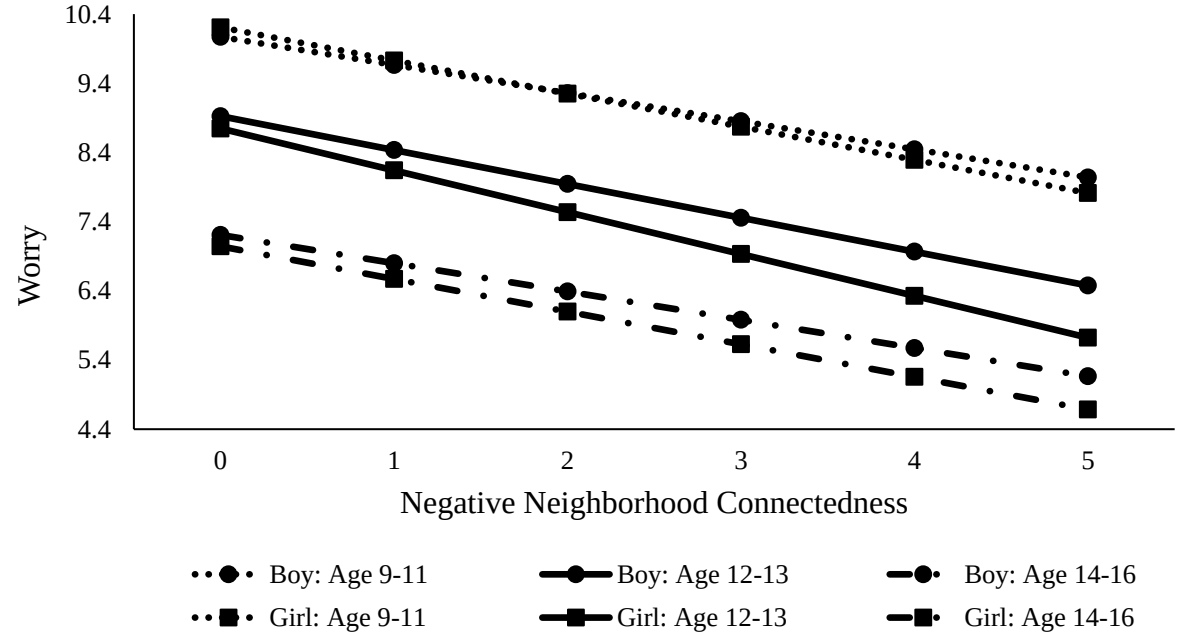


Figure 37. Worry as a Function of Negative Neighborhood Connectedness, Gender, and Age.

Traumatic stress. Table 20 shows SEM results for traumatic stress. Gender and witnessing violence both have positive main effects on traumatic stress, the former indicating that girls have higher levels of traumatic stress than boys. All three of the social support variables are statistically significant: maternal warmth and positive neighborhood connectedness are both positively associated with traumatic stress, and absence of negative neighborhood connectedness is negatively associated with traumatic stress.

The supplemental LMM analysis showed main effects for age_{lin} (b = -0.380, se = 0.015, t = -24.81, $p < .001$) and for age_{quad} (b = 0.029, se = 0.008, t = 3.67, $p < .001$). Traumatic stress increased modestly between ages 9 and 10, and thereafter it decreased monotonically as a function of age (Figure 38). Only one significant age-related interaction occurred.

1. Witnessing violence × age_{lin} (b = -0.046, se = 0.018, t = -2.58, $p < .01$; Figure 39). Witnessing violence is associated with an increase in traumatic stress for all three age groups. The sharpest increase occurs for the two younger age group (b_y = 0.710, b_m = .715, with the increase for the oldest age group not as substantial (b_o = 0.550).

Table 20

SEM Estimates: Determinants of Traumatic Stress at Time t

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Gender (G)	0.352	0.054	6.494	<.001
Exposure to violence				
Witnessing violence (WV)	0.553	0.061	9.095	<.001
Violent victimization (VV)	-0.036	0.030	-1.201	.230
G × WV	0.142	0.083	1.704	.088
G × VV	0.091	0.051	1.802	.072
Social support				
Maternal warmth (MOM)	0.091	0.030	3.034	.002
$Neighborhood\ connectedness_{positive}$ (NHP)	0.213	0.021	10.290	<.001
$Neighborhood\ connectedness_{negative}$ (NHN)	-0.197	0.023	-8.427	<.001
G × MOM	0.070	0.043	1.629	.103
G × NHP	-0.032	0.028	-1.143	.253
G × NHN	-0.053	0.033	-1.618	.106

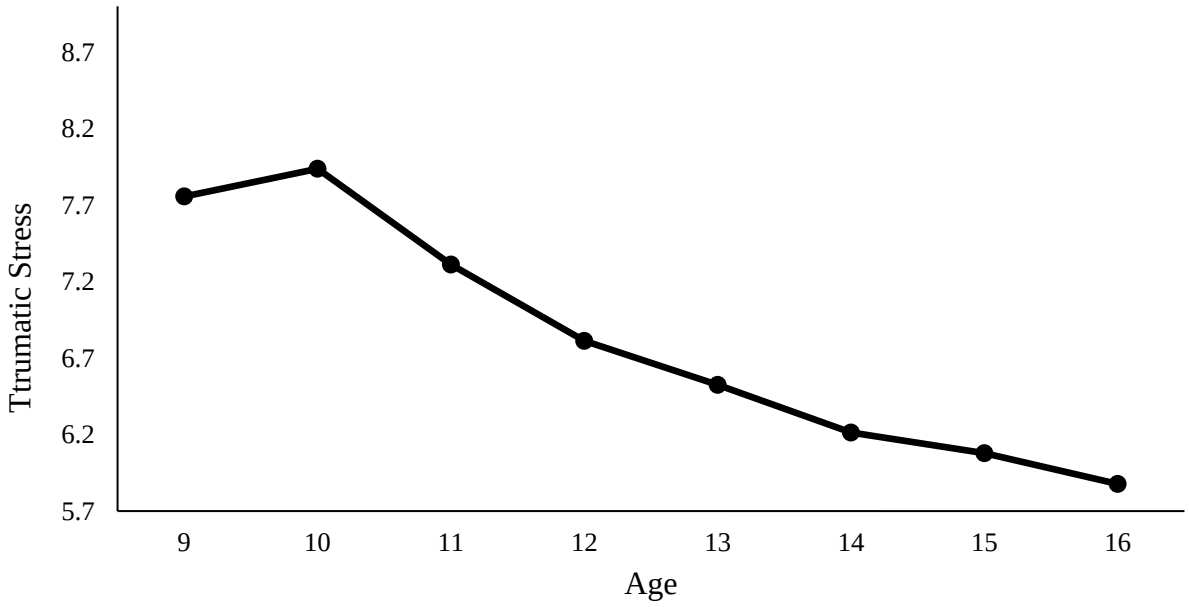


Figure 38. Traumatic Stress as a Function of Age.

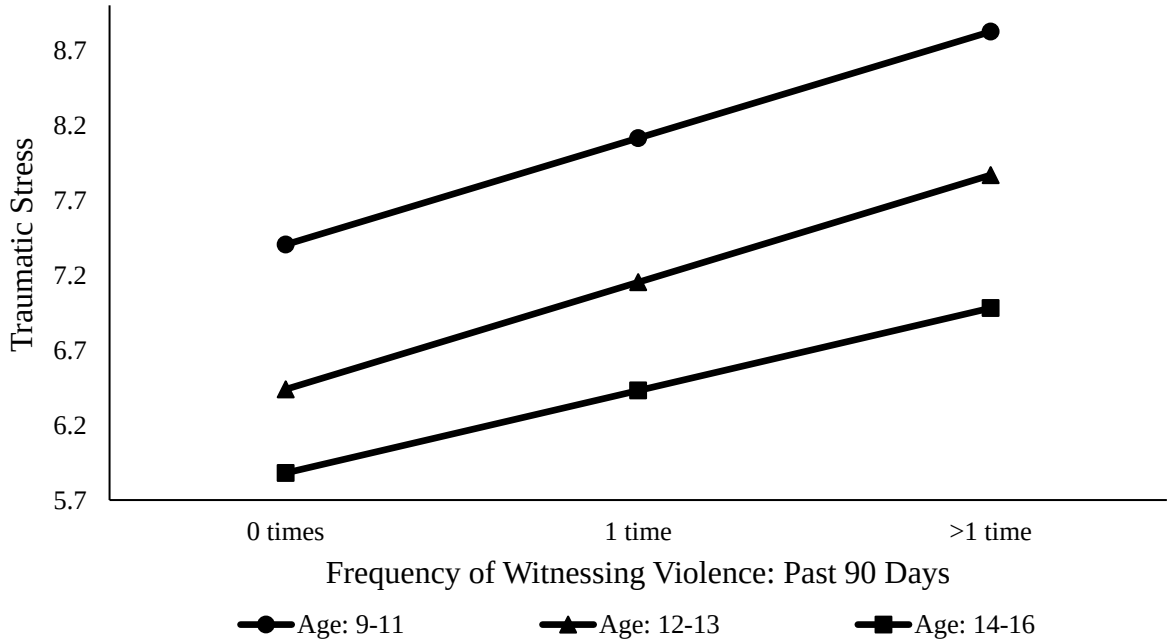


Figure 39. Traumatic Stress as a Function of Witnessing Violence and Age.

Academic progress. Table 21 shows direct effects, assessed through SEM, of variables predicting academic progress. As in all the other analyses, gender has a significant effect on academic progress, with girls faring better than boys. Both of the exposure to violence variables have significant negative effects on academic progress; neither of the exposure to violence by gender interaction is significant. Maternal warmth is a significant predictor of academic progress; greater maternal warmth is associated with lower academic progress. None of the social support by gender interactions is significant. Parental monitoring and curfew are both associated with improved normative academic progress, but neither of the family control by gender effects is significant. Hopelessness and street code are negatively associated with academic progress, while global self-worth, worry, and traumatic stress are all positively associated with academic progress. Several psychological adjustment interactions are associated with academic progress. When a continuous variable is dichotomized in the figures, groupings are based on median splits.

1. Street code × gender (Figure 40). Street code had negative effect on academic progress for boys (b = -0.042); its effect on academic progress for girls was also negative but smaller (b = -0.021).
2. Traumatic stress × gender (Figure 41). Traumatic stress had a positive, albeit modest, effect on academic progress for boys (b = .019); it had virtually no effect on academic progress for girls (b = .001).
3. Self-worth$_{global}$ × neighborhood connectedness$_{negative}$ (Figure 44). Global self-worth had a larger positive effect on academic progress for adolescents who felt an absence of negative connectedness to their neighborhood (b = 0.141) than for adolescents who had high levels negative feelings about their neighborhood (b = 0.088).
4. Worry × neighborhood connectedness$_{negative}$ (Figure 43). Worry had a modest positive effect on academic progress for adolescents who had negative feelings about their neighborhood (b = 0.014); for adolescents who did not have negative feelings about their neighborhoods, the relationship was essentially flat (b = 0.004).
5. Worry × parental monitoring (Figure 42). A simplified analysis showed that worry had essentially no effect on academic progress either adolescents who experienced low levels of parental monitoring (b = 0.008) or for adolescents who experienced high levels of parental monitoring *(*b = 0.001), despite the results from the SEM analysis.
6. Self-worth$_{behavioral}$ × neighborhood connectedness$_{negative}$ × gender (Figure 46). For boys, those who had negative feelings about their neighborhood showed a weaker relationship between behavioral self-worth and academic progress (b = 0.032) than boys who had no negative feelings about their neighborhood (b = 0.052). Girls showed a similar pattern, with those holding negative feelings about their neighborhood showing a weaker relationship between behavioral self-worth and academic progress (b = 0.039) than those with no negative feelings about their neighborhood (b = 0.073).
7. Self-worth$_{global}$ × neighborhood connectedness$_{negative}$ × gender (Figure 45). Boys for whom negative feelings about their neighborhood were absent displayed a stronger relationship between global self-worth and academic progress (b = 0.152) compared with boys for whom such negative feelings were present (0.065). For girls, the relationship between global self-worth and academic progress was strongest among those with no negative feelings about their neighborhood (b = 0.112) compared with those who had negative feelings about their neighborhood (b = 0.089). The difference in slopes between

the two groups of boys was greater than the difference in slopes between the two groups of girls.

Table 21
SEM Estimates: Determinants of Academic Progress at Time t

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Gender (G)	0.122	0.023	5.193	<.001
Exposure to violence				
Witnessing violence (WV)	-0.057	0.021	-2.672	.008
Violent victimization (VV)	-0.078	0.013	-6.153	<.001
G × WV	0.013	0.030	0.418	.676
G × VV	-0.007	0.021	-0.347	.728
Social support				
Maternal warmth (MOM)	-0.035	0.011	-3.178	.001
Neighborhood connectedness$_{positive}$ (NHP)	0.007	0.007	0.990	.322
Neighborhood connectedness$_{negative}$ (NHN)	0.016	0.008	1.933	.053
G × MOM	0.016	0.016	0.999	.318
G × NHP	-0.002	0.010	-0.237	.813
G × NHN	0.020	0.012	1.621	.105
Family control				
Parental monitoring (PM)	0.023	0.005	4.401	<.001
Curfew (CF)	0.076	0.010	7.600	<.001
G × PM	0.000	0.008	0.008	.994
G × CF	-0.023	0.014	-1.627	.104
Psychological adjustment				
Hopelessness (HPL)	-0.033	0.008	-4.183	<.001
Street code (SC)	-0.013	0.005	-2.392	.017
Self-worth$_{behavioral}$ (SWB)	-0.018	0.009	-1.858	.063
Self-worth$_{global}$ (SWG)	0.070	0.014	5.048	<.001
Worry (WOR)	0.009	0.003	2.948	.003
Traumatic stress (TS)	0.014	0.004	3.794	<.001
G × HPL	0.002	0.012	0.179	.858
G × SC	0.025	0.009	2.864	.004
G × SWB	-0.001	0.005	-0.240	.810
G × SWG	0.027	0.014	1.917	.055
G × WOR	-0.005	0.020	-0.260	.795
G × TRS	-0.014	0.006	-2.445	.014
HPL × MOM	0.007	0.007	0.988	.323
HPL × NHP	0.001	0.004	0.263	.793
HPL × NHN	0.006	0.005	1.236	.216
HPL × PM	-0.000	0.003	-0.178	.858
HPL × CF	-0.006	0.006	-1.085	.278
SC × MOM	-0.004	0.004	-0.896	.370
SC × NHP	-0.005	0.003	-1.638	.102
SC × NHN	0.001	0.003	0.204	.838
S C × PM	0.003	0.002	1.399	.162
SC × CF	-0.004	0.004	-0.965	.335
SWB × MOM	0.005	0.008	0.581	.562

SWB × NHP	0.000	0.005	0.043	.966
SWB × NHN	-0.009	0.006	-1.548	.122
SWB × PM	0.001	0.004	0.266	.790
SWB × CF	-0.011	0.007	-1.415	.157
SWG × MOM	-0.003	0.011	-0.289	.773
SWG × NHP	0.007	0.007	0.984	.325
SWG × NHN	0.038	0.009	4.404	<.001
SWG × PM	-0.005	0.005	-1.044	.296
SWG × CF	-0.002	0.010	-0.148	.882
WOR × MOM	0.001	0.002	0.476	.634
WOR × NHP	0.001	0.002	0.424	.672
WOR × NHN	-0.005	0.002	-2.670	.008
WOR × PM	-0.002	0.001	-2.094	.036
WOR × CF	0.001	0.002	0.639	.523
TS × MOM	0.000	0.003	0.008	.993
TS × NHP	0.002	0.002	1.054	.292
TS × NHN	0.001	0.002	0.562	.574
TS × PM	-0.002	0.001	-1.622	.105
TS × CF	-0.004	0.003	-1.363	.173
G × HPL × MOM	0.004	0.010	0.433	.665
G × HPL × NHP	0.006	0.006	0.939	.348
G × HPL × NHN	-0.010	0.007	-1.387	.166
G × HPL × PM	-0.002	0.004	-0.410	.682
G × HPL × CF	-0.004	0.008	-0.434	.664
G × SC × MOM	0.005	0.007	0.630	.529
G × SC × NHP	-0.003	0.004	-0.662	.508
G × SC × NHN	-0.000	0.005	-0.076	.940
G × SC × PM	-0.005	0.003	-1.614	.106
G × SC × CF	0.008	0.006	1.225	.221
G × SWB × MOM	0.009	0.012	0.733	.464
G × SWB × NHP	-0.002	0.007	-0.233	.816
G × SWB × NHN	0.025	0.009	2.856	.004
G × SWB × PM	0.001	0.005	0.188	.851
G × SWB × CF	0.003	0.011	0.260	.795
G × SWG × MOM	0.018	0.015	1.147	.251
G × SWG × NHP	-0.013	0.010	-1.236	.216
G × SWG × NHN	-0.046	0.012	-3.747	<.001
G × SWG × PM	-0.003	0.007	-0.347	.729
G × SWG × CF	-0.001	0.015	-0.059	.953
G × WOR × MOM	-0.001	0.004	-0.358	.721
G × WOR × NHP	-0.000	0.002	-0.210	.833
G × WOR × NHN	0.005	0.003	1.928	.054
G × WOR × PM	0.002	0.002	0.872	.383
G × WOR × CF	-0.001	0.003	-0.384	.701
G × TS × MOM	0.007	0.005	1.545	.122
G × TS × NHP	-0.003	0.003	-0.941	.347
G × TS × NHN	-0.006	0.003	-1.743	.081
G × TS × PM	0.001	0.002	0.536	.592

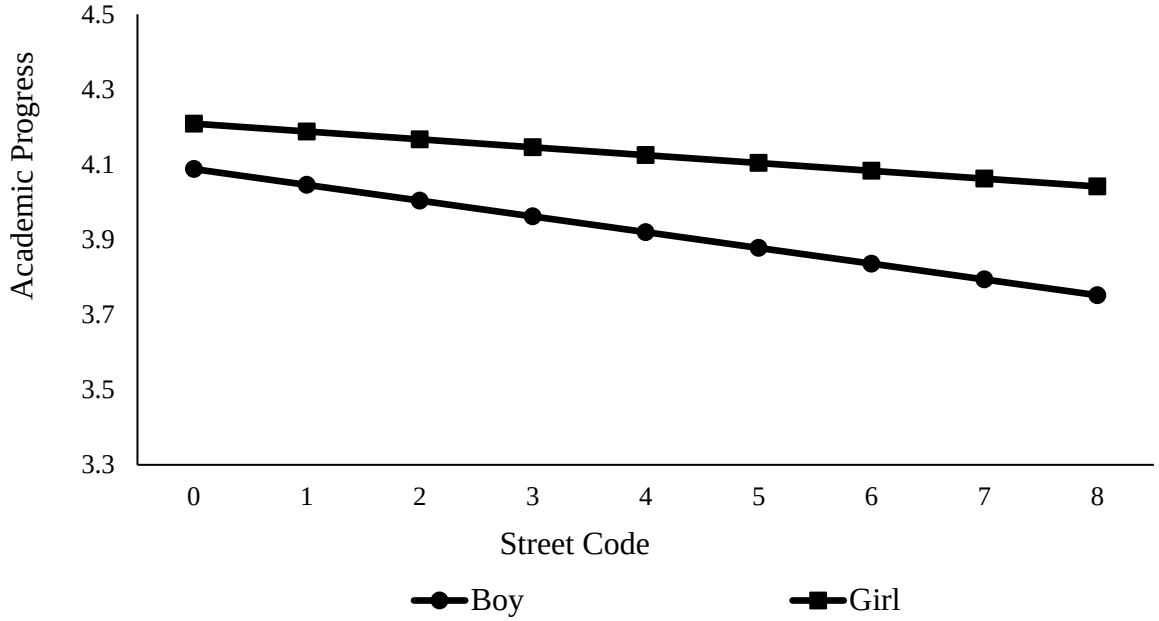


Figure 40. Academic Progress as a Function of Street Code and Gender.

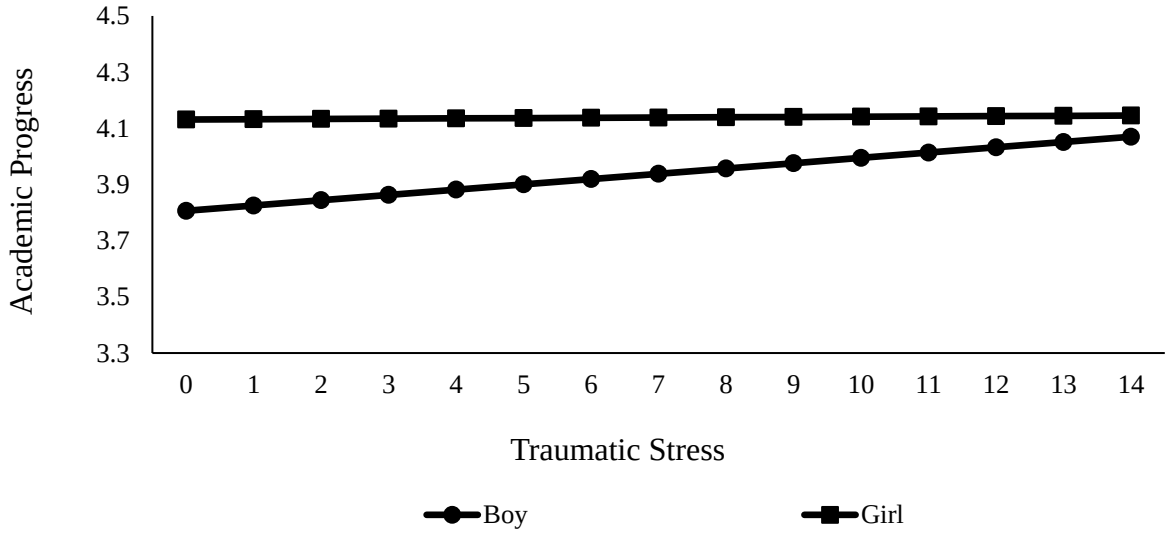


Figure 41. Academic Progress as a Function of Traumatic Stress and Gender.

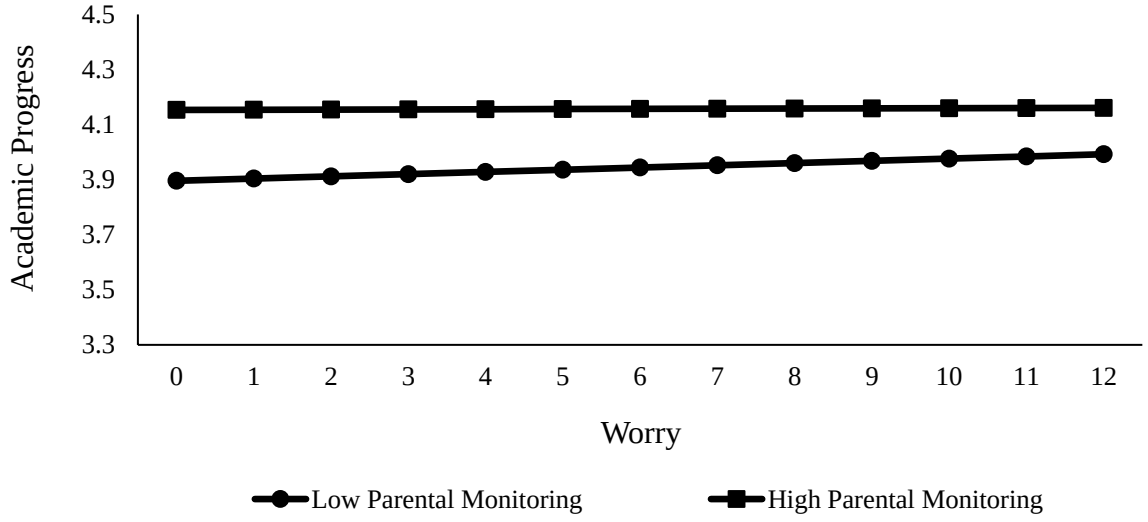


Figure 42. Academic Progress as a Function of Worry and Parental Monitoring.

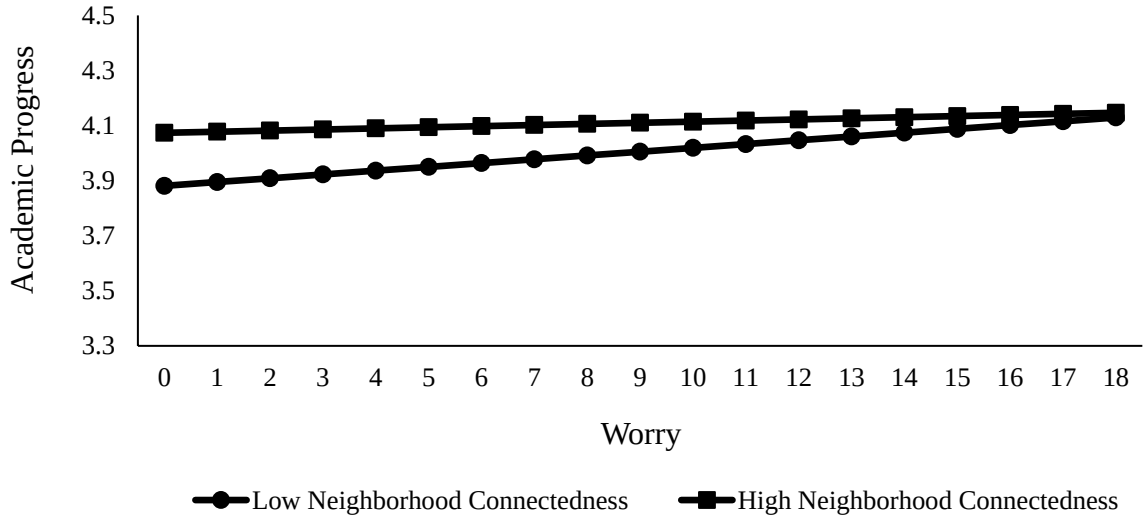


Figure 43. Academic Progress as a Function of Worry and Negative Neighborhood Connectedness.

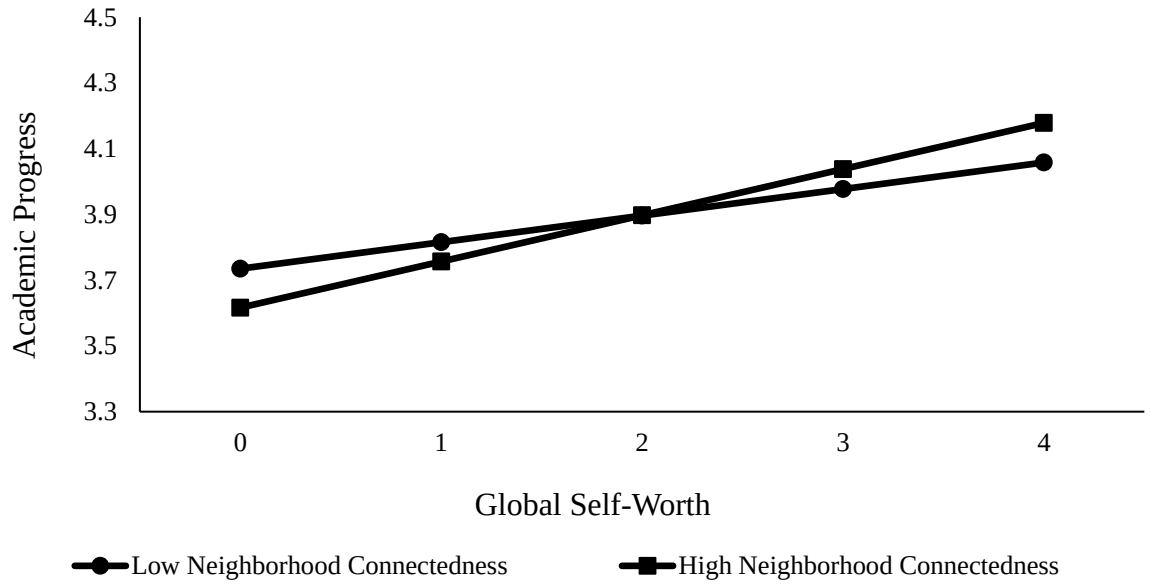


Figure 44. Academic Progress as a Function of Global Self-Worth and Negative Neighborhood Connectedness

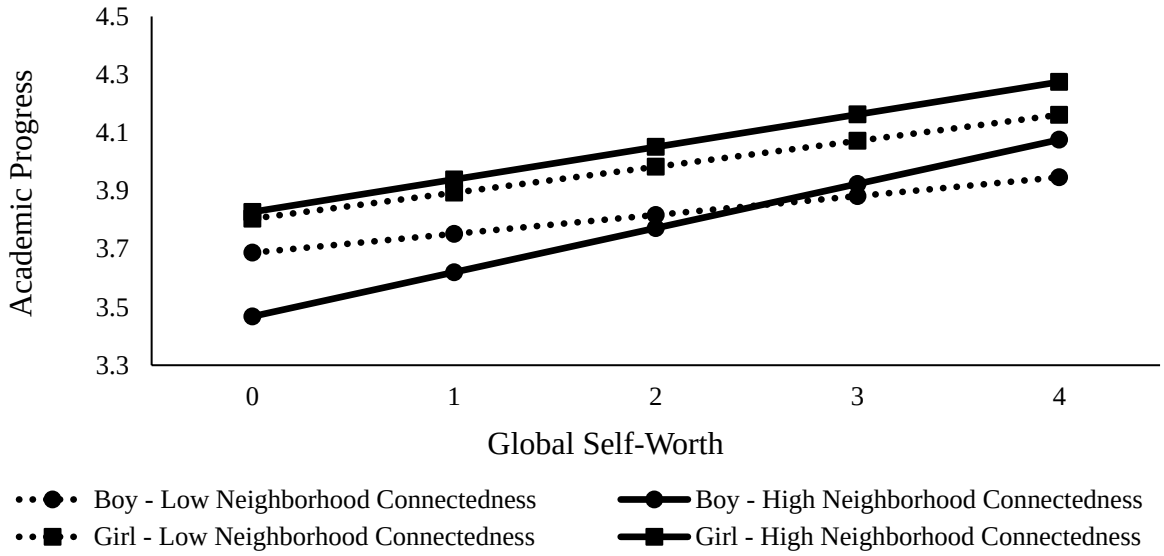


Figure 45. Academic Progress as a Function of Global Self Worth, Negative Neighborhood Connectedness, and Gender.

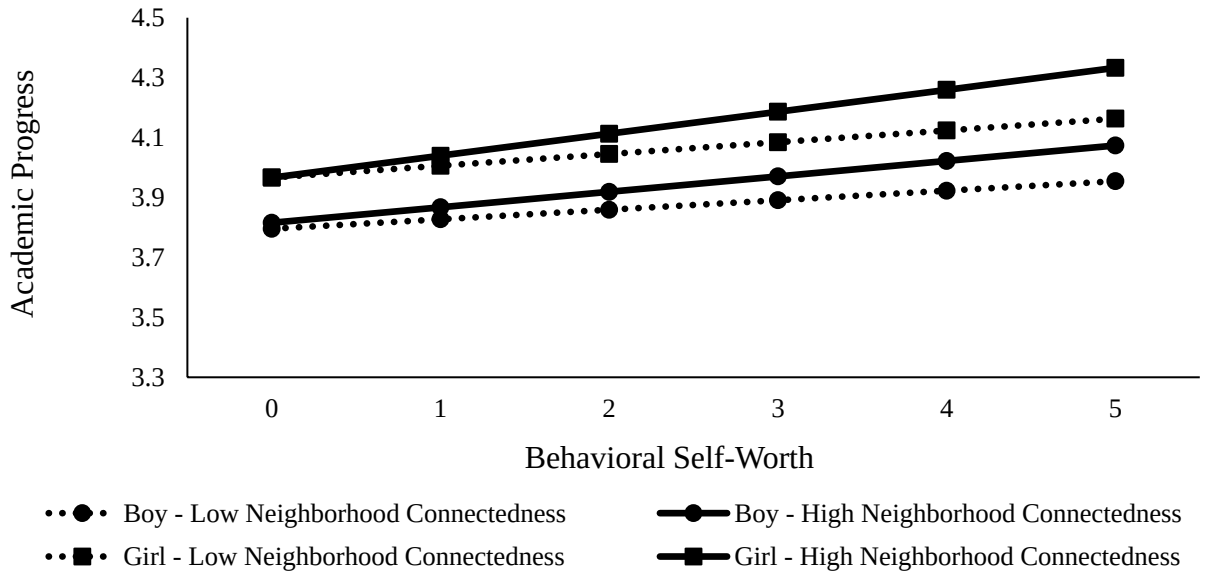


Figure 46. Academic Progress as a Function of Behavioral Self Worth, Negative Neighborhood Connectedness, and Gender.

Court outcome severity. The effects of gender, exposure to violence, psychological adjustment, social support and family control, and academic progress on court outcome severity are shown in Table 22. In this analysis, court outcome severity is included on both sides of the equation, as a dependent variable at time *t*+1 and as an independent variable at time *t.* Thus, the case for inferring causation from statistically significant relationships is strengthened, although by no means absolute.

Both measures of exposure to violence are statistically significant and positive predictors of court outcome severity, as expected based on the evidence from Research Question 1. Unlike many of the other outcome variables, gender does not predict court outcome severity. Among the psychological adjustment variables, only hopelessness, behavioral self-worth, and global self-worth are statistically significant predictors of court outcome severity. Among the social support variables, maternal warmth and positive feelings of neighborhood connectedness are statistically significant predictors of court outcome severity. And among the family control variables, parental monitoring is a significant predictor of court outcome severity. Academic progress has a negative (expected) effect on court outcome severity. As with academic progress, several interactions were statistically significant predictors of court outcome severity.

1. Street code × curfew (Figure 48). The relationship between street code and court outcome severity is negative for adolescents with a strict curfew (exp(*b*) = 0.995). That is, for every unit of increase in street code, court outcome severity decreases by 0.005 (i.e., 1-.995). For adolescents with a lax curfew, the relationship is positive (exp(*b*) = 1.007); that is, for every unit of increase in street code, court outcome severity increases by 0.007.
2. Traumatic Stress × neighborhood connectedness$_{negative}$ (Figure 51). For adolescents who had negative feelings about their neighborhood, the relationship between traumatic stress and court outcome severity was positive (exp(*b*) = 1.013); for adolescents who had fewer

negative feelings about their neighborhood, the relationship between traumatic stress and court outcome severity was negative (exp(*b*) = 0.991).

3. Street code × parental monitoring × gender (Figure 50). The relationship between street code and court outcome severity is positive and strongest for boys (exp(*b*) = 1.115) and girls (exp(*b*) = 1.155) who reported high levels of parental monitoring. It is also positive, but not as strong, for boys (exp(*b*) = 1.029) and girls (exp(*b*) = 1.093) who reported low levels of parental monitoring.
4. Traumatic Stress × neighborhood connectedness$_{negative}$ × gender (Figure 52). For girls without negative feelings about their neighborhood, the relationship between traumatic stress and court outcome severity is positive (exp(*b*) = 1.018) and nearly identical to the relationship for girls with negative feelings about their neighborhood (exp(*b*) = 1.021). For boys with negative feelings about their neighborhood, the relationship between traumatic stress and court outcome severity is also positive (exp(*b*) = 1.013). However, for boys without negative feelings about their neighborhood, the relationship is negative (exp(*b*) = -0.976).

A supplemental GLMM analysis was run to determine the effects of linear and quadratic age, both as main effects and in interaction with other variables, on court outcome severity. Because the distribution of court outcome severity had zero-inflated Poisson characteristics, the analysis treated the error distribution as negative binomial with log link function. The model was estimated using maximum likelihood estimation based on Laplace approximation. Intercept was treated as a random effect, and the variance-covariance matrix was allowed to be unstructured, parameterized through its Cholesky root. Denominator degrees of freedom were determined using containment. The first result of interest was a statistically significant quadratic age effect (*b* = -0.158, *se* = .008, *t* = -19.07, *p* < .001). Figure 47 shows how age affect court outcome severity. Court outcome severity remains very low through age 10, then increases through age 13 before beginning to decline at age 14. Several age interactions also affect court outcome severity.

1. Violent victimization × age$_{quad}$ (*b* = 0.020, *se* = 0.009, *t* = 2.26, *p* < .05; Figure 53). The relationship between violent victimization and court outcome severity is positive for all three age groups. (Note that this result is different from the RQ1 results, likely because of the greater complexity of this model.) This relationship is strongest for the youngest age group (exp(b_o) = 1.827) and weakest for the middle age group (exp(b_m) = 1.195, exp(b_o) = 1.266).
2. Violent victimization × age$_{quad}$ × gender (*b* = -0.037, *se* = 0.18, *t* = -2.04, *p* < .05; Figure 54). This is essentially the same analysis that was conducted to address Research Question 1 (Figure 4). For all six gender × age groups, the relationship between violent victimization and court outcome severity is positive. The relationship is stronger for girls than for boys, with the youngest girls showing the sharpest increase in court outcome severity as a function of violent victimization (exp(b_y) = 1.469), followed by the oldest girls (exp(b_o) = 1.389) and the middle female age group (exp(b_m) = 1.205). Among boys, the relationship between violent victimization and court outcome severity is strongest for the youngest age group (exp(b_y) = 1.286), followed sequentially by the middle age group (exp(b_m) = 1.243) and the oldest age group (exp(b_o) = 1.146).
3. Street code × age$_{lin}$ (*b* = -0.022, *se* = 0.007, *t* = -3.17, *p* < .01; Figure 49). The increase in court outcome severity as a function of street code is most rapid for the youngest age

group (exp(b_y) = 1.568), followed in intensity by the oldest age group (exp(b_o) = 1.083) and the middle age group (exp(b_y) = 1.044).

4. Self-worth$_{behavioral}$ × age$_{quad}$ (b = -0.019, se = 0.007, t = -1.99, p < .01; Figure 55). For all three age groups, the relationship between behavioral self-worth and court outcome severity was negative. The decrease is most rapid for the youngest age group (exp(b_m) = 0.570), followed by the oldest (exp(b_o) = 0.765) and the middle (exp(b_m) = 0.872).
5. Self-worth$_{global}$ × age$_{quad}$ (b = 0.025, se = 0.009, t = 2.80, p < .01; Figure 56). The youngest age group shows the steepest decline in court outcome severity as a function of global self-worth (exp(b_y) = 0.521), with the other two age groups showing less steep and similar declines (exp(b_m) = 0.81; exp(b_o) = 0.800).
6. Self-worth$_{global}$ × age$_{quad}$ × gender ($b8$ = 0.068, se = 0.029, t = 2.33, p < .05; Figure 57). All six gender × age groups showed a decline in court outcome severity as a function of global self-worth; this decline tended to be steeper for girls than for boys. For girls, the steepest decline occurred for the youngest age group (exp(b_y) = 0.415), becoming less steep as age increased (exp(b_m) = 0.7301, exp(b_o) = 0.833). For boys, steepness of decline inversely followed age order (exp(b_y) = 0.844) (exp(b_m) = 0.822) (exp(b_y) = 0.790), although differences among the three age groups were small.

Table 22

SEM Estimates: Determinants of Court Outcome Severity at Time t + 1

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Gender (G)	-0.260	0.229	-1.136	.256
Lagged court outcome severity	0.252	0.010	26.519	<.001
Exposure to violence				
Witnessing violence (WV)	0.131	0.052	2.516	.012
Violent victimization (VV)	0.097	0.026	3.752	<.001
G × WV	0.058	0.083	0.703	.482
G × VV	-0.043	0.050	-0.860	.390
Social support				
Maternal warmth (MOM)	0.057	0.036	1.594	.111
Neighborhood connectedness$_{positive}$ (NHP)	0.036	0.021	1.733	.083
Neighborhood connectedness$_{negative}$ (NHN)	0.010	0.024	0.392	.695
G × MOM	-0.004	0.054	-0.067	.947
G × NHP	-0.001	0.030	-0.031	.975
G × NHN	0.004	0.037	0.109	.913
Family control				
Parental monitoring (PM)	-0.031	0.013	-2.329	.020
Curfew (CF)	-0.050	0.027	-1.893	.058
G × PM	-0.009	0.021	-0.444	.657
G × CF	0.034	0.041	0.838	.402
Psychological adjustment				
Hopelessness (HPL)	0.073	0.022	3.399	.001
Street code (SC)	0.013	0.016	0.809	.419
Self-worth$_{behavioral}$ (SWB)	-0.061	0.030	-2.051	.040
Self-worth$_{global}$ (SWG)	-0.035	0.042	-0.836	.403
Worry (WOR)	-0.007	0.009	-0.799	.424

Traumatic stress (TS)	-0.006	0.011	-0.566	.572
G × HPL	0.016	0.026	0.627	.531
G × SC	-0.004	0.014	-0.274	.784
G × SWB	-0.039	0.044	-0.883	.377
G × SWG	-0.062	0.060	-1.040	.298
G × WOR	0.009	0.017	0.520	.603
G × TRS	-0.004	0.054	-0.067	.947
HPL × MOM	0.006	0.018	0.314	.754
HPL × NHP	-0.011	0.010	-1.079	.280
HPL × NHN	0.009	0.012	0.758	.449
HPL × PM	0.001	0.007	0.136	.892
HPL × CF	-0.003	0.014	-0.232	.817
SC × MOM	0.019	0.014	1.323	.186
SC × NHP	0.006	0.008	0.800	.424
SC × NHN	0.001	0.010	0.145	.885
SC × PM	0.006	0.005	1.118	.264
SC × CF	0.023	0.010	2.221	.026
SWB × MOM	0.017	0.023	0.754	.451
SWB × NHP	0.001	0.016	0.035	.972
SWB × NHN	0.001	0.018	0.054	.957
SWB × PM	-0.001	0.010	-0.155	.877
SWB × CF	-0.003	0.021	-0.158	.875
SWG × MOM	0.002	0.030	0.060	.952
SWG × NHP	0.024	0.022	1.095	.274
SWG × NHN	-0.027	0.024	-1.151	.250
SWG × PM	0.007	0.013	0.545	.586
SWG × CF	0.027	0.028	0.964	.335
WOR × MOM	0.011	0.007	1.509	.131
WOR × NHP	-0.004	0.005	-0.708	.479
WOR × NHN	0.004	0.006	0.722	.470
WOR × PM	-0.004	0.003	-1.300	.194
WOR × CF	-0.011	0.006	-1.767	.077
TS × MOM	-0.009	0.009	-1.005	.315
TS × NHP	-0.010	0.006	-1.781	.075
TS × NHN	-0.019	0.007	-2.951	.003
TS × PM	0.001	0.003	0.326	.744
TS × CF	-0.005	0.008	-0.614	.539
G × HPL × MOM	-0.031	0.028	-1.113	.266
G × HPL × NHP	-0.011	0.017	-0.675	.500
G × HPL × NHN	0.001	0.019	0.074	.941
G × HPL × PM	-0.011	0.011	-0.986	.324

G × HPL × CF	0.003	0.022	0.119	.905
G × SC × MOM	0.014	0.022	0.647	.518
G × SC × NHP	0.000	0.012	0.012	.990
G × SC × NHN	-0.021	0.015	-1.378	.168
G × SC × PM	-0.018	0.009	-2.093	.036
G × SC × CF	-0.011	0.017	-0.603	.546
G × SWB × MOM	0.026	0.039	0.678	.498
G × SSWB × NHP	-0.005	0.025	-0.182	.856
G × SWB × NHN	0.009	0.028	0.336	.737
G × SWB × PM	-0.018	0.016	-1.140	.254
G × SWB × CF	0.020	0.033	0.608	.543
G × SWG × MOM	-0.028	0.050	-0.554	.580
G × SWG × NHP	-0.028	0.033	-0.873	.383
G × SWG × NHN	-0.033	0.037	-0.903	.366
G × SWG × PM	-0.032	0.020	-1.594	.111
G × SWG × CF	0.001	0.044	0.025	.980
G × WOR × MOM	0.010	0.012	0.793	.428
G × WOR × NHP	-0.002	0.008	-0.223	.823
G × WOR × NHN	-0.000	0.009	-0.056	.955
G × WOR × PM	0.000	0.005	0.086	.932
G × WOR × CF	0.010	0.010	0.975	.330
G × TS × MOM	0.013	0.014	0.894	.371
G × TS × NHP	0.003	0.009	0.340	.734
G × TS × NHN	0.021	0.010	2.003	.045
G × TS × PM	0.006	0.006	0.965	.335
G × TS × CF	0.004	0.013	0.303	.762
Education				
Academic progress (EDUC)	-0.107	0.034	-3.096	.002
G × EDUC	-0.011	0.056	-0.203	.839

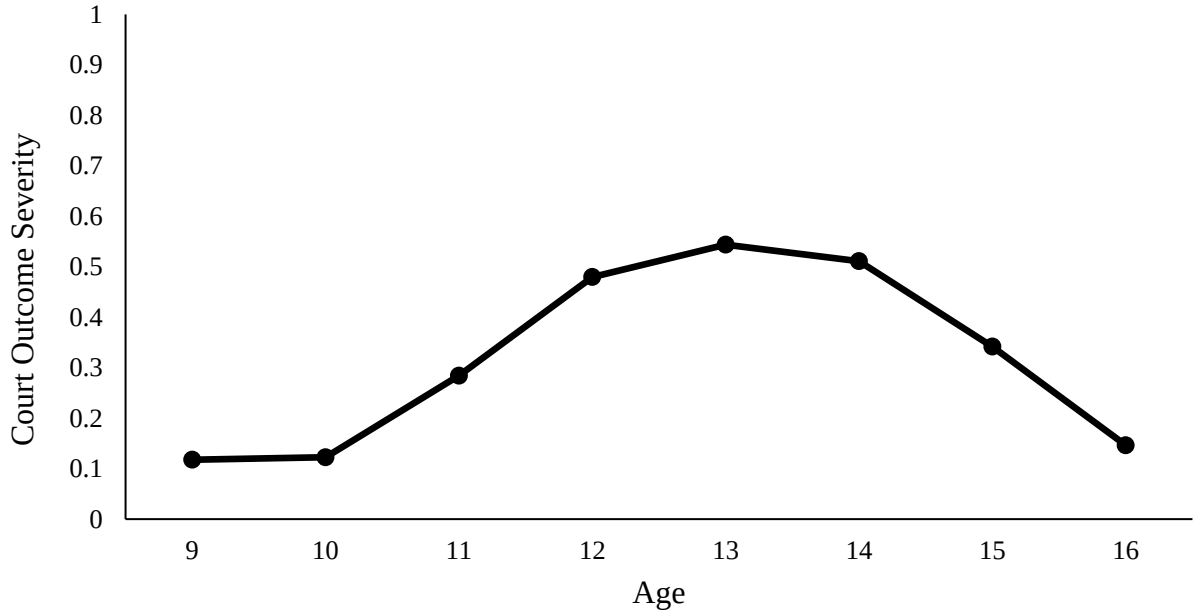


Figure 47. Court Outcome Severity as a Function of Age.

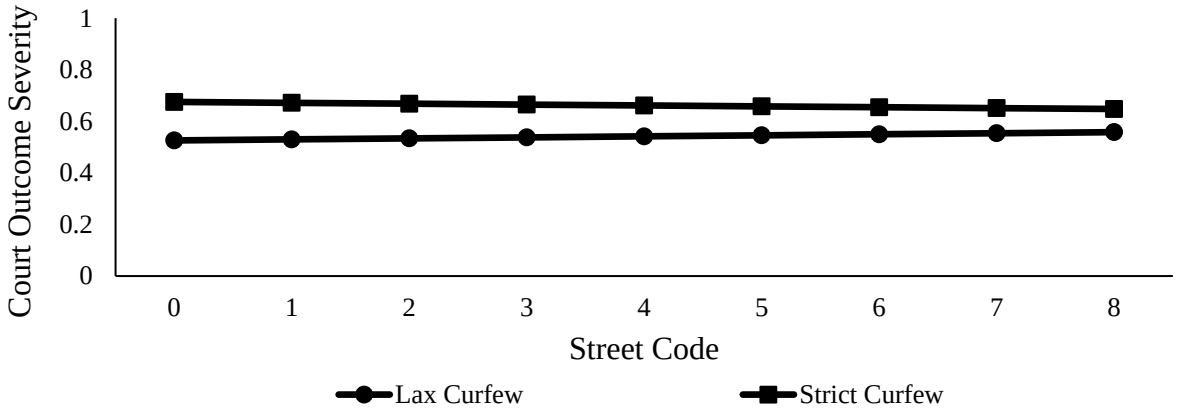


Figure 48. Court Outcome Severity as a Function of Street Code and Curfew.

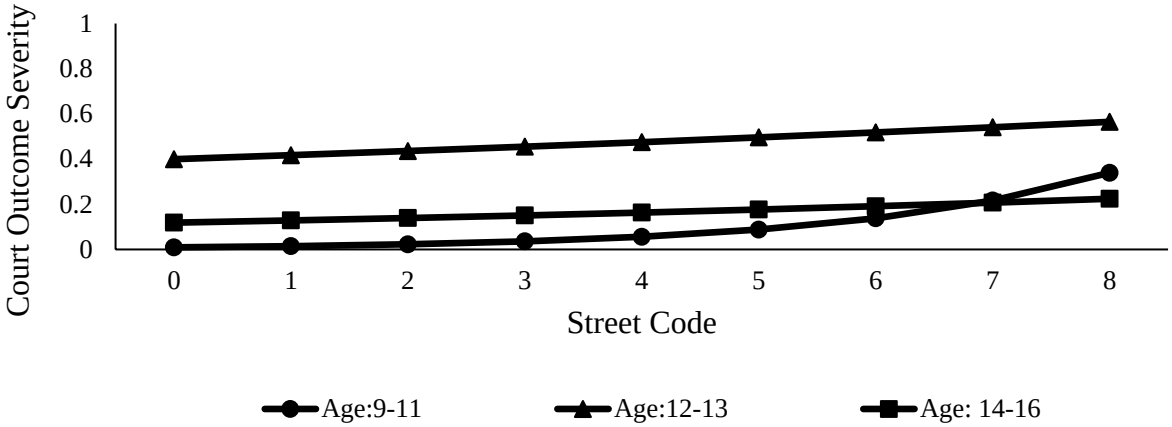


Figure 49. Court Outcome Severity as a Function of Street Code and Age.

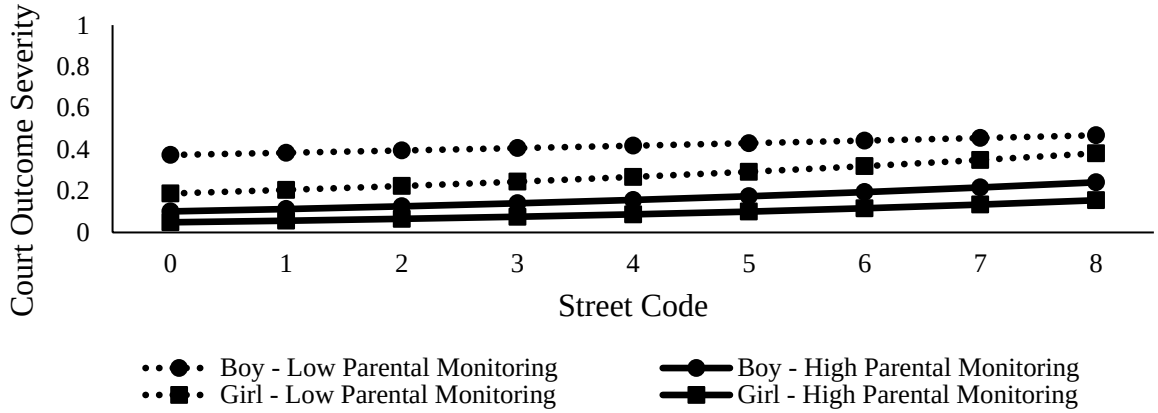


Figure 50. Court Outcome Severity as a Function of Street Code, Parental Monitoring, and Gender.

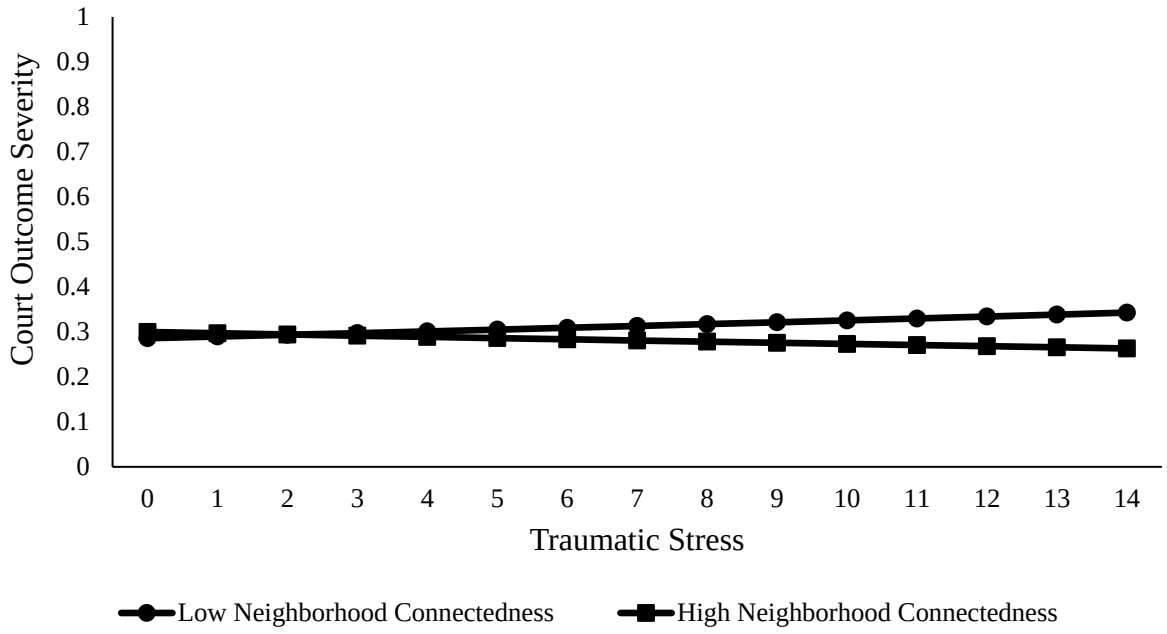


Figure 51. Court Outcome Severity as a Function of Traumatic Stress and Negative Neighborhood Connectedness.

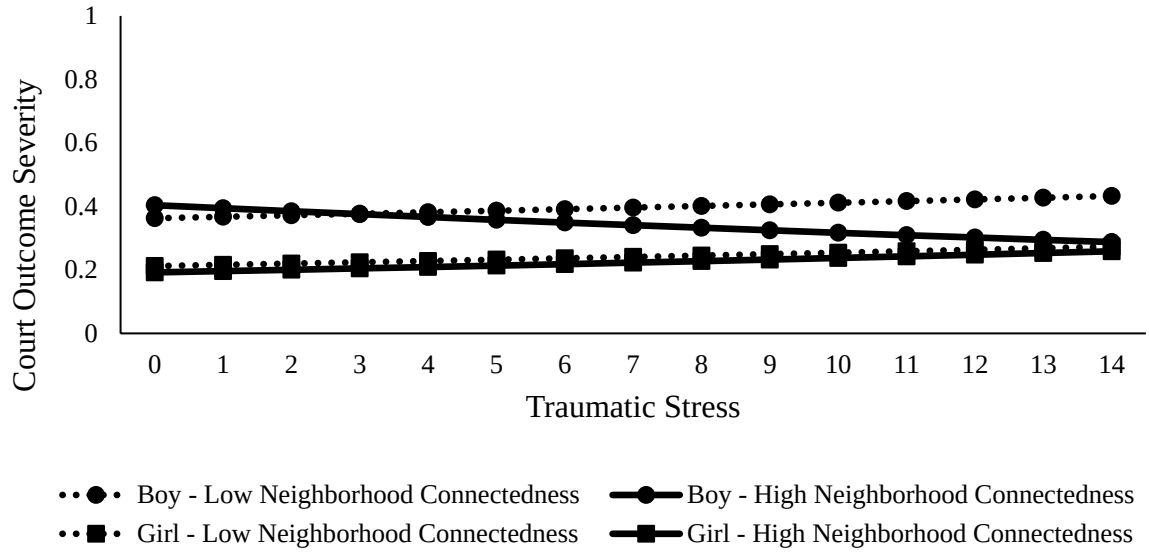


Figure 52. Court Outcome Severity as a Function of Traumatic Stress, Negative Neighborhood Connectedness, and Gender.

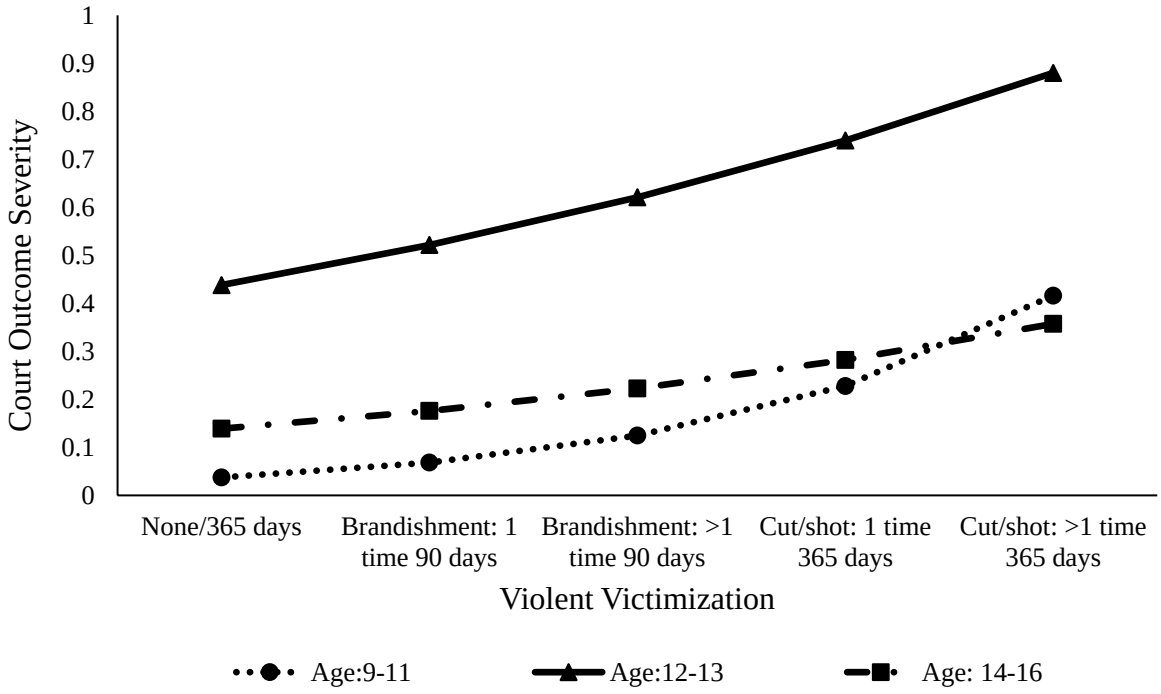


Figure 53. Court Outcome Severity as a Function of Violent Victimization and Age.

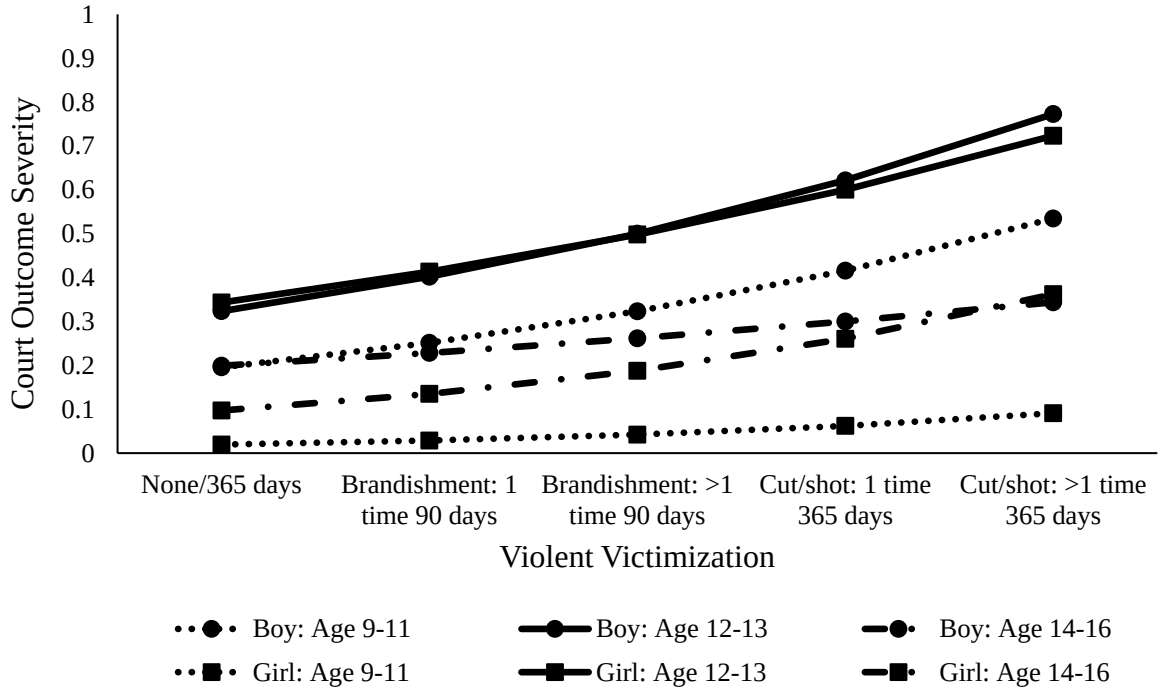


Figure 54. Court Outcome Severity as a Function of Violent Victimization, Gender, and Age.

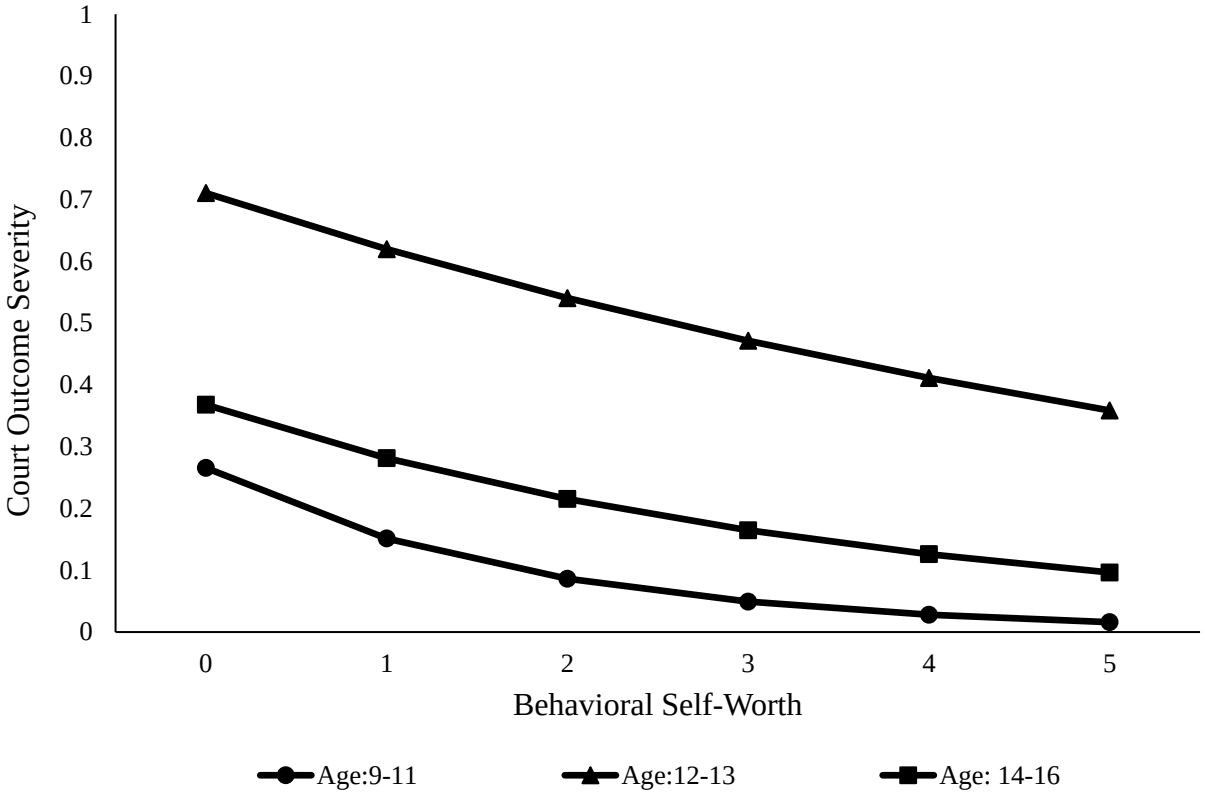


Figure 55. Court Outcome Severity as a Function of Behavioral Self-Worth and Age.

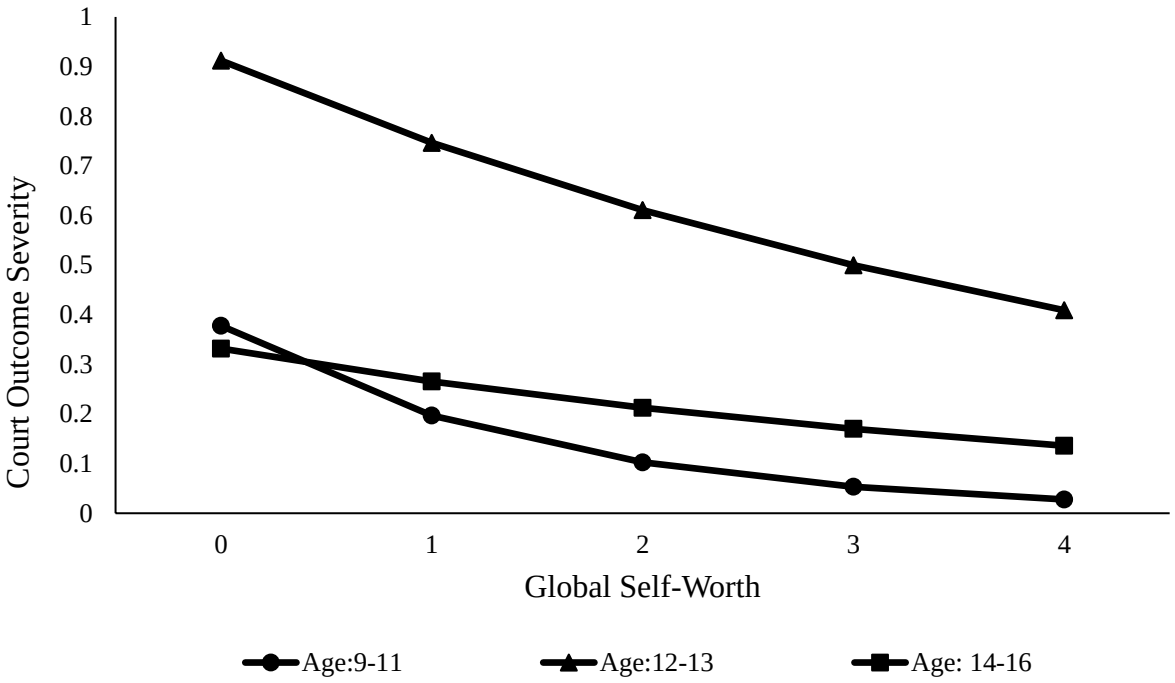


Figure 56. Court Outcome Severity as a Function of Global Self-Worth and Age.

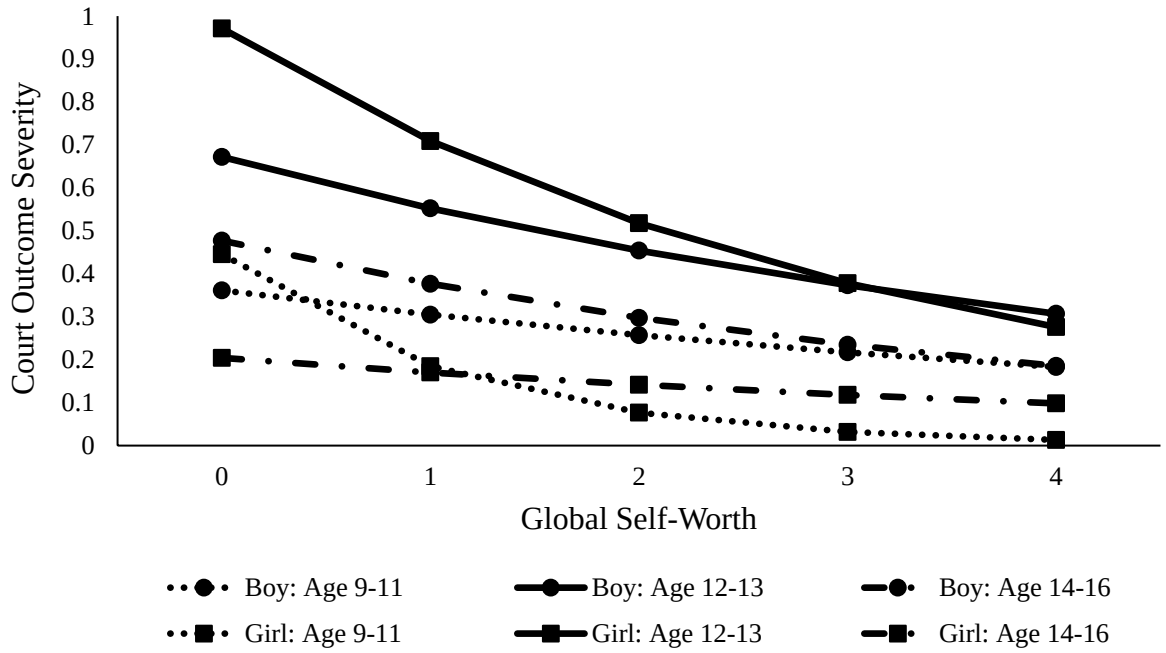


Figure 57. Court Outcome Severity as a Function of Global Self-Worth, Gender, and Age.

Indirect effects. Table 23 shows direct effects, indirect effects, and total effects originating from the two exposure to violence variables. The direct effect of witnessing violence on court outcome severity is statistically significant, accounting for 82.5% of its total effect; even so, the indirect effect (through academic progress and hopelessness directly, and through hopelessness, global self-worth, and traumatic stress indirectly via academic progress) is statistically significant. Therefore, we would conclude that the effect of witnessing violence on court outcome severity is partially mediated by psychological adjustment and academic progress.

Like witnessing violence, the direct effect of violent victimization on court outcome severity is statistically significant, accounting for 76.5% of the total effect; however, the indirect effect is again statistically significant, manifest through academic progress, hopelessness, and both behavioral directly, and through hopelessness, global self-worth, and worry indirectly (via academic progress). As before, the conclusion should be that the effect of violent victimization on court outcome severity is partially mediated by psychological adjustment and academic progress.

Table 23 also shows the indirect effects of exposure to violence on academic progress. The overwhelming bulk of the effects are direct (98.3%), and the total contribution of indirect effects is not statistically significant. However, this is confounded by the fact that negative indirect effects of hopelessness, street code, and global self-worth largely offset the positive indirect effects of worry and traumatic stress, each of which is statistically significant in its own right. Therefore, we should again conclude that the effect of witnessing violence on academic progress is partially mediated by psychological adjustment. Finally, the direct effects of violent victimization account for 86.7% of its total effects on academic progress. But again, the combined indirect effects of psychological adjustment, notably through hopelessness, street code, global self-worth, worry, and traumatic stress are statistically significant. Again, we should conclude that the relationship between violent victimization and academic progress is partially mediated by psychological adjustment.

Finally, Table 23 shows the indirect effects of gender on court outcome severity, through the psychological adjustment mediators, academic progress, and the psychological adjustment → academic progress mediational path. Overall, the indirect effect is statistically significant, even though neither the direct effect of gender nor the total effect of gender on court outcome severity achieves statistical significance. Thus, girls have less severe court outcomes than boys, but this relationship is manifest only indirectly. Significant mediators are hopelessness, behavioral self-worth, academic progress, and the hopelessness → academic progress, the worry → academic progress, and the traumatic stress → academic progress paths.

Table 23
SEM Estimates: Indirect Effects on Court Outcome Severity and Academic Progress

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Witnessing violence → Court outcome severity				
Total effects	0.160	0.052	3.079	.002
Direct effects	0.131	0.052	2.516	.012
Indirect effects	0.028	0.011	2.664	.008
WV → HPL → COURT	0.011	0.004	2.821	.005
WV → SC → COURT	0.006	0.008	0.809	.418
WV → SWB → COURT	0.009	0.004	1.932	.053
WV → SWG → COURT	0.002	0.002	0.800	.424
WV → WOR → COURT	-0.002	0.003	-0.789	.430
WV → TRS → COURT	-0.003	0.006	-0.565	.572
WV → EDUC → COURT	0.006	0.003	2.019	.043
WV → HPL → EDUC → COURT	0.001	0.000	2.186	.029
WV → SC → EDUC → COURT	0.001	0.000	1.865	.062
WV → SWB → EDUC → COURT	-0.000	0.000	-1.534	.125
WV → SWG → EDUC → COURT	0.000	0.000	2.023	.043
WV → WOR → EDUC → COURT	-0.000	0.000	-1.902	.057
WV → TRS → EDUC → COURT	-0.001	0.000	-2.378	.017
Violent victimization → Court outcome severity				
Total effects	0.128	0.026	4.819	<.001
Direct effects	0.097	0.026	3.752	<.001
Indirect effects	0.030	0.007	4.256	<.001
VV → HPL → COURT	0.006	0.002	2.890	.004
VV → SC → COURT	0.004	0.005	0.807	.420
VV → SWB → COURT	0.006	0.003	2.010	.044
VV → SWG → COURT	0.002	0.003	0.829	.407
VV → WOR → COURT	0.001	0.002	0.792	.428
VV → TRS → COURT	0.000	0.000	0.507	.612
VV → EDUC → COURT	0.008	0.003	2.777	.005
VV → HPL → EDUC → COURT	0.000	0.000	2.146	.032
VV → SC → EDUC → COURT	0.000	0.000	1.876	.061
VV → SWB → EDUC → COURT	-0.000	0.000	-1.575	.115
VV → SWG → EDUC → COURT	0.001	0.000	2.512	.012
VV → WOR → EDUC → COURT	0.000	0.000	2.003	.045
VV → TRS → EDUC → COURT	0.000	0.000	1.093	.274
Witnessing violence → Academic progress				
Total effects	-0.058	0.021	-2.736	.006
Direct effects	-0.057	0.021	-2.672	.008
Indirect effects	-0.001	0.004	-0.355	.722
WV → HPL → EDUC	-0.005	0.002	-3.243	.001
WV → SC → EDUC	-0.006	0.003	-2.348	.019
WV → SWB → EDUC	0.002	0.001	1.777	.076

WV → SWG → EDUC	-0.004	0.001	-2.655	.008
WV → WOR → EDUC	0.003	0.001	2.439	.015
WV → TRS → EDUC	0.008	0.002	3.536	<.001
Violent victimization → Academic progress				
Total effects	-0.090	0.013	-7.057	<.001
Direct effects	-0.078	0.013	-6.153	<.001
Indirect effects	-0.012	0.002	-5.019	<.001
VV → HPL → EDUC	-0.003	0.001	-3.216	.001
VV → SC → EDUC	-0.004	0.002	-2.358	.018
VV → SWB → EDUC	0.002	0.001	1.821	.069
VV → SWG → EDUC	-0.005	0.001	-4.090	<.001
VV → WOR → EDUC	-0.002	0.001	-2.615	.009
VV → TRS → EDUC	-0.001	0.000	-1.153	.249
Gender → Court outcome severity				
Total effects	-0.307	0.231	-1.329	.184
Direct effects	-0.260	0.229	-1.136	.256
Indirect effects	-0.047	0.011	-4.251	<.001
G → HPL → COURT	-0.023	0.007	-3.252	.001
G → SC → COURT	-0.004	0.005	-0.804	.421
G → SWB → COURT	-0.005	0.003	-1.720	.085
G → SWG → COURT	-0.001	0.002	-0.794	.427
G → WOR → COURT	0.002	0.003	0.791	.429
G → TRS → COURT	-0.002	0.004	-0.562	.574
G → EDUC → COURT	-0.013	0.005	-2.754	.006
G → HPL → EDUC → COURT	-0.001	0.000	-2.348	.019
G → SC → EDUC → COURT	-0.000	0.000	-1.852	.064
G → SWB → EDUC → COURT	0.000	0.000	1.413	.158
G → SWG → EDUC → COURT	-0.000	0.000	-1.790	.074
G → WOR → EDUC → COURT	0.000	0.000	1.941	.052

Table 24 shows the combined indirect effect (directly and indirectly via academic progress) of each of the psychological adjustment variables in the two exposure to violence → court outcome severity paths. The indirect effects of hopelessness and behavioral self-worth have the most consistent and strongest combined indirect effects, although the total indirect effect of global self-worth trends toward statistical significance, for the paths leading from exposure to violence to court outcome severity.

Table 24
SEM Estimates: Sum of Psychological Adjustment Indirect Effects on Court Outcome Severity

	$Estimate$	$SE_{estimate}$	$\frac{Estimate}{SE_{estimate}}$	p
Witnessing violence				
Hopelessness	0.012	0.004	2.909	.004
Street code	0.007	0.008	0.892	.372
Self-worth$_{behavioral}$	0.008	0.004	1.876	.061
Self-worth$_{global}$	0.002	0.002	0.951	.342
Worry	-0.003	0.003	-0.892	.372
Traumatic stress	-0.004	0.006	-0.702	.483
Violent victimization				
Hopelessness	0.006	0.002	2.977	.003
Street code	0.004	0.005	0.889	.374
Self-worth$_{behavioral}$	0.006	0.003	1.947	.052
Self-worth$_{global}$	0.003	0.003	0.999	.318
Worry	0.002	0.002	0.898	.369
Traumatic stress	0.000	0.000	0.602	.547

Discussion

The relationship between exposure to violence and involvement in the juvenile justice system has been previously established (e.g., Gorman-Smith, Henry, & Tolan, 2004; Hong, Huang, Upton Patton, & Washington, 2014; Patchin, Huebner, McCluskey, Varano, & Bynum, 2006; Salzinger, Rosario, Feldman, & Ng-Mak, 2008). In this study, we sought to extend findings about the exposure-to-violence to juvenile court relationship to an extremely impoverished and vulnerable population of urban, predominantly African American adolescents, for whom both exposure to violence and court contact are common experiences. Further, we explored factors that may mediate or moderate the exposure-to-violence to juvenile court relationship. Because this population has disproportionately high levels of court contact. We used longitudinal data from the Mobile Youth and Poverty Study to explore how exposure to violence impacts juvenile court involvement in a sample of economically disadvantaged adolescents living in Mobile, Alabama. In this discussion, first a summary of main results is first presented, followed by implications for policy and practice, leading to strengths, limitations, and future research possibilities.

Summary of Exposure to Violence → Juvenile Justice Involvement Results

Our first objective was to *better understand how traumatic events increase the risk of juvenile justice involvement for vulnerable adolescents*. Of primary importance in addressing this objective is an exploration of the outcome variables used in the model: (a) crimes against a person and (b) court outcome severity. While research has previously been conducted to investigate whether exposure to violence is related to juvenile court contact (e.g., Voisin, Patel, Hong, Takahashi, & Gaylord-Harden, 2016), this study goes further to investigate this path.

Research question 1. A brief summary of the results for **Research Question 1** indicates that exposure to violence is positively associated with both outcome variables. Witnessing violence significantly predicted a change in crimes against a person offense (i.e., more likely to be charged with a crime against a person) from time *t* to time *t*+1 as well as significantly predicted a change in court outcome severity (i.e., more adjudication, more likely to be assigned residential placement, put on probation, etc.) from time *t* to time *t*+1. That is, witnessing violence did have an effect on behaviors that may lead to court contact, and to an even greater extent, the severity of outcomes associated with these contacts. The analyses that produced these conclusions were particularly rigorous, in that they statistically controlled for previous levels of crimes against a person and court outcome severity; thus, these analyses demonstrated not only a relationship between exposure to violence and court involvement, but also, given its temporal quality, that exposure to violence is associated with *change* in court involvement. Although strong causality cannot ever be definitively established in statistical analysis, the analyses we performed allowed us to infer a weak form of causality (Granger causality).

Research question 2. Research question 2 treats the question of exposure to violence in a more nuanced way, specifically by considering how a simple exposure to violence may differ from more complex exposure in predicting crimes against a person and court outcome severity. Specifically, complex exposure reflected (a) multiple incidents of exposure, (b) multiple sources of exposure, and (c) multiple incidents *and* multiple sources of exposure. This is an important distinction, because complex exposure to violence is common in court-involved youth: Stimmel

and colleagues (20014) found that within a sample of detained youth, more than half reported more than one traumatic event over their lifetime and that more exposure to violence was associated with higher levels of trauma. Although analyses associated with Research Question 1 showed clear differences between no exposure and exposure in predicting juvenile justice variables, the analyses for Research Question 2 showed that overall, complex exposure did not differ from simple exposure in predicting the two outcome variables.

Research question 3. Research question 3 considers factors that mediate and moderate the relationship between exposure to violence and court involvement, using a structural equation model. First, we considered how exposure to violence might be associated with six different psychological adjustment variables. Second, we considered how exposure to violence might be associated with social support and family control variables. Third, we considered how exposure to violence is related to court outcome severity.

Psychological Adjustment. Consistent with prior research (see Salzinger, Feldman, Stockhammer, & Hood, et al., 2002 for a review), our results suggest that exposure to violence is indeed related to psychological adjustment. Findings show that witnessing violence was positively associated with feelings of hopelessness, street code, worry, and traumatic stress, and negatively associated with behavioral self-worth and global self-worth. Similarly, violent victimization is positively associated with hopelessness and street code, and negatively associated with behavioral self-worth, global self-worth, and worry; it is not, however, associated with traumatic stress. This latter finding may be due to the wording of the traumatic stress items: they all ask about symptoms that occur when bad things happen to a family member of friend rather than oneself. Nonetheless, unless there is a complete bifurcation between emotional response to events affecting self and other, this finding seems strange. It is also worth noting that not all youth exposed to trauma will display symptoms of post-traumatic stress disorder according to the DSM V, but they may still have notable outcomes related to that trauma (Kerig & Becker, 2012). Additionally, the negative relationship between violent victimization and worry seems, on its face, implausible.

However, in high-poverty inner-city neighborhoods, many adolescents worry about being victimized (Bagley, Tu, Buckhalt, & El-Sheikh, 2016; Goldman-Mellor, Margerison-Zilko, Allen, & Cerda, 2016). When this happens, it may remove the uncertainty of victimization and result in lower levels of overall worry. There also may be a desensitization effect. Mrug and colleagues (2016) concluded that "emotional desensitization to violence in early adolescence contributes to serious violence in late adolescence" (p. 75) and that this emotional desensitization can occur with repeated exposure to community violence. Further, Gaylord-Harden and colleagues (2017) found in their study of adolescent boys that depressive symptoms increased as exposure to violence increased, but only to a point; then emotional desensitization occurs and depressive symptoms reduce. They go on to conclude that this reduction in depressive symptoms is not indicative of mental health but rather provides evidence to suggest the complexity of exposure to violence; they also suggest that depressive symptoms found more in boys/men should be considered, such as aggression, anger, and risk-taking behaviors (also see Martin, Neighbors, & Griffin, 2013). One other explanation may be that these youth change their behaviors to reduce worry (i.e., joining a gang or carrying a gun). Indeed, Reid and colleagues (2017) found that with repeated exposure to violence, there was an increase in the likelihood of youth carrying a gun.

Finally, and again unexpectedly, we found that worry was positively related to academic progress; perhaps worry might create an increased vigilance that allows an adolescent to anticipate and avoid negative outcomes related to academic progress. Because worry was reported by the participants, it is possible that this unexpected association is a reflection of their experiential avoidance (i.e., psychological avoidance of negative emotions), a known sequelae of trauma (e.g., Kashdan, Morina, & Priebe, 2009). It is also possible that youth with a history of violent victimization may represent the most chronically victimized sub-group of our sample. As a chronically victimized sub-group, they may be experiencing a blunting of their stress response, including lowered free-floating anxiety (McLaughlin et al., 2015).

We also found that boys worry more than girls, but that witnessing violence had a bigger impact on worry for girls than it did for boys. And we found that witnessing violence was associated with higher levels of worry for younger adolescents than for older adolescents.

Social Support and Family Control Variables. Social support and family control variables also affect the psychological adjustment variables. Maternal warmth has been described in terms of involvement and acceptance, typically related to better psychological adjustment (Lamborn et al., 1991). Maternal warmth is positively associated with both behavioral and global self-worth, which is intuitive (see Lockhart et al., 2017). Maternal warmth is also positively associated with traumatic stress, which is counterintuitive, especially in light of the abundance of research that indicates that high levels of warmth and support are associated with positive psychological adjustment (e.g., Eisman, Stoddard, Heinze, Caldwell, & Zimmerman, 2015; Washington et al., 2017; though see Williamson et al., 2017 for inconsistent results). There are a couple of possibilities to explain these counterintuitive findings. First, though many participants in this sample live in a single parent household, it could be the case that while maternal warmth levels are high, there is low paternal warmth. Wagner and colleagues (1996) found that adolescents have more benefit from having two parents who they consider having warm relations with rather than just one, especially during stressful times (also see del Barrio, Holgado-Tello, & Carrasco, 2016).

Positive neighborhood connectedness is positively associated with hopelessness, street code, behavioral and global self-worth, worry, and traumatic stress. With the exception self-worth, all of these results are counterintuitive. By comparison, Foster and colleagues (2017) found that community connectedness was associated with positive outcomes for youth, specifically with lower levels of anxiety. Similarly, Li and colleagues (2007) found that positive neighborhood perceptions were significant in buffering exposure to violence on externalizing symptoms; however, these perceptions were measured by the parents of participants rather than the youth participants themselves. Moreover, Chen and colleagues (2016) who found that youths exposed to community violence had lower levels of neighborhood cohesion than those not exposed to violence.

A possible explanation for the counterintuitive results with respect to psychological adjustment and positive neighborhood connectedness is related to youth gang membership. Gang membership reached high levels in the neighborhoods where the MYS was conducted, and MYS data show that gang involvement is associated with greater feelings of neighborhood belonging ($b = 0.017$, $se = 0.005$, $t = 3.55$, $p < .001$, based on a linear mixed model using a Granger causality framework and controlling for age and gender). Not surprisingly, the MYS data also show that gang involvement is positively associated with street code ($b = 0.202$, $se = 0.014$, $t = 14.37$, $p < .001$) and hopelessness ($b = 0.042$, $se = 0.010$, $t = 4.14$, $p < .001$); these analyses are

also based on a linear mixed model using a Granger causal framework and controlling for age and gender.

In contrast, negative neighborhood connectedness (i.e., a belief that negative conditions and characteristics are largely absent from the neighborhood) are negatively associated with hopelessness, street code, worry, and traumatic stress, and positively associated with self-worth. Additionally, the slope coefficients for negative neighborhood connectedness are larger than those for positive neighborhood connectedness, suggesting that the absence of negative neighborhood factors has a stronger impact on psychological adjustment than the presence of positive neighborhood factors (particularly when those positive factors may be related to gangs and thus have negative implications). As Graves and Shapiro (2016) describe, those who feel as if they live in a safer environment (i.e., not exposed to violence thus not traumatized by it) might have higher levels of self-efficacy and feelings that they control their environment rather than the environment controlling them, thus also feelings of control over their lives are present. One way of exploring negative neighborhood connectedness is with respect to social disorder. Chung and Steinberg (2006) studied how neighborhood disorder was related to youth offending behaviors and found a complex system where community connectedness is related to both prosocial and antisocial outcomes related to adolescents. Ross and Mirowsky (2009) also studied neighborhood disorder, including danger in the neighborhood, and found that when prevalent in the neighborhood, results in more constant distress among residents, which can then lead to feelings of mistrust, powerlessness, and social isolation. It is not unreasonable, then, that individuals who experience these feelings look to groups where they might feel acceptance to alleviate these feelings, such as gangs.

Consistent with prior research (e.g., Voisin et al., 2016, also see Salzinger et al., 2002), results from this study suggest that both witnessing violence and violent victimization are negatively related to academic progress. So are hopelessness and street code, with these two components of psychological adjustment partially mediating the effects of exposure to violence on academic progress. Behavioral and global self-worth, worry, and traumatic stress all were positively associated with academic progress, with self-worth and worry partially mediating the effect of exposure to violence. The positive association between self-worth and academic progress is intuitive; and while not completely intuitive, the positive relationship between worry and academic progress can perhaps be explained by hypervigilance created by worry and possibly expectations of academic achievement creating worry and consequent greater attention to academic risk, especially when there is also exposure to violence (Overstreet & Braun, 1999). We are at a loss to explain the positive relationship between traumatic stress and academic progress. However, traumatic stress caused by exposure to violence may serve as a wake-up call, leading those who experience it to believe that education may be the only way out of poverty. In addition to the psychological adjustment variables, maternal warmth is (unexpectedly) negatively related to academic progress, while parental monitoring and curfew are (expectedly) positively related to academic progress (see Pinquart, 2016).

***Court Outcome Severity*.** Finally, and most important, are results showing determinants of court outcome severity. These results are especially revealing for three reasons. First, and most obvious, they address the study's focus: how and why exposure to violence affects juvenile court involvement for a population of adolescents characterized by extremely high rates of poverty. Second, this is the only component of the analysis that includes all variables in the model. Third, this analysis comes closest to providing a causal explanation for obtained results: it both assesses

how variables and scales measured at time *t* affect outcomes measured at time *t*+1, specifically how events and conditions at *t* affect change in outcomes between *t* and *t*+1.

As was demonstrated in the initial analysis that lacked potential mediators, the two exposure to violence variables both positively influence court outcome severity. Thus, a logical assumption is supported: impoverished adolescents who witness violence or who are victimized by violence are more likely to have subsequent contact with the court, and their court outcomes are more severe, than impoverished adolescents who are not exposed to violence. Additionally, a second logical assumption, that academic progress is negatively associated with court outcome severity, is also supported; further, academic progress partially mediates the relationship between exposure to violence and court outcome severity. An additional secondary assumption holds that psychological adjustment associated with exposure to violence affects the severity of court outcomes. Among the psychological adjustment scales, hopelessness follows the clearest pattern: it is positively associated with court outcome severity, and it partially mediates the effects of exposure to violence on court outcome severity both directly and indirectly through academic progress. Hopelessness, then, is particularly worthwhile to consider with respect to programming and interventions with this population. In addition to hopelessness, behavioral self-worth has a negative impact on court outcome severity, and it partially mediates the effect of exposure to violence on court outcome severity. Although they are not statistically significant predictors of court outcome severity in their own right, two other psychological adjustment scales, global self-worth and traumatic stress, partially mediated the effect of exposure to violence on court outcome severity; however, as was the case in so many other analyses, the mediating effect of traumatic stress was largely uninterpretable. Overall, among the psychological adjustment scales, hopelessness had the largest impact on court outcome severity, both directly and indirectly (through academic progress). The final component of RQ3 was in relation to how social support and family control scales impact the path of exposure to violence to juvenile court involvement. Among the social support and family control scales, only parental monitoring had an impact (negative) on court outcome severity. Spano and colleagues (2012) found in a sample of MYS youth that stable and high levels of parental monitoring can shield exposure to violence. However, another analysis of MYS data showed that for those youths who have been exposed to violence, parental discipline is (a) less effective (Spano, Vazsonyi, & Bolland, 2009) and (b) reduces the effectiveness of their parental monitoring (Spano, Rivera, Vazsonyi, & Bolland, 2008). Although demographic variables and their interactions with other predictor variables were included in analyses to address the first objective, they are more useful for addressing the second objective.

Summary of Results that Suggest Promising Intervention Points

Our second objective was to *identify conditions where interventions can most effectively reduce the risk of juvenile justice involvement for vulnerable adolescents*. One of the most important conditions is age; another is gender; and a third is where moderating protective factors may be strongest and where moderating risk factors are weakest.

Exposure to violence. Most generally, age and gender distributions for the different variables are important. Witnessing violence is nearly flat with respect to age, which is intuitive: anyone who lives in violent neighborhoods and spends time outdoors is vulnerable to witnessing neighborhood violence (and even those who remain indoors can see neighborhood violence through the window). Richards and colleagues (2015) assessed exposure to violence daily for a

week in 169 urban African American adolescents and found that there was nearly one incident per day recorded by the participants. Youth of different ages may be exposed to different levels of violence (Bell & Jenkins, 1993; Selner-O'Hagan, Kindlon, Buka, Raudenbush, & Earles, 1998), but they may also process and react to that exposure differently (see Bell & Jenkins, 1997). For example, Schwab-Stone and colleagues (1999) found that younger adolescents were more affected by exposure to violence with respect to internalizing symptoms than older adolescents. Not surprisingly, in our study, violent victimization varies largely as a function of age, with older adolescents more prone to victimization than younger adolescents. Although, research has also found that exposure to violence at any age has both short-term and long-term negative effects (see Carey & Richards, 2014). In fact, Farrell and Zimmerman (2018) found that these effects can have effects over 12-13 years.

Gender, by itself, shows little ability to modify the relationship between relationship between exposure to violence and psychological adjustment. It is important, still, to acknowledge that not only could boys and girls be exposed to different levels of violence (see Bell & Jenkins, 1997; Buka et al., 2001), but they may also process and react to that exposure differently (see Chen, 2010; Jenkins & Bell, 1994). In our study, boys and girls report witnessing violence at similar rates (M =0.343 versus M = 0.283, respectively), but boys are more susceptible to violent victimization than girls (M = .579 versus M = 0.241, respectively). Others have found that girls' psychological adjustment, though, is more negatively affected by exposure to violence than boys (Jenkins & Bell, 1994; White et al., 1998; Fitzpatrick & Boldizar, 1993). Additionally, gender does not interact with exposure to violence to predict academic progress. However, we do find significant street code × gender and traumatic stress × gender effects for academic progress, with the effects of these two psychological adjustment variables on academic progress stronger for boys than for girls.

Our findings that no youth (younger or older, male or female) is immune to exposure to violence or the effects of it, coupled with others' results might initially suggest that interventions to address the negative effects of violent victimization be universal. More careful analysis shows that these initial suggestions do not necessarily hold, however.

Crimes against a person. With respect to change in crimes against a person as a function of violent victimization, the effect was strongest (and dramatic) for the oldest group of girls, although the effect was also positive for all other age by gender groups except the youngest girls who exhibited essentially no change. With respect to changes in court outcome severity as a function of violent victimization, the change from time t to time $t+1$ was greater than it was for crimes against a person. The relationship between violent victimization and court outcome severity is positive for all six groups. The middle age group of boys and girls had relatively similar levels of change in court outcome severity as a function of violent victimization, and higher levels than other age groups. The older age group of boys and girls also were similar with respect to court outcome severity as a function of violent victimization, while the oldest boys saw a fairly low increase in court outcome severity as recency/frequency of violent victimization increased. The youngest age group of girls had the lowest overall levels of court outcome severity, though they did experience modest increases in court outcome severity as a function of violent victimization and the younger boys with a fairly high change in court outcome severity as recency/frequency of violent victimization increased.

In our results, boys almost always had higher levels of crimes against a person (except for the oldest girls at the highest levels of exposure to violence) and higher levels of court outcome

severity than girls; however, there was no clear pattern with respect to age. Evangelist and colleagues (2017) found that boys were slightly more disadvantaged than girls with respect to adjudication. They also found that the youngest group of youth were the least likely to receive a formal adjudication, followed by the oldest youth and that the middle age group of adolescents was most at risk for formal adjudication. Mears and colleagues (2014) found higher levels of informal adjudication at younger ages that decreased with age until age 15 when it increased slightly and found levels of formal processing to be at the lowest levels for the youngest adolescents (age 10) and increased with age until age 15 when it decreased slightly. While we did not categorize court outcome severity as informal or formal, we did categorize formal processing as more a more severe court outcome than informal processing.

Court outcome severity. Court outcome severity as a function of age shows that the most contact, and the most severe outcomes, occur for adolescents 12-14 years of age. This finding, in some ways, appears to be counterintuitive: we might expect that older adolescents would be engaging in more severe crimes; further, we might expect that court sentencing is affected by prior violations, and that older adolescents would have accumulated more prior violations. Indeed, these expectations are consistent with findings by Rodriguez (2010). On the other hand, older adolescents may have come to realize that their bad behavior will be detected and punished, so they avoid it. Or perhaps, they have just become more skilled at avoiding detection of their bad behavior. Whatever the case, it would initially appear that the most effective expenditure of resources would target adolescents during their middle years.

In terms of gender, boys receive more severe punishment than girls—perhaps because they commit more severe offenses, or because they have a history of more offenses, or because they are viewed as a greater threat to society than girls. Consistent with this hypothesis, Tam and colleagues (2016) found that boys were more likely to have more severe court outcomes than girls in their study of adolescents involved in the juvenile court system in California. We found no significant gender interactions with either exposure to violence or psychological adjustment in predicting court outcome severity. Nor did gender, by itself, interact with any of the social support or family control variables to predict court outcome severity.

We can obtain the best understanding of the risk posed for each age group by examining how age interacts with exposure to violence, psychological adjustment, and academic progress to predict court outcome severity. While age does interact with exposure to violence to predict psychological adjustment (e.g., witnessing violence × age_{lin} is negatively associated with hopelessness; witnessing violence × age_{lin} is positively associated with street code), the results are not consistent across the psychological adjustment variables. Thus, these results do not necessarily provide us with much general guidance about whether and how to target age groups to reduce the negative effects of exposure to violence on psychological adjustment. Because age is structurally associated with academic progress, we did not examine how any age interactions affect academic progress. When we look at how age interactions affect court outcome severity, we find more helpful information. Violent victimization × age_{quad} is related to court outcome severity, such that the greatest negative court outcomes as a function of violent victimization occur for the youngest adolescents. Similarly, the greatest reduction in court outcome severity as a function of behavioral self-worth occurs for the youngest adolescents; a similar effect occurs for global self-worth. For all of these findings, the oldest group of adolescents experiences a similar amount of absolute change, but their relative change is lesser than for the younger adolescents. This suggests the possibility that interventions targeted at the youngest age group

(e.g., 9-11 year olds) might pay the greatest dividend. Several papers in a 2012 issue of *Criminology & Public Policy* discuss the merits of early intervention (e.g., Farrington, 2012; Wright, McMahon, Daly, & Haney, 2012).

Neighborhood connectedness. One area where age and gender do show some consistency, however, is negative neighborhood connectedness, or connectedness because of the absence of negative neighborhood characteristics. For example, hopelessness declines more rapidly as a function of negative neighborhood connectedness for boys than for girls, suggesting that this component of neighborhood connectedness is a stronger protective factor for boys than for girls. Results also show that hopelessness declines most rapidly as a function of negative neighborhood connectedness for the youngest age group, and particularly for the youngest age group of boys. Street code also declines more rapidly as a function of negative neighborhood connectedness for boys than for girls and while our results suggest this relationship, others have found little difference with respect to gender in code of the street (e.g., Stewart & Simons, 2006). Thus, the most effective intervention point for promoting negative neighborhood connectedness to offset the risk associated with hopelessness and street code may be younger boys. Unfortunately, the interactive effects of age, gender, and negative neighborhood connectedness only partially fit this pattern: the strongest relationship between neighborhood connectedness and behavioral self-worth occurs for the youngest girls.

We previously identified that, unlike negative neighborhood connectedness, positive neighborhood connectedness may be a risk factor and enhance the negative effects of exposure to violence. Similarly, positive neighborhood connectedness is a stronger predictor of street code for boys than for girls, but the effect was strongest for the oldest age group (14-15 year olds). Using MYS Data, Drummond and colleagues (2011) found that indeed having a positive sense of community was protective against hopelessness, however, it was also found to be positively related to weapon brandishing. To complicate matters, we found positive neighborhood connectedness to be a protective factor for self-worth, and results show that its strongest effect is for boys and for the youngest age group. In an analysis of MYS data, Bolland and colleagues (2016) found that neighborhood connectedness (not separated into positive and negative connectedness) increased with age for boys, but decreased with age for girls. They also found that delinquent behavior was negatively associated with community connectedness for boys.

Conclusion. The lack of clear pattern for age or gender with respect to psychological adjustment or family control variables on court involvement indicates that perhaps we need to consider the substance of intervention at different points rather than target intervention *only* at a certain age or grade level or only for boys *or* girls. Our inconsistent findings with respect to age and gender are consistent with others' investigations of youth within the juvenile justice system (e.g., Evangelist et al., 2017).

Addressing Exposure to Violence: Approaches to Intervention

Our third objective was to *identify classes (i.e., types) of intervention that might be most effective for these adolescents*. The results reported in this study suggest that programs and policies can be implemented at five different levels to potentially reduce the effects of exposure to violence on court involvement for adolescents living in extreme poverty: (a) municipal and county government, (b) schools, (c) the neighborhood, (d) family, and (e) the individual. We recognize that there is considerable overlap between these systems (see Bronfenbrenner, 1992)

and provide some discussion with respect to this. There has been limited research on the overlap of these systems with respect to how exposure to violence affects youth (although see Yule, Houston, & Grych, 2019 for a meta-analysis). We have identified, but not tested any of the promising programs that are identified in the following sections. The very complexity of the model, coupled with the high levels of poverty that characterize the population studied, means that definitive programs have yet to be developed to address many of the needs of these youths. In the following sections, we do explore how different approaches could be implemented, and provide our thoughts on the potential for success of each.

Municipal and County Government. In this category, we include not just governmental units, but also departments of these units (e.g., Police Department) and quasi-governmental units that function at the city and county level (e.g., Juvenile Court, Health Department, Child Protective Services). For the most part, interventions at this level constitute policies rather than programs. Within this category, we explore (a) databases, (b) rapid response and research, and (c) coordination of systems.

Databases. One possible policy change would encompass multiple governmental units. Currently in place is a mandated requirement for any professional-level service provider to report suspected cases of child abuse or neglect to the local Child Protective Services Office. Arguably, however, exposure to violence takes a similar, if not necessarily as dramatic, toll on children and adolescents. A central database documenting children's exposure to violence, and additional resources to help families that need those resources to cope with the harm (e.g., physical, psychological, developmental, legal) that arises from exposure to violence, would be a potentially useful policy. We do, however, acknowledge that there may be regulatory challenges associated with collecting, compiling, storing, and maintaining these data.

Similarly way, a database documenting locations where violence occurs to create a geographical information system (GIS), would potentially helpful. The Police Department probably has the best information for this, and it documents cases where a crime is reported or a service is rendered. But police may be aware of violence, and possibly called in to prevent violence, even in the absence of a complaint or an arrest. A GIS that identifies violent areas could be useful in (a) allowing police to be more effective in their patrolling activities, and (b) identifying areas where additional programs and resources could be allocated to prevent violence (see **Neighborhood** section that follows). If exposure to violence can be identified at the individual level, it might be used as a marker and a step toward primary prevention. This identification and then early intervention might be best undertaken as a joint effort between multiple quasi-governmental agencies. Additionally, descriptive records documenting violence in the community could be integrated into the database, providing additional support for anyone who reports exposure to violence. Based on self-reports and supportive documentation, individuals might be eligible for diversion programs if they enter the juvenile court system.

Rapid Response and Research. An adjunct to this approach would be a rapid response approach wherein anyone added to the database would be visited by service providers from the Police Department (i.e., members of the Family Intervention Team, who are non-sworn officers tasked with working with youth to prevent juvenile justice involvement), the Health Department, Child Protective Services, or one of the mental health organizations serving the area to determine whether and which follow-up services would be warranted. While this may seem intrusive to

some (many) of the youth involved, it could alternatively be framed as research, wherein a researcher (e.g., a psychology, sociology, or social work faculty member or student at a local university) contacts the youth and recruits him or her into a study of community violence; caregivers and other adults living in the household should also be recruited into the study and interviewed. Given the success of the Mobile Youth Survey and spin-off research studies in recruiting participants, this would seem to be an effective means for initial contact. After asking an initial set of questions, the interviewer would be able to make an initial assessment of the youth's situation, and if it seems problematic, the interviewer could talk with the youth, then with his or her adult caregiver, about their interest in follow-up services, which would potentially target the entire household rather than just the adolescent. Besides potentially serving as a method of case-finding, results from the initial (and potentially follow-up interviews) would provide a better understanding about the prevalence of trauma related to violence in the community, and how to better support adolescents who are exposed to violence in their neighborhoods. Results could be shared not only with service providers who design and implement programs, but also with community leaders who may be able to use the data in thinking about neighborhood-based solutions to violence.

Coordination of Systems. A third policy approach would be more comprehensive; but given the overall costs of addressing poverty and its associated problems, and a general lack of success in trying to do so, such a comprehensive and coordinated approach may be justified. Services provided by quasi-governmental units, such as school districts, police departments, courts, health departments, and child protective services, are designed to meet the statutory goals and objectives of each organization. Thus, schools educate students; police departments prevent and control crime; etc. Often goals overlap, and interorganizational programs are developed to meet the needs of client groups. But joint programs must always take the backseat to programs designed to meet each organization's primary goal. This leads to a fundamental law of organizational behavior: "organizations strive to maintain their autonomy" (see Gouldner, 1959; Van de Ven & Ferry, 1984), perhaps because a loss of autonomy threatens their ability to meet their primary goal. Even so, and in support of the coordination of systems, a non-siloed distribution of funding could help overcome siloed agency solutions to these complex problems. For example, Vermont's *Integrated Family Services* (https://ifs.vermont.gov/) program coordinates family services across agencies, including child protective services, developmental services, and adult and child mental health services. The funding for the Integrated Family Services program is disbursed across agencies, encouraging cross-agency collaboration.

We cite this organizational literature because we realize how difficult the suggestion may be. But we want to stress our findings that exposure to violence interferes with academic progress and affects court outcome severity, and the possibility that exposure to violence my affect more children than child abuse and neglect. Thus, at least for an important segment of the population, the primary goal of the school district, or the juvenile court system, or child protective services, may not be achievable without important modification of the historic approach to achieving that goal. For example, youth who have been exposed to violence may not be able to learn in the same ways as youth who have not, and perhaps the curriculum will need to be reshaped in schools that serve these youth.

Judicial punishment may not affect youth who have been exposed to violence in the same way that it affects youth who have not been so affected; moreover, if likelihood of engaging in delinquent behavior increases as a function of physiological changes caused by exposure to

violence (e.g., increased cortisol production), then punishment for these delinquent acts might be seen as punishing the victim, or at least punishing a person for something he or she may not be able to control. In fact, Ford and colleagues (2006) suggest that trauma history should be evaluated at the time of intake into the criminal justice system. The courts could make use of such a database then, considering exposure to violence in its disposition of cases. In the case of abuse and neglect, abuse that occurs proximal to other violent exposure may have a more severe effect than abuse that occurs in isolation of community violence. Finally, health outcomes (e.g., diseases connected to stress) may be more prevalent in neighborhoods where violence is normative, or at least occurs frequently, and any public health initiative designed to prevent these diseases must at least consider how exposure to violence affects them.

Even more significant, the effects of exposure to violence has an impact on every one of these governmental or quasi-governmental units. Thus, independent efforts to reduce the negative impact of exposure to violence are unlikely to be as effective as a coordinated effort among organizations. A potentially effective approach to this problem would be to treat violence as a public health emergency, much as the federal government has declared the opioid epidemic as a public health emergency. This approach has been suggested by Finkelhor and colleagues (2013), and others (e.g., CDC 2009) echo the sentiment that exposure to community violence is indeed a significant public health issue for youth, particularly racial and ethnic minority youth (Chen et al., 2016). One critical aspect of public health is surveillance, which reinforces the earlier suggestions about (a) developing a database of youth who have been exposed to violence so that they might potentially receive multidisciplinary services, and (b) developing a GIS indicating where incidents of violence are most common so that they can potentially be targeted by neighborhood approaches to violence prevention.

School. Next, it is important to address practice implications with respect to academic progress. Several studies found results similar to those reported in our study, showing that students who have been exposed to violence have lower school performance than those who have not (e.g., Henrich et al., 2004; Patton, Woolley, & Hong, 2012). Not surprisingly, involvement in the juvenile justice system, particularly when there is an out-of-home court outcome, resulted in lower academic progress or achievement (Aizer & Doyle, 2015; Mendel, 2011). Prior research has shown that risk, particularly cumulative risk, is associated with decreased academic performance (e.g., Gutman, Sameroff, & Cole, 2003), as well as outcomes such as problematic internalizing and externalizing behavior (Appleyard, Egeland, van Dulmen & Sroufe, 2005). These results suggest that schools have a vested interest in preventing violence, particularly in catchment areas where violence is most common. We suggest attention within the schools regarding (a) school engagement and (b) school policy, and we suggest (c) trauma-informed programs and (d) exploring gifted education.

School Engagement. Not surprisingly, feelings of connectedness to school are associated with positive outcomes such as academic achievement (Skinner & Pitzer, 2012) and health and well-being (Jose, Ryan, & Pryor, 2012). Wang and Eccles (2012a) found that school engagement generally declines in middle and high school, which is negatively related to academic outcomes such as grade point average. Additionally, when students do not feel a connection to school or are not particularly engaged in school, poor outcomes such as substance use (Wormington, Anderson, Schneider, Tomlinson, & Brown, 2016), depression (Shochet et al., 2006), delinquency (Chen et al., 2016), exposure to community violence (Elsaesser, Gorman-Smith,

Henry, & Schoeny, 2017), and association with deviant peers (Rudasill, Niehaus, Crockett, & Rakes, 2014) can occur. In the MYS sample, Bolland and colleagues (2016) found that delinquency was negatively correlated with school connectedness. This suggests the importance of interventions to promote school engagement, especially in school servicing academically vulnerable students and particularly in middle and high school.

School Policy. Umlauf and colleagues (2015) found that exposure to violence can affect sleep, which then could affect academic achievement—and as our results show, also juvenile court involvement. One approach to solving the problem of sleep would be to implement a later start time in the schools. Dunster and colleagues (2018) studied a school in Seattle where the start time for high school students was delayed from 7:50 to 8:45 a.m. and found multiple benefits to the students, including more sleep and higher grades. Most of the high schools and middle schools within the MCPSS begin before 7:30 a.m. Most of the elementary schools begin between 8:00 a.m. and 8:15 a.m., although at least one has a start time before 8:00 a.m. While staggering the start time of elementary, middle, and high schools can alleviate traffic congestion, the early start time for many of these schools might be revisited.

Trauma-Informed Programs. Another approach to addressing the effects of exposure to violence within the schools is to use trauma-informed approaches or to create trauma-responsive schools (e.g., Dorado, Martinez, McArthur, & Leibovitz, 2016; Katoka et al., 2018; Plumb, Bush, & Kersevich, 2016). However first, it is also important to note that better screening for trauma exposure could be useful. That is, it is important for teachers, counselors, and other school personnel to be aware of the symptoms of trauma exposure. However, identification of trauma exposure in youth may prove challenging (see Cummings, Addante, Swindell, & Meadan, 2017), suggesting that the awareness of symptoms of trauma exposure is even more important for school employees. Additionally, Wang and Eccles (2012b) found that teacher support was influential in student engagement for middle and high school students, reinforcing the notion that teachers be aware of the circumstances that their students may find themselves in (such as being exposed to community violence) so they are able to provide appropriate support to their students. Woodbridge and colleagues (2016) advocate for routine school-based screenings and for culturally competent support and interventions. West and colleagues (2014) (see also Ko et al., 2008) advocate for trauma-informed systems of care, including within the education system, that would be available to students who have been exposed to violence. Because youth must attend school (in Alabama, youth are mandated to attend school until the age of 16), the integration of trauma-informed practices within the schools might be especially effective, with the schools also coordinating, communicating, and referring students to other services as needed. Trauma-responsive and trauma-informed programs are gaining attention, enough to warrant a special issue of *School Mental Health* (see Overstreet & Chafouleas, 2016).

One trauma-informed program that has been effective in schools is Cognitive Behavioral Intervention for Trauma in Schools (CBITS, Jaycox, Langley, & Hoover, 2018). However, it is also important to note that some of the youngest students seem to be most at risk (at least in some areas) for exposure to violence, and that cognitive behavioral therapy (CBT) may not work particularly well for young students, particularly those with cognitive and/or developmental delays (e.g., it is not atypical for MYS participants to have low standardized test scores and low IQ test scores). It is well recognized that the efficacy of CBT depends on the cognitive capacity of the child being treated (Kendall, Lerner, & Craighead, 1984; Shirk, 1999; Weisz & Weersing,

1999), although demonstrated that it can be effective for developmentally delayed children *if appropriate modifications are made* (Grosso, 2012; Suveg, Comer, Furr, & Kendall, 2006). It is important to determine how effectively this can be accomplished by practitioners without a firm theoretical understanding of the principles of CBT.

Another trauma-responsive approach that might guide schools is through the mnemonic CAPPD (Calm; Attuned; Present; Predictable; Don't let children's emotions escalate your own; see Walkley & Cox, 2013). Walkley and Cox, however, caution that the change in school climate is often needed for a school to become more trauma-responsive and that this does not happen automatically. School social workers might be particularly instrumental in school climate change.

It is important to note that trauma-informed care does not just respond to traumatic stress, but to trauma created by, for example, exposure to violence that might result in many different psychological adjustment outcomes, including perhaps feelings of hopelessness. This is something that should be explored in much greater depth, however, to determine exactly what types of psychological adjustment respond to trauma-informed programs.

Gifted Education. In thinking about these trauma-informed approaches, however, it is important to better understand whether exposure to violence does, indeed, result in trauma. For students growing up in abject poverty where exposure to violence is extensive, exposure to violence may be normative (e.g., Gaylord-Harden, Dickson, & Pierre, 2016; Gorman-Smith & Tolan, 1998; Guerra, Huesmann, & Spindler, 2003), and therefore not necessarily traumatic so much as expected. If this is the case, typical trauma-informed programming may not necessarily be effective. Rather, programs that attempt to show students ways to counter expectations might be more effective, but also very difficult to design for students who have already given up on education as a way out of poverty. One potentially promising approach involves gifted education. Using these same data, Bolland and colleagues (2018) found that weapon carrying was lower for gifted boys during middle adolescence than it was for their non-gifted (i.e., not identified as gifted) peers. Impulsivity was also, in early and middle adolescence, found to be higher for boys not identified as gifted than boys identified as gifted. Gifted programming, while initially focused on engaging and developing intellectual skills, now includes programming focused on creativity, problem solving, leadership, and civic skills (Betts, Kapushion, & Carey, 2016). In the two studies of giftedness using these data (see Bolland et al., 2018; Bolland et al., 2019), gifted status seemed to be particularly protective for boys. Thus, another effective approach within the school system might be to implement some aspects of gifted programming more throughout the curriculum rather than reserve that programming for students only identified as gifted.

Neighborhood. Perhaps the most distal factor that affects court outcome severity in this study is exposure to violence, and reducing exposure to violence would be an effective way to reduce youth involvement in the court system. Youth mainly experience violence in the three contexts: inter-parental relationships, parent-child relationships, and community (Margolin et al., 2009); given the focus of this study, we will focus mainly on exposure to community violence, although as suggested previously, domestic violence could also occur. Our findings persuasively demonstrate that *protecting youth from exposure to violence is in and of itself a powerful defense against their involvement with the juvenile justice system*. We found that the two exposure to violence variables had important effects on the main outcome of court outcome severity, which

can best be targeted at the *neighborhood level*, where we considered both positive (positive feelings towards neighborhood) and negative (the absence of negative feelings towards neighborhood) neighborhood affiliation. It is important to first discuss the *code of the street* that exists within MYS neighborhoods and its general origins before discussing two points of intervention: (a) neighborhood organizing and (b) community belonging.

Code of the Street. We begin by reporting several statistics from the Mobile Youth Survey (MYS) sample between 1998 and 2011:

1. 12.29% carried a gun during the past week;
2. 11.81% pulled a knife or gun on someone else during the past month;
3. 14.14% cut, stabbed, or shot a gun at someone lese during the past week;
4. 14.23% had a knife or gun pulled on them during the past week;
5. 16.40% had a knife or gun pulled on them during the past week;
6. 25.67% felt unsafe in their neighborhood most or all of the time.

Clearly, the neighborhoods in this study are violent places. Perhaps even more important are adolescents' perceptions of violence in their neighborhoods. Again, data from the 1998-2011 MYS sample suggest expectations about the inevitability of violence in their neighborhoods:

7. 49.12% believed that it was impossible to avoid fights in their neighborhood;
8. 28.93% believed that if you didn't carry a knife or gun, something bad might happen to you;
9. 39.22% believed that carrying a weapon let others know that they shouldn't mess with you.
10. 49.21% believe that hitting someone knocks some sense into them;
11. 57.18% believe that if you are in an argument, you should stand your ground and get what you want.

Notably, these questions were taken from the Street Code scale.

In such situations, informal social control, or informal rules and norms of behavior suffer, and in some cases are non-existent. Thus, adolescents who have largely abandoned traditional avenues to success (e.g. education) turn to a more visceral, and risk-laden (both for themselves and the larger neighborhood) strategy of establishing their worth through their toughness and street-smarts (Agnew, 2001; Anderson, 1999). The risk to self occurs because there is always someone who is tougher, or smarter, or both, and someone (most often the less tough or less smart) will be injured. The risk to neighborhood occurs (a) due to collateral damage created by these confrontations, and (b) the increased danger and resulting emphasis on street code leads adolescents to become more aggressive as a way of avoiding victimization. Thus, street code becomes self-perpetuating: greater centrality of street code in the belief systems of neighborhood adolescents leads to greater violence, which in turn leads to increased importance of street code (Stewart & Simons, 2010). In essence, street code also becomes a coping mechanism for stress exposure within a neighborhood, such as exposure to violence (Agnew, 2013). In fact, Sanchez and colleagues (2013) found that exposure to violence resulted in externalizing symptoms with for boys, even when there were attempts of avoidance. That might suggest that both exposure to

violence and code of the street are inherent to a neighborhood and unavoidable, especially for boys.

In light of the MYS results just presented about violence and street code, it is important to consider two important questions. First, is it possible to change the aggressive and violent behavior of individual adolescents when they encounter high levels of violence and violent beliefs in their neighborhood? Second, is it ethical to attempt to change the aggressive and violent behavior of individual adolescents when (a) they are living in the midst of violence, and (b) they believe that they will be victimized if they are not aggressive and violent themselves? We believe that encouraging individual adolescents to abandon their street code beliefs in the presence of high degrees of neighborhood violence, or to commit to non-aggression and non-violence in a neighborhood where the code of the street is pervasive, simply will not work.

General Origins. Thus, in thinking about how this situation can be changed, it is worthwhile to consider how it came about. Between the 1950s and the 1960s, there was a well-documented exodus of middle-class and affluent residents from African American communities in the United States. We use the term "communities" rather than neighborhoods here because, before this exodus they were bound together by a common culture and destiny, and social interaction was vibrant. Socioeconomically, these communities were very heterogeneous; families were legally and politically bound to neighborhoods by restrictive housing laws, resulting in *de facto* segregation. But with the easing of housing restrictions, mainly by the courts, *de facto* (and to a lesser extent, *de jure*) segregation began to erode, and more affluent African American families moved to wealthier neighborhoods in pursuit of the American dream. As a result, African American neighborhoods became increasingly impoverished, to the extent that poverty became hyperconcentrated (Wilson, 2012) and where prior community norms that were strong became weakened and often disappeared (McBride Murry, Berkel, Gaylord-Harden, Copeland-Linder, & Nation, 2011).

Consider, for a moment, how poverty, and particularly hyperconcentrated poverty, affects people's lives. First, depression is more prevalent among people living in poverty than among those who are more affluent (e.g., James, Hart, Banay, Laden, & Signorello, 2017; also see Lorant et al., 2003). In the MYS neighborhoods, the rates of clinical depression among adults reached nearly 50% (Mugoya et al., 2017). Thus, not only is any individual just as likely as not to be depressed, but half of his or her neighbors are also like to depressed. Second, the social networks of people living in poverty tend to be attenuated compared with those of more affluent individuals. Third, residential turnover is much higher in impoverished neighborhoods than in more affluent neighborhoods. Within the MYS sample, the mean 3-year neighborhood change (e.g., Wave 1 – Wave 3) rate was 32.5%. This is likely an underestimate, because adolescents who moved between neighborhoods were more difficult to find and re-interview than those who remained in the same neighborhood. Thus, neighborhoods characterized by hyperconcentrated poverty are also neighborhoods of strangers (Merry, 1981), where residents do not know one another and where trust, a key element of social capital, is missing. All of these conditions are interrelated (e.g., high residential mobility leads to attenuated social networks; isolation created by attenuated social networks is associated with depression). Put succinctly, many residents experience feelings of isolation, alienation, loneliness, and disempowerment, and the development and enforcement of informal rules and behavioral norms suffers or disappears altogether (see Sampson, Raudenbush, & Earles, 1997; Riger, 1993).

One resident of a Huntsville, AL, public housing neighborhood, where we conducted a study that served as precursor to the MYS, explained to us the reason why she lived in public housing: her husband left, her car broke, and she had no way to afford rent in the private sector. “But,” she said as she looked around the neighborhood, “everyone else is living here because they are lazy.” The United States is one of the few industrialized nations where poverty is viewed as a character flaw; but it is astonishing that people living in poverty would embrace this view of their impoverished neighbors. This emphasis on differences and divisions (it is likely that one of the “lazy” neighbors the woman scorned would have a similar view of her neighbors) leads to a generalized distrust, which makes collective action difficult; but the enforcement of community norms requires collective action. As another resident explained to us, “Good neighbors mind their own business.” – but as noted, with a cost, because informal rules and norms, and the social control they create, can potentially provide a useful way to contain bad behavior, including aggression and violence, among adolescents.

The challenge, then, is to transform impoverished neighborhoods into social communities. “Community” derives from the Latin *communitas*, whose root is *commūnis* – meaning “common” or “public.” To achieve community, it is therefore necessary to provide means for residents to understand their commonalities, their similarities. Such an understanding is essential to trust, to social networking, and to the development of social capital. Given the previously identified arguments, the best way accomplish this is to provide a safe environment for neighborhood residents to get to know one another and discover their commonalities. This can be accomplished most effectively by working simultaneously to (a) strengthen social networks within the neighborhoods, through which innovations can diffuse, social support can be provided, and residents can mobilize to act; and (b) empower residents of the neighborhoods to exercise more control over their lives, both individually and collectively (Hawkins & Catalano, 1992). These goals are the essence of a socially competent community (Iscoe, 1974) of neighborhood residents who can work together to establish and enforce neighborhood norms, develop *hope* for a collective future, and otherwise solve the problems in their midst (Cohen & Phillips, 1997). This is also the essence of community development, defined as “a process that stimulates opportunities for membership, for influence, for mutual needs to be met, and for shared emotional ties and support” (Chavis & Newbrough, 1986, p. 337).

A sense of community, and the commitment to the neighborhood it creates, leads to greater contact among neighbors, allows for better acquaintance and interaction among residents, provides a space to discuss shared problems (Unger & Wandersman, 1983), and it motivates them to take action to alleviate perceived threats to their neighborhood. Chavis and Wandersman (1990) argue, "When people share a strong sense of community they are motivated and empowered to change problems they face, and are better able to mediate the negative effects of things over which they have no control" (p. 73). In addition to enhancing social interaction, participation in neighborhood activities is also empowering, for involvement in neighborhood organizations helps individuals feel more competent and less alienated (Zimmerman & Rappaport, 1988). Feelings of empowerment and efficacy, in turn, lead people to respond to perceived threats; and it builds community by creating a sense of pride in the neighborhood (Chavis & Newbrough, 1986). The neighborhood community, in fact, becomes a source of group identity for these residents where there is a reduced apprehension about participating in neighborhood activities (Chavis & Wandersman, 1990) and through a collective experience, individuals may gain a greater sense of control over their lives and may attempt things they otherwise would have felt beyond their capacity to accomplish (Minkler, 1985).

Neighborhood Organizing. Perhaps the best way to achieve these goals is to provide residents with opportunities to interact in a safe environment and get to know one another. One way to accomplish this is through neighborhood organizing, but with a twist. Community organizing is generally undertaken in pursuit of some social action goal, for example union membership, voter registration, boycott of some unfair business or governmental practice), and as such it is adversarial. In contrast, we propose community organization as a way of advancing social contact and interaction, with no specific action as the ultimate goal. As such, it is best achieved by sponsoring safe events in neutral and safe environments, preferably on a recurring schedule. These could include a sewing circle, a quilting bee, exercise classes, or lunches. To be effective, though, these can't be developed and conducted by outsiders. As noted previously, distrust of other neighborhood residents is strong, and it likely extends to outsiders and institutions. Therefore, it is critical for a community organizer to spend time in, and literally become part of the neighborhood – introducing herself to residents and explaining the purpose of her presence (e.g., helping neighborhood residents gain a sense of empowerment). Given the importance of religion to people, and particularly minority people living in poverty, perhaps a local church would be an ideas sponsor of such a program.

In designing activities, the community organizer should talk with residents, getting their input about events that would be enjoyable and helpful, and about how best to organize and publicize these activities and events. Over time, residents would likely become increasingly involved in coordinating the activities, and even designing new ways to help neighborhood residents. As an outsider, the organizer has no potential alliance with neighborhood factions, and she can likely referee between conflicts if they emerge. It is important to understand that this must be a long-term commitment. The organizer cannot work in a neighborhood for a few months and then leave: such an approach would have little opportunity of success; in fact, it would likely be harmful, leading residents to feel built up, only to be abandoned.

The importance of the built environment should not be overlooked in this process. Kondo and colleagues (2018) reviewed studies of neighborhood-focused violence reduction interventions that targeted the built environment, including "housing, land use and zoning, alcohol outlets, blight remediation, transportation and mobility, greening, and schools" (p. 256). Demolition of high-rises and provision of affordable scattered site housing was associated with reduced rates of homicide, assault, and other violent crime in the surrounding areas. Enhancement of deteriorated structures, including fixing broken doors and windows and cleaning and greening of vacant spaces was associated with decreased violence, including gun violence. Reducing alcohol availability and street connectivity was also associated with lower violent crimes. These are typically initiated by local governments; but as residents get to know one another and learn to trust one another, they can become effective advocates for changes that will benefit their neighborhood, and perhaps even collaborate on the design of projects to create these changes. One relatively straightforward built environment project that can be achieved with relatively little expenditure is the development of community gardens. They not only produce food, but they also provide a venue for residents to work together and watch their efforts grow and bear fruit.

Community Belonging. The OJJDP maintains a searchable database of evidence-based, model treatment programs for youth at risk for juvenile justice involvement (https://www.ojjdp.gov/MPG/). It describes the programs, documents the evidence available for

each program, and presents implementation information (i.e., cost, training, timeframe). The *OJJDP Model Programs Guide* recommends several community-based, empirically-supported prevention and intervention programs for enhancing community belonging and reducing youth gang membership. These programs are diverse in their approach, varying in types of facilitator (e.g., community member, social services professional, policeperson), intervention targets (e.g., criminal behavior, youth mental health symptoms, parent-child and parent-teacher relationships, gang membership), and setting (e.g., school, home, community). Such methodological diversity allows a wide range of options when selecting an evidence-based program for implementation. A neighborhood development program designed to reduce the conditions that lead to violence should, first of all, facilitate the development of stronger social network ties among neighbors. As we noted previously, strong network connectedness can lead to increased gang activity, but this may occur primarily when positive connections are not available; it may also be a problem particularly for youth and young adults. We believe it makes sense for neighborhood development programs to target adults who have largely grown beyond the lure of gangs, including the parents of adolescents. Finally, the significant associations between neighborhood connectedness (both negative and positive) and youth psychological adjustment indicated the psychological salience of social connectedness for adolescent youth. Youth desire social belonging and actively monitor their social status. Interventions for youth at risk for juvenile justice involvement should leverage the developmental salience of social connectedness for this population by (a) accounting for youth social networks in implementing the interventions, (b) prioritizing highly influential peers in the efforts to affect community youth culture, and (c) offering youth membership in alternative high-status, prosocial peer groups.

Neighborhood connectedness is a consistent modifier of the scales that most affect court outcome severity. Although it is both a risk factor (positive neighborhood connectedness) and a protective factor (negative neighborhood connectedness), it reflects the importance of the environment, and the need to change the environment in which poverty exists to reduce the risk of court involvement for the most marginalized (economically, racially, and culturally) adolescents. We do not expect to be able to eliminate poverty, but it may be possible to make changes in the environment that will make poverty less strongly associated with crime and violence. Interestingly, neighborhood connectedness is an important predictor of four of the psychological adjustment variables (hopelessness, street code, behavioral self-worth, global self-worth), three of which significantly mediate the relationship between exposure to violence and juvenile court outcomes. Thus, it seems critical to include neighborhood development programs as a, if not the, major component of programs to reduce the negative impact of exposure to violence. Such an approach would likely lead to less neighborhood violence (and hence less exposure to violence), but it would also reduce its negative effects when it does occur.

Family[3]. Consistent with Maslow's hierarchy of needs and the universally established SES-and-health-gradient (e.g., Evans, Wolfe, & Adler, 2012), the most direct way to enhance parental functioning for socio-economically disadvantaged parents is to provide them with pathways to economic security. This should include both the economic community development (see previous *Neighborhood* section) and the educational/vocational training for the parents. These all lead to increased perceptions of support and decreased stress (see Lee, Halpern, Hertz-Picciotto,

[3] While within the family context, youth are primarily victimized by their parents, either by witnessing inter-parental violence or being victimized by the parents (Margolin et al., 2009), that is not the focus of this project. However, we do not discount that this can happen.

Martin, & Suchindran, 2006), which then can lead to more positive parenting (McConnell, Breitkreuz, & Savage, 2011). Concerning family-level variables, we suggest interventions that focus on (a) parental monitoring, (b) the relationship between the mother or mother-figure and the child, (c) the use of trauma-sensitive therapeutic approaches, and (d) increasing stability.

Parental Monitoring. As youth age, parental involvement may naturally begin to decrease (e.g., Hayes, Hudson, & Matthews, 2003), however, Matjasko and colleagues (2013) found that in populations where exposure to violence is likely, this decrease in parental involvement may be detrimental. Similarly, Bacchini and colleagues (2011) found that parental monitoring was protective with respect to the relationship between exposure to violence and externalizing symptoms for boys and internalizing symptoms for girls. Other research has been inconsistent with respect to parental involvement and its protective nature against youth risky behaviors including delinquency (e.g., Davidson & Cardemil, 2009; Ozer, Lavi, Douglas, & Wolf, 2015), and it promotes positive outcomes such as academic achievement (e.g., Jeynes, 2003). Turanovic and Pratt (2015) concluded that attachment to family is a protective factor with respect to violent victimization and future negative outcomes such as risky behaviors in adulthood. Thus, we advocate for the inclusion of family as a point of intervention for youth who have been exposed to violence (see Duncan, 1996). Morris and colleagues (2017) discuss interventions that include parents specifically for children who live in impoverished communities, including Triple P (Positive Parenting Program, see Nowak & Heinrichs, 2008; Sanders et al., 2008) and Nurse-Family Partnership (see Olds et al., 2014).

Mother-Child Relationship. We generally found that maternal warmth was associated with better psychological adjustment for youths in this study, including higher self-worth, lower hopelessness, and lower street code. As youth's perceptions of maternal warmth are likely indicative of the quality of their relationship with the mother (or maternal figure), the quality of this relationship is a protective factor against juvenile justice involvement following youth exposure to violence. *The OJJDP Model Programs Guide* recommends a number of empirically-based prevention and intervention programs that target the child-mother relationship across development, starting in the infant period. They address different aspects and correlates of the relationship, including maternal mental health, caregiving in the infancy period, and effective parenting strategies across development. Indeed, especially important in this context is parental psychological adjustment as it is related to many other outcomes, including child attachment, behavior, and even child psychological adjustment (e.g., Downey & Coyne, 1990; Lee et al., 2006; Luoma et al., 2001). Therefore, prevention efforts for youth juvenile justice involvement should include a focus on the functioning of the parents.

The Annie E. Casey Foundation recommends the Strong African American Families program and rates it as a promising program designed for children (ages 5-11) and their parents that includes family therapy and parent training with outcome goals including closer relationships with parents and reduced delinquency and criminal behavior (see Brody et al., 2004); this program is currently implemented in Mobile as part of the Casey Evidence2Success grant. Although we did not directly test them, youth relationships with other parental figures or adult mentors are also very important for successful youth development and should also serve as prevention and intervention targets (e.g., Hardaway, Sterrett-Hong, Larkby, & Cornelius, 2016; Miranda-Chan, Fruiht, Dubon, & Wray-Lake, 2016); in communities characterized by poverty, there is often less access to these mentors (e.g., Raposa, Erickson, Hagler, & Rhodes, 2018).

Trauma-Sensitive Interventions. Our finding that maternal warmth was associated with *higher* traumatic stress for youths is unexpected and inconsistent with previous studies (see Chen et al., 2016). Extending the *blunting of the stress response* hypothesis, it is possible that victimized youth who have a supportive maternal figure do not experience the blunting of the stress response system and experience more traumatic stress symptoms; this may be exacerbated if the maternal figure supported their more adaptive processing of the trauma, or because maternal warmth is a proxy for a higher functioning maternal figure, which would be associated with lower youth victimization. The Substance Abuse and Mental Health Services Administration (2014) suggests that service providers who work with traumatized individuals understand the (a) impact of trauma and (b) the signs of trauma, (c) integrate knowledge about trauma within the environment, and (d) take care to not re-traumatize individuals who have a trauma history.

While these are appropriate guidelines for service providers, given the amount of time that youth spend in the care of a parent, it is also important that family members understand these guidelines as well and how to care for their children in a trauma-informed manner, if needed. Indeed, perhaps strong maternal support allows adolescents to openly react and discuss their trauma, which might be re-traumatizing. As trauma-sensitive schools provide their students with trauma-informed practices, perhaps trauma-sensitive parenting would also be beneficial to these adolescents.

As previously discussed, involving parents in interventions might be effective in promoting positive parenting, related to positive psychological adjustment in youth. Included in these interventions should also be a focus on communication between parents and their children. Eisman and colleagues (2015) suggest that positive communication between parents and children is necessary to alleviate outcomes related to trauma; however, Buffington and colleagues (2010) advise that parents may need education about trauma so that they can be appropriately supportive of their children. Finnegan and colleagues (1998) studied the mother-child relationship and found that when mothers were perceived as over-protective, there was increased peer victimization for boys, whereas when there was perceived rejection from mothers, girls were at a greater risk for peer victimization.

Berkowitz and colleagues (2011) suggest Child and Family Traumatic Stress Intervention (CFTSI) that includes psychoeducation for children and caregivers about symptoms related to trauma, understanding reactions related to trauma, and assessing risk. CFTSI also includes a multidisciplinary supportive therapy intervention and has shown promise in youth who have been exposed to violence, where communication between caregivers and children is promoted, especially about feelings, symptoms, and behaviors associated with trauma as well as behavioral skills taught to both caregivers and youth to aid in coping with that trauma. It is worth noting that this pilot test was conducted with youth recruited from a pediatric emergency room department and there is not information about their socioeconomic status.

Additionally, exposure to violence does not only affect adolescents in these communities. Parents who are exposed to violence are likely also to experience the same maladjustment that adolescents do, which then can affect parenting. For example, maternal stress and poor psychological adjustment might play a role in prohibiting the full benefits of maternal warmth. Grant and colleagues (2000) found that sources of support, such as moms, may not be able to provide the high levels of support or warmth that a child might need in response to their own trauma. Similarly, shared trauma (not necessarily the same exposure) may provide a closeness

for parent and child as a shared experience, but the parenting still might be affected. Kerns and colleagues (2014) found that when parents were distressed by a traumatic experience (shared with a child), their child/ren had more negative outcomes such as emotional problems, posttraumatic stress, and lower prosocial behaviors. Thus, changing the neighborhood environment to reduce exposure to violence may be a necessary prerequisite for any of these family interventions to be successful.

***Stability*.** Finally, with respect to the family, we consider interventions focused on stability. Neighborhood stability is one form of stability that may be important and has been found to be related to delinquency within a neighborhood (e.g., Cantillon, 2006). Residential mobility can and does affect the lives of people, particularly people living in poverty who may move from one gang territory to another. Such moves can have unintended consequences for education and law enforcement; for instance, if gang conflicts are intensified, neighborhoods and schools become a staging ground for this conflict. Fowler and colleagues (2015) found that housing instability in adolescence predicted later psychological maladjustment and crime. Even "upward mobility" within a family resulting in moving to a more advantaged neighborhood might result in negative outcomes such as increases in street code and increased chance of dropout of school (e.g., Metzger, Fowler, Anderson, & Lindsay, 2015).

Additionally, household stability might be quite important to focus on with respect to interventions. Household stability has been found to be related to hopelessness (e.g., Bolland, Lian, & Formichella, 2005), behavioral problems (e.g., Cavanagh & Huston, 2006), and exposure to violence (e.g., Cavanagh, Stritzel, Smith, & Crosnoe, 2018). In adolescence, when developmental change is rapid, developmental instability often occurs (e.g., Vannucci et al., 2018), and stability in other areas of life may become increasingly important. Lower-income families are more likely to experience household instability due to movement of the entire family between residences and/or neighborhoods (i.e., residential mobility) as well as household member instability (Raver, Blair, Garrett-Peters, & Family Life Project Key Investigators, 2015; Raver, Roy, & Pressler, 2015). This instability has been found to negatively influence child development (Fomby & Cherlin, 2007; Roy, McCoy, & Raver, 2014; Sandstrom & Huerta, 2013). Additionally, results from several studies suggest that in single-parent households and/or in homes where youth are socially isolated from their families, there are higher risks of exposure to violence (Bell & Jenkins, 1993; Esbensen & Huizinga, 1991; Ebensen, Huizinga, & Menard, 1999). Instability has also been found to be related to trust and parenting ability (Conger et al., 2002; McLoyd, 1990).

In the MYS sample, there is considerable household instability. Each year, we asked respondents to indicate the person most like a mother and most like a father to them, providing response choices for each (e.g., mother/father, aunt/uncle, older sister/brother). The median wave-to-wave change in the person identified as most like a father was 44.5%, and the median wave-to-wave change in the person identified as most like a mother was 25.8%. We also asked respondents to indicate how much of the time they lived with the person who was most like a mother and with the person who was most like a father to them, and we used these responses to identify family structure. Across waves of data (and ignoring cases where the respondent was 19 and therefore liberated), we found that the median rate of true two-parent families (i.e., mother-father, mother-stepfather, stepmother-father, stepmother-stepfather) was 33.1%; when we considered a more inclusive definition of mother- and father-roles (i.e., including aunt/grandmother/older sister as potential mother figures and uncle/grandfather/older brother as

father figures), the median rate of two-parent-equivalent families increases to 40.5% across waves.

We considered how these measures of instability affect maternal warmth, parental monitoring, and curfew using restricted maximum likelihood in a linear mixed model, with a first-order autoregressive covariance structure and a Kenward-Rogers estimate of degrees of freedom; in each case, we used a Granger causality framework with age and gender as covariates. In the first set of analyses, we estimated the effects of change in mother figure and change in father figure together in each model. Results show that change in mother figure was negatively associated with change in maternal warmth (b = -0.066 se = 0.022, t = -2.97, $p < .01$), but change in father figure was not. Results also show that both change in mother figure (b = -0.384, se = 0.047, t = -8.15, $p < .001$) and change in father figure (b = -0.145, se = 0.040, t = -3.62, $p < .001$) were negatively associated with change in parental monitoring. Finally, change in father figure was negatively associated with change in curfew (b = -0.052, se = 0.020, t = -2.61, $p < .01$).

The analysis of family structure used the same approach as previously identified. Results for true two-parent families showed significant positive effects for maternal warmth (b = 0.129, se = 0.019, t = 6.68, $p < .001$), parental monitoring (b = 0.252, se = 0.041, t = 6.09, $p < .001$), and curfew (b = 0.062, se = 0.021, t = 2.91, $p < .01$). Results are similar for analyses using two-parent equivalent families.

These findings suggest why household instability contribute to poor juvenile court outcomes for the adolescents in the MYS sample. Change in mother figure is negatively associated with parental monitoring and curfew; change in father figure is negatively associated with maternal warmth, parental monitoring, and curfew. And having two parents or parent figures in the home is positively associated with maternal warmth, parental monitoring, and curfew. All three of these social support and family control variables have direct or moderating effect on court outcome severity, and an indirect effect on court outcome severity through academic progress.

Of course, it is difficult to engineer family structure and stability. But several approaches could prove to be helpful. First, the court should consider carefully how alternative residential placement of the child may affect the child. That is, removing juveniles from their homes (e.g., residential treatment, juvenile detention) may present additional sources of instability and result in additional negative outcomes (Zelechoski et al., 2013). While residential treatment might be ordered or suggested for those adolescents with more severe emotional or behavioral problems, this treatment plan may not be best, in part, because displacement from the home might be sudden. Although the courts do certainly take this into consideration in their placement decisions, perhaps a more thorough assessment of how such placement may affect the overall psychological adjustment of the child would be in order (e.g., change in mother figure is a positive predictor of hopelessness; Bolland et al., 2005). Similarly, schools should consider whether and how disciplinary actions may affect the living arrangements of a student before taking such actions. Third, more thorough assessments of the child's living arrangement may be useful in child protective services decisions, and during investigations it could commit resources that would potentially strengthen these living arrangements. Finally, it may be the case that even seemingly minor interventions could help promote stability. For example, the establishment of routines (e.g., consistent meal times, bed times, time to do homework) is associated with better child adjustment (Kliewer & Kung, 1998), and it can moderate (Ivanova & Israel, 2005; Ivanova & Israel, 2006; Kliewer & Kung, 1998) and mediate (Brody & Flor, 1997) the effects of negative

events or conditions on child outcomes. Thus, programs to establish household routines can potentially be effective even if the structural aspects of instability cannot be eliminated.

Individual. Finally, we generally found that exposure to violence was associated with worsening psychological adjustment for youths, such as increased hopelessness, traumatic stress, and street code, and decreased self-worth and academic progress. Further, our finding that more complex (i.e., multiple) exposure to violence did not predict more intensive involvement with the juvenile justice system than simple exposure speaks to the critical importance of addressing *any* violence exposure. Even a single exposure serves as a powerful risk factor for juvenile justice involvement, which in turn likely alters the youth's developmental trajectory.

Given the inconsistent findings with respect to age and gender, that is, the lack of pattern, suggesting when or for whom interventions should take place, we suggest that the results be taken into consideration as they have been presented. That is, the indirect effects and interaction terms in the model suggest what kinds of interventions may be most effective for any given individual. We consider interventions that focus on (a) trauma and traumatic stress, (b) hopelessness, and (c) self-worth.

***Trauma and Traumatic Stress*.** Exposure to violence, whether witnessing violence or violent victimization, is a traumatic event (see Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009), and many studies of community violence have indeed found that exposure produces post-traumatic stress disorder (e.g., McGill et al., 2014). Yet, our results show that traumatic stress is among the least important mediators linking exposure to violence to court outcome severity; these results further show a significant mediation effect only for witnessing violence but not violent victimization (although this may be an artifact of the way in which we measured traumatic stress), and the only significant mediation path is witnessing violence → traumatic stress → academic progress → court outcome severity. The direction of this finding is not as expected, however: increased stress is associated with *improved* academic progress, particularly for boys. Moreover, neither of the strongest mediators in the relationship between exposure to violence and court outcome severity, hopelessness and global self-worth, are particularly strongly related to traumatic stress (r = .082 and r = -.097 respectively).

This all leads us to conclude that, while evidence-based programs to reduce the trauma that occurs as a function of exposure to violence help reduce traumatic stress for youth in general, they may not have much of an effect on future involvement with the juvenile justice system for the population under study here. This may be because trauma associated with exposure to violence among extremely impoverished youth manifests and resolves itself in different ways than among less-impoverished populations of youth. As previously discussed, this might be because youth who live in neighborhoods view violence as inevitable, and as they are exposed to violence these preconceptions are reinforced. Thus, they may feel increasingly trapped in a difficult environment, with no sense of a future, and they develop increased feelings of hopelessness.

While we believe that interventions targeting traumatic stress may not be the most effective interventions when it comes to exposure to violence and psychological adjustment and/or court involvement, we still advocate for trauma-informed and trauma-sensitive interventions, even for this population. Buffington and colleagues (2010) identify components of trauma-focused, evidence-based treatments: (a) "psycho-education, (b) caregiver involvement and support, (c) emotion regulation skills, (d) anxiety management, (e) cognitive processing, (f) construction of a

trauma narrative, and (g) personal empowerment training" (p. 18). And, our results support the use of evidence-based cognitive behavioral treatment for traumatic stress and emotional and behavioral problems (e.g., anxiety, depression, mood dysregulation) for violence-exposed youth. In the category of *Children Exposed to Violence and Victimization, the OJJDP Model Programs Guide* lists several evidence-based cognitive behavioral treatments, such as the Cognitive Behavioral Intervention for Trauma in the Schools (CBITS) and the Trauma-Focused Cognitive Behavioral Therapy (TF-CBT, see Voisin and Berringer, 2014). CBT helps youth to understand their constellation of symptoms and to develop a set of effective coping strategies to effectively manage these symptoms while leading an enjoyable and meaningful life. As previously noted, care must be taken when employing CBT with individuals or groups who may have cognitive delays, to modify the approach to acknowledge disabilities but without distorting the basic principles of CBT; while this may be readily accomplished by professionals with graduate training in psychology, it may be a challenge for practitioners without such training.

Hopelessness. Our second thought more explicitly involves hopelessness. Feelings of hopelessness in the study population far exceed those for middle-class and affluent youth. A comparison between results published elsewhere (Reifman & Windle, 1995; Spirito, Williams, Stark, & Hart, 1988) and the MYS results shows that hopelessness among MYS respondents was 4.48 times higher than in the general adolescent population, 1.83 time higher than for adolescents in the general population who experienced significant emotional problems and were in therapy, and 0.74 times as high as for adolescents in the general population who had been institutionalized because they had attempted suicide (Bolland et al., 2007).

This should not be surprising, given a growing literature on adolescent hopelessness. One important aspect of hopelessness is difficulty envisioning a future (Lorion & Saltzman, 1993; Mac Giollabhui et al., 2018; MacLeod et al., 2005), such that adolescents who are hopeless tend to live in the moment and not consider the future consequences of their actions (Bolland, 2003). Consistent with this, Burnside and Gaylord-Harden (2019) found that among court-involved youth, hopelessness predicted future exposure to violence, likely because they found themselves in places where violence was more likely to occur. So and colleagues (2015) found that future orientation (e.g., hope for the future) serves as a protective factor against delinquency in adolescence (see also Jackman & MacPhee, 2017; Stoddard, Zimmerman, & Bauermeister, 2011). Similarly, Daigle and Hoffman (2018) found that when adolescents have been victimized, their future orientation suffers. Monahan and colleagues (2015) found that in a sample of juvenile offenders, greater exposure to violence was related to lower future orientation through young adulthood, as well as to lesser impulse control in the short-term. The hopelessness found in many of the youth who live in these communities is most likely not depression-associated hopelessness, but rather a cognitive style that is adaptive in their environment. That is, hopelessness is adaptive in many of the MYS youths' developmental context and may not be a sign of psychopathology. It is, in essence, a sensible cognitive adaptation to their environment.

One major problem, though, is that hopelessness (unlike, for example, depression) is seldom addressed directly in established youth interventions, and never directly addressed in evidence-based interventions. Although hopelessness is in some ways similar to depression, and in fact is directly linked to depression in one theory (Abramson, Metalsky, & Alloy, 1989), they are not the same thing. In simplest terms, depression is a mood disorder that may be caused by biological or environmental factors. Typically, a major depressive episode lasts for approximately 20 weeks; however, depressive episodes caused by environmental factors (e.g.,

trauma) are less severe and shorter lived. Symptoms of major depression include sleep disturbance, psychomotor disturbance, loss of energy, loss of interest, feelings of worthlessness, difficulty thinking, and thoughts of death (Buchwald & Rudick-Davis, 1993). Individuals who are depressed often feel isolated and/or hopeless (Gilbert, 1988), find it difficult to plan ahead (Breier-Williford & Bramlett, 1995), and lack the energy to engage in purposive behavior (Wilson, Sandoz, Kitchens, & Roberts, 2010). Feelings of lack of control, which contribute to depression, become a self-fulfilling prophesy as people react to events rather than anticipate them. Although depression can result in feelings of hopelessness (Gilbert, 1988), hopelessness as a malady typically stems strictly from environmental factors, particularly for impoverished youth. McLaughlin, Miller, and Warwick (1996) defined hopelessness as a system of negative expectations concerning self and future life. Joiner and Wagner (1995) saw it as "an expectation that highly desired outcomes will not occur or that negative ones will occur..., and that nothing is going to change things for the better...." (p. 778). Thus, it appears to be rooted in cognition rather than mood. Unlike situational depression, which also has environmental causes but tends to be short-term (diminishing as the environment changes), hopelessness tends to be a long-term condition, particularly if the impoverished environment does not change: MYS results show that the year-to-year-to-year correlation for hopelessness remained statistically significant through 84 months (median $r = .126$, $p < .05$). All of this suggests that successful approaches for treating depression will not necessarily work for hopelessness in this population. This may be particularly true for CBT, which has had a successful history in treating depression. However, hopelessness is at its peak during early adolescence (Figure 5), when cognitive ability is just beginning to develop, and particularly for impoverished adolescents whose cognitive development is often delayed.

How, then, can hopelessness best be addressed at the individual level? Attempting to "correct" the cognitive style of hopelessness to a rosier one ignores the realities of the environments which these youth live in and ignores the adaptive properties of this style. That is, hopelessness resulting from poverty-related stress (Wadsworth & Berger, 2006), must to be acknowledged as valid with these youth. Although no definitive conclusions have emerged, suggestions have been advanced. Marotta and Voisin (2017) focused on the lack of future orientation that stems from hopelessness, and they advocate for the strengthening of resilience (i.e., "positive adaptation in individuals who have been exposed to significant adversity," Yule et al., 2019, p. 2) in youth, particularly African American youth living in communities characterized by poverty. DuRant and colleagues (1994) found that resiliency factored into whether impoverished youth who were exposed to violence also engaged in violence; unfortunately, they measured resiliency in terms of hopelessness and future orientation, which does not advance us much toward a goal of reducing hopelessness (i.e., the way to reduce hopelessness is to reduce hopelessness). It also points out the difficulty of promoting resilience as a therapeutic approach: it is an amorphous concept that is difficult to measure. Perhaps as a result, no evidence-based programs have been developed to increase resilience, though recently, Wadsworth and colleagues (2018) have proposed their program Building a Strong Identity and Coping Skills (BaSICS) which does address resiliency in youth who experience poverty-related stress.

In the absence of evidence-based programs to directly address hopelessness, two approaches seem possible. First, evidence-based programs that effectively address some of the behavioral consequences of hopelessness (see Bolland, 2003) could be implemented. One such program, Positive Action, has been recommended by the Annie E. Casey Foundation on its Blueprints

website. It is a universal school-based program (for elementary- and middle-school grades) prevention program that has reduced delinquency and violence, increased emotional regulation and positive social/prosocial behavior, and increased school attendance, and it has shown promise with low income students (see Lewis et al., 2016). Second, programs to reduce hopelessness could be designed based on research results presented here (also see Bolland et al., 2005). These results suggest that hopelessness decreases when (a) feelings of connectedness increase, and (b) disruption decreases. Thus, such a program could attempt to increase feelings of connectedness with schools (particularly for youth who change schools because of residential mobility) by conducting individualized orientations for students; promote better feelings of connectedness with the neighborhood by reducing negative neighborhood characteristics (e.g., blight, litter); and promote better caregiver-child relationships. They could also attempt to reduce disruption, for example by decreasing changes in caregiver (i.e., mother and father figure) and helping establish routines in the home.

Self-Worth. Our third thought involves self-worth, which significantly relationship between exposure to violence and court outcome severity (see Table 24). Much of the existing research about effects related to exposure to violence focus on internalizing and externalizing symptoms, neglecting psychological well-being. However, there is scant research suggesting that poverty has a negative effect on the socioemotional wellbeing (including self-worth) of children (Evans & English, 2002; Li et al., 2007). Additionally, Buckner and colleagues (2004) found that self-esteem mediated the relationship between exposure to violence and problematic mental health symptoms (e.g., depressive symptoms) in children who lived in communities characterized by extreme poverty (although see Youngstrom, Weist, & Albus, 2003 for inconsistent results). One factor that has been shown to effect self-esteem is family and neighborhood cohesion (see DiClemente et al., 2018). In fact, DiClemente and colleagues found that for boys who had been exposed to high levels of violence, high levels of neighborhood cohesion resulted in increased self-esteem (although possible high levels of neighborhood cohesion in the presence of high levels of gang activity raise caution flags about how these results should be interpreted). Thus, approaching self-worth through either neighborhood or family interventions might be appropriate. Given the negative relationship between self-worth and depression, CBT and other therapies used to treat depression could be effective (the previous caution about using CBT with this population is less pronounced for self-worth than it was for hopelessness, because self-worth is less affected by age than is hopelessness; compare Figure 5 with Figures 19 and 25).

Strengths and Limitations

The first limitation of this study is that it is largely based on self-report data. Specifically, measures of exposure to violence, psychological adjustment, social support, and family control are all derived from responses to survey questions. These self-reports are notoriously subject to measurement error (see Gnambs & Kaspar, 2015), due to misunderstanding of questions or purposeful misrepresentation in responses. In terms of misunderstanding, Mobile Youth Survey participants may have been particularly susceptible to measurement error (in a sample of 457 MYS youths, composite scores on the Kaufman Brief Intelligence Test (K-BIT II; Kaufman, Lichtenberger, Fletcher-Janzen, & Kaufman, 2005) ranged from 52 to 124, M = 85.11, SD = 13.36, translating to percentile ranks ranging from 0.1 to 95.0, M = 22.93, SD = 21.67). We were aware of this challenge, however, and we attempted to limit the negative effects of cognitive limitations, in two ways. First, we read questions, and often response options, aloud to

respondents. Second, we invited respondents who appeared to have difficulty following along to be interviewed in a one-on-one format, allowing as much time as necessary to answer each question and more clarification and explanation than would be possible in group settings. In terms of purposeful misrepresentation, we were able to detect inconsistency in responses, which might occur if a respondent were attempting to overstate or understate a particular behavior, and we eliminated the data of respondents who exceeded a fairly strict inconsistency rate (i.e., who were inconsistent in their reporting of 15% or more of the behaviors that were assessed). This, of course, does not completely eliminate purposeful misrepresentation, but it should reduce its effects.

A related strength of the study is that two of the measures, those having to do with the schools and the courts, used objectively measured outcomes obtained from the Mobile County Public School System and the Mobile County Juvenile Court. In developing measures of academic progress, crimes against a person, and court outcome severity, we made decisions about how to sort, distinguish, and combine data (see Appendix D and Appendix E), and there is plenty of room for disagreement about these decisions. Even so, the statistical models that used self-report data along with the objective measures produced a number of statistically significant results. Arguably, if the measurement error produced by the self-report measures had been eliminated, the results would have been stronger. Similarly, any error introduced by coding decisions for the objective data should have attenuated results, and arguably if this error were eliminated the results would have been stronger. Put differently, any error in the study, either introduced by respondents or by investigator decisions, would introduce Type II error into the results; the obtained results should therefore be viewed as conservative.

Our decision to use a Granger Causation framework in the analysis of court outcome severity introduces a further conservative bias into the results, but it allow a stronger causal interpretation of the results than would otherwise be possible. This is not to suggest that the results definitively demonstrate causation; they do not. But any enhanced ability to draw causal inference, however tentatively, strengthens the usefulness of the conclusions.

Another limitation/strength of the study involves the homogeneity of the population. The MYS sample is remarkably homogeneous in terms of socioeconomic status (SES), race, and geographical location. This obviously limits severely the generalizability of the results to Mobile and other similar urban areas where extreme poverty is rampant in racially-segregated areas of the metropolitan area, and it may explain why the results reported here are sometimes inconsistent with those found in other studies. Surely, however, a number of similar urban areas exist in the United States. On the other hand, however, the extreme homogeneity of the population studied is also a strength of the study. Consider, for example, how heterogeneity in SES can distort the validity of findings. Arguably, a number of factors considered in this study are associated with SES: these include exposure to violence (e.g., Evans, 2004; Friedson & Sharkey, 2015), feelings of hopelessness (e.g., Bolland et al., 2005; Landis et al., 2007), academic progress (e.g., Blair & Raver, 2016; Hair, Hanson, Wolfe, & Pollak, 2015; Lacour & Tissington, 2011), and juvenile court contact (e.g., Rodriguez, 2013; Voisin et al., 2017). If SES is left uncontrolled, correlations among these variables will be artificially increase, distorting the true magnitude of the relationship. The alternative, most often used in studies, is to measure SES and statistically control for its effect. This approach, however, is limited by any error in measuring SES. Unfortunately, a substantial literature has developed questioning the accuracy of measurement of SES (e.g., Oakes & Rossi, 2003). As the magnitude of the error increases, the

magnitude of relationships among variables and the statistical significance of results, becomes exaggerated and therefore less accurate.

Future Research

The results suggest several areas where additional research may be fruitful and help address some unresolved issues identified in this report. First, youth exposure to violence in communities of concentrated poverty is an inherently complex problem that occurs at multiple levels of society, has both local and universal aspects, is dynamic, and is determined by current and historical factors. Our results demonstrated some of these factors by illuminating the interplay of individual, social, and institutional variables over time. Given these formidable complexities, successful solutions to this problem also must be complex. Future research should utilize complex, multidisciplinary frameworks that incorporate multiple levels of analysis and temporal processes. For example, Wadsworth and colleagues (2018) proposed an elegant research framework that integrates the literatures on stress and coping, psychophysiology, cultural identity development, and empowerment theory.

Related, parents create the developmental environments in which their children grow up, such as physical, intellectual, emotional, and interpersonal environments. All primary aspects of human development are rooted in the family environment. Therefore, to assist youth growing up in environments of concentrated poverty, it is crucial to assist their parents who are creating their developmental environments. Given this, future research should pursue comprehensive approaches to assisting the parents. Because parental economic viability is essential for the provision of the family environment, interventions to support parental employment and financial self-sufficiency (e.g., educational remediation, vocational and professional training) should be included as core components of these approaches. Interventions to address parental mental health problems and substance abuse should also be included. Further, stresses associated with concentrated poverty may disrupt the intergenerational and community transmission of healthy parenting practices, such as preparation of healthy meals, creation of family routines, and positive parenting. Therefore, parents in environments of concentrated poverty may also benefit from skills-based family wellness coaching that could facilitate the transmission of healthy parenting practices between family and community members (Hudziak & Ivanova, 2018; Ivanova et al., 2019).

Second, future research should investigate how witnessing violence impacts behavior as well as juvenile court outcomes. In other words, an exploration into the mechanism that is triggering more severe juvenile court outcomes for youth who have been exposed to violence would be appropriate. Such an investigation could focus on whether youth who are exposed to violence engage in more serious forms of, or higher rates of, violent behavior, and whether this violent behavior is what leads to negative educational and juvenile court outcomes. Similarly, it may be useful to explore how gang involvement affects both psychological adjustment and these outcomes. This would add considerable complexity to the structural equations model tested in this study; but it could be undertaken with the Mobile Youth and Poverty Study data.

Related, better research on resilience in this population would be worthwhile. Such research would explore what factors enable some youth to thrive in the face of hyperconcentrated poverty. As suggested previously, this requires considerable attention to the meaning and measurement of resilience. It would be important to determine, for example, whether in this population resilience is simply the absence of negative outcomes, or whether it also involves positive outcomes; and, if it requires positive outcomes, it is important to theoretically determine what those outcomes

are and how to measure them. This would also allow a rigorous examination of whether resilience can truly prevent juvenile court involvement, or alternatively if the institutional racism (and equally important, structural bias against those living in poverty) makes resilience largely irrelevant. If theoretically justifiable measures of resilience can be developed, it would provide a fertile ground for developing interventions to reduce violence in the community.

Third, a more thorough examination of violent behavior would be useful. There are some possibilities with respect to future research that might be undertaken with the population of youth who have been exposed to violence. For example, investigation into the fight, flight, freeze system (FFFS) might be warranted and yield interesting results. Tache, Lambert, Ganiban, & Ialongo (2018) found that "community violence exposure was positively associated with aggressive behavior for adolescents low on the FFFS, but not associated with aggressive behavior for adolescents high on FFFS. Youth low on FFFS may be less perceptive of cues indicating imminent threat, less sensitive to emotions involving fear or panic, and more willing to engage with violent situations requiring aggression…. Certain aspects of fearfulness (e.g., caution) may help to protect against aggression for African American adolescents" (p. 714).

This naturally leads to a need for better understanding of the biology of FFFS, and how the physical environment may affect violence for youth living in hyperconcentrated poverty. Poverty is associated with substandard housing, often poorly insulated against the elements, and as a result, often damp. This leads to mold, and to cockroach and dustmite infestations, all of which are produce allergens (Arbes, Gergen, Elliott, & Zeldin, 2005; Sly, 1999). Many youth growing up in these homes develop atopy (sensitivity to allergens) during their childhood; for atopic individuals, exposure to allergens stimulates the production of immunoglobulin E (IgE) (Eggleston et al., 1998; Gergen, Arbes, Calatroni, Mitchell, & Zeldin, 2009), which in turn triggers a cascade of immunomodulatory and proinflammatory cytokines; the latter bind to neurons in the preoptic nucleus of the brain and triggering the release corticotropin releasing hormone (CRH) in the brain (Black, 1994; Turnbull & Rivier, 1999). Thus, exposure to allergens may create a high level of ambient cortisol in atopic individuals.

As argued by Tache and colleagues (2018), fear and threat are at the heart of the FFFS. When a youth encounters a threatening situation, the amygdala triggers the production of CRH by the hypothalamic-pituitary-adrenocortical (HPA) axis (Sajdyk, Shekhar, & Gehlert, 2004). This, in turn, induces expression of proopiomelanocortin in the anterior pituitary gland and results in the (a) synthesis of adrenocorticotropin and β-endorphin, and (b) production of adrenal glucocorticoids (notably cortisol) (Black, 1994). This, coupled with high ambient levels of cortisol produced by the immunological response, may result in hypercortisolism, wherein the sympathetic nervous system is activated, with increased blood pressure and heart rate, diversion of stored energy to muscle, and inhibition of digestion (Goldstein, 2004; McCarty & Gold, 1996; Rodrigues, LeDoux, & Sapolsky, 2009)—all of which are central to the FFFS. However, in an environment where flight or freeze may not be feasible (e.g., because of the code of the street), fighting and violence often results. However too much cortisol my result in another, very different physiological response. When too much CRH is released too often over a prolonged period of time, in can lead to atrophy of neurons in the hippocampus and the amygdala (Roozendaal, McEwen, &, Chattarji, 2009; Vyas, Pillai, & Chattarji, 2004). This results in a hypocortisolism and a blunted stress response (Buske-Kirschbaum et al., 2003), which has been associated with psychopathy (O'Neal et al., 2010), sociopathy (van Goozen & Fairchild, 2008), aggression (Gunnar & Vazquez, 2001), and an inability to recognize fear (Korte, 2001). Indeed, the effects of hypocortisolism are similar to those found in people with lesions in the inferior

frontal region of the brain (Korte, 2001); this latter condition has been associated with marked increases in violent behavior (Hoptman, 2003).

A better understanding the prevalence of hypercortisolism and hypocortisolism among impoverished adolescents living in neighborhoods where poverty itself is hyperconcentrated is critical: although these two conditions may both result in violence, the etiology of the violence is very different and potentially subject to different interventions. These interventions may be quite sophisticated and involve medical treatment; they may be very simple and involve the replacement of substandard housing; or they may be in an area that we can only identify once more study is conducted.

Fourth, at a more sociological level, understanding how violence spreads through neighborhoods is important. Violence typically does not occur in isolation: there are witnesses, and victims share their experiences. Again, both street code and gang involvement are important elements of this, such that any act of violence may require retaliation either by the victim or by his or her mates. Burnside and colleagues (2018) found these network effects with respect to exposure to violence. Perhaps just as important is an understanding of the meaning of violence in an environment of concentrated poverty. That is, it would be useful to determine whether violence is interpreted as a purposeful assault on an individual by a bad or evil person, or as environmentally driven acts where individuals are victimized because they were in the wrong place at the wrong time.

Fifth, methodological research would help clarify some of the issues presented in this report. For example, a number of the measures used in this study are not normally distributed. It is important to determine whether this results in a non-normal error distribution, and how this may bias results. If the error distributions do violate the normality assumption, it would be important to explore how accurately different error distribution models capture the data, and to reanalyze the data using the appropriate distribution. This assumes, however, that existing statistical analysis software is capable of estimating these models. They also found that those who fit a profile of high exposure to violence are also lower in their future orientation levels.

Another methodological issue would be to examine how polyvictimization differs from multiple exposures, and how it might influence court involvement could be undertaken. Polyvictimization typically refers to exposure to different kinds of exposure to violence, rather than multiple exposures of the same kind of violence (Finkelhor, Turner, Omrod, Hamby, & Kracke, 2009). Indeed, high levels of polyvictimization are more common for youth of low socioeconomic status (Finkelhor et al., Turner, 2007). Moreover, polyvictimization produced higher levels of psychological symptoms than single-victimization (Finkelhor et al., 2007; Gustafsson, Nilsson, & Svedin, 2009; Turner, Shattuck, Finkelhor, & Hamby, 2016).

Still another methodological issue involves the measurement of traumatic stress: our scale more closely measures secondary traumatic stress rather than direct traumatic stress. The consequences of the scale we used (e.g., I have trouble sleeping) are very similar to those used in a traditional traumatic stress scale; however, the antecedent (when something bad happens to a friend or family member …) is different. One might argue that the consequents are more important than the antecedent, but that is an empirical question that should be tested. If the two approaches yield similar results, then the conclusions reported here are valid for both witnessing violence and violent victimization; if not, they are only valid for witnessing violence.

Finally, future research should evaluate programs that might be implemented to respond to the problems associated with exposure to violence. For example, given the limitations of CBT for youth with moderate-to-serious cognitive delays, and the need to modify programs using

CBT for these youth, it is important to determine the effectiveness of group treatments, such as CBITS, when developmental delays or disabilities may be present or even common. Additionally, it would be useful to further evaluate the effectiveness of interventions that target traumatic stress to determine their effects on hopelessness and self-worth, given our findings that hopelessness was the most important mediator between exposure to violence and court involvement.

Conclusions

The uncertainty associated with poverty creates existential challenges for day-to-day survival of children growing up poor. One area where this is particularly the case is exposure to violence and the psychological and behavioral adjustment that it causes. One especially important outcome potentially related to psychological and behavioral maladjustment is involvement in the juvenile court system, where African Americans are overrepresented at every stage or level (Kempf-Leonard, 2007; Leiber, 2016; Stahl, Finnegan, & Kang, 2006). In this study, we explored direct and indirect pathways from exposure to violence to juvenile court involvement using data from the Mobile Youth and Poverty Study (MYPS), a community-based longitudinal cohort study of adolescents who live in communities characterized by extreme and concentrated poverty. Specifically, this study has three objectives: (a) better understand how traumatic events increase the risk of juvenile justice involvement for vulnerable adolescents; (b) identify developmental points where interventions can most effectively reduce this risk; and (c) identify classes (i.e., types) of intervention that might be most effective for these adolescents. To meet these objectives, this study links data from multiple sources (i.e., longitudinal survey responses, juvenile court and school records) of over 8,000 adolescents living in impoverished neighborhoods in Mobile, AL and surrounding suburbs between 1998 and 2011. The MYPS sample consists almost exclusively of African American and racially mixed adolescents. Given the relationship between socioeconomic status and racial/ethnic minority status, our sample of youth is appropriate to address these objectives.

Results from this study indicate that exposure to violence does influence juvenile court involvement with respect to type of offense (i.e., crimes against a person) as well as the severity of court outcomes. That is, exposure to violence does increase the likelihood of committing crimes against a person. While the effects we found are not large, the analysis approach we use is conservative and the effects are non-trivial. With respect to court outcome severity, which considers all categories of offenses, exposure to violence has a larger impact. We also found that multiple sources and/or instances of victimization did *not* result in an increased likelihood of crimes against a person or in court outcome severity. That is to say, any exposure to violence, whether witnessing violence or being victimized by violence, is meaningful and should be considered important with respect to later outcomes, including psychological adjustment, academic progress, and juvenile court outcomes.

Given that our results do suggest a path, both direct and indirect, from exposure to violence to both violent behavior and juvenile court involvement in high poverty neighborhoods, it is important to identify ways to mitigate the problem of exposure to violence and its path toward juvenile justice involvement. Our results suggest a need to broaden initiatives to prevent violence in these neighborhoods, one that goes beyond strict law enforcement to the community. A broad public health approach to prevent violence in these at-risk neighborhoods is one promising approach. Finkelhor and colleagues (2013) suggest that exposure to community violence is indeed a significant public health issue for youth, particularly among racial and ethnic minority

youth (Chen et al., 2016). Such an approach must focus not only on the individual, but more broadly on the neighborhood. Specifically, these results suggest that reducing the negative characteristics of a neighborhood is an approach that would lead to positive outcomes. To accomplish this, it is necessary to work with neighborhood residents and community leaders as a whole; this replaces the traditional concept of individual therapy with a broader concept of community therapy.

We also found that witnessing violence has an impact on youth's psychological adjustment, academic progress, and eventual juvenile court involvement. It is important to acknowledge this impact and attend to those who have witnessed violence not only those who have been victimized by it. Thus, ameliorating the effect of exposure to violence on psychological adjustment is an approach that could be undertaken to interrupt the path of exposure to violence to juvenile court involvement. As discussed, there are many existing programs aimed at targeting traumatic stress, self-esteem, and more recently, even worry. However, there have been virtually no trials, let alone evidence-based programs, developed to reduce hopelessness; yet, hopelessness is the most important mediating factor in the current study. We found that both age and gender moderate the path from exposure to violence to juvenile justice contact, but not always in a consistent manner. Thus, we conclude that interventions should be considered with respect to the substance for particular age groups and genders rather than more of a universal prevention approach.

A final approach to this problem is to ameliorate the effect of exposure to violence on academic progress. We found that exposure to violence indeed does negatively affect normative academic progress, and that academic progress partially mediates the relationship between exposure to violence and court outcome severity. We also found that psychological adjustment also partially mediates the effect of exposure to violence on academic progress. Perhaps trauma-informed training for teachers, school counselors, and school social workers should be promoted. Additionally, programs targeting trauma-informed coping skills could be beneficial.

References

Abram, K.M., Teplin, L.A., Charles, D.R., Longworth, S., McClelland, G., & Dulcan, M. (2004). Posttraumatic stress disorder and trauma in youth in juvenile detention. *Archives of General Psychiatry, 61,* 403-410.

Abramson, L.Y., Metalsky, G.I., & Alloy, L.B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review, 96*(2), 358-372.

Agnew, R. (2001). Building on the foundation of general strain theory: Specifying the types of strain most likely to lead to crime and delinquency. *Journal of Research in Crime and Delinquency, 38*(4), 319-361.

Agnew, R. (2013). When criminal coping is likely: An extension of general strain theory. *Deviant Behavior, 34*(8), 653-670.

Aiken, L.S., West, S.G., & Reno, R.R. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.

Aizer, A., & Doyle Jr, J.J. (2015). Juvenile incarceration, human capital, and future crime: Evidence from randomly assigned judges. *The Quarterly Journal of Economics, 130*(2), 759-803.

Allensworth E. & Easton J.Q. (2005). The on-track indicator as a predictor of high school graduation. University of Chicago Consortium on Chicago School Research; Chicago: 2005. Retrieved from https://ccsr.uchicago.edu/sites/default/files/publications/p78.pdf

American Psychiatric Association. (2013). Trauma – and stressor-related disorders. In *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: https://doi.org/10.1176/appi.books.9780890425596.dsm07

Anderson, E. (1999). Code of the street: Decency, violence, and the moral life of the inner city. New York: W.W. Norton.

Andrew, M. (2014). The scarring effects of primary-grade retention? A study of cumulative advantage in the educational career. *Social Forces, 93*(2), 653-685. doi: 10.1093/sf/sou074

Appleyard, K., Egeland, B., van Dulmen, M.H., & Alan Sroufe, L. (2005). When more is not better: The role of cumulative risk in child behavior outcomes. *Journal of Child Psychology and Psychiatry, 46*(3), 235-245.

Arbes, S.J., Gergen, P.J., Elliott, L., & Zeldin, D.C. (2005). Prevalences of positive skin test responses to 10 common allergens in the US population: Results from the Third National Health and Nutrition Examination Survey. *Journal of Allergy & Clinical Immunology, 116,* 377-383.

Bacchini, D., Concetta Miranda, M., & Affuso, G. (2011). Effects of parental monitoring and exposure to community violence on antisocial behavior and anxiety/depression among adolescents. *Journal of Interpersonal Violence, 26*(2), 269-292.

Bacchini, D., Esposito, G., & Affuso, G. (2009). Social experience and school bullying. *Journal of Community & Applied Social Psychology, 19*(1), 17-32.

Bagley, E.J., Tu, K.M., Buckhalt, J.A., & El-Sheikh, M. (2016). Community violence concerns and adolescent sleep. *Sleep Health, 2*(1), 57-62.

Balfanz, R., Herzog, L., & Mac Iver, D.J. (2007). Preventing student disengagement and keeping students on the graduation path in urban middle-grades schools: Early identification and effective interventions. *Educational Psychologist, 42*(4), 223-235. doi 10.1080/00461520701621079

Balfanz, R., Spiridakis, K., Neild, R.C., & Legters, N. (2003). High-poverty secondary schools and the juvenile justice system: How neither helps the other and how that could change. *New Directions for Youth Development, 2003*(99), 71-89.
Bandura, A. (1973). *Aggression: A social learning analysis*. Prentice-Hall.
Bell, C.C., & Jenkins, E.J. (1993). Community violence and children on Chicago's southside. *Psychiatry, 56*(1), 46-54.
Bell, C.C., & Jenkins, E.J. (1997). Exposure and response to community violence among children and adolescents. In J. Osofsky (Ed.), *Children in a violent society* (pp. 9-31). New York: Guilford Press.
Bensing, R.C., & Schroeder, O. (1960). *Homicide in an urban community*. Thomas.
Berkowitz, S.J., Stover, C.S., & Marans, S.R. (2011). The child and family traumatic stress intervention: Secondary prevention for youth at risk of developing PTSD. *Journal of Child Psychology and Psychiatry, 52*(6), 676-685.
Betts, G., Kapushion, B., & Carey, R.J. (2016). The autonomous learner model. In D. Ambrose & R.J. Sternberg (Eds.), *Giftedness and talent in the 21st Century* (pp. 201-220). Rotterdam, Netherlands: Sense.
Black, P.H. (1994). Immune system-central nervous system interactions: Effect and immunomodulatory consequences of immune system mediators on the brain. *Antimicrobial Agents & Chemotherapy, 38,* 7-12.
Blair, C., & Raver, C.C. (2016). Poverty, stress, and brain development: New directions for prevention and intervention. *Academic Pediatrics, 16*(3), S30-S36.
Blum, R.W., Beuhring, T., Shew, M.L., Bearinger, L.H., Sieving, R.E., & Resnick, M.D. (2000). The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. *American Journal of Public Health, 90*(12), 1879.
Bolland, A. C. (2012). Representativeness two ways: An assessment of representativeness and missing data mechanisms in a study of an at-risk population. *Unpublished doctoral dissertation). University of Alabama, Tuscaloosa*.
Bolland, A.C., Besnoy, K.D., Tomek, S., & Bolland, J.M. (2019). The effects of academic giftedness and gender on developmental trajectories of hopelessness among students living in economically disadvantaged neighborhoods. *Gifted Child Quarterly*, doi 0016986219839205
Bolland, A.C., Tomek, S.E., Besnoy, K.D., & Bolland, J.M. (2018). Gifted 'n the 'hood: Gender and giftedness as predictors of social risk among low-income students. *Exceptionality, 26*(3), 190-208.
Bolland, A.C., Tomek, S. and Bolland, J.M. (2017) Does Missing Data in Studies of Hard-to-Reach Populations Bias Results? Not Necessarily. *Open Journal of Statistics, 7*, 264-289. doi: 10.4236/ojs.2017.72021
Bolland, J.M. (2003). Hopelessness and risk behavior among adolescents living in high-poverty inner-city neighborhoods. *Journal of Adolescence, 26*, 145-158.
Bolland, J.M. (2007). Mobile Youth Survey overview. Unpublished paper. Birmingham, AL: School of Public Health, University of Alabama at Birmingham.
Bolland, J.M., Bryant, C.M., Lian, B.E., McCallum, D.M., Vazsonyi, A.T., & Barth, J.M. (2007). Development and risk behavior among African American, Caucasian, and mixed-race adolescents living in high poverty inner-city neighborhoods. *American Journal of Community Psychology, 40*(3-4), 230-249.

Bolland, J.M., Lian, B.E., & Formichella, C.M. (2005). The origins of hopelessness among inner-city African-American adolescents. *American Journal of Community Psychology*, *36*(3-4), 293-305.
Bolland, K.A., Bolland, A.C., Bolland, J.M., Church, W.T., Hooper, L.M., Jaggers, J.W., & Tomek, S. (2016). Trajectories of school and community connectedness in adolescence by gender and delinquent behavior. *Journal of Community Psychology*, *44*(5), 602-619.
Bowen, N.K., & Bowen, G.L. (1999). Effects of crime and violence in neighborhoods and schools on the school behavior and performance of adolescents. *Journal of Adolescent Research*, *14*(3), 319-342.
Bowers, A.J., Sprott, R., & Taff, S.A. (2012). Do we know who will drop out? A review of the predictors of dropping out of high school: Precision, sensitivity, and specificity. *The High School Journal*, 77-100.
Braveman, P. A., Cubbin, C., Egerter, S., Chideya, S., Marchi, K. S., Metzler, M., & Posner, S. (2005). Socioeconomic status in health research: one size does not fit all. *JAMA*, *294*(22), 2879-2888.
Breier-Williford, S., & Bramlett, R.K. (1995). Time perspective of substance abuse patients: Comparison of the scales in Stanford time perspective inventory, Beck depression inventory, and Beck hopelessness scale. *Psychological Reports*, *77*(3), 899-905.
Brezina, T., Agnew, R., Cullen, F.T., & Wright, J.P. (2004). The code of the street a quantitative assessment of Elijah Anderson's subculture of violence thesis and its contribution to youth violence research. *Youth Violence and Juvenile Justice*, *2*(4), 303-328.
Brody, G.H., & Flor, D.L. (1997). Maternal psychological functioning, family processes, and child adjustment in rural, single-parent, African American families. *Developmental Psychology*, *33*(6), 1000-1011.
Brody, G.H., Murry, V.M., Gerrard, M., Gibbons, F.X., Molgaard, V., McNair, L., ... & Chen, Y.F. (2004). The strong African American families program: Translating research into prevention programming. *Child Development*, *75*(3), 900-917.
Bronfenbrenner, U. (1992). *Ecological systems theory*. Jessica Kingsley Publishers.
Buchwald, A.M. & Rudick-Davis, D. (1993). The symptoms of major depression. *Journal of Abnormal Psychology*, *102*(2), 197-205.
Buckner, J.C., Beardslee, W.R., & Bassuk, E.L. (2004). Exposure to violence and low-income children's mental health: Direct, moderated, and mediated relations. *American Journal of Orthopsychiatry*, *74*(4), 413-423.
Buffington, K., Dierkhising, C.B., & Marsh, S.C. (2010). Ten things every juvenile court judge should know about trauma and delinquency. *Juvenile and Family Court Journal*, *61*(3), 13-23.
Buka, S.L., Stichick, T.L., Birdthistle, I., & Earls, F.J. (2001). Youth exposure to violence: prevalence, risks, and consequences. *American Journal of Orthopsychiatry*, *71*(3), 298-310.
Bullock, H.A. (1955). Urban homicide in theory and fact. *The Journal of Criminal Law, Criminology, and Police Science*, *45*(5), 565-575.
Burnside, A.N., Gaylord-Harden, N.K., So, S., & Voisin, D.R. (2018). A latent profile analysis of exposure to community violence and peer delinquency in African American adolescents. *Children and Youth Services Review*, *91*, 196-203.
Buske-Kirschbaum, A., von Auer, K., Krieger, S., Weis, S., Rauh, W., & Hellhammer, D. (2003). Blunted cortisol response to psychosocial stress in asthmatic children: A general feature of atopic disease? *Psychosomatic Medicine*, *65*, 806-810.

Cantillon, D. (2006). Community social organization, parents, and peers as mediators of perceived neighborhood block characteristics on delinquent and prosocial activities. *American Journal of Community Psychology, 37*(1-2), 111-127.
Carey, D.C., & Richards, M.H. (2014). Exposure to community violence and social maladjustment among urban African American youth. *Journal of Adolescence*, *37*(7), 1161-1170.
Cavanagh, S.E., & Huston, A.C. (2006). Family instability and children's early problem behavior. *Social Forces*, *85*(1), 551-581.
Cavanagh, S.E., Stritzel, H., Smith, C., & Crosnoe, R. (2018). Family instability and exposure to violence in the early life course. *Journal of Research on Adolescence, 28*(2), 456-472.
Cedeno, L.A., Elias, M.J., Kelly, S., & Chu, B.C. (2010). School Violence, Adjustment, and the Influence of Hope on Low-Income, African American Youth. *American Journal of Orthopsychiatry, 80*(2), 213-226.
Centers for Disease Control and Prevention. (2009). Youth violence: Facts at a glance. Retrieved from http://www.cdc.gov/violenceprevention/pdf/YV_DataSheet_Summer2009-a.pdf
Chavis, D.M., & Newbrough, J.R. (1986). The meaning of" community" in community psychology. *Journal of Community Psychology*, *14*(4), 335-340.
Chavis, D.M., & Wandersman, A. (1990). Sense of community in the urban environment: A catalyst for participation and community development. *American Journal of Community Psychology*, *18*(1), 55-81.
Chen, P., Voisin, D.R., & Jacobson, K.C. (2016). Community violence exposure and adolescent delinquency: Examining a spectrum of promotive factors. *Youth & Society*, *48*(1), 33-57.
Chen, W.Y. (2010). Exposure to community violence and adolescents' internalizing behaviors among African American and Asian American adolescents. *Journal of Youth and Adolescence*, *39*(4), 403-413.
Child Trends. (2012). Children who repeated a grade. Retrieved from http://www.childtrends.org/?indicators=children-who-repeated-a-grade
Chung, H.L., & Steinberg, L. (2006). Relations between neighborhood factors, parenting behaviors, peer deviance, and delinquency among serious juvenile offenders. *Developmental Psychology*, *42*(2), 319-331.
Cohen, C.S., & Phillips, M.H. (1997). Building community: Principles for social work practice in housing settings. *Social Work*, *42*(5), 471-481.
Conger, R., Wallace, L., Sun, Y., Simons, R., McLoyd, V., & Brody, G. (2002). Economic pressure in African American families: A replication and extension of the family stress model. *Developmental Psychology, 38*, 179–193.
Copeland, W.E., Miller-Johnson, S., Keeler, G., Angold, A., & Costello, E.J. (2007). Childhood psychiatric disorders and young adult crime: A prospective, population-based study. *American Journal of Psychiatry*, *164*, 1668-1675.
Copeland-Linder, N., Lambert, S.F., & Ialongo, N.S. (2010). Community violence, protective factors, and adolescent mental health: A profile analysis. *Journal of Clinical Child & Adolescent Psychology*, *39*(2), 176-186.
Coulton, C.J., Korbin, J.E., Su, M., & Chow, J. (1995). Community level factors and child maltreatment rates. *Child Development*, *66*(5), 1262-1276.
Crick, N.R., Ostrov, J.M., & Werner, N.E. (2006). A longitudinal study of relational aggression, physical aggression, and children's social–psychological adjustment. *Journal of Abnormal Child Psychology*, *34*(2), 127-138.

Cummings, K.P., Addante, S., Swindell, J., & Meadan, H. (2017). Creating supportive environments for children who have had exposure to traumatic events. *Journal of Child and Family Studies*, *26*(10), 2728-2741.
Daigle, L.E., & Hoffman, C.Y. (2018). Violent victimization and future expectations: results from a longitudinal study of at-risk youth. *Victims & Offenders*, *13*(6), 798-813.
Davidson, T.M., & Cardemil, E.V. (2009). Parent-child communication and parental involvement in Latino adolescents. *The Journal of Early Adolescence*, *29*(1), 99-121.
Delaney-Black, V., Covington, C., Ondersma, S.J., Nordstrom-Klee, B., Templin, T., Ager, J., Janisse, J., & Sokol, R.J. (2002). Violence exposure, trauma, and IQ and/or reading deficits among urban children. *Archives of Pediatric and Adolescent Medicine*, *156*, 280-285.
del Barrio, V., Holgado-Tello, F.P., & Carrasco, M.A. (2016). Concurrent and longitudinal effects of maternal and paternal warmth on depression symptoms in children and adolescents. *Psychiatry Research*, *242*, 75-81.
DiClemente, C.M., Rice, C.M., Quimby, D., Richards, M.H., Grimes, C.T., Morency, M.M., ... & Pica, J.A. (2018). Resilience in urban African American adolescents: the protective enhancing effects of neighborhood, family, and school cohesion following violence exposure. *The Journal of Early Adolescence*, *38*(9), 1286-1321.
Dorado, J.S., Martinez, M., McArthur, L.E., & Leibovitz, T. (2016). Healthy Environments and Response to Trauma in Schools (HEARTS): A whole-school, multi-level, prevention and intervention program for creating trauma-informed, safe and supportive schools. *School Mental Health*, *8*(1), 163-176.
Downey, G., & Coyne, J.C. (1990). Children of depressed parents: an integrative review. *Psychological Bulletin*, *108*(1), 50-76.
Drummond, H., Bolland, J.M., & Harris, W.A. (2011). Becoming violent: Evaluating the mediating effect of hopelessness on the code of the street thesis. *Deviant Behavior*, *32*(3), 191-223.
Dubrow, N.F., & Garbarino, J. (1989). Living in the war zone: mothers and young children in a public housing development. *Child Welfare*, *68*(1), 3-20.
Duncan, D.F. (1996). Growing up under the gun: Children and adolescents coping with violent neighborhoods. *Journal of Primary Prevention*, *16*(4), 343-356.
Duncan, G.J., Yeung, W.J., Brooks-Gunn, J., & Smith, J.R. (1998). How much does childhood poverty affect the life chances of children?. *American Sociological Review*, *63*(3), 406-423.
Dunster, G.P., de la Iglesia, L., Ben-Hamo, M., Nave, C., Fleischer, J.G., Panda, S., & Horacio, O. (2018). Sleep more in Seattle: Later school start times are associated with more sleep and better performance in high school students. *Science Advances*, *4*(12), eaau6200.
DuRant, R.H., Getts, A., Cadenhead, C., Emans, S.J., & Woods, E.R. (1995). Exposure to violence and victimization and depression, hopelessness, and purpose in life among adolescents living in and around public housing. *Journal of Developmental and Behavioral Pediatrics*, *16*(4), 233-237.
Eggleston, P. A., Rosenstreich, D., Lynn, H., Gergen, P., Baker, D., Kattan, M., ... & Malveaux, F. (1998). Relationship of indoor allergen exposure to skin test sensitivity in inner-city children with asthma. *Journal of Allergy and Clinical Immunology*, *102*(4), 563-570.
Esbensen, F.A., & Huizinga, D. (1991). Juvenile victimization and delinquency. *Youth & Society*, *23*(2), 202-228.
Esbensen, F.A., & Huizinga, D., & Menard, S. (1999). Family context and criminal victimization in adolescence. *Youth & Society*, *31*(2), 168-198.

Eisman, A.B., Stoddard, S.A., Heinze, J., Caldwell, C.H., & Zimmerman, M.A. (2015). Depressive symptoms, social support, and violence exposure among urban youth: A longitudinal study of resilience. *Developmental Psychology*, *51*(9), 1307-1316.

Elsaesser, C., Gorman-Smith, D., Henry, D., & Schoeny, M. (2017). The longitudinal relation between community violence exposure and academic engagement during adolescence: Exploring families' protective role. *Journal of Interpersonal Violence*.

Evangelist, M., Ryan, J.P., Victor, B.G., Moore, A., & Perron, B.E. (2017). Disparities at adjudication in the juvenile justice system: An examination of race, gender, and age. *Social Work Research*, *41*(4), 199-212.

Evans, G.W. (2004). The environment of childhood poverty. *American Psychologist*, *59*(2), 77-92.

Evans, G.W., & English, K. (2002). The environment of poverty: Multiple stressor exposure, psychophysiological stress, and socioemotional adjustment. *Child Development, 73*(4), 1238-1248.

Evans, W., Wolfe, B., & Adler, N. (2012). The SES and health gradient: A brief review of the literature. In B. Wolfe, W. Evans, and T. Seeman (Eds). (pp. 1-37). *The Biological Consequences of Socioeconomic Inequalities*. Russell Sage Foundation.

Farrell, C., & Zimmerman, G.M. (2018). Is exposure to violence a persistent risk factor for offending across the life course? Examining the contemporaneous, acute, enduring, and long-term consequences of exposure to violence on property crime, violent offending, and substance use. *Journal of Research in Crime and Delinquency*, *55*(6), 728-765.

Farrington, D.P. (2012). Should the juvenile justice system be involved in early intervention? *Criminology & Public Policy*, *11*(2), 265-273.

Finkelhor, D., Ormrod, R.K., & Turner, H.A. (2007). Poly-victimization: A neglected component in child victimization. *Child Abuse & Neglect, 31*(1), 7-26.

Finkelhor, D., Turner, H., Ormrod, R., Hamby S. & Kracke, K. (2009) Children's Exposure to Violence: A Comprehensive National Survey. U.S. Department of Justice, Office of Juvenile Justice and Delinquency Programs.

Finkelhor, D., Turner, H.A., Shattuck, A., & Hamby, S.L. (2013). Violence, crime, and abuse exposure in a national sample of children and youth: An update. *JAMA Pediatrics, 167*(7), 614-621.

Finnegan, R.A., Hodges, E.V., & Perry, D.G. (1998). Victimization by peers: Associations with children's reports of mother–child interaction. *Journal of Personality and Social Psychology*, *75*(4), 1076-1086.

Fitzpatrick, K.M., & Boldizar, J.P. (1993). The prevalence and consequences of exposure to violence among African-American youth. *Journal of the American Academy of Child & Adolescent Psychiatry*, *32*(2), 424-430.

Fleckman, J.M., Drury, S.S., Taylor, C.A., & Theall, K.P. (2016). Role of direct and indirect violence exposure on externalizing behavior in children. *Journal of Urban Health, 93*(3), 479-492.

Fomby, P., & Cherlin, A.J. (2007). Family instability and child well-being. *American Sociological Review*, *72*(2), 181-204.

Ford, J.D., Chapman, J., Mack, M., & Pearson, G. (2006). Pathways from traumatic child victimization to delinquency: Implications for juvenile and permanency court proceedings and decisions. *Juvenile and Family Court Journal*, *57*(1), 13-26.

Ford, J.D., Chapman, J.F., Hawke, J., & Albert, D. (2007). Trauma among youth in the juvenile justice system: critical issues and new directions. Delmar, NY: National Center for Mental Health and Juvenile Justice.
Foster, C.E., Horwitz, A., Thomas, A., Opperman, K., Gipson, P., Burnside, A., ... & King, C.A. (2017). Connectedness to family, school, peers, and community in socially vulnerable adolescents. *Children and Youth Services Review*, *81*, 321-331.
Fowler, P.J., Henry, D.B., & Marcal, K.E. (2015). Family and housing instability: Longitudinal impact on adolescent emotional and behavioral well-being. *Social Science Research*, *53*, 364-374.
Fowler, P.J., Tompsett, C.J., Braciszewski, J.M., Jacques-Tiura, A.J., & Baltes, B.B. (2009). Community violence: A meta-analysis on the effect of exposure and mental health outcomes of children and adolescents. *Development and Psychopathology*, *21*(1), 227-259.
Frankenberg, E. (2009). The impact of school segregation on residential housing patterns: Mobile, Alabama, and Charlotte, North Carolina. In *School Resegregation: Must the South Turn Back?* (pp. 164-184). University of North Carolina Press.
Freeman, J.R. (1983). Granger causality and the times series analysis of political relationships. *American Journal of Political Science*, 327-358.
Friedson, M., & Sharkey, P. (2015). Violence and neighborhood disadvantage after the crime decline. *The Annals of the American Academy of Political and Social Science*, *660*(1), 341-358.
Garbarino, J. (1995). The American war zone: what children can tell us about living with violence. *Journal of Developmental & Behavioral Pediatrics*, *16*(6), 431-435.
Gaylord-Harden, N.K., Dickson, D., & Pierre, C. (2016). Profiles of community violence exposure among African American youth: An examination of desensitization to violence using latent class analysis. *Journal of Interpersonal Violence*, *31*(11), 2077-2101.
Gaylord-Harden, N.K., So, S., Bai, G.J., Henry, D.B., & Tolan, P.H. (2017). Examining the pathologic adaptation model of community violence exposure in male adolescents of color. *Journal of Clinical Child & Adolescent Psychology*, *46*(1), 125-135.
Gergen, P.J., Arbes, S.J., Calatroni, A., Mitchell, H.E., & Zeldin, D.C. (2009). Total IgE levels and asthma prevalence in the US population: Results from the National Health and Nutrition Examination Survey 2005-2006. *Journal of Allergy & Clinical Immunology*, *124*, 447-453.
Geronimus, A.T., & Korenman, S. (1993). The socioeconomic costs of teenage childbearing: Evidence and interpretation. *Demography*, *30*(2), 281-290.
Gilbert, P. (2014). *Depression: The evolution of powerlessness*. Psychology Press.
Glynn, T.J. (1981). Psychological sense of community: Measurement and application. *Human Relations*, *34*(9), 789-818.
Gnambs, T., & Kaspar, K. (2015). Disclosure of sensitive behaviors across self-administered survey modes: A meta-analysis. *Behavior Research Methods*, *47*(4), 1237-1259.
Goldman-Mellor, S., Margerison-Zilko, C., Allen, K., & Cerda, M. (2016). Perceived and objectively-measured neighborhood violence and adolescent psychological distress. *Journal of Urban Health*, *93*(5), 758-769.
Goldstein, D.S. (2003) Catecholamines and stress. *Endocrine Regulations, 37*, 69-80.
Gorman-Smith, D., Henry, D.B., & Tolan, P.H. (2004). Exposure to community violence and violence perpetration: The protective effects of family functioning. *Journal of Clinical Child and Adolescent Psychology*, *33*(3), 439-449.

Gorman–Smith, D., & Tolan, P. (1998). The role of exposure to community violence and developmental problems among inner-city youth. *Development and Psychopathology, 10*(1), 101-116.
Gouldner, A. (1959). Reciprocity and autonomy in functional theory. In L. Gross (Ed.), *Symposium on sociological theory*, pp. 241-270). New York, NY: Harper & Ros.
Granger, C.W. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica: Journal of the Econometric Society*, 424-438.
Grant, K.E., O'Koon, J.H., Davis, T.H., Roache, N.A., Poindexter, L.M., Armstrong, M.L., ... & McIntosh, J.M. (2000). Protective factors affecting low-income urban African American youth exposed to stress. *The Journal of Early Adolescence, 20*(4), 388-417.
Graves, J., & Shapiro, J. (2016). Trauma informed clinical social work practice: Case composite with court-involved adolescent. *Smith College Studies in Social Work, 86*(3), 204-224.
Grosso, C.A. (2012). Children with developmental disabilities. In J.A. Cohen, A.P. Mannarino, & E. Deblinger (Eds.), *Trauma-focused CBT for children and adolescents: Treatment applications.* New York, NY: Guilford.
Gunnar, M.R. & Vazquez, D.M. (2001). Low cortisol and a flattening of expected daytime rhythm: Potential indices of risk in human development. *Developmental Psychopathology, 13*, 515-538.
Guerra, N.G., Huesmann, L.R., & Spindler, A. (2003). Community violence exposure, social cognition, and aggression among urban elementary school children. *Child Development, 74*, 1561-1576.
Gustafsson, P.E., Nilsson, D., & Svedin, C.G. (2009). Polytraumatization and psychological symptoms in children and adolescents. *European Child & Adolescent Psychiatry*, *18*(5), 274-283.
Gutman, L.M., Sameroff, A.J., & Cole, R. (2003). Academic growth curve trajectories from 1st grade to 12th grade: Effects of multiple social risk factors and preschool child factors. *Developmental Psychology, 39*(4), 777-790.
Hair, E.C., Moore, K.A., Garrett, S.B., Ling, T., & Cleveland, K. (2008). The continued importance of quality parent–adolescent relationships during late adolescence. *Journal of Research on Adolescence*, *18*(1), 187-200.
Hair, N.L., Hanson, J.L., Wolfe, B.L., & Pollak, S.D. (2015). Association of child poverty, brain development, and academic achievement. *JAMA Pediatrics*, *169*(9), 822-829.
Hardaway, C.R., Sterrett-Hong, E., Larkby, C.A., & Cornelius, M.D. (2016). Family resources as protective factors for low-income youth exposed to community violence. *Journal of Youth and Adolescence*, *45*(7), 1309-1322.
Harter, S. & Whitesell, N.R. (2003). Beyond the debate: Why some adolescents report stable self-worth over time and situations, whereas others report changes in self-worth. *Journal of Personality, 71*, 1027-1058.
Harter, S. (1982). The perceived competence scale for children. *Child Development*, 87-97.
Hawkins, J.D., & Catalano Jr, R.F. (1992). *Communities that care: Action for drug abuse prevention*. Jossey-Bass.
Hayes, L., Hudson, A., & Matthews, J. (2003). Parental monitoring: A process model of parent-adolescent interaction. *Behaviour Change*, *20*(1), 13-24.
Heitzeg, N.A. (2009). Education or Incarceration: Zero Tolerance Policies and the School to Prison Pipeline. In *Forum on Public Policy Online* (Vol. 2009, No. 2). Oxford Round Table. 406 West Florida Avenue, Urbana IL.

Heinze, J.E., Stoddard, S.A., Aiyer, S.M., Eisman, A.B., & Zimmerman, M.A. (2017). Exposure to violence during adolescence as a predictor of perceived stress trajectories in emerging adulthood. *Journal of Applied Developmental Psychology, 49*, 31-38.
Henrich, C.C., Schwab-Stone, M., Fanti, K., Jones, S., & Ruchkin, V. (2004). The association of community violence exposure with middle-school achievement: A prospective study. *Applied Developmental Psychology, 25*, 327-348.
Herrera, V.M., & McCloskey, L.A. (2001). Gender differences in the risk for delinquency among youth exposed to family violence. *Child Abuse and Neglect, 25*, 1037–1051.
Hogeveen, B.R. (2007). Youth (and) violence. *Sociology Compass, 1*(2), 463-484.
Hong, J.S., Huang, H., Golden, M., Upton Patton, D., & Washington, T. (2014). Are community violence-exposed youth at risk of engaging in delinquent behavior? A review and implications for residential treatment research and practice. *Residential Treatment for Children & Youth, 31*(4), 266-283.
Hoptman, M.J. (2003). Neuroimaging studies of violence and antisocial behavior. *Journal of Psychiatric Practice, 9*, 265-278.
Hudziak, J., & Ivanova, M. Y. (2016). The Vermont family based approach: family based health promotion, illness prevention, and intervention. *Child and Adolescent Psychiatric Clinics, 25*(2), 167-178.
Hurt, H., Malmud, E., Brodsky, N.L., & Giannetta, J. (2001). Exposure to violence: Psychological and academic correlates in child witnesses. *Archives of Pediatrics & Adolescent Medicine, 155*(12), 1351-1356.
Iscoe, I. (1974). Community psychology and the competent community. *American Psychologist, 29*(8), 607-613.
Ivanova, M. Y., Dewey, L., Swift, P., Weinberger, S., & Hudziak, J. (2019). Health Promotion in Primary Care Pediatrics: Initial Results of a Randomized Clinical Trial of the Vermont Family Based Approach. *Child and Adolescent Psychiatric Clinics, 28*(2), 237-246.
Ivanova, M.Y., & Israel, A.C. (2005). Family stability as a protective factor against the influences of pessimistic attributional style on depression. *Cognitive Therapy and Research, 29*(2), 243-251.
Ivanova, M.Y., & Israel, A.C. (2006). Family stability as a protective factor against psychopathology for urban children receiving psychological services. *Journal of Clinical Child and Adolescent Psychology, 35*(4), 564-570.
Jackman, D.M., & MacPhee, D. (2017). Self-esteem and future orientation predict adolescents' risk engagement. *The Journal of Early Adolescence, 37*(3), 339-366.
Jain, S., & Cohen, A.K. (2013). Behavioral adaptation among youth exposed to community violence: A longitudinal multidisciplinary study of family, peer and neighborhood-level protective factors. *Prevention Science, 14*(6), 606-617.
James, P., Hart, J.E., Banay, R.F., Laden, F., & Signorello, L.B. (2017). Built environment and depression in low-income African Americans and Whites. *American Journal of Preventive Medicine, 52*(1), 74-84.
Jargowsky, P.A. (1997). *Poverty and place: Ghettos, barrios, and the American city*. New York, NY: Russell Sage Foundation.
Jargowsky, P.A. (2003). *Redefining Urban and Suburban America: Evidence from Census 2000*. Harrisonburg, VA: Donnelley.
Jaycox, L.H., Langley, A.K., & Hoover, S.A. (2018). *Cognitive behavioral intervention for trauma in schools (CBITS)*. RAND Corporation.

Jenkins, E.J., & Bell, C.C. (1994). Violence among inner city high school students and post-traumatic stress disorder. In S. Friedman (Ed.), *Anxiety disorders in African Americans* (pp. 76-88). New York, NY, US: Springer Publishing Company.
Jeynes, W.H. (2003). A meta-analysis: The effects of parental involvement on minority children's academic achievement. *Education and Urban Society*, *35*(2), 202-218.
Joiner, T.E., & Wagner, K.D. (1995). Attributional style and depression in children and adolescents: A meta-analytic review. *Clinical Psychology Review*, *15*(8), 777-798.
Jose, P.E., Ryan, N., & Pryor, J. (2012). Does social connectedness promote a greater sense of well-being in adolescence over time? *Journal of Research on Adolescence, 22*(2), 235–251.
Kashdan, T.B., Morina, N., & Priebe, S. (2009). Post-traumatic stress disorder, social anxiety disorder, and depression in survivors of the Kosovo War: Experiential avoidance as a contributor to distress and quality of life. *Journal of Anxiety Disorders*, *23*, 185-196.
Kataoka, S.H., Vona, P., Acuna, A., Jaycox, L., Escudero, P., Rojas, C., ... & Stein, B.D. (2018). Applying a Trauma Informed School Systems Approach: Examples from School Community-Academic Partnerships. *Ethnicity & Disease*, *28*(Suppl 2), 417-426.
Kaufman, A. S., Lichtenberger, E. O., Fletcher-Janzen, E., & Kaufman, N. L. (2005). *Essentials of KABC-II assessment* (Vol. 94). John Wiley & Sons.
Kaufman, J.S., & Cooper, R.S. (2001). Commentary: considerations for use of racial/ethnic classification in etiologic research. *American Journal of Epidemiology, 154*(4), 291-298.
Kaufman, J.S. & Poole, C. (2000). Looking back on "causal thinking in the health sciences". *Annual Review of Public Health, 21,* 101-119.
Kaynak, Ö., Lepore, S.J., & Kliewer, W.L. (2011). Social support and social constraints moderate the relation between community violence exposure and depressive symptoms in an urban adolescent sample. *Journal of Social and Clinical Psychology*, *30*(3), 250-269.
Kazdin, A.E., French, N.H., Unis, A.S., Esveldt-Dawson, K., & Sherick, R.B. (1983). Hopelessness, depression, and suicidal intent among psychiatrically disturbed inpatient children. *Journal of Consulting and Clinical Psychology*, *51*, 504-510.
Keele, L., & Kelly, N.J. (2006). Dynamic models for dynamic theories: The ins and outs of lagged dependent variables. *Political Analysis*, *14*(2), 186-205.
Kempf-Leonard, K. (2007). Minority youths and juvenile justice: Disproportionate minority contact after nearly 20 years of reform efforts. *Youth Violence and Juvenile Justice*, *5*(1), 71-87.
Kendall, P.C., Lerner, R.M., & Craighead, W.E. (1984). Human development and intervention inchildhood psychopathology. *Child Development, 55*, 71-82.
Kennedy, A.C. & Bennett, L. (2006). Urban adolescent mothers exposed to community, family, and partner violence: Is cumulative violence exposure a barrier to school performance and participation? *Journal of Interpersonal Violence*, *21*, 750-773.
Kenward, M.G., & Roger, J.H. (1997). Small sample inference for fixed effects from restricted maximum likelihood. *Biometrics*, 983-997.
Kerig, P.K., & Becker, S.P. (2012). Trauma and girls' delinquency. In *Delinquent girls* (pp. 119-143). Springer New York.
Kerns, C.E., Elkins, R.M., Carpenter, A.L., Chou, T., Green, J.G., & Comer, J.S. (2014). Caregiver distress, shared traumatic exposure, and child adjustment among area youth following the 2013 Boston Marathon bombing. *Journal of Affective Disorders, 167,* 50-55.

Kessler, R.C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C.B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*, *52*(12), 1048-1060.
Kliewer, W., & Kung, E. (1998). Family moderators of the relation between hassles and behavior problems in inner-city youth. *Journal of Clinical Child Psychology*, *27*(3), 278-292.
Kneebone, E. (2014). The growth and spread of concentrated poverty, 2000 to 2008-2012. *The Brookings*.
Ko, S.J., Ford, J.D., Kassam-Adams, N., Berkowitz, S.J., Wilson, C., Wong, M., ... & Layne, C.M. (2008). Creating trauma-informed systems: child welfare, education, first responders, health care, juvenile justice. *Professional Psychology: Research and Practice*, *39*(4), 396-404.
Kondo, M.C., Andreyeva, E., South, E.C., MacDonald, J.M., Branas, C.C. (2018). Neighborhood interventions to reduce violence. *Annual Review of Public Health, 39,* 253-271.
Korte, S.M. (2001). Corticosteroids in relation to fear, anxiety and psychopathology. *Neuroscience & Biobehavioral Reviews, 25,* 117-142.
Kposowa, A.J., Breault, K.D., & Harrison, B.M. (1995). Reassessing the structural covariates of violent and property crimes in the USA: A county level analysis. *British Journal of Sociology, 46,* 79-105.
Kramer, C.Y. (1956). Extension of Multiple Range Tests to Group Means with Unequal Numbers of Replications. *Biometrics, 12*(3), 307-310.
Lacour, M., & Tissington, L.D. (2011). The effects of poverty on academic achievement. *Educational Research and Reviews*, *6*(7), 522-527.
Ladouceur, R., Blais, F., Freeston, M.H., & Dugas, M.J. (1998). Problem solving and problem orientation in generalized anxiety disorder. *Journal of Anxiety Disorders*, *12*, 139–152.
Lamborn, S.D., Mounts, N.S., Steinberg, L., & Dornbusch, S.M. (1991). Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development*, *62*(5), 1049-1065.
Landis, D., Gaylord-Harden, N.K., Malinowski, S.L., Grant, K.E., Carleton, R.A., & Ford, R.E. (2007). Urban adolescent stress and hopelessness. *Journal of Adolescence*, *30*(6), 1051-1070.
Latzman, R.D., & Swisher, R.R. (2005). The interactive relationship among adolescent violence, street violence, and depression. *Journal of Community Psychology*, *33*(3), 355-371.
Lee, L.C., Halpern, C.T., Hertz-Picciotto, I., Martin, S.L., & Suchindran, C.M. (2006). Child care and social support modify the association between maternal depressive symptoms and early childhood behaviour problems: a US national study. *Journal of Epidemiology & Community Health*, *60*(4), 305-310.
Leiber, M.J. (2016). Race, prior offending, and juvenile court outcomes. *Journal of Crime and Justice*, *39*(1), 88-106.
Lewis, K.M., Vuchinich, S., Ji, P., DuBois, D.L., Acock, A., Bavarian, N., ... & Flay, B.R. (2016). Effects of the Positive Action program on indicators of positive youth development among urban youth. *Applied Developmental Science*, *20*(1), 16-28.
Li, S.T., Nussbaum, K.M., & Richards, M.H. (2007). Risk and protective factors for urban African-American youth. *American Journal of Community Psychology*, *39*(1-2), 21-35.
Limber, S.P., & Nation, M.A. (1998). Violence within the neighborhood and community. In P.K. Trickett & C.J. Schellenbach (Eds.), *Violence against children in the family and the community* (pp. 171-193). Washington, DC, US: American Psychological Association. doi: 10.1037/10292-006

Lockhart, G., Phillips, S., Bolland, A., Delgado, M., Tietjen, J., & Bolland, J. (2017). Prospective relations among low-income African American adolescents' maternal attachment security, self-worth, and risk behaviors. *Frontiers in Psychology*, *8*, 33.

Lorant, V., Deliège, D., Eaton, W., Robert, A., Philippot, P., & Ansseau, M. (2003). Socioeconomic inequalities in depression: a meta-analysis. *American Journal of Epidemiology*, *157*(2), 98-112.

Lorion, R.P., & Saltzman, W. (1993). Children's exposure to community violence: Following a path from concern to research to action. *Psychiatry*, *56*(1), 55-65.

Losen, D.J., Hewitt, D.T., & Kim, C.Y. (2010). *The school-to-prison pipeline: Structuring legal reform*. NYU Press.

Ludwig, K.A., & Warren, J.S. (2009). Community violence, school-related protective factors, and psychosocial outcomes in urban youth. *Psychology in the Schools*, *46*(10), 1061-1073.

Luoma, I., Tamminen, T., Kaukonen, P., Laippala, P., Puura, K., Salmelin, R., & Almqvist, F. (2001). Longitudinal study of maternal depressive symptoms and child well-being. *Journal of the American Academy of Child & Adolescent Psychiatry*, *40*(12), 1367-1374.

Mac Giollabhui, N., Nielsen, J., Seidman, S., Olino, T. M., Abramson, L.Y., & Alloy, L.B. (2018). The development of future orientation is associated with faster decline in hopelessness during adolescence. *Journal of Youth and Adolescence*, *47*(10), 2129-2142.

MacLeod, A.K., Tata, P., Tyrer, P., Schmidt, U., Davidson, K., & Thompson, S. (2005). Hopelessness and positive and negative future thinking in parasuicide. *British Journal of Clinical Psychology*, *44*(4), 495-504.

Margolin, G. (2005). Children's exposure to violence: Exploring developmental pathways to diverse outcomes. *Journal of Interpersonal Violence*, *20*, 72-81.

Margolin, G., Vickerman, K.A., Oliver, P.H., & Gordis, E.B. (2010). Violence exposure in multiple interpersonal domains: Cumulative and differential effects. *Journal of Adolescent Health*, *47*(2), 198-205.

Margolin, G., Vickerman, K.A., Ramos, M.C., Serrano, S.D., Gordis, E.B., Iturralde, E., Oliver, P.H., & Spies, L.A. (2009). Youth exposure to violence: Stability, co-occurrence, and context. *Clinical Child and Family Psychology Review*, *12*, 39-54.

Marotta, P.L., & Voisin, D.R. (2017). Pathways to delinquency and substance use among African American youth: does future orientation mediate the effects of peer norms and parental monitoring?. *Journal of Health Psychology*.

Martin, L.A., Neighbors, H.W., & Griffith, D.M. (2013). The experience of symptoms of depression in men vs women: analysis of the National Comorbidity Survey Replication. *JAMA Psychiatry*, *70*(10), 1100-1106.

Martinez, P., & Richters, J.E. (1993). The NIMH community violence project: II. Children's distress symptoms associated with violence exposure. *Psychiatry*, *56*(1), 22-35.

Mathews, T., Dempsey, M., & Overstreet, S. (2009). Effects of exposure to community violence on school functioning: The mediating role of posttraumatic stress symptoms. *Behaviour Research and Therapy*, *47*(7), 586-591.

Matjasko, J.L., Vivolo-Kantor, A.M., Henry, D.B., Gorman-Smith, D., Schoeny, M.E., & The Multisite Violence Prevention Project. (2013). The relationship between a family-focused preventive intervention, parenting practices, and exposure to violence during the transition to adolescence: Testing a mediational model. *Journal of Aggression, Maltreatment & Trauma*, *22*(1), 45-66.

McBride Murry, V., Berkel, C., Gaylord-Harden, N.K., Copeland-Linder, N., & Nation, M. (2011). Neighborhood poverty and adolescent development. *Journal of Research on Adolescence*, *21*(1), 114-128.
McCarty, R. & Gold, P.E. (1996). Catecholamines, stress, and disease: A psychobiological perspective. *Psychosomatic Medicine, 58,* 590-597.
McConnell, D., Breitkreuz, R., & Savage, A. (2011). From financial hardship to child difficulties: Main and moderating effects of perceived social support. *Child: Care, Health and Development, 37*(5), 679-691.
McEvoy, A., & Welker, R. (2000). Antisocial behavior, academic failure, and school climate a critical review. *Journal of Emotional and Behavioral Disorders, 8*(3), 130-140.
McGill, T.M., Self-Brown, S.R., Lai, B.S., Cowart-Osbome, M., Tiwari, A., LeBlanc, M., & Kelley, M.L. (2014). Effects of exposure to community violence and family violence on school functioning problems among urban youth: the potential mediating role of posttraumatic stress symptoms. *Frontiers in Public Health, 2,* article 8.
McLaughlin, J.A., Miller, P., & Warwick, H. (1996). Deliberate self-harm in adolescents: hopelessness, depression, problems and problem-solving. *Journal of Adolescence*, *19*(6), 523-532.
McLaughlin, K.A., Sheridan, M.A., Tibu, F., Fox, N.A., Zeanah, C.H., & Nelson, C.A. (2015). Causal effects of the early caregiving environment on development of stress response systems in children. *Proceedings of the National Academy of Sciences*, *112*, 5637-5642.
McLoyd, V.C. (1990). The impact of economic hardship on Black families and children: Psychological distress, parenting, and socioeconomic development. *Child Development,* 61, 311– 346.
McMahon, S.D., Felix, E.D., Halpert, J.A., & Petropoulos, L.A. (2009). Community violence exposure and aggression among urban adolescents: Testing a cognitive mediator model. *Journal of Community Psychology*, *37*(7), 895-910.
Mears, D.P., Cochran, J.C., Stults, B.J., Greenman, S.J., Bhati, A.S., & Greenwald, M.A. (2014). The "true" juvenile offender: Age effects and juvenile court sanctioning. *Criminology*, *52*(2), 169-194.
Mendel, R.A. (2011). No Place for Kids: The Case for Reducing Juvenile Incarceration. *Annie E. Casey Foundation*.
Merry, S.E. (1981). Urban danger: Life in a neighborhood of strangers. *Philadelphia, PA.*
Metzger, M.W., Fowler, P.J., Anderson, C.L., & Lindsay, C.A. (2015). Residential mobility during adolescence: Do even "upward" moves predict dropout risk?. *Social Science Research*, *53*, 218-230.
Minkler, M. (1985). Building supportive ties and sense of community among the inner-city elderly: the Tenderloin Senior Outreach Project. *Health Education Quarterly*, *12*(3), 303-314.
Miranda-Chan, T., Fruiht, V., Dubon, V., & Wray-Lake, L. (2016). The functions and longitudinal outcomes of adolescents' naturally occurring mentorships. *American Journal of Community Psychology*, *57*(1-2), 47-59.
Monahan, K.C., King, K.M., Shulman, E.P., Cauffman, E., & Chassin, L. (2015). The effects of violence exposure on the development of impulse control and future orientation across adolescence and early adulthood: Time-specific and generalized effects in a sample of juvenile offenders. *Development and Psychopathology*, *27*(4pt1), 1267-1283.

Morris, A.S., Robinson, L.R., Hays-Grudo, J., Claussen, A.H., Hartwig, S.A., & Treat, A.E. (2017). Targeting parenting in early childhood: A public health approach to improve outcomes for children living in poverty. *Child Development, 88*(2), 388-397.

Moses, A. (1999). Exposure to violence, depression, and hostility in a sample of inner city high school youth. *Journal of Adolescence, 22*(1), 21-32.

Mrug, S., Madan, A., & Windle, M. (2016). Emotional desensitization to violence contributes to adolescents' violent behavior. *Journal of Abnormal Child Psychology*, *44*(1), 75-86.

Mugoya, G.C., Witte, T., Bolland, A., Tomek, S., Hooper, L.M., Bolland, J., & George Dalmida, S. (2017). Depression and intimate partner violence among African American women living in impoverished inner-city neighborhoods. *Journal of Interpersonal Violence*.

Muthen, B. (1990). Moments of the censored and truncated bivariate normal distribution. *British Journal of Mathematical and Statistical Psychology*, *43*, 131-143.

National Child Traumatic Stress Network. (2003). *The defining trauma and child traumatic stress*. Retrieved from http://www.nctsn.org/content/defining-trauma-and-child-traumatic-stress

Nook, E.C., Sasse, S.F., Lambert, H.K., McLaughlin, K.A., & Somerville, L.H. (2018). The nonlinear development of emotion differentiation: Granular emotional experience is low in adolescence. *Psychological Science*. doi: 10.1177/0956797618773357

Nowak, C., & Heinrichs, N. (2008). A comprehensive meta-analysis of Triple P-Positive Parenting Program using hierarchical linear modeling: Effectiveness and moderating variables. *Clinical Child and Family Psychology Review*, *11*(3), 114.

Nurius, P.S., Russell, P.L., Herting, J.R., Hooven, C., & Thompson, E.A. (2009). Risk and protective profiles among never exposed, single form, and multiple form violence exposed youth. *Journal of Child & Adolescent Trauma, 2*(2), 106-123.

O'Neal, C.R., Brotman, L.M., Huang, K.Y., Gouley, K.K., Kamboukos, D., Calzada, E.J., & Pine, D.S. (2010). Understanding relations among early family environment, cortisol response, and child aggression via a prevention experiment. *Child Development, 81*, 290-305.

Oakes, J.M. & Rossi, P.H. (2003). The measurement of SES in health research: Current practice and steps toward a new approach. *Social Science & Medicine, 56*, 769-784.

Oberwittler, D. (2007). The effects of neighbourhood poverty on adolescent problem behaviours: A multi-level analysis differentiated by gender and ethnicity. *Housing Studies, 22*(5), 781-803.

Office of Juvenile Justice and Delinquency Prevention. (2019). *Statistical briefing book*. Retreived from https://www.ojjdp.gov/ojstatbb/

Olds, D.L., Kitzman, H., Knudtson, M.D., Anson, E., Smith, J.A., & Cole, R. (2014). Effect of home visiting by nurses on maternal and child mortality: Results of a 2-decade follow-up of a randomized clinical trial. *JAMA Pediatrics, 168*(9), 800-806.

Overstreet, S., & Braun, S. (1999). A preliminary examination of the relationship between exposure to community violence and academic functioning. *School Psychology Quarterly, 14*(4), 380-396.

Overstreet, S., & Chafouleas, S.M. (2016). Trauma-informed schools: Introduction to the special issue. *School Mental Health, 8*, 1-6.

Ozer, E.J., Lavi, I., Douglas, L., & Wolf, J.P. (2017). Protective factors for youth exposed to violence in their communities: a review of family, school, and community moderators. *Journal of Clinical Child & Adolescent Psychology*, *46*(3), 353-378.

Patchin, J.W., Huebner, B.M., McCluskey, J.D., Varano, S.P., & Bynum, T.S. (2006). Exposure to community violence and childhood delinquency. *Crime & Delinquency, 52*(2), 307-332.

Patton, D.U., Woolley, M.E., & Hong, J.S. (2012). Exposure to violence, student fear, and low academic achievement: African American males in the critical transition to high school. *Children and Youth Services Review, 34*(2), 388-395.
Pearl, J. (2009). *Causality*. Cambridge University Press.
Perfect, M.M., Turley, M.R., Carlson, J.S., Yohanna, J., & Saint Gilles, M.P. (2016). School-related outcomes of traumatic event exposure and traumatic stress symptoms in students: A systematic review of research from 1990 to 2015. *School Mental Health*, *8*(1), 7-43.
Perkins, D.D., Florin, P., Rich, R.C., Wandersman, A., & Chavis, D.M. (1990). Participation and the social and physical environment of residential blocks: Crime and community context. *American Journal of Community Psychology, 18*, 83–115.
Peterson, R.D., & Krivo, L.J. (2009). Segregated spatial locations, race-ethnic composition, and neighborhood violent crime. *The Annals of the American Academy of Political and Social Science, 623*(1), 93-107.
Pinquart, M. (2016). Associations of parenting styles and dimensions with academic achievement in children and adolescents: A meta-analysis. *Educational Psychology Review*, *28*(3), 475-493.
Plumb, J.L., Bush, K.A., & Kersevich, S.E. (2016). Trauma-sensitive schools: An evidence-based approach. *School Social Work Journal*, *40*(2), 37-60.
Positive Action. Retrieved from https://www.positiveaction.net/
Pressler, E., Raver, C.C., Friedman-Krauss, A.H., & Roy, A. (2016). The roles of school readiness and poverty-related risk for 6th grade outcomes. *Journal of Educational and Developmental Psychology*, *6*(1), 140-156.
Putwain, D.W. (2007). Test anxiety in UK schoolchildren: Prevalence and demographic patterns. *British Journal of Educational Psychology*, *77*(3), 579-593.
Pynoos, R.S., & Nader, K. (1988). Psychological first aid and treatment approach to children exposed to community violence: Research implications. *Journal of Traumatic Stress*, *1*(4), 445-473.
Ramirez, M., Wu, Y., Kataoka, S., Wong, M., Yang, J., Peek-Asa, C., & Stein, B. (2012). Youth violence across multiple dimensions: a study of violence, absenteeism, and suspensions among middle school children. *The Journal of Pediatrics*, *161*(3), 542-546.
Raposa, E.B., Erickson, L.D., Hagler, M., & Rhodes, J.E. (2018). How economic disadvantage affects the availability and nature of mentoring relationships during the transition to adulthood. *American Journal of Community Psychology*, *61*(1-2), 191-203.
Raver, C.C. (2004). Placing emotional self-regulation in sociocultural and socioeconomic contexts. *Child Development*, *75*(2), 346-353.
Raver, C.C., Blair, C., Garrett-Peters, P., & Family Life Project Key Investigators. (2015). Poverty, household chaos, and interparental aggression predict children's ability to recognize and modulate negative emotions. *Development and Psychopathology*, *27*(3), 695-708.
Raver, C.C., Roy, A.L., & Pressler, E. (2015). Struggling to stay afloat: Dynamic models of poverty-related adversity and child outcomes. In *Families in an era of increasing inequality* (pp. 201-212). Springer, Cham.
Reid, J.A., Richards, T.N., Loughran, T.A., & Mulvey, E.P. (2017). The relationships among exposure to violence, psychological distress, and gun carrying among male adolescents found guilty of serious legal offenses: a longitudinal cohort study. *Annals of Internal Medicine*, *166*(6), 412-418.

Reifman, A., & Windle, M. (1995). Adolescent suicidal behaviors as a function of depression, hopelessness, alcohol use, and social support: A longitudinal investigation. *American Journal of Community Psychology*, *23*(3), 329-354.
Richards, M.H., Romero, E., Zakaryan, A., Carey, D., Deane, K., Quimby, D., ... & Burns, M. (2015). Assessing urban African American youths' exposure to community violence through a daily sampling method. *Psychology of Violence*, *5*(3), 275-284.
Richters, J.E., & Martinez, P. (1993). The NIMH community violence project: I. Children as victims of and witnesses to violence. *Psychiatry*, *56*(1), 7-21.
Riger, S. (1993). What's wrong with empowerment?. *American Journal of Community Psychology*, *21*(3), 279-292.
Rodrigues, S.M., LeDoux, J.E., & Sapolsky, R.M. (2009). The influence of stress hormones on fear circuitry. *Annual Review of Neuroscience, 32*, 289-313.
Rodriguez, N. (2010). The cumulative effect of race and ethnicity on juvenile court outcomes and why preadjudication detention matters. *Journal of Research in Crime and Delinquency*, *47*(3), 391-413.
Rodriguez, N. (2013). Concentrated disadvantage and the incarceration of youth: Examining how context affects juvenile justice. *Journal of Research in Crime and Delinquency*, *50*(2), 189-215.
Roozendaal, B., McEwen, B. S., & Chattarji, S. (2009). Stress, memory and the amygdala. *Nature Reviews Neuroscience*, *10*(6), 423-433.
Rosenbaum, P.R. (2005) Heterogeneity and causality: Unit heterogeneity and design sensitivity in observational studies. *American Statistician*, *59*, 147-152.
Ross, C.E., & Mirowsky, J. (2009). Neighborhood disorder, subjective alienation, and distress. *Journal of Health and Social Behavior*, *50*(1), 49-64.
Roy, A.L., McCoy, D.C., & Raver, C.C. (2014). Instability versus quality: Residential mobility, neighborhood poverty, and children's self-regulation. *Developmental Psychology*, *50*(7), 1891-1896.
Ruchkin, V., Henrich, C.C., Jones, S.M., Vermeiren, R., & Schwab-Stone, M. (2007). Violence exposure and psychopathology in urban youth: The mediating role of posttraumatic stress. *Journal of Abnormal Child Psychology*, *35*(4), 578-593.
Rudasill, K.M., Niehaus, K., Crockett, L.J., & Rakes, C.R. (2014). Changes in school connectedness and deviant peer affiliation among sixth-grade students from high-poverty neighborhoods. *The Journal of Early Adolescence, 34*(7) 896–922. doi: 10.1177/0272431613511330
Rumberger, R.W. (1995). Dropping out of middle school: A multilevel analysis of students and schools. *American Educational Research Journal*, *32*, 583–625. doi: 10.3102/00028312032003583
Sajdyk, T.J., Shekhar, A., & Gehlert, D.R. (2004). Interactions between NPY and CRF in the amygdala to regulate emotionality. *Neuropeptides, 38*, 225-234.
Salzinger, S., Feldman, R.S., Stockhammer, T., & Hood, J. (2002). An ecological framework for understanding risk for exposure to community violence and the effects of exposure on children and adolescents. *Aggression and Violent Behavior*, *7*(5), 423-451.
Salzinger, S., Rosario, M., Feldman, R.S., & Ng-Mak, D.S. (2008). Aggressive behavior in response to violence exposure: is it adaptive for middle-school children?. *Journal of Community Psychology*, *36*(8), 1008-1025.

Sampson, R.J., Raudenbush, S.W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science, 277*(5328), 918-924.
Sanchez, Y.M., Lambert, S.F., & Cooley-Strickland, M. (2013). Adverse life events, coping and internalizing and externalizing behaviors in urban African American youth. *Journal of Child and Family Studies, 22*(1), 38-47.
Sanders, M.R., Ralph, A., Sofronoff, K., Gardiner, P., Thompson, R., Dwyer, S., & Bidwell, K. (2008). Every family: A population approach to reducing behavioral and emotional problems in children making the transition to school. *The Journal of Primary Prevention, 29*(3), 197-222.
Sandstrom H. & Huerta S. The negative effects of instability on child development: A research synthesis. First Focus and the Urban Institute; Washington, D.C.: 2013. Retrieved from http://www.urban.org/publications/412908.html
Satterthwaite, F.E. (1941). Synthesis of variance. *Psychometrika, 6*(5), 309-316.
Schwab-Stone, M.E., Ayers, T.S., Kasprow, W., Voyce, C., Barone, C., Shriver, T., & Weissberg, R.P. (1995). No safe haven: A study of violence exposure in an urban community. *Journal of the American Academy of Child & Adolescent Psychiatry, 34*(10), 1343-1352.
Schwab-Stone, M., Chen, C., Greenberger, E., Silver, D., Lichtman, J., & Voyce, C. (1999). No safe haven II: The effects of violence exposure on urban youth. *Journal of the American Academy of Child & Adolescent Psychiatry, 38*(4), 359-367.
Schwartz, D., & Gorman, A.H. (2003). Community violence exposure and children's academic functioning. *Journal of Educational Psychology, 95*(1), 163-173.
Selner-O'Hagan, M.B., Kindlon, D.J., Buka, S.L., Raudenbush, S.W., & Earls, F.J. (1998). Assessing exposure to violence in urban youth. *The Journal of Child Psychology and Psychiatry and Allied Disciplines, 39*(2), 215-224.
Shavers, V.L. (2007). Measurement of socioeconomic status in health disparities research. *Journal of the National Medical Association, 99,* 1013-1023.
Shingles, R.D. (1976). Causal inference in cross-lagged panel analysis. *Political Analysis, 3,* 95-133.
Shirk, S.R. (1999). Developmental therapy. In W.K. Silverman & T.H. Ollendick (Eds.), Developmental issues in the clinical treatment of children (pp. 60-74). Boston: Allyn & Bacon.
Shochet, I.M., Dadds, M.R., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child & Adolescent Psychology, 35*(2), 170–179.
Shufelt, J.L. & Cocozza, J.J. (2006). Youth with mental health disorders in the juvenile justice system: Results from a multi-state prevalence study. Delmar, NY: National Center for Mental Health and Juvenile Justice.
Skinner, E.A., & Pitzer, J. (2012). Developmental dynamics of engagement, coping, and everyday resilience. In S. Christenson, A. Reschly, & C. Wylie (Eds.), *The handbook of research on student engagement*. New York: Springer Science.
Sly, R.M. (1999). Changing prevalence of allergic rhinitis and asthma. *Annals of Allergy, Asthma & Immunology, 82,* 233-252.
Small, S., & Rodgers, K. (1995). Teen assessment project. *Madison, WI: School of Family Resources and Consumer Sciences, University of Wisconsin*.

So, S., Gaylord-Harden, N.K., Voisin, D.R., & Scott, D. (2018). Future orientation as a protective factor for African American adolescents exposed to community violence. *Youth & Society*, *50*(6), 734-757.
Spano, R., Rivera, C., Vazsonyi, A.T., & Bolland, J.M. (2008). The impact of exposure to violence on a trajectory of (declining) parental monitoring: A partial test of the ecological-transactional model of community violence. *Criminal Justice and Behavior*, *35*(11), 1411-1428.
Spano, R., Rivera, C., Vazsonyi, A.T., & Bolland, J.M. (2012). Specifying the interrelationship between exposure to violence and parental monitoring for younger versus older adolescents: A five year longitudinal test. *American Journal of Community Psychology*, *49*(1-2), 127-141.
Spano, R., Vazsonyi, A.T., & Bolland, J. (2009). Does parenting mediate the effects of exposure to violence on violent behavior? An ecological–transactional model of community violence. *Journal of Adolescence*, *32*(5), 1321-1341.
Spirito, A., Williams, C.A., Stark, L.J., & Hart, K.J. (1988). The Hopelessness Scale for Children: Psychometric properties with normal and emotionally disturbed adolescents. *Journal of Abnormal Child Psychology*, *16*(4), 445-458.
Stahl, A., Finnegan, T., & Kang, W. (2006). Easy access to juvenile court statistics: 1985–2003. *National Center for Juvenile Justice.* Retrieved from http://ojjdp.ncjrs.gov/ojstatbb/ezajcs
Stewart, E.A., & Simons, R.L. (2006). Structure and culture in African American adolescent violence: A partial test of the "code of the street" thesis. *Justice Quarterly*, *23*(1), 1-33.
Stewart, E.A., & Simons, R.L. (2010). Race, code of the street, and violent delinquency: A multilevel investigation of neighborhood street culture and individual norms of violence. *Criminology*, *48*(2), 569-605.
Stimmel, M.A., Cruise, K.R., Ford, J.D., & Weiss, R.A. (2014). Trauma exposure, posttraumatic stress disorder symptomatology, and aggression in male juvenile offenders. *Psychological Trauma: Theory, Research, Practice, and Policy*, *6*(2), 184-191.
Stoddard, S.A., Whiteside, L., Zimmerman, M.A., Cunningham, R.M., Chermack, S.T., & Walton, M.A. (2013). The relationship between cumulative risk and promotive factors and violent behavior among urban adolescents. *American Journal of Community Psychology*, *51*(1-2), 57-65.
Stoddard, S.A., Zimmerman, M.A., & Bauermeister, J.A. (2011). Thinking about the future as a way to succeed in the present: A longitudinal study of future orientation and violent behaviors among African American youth. *American Journal of Community Psychology*, *48*(3-4), 238-246.
Substance Abuse and Mental Health Services Administration. (2014). SAMHSA's concept of trauma and guidance for a traumainformed approach. Rockville, MD: SAMHSA.
Suliman, S., Mkabile, S.G., Fincham, D.S., Ahmed, R., Stein, D.J., & Seedat, S. (2009). Cumulative effect of multiple trauma on symptoms of posttraumatic stress disorder, anxiety, and depression in adolescents. *Comprehensive Psychiatry*, *50*(2), 121-127.
Suveg, C., Comer, J.S., Furr, J.M., & Kendall, P.C. (2006). Adapting manualized CBT for a cognitively delayed child with multiple anxiety disorders. *Clinical Case Studies*, *5*(6), 488-510.
Tache, R.M., Lambert, S.F., Ganiban, J.M., & Ialongo, N.S. (2018). Temperament moderators of prospective associations between community violence exposure and urban African American adolescents' aggressive behavior. *Child Psychiatry & Human Development*, 1-9.

Tam, C.C., Abrams, L.S., Freisthler, B., & Ryan, J.P. (2016). Juvenile justice sentencing: Do gender and child welfare involvement matter?. *Children and Youth Services Review*, *64*, 60-65.
Turanovic, J.J., & Pratt, T.C. (2015). Longitudinal effects of violent victimization during adolescence on adverse outcomes in adulthood: A focus on prosocial attachments. *The Journal of Pediatrics*, *166*(4), 1062-1069.
Turnbull, A.V. & Rivier, C.L. (1999). Regulation of the hypothalamic-pituitary-adrenal axis by cytokines: Actions and mechanisms of action. *Physiological Review*, *79*, 1-71.
Turner, H.A., Finkelhor, D., & Ormrod, R. (2010). Poly-victimization in a national sample of children and youth. *American Journal of Preventive Medicine*, *38*(3), 323-330.
Turner, H.A., Shattuck, A., Finkelhor, D., & Hamby, S. (2016). Polyvictimization and youth violence exposure across contexts. *Journal of Adolescent Health*, *58*(2), 208-214.
Umlauf, M.G., Bolland, A.C., Bolland, K.A., Tomek, S., & Bolland, J.M. (2015). The effects of age, gender, hopelessness, and exposure to violence on sleep disorder symptoms and daytime sleepiness among adolescents in impoverished neighborhoods. *Journal of Youth and Adolescence*, *44*(2), 518-542.
Unger, D.G., & Wandersman, A. (1983). Neighboring and its role in block organizations: An exploratory report. *American Journal of Community Psychology*, *11*(3), 291-300.
Van de Ven, A.H. & Walker, G. (1984). The dynamics of interorganizational coordination. *Administrative Science Quarterly*, *29*, 598-621.
van Goozen, S.H. & Fairchild, G. (2008). How can the study of biological processes help design new interventions for children with severe antisocial behavior? *Developmental Psychopathology, 20*, 941-973.
Van Meter, D.S. (1974). Alternative methods of measuring change: what difference does it make?. *Political Methodology*, 125-140.
Vannucci, A., Finan, L., Ohannessian, C.M., Tennen, H., De Los Reyes, A., & Liu, S. (2018). Protective Factors Associated with Daily Affective Reactivity and Instability During Adolescence. *Journal of Youth and Adolescence*, 1-17.
Vargha, A., Rudas, T., Delaney, H.D., & Maxwell, S.E. (1996). Dichotomization, partial correlation, and conditional independence. *Journal of Educational and Behavioral Statistics*, *21*, 264-282.
Voisin, D.R., & Berringer, K.R. (2015). Interventions targeting exposure to community violence sequelae among youth: A commentary. *Clinical Social Work Journal*, *43*(1), 98-108.
Voisin, D.R., Patel, S., Hong, J.S., Takahashi, L., & Gaylord-Harden, N. (2016). Behavioral health correlates of exposure to community violence among African-American adolescents in Chicago. *Children and Youth Services Review, 69*, 97-105.
Voisin, D.R., Sales, J.M., Hong, J.S., Jackson, J.M., Rose, E.S., & DiClemente, R.J. (2017). Social context and problem factors among youth with juvenile justice involvement histories. *Behavioral Medicine*, *43*(1), 71-78.
Vyas, A., Pillai, A. G., & Chattarji, S. (2004). Recovery after chronic stress fails to reverse amygdaloid neuronal hypertrophy and enhanced anxiety-like behavior. *Neuroscience*, *128*(4), 667-673.
Wadsworth, M.E., Ahlkvist, J.A., McDonald, A., & Tilghman-Osborne, E.M. (2018). Future Directions in Research and Intervention with Youths in Poverty. *Journal of Clinical Child & Adolescent Psychology*, *47*(6), 1023-1038.

Wadsworth, M.E., & Berger, L.E. (2006). Adolescents coping with poverty-related family stress: Prospective predictors of coping and psychological symptoms. Journal of Youth & Adolescence, 35, 54–67. doi:10.1007/s10964-005-9022-5

Wagner, B.M., Cohen, P., & Brook, J.S. (1996). Parent/adolescent relationships: Moderators of the effects of stressful life events. *Journal of Adolescent Research*, *11*(3), 347-374.

Walkley, M., & Cox, T.L. (2013). Building trauma-informed schools and communities. *Children & Schools*, *35*(2), 123-126.

Wang, M.T., & Eccles, J.S. (2012a). Adolescent behavioral, emotional, and cognitive engagement trajectories in school and their differential relations to educational success. *Journal of Research on Adolescence*, *22*(1), 31-39.

Wang, M.T., & Eccles, J.S. (2012b). Social support matters: Longitudinal effects of social support on three dimensions of school engagement from middle to high school. *Child Development*, *83*(3), 877-895.

Washington, T., Rose, T., Coard, S.I., Patton, D.U., Young, S., Giles, S., & Nolen, M. (2017, February). Family-level factors, depression, and anxiety among African American children: A systematic review. In *Child & Youth Care Forum* (Vol. 46, No. 1, pp. 137-156). Springer US.

Wasserman, G.A. & McReynolds, L.S. (2011). Contributors to traumatic exposure and posttraumatic stress disorder in juvenile justice youths. *Journal of Traumatic Stress*, *24*, 422-429.

Weisz, J.R., & Weersing, V.R. (1999). Developmental outcome research. In W.K. Silverman & T.H. Ollendick (Eds.), Developmental issues in the clinical treatment of children (pp. 457-469). Boston: Allyn & Bacon.

West, S. D., Day, A.G., Somers, C.L., & Baroni, B.A. (2014). Student perspectives on how trauma experiences manifest in the classroom: Engaging court-involved youth in the development of a trauma-informed teaching curriculum. *Children and Youth Services Review*, *38*, 58-65.

White, K.S., Bruce, S.E., Farrell, A.D., & Kliewer, W. (1998). Impact of exposure to community violence on anxiety: A longitudinal study of family social support as a protective factor for urban children. *Journal of Child and Family Studies*, *7*(2), 187-203.

Williamson, V., Creswell, C., Fearon, P., Hiller, R.M., Walker, J., & Halligan, S.L. (2017). The role of parenting behaviors in childhood post-traumatic stress disorder: A meta-analytic review. *Clinical Psychology Review*, *53*, 1-13.

Wilson, K.G., Sandoz, E.K., Kitchens, J., & Roberts, M. (2010). The Valued Living Questionnaire: Defining and measuring valued action within a behavioral framework. *The Psychological Record*, *60*(2), 249-272.

Wilson, W.J. (2012). *The truly disadvantaged: The inner city, the underclass, and public policy*. University of Chicago Press.

Winokur, K.P., Li, S., & McEntire, R. (2002). Data integration in the evaluation of juvenile justice education. *Evaluation Review*, *26*(3), 322-339.

Woodbridge, M.W., Sumi, W.C., Thornton, S.P., Fabrikant, N., Rouspil, K.M., Langley, A.K., & Kataoka, S.H. (2016). Screening for trauma in early adolescence: Findings from a diverse school district. *School Mental Health*, *8*(1), 89-105.

Wormington, S.V., Anderson, K.G., Schneider, A., Tomlinson, K.L., & Brown, S.A. (2016). Peer victimization and adolescent adjustment: does school belonging matter?. *Journal of School Violence*, *15*(1), 1-21.

Wright, E.M., Fagan, A.A., & Pinchevsky, G.M. (2013). The effects of exposure to violence and victimization across life domains on adolescent substance use. *Child Abuse & Neglect*, *37*(11), 899-909.

Wright, J.P., McMahon, P.M., Daly, C., & Haney, J.P. (2012). A quasi-experiment in early intervention involving collaboration between schools and the District Attorney's office. *Criminology & Public Policy*, *11*(2), 227-249.

Yehuda, R. (2002). Post-traumatic stress disorder. *New England Journal of Medicine*, *346*(2), 108-114.

Youngstrom, E., Weist, M.D., & Albus, K.E. (2003). Exploring violence exposure, stress, protective factors and behavioral problems among inner-city youth. *American Journal of Community Psychology*, *32*(1-2), 115-129.

Yule, K., Houston, J., & Grych, J. (2019). Resilience in children exposed to violence: a meta-analysis of protective factors across ecological contexts. *Clinical Child and Family Psychology Review*, 1-26.

Zelechoski, A.D., Sharma, R., Beserra, K., Miguel, J. L., DeMarco, M., & Spinazzola, J. (2013). Traumatized youth in residential treatment settings: Prevalence, clinical presentation, treatment, and policy implications. *Journal of Family Violence*, 28(7), 639–652. doi: 10.1007/s10896-013-9534-9

Zimmerman, M.A., & Rappaport, J. (1988). Citizen participation, perceived control, and psychological empowerment. *American Journal of Community Psychology*, *16*(5), 725-750.

Appendix A
Mobile Youth and Poverty Study Archive

The Mobile Youth and Poverty Study (MYPS) consists of data derived from several sources, as noted in the following sections. Data from these different sources have been linked to permanent identification numbers.

Mobile Youth Survey (MYS, 1998-2011)

The Mobile Youth Survey (MYS) is a multiple cohort, longitudinal study (14 annual waves of data) of adolescents (aged 9.75 years – 19.25 years) conducted in the most impoverished neighborhoods in the Mobile, Alabama Metropolitan Statistical Area (MSA). In 1998, we enrolled a cohort of 1,771 youths from 13 neighborhoods (median poverty rate = 73%). We attempted to recruit all appropriately-aged adolescents in these neighborhoods through a combination of active (i.e., knocking on doors) and passive (e.g., posting flyers) recruitment procedures; while our final response rate is difficult to determine (we do not have a definitive sampling frame), we estimate that we obtained a response rate of between 50% and 60%. During each subsequent year, we attempted to re-survey each enrolled participant until he or she aged out of the study; we also enrolled a new cohort each year. As enrollees moved to new neighborhoods, we followed them to the extent possible; as a sufficient number of previous enrollees moved to a new neighborhood, we begin recruiting new participants in that neighborhood. By 2011, we were conducting surveys in over 50 neighborhoods in the Mobile MSA. The data collected through the MYS was funded in part by NICHD, NIDA, CDC, SAMHSA, the cities of Mobile, Prichard, the Mobile Housing Board, the Southern Nursing Research Society, and The University of Alabama.

The first seven waves of the MYS consisted of 294 questions about risk behaviors and attitudes associated with violence, substance use, and sex; family structure and function; feelings about self, neighborhood, and peers; and experiences in school. In 2005, we added a number of questions related to identity style, ego strengths; intimate relationships; and connectedness to school and to friends; we also increased the number of questions about the nature of the respondent's relationship with his or her mother or mother figure. In 2010, two additional items were added to the MYS. Version 3 of the MYS (used in 2010-2011, with 408 items) typically required about an hour and a half to complete. Respondents were guaranteed confidentiality in their responses (no questions dealt with child abuse). MYS questions and scales are described in the MYPS Archive. For each, the original source for the questions is specified (when one exists), although it should be noted that in most cases questions were adapted to address the situations and reading levels of the respondents. Unlisted questions were either taken from generally-available sources (e.g., How old are you?) or were developed specifically for the purpose of this study.

Between 1998 and 2011, we enrolled a total of 12,448 MYS participants, who collectively contributed 36,171 annual data points (an average of 2.9 annual data points per enrollee). Of these enrollees, 2,594 contributed five or more data points. We examined the annual earned income of a sample of MYS households in 2005, finding a mean annual earned household income of under $5,000. A recent comparison (see Bolland, 2012) of MYS enrollees and non-enrollees living in the MYS neighborhoods showed a very small difference in free/reduced cost lunch status (MYS enrollees were slightly more likely to receive free/reduced cost lunch) and race (MYS enrollees were slightly more likely to be African American). But once these

differences were controlled, we found no differences in standardized test scores, school violations, or school discipline outcomes between MYS enrollees and non-enrollees.

The MYS sample serves as the basis for other data that were either collected during interviews or from archival records. Those other data sources are described in the following sections.

Adult and Family Dynamics Questionnaire

Between 2000 and 2011, we conducted over 1,200 interviews with adults living in MYS households. While not all respondents were asked all questions, a majority did provide answers to questions involving their romantic relationships; experiences with racial discrimination; exposure to violence; major life events; relationships with children in the household; neighborhood; employment and finances; social support; physical and mental health; religiosity; household environment; and risk behavior related to sex and substance use and abuse. Responses are connected, through identification numbers, with MYS enrollees living in the household. Notably, approximately 50 of the adult respondents were previously MYS enrollees.

Substance Use Decision Making Survey

In 2003, we selected a subsample of approximately 500 MYS enrollees to participate in a three-year longitudinal study of their cognitive processing abilities and styles and how those affect decisions. Enrollees in this substudy were between 10 and 12 at the time of the first annual interview, with two subsequent interviews at intervals of approximately 12 months. The initial interview assessed IQ, decision making heuristics, creativity, need for cognition, and other aspects of cognitive processing. During subsequent interviews, all of these measures except IQ were again collected; during subsequent interviews, we also examined attributional styles and sensation-seeking behavior.

Sleep Survey

In 2010-2011, we interviewed a subsample of approximately 250 MYS enrollees about their sleep habits and hygiene, sleep disorders, and household conditions that might affect sleep quality (e.g., overcrowding, noise).

Gene by Environment Neighborhood Interaction Study

Between 2008 and 2011, we selected a subsample of approximately 600 MYS enrollees who had lived in public housing, and conducted interviews; we also collected DNA from these individuals. The interviews were conducted using the *Diagnostic Interview Schedule for Children*, the *Child Behavior Check List*, and the *Youth Self Report*. Additionally, respondents were asked about neighborhood ecology, collective efficacy, and exposure to violence. A caregiver for each respondent was also interviewed.

Mobile County Public School System Student Records

In 1998, the Mobile County Public School System (MCPSS) began storing student records electronically. We have been able to match approximately 90% of MYS enrollees to their student records. Records include standardized test scores (Stanford Achievement Test, SAT, Otis-Lennon School Ability Test, OLSAT), school violations and disciplinary action, emergency contacts, special education status, absenteeism, grades, and household financial information provided by free/reduced cost lunch applications.

Mobile County Juvenile Court Records

In 1999, the Mobile County Juvenile Court (MCJC) began storing court records electronically. We have matched approximately 40% of MYS enrollees to these juvenile court records. Records include each incident that resulted in a court appearance, the date of the incident, the charge code, and the disposition.

Mobile Housing Board Records

In 1998, the Mobile Housing Board (MHB) began storing public housing and Section 8 Housing records electronically. We have been able to match over 50% of MYS enrollees to these housing records. In addition to a census of household members, these records also provide results of an audit of household income and financial resources.

Mobile Police Department Crime and Service Reports

In 2005, the Mobile Police Department (MPD) began geocoding its crime and service reports. We will aggregate these by MYS neighborhood each year to provide a measure of crime, by type, in each of these neighborhoods.

Mobile Youth and Poverty Study Geodatabase

Data from the MYS and studies of MYS subsamples, MCPSS, MCJC, and MHB provide a reasonably comprehensive set of addresses for MYS enrollees between 1998 and 2011. Using a geographical clustering approach, we have identified over 50 neighborhoods where MYS enrollees have lived during this period. We are in the process of developing a Geographical Information System that will link all of the MYS data (from both the full sample and subsamples), as well as MCPSS, MCJC, MHB, and MPD archival records to these neighborhoods.

Uniqueness of the MYPS Archive

Members of our research team have been engaged in research in Mobile for the past 21 years. During this time, we have spent considerable time in Mobile's poorest neighborhoods, gotten to understand the culture of the neighborhoods and the needs of their residents, and worked with the residents to develop a framework for more effective programs. During this time we have also become quite involved with the public systems in Mobile. This involvement has included sharing study results with directors and senior staff; writing grant proposals in collaboration with them; and engaging in long conversations about the services they provide, the clientele they serve, and how to make their services more effective.

Thus, we have been able to earn the trust of neighborhood residents and public officials, and this has enabled us to obtain good MYS response rates and develop the partnership agreements with public sector agencies, organizations, and systems described previously. Together, these have led to a unique and remarkable data archive, in which we have (a) obtained thousands of survey responses from adolescents over a 14 year period; (b) obtained access to individual court and school records of the individual survey respondents; (c) obtained geocoded police and crime records about the neighborhoods where these survey respondents live; and (d) created a database in which all of these data elements can be merged. It is fair to conclude that the MYPS is one of the largest, if not the largest, of its kind; the fact that it focuses on what has often been described as a "hard-to-study" population of impoverished adolescents makes it even more remarkable. We

have the ability to address a number of questions, including those specified in this study, in a way that has not been possible previously.

Procedures to access MYPS Data

Procedures are in place for researchers to access deidentified MYPS data at http://acbolland.people.ua.edu/data-use.html. Additionally, requests can be made to Anneliese Bolland, Ph.D. (acbolland@ua.edu) or John Bolland, Ph.D. (john.m.bolland@gmail.com). Included in these procedures are attention to data protection. In order to access MYPS data, researchers must first read through the guidelines in place for the MYPS archive. Then, researchers must identify research questions and the data they wish to use in their studies and use the MYPS Data Request Application, also filling in a Data Protection Plan, to request deidentified data. The application will then be reviewed by MYPS staff and a decision will be made and researchers will be notified. Before any MYPS data are made available to researchers, IRB approval or a waiver of IRB approval must be submitted to MYPS staff from the researchers' home institutions. This approval lasts one year, however, researchers are able to request annual renewal. Researchers are also responsible for reviewing existing published manuscripts that use MYPS data to ensure that they are not proposing to answer research questions that have already been answered. Additionally, MYPS staff keep track of what studies are in progress to ensure that new requests do not overlap with existing studies.

Appendix B
Mobile Youth Survey Data Collection Protocols

Mobile Youth Survey (MYS) Questionnaire

The first seven waves of the MYS consisted of 294 questions about risk behaviors and attitudes associated with violence, substance use, and sex; family structure and function; feelings about self, neighborhood, and peers; and experiences in school. In 2005, we added a number of questions related to identity style, ego strengths; intimate relationships; and connectedness to school and to friends; we also increased the number of questions about the nature of the respondent's relationship with his or her mother or mother figure. In 2010, two additional items were added to the MYS. Version 3 of the MYS (used in 2010-2011, with 408 items) typically required about an hour and a half to complete. Respondents were guaranteed confidentiality in their responses (no questions dealt with child abuse). MYS questions and scales are described in the Mobile Youth and Poverty Study (MYPS) Archive. For each, the original source for the questions is specified (when one exists), although it should be noted that in most cases questions were adapted to address the situations and reading levels of the respondents. Unlisted questions were either taken from generally-available sources (e.g., How old are you?) or were developed specifically for the purpose of this study.

IRB Protocols

All data collected and/or received as part of the MYPS, including the MYS, were approved by an Institutional Review Board (IRB, i.e., The University of Alabama or University of Alabama at Birmingham). All protocols are up to date and continue to be approved by The University of Alabama's IRB.

Data Collection Procedures

When participants came to a scheduled survey administration (in 1998 and during every subsequent year), they were checked in (to ensure that (a) we had had previous contact with them and that they were able to correctly provide us their address and birthdate, as obtained during the recruitment process; (b) they had not already been surveyed during the current year; and (c) that they had parental consent) and placed in a room with other MYS participants (typically 10 to 20). We read the assent statement on the cover page out loud and ask respondents to print their name at the bottom of the page, along with their address, their birth date, and the date the survey is administered; they then tear this page off of the MYS questionnaire, and we collected these cover pages. We usually read the questions aloud, and ask each respondent to mark the appropriate answer in his or her survey booklet. If an individual had difficulty keeping up with the group, or circumstances require individual attention, a member of the survey team works one-on-one with that respondent. When respondents completed the survey, we paid them $10 ($15 starting in 2005).

If adolescents were scheduled to attend a group administration and did not come, we attempted to recontact them and schedule another time for the survey. If adolescents did not participate in the group survey administration in their neighborhood (either because they did not come to their scheduled survey administration time or because we were unable to make contact with them during the time we were in their neighborhood), we attempted to contact them later in the summer to schedule a time to administer the survey to them in their home. During the first seven waves of data collection, virtually all respondents who moved to untargeted

neighborhoods were surveyed in their homes. If others were in the room during the survey, we typically allowed respondents to read and answer the questions themselves; if others are not in the room, we read the questions aloud while the respondents recorded their answers in the response booklet. In some special circumstances, we initially scheduled an in-home survey rather than a group administration. During 1998, approximately 10% of all the surveys were administered in the respondent's home; by 2000, this had increased to over 20% (because of the annual increase in the number of respondents living in untargeted neighborhoods).

Response and retention rates. In 1998 (Wave 1), we surveyed a total of 1,774 respondents. It is difficult to estimate the response rate, because we did not have a definitive sampling frame of adolescents who actually lived in the targeted neighborhoods (even in public housing, housing authority records only include youths formally listed on leases, and not all of those are actually living in the residence at any given time). Although the total number of refusals in 1998 was only 9.1% of the 1,526 actively recruited respondents, another 11.5% were never contacted, and 20.4% agreed to participate but did not come to their survey appointment and were not available during our subsequent attempts to survey them. A conservative estimate of the cooperation rate in public housing neighborhoods is between 59% and 67% for 1998, and between 64% and 72% in nonpublic housing neighborhoods.

Response rates are more difficult to calculate. We conducted an extensive analysis of one public housing neighborhood (Orange Grove). Based on Housing Authority lease information, adjusted for information we obtained from leaseholders, we estimate the 1998 response rate (combined for actively and passively recruited households) to be between .482 and .517. However, if we also consider delayed enrollment in the MYS (i.e., enrollment between 1999 and 2004), we obtain a response rate of between 72.7% and 78.0% for eligible youths living in Orange Grove during the summer of 1998. Using the same logic for Alabama Village, we estimate a total response rate (current + delayed enrollment) of 72.3% for youths living in the neighborhood during the summer of 1998. Fortunately, there were no major drug busts in any neighborhood immediately after we conducted the survey, and by 1999 the cooperation rate had increased to approximately 88%, where it remained throughout the study. When we compare respondents from active recruitment households and passive recruitment households, we do not find statistically significant differences.

Table 2 shows the initial size of each cohort, and the number of respondents from each cohort who contributed one, two, three, …, twelve data points. Overall, 3,561 participants (30.7%) contributed a single data point; 2,434 (21.0%) participants contributed two data points; 1,731 (14.9%) contributed three data points; 885 (7.6%) participants contributed four waves of data; and 2,971 (25.7%) contributed five-or-more data points.

Follow-up rates are higher than Table 2 might initially suggest, because during any given year the number of respondents who age out of the sample each year averages 11% (i.e., 100% of respondents age out over a nine-year period). Follow-up rates for the Year 1 cohort, discounting those who have aged out of the study and those who have not been verified, are .733 for Wave 2; .614 for Wave 3; .558 for Wave 4; .439 for Wave 5; .433 for wave 6; and .442 for Wave 7. Not surprisingly, the largest loss to follow-up occurs between Waves 1 and 2, with virtually no loss to follow-up between Waves 5 and 7. However, as the number of eligible prior respondents has increased each year, and as they have moved to new neighborhoods, the response rate has decreased. Non-respondents do not differ significantly from respondents.

Table B1 provides a detailed analysis of the first two waves of data, which will help clarify this. In 1998, 1,775 adolescents were interviewed, 1,673 of whom could be confirmed as residents of Mobile County. Fifty-eight (3.3%) aged out of the study, leaving a total of 1,615 Cohort 1 respondents eligible to participate in wave 2. 1,249 were surveyed, for a response rate (and a Year 1-Year 2 follow-up rate) of .733. An analysis of those who attritted in 1999 proves interesting, however. We were able to confirm (based on Mobile County Public School System records) that 222 of respondents lost to follow-up were living at a different address than they provided us in 1998. Eleven of these apparently moved out of the county, and 211 were living at different addresses in Mobile County. We were also able to confirm from school records that 127 additional non-respondents were living at their 1998 address; 15.7% of these were scheduled to be surveyed but did not participate; 29.1% refused; 14.2% were gone for the summer; and 40.9% were not contacted. We were unable to verify whether 17 additional non-respondents (who were never contacted) lived at their 1998 address or had moved.

One additional set of statistics about attrition, provided in the recapture column, is revealing. Even though they dropped out of the study between 1998 and 1999, 34.2% dropped back into the study during subsequent years! Thus, the concept of loss to follow-up is at least partially a misnomer: a substantial number of the dropouts were not lost to follow-up, they were temporarily misplaced to follow-up, only to be found later. This occurred, albeit at different rates, for every category of attritters. This is consistent with earlier findings about response rates for current and delayed enrollees in the MYS, and it provides support for our assumption, to be developed in the *Missing Data and Sample Representativeness section*, that data in the study can be treated as missing at random (MAR). This is useful information, because it allows considerable flexibility in data analysis.

***Data Storage*.** Data were collected using scannable questionnaires; they have a cover page, on which identifiable information was written, and 24 (1998-2005) or 36 (2006-2011) data pages which have no identifiers other than questionnaire number (which can be traced back to the number on the cover sheet). Questionnaires have now all been shredded and recycled. Cover sheets were electronically scanned and are now stored on a secure University of Alabama network. Only one person has the password to the folder where these files are stored. The scanned MYS data are stored in two files, which can be linked by permanent identification number (PID). The *data file* has only de-identified data, including (a) PID; (b) neighborhood; (c) response booklet number for each year the respondent participated; (d) neighborhood where the respondent lived each year; (e) exact age of the respondent each year (i.e., the age of the respondent on the date that the survey was completed each year); and (f) responses to questions on the survey (across multiple years; i.e., a single row of data has all responses for a case for all of the years that the respondent participated in the MYS). Note that this file does not include name, birthdate, address, or any other identifiers. The *names file* contains (a) PID; (b) name of the respondent each year that he or she completed the survey; (c) address of the respondent each year that he or she completed the survey; (d) birthdate of the respondent; (e) date the survey was completed each year; and (f) booklet number each year that the respondent completed the survey. These files are stored on password-protected, whole-disk encrypted computers, making it extremely difficult for the data to be compromised if a computer is lost or stolen. The UA Office of Information Technology has agreed to conduct an annual review of our data security procedures. All analyses are done using the *data file*.

Current State of the Research. All data have been collected, so no new recruitment of participants of data collection will occur. The compiled data is being used to answer a fundamental research question: What are the challenges for youth growing up in poverty, and how do protective and risk factors affect the behaviors associated with those challenges? To effectively address this question, we can use all of the variables in the MYS, either as outcome measures, predictor measures, covariates, or ways to describe the sample. The analyses use a variety of statistical measures, mostly involving either linear mixed models or structural equation models.

Connection to Other Research. In the consent form, we specified that the data that were collected may be used in conjunction with other data that we collect, and that we may re-contact the participant at some point in the future to conduct additional research based on answers he or she provides in response to the MYS questions. We have, in fact, conducted two federally funded studies in which we conducted additional interviews with samples of MYS participants (one involving decision making styles and how they affect substance use, the other involving how the interaction between genes and environment affects risk behavior, see Appendix A). Additionally, we have obtained school records, juvenile court records, and housing authority records for the county, and have been able to connect those records to MYS data. We have also obtained geocoded police reports for neighborhoods where MYS participants live. All of these additional sources of data have been reviewed and approved by the UA IRB.

Table B1
Detailed Analysis of Retention, Attrition, and Recapture for 1998 MYS Sample

Disposition	N	Percent (source)	Recapture	Percent of *N*
(a) 1998 sample	1,775			
(a.1) Not confirmed	102	.057 (a.1/a)		
(a.2) Aged out	58	.033 (a.2/a)		
(b) Eligible for the 1999 MYS	1,615	.910 (b/a)		
(b.1) Interviewed in 1999	1,249	.773 (b.1/b)		
(b.2) Not interviewed	366	.227 (b.2/b)	125	.342
(b.2.1) Moved to new address outside Mobile County	11	.030 (b.2.1/b.2)	2	.182
(b.2.2) Could not be located at 1998 address	211	.576 (b.2.2/b.2)	88	.417
(b.2.3) Remained at same address	127	.347 (b.2.3/b.2)	33	.260
(b.2.3.1) Scheduled but not interviewed	20	.157 (b.2.3.1/b.2.3)	6	.300
(b.2.3.2) Refused	37	.291 (b.2.3.2/b.2.3)	9	.243
(b.2.3.3) Gone for the summer	18	.142 (b.2.3.3/b.2.3)	4	.222
(b.2.3.4) No contact	52	.409 (b.2.3.4/b.2.3)	14	.269
(b.2.4) No contact; unverified address	17	.046 (b.2.4/b.2)	2	.117

Missing Data and Sample Representativeness

In any community-based longitudinal study, missing data are an issue. Therefore, steps were taken to determine whether missing data in the MYS were informative (i.e., missingness predicts

the value that would have been obtained if the data would have been collected), which leads to sampling bias and undermines results and conclusions. If missing data are not informative, they are either MAR or missing completely at random (MCAR); sampling bias is eliminated in both of these cases. In a similar way, we considered whether and how the representativeness of the sample (whether missing data due to people in the population not being sampled) is informative and contributes to sampling bias.

In the MYS, the sampling frame was not well defined. In 1998, we received lists of public housing residences where eligible adolescents lived from the Mobile and Prichard Public Housing Authorities, and we randomly selected half of these residences to contact and select potential participants. In private residential neighborhoods, however, we did not know in which buildings eligible adolescents lived, so we randomly selected half of the residences in these neighborhoods. In addition to these targeted participants, we also encouraged anyone between the ages of 10 and 18 who lived in these neighborhoods (both public and private) to participate. Hence, the 1998 sampling frame was essentially all eligible adolescents who lived in the 13 targeted neighborhoods. But because we did not have a definitive list of those individuals, the sampling frame was, strictly speaking, unknown and unknowable.

We were able to estimate the sampling frame, however, based on MCPSS school records. We identified neighborhood boundaries, using ARCGIS, and assigned MYS participants to these neighborhoods based on geocoded addresses given on the MYS cover sheets. We then identified schools where ten-or-more MYS participants were enrolled, and we geocoded addresses of students enrolled in those schools; geocoded addresses that fell within the target MYS neighborhoods were retained, and students living at those addresses were assumed to constitute the MYS sampling frame—but with two important limitations. First, not all students were enrolled in the MCPSS. In particular, students could attend private or parochial schools, and they could be home schooled. However, we believe that this did not seriously limit our conclusions: we know definitively of only one student who was enrolled in a parochial school and one student who was home schooled in the MYS sample. There may well have been others, but we were able to match nearly 96% of MYS participants to MCPSS records, so the overall effect could not have been large. Second, and a larger issue, students were able to drop out of school at age 16 during most years of the MYS study. As a result, the sampling frame could not be estimated for adolescents older than 15. Given these limitations, we estimate that approximately 33% of eligible students younger than age 16 and living in the MYS target neighborhoods were 1998 MYS participants. More complete information can be found in Bolland's (2012) study of representativeness and missing data in the MYS.

MCPSS records not only provided names of students living in MYS target neighborhoods; they also provided race, age, gender, grade in school, free/reduced cost lunch status, Stanford Achievement Test verbal and math scores, and school violations. Thus, we were able to compare MYS participants versus MYS dropouts each year, and we were able to compare MYS enrollees with non-enrollees each year on these measures. The first set of comparisons provides information about potential sampling bias due to dropout, while the second provides information about potential sampling bias due to non-representativeness of the sample.

Dropout. To assess whether missingness in the MYS dataset due to dropout was informative, we estimated a statistical model, using a generalized estimating equations (GEE) framework, in which we compared dropouts and non-dropouts each year in terms of information from their school records (Bolland, Tomek, & Bolland, 2017) for the first ten waves of data (1998-2007).

Specifically, if person *i* participated in the survey at both time *t* and time *t*+1, $dropout_{i,t+1} = 0$; if person *i* participated in the survey at time *t* but not at time *t*+1, $dropout_{i,t+1} = 1$; and if person *i* did not participate in the survey at time *t*, $dropout_{i,t+1}$ is undefined and therefore missing. Results showed that dropout was statistically associated with race ($p < .05$; African American < White), but with a small-to-moderate effect size. Free lunch status was also statistically significant ($p < .001$; free < not free), but the effect size was small. Grade was associated with dropout ($p < .001$; lower grades < higher grades), but the effect size is miniscule. Stanford Achievement Test (SAT) reading test scores achieved statistical significance ($p < .05$; lower score < higher score), but the effect size was miniscule. Gender, SAT math scores, and school violations were all unassociated with dropout (all *p*s > .05).

Representativeness. Here, we considered MYS enrollment, such that $enrollment_i = 1$ if person *i* ever participated in the MYS, and $enrollment_i = 0$ if *i* never participated in the MYS. To assess whether missingness in the MYS dataset due to representativeness was informative, we estimated a statistical model, using a generalized estimating equations (GEE) framework, in which we compared enrollees versus non-enrollees each year in terms of information from their school records (Bolland et al., 2017) for the first ten waves of data (1998-2007). Race is statistically associated with enrollment ($p < .001$; White < African American), with a small-to-moderate effect size. Free Lunch status ($p < .001$; not free < free) and grade ($p < .01$; lower grade < higher grade) are both associated with enrollment, but both effect sizes are miniscule. SAT reading scores ($p < .01$; higher score < lower score), SAT math scores ($p < .05$, higher score < lower score), and school violations ($p < .01$; fewer violations < more violations) are all associated with enrollment status, but again all of the effect sizes are miniscule.

The general conclusion is that, while missing data do appear to be informative, the level of information conveyed is mostly very, very small. Moreover, in almost all cases, the direction of missingness is opposite of what we would expect. Typically we would expect that vulnerable, hard-to-reach populations are least likely to participate in studies (see Bolland et al., 2017). So, we might expect that African Americans would be less likely to participate in the MYS and to drop out of the study; that students receiving free lunches would be less likely to participate than those not receiving free lunches; that students scoring higher on standardized tests would be more likely to participate than those scoring lower; that students who have fewer school violations would be more likely to participate than those who have more violations. Yet, none of these conditions hold. Given that the goal of the MYS was to sample the most vulnerable adolescents in Mobile, reflected in our choice to target neighborhoods with the lowest income levels, we may have succeeded better than we expected, with the most vulnerable individuals in the most vulnerable neighborhoods enrolling in the study and not dropping out. Of course, the effect sizes are so small that bias is highly unlikely. But whatever bias may have occurred as a function of data missingness, it is likely to have contributed to, rather than detracted from, our overall intent in designing and conducting the MYS study.

Appendix C
MYS Measures

In this appendix, information about the constructs and scales used in the analyses, derived from Mobile Youth Survey (MYS) items, is presented.

Construct: DEMOGRAPHICS
Variable: Race

Table C1
Race Items on the MYS

Item number	Question	Response options	
m24	Are you black/African American?	1 No	2 Yes
m25	Are you white?	1 No	2 Yes
m26	Are you Hispanic/Latino?	1 No	2 Yes
m27	Are you mixed race and/or Creole?	1 No	2 Yes

Construct: DEMOGRAPHICS
Variable: Age

Table C2
Age Item on the MYS

Item number	Question	Response options	
m1	How old are you now?	1	9 years old
		2	10 years old
		3	11 years old
		4	12 years old
		5	13 years old
		6	14 years old
		7	15 years old
		8	16 years old
		9	17 years old
		10	18 years old
		11	19 years old

Construct: DEMOGRAPHICS
Variable: Gender

Table C3
Gender Item on the MYS

Item number	Question	Response options
m2	Are you male or female (a boy or a girl)?	1 Male (boy) 2 Female (girl)

Construct: EXPOSURE TO VIOLENCE[4]
Scale: Witnessed violence

Table C4
Witnessing Violence Item on the MYS

Item number	Question	Response options
m167	During the past 3 months (90 days), did you see someone being cut, stabbed, or shot?	1 No 2 Yes, just once 3 Yes, more than once

Construct: EXPOSURE TO VIOLENCE
Scale: Violent victimization: Weapon brandished against you

Table C5
Violent Victimization (Weapon Brandishment) Item on the MYS

Item number	Question	Response options
m169	In the past 3 months (90 days), did someone pull a knife or a gun on you?	1 No 2 Yes, just once 3 Yes, more than once

[4] Short-term reliability for witnessing violence is .384, which is reasonable but not high; the short-term reliability for being shot at is .127 (ns). The behavior variables is that they are heavily skewed, so that even a single case of moving from no-to-yes or yes-to-no can heavily influence the correlation. Moreover, the other measures are mostly attitudes or beliefs, which wouldn't be expected to change over five weeks, so any deviation from r = 1 is mostly measurement error. On the other hand, events can occur over a five-week period. Thus, we are not reporting short-term reliability for the exposure to violence measures.

Construct: EXPOSURE TO VIOLENCE
Scale: Violent victimization: You were cut or shot at

Table C6
Violent Victimization (Cut or Shot at) Items on the MYS

Item number	Question	Response options					
m171	In the past year (12 months), did someone cut or stab you bad enough that you had to see a doctor?	1	No	2	Yes, just once	3	Yes, more than once
m173	In the past year (12 months), did someone shoot a gun at you?	1	No	2	Yes, just once	3	Yes, more than once

Construct: EXPOSURE TO VIOLENCE
Scale: Violent victimization: Brandishment, cut, or shot at

This violent victimization variable is a combination of the two previous violent victimization variables. Initially, it would seem that if a person is cut or shot at, a gun or knife would also have been pulled on him or her. Results from the MYS are equivocal on this point. First, 2,111 (out of a total of 32,787; 6.44%) observations reported that the respondent had been cut or shot at but that a weapon had not been brandished against them. This would suggest that the error rate is small; however, only 4,004 observations reported that the respondent had been cut or shot at, and the error rate for these respondents is 52.72%, which suggests that the issue is not negligible.

However, two factors help rationalize this error rate. First, the non-aligned time periods mean that a respondent may truly have had a weapon brandished against him or her *and* cut or shot at, but correctly reported no weapon brandishment (e.g., if the event happened six months prior to the survey date). We can partially estimate the impact of this misalignment, because the MYS also asks whether a knife or gun has ever been pulled against the respondent (which would include, but not be limited to, the nine month period between three months and 12 months). If we assume that all of these "ever" events happened during this nine-month period, the number of inconsistent cases drops to 1,189, for an error rate of 3.63% (as a function of all observations) and 29.7% (as a function of observations that reported being cut or shot at).

Second, weapon brandishment implies a close encounter, as would absolutely be necessary if a respondent were cut or stabbed. But a gun could be shot from some distance, which would not necessarily be viewed as brandishment. In addition, a shot could be fired in the direction of a respondent without intent, as in a shot fired into a crowd or a stray shot fired at another person; again, neither would be accompanied by a report of brandishment. Despite this limitation, combining these two variables seems useful, in that it simplifies the analysis, and weapon use is a more extreme extension of weapon brandishment.

Construct: PSYCHOLOGICAL ADJUSTMENT
Scale: Hopelessness

Table C7
Hopelessness Items on the MYS

Item number	Item	Response options
m84	All I see ahead of me are bad things, not good things.	1 Agree 2 Disagree
m85	There's no use in really trying to get something I want because I probably won't get it.	1 Agree 2 Disagree
m86	I might as well give up because I can't make things better for myself.	1 Agree 2 Disagree
m87	I don't have good luck now and there's no reason to think I will when I get older.	1 Agree 2 Disagree
m88	I never get what I want, so it's dumb to want anything.	1 Agree 2 Disagree
m89	I don't expect to live a very long life.	1 Agree 2 Disagree

Source

Kazdin, A.E., French, N.H., Unis, A.S., Esveldt-Dawson, K., & Sherick, R.B. (1983). Hopelessness, depression, and suicidal intent among psychiatrically disturbed inpatient children. *Journal of Consulting and Clinical Psychology*, *51*, 504-510.

Note. M85-M89 are adapted from Kazdin, et al.; these five questions have the highest item-total correlations with the Kazdin's Hopelessness Scale for Children. M89 was added to address beliefs about early mortality (see DuRant, et al., 1994).

Reliability

Cronbach's alpha = .773 across all 14 waves of data. Care should be exercised in interpreting this statistic because observations are not independent, and some respondents may have as many as 10 data points while may have a single data point. Table C9 shows additional information, again across all waves of data. Five-week test-retest reliability for a sample of 49 adolescent public housing residents in Huntsville, AL (1998) was high (r = .622).

Table C8
Reliability: Hopelessness Scale

Item	Item-total correlation	α if item deleted
m84	.503	.742
m85	.477	.750
m86	.552	.729
m87	.566	.725
m88	.545	.731
m89	.461	.752

Construct: PSYCHOLOGICAL ADJUSTMENT
Scale: Worry

Table C9
Worry Items on the MYS

Item number	Question	Response options							
m12	How much do you worry about getting good grades?	1	I am not in school	2	Not at all	3	Some	4	Very much
m71	How much do you worry about being pressured into doing something dangerous by your friends?	1	Not at all	2	Some	3	Very much		
m72	How much do you worry about not fitting in with other kids in the neighborhood or at school?	1	Not at all	2	Some	3	Very much		
m73	How much do you worry that your family has enough money to get by?	1	Not at all	2	Some	3	Very much		
m74	How much do you worry that you might not get a good job when you get older?	1	Not at all	2	Some	3	Very much		
m75	How much do you worry about getting along with people of other races?	1	Not at all	2	Some	3	Very much		
m194	How much do you worry about gangs in your neighborhood?	1	Not at all	2	Some	3	Very much		
m227	How much do you worry about whether you are ‘straight’ or ‘gay’?	1	Not at all	2	Some	3	Very much		
m228	How much do you worry that you might get AIDS?	1	Not at all	2	Some	3	Very much		

Source

Small, S. & Rodgers, K.B. (1995). Teen assessment project survey question bank. Madison, WI: Center for Action, University of Wisconsin.

Note. Question format, but not question content, was taken from Small & Rogers (1995).

Reliability

Cronbach's alpha = .739 across all 14 waves of data. Care should be exercised in interpreting this statistic because observations are not independent, and some respondents may have as many as 10 data points while may have a single data point. Table C12 shows additional information, again across all waves of data. Five-week test-retest reliability for a sample of 49 adolescent public housing residents in Huntsville, AL (1998) was high (r = .591).

Table C10
Reliability: Worry Scale

Item	Item-total correlation	α if item deleted
m12	.282	.735
m71	.491	.702
m72	.442	.711
m73	.496	.700
m74	.493	.701
m75	.502	.700
m195	.341	.727
m227	.368	.722
m228	.322	.734

Construct: PSYCHOLOGICAL ADJUSTMENT
Scale: Self-Worth

Table C11
Self-Worth Items on the MYS

Instructions: For each of the following questions, please indicate which of the two statements that are listed is most like you.

Item number	Response options	
m116	1	I am usually unhappy with myself.
	2	I am usually happy with myself.
m117	1	I sometimes do things I know I shouldn't do.
	2	I hardly ever do things I know I shouldn't do.
m118	1	I usually don't like the way I behave.
	2	I usually like the way I behave.
m119	1	I like the kind of person I am.
	2	I don't like the kind of person I am.
m120	1	I usually get into trouble because of the things I do.
	2	I usually don't do things that get me into trouble.
m121	1	I usually make good decisions.
	2	I usually don't make good decisions.
m122	1	I usually behave myself very well.
	2	I often find it hard to behave myself.
m123	1	I am not happy with the way I do a lot of things.
	2	The way I do things is fine.
m124	1	I don't like the way I am leading my life.
	2	I like the way I am leading my life.

Source
Harter, S. (1982). The perceived competence scale for children. *Child Development*, *53*, 87-97.

Note. Question format is different from that used by Harter (1982).

Reliability

Cronbach's alpha = .655 across all 14 waves of data. Care should be exercised in interpreting this statistic because observations are not independent, and some respondents may have as many as 10 data points while may have a single data point. Table C13 shows additional information, again across all waves of data. Five-week test-retest reliability for a sample of 48 adolescent public housing residents in Huntsville, AL (1998) was acceptable (r = .468).

Table C12
Reliability: Self-Worth Scale

Item	Item-total correlation	α if item deleted
m116	.283	.639
m117	.226	.656
m118	.390	.614
m119	.304	.638
m120	.300	.638
m121	.369	.620
m122	.316	.632
m123	.414	.609
m124	.415	.610

Construct: PSYCHOLOGICAL ADJUSTMENT
Scale: Street Code

Table C13
Street Code Items on the MYS

Item number	Item	Response options
m187	It is not possible to avoid fights in my neighborhood.	1 Agree 2 Disagree
m188	If you don't carry a knife or gun in my neighborhood, something bad might happen to you.	1 Agree 2 Disagree
m189	Kids who are in a gang get respect from other kids in my neighborhood.	1 Agree 2 Disagree
m190	When I get mad, I usually don't care who gets hurt.	1 Agree 2 Disagree
m191	Carrying a weapon lets other kids know that they shouldn't mess with you.	1 Agree 2 Disagree
m192	If someone else starts a fight with me, I am going to finish it.	1 Agree 2 Disagree
m193	Hitting someone really knocks some sense into them.	1 Agree 2 Disagree
m194	When you are in an argument, you should stand your ground to get what you want.	1 Agree 2 Disagree

Sources.

Anderson, E. (1999). Code of the street: Decency, violence, and the moral life of the inner city. New York, NY: Norton.

Bandura, A. (1973). Aggression: A social learning analysis. Englewood Cliffs, NJ: Prentice Hall.

Note. The concept of street code was developed by Elijah Anderson. However, the questions we used to measure street code were developed by Albert Bandura.

Reliability

Cronbach's alpha = .735 across all 14 waves of data. Care should be exercised in interpreting this statistic because observations are not independent, and some respondents may have as many as 10 data points while may have a single data point. Table C15 shows additional information, again across all waves of data. Five-week test-retest reliability for a sample of 48 adolescent public housing residents in Huntsville, AL (1998) was good (r = .596).

Table C14
Reliability: Street Code Scale

Item	Item-total correlation	α if item deleted
m187	.305	.733
m188	.375	.718
m189	.354	.723
m190	.394	.715
m191	.471	.700
m192	.574	.678
m193	.591	.674
m194	.368	.721

Construct: PSYCHOLOGICAL ADJUSTMENT
Scale: Traumatic Stress

Table C15
Traumatic Stress Items on the MYS

Item number	Item	Response options					
m106	I have bad dreams about the bad things that have happened to a family member or friend.	1	Almost never	2	Sometimes	3	Very often
m106	I have trouble sleeping at night when bad things happen to a family member or friend.	1	Almost never	2	Sometimes	3	Very often
m108	I think I would feel better if I could talk to someone about the bad things that happen to a family member or friend.	1	Almost never	2	Sometimes	3	Very often
m109	When bad things happen to a family member or friend, it feels like they are happening to me.	1	Almost never	2	Sometimes	3	Very often
m110	I think about bad things that have happened to a family member or friend, even when I don't want to.	1	Almost never	2	Sometimes	3	Very often
m111	After bad things happen to a family member or friend, I feel uncomfortable being with them because it reminds me of the bad things that happened.	1	Almost never	2	Sometimes	3	Very often
m113	I worry that bad things might happen to a family member or friend.	1	Almost never	2	Sometimes	3	Very often

Source
Developed for the MYPS

Reliability

Cronbach's alpha = .774 across all 14 waves of data. Care should be exercised in interpreting this statistic because observations are not independent, and some respondents may have as many as 10 data points while may have a single data point. Table C17 shows additional information, again across all waves of data. No five-week test-retest reliability is available for traumatic stress.

Table C16
Reliability: Traumatic Stress Scale

Item	Item-total correlation	α if item deleted
m106	.510	.743
m107	.545	.735
m108	.461	.753
m109	.511	.742
m110	.541	.736
m111	.448	.755
m113	.451	.754

Construct: SOCIAL SUPPORT
Scale: Maternal Warmth

Table C17
Maternal Warmth Items on the MYS

Instructions:	*Please tell us about [the] person who is most like a mother to you.*						
Item number	**Item**	**Response options**					
m30	I can usually count on her to help me out if I have some kind of problem.	1	I don't have anyone who is like a mother to me	2	Agree	3	Disagree
m31	She usually keeps pushing me to do my best in whatever I do.	1	I don't have anyone who is like a mother to me	2	Agree	3	Disagree
m32	We do fun things together.	1	I don't have anyone who is like a mother to me	2	Agree	3	Disagree
m33	She usually helps me if there is something I don't understand.	1	I don't have anyone who is like a mother to me	2	Agree	3	Disagree
m34	When she wants me to do something, she usually explains the reasons why.	1	I don't have anyone who is like a mother to me	2	Agree	3	Disagree
m35	She spends time just talking with me.	1	I don't have anyone who is like a mother to me	2	Agree	3	Disagree

Source

Lamborn, S.D., Mounts, N.S., Steinberg, L., & Dornbusch, S. (1991). Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 62*, 1049-1065.

Reliability

Cronbach's alpha = .704 across all 14 waves of data. Care should be exercised in interpreting this statistic because observations are not independent, and some respondents may have as many as 10 data points while may have a single data point. Table C19 shows additional information, again across all waves of data. Five-week test-retest reliability for a sample of 48 adolescent public housing residents in Huntsville, AL (1998) was modest (r = .297).

Table C18
Reliability: Maternal Warmth Scale

Item	Item-total correlation	α if item deleted
m30	.424	.669
m31	.387	.679
m32	.461	.666
m33	.476	.655
m34	.424	.671
m35	.463	.657

Construct: SOCIAL SUPPORT
Scale: Neighborhood Connectedness

Table C19
Neighborhood Connectedness Items on the MYS

Item number	Item	Response options
Positive		
m249	I feel I am an important part of my neighborhood.	1 Agree 2 Disagree
m250	If I moved away from my neighborhood, I would be sorry to leave.	1 Agree 2 Disagree
m252	I have friends in my neighborhood who know they can depend on me.	1 Agree 2 Disagree
m254	There are people in my neighborhood, other than my family, who really care about me.	1 Agree 2 Disagree
m255	I have friends in my neighborhood I can depend on.	1 Agree 2 Disagree
m259	If I am upset about a personal problem, there are people in my neighborhood I can turn to.	1 Agree 2 Disagree
Negative		
m251	Very few of my neighbors know me.	1 Agree 2 Disagree
m253	I do not like living in my neighborhood.	1 Agree 2 Disagree
m256	If you don't look out for yourself in my neighborhood, no one else will.	1 Agree 2 Disagree
m257	No one in my neighborhood takes any interest in what their neighbors are doing.	1 Agree 2 Disagree
m258	It is hard to make good friends in my neighborhood.	1 Agree 2 Disagree

Sources

Glynn, T.J. (1981). Psychological sense of community: measurement and application. Human Resources, 34, 789-818.

Perkins, D.D., Florin, P., Rich, R.C., Wandersman, A., & Chavis, D.M. (1990). Participation and the social and physical environment of residential blocks: Crime and community context. *American Journal of Community Psychology*, *18*, 83-115.

Note. These questions were originally developed to address sense of community. Because some of the questions were worded positively and some were worded negatively, we chose to create two neighborhood connected scales, one consisting of positively worded questions (Positive) and one consisting of negatively worded questions (Negative).

Reliability

For Positive Neighborhood Connectedness, Cronbach's alpha = .734 across all 14 waves of data; for Negative Neighborhood Connectedness, Cronbach's alpha = .608 across all 14 waves of data. Care should be exercised in interpreting this statistic because observations are not independent, and some respondents may have as many as 10 data points while may have a single data point. Table C21 shows additional information, again across all waves of data. Five-week test-retest reliability for a sample of 48 adolescent public housing residents in Huntsville, AL (1998) was good (r = .474 for Positive; r = .427 for Negative).

Table C20
Reliability: Neighborhood Connectedness Scale

Positive		
Item	**Item-total correlation**	**α if item deleted**
m249	.411	.714
m250	.396	.720
m252	.539	.678
m254	.487	.693
m255	.535	.678
m259	.462	.700

Negative		
Item	**Item-total correlation**	**α if item deleted**
m251	.320	.577
m253	.369	.551
m256	.364	.553
m257	.350	.561
m258	.413	.528

Construct: FAMILY CONTROL
Scale: Curfew

Table C21
Curfew Items on the MYS

Item number	Question	Response options			
m55	Are you allowed to stay out as late as you want on school nights?	1	No	2	Yes
m56	Are you allowed to stay out after dark on school nights?	1	No	2	Yes
m57	Are you allowed to stay out as late as you want on weekend nights?	1	No	2	Yes
m58	Are you allowed to stay out after dark on weekend nights?	1	No	2	Yes

Source

Lamborn, S.D., Mounts, N.S., Steinberg, L., & Dornbusch, S. (1991). Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 62*, 1049-1065.

Reliability

Cronbach's alpha = .699 across all 14 waves of data. Care should be exercised in interpreting this statistic because observations are not independent, and some respondents may have as many as 10 data points while may have a single data point. Table C23 shows additional information, again across all waves of data. Five-week test-retest reliability for a sample of 47 adolescent public housing residents in Huntsville, AL (1998) was good (r = .513).

Table C22
Reliability: Curfew Scale

Item	Item-total correlation	α if item deleted
m55	.394	.686
m56	.504	.623
m57	.499	.627
m58	.543	.597

Construct: FAMILY CONTROL
Scale: Parental Monitoring

Table C23
Parental Monitoring Items on the MYS

Item number	Question	Response options
m59	Does your mother or father know who you hang out with?	1 No 2 Yes
m60	Does your mother or father know exactly where you are most afternoons (after school) and during the day on weekends and during the summer?	1 No 2 Yes
m61	How much does your mother or father <u>really</u> know about what you do most afternoons (after school) and during the day on weekends and during the summer?	1 They <u>don't</u> know 2 They know a little 3 They know a lot
m62	How much does your mother or father <u>really</u> know about where you go at night?	1 I <u>don't</u> go out at night 2 They <u>don't</u> know 3 They know a little 4 They know a lot
m63	Does your mother or father try <u>to find out how you spend your time?</u>	1 They <u>don't</u> try 2 They try a little 3 They try a lot
m64	How much does your mother or father <u>really</u> know about how you spend your time?	1 They <u>don't</u> know 2 The know a little 3 They know a lot

Source

Lamborn, S.D., Mounts, N.S., Steinberg, L., & Dornbusch, S. (1991). Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 62*, 1049-1065.

Reliability

Cronbach's alpha = .636 across all 14 waves of data. Care should be exercised in interpreting this statistic because observations are not independent, and some respondents may have as many as 10 data points while may have a single data point. Table C25 shows additional information, again across all waves of data. Five-week test-retest reliability for a sample of 48 adolescent public housing residents in Huntsville, AL (1998) was very good (r = .624).

Table C24
Reliability: Parental Monitoring Scale

Item	Item-total correlation	α if item deleted
m59	.333	.619
m60	.399	.601
m61	.518	.540
m62	.253	.709
m63	.412	.571
m64	.533	.519

Table C25
Ancillary MYS Questions Necessary to Create the Parental Monitoring Scale

Item	Question	Response options									
m29	How often do you live with the person who is most like a mother to you?	1	I don't have any-one who is like a mother to me	2	All of the time	3	Most of the time	4	Some of the time	5	None of the time
m37	How often do you live with the person who is most like a father to you?	1	I don't have any-one who is like a mother to me	2	All of the time	3	Most of the time	4	Some of the time	5	None of the time

Appendix D
Mobile County Public School System Measures

In 2011, a cooperative agreement was established between The University of Alabama and the Mobile County Public School System (MCPSS) for the purposes of research collaboration related to the improvement of achievement of students in the MCPSS.

Scale Creation

We used a single measure of academic outcome for this study: normative progress through the educational system. The MCPSS specifies age of kindergarten enrollment as five years old on or before September 1. Based on this, we determined that normative progress occurred if the following conditions held (see Table D1):

Table D1
Normative Academic Grade Progress

Normative School Grade Progress	
Kindergarten	≥ 5 years old ***and*** < 6 years old on September 1
1st Grade	≥ 6 years old ***and*** < 7 years old on September 1
2nd Grade	≥ 7 years old ***and*** < 8 years old on September 1
3rd Grade	≥ 8 years old ***and*** < 9 years old on September 1
4th Grade	≥ 9 years old ***and*** < 10 years old on September 1
5th Grade	≥ 10 years old ***and*** < 11 years old on September 1
6th Grade	≥ 11 years old ***and*** < 12 years old on September 1
7th Grade	≥ 12 years old ***and*** < 13 years old on September 1
8th Grade	≥ 13 years old ***and*** < 14 years old on September 1
9th Grade	≥ 14 years old ***and*** < 15 years old on September 1
10th Grade	≥ 15 years old ***and*** < 16 years old on September 1
11th Grade	≥ 16 years old ***and*** < 17 years old on September 1
12th Grade	≥ 17 years old ***and*** < 18 years old on September 1

From this, we developed an ordinal scale of normative school grade progress, assigned to each study participant during each of the 14 study years, such that normative progress > one year behind normative progress > two years behind normative progress, etc. However, three conditions complicate this scale: students who have graduated and students who have dropped out. We addressed these issues as follows.

1. A student who has graduated is specified as having achieved normative progress each year post graduation.
2. A student who has dropped out is specified as having achieved the lowest outcome rank for each year post dropout, unless the student re-enrolled in school.

Thus, we obtained the following six-point ordinal scale of academic progress (**EDUC**) each year (Table D2).

Table D2
Normative Academic Progress Scale

0	Dropout
1	4+ years behind normative advancement
2	3 years behind normative advancement
3	2 years behind normative advancement
4	1 year behind normative advancement
5	Normative advancement or HS graduate

Several steps are required to develop this scale.

Determine Date of Birth

We were able to determine date of birth from several possible sources.

1. Each year, the MYS participant provided his or her date of birth on the Mobile Youth Survey (MYS) cover sheet.
2. School records provided date of birth each year of school enrollment.
3. Juvenile Court records provided date of birth for each study participant with court contact.
4. Housing Authority records provided date of birth for all study participants residing in public housing.
5. Police Department records provided date of birth for all study participants enrolled in its Family Intervention Team program.

In addition to these data sources, we were able to use two public records databases to provide additional confirmation when required.

6. The Intelius database provided date of birth for some study participants we were able to match (birthdays were not all people in the Intelius database (we attempted to match 5,909 participants; we were able to definitively match 59.1% with a high degree of certainty, of which Intelius listed date of birth for 40.9%.
7. The LexisNexis database also provided date of birth for some study participants we were able to match (birthdays were not all people in the Intelius database). We attempted to match 12,368 participants; we were able to definitively match 78.7% with a high degree of certainty. This was aided in the LexisNexis database by the fact that one of the search fields was social security number, which we could match to school records; however, LexisNexis does not include in its database anyone who is under 18 years of age, which excludes approximately 3% of the names that we searched for. Of those cases that were matched, LexisNexis listed date of birth for 91.79%; unfortunately, however, date of birth in the LexisNexis database only includes month and year.

A total 751 MYS participants (6.06%) could not be confirmed; that is, they showed up in none of the other previously listed databases listed and they participated in the MYS only one

time. This typically means that they used a bogus name (and received consent under that name) or registered under a legitimate and registered name but wrote a different name on their MYS cover sheet. They were excluded from all analyses.

The mean number of dates of birth recorded from the previously listed sources for the remaining cases equals 20.16, with 93.08% having five-or-more recorded dates of birth. Of these, 93.1% were at least 85% consistent, and 88.1% were at least 90% consistent. Given all the ways that dates of birth can be erroneously recorded (e.g., numbers transposed; December 10 being recorded as 10/10; MYS participants misrepresenting their age in order to fall within the age limits; poor memory; distraction; confusion, such as writing the current date instead of the birth date), this consistency rate seems reasonable. In cases of inconsistency, we used the date specified by the most sources, or as an alternative, the most consistent date.

Determine Educational Status Each Year

Each year because 1998-1999, the MCPSS has maintained a relational database that was changed every time the student's status changed (e.g., change of school, change of address, change of homeroom). Between 1998-1999 and 2009-2010, this used the DAISI system, developed for the MCPSS; since 2009-2010, this has used the I-NOW system, developed for the State of Alabama. The relational database(s) yielded several flat files, which were used to construct EDUC; in these flat files, every change or update for a student is reflected in a new record for that student; thus, all of the situations for a student during a given year are maintained. All changes and updates were made at the school level rather than at the central school district administration level.

The primary file used for this is the STU file, which lists demographic information (gender, address, race, date of birth) and school information (school, grade[5], special education status, telephone number, school bus number, etc.); the file also contains the date for each record, reflecting the date on which a change was made. From this information aggregated across school years, it should be possible to discern grade advancement or retention. Several factors introduce noise into these data, however.

First, the MCPSS contracts with a number of alternative schools to provide educational services for its students, each of which also provides the same information as regular schools. Examples of these alternative schools are the Continuous Learning Center, the Phoenix Program, and the Drop Back In Academy. Unfortunately, these alternative schools do not all have rigorous standards for grade assignment, so a student may move from 8th grade in a MCPSS school to 11th grade in an alternative school *during the same school year*. Additionally, a student may spend only a couple of weeks in an alternative school, for example because of an out-of-school suspension. For students who remained in an alternative school over an extended period of time, grade progression is often inconsistent as well. For example, a student may be listed in 10th and 12th grade during the same year, then move back to 10th grade the following year. For alternative schools, the goal may be more to keep the student engaged in academic activities rather than to expose him or her to specific grade-level content. Because of all of this, grade-level information from alternative is noisy, and we ignored it when it was inconsistent with other data and did not fit grade progression patterns.

[5] During the 2010-2011 and the 2011-2012 school years, when the I-NOW database was in use, school grade was available only in the StudentAcadSession file.

Second, inconsistent school grades for a given student within a particular year were partially a function of the date of any entry into the database. Students enrolled each year in early August, assigned to a grade at that time. In a number of cases, they were reassigned to a different grade in September. This makes sense, and could represent a determination that the work associated with the assigned grade was either too difficult or too easy for the student or could represent enrollment misinformation. In some cases, particularly for high-school students, grade was reassigned at mid-year, usually as an advancement; this probably reflects the accumulation of sufficient credits during the previous semester to warrant a grade-level advancement. The biggest challenge occurred when a grade-level advancement occurred after the academic year had ended, for example in May, June, or July. This likely either reflected an anticipated grade-level advancement for the following year or accumulation of credits during summer school. In some cases, however, it might have represented a delay in paperwork being filed for a change that took place earlier in the school year.

We resolved these sources of inconsistency as follows:

1. We ignored any changes made after June 1 of the academic year (e.g., if a change in grade was made on June 15, 1999, no change was made in the academic progression variable for the 1998-1999 academic school year.
2. When records allowed annual grade progression (i.e. grade g at time t, followed by g+1 at t+1, we selected that progression, even if there were alternative grades also specified at t and/or t+1. We followed that logic for sequences of three, four, five, etc. years.
3. In three year sequences, where $g = x$ at t, $g = x$ and $g = x$+1 at t+1, and $g = x$+1 at t+2, it can be concluded that a grade was repeated; but we are not sure *which* grade was repeated. As a convention, we specified a normative grade progression between t and t+1, and a grade retention between t+1 and t+2, unless additional information was available that resolved the inconsistency in a different way. For example, if a middle school grade was specified in conjunction with an elementary school, we assumed a data entry error and that the grade associated with the specified school was correct.
4. When we found inconsistent grades specified during a given school year, and grades were reported by both typical schools and alternative schools, we assumed that the regular school grade was correct.

Determine Graduation and Dropout Status for Students

Unfortunately, graduation was not specified in the MCPSS school records we obtained, and although dropout status was specified in the SWD file, this information was not always reliable. Thus, we had to make a number of arbitrary decisions concerning both graduation and drop out. We were helped in these decisions by a withdrawal date specified in the STU files.

1. If (a) the student was listed in 12th grade during any year t; (b) there was no subsequent record of the student in the DAISI or I-NOW databases in years t+1, t+2, etc.; (c) there was no withdrawal date listed for the student during year t; and (d) there was no record of dropout for the student in the SWD file during year t, the student was assumed to have graduated in year t and EDUC was coded as 5 in year t and each subsequent year.
2. If (a) the student was listed in the SWD file as having dropped out during year t and (b) there was no subsequent record of the student in the DAISI or I-NOW databases in

This resource was prepared by the author(s) using Federal funds provided by the U.S. Department of Justice. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

years *t*+1, *t*+2, etc., the student was assumed to have dropped out in year *t* and EDUC was coded as 0 in year *t* and each subsequent year.

3. The legal age for dropping out in Alabama was 16 during all but the last year of the study; however, under special circumstances the student was allowed to drop out earlier.
4. If (a) the student was aged 14.4 years at the beginning of year *t* and the SWD file listed the student as having dropped out during year *t*, the student was assumed to have dropped out in year *t* and EDUC was coded as 0 in year *t* and each subsequent year.
5. If (a) the student was aged 14.4 years at the beginning of year *t* and (b) there was no subsequent record of the student in the DAISI or I-NOW databases in years *t*+1, *t*+2, etc.; and (c) the student participated in the MYS in subsequent year(s), the student was assumed to have dropped out in year *t* and EDUC was coded as 0 in year *t* and each subsequent year.

In addition to these conditions,

6. If (a) the student was assumed to have dropped out in year *t* but reappears in the MCPSS records in some subsequent year *t*+*k*, EDUC was coded as 0 in year *t* and each year *t*+1, *t*+2, …, *t*+*k*-1, but then EDUC was coded using the normative grade level criterion in year *t*+*k* and each subsequent year the student appears in the MCPSS records. This rule has two exceptions. First, if the student re-enrolls in either the Drop Back In Academy or the Evening Options Program, both of which focus on over-age youth and are oriented toward GEDs, they remain classified as dropouts. Second, if the student re-enrolls and subsequently graduates in year *t* (according to rule 1), they are coded as 5 in year *t* and subsequent years. These two exceptions are unlikely to have any impact on study participants, because they would typically have aged out of the MYS by the time the exception occurred.
7. If (a) the student is younger than 14.4 years old at the beginning of year *t*; (b) withdraws during year *t*; and (c) is not enrolled in the MCPSS during year *t*+1, the student is assumed to have moved out of the MCPSS and EDUC was coded as missing during *t* and *t*+1. If the student fails to re-enroll subsequently in the MCPSS, all subsequent years were coded as missing. In this case, the student would be unlikely to participate in the MYS during the absent years, so this decision has little real impact. However, a student may withdraw from the school district to be home schooled or attend a private school, in which case he or she may have participated in the MYS.
8. If the student was younger than 5 on September 1 of year *t*, EDUC was coded as missing for year *t*. This should have no impact, because youth did not become eligible to participate in the MYS until they were 9.75 years of age.

Finally, a student may have dropped out of school before 1998, when electronic records became available, and therefore never show up in the records we obtained. If this occurred, EDUC was coded as missing even though its true value would be 0.

Appendix E
Juvenile Court Measures

In 2010, a cooperative agreement was established between The University of Alabama and the Mobile County Juvenile Court (MCJC) the purposes of research to benefit the client population served by the MCJC.

Scale Creation

In the state of Alabama, the Juvenile Court has jurisdiction over offenses alleged to have been committed prior to an individual's 18th birthday; at 18, the individual is charged in adult court. All states have transfer laws that allow younger offenders to be prosecuted as adults for serious offenses. In the state of Alabama, there is also a "once and adult, always an adult" law, where once an individual has been prosecuted as an adult, their "adult status" remains even for lesser offenses. Because the offenses of interest for this project were identified as "crimes against a person," often more serious in nature, it was decided to exclude those who were older than age 17 for analysis.

The initial MCJC file included information about court involvement for juveniles between 1999 and 2012 and was matched to participants in the Mobile Youth Survey (MYS) using procedures discussed previously. Cases that were not assigned to an MYS participant were removed from the dataset for analysis.

Next, cases were assigned a referral wave based on the date in which the MYS was taken and the date of referral (Table E1). If the date of referral was between 0 and 365 days after the MYS administration, the referral wave was identified as the same wave. For example, if the MYS was taken on June 15, 1998 (wave 1) and a referral was made on March 1, 1999, the referral wave was also wave 1. Thus, MYS administration always preceded Juvenile Court referral. The court referral case was matched to the wave corresponding to the fewest positive days between MYS date taken and court referral date without going over 365 days. Two examples follow. For example, Participant A completed the MYS on August 13, 1998 and had contact with the court system on January 8, 1999 with a difference of 148 days between MYS survey and court contact. Participant A is identified as wave 1 with respect to court referral wave.

Table E1
Court Referral Date, MYS Date Wave Correspondence

MYS Year	MYS Wave	Court Referral Wave
1998	1	1
1999	2	2
2000	3	3
2001	4	4
.		
.		
.		
2011	14	14

Cases were coded with respect to the type of referral reason and the amended to reason. In 96.9% of the cases, the referral reason and the amended to reason were exactly consistent. In 1.2% of the cases, there was no amended to reason identified, leaving an additional 1.9% cases where the referral reason and the amended to reason were not consistent. For 98% of those cases,

the referral reason and amended to reason fell within the same category of offense. For 0.8% cases, the referral reason and amended to reason did not fall into the same category of offense. When the referral reason and amended to reason fell into different categories of offense, the amended to reason category was used. Largely, the cases were coded using guidance from the National Center for Juvenile Justice, specifically for the state of Alabama. Identified categories of court offenses include (a) crimes against a person, (b) property crimes, (c) public order offenses, (d) traffic offenses, (e) drugs and alcohol offenses, (f) procedural offenses, and (g) status offenses (e.g., Child in Need of Supervision (CHINS) Beyond Control) offenses (Table E2). CHINS offenses involving alcohol were coded as drugs/alcohol rather than status offenses.

Table E2
Categories of Offense

Category of offense	**Example**
Crimes against a person	Assault, murder, kidnapping, pistol carrying without permit, harassment, sexual abuse
Property	Arson, burglary, criminal mischief, robbery, theft of property
Public order	Attempt to elude law enforcement officer, disorderly conduct, hindering prosecution, loitering, violation of noise ordinance
Traffic	Improper turn, driving without license, speeding, reckless driving
Drugs/alcohol	Minor in possession of alcohol, distribution of controlled substance, marijuana possession
Status	CHINS beyond control, resisting arrest, truancy
Procedural	Probation revocation

Removing Cases

Cases were removed from the dataset for several reasons:

1. The individual identified was over 20 years old and the category of offense was reserved for adults (e.g., violation of parent responsibility).
2. The individual identified was under 8 years old and the category of offense was reserved for adults (e.g., violation of parent responsibility).
3. The category of offense was an adult violation (e.g., violation of parent responsibility).
4. The individual referred was an adult (i.e., 18 years of age or older).
5. The individual referred was under 8 years old.
6. The case was duplicated (i.e., based on PID, offense date, category of offense).
    a. In cases that were duplicated, if there was one case where there were no priors and one case where there were priors, the case with "priors" was removed.
    b. In cases that were duplicated, when the outcome was different, the more severe outcome was retained.
    c. In cases that were duplicated, if one was petitioned and the other not, the one that was petitioned was retained.
    d. In cases that were duplicated, the one with the latest (most recent) court action date was retained.
7. There was a grade/age discrepancy or category of offense could not be categorized (e.g., a 13 year old was identified as in 12^{th} grade).
8. The case could not be matched to the MYS wave.

Once all exclusion criteria were applied, two variables were created for each category of offense. The first was a count of the number of referrals per referral wave for the category of offense. The second was a dichotomous variable (0 = no, 1 = yes) indicating whether a referral was made during each wave for the category of offense. For this project, only the Crimes Against a Person category of offense was used for analysis.

A variable to measure court outcome severity was also created, taking into account all categories of offense within a wave for each participant. Largely, the National Center for Juvenile Justice and the Office for Juvenile Justice and Delinquency Prevention guided the coding of cases with respect to severity. The disposition description and disposition code variables were used to classify court outcome severity (Table E3). While there are additional variables provided by the juvenile court, the two disposition variables were the ones where the most information was provided with respect to severity. When a disposition description was missing, steps were taken to fill in the missing information from other variables (e.g., manner of handling[6], complaint action) when available. When "petitioned" was indicated in the manner of handling variable, but no other information was provided, the court outcome severity variable was classified as missing. The petitioned category also includes other, but less frequent, severe outcomes including transfer to criminal court, supervision or service provided, and judicial waiver.

Table E3
Court Outcome Severity

Outcome	**Code**
No offense within wave	0
Released without transfer or referral	1
Nolle Prosse, dismissed with conditions	2
Lecture and release	3
Informal adjustment	4
Released with transfer or referral	5
Probation supervision or fined	6
Residential placement	7

[6] The Manner of Handling is "a general classification of case processing within the court system" (OJJDP, 2019). At this stage, cases can be petitioned (i.e., formally handled), or non-petitioned. It is individuals who are authorized by the court (e.g., judges, probation officers, other officers of the court) who determine whether a case should or should not be petitioned.

Appendix G
Study Personnel Biographies

Anneliese Bolland. Dr. A. Bolland is an associate research scientist at The University of Alabama in the Institute for Communication and Information Research within the College of Communication and Information Sciences. She earned her doctorate in educational research at The University of Alabama. Her research agenda includes studies of adolescents who grow up in neighborhoods characterized by economic disadvantage, including risk and protective factors for these adolescents. She has published manuscripts in the areas of school factors (e.g., connectedness, giftedness, alcohol initiation), family factors, psychological well-being, and methodology for community-based longitudinal research. She is also an evaluator.

John Bolland. Dr. J. Bolland is a Professor Emeritus at the University of Alabama (UA). He retired in 2012 as a Professor and Research Chairholder in the College of Human Environmental Sciences at UA; prior to that, he held positions as Associate Professor in the School of Public Health at the University of Alabama at Birmingham, Senior Research Scientist in the College of Arts and Sciences at UA, and Assistant Professor in the Department of Political Science at the University of Kansas. During the past 30 years, his research has focused on poverty and how it affects risk for negative health and social outcomes. In 1998, he conceived and began directing the Mobile Youth Survey (which has morphed into the Mobile Youth and Poverty Study); active data collection for this study continued over a 14 year period. He has received funding for this research from the National Institute for Child Health and Human Development, the National Institute for Drug Abuse, the Centers for Disease Control and Prevention, and the Substance Abuse and Mental Health Services Administration.

Masha Ivanova. Dr. Ivanova is Assistant Professor of Psychiatry and Psychology at the University of Vermont (UVM) Department of Psychiatry. She received her Ph.D. in Clinical Psychology at the University at Albany, State University of New York and completed a post-doctoral fellowship in developmental psychopathology at the UVM Research Center for Children, Youth, and Families. Dr. Ivanova has authored and co-authored over 60 publications and received funding from the National Institutes of Health, Health Resources and Services Administration, and several foundations. Dr. Ivanova's research aims to advance the understanding of proximal (e.g., family) and distal (e.g., culture) environmental influences on child psychopathology and wellness. She is also a licensed Clinical Psychologist specializing in evidence-based approaches to enhancing the stability of the family environment for children enduring adversity.

Richard Spano. Dr. Spano is a Research Assistant Professor in the Buehler Center for Health Policy and Economics at Northwestern University. He received his Ph.D. in Criminal Justice from the University at Albany, State University of New York. His research interest include firearm related injury, child abuse and neglect, and violence as a public health threat. More specifically, his recent research has examined the impact of early age of onset of gun carrying (for at-risk youth age 9-11) on violent behavior and gang membership.