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Trauma and the Intergenerational Transmission of Disadvantage

By

Michael Ryan Menefee

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy in

Sociology

in the

Graduate Division

University of California, Berkeley

Committee in charge:

Professor David J. Harding, Chair

Professor Daniel Schneider

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Professor Jonathan Simon

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Abstract

Trauma and the Intergenerational Transmission of Disadvantage

by

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Doctor of Philosophy in Sociology

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Professor David Harding, Chair

Childhood trauma constitutes a major public health crisis in the United States, with an estimated two thirds of children experiencing at least one traumatic event by the age of 16. Despite the prevalence of childhood trauma, there has been very little sociological research on this subject. Using rich data from the National Longitudinal Study of Adolescent Health, the current dissertation project offers important new insights on the contours and consequences of childhood trauma. The first analytic chapter shows how neighborhood racial segregation is an important determinant for exposure to multiple types of violence. The findings suggest that adolescents living in more racially segregated communities are more likely to report exposure to violence. The second analytic chapter examines whether exposure to multiple traumas or “complex trauma” mediates the association between family structure and various “markers” of life chances in adulthood. The analysis shows that children born to single mother families, relative to children who are born to two biological or adoptive parent families, are more likely to experience complex trauma in childhood, which accounts for a significant portion of the association between family structure, adult incarceration, and college completion. Finally, the third analytic chapter examines the relationship between witnessing community violence and criminal legal system involvement in young adulthood. This analysis shows that adolescents who witness community violence are significantly more likely to become incarcerated in young adulthood. The analysis also finds significant racial disparities in witnessing violence, suggesting that exposure to community violence is a potentially important mechanism in the production of racial inequalities in criminal legal system involvement.

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Chapter 1

Introduction

Exposure to childhood trauma is widespread in the United States and is a major public health issue. Previous studies estimate that two-thirds of children will experience at least 1 traumatic event by the age of 16, and 1 in 3 children will experience multiple traumas by 16 (Copeland et al 2007). Broadly, trauma refers to “an emotional response to a terrible event or accident” (American Psychological Association 2021). Childhood trauma usually refers to physical abuse, sexual abuse, emotional abuse, neglect, as well as domestic and community exposure to violence. Exposure to trauma during childhood can have long-term consequences for children’s cognitive and social-emotional development. Studies have found that childhood trauma is associated with a host of negative consequences, including posttraumatic stress, mood disorders (e.g., depression) and substance use (Scheidell et al 2017; Copeland et al 2007; Copeland et al 2018).

Much of the previous literature on trauma has usually estimated the effects of specific types of traumatic exposures (e.g., sexual abuse). However, a growing body of research spanning multiple disciplines suggests that children who do experience trauma often experience more than one type of trauma, and many of these exposures occur repeatedly over time. Studies estimate that anywhere from 22 to 30 percent of children will experience multiple exposures to trauma (Finkelhor, Ormrod and Turner 2007; Copeland et al 2007). Importantly, among children who experience at least 1 trauma, an estimated 65 percent of these children will be exposed to multiple types of traumas over time (Finkelhor, Ormrod and Turner 2007),

There has been relatively little sociological engagement with trauma, either theoretically or empirically. Yet, trauma is a potentially important mechanism in the production of social inequality. Within sociology, there has been a longstanding interest in understanding how structural disadvantages affect individual life chances. One example of this would be the literature on neighborhood effects, which attempts to identify the effect of neighborhood characteristics on individual outcomes (e.g., high school graduation) (e.g., see Wodtke, Harding and Elwert 2011). Yet, there continues to be ongoing debate regarding the mechanisms that link structural disadvantages/advantages with long term outcomes. I argue that exposure to trauma provides a novel mechanism to explain why children from disadvantaged backgrounds, on average, fare worse as adults compared to children from more advantaged backgrounds.

This dissertation presents three empirical studies related to the sociology of trauma. In doing so, I use rich longitudinal data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). In the first analytic chapter, I examine the relationship between neighborhood racial segregation and exposure to violence. While previous sociological research suggests that neighborhood disadvantage is a primary driver of community violence, I argue that Black middle-class neighborhoods, due to spatial isolation and historical disinvestment, are more likely to experience higher levels of violence compared to middle class White neighborhoods. To show this empirically, I examine whether and to what extent neighborhood racial composition, net of neighborhood disadvantage-advantage, predicts several measures of exposure to violence among adolescents. In the analysis, I find that the proportion of Black residents, which is a proxy for neighborhood racial segregation, is positively associated with multiple exposures to violence even after accounting for neighborhood disadvantage-advantage. The results from this study suggest that racial residential segregation is an important factor in relation to exposure to violence.

In the second chapter, I focus on childhood trauma as a mechanism of family structure effects. In doing so, I address a longstanding puzzle in the family structure literature which asks, “Why do children from single mother families fare worse in adulthood relative to their counterparts who are raised by two biological parents?” Previous studies in the family structure literature have argued that children from single mother families do not fare as well as their counterparts from two parent families because they receive fewer parental investments and are exposed to lower quality parenting practices. While individually important in their own right, I argue that childhood trauma constitutes a potentially important but overlooked mechanism linking children’s family structure at birth with various markers of “life chances” in adulthood. In the analysis, I estimate whether and to what extent exposure to multiple childhood traumas or “complex trauma” mediates the association between family structure at birth and several important markers of life chances in adulthood, including criminal legal system involvement, completion of a four-year degree, and personal earnings. I find that complex trauma mediates a significant portion of the relationship between family structure at birth, incarceration, and college completion.

In the third and final analytic chapter, I examine the relationship between witnessing community violence (sometimes referred to as “secondary exposure to violence”) and criminal legal system involvement in young adulthood. While previous studies have found high rates of exposure to violence among justice involved populations (e.g., Western 2018), there has been a dearth of research on the potential role that community violence plays in driving criminal legal system involvement. I argue that exposure to community violence can lead to poorer mental health, substance use problems, and behavioral problems that can increase the risk for criminal legal system involvement, especially among boys. In the analysis, I find that adolescents who report witnessing a shooting or stabbing during the previous year are significantly more likely to become incarcerated in young adulthood. Moreover, I find that this effect is significantly larger among boys relative to girls. Chapter 5 concludes the dissertation. This final chapter summarizes the contribution of these three empirical analyses to the sociological literature. I also reflect on the need for future sociological research on trauma especially in the context of social inequality.

Chapter 2

The Effect of Neighborhood Racial Segregation on Exposure to Violence

ABSTRACT

A large body of literature finds that youth living in neighborhoods with concentrated disadvantage are more likely to be exposed to violence, yet relatively few studies have examined whether and to what extent neighborhood racial segregation influences risk for exposure to violence, net of neighborhood disadvantage. Since racial segregation in the US exposes Black and White youth with similar socioeconomic backgrounds to neighborhoods with varying levels of spatial disadvantage and surveillance, residential segregation might independently influence the risk for exposure to violence, net of neighborhood disadvantage. Using nationally representative data from the National Longitudinal Study of Adolescent to Adult Health, I use neighborhood racial composition as a proxy for residential segregation to estimate its effect on exposure to violence. I find evidence that racial segregation, net of neighborhood disadvantage, is associated with an increased risk for multiple exposures to violence and is most strongly associated with witnessing violent events and being threatened with weapons. Additional individual-level analyses show that Black adolescents from relatively advantaged class backgrounds have a higher risk for exposure to violence compared to White adolescents from lower class backgrounds. Findings suggest that exposure violence should be considered as a unique form of disadvantage that can disproportionately affect the health of Black youth in the United States

INTRODUCTION

Exposure to violence includes (1) direct victimization through intentional or threatened physical harm or (2) witnessing or hearing about violence acts or events (Zimmerman and Posick 2016). Exposure to violence is prevalent among youth in the United States. In one study conducted by the Department of Justice, researchers estimated that 60 percent of children have been exposed to violence--directly or indirectly--during the previous year (Finkelhor et al 2009). Previous studies find a host of deleterious consequences associated with exposure to violence, including issues with cognitive functioning, increased aggression, posttraumatic stress, depressive symptoms, fear and anxiety, dissociation, and substance use problems (Singer et al 1995; Buka et al 2001; Sharkey 2010; Yoon et al 2017; Zimmerman and Kushner 2017).

Adolescence is the period in the life course when toxic stress due from interpersonal violence tends to peak (National Research Council 2019). The risk for multiple exposures to violence is also higher which is important because previous research suggests that multiple exposures to violence has more deleterious consequences for mental health and behavioral outcomes relative to single exposures (Finkelhor et al 2007a; Finkelhor et al 2007b; Zimmerman and Posick 2016). Yet, there are significant racial and ethnic disparities in exposure to violence. Previous research shows that Black adolescents have a higher risk for violent victimization and are more likely to witness violence in their communities (Crouch et al 2000; Buka et al 2001; Finkelhor et al 2007a; Sheats et al 2018).

Sociological studies have predominately focused on neighborhood socioeconomic status as a structural determinant of exposure to violence (Haynie, Silver and Teasdale 2006; Zimmerman and Messner 2013; Gibson, Morris and Beaver 2009). While these studies provide important contributions to research on the harms of exposure to violence, there has been relatively little research on how the persistence of residential segregation in the US (Massey 2020) influences

adolescents' risk for exposure to violence by race and class. Studies on racial residential segregation suggest that segregation exposes Black and White children with comparable socioeconomic characteristics (i.e., household income) to neighborhoods varying levels of spatial disadvantage and punitive policing (Adelman 2004; Massey and Denton 1993; Pattillo-McCoy 1999; Williams and Collins 2001). In the US, predominately Black middle-class neighborhoods are more likely to be located in close proximity to neighborhoods with concentrated disadvantage, referred to as spatial disadvantage (Pattillo-McCoy 1999; Sharkey 2014). Moreover, predominately Black communities are also policed and surveilled more aggressively and intensely than predominately White communities, contributing to lack of trust in law enforcement and residents being less willing to rely on law enforcement to mediate conflicts (Kirk and Papachristos 2011; Desmond, Papachristos and Kirk 2016).

Since these differences are fundamentally linked to the fact that ethno-racial categories continue to be a fundamental element of social stratification in the US (; Bonilla-Silva 2003), I argue that the racial segregation will be associated with exposure to violence, above and beyond, neighborhood disadvantage-advantage. While previous studies have examined race and exposure to violence while accounting for neighborhood socioeconomic contexts such as relative deprivation or poverty, these studies have focused exclusively on firearm-related violence (Kalesan et al 2016; Beard et al 2017; Cheon 2020).

The current study uses data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) to estimate the association between neighborhood racial composition and multiple exposure to violence net of neighborhood disadvantage-advantage.¹ Add Health provides several important advantages in studying this relationship. First, Add Health allows me to measure exposure to violence during adolescence, a period in the life course when the risk for exposure to violence is elevated (Finkelhor et al 2015). Adolescents have also been understudied in the literature, though a growing body of literature suggests that adolescence is a critical developmental period for brain development (National Research Council 2019).² Second, Add Health is a nationally representative sample of adolescents in the US, whereas prior studies have often focused on more limited samples or have used data from specific cities.³ Lastly, Add Health provides a rich set contextual measures, including neighborhood environments, which are appropriate for estimating the relationship between neighborhood structural characteristics on adolescent's individual-level risk for exposure to violence.

I find evidence that racial segregation is associated with an increased risk for multiple exposures to violence even after accounting for neighborhood-disadvantage-advantage. Linear probability models (LPM) show that the neighborhood proportion of Black residents, a proxy for racial segregation, is associated with a higher risk for multiple exposures to violence and is particularly associated with

¹ Neighborhood racial composition is not viewed, in an of itself, as being a distinct cause of violence. Rather, I argue that the proportion of Black residents is a proxy for disadvantaged social contexts that are fundamentally rooted in the legacy of institutional racism in discrimination in the United States.

² Some evidence suggests that trauma affects children differently relative to the developmental period in which it occurs. Prior research finds that abuse in early childhood affects the hippocampus, a region of the brain associated with memory, whereas abuse during adolescence has been shown to affect the prefrontal cortex, a region of the brain that is associated with self-control and complex decision-making (Andersen et al 2008).

³ For example, a number of studies use data from the Project on Human Development in Chicago Neighborhoods (e.g., Zimmerman and Messner 2010), which is not representative from a national standpoint.

secondary exposure to violence, which includes witnessing a shooting or stabbing and being threatened with a weapon.

NEIGHBORHOOD RACIAL SEGREGATION AND EXPOSURE TO VIOLENCE

Despite some declines in residential segregation since 1970, Blacks continue to experience high levels of residential segregation at all levels of income (Krysan and Crowder 2017). Sociologists and historians have widely documented how discriminatory practices at the federal and local levels and in housing markets have contributed to the socio-spatial segregation of Black from Whites in the US (Massey and Denton 1993; Sugrue 1996; Rothstein 2017). Previous studies find that racial segregation is associated with violent crime, but most of these studies have focused on aggregate crime rates using cross-sectional data sources (Peterson and Krivo 1993; Krivo, Peterson and Kuhl 2009; Krivo and Peterson 2010). Nevertheless, these studies suggest that Black Americans bear the burden of urban violence as they are more likely to reside in more disadvantaged urban communities relative to Whites (Krivo, Peterson and Kuhl 2009). Importantly, Massey (2004) argues that racial segregation has the effect of concentrating poverty and social problems geographically. This exposes Blacks to higher levels of violence and decreases the risk for exposure among Whites (Light and Thomas 2019).

One mechanism linking neighborhood racial composition with exposure to violence is spatial disadvantage. In the US, spatial disadvantage is a highly racialized phenomenon traced to the persistence of racial residential segregation (Intrator, Tannen and Massey 2016). The spatial disadvantage perspective suggests that predominately Black middle-class neighborhoods are more disadvantaged than White middle-class neighborhoods because of their spatial proximity to neighborhoods with high poverty levels and social problems (Pattillo-McCoy 1999). One can reside in a neighborhood that has spatial disadvantage even if the neighborhood itself does not have concentrated disadvantage. In other words, spatial disadvantage refers to the surrounding socioeconomic contexts of one's immediate neighborhood environment. One study estimates that 2 in 3 majority-Black urban census tracts share a border with at least one neighborhood with concentrated disadvantage (Sharkey 2014). The study further finds that the elite Black middle class, defined as households with more than \$100,000 annual income, are more likely to reside in communities with more disadvantage and spatial disadvantage than low-income White households with less than \$30,000 annual income. Because of stark racial inequalities in the proximity of non-disadvantaged Black and White communities to neighborhoods with concentrated disadvantage, I argue that the proportion of Black residents will be associated with exposure to violence above and beyond the level of neighborhood disadvantage-advantage. While I am unable to directly test this mechanism in the current study, I interpret a positive association between neighborhood racial composition and exposure to violence, net of neighborhood disadvantage-advantage, as being consistent with a spatial disadvantage perspective.⁴

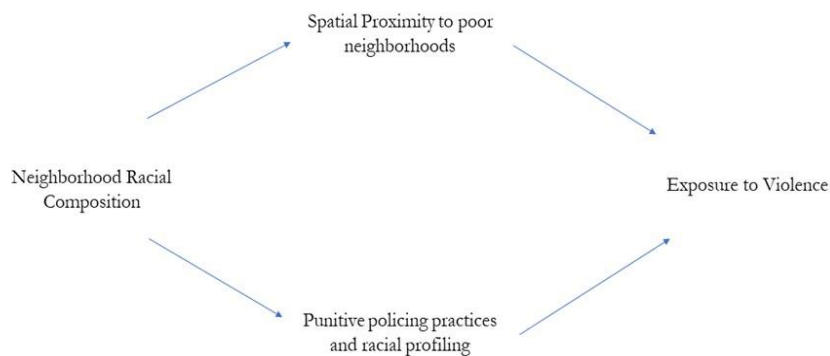
A second explanation linking neighborhood racial composition to exposure to violence is differential policing and surveillance. There is a long history of tensions between police departments and minority communities as well as its existence as a contemporary issue (Brunson 2007; Brunson and Miller 2006; Weitzer et al 2008). Most recently, there has been increasing public awareness and

⁴ Since Add Health provides pseudocodes for Census Tracts, I am unable to construct a measure of an adolescent who resides in a non-disadvantaged neighborhood but is located next to one or more neighborhoods with concentrated disadvantage.

scrutiny directed as “broken windows policing” that originated in the New York City Police Department and has been a widely adopted model across the US. Much of the scrutiny has focused on the differential use of police stops or “stop and frisk” among minorities and the use of racial profiling in the application of stop and frisk procedures. In a study of 125,000 pedestrian stops by the New York City Police Department, Gelman, Fagan and Kiss (2007) find that Black and Latina/o pedestrians were stopped more frequently than their White counterparts. Moreover, the study found that these disparities remained even after accounting for precinct variability and race-specific estimates of crime participation.

Studies suggest that negative encounters with the police contributes to legal cynicism in predominately Black communities. Research on legal cynicism is rooted in a procedural justice framework. This perspective suggests that perceptions of fairness and trust in the law are key factors related to whether the public believes in the legitimacy of law enforcement. Legal cynicism, which refers to a lack of trust in law enforcement, can result in higher levels of violence and crime as residents will be less willing to rely upon law enforcement to mediate conflicts. In one study, researchers collected data on police-related 911 calls in Milwaukee to examine possible changes in police 911 calls following a widely publicized case of police violence directed at an unarmed Black man, Frank Jude (Desmond, Papachristos and Kirk 2016). While controlling for the prior number of 911 call patterns, neighborhood characteristics and the crime rate, they found evidence that residents were less likely to report crime after the incident occurred, which suggests that police brutality incidences and negative encounters with the police can adversely affect public safety more broadly. Since predominately Black communities tend to be more aggressively policed and surveilled, I argue that this is a second mechanism linking neighborhood racial composition with exposure to violence. Figure 1 shows the aforementioned mechanisms linking neighborhood racial composition with exposure to violence.

Figure 1. Mechanisms Linking Neighborhood Racial Composition with Exposure to Violence



Few studies have examined the relationship between the racial composition of neighborhoods and the risk for multiple exposure to violence. Prior studies have predominately focused on firearm

related violence. Using nationwide inpatient data, Kalesan et al (2016) find that Black children have a higher risk for intentional firearm hospitalizations relative to their White counterparts. Moreover, their study finds that the risk for firearm hospitalization among Black children does not vary by neighborhood poverty. Beard et al (2017) examine racial disparities in firearm assaults using data from the Philadelphia Police Department. While their study finds that firearm assaults are concentrated in low-income areas, firearm assault rates for Blacks are higher across income levels, and the disparity in firearm assaults between Blacks and Whites was largest among those in the high-income category. Moreover, their study found that Black residents in Census blocks with more than \$60,000 per year had firearm assault rates similar to areas of White residents with incomes ranging between \$20,000-\$30,000. In a more recent study that uses data from the American Community Survey and Gun Violence Archive, Cheon et al (2020) estimate the relationship between neighborhood racial composition and gun homicide deaths by US Census tracts between 2014 and 2018. They examine gun homicides deaths for neighborhoods with fixed socioeconomic characteristics, but different racial compositions. Their study finds that for neighborhoods with fixed socioeconomic characteristics (low, medium and high), the neighborhood proportion of Black residents is associated with gun homicides rates. In other recent work, Light and Thomas (2019) find that racial segregation significantly increases the risk for homicide victimization among Blacks and simultaneously decreases the risk for homicide victimization among Whites.

The above studies have greatly contributed to the literature on ethno-racial disparities in exposure to violence. However, since these studies predominately focus on firearm related violence (one study focuses on homicide), we know relatively little about the relationship between race (neighborhood racial composition in the current study) and other types of exposure to violence and multiple exposures to violence. This has important policy implications for violence prevention as higher levels of multiple exposures to violence suggest that policymakers should consider targeted interventions that go beyond addressing firearm-related violence.

METHODS

The current study uses data from the in-home survey of Wave I (1994-1995) and Wave II (1996) of the National Longitudinal Study of Adolescent to Adult Health (Add Health). Add Health is a nationally representative, longitudinal survey of adolescents in the United States in grades 7 through 12 (Harris et al 2009). Add Health data were collected through a multistage cluster sampling design. The Add Health study sampled high schools and middle schools from a list of U.S. high schools maintained by Quality Education Data Inc. The initial survey was conducted in schools and included a total of 90,118 students, a 79 percent response rate. The first in-home survey was conducted in 1995 and included 20,745 students that were selected from the school rosters using a stratified sampling design which was based on grade and gender. The response rate for the Wave 1 in home survey was 80 percent. The Wave 2 in-home survey was conducted in 1996 and re-interviewed 14,738 respondents with an 88.6 percent response rate (Chen and Chantala 2014). I exclude individuals with missing sampling weights to ensure a representative design (Chen and Chantala 2014). A total of 13,568 respondents at Wave 2 had corresponding information at Wave 1 and non-missing sample weights.

I use neighborhood racial composition as a proxy for neighborhood racial segregation, which comprises the key variable in the current study, measured using proportion of Black residents at the Census tract level. This variable comes from the 1990 Census contextual measures provided by Add Health.

I measure exposure to violence using the following four indicators, measured at Wave II. Respondents are asked whether in the previous year they were 1) shot by someone (hereafter “assault by firearm”), 2) stabbed by someone (hereafter “assault by stabbing”), 3) had a knife or gun pulled on them (hereafter, “threatened with a weapon”), 4) saw someone get shot or stabbed by another person (hereafter “witnessed shooting/stabbing”). Each question allows respondents to report whether they have experienced no exposure, one exposure or 2 or more exposures. Given the skewed responses for these variables, I collapse each into a binary measure that indicate whether respondents had no exposure or any exposure for each of the five measures. In the analytic sample, the most common type of exposure is having been threatened with violence (10.2 percent), followed by witnessing violence (8.1 percent), stabbing victimization (3.4 percent) and firearm victimization (1.1. percent). Lastly, using each of the five binary measures, I construct a measure for multiple exposures to violence (0 = no exposure or 1 exposure; 1 = 2 or more exposures). In the analytic sample, 1.7 percent of adolescents meet the criteria for having experienced multiple exposure to violence.

I measure neighborhood disadvantage-advantage at Wave 1 of the Add Health study using tract-level data from the 1990 Census. Using the pseudocodes for Census tracts among respondents provided by Add Health, I construct a composite measure for neighborhood disadvantage-advantage (Wodtke, Harding and Elwert 2011). I use the following characteristics to construct the neighborhood disadvantage-advantage scale: poverty level (reverse-coded), unemployment (reverse-coded), proportion female-headed households (reverse-coded), proportion of residents 25 and older with a college degree, occupational structure, proportion of residents receiving public assistance (reverse-coded), and the proportion of people 25 and older without a high school diploma (reverse-coded) ($\alpha = .93$).⁵ Higher scores for the scale correspond to living in relatively more advantaged neighborhoods, whereas lower scores correspond with residing in relatively more disadvantaged neighborhoods. I standardize the measure to aid with interpretation of model results.

I control for numerous demographic characteristics that might confound the relationship between neighborhood racial composition and exposure to violence. First, I control for respondent’s age at Wave 1 and gender (female =0; male =1). Previous research suggests that peer contexts, including unstructured peer socializing and gang membership are associated with an increased risk for delinquency and victimization (Haynie and Osgood 2005; Augustyn and McGloin 2013; Hoeben and Weerman 2016; Zimmerman and Posick 2016; Pyrooz, Moule Jr. and Decker 2014).⁶ Therefore, I construct a measure of unstructured peer socializing at Wave 1, which asks respondents about the number of times in the prior week they “just hang out or talk with friends” (0 = not at all; 1 = 1 or 2 times; 2 = 3 or 4 times; 3 = 5 or more times). I also control for gang membership, measured at Wave 2 using the following question, “have you been initiated into a named gang?” Family structure is measured using the following categories (0 = two biological parents; 1 = stepparent family; 2 = single parent; 4 = other arrangement). Family income is measured at Wave I using a continuous measure for total household income. Parent’s education is a composite measure for each parent’s total number of years schooling measured during Wave I ($\alpha =.75$). Parent-child relationship quality is a composite measure derived from the following questions during Wave I: “you are satisfied with

⁵ At Wave 1, Add Health respondents are clustered in a total of 2,450 census tracts.

⁶ There is a well-established criminological literature on the “victim-offender” overlap. It is well known in this arena that victims and perpetrators are intimately linked, such that those who engage in violence perpetration are more likely to have previously been victimized. See Widom (1989) for a more detailed discussion about the “cycle of violence.”

your relationship with your mother/father”, “you are satisfied with the way your mother/father and you communicate”, and “most of the time your mother/father is warm and loving toward you” (1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree; 5 = strongly disagree). These measures are reverse coded such that higher values of the parent-child relationship quality measure indicate a stronger parent-child relationship quality ($\alpha = .88$). Residential instability is coded as any move that occurred between Wave I and the Wave II surveys (none = 0; 1 or more times =1).

There were missing values on 2,894 observations. I constructed 20 imputed datasets using multiple imputation by chained equations (MICE) in Stata 15.1. MICE allows researchers to conduct multiple imputation under scenarios where there are missing values on multiple variables of interest using chained regression equations (White, Royston, and Wood 2010). I imputed missing values for mother’s education, family income, parent-child relationship quality, neighborhood racial segregation, neighborhood disadvantage-advantage, gang affiliation, witnessing a shooting or stabbing, being threatened with a weapon, non-Hispanic White, non-Hispanic Black, residential instability, unstructured peer socializing and age at Wave 1. I also include the dependent variables in the imputation and then excluded these imputed observations during the analysis (Von Hippel 2007). Imputed values on the dependent variable were deleted after the imputation procedure. This led to a final analytic sample of 13,497 respondents. To ensure that biases were not introduced by the imputation procedures, I re-estimated all analyses on original data that included the missing values using listwise deletion. These models produced results that were consistent with the results using the imputed data. Table 1 displays means for all covariates and outcomes for the imputed data.

Table 1. Survey Weighted Means for Outcomes and Covariates for Analytic Sample

Multiple Exposures to Violence	0.017 (0.002)
Witnessed Shooting/Stabbing	0.081 (0.006)
Threatened with a Weapon	0.102 (0.006)
Assaulted with Firearm	0.011 (0.001)
Assaulted with Knife	0.034 (0.002)
Neighborhood Proportion Black	0.137 (0.017)
Neighborhood Disadvantage-Advantage Scale	0.102 (0.051)
Black	0.155 (0.021)
Age (Wave I)	14.809 (0.115)
Male	0.501 (0.005)
Unstructured Peer Socializing	1.985 (0.019)
Gang Affiliation	0.046 (0.004)
Family Structure	0.802 (0.028)
Family Income (logged)	4.041 (0.044)
Mother’s Total Years of Schooling	13.089

Parent-Child Relationship Quality	(0.100)
	0.021
Residential Instability	(0.016)
	0.105
Observations	(0.005)
Standard errors in parentheses	13,497

Analytical Approach

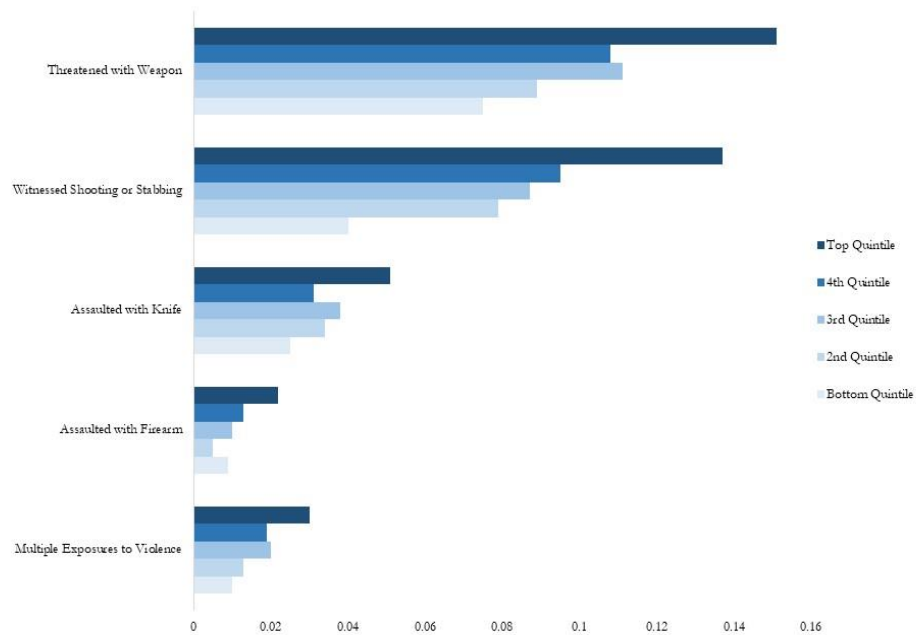
I use linear probability models (LPM) to estimate the association between neighborhood racial composition and the exposure to violence outcomes. To account for Add Health’s complex survey design, all models included sampling weights using the “svy” package in Stata 15.1 (StataCorp 2017). The LPM models control for neighborhood disadvantage-advantage, family structure, family income (logged), respondent’s age at Wave I, gender, unstructured peer socializing, gang membership, parent-child relationship quality, parent’s education, and residential instability. The primary aim of these models is to assess whether there is an association between neighborhood racial segregation and exposure to violence after accounting for neighborhood disadvantage-advantage.

RESULTS

Neighborhood Racial Segregation and Exposure to Violence

I first describe descriptive patterns in exposure to violence by neighborhood racial composition. Figure 2 shows the means for exposure to violence across neighborhood proportion Black quintiles. These results show stark gradients between neighborhood racial segregation and exposure to violence, with increases in exposure to violence corresponding with increases in the level of racial segregation. Adolescents outside the bottom quintile have higher rates for multiple exposures to violence, being assaulted with weapons, witnessing a shooting or stabbing and being threatened with a weapon. Relative to the bottom quintile, respondents in the top quintile are three times more likely to witness a shooting or stabbing, and are nearly two times more likely to be assaulted with a firearm.

Figure 2. Neighborhood Proportion Black Quintiles and Exposure to Violence



The Effect of Neighborhood Racial Segregation on Exposure to Violence

I now describe results showing the relationship between neighborhood racial composition and exposure to violence. Table 2 below displays coefficients from LPM models estimating the association between neighborhood racial composition and the exposure to violence outcomes. I find that neighborhood racial composition, net of neighborhood disadvantage-advantage, is associated with an increased risk for multiple exposure to violence. The LPM model results indicate that a one percent increases in the proxy measure of neighborhood racial segregation (neighborhood racial composition) increases the risk for multiple exposures to violence by 1.8 percentage points. When disaggregating by type of exposure to violence, the LPM models indicate that the strongest association is for witnessing a shooting/stabbing and being threatened with a weapon. These results indicate that a one percent increases in neighborhood racial segregation increases the risk for witnessing a shooting/stabbing by 6.6 percentage points, and increases the risk of being threatened with a weapon by 8.1 percentage points. I also find statistically significant associations between neighborhood racial segregation and the risk for being assaulted with a firearm or knife. The LPM results suggest that a one unit increase in neighborhood racial segregation increases the risk for being assaulted with a firearm by 1.8 percentage points and increases the risk for being assaulted with a knife by 2.4 percentage points.

Table 2. LPM Estimates for the Effect of Neighborhood Proportion Black on Exposure to Violence

	Multiple Exposures to Violence	Witnessed Shooting/Stabbing	Threatened with a Weapon	Assaulted with Firearm	Assaulted with Knife
Neighborhood Proportion Black	0.018* (0.008)	0.066** (0.020)	0.081*** (0.022)	0.018* (0.008)	0.024* (0.010)
Neighborhood Disadvantage-Advantage Scale	0.002 (0.003)	-0.016* (0.007)	-0.001 (0.008)	0.001 (0.003)	0.001 (0.004)
Age (Wave 1)	0.003* (0.001)	0.006* (0.003)	0.010*** (0.002)	0.000 (0.001)	0.001 (0.001)
Male	0.018*** (0.003)	0.041*** (0.008)	0.091*** (0.008)	0.013*** (0.002)	0.029*** (0.004)
<u>Unstructured Peer Socializing</u>					
1 or 2 times	-0.003 (0.007)	-0.021 (0.014)	-0.012 (0.012)	0.001 (0.005)	-0.006 (0.009)
3 or 4 times	-0.012* (0.006)	-0.020 (0.011)	-0.012 (0.012)	-0.002 (0.005)	-0.015* (0.007)
5 or more times	-0.000 (0.006)	-0.007 (0.012)	0.021 (0.012)	-0.001 (0.005)	0.004 (0.008)
Gang Affiliation	0.153*** (0.021)	0.336*** (0.031)	0.361*** (0.028)	0.101*** (0.022)	0.181*** (0.022)
<u>Family Structure</u>					
Stepparent Family	0.002 (0.005)	0.012 (0.007)	0.025* (0.010)	0.001 (0.004)	0.004 (0.006)
Single Parent	0.002 (0.004)	0.041*** (0.008)	0.030** (0.009)	-0.004 (0.003)	0.011 (0.006)
Other Arrangement	0.015 (0.008)	0.049** (0.016)	0.047** (0.018)	0.014 (0.007)	0.012 (0.009)
Family Income (logged)	-0.001 (0.001)	0.001 (0.002)	-0.004 (0.002)	0.001 (0.001)	-0.001 (0.001)
Mother's Total Years of Schooling	-0.001 (0.001)	-0.004* (0.002)	-0.002 (0.002)	-0.001* (0.000)	0.001 (0.001)
Parent-Child Relationship Quality	-0.005* (0.002)	-0.012** (0.004)	-0.015*** (0.004)	-0.003 (0.002)	-0.011*** (0.003)
Residential Mobility	0.019** (0.007)	0.026* (0.012)	0.047*** (0.011)	0.006 (0.005)	0.031*** (0.009)
Constant	-0.030	-0.008	-0.091*	0.006	-0.008

	(0.021)	(0.048)	(0.045)	(0.016)	(0.025)
Observations	13,497	13,497	13,497	13,497	13,497

Standard errors in parentheses
 * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Sensitivity Analyses

The above results suggest that neighborhood racial composition is associated with multiple exposures to violence, and each of the specific exposure to violence measures used in the study. One possible issue is that there are relatively more cases of adolescents in advantaged neighborhoods with a lower proportion of Black residents, and adolescents in highly disadvantaged neighborhoods tend to be in neighborhoods with a higher proportion of Black residents. This fact is not surprising given that Black Americans disproportionately reside in poor neighborhoods in the US (Sharkey 2013). However, the lack of overlapping cases for neighborhood proportion Black and neighborhood disadvantage-advantage could result in biased estimates. As a sensitivity analysis, I limit the distribution of neighborhood disadvantage-advantage to a narrower window [-1, 1]. Figures 3a and 3b below show the relationship between neighborhood proportion Black and neighborhood disadvantage-advantage before narrowing the window (3a) and after narrowing the window (3b).

Figure 3a. Relationship between Neighborhood Racial Composition and Neighborhood Disadvantage-Advantage

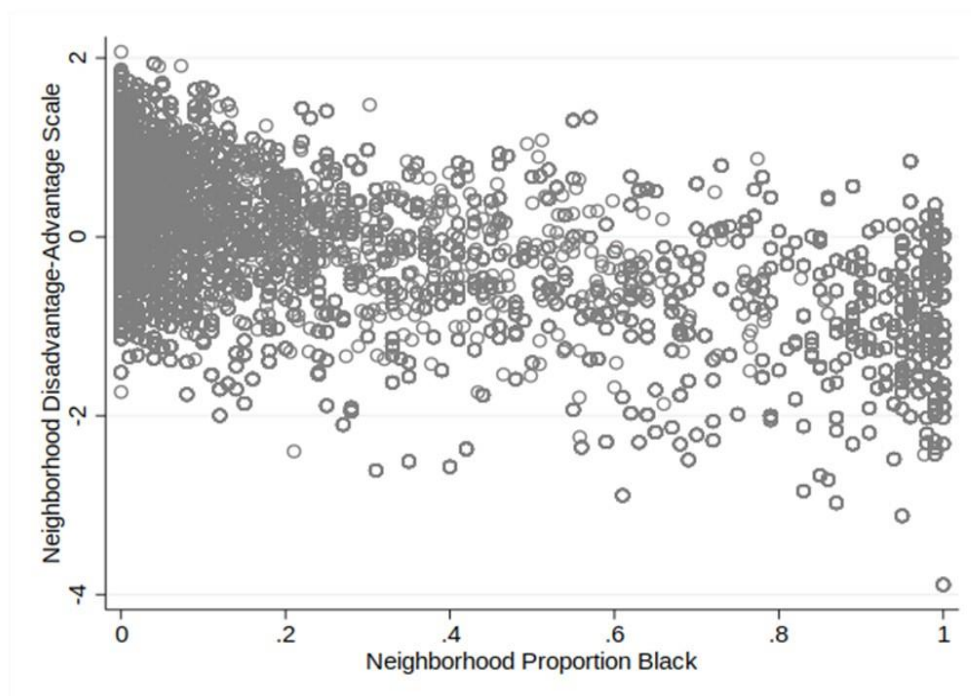


Figure 3b. Relationship between Neighborhood Racial Composition and Neighborhood Disadvantage-Advantage with Narrowed Window [-1,1]

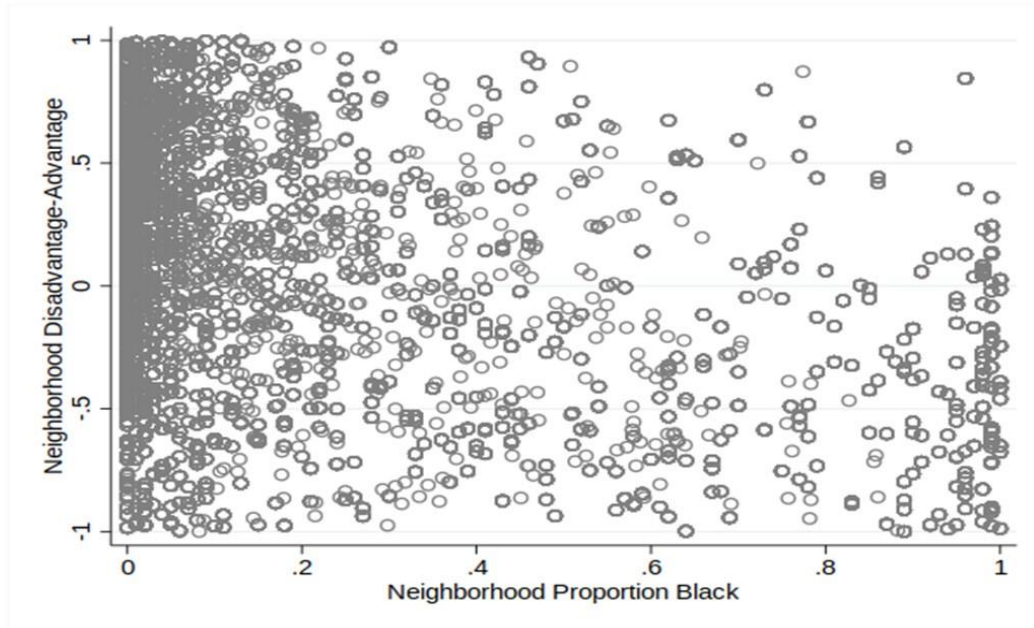


Table 3 displays coefficients from the LPM models estimating the relationship between neighborhood racial composition and exposure to violence outcomes using the narrowed window. The results for this sensitivity analysis are consistent with the main results presented above. I note, however, that the size of the coefficients increases slightly for each outcome. This suggests that the concentration of cases presented in the main results may actually lead to downwardly biased estimates.

Table 3. LPM Estimates for the Effect of Neighborhood Proportion Black on Exposure to Violence with Narrowed Window

	Multiple Exposures to Violence	Witnessed Shooting/Stabbing	Threatened with a Weapon	Assaulted with Firearm	Assaulted with Knife
Neighborhood Proportion Black	0.023* (0.010)	0.069** (0.023)	0.112** (0.029)	0.021* (0.010)	0.026* (0.011)
Neighborhood Disadvantage-Advantage Scale	0.003 (0.003)	-0.003 (0.009)	0.012 (0.008)	0.002 (0.003)	0.007 (0.004)
Age (Wave 1)	0.003* (0.001)	0.006* (0.002)	0.011*** (0.002)	-0.000 (0.001)	0.000 (0.001)
Male	0.016*** (0.003)	0.035*** (0.008)	0.085*** (0.008)	0.012*** (0.002)	0.029*** (0.004)
<u>Unstructured Peer</u>					

<u>Socializing</u>					
1 or 2 times	-0.003 (0.007)	-0.021 (0.015)	-0.017 (0.013)	0.002 (0.006)	-0.010 (0.009)
3 or 4 times	-0.009 (0.007)	-0.019 (0.012)	-0.015 (0.013)	-0.002 (0.005)	-0.017* (0.008)
5 or more times	0.002 (0.007)	-0.011 (0.014)	0.023 (0.014)	0.001 (0.006)	0.001 (0.008)
Gang Affiliation	0.143*** (0.021)	0.340*** (0.032)	0.372*** (0.030)	0.098*** (0.021)	0.168*** (0.022)
<u>Family Structure</u>					
Stepparent Family	-0.000 (0.004)	0.013 (0.008)	0.018 (0.010)	0.001 (0.004)	0.001 (0.006)
Single Parent	0.005 (0.004)	0.044*** (0.009)	0.025* (0.010)	-0.003 (0.003)	0.014* (0.006)
Other Arrangement	0.019* (0.009)	0.047** (0.017)	0.046* (0.019)	0.018* (0.008)	0.012 (0.010)
Family Income (logged)	-0.001 (0.001)	0.001 (0.002)	-0.004* (0.002)	0.000 (0.001)	-0.001 (0.001)
Mother's Total Years of Schooling	-0.001 (0.001)	-0.003* (0.002)	-0.002 (0.002)	-0.001 (0.001)	0.000 (0.001)
Parent-Child Relationship Quality	-0.004 (0.002)	-0.012** (0.004)	-0.013** (0.004)	-0.001 (0.001)	-0.010** (0.003)
Residential Mobility	0.017* (0.007)	0.027* (0.013)	0.047*** (0.013)	0.005 (0.005)	0.031** (0.009)
Constant	-0.028 (0.021)	-0.019 (0.046)	-0.108* (0.046)	0.009 (0.017)	-0.002 (0.026)

Observations

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

CONCLUSION

While previous research has documented racial disparities in exposure to violence (e.g., Zimmerman and Messner 2013), little research has explored the role of racial segregation in shaping adolescent's risk for exposure to violence. The current study bridges this gap in the literature by estimating the relationship between neighborhood racial composition and multiple exposures to violence using a nationally representative sample of adolescents. I argue that neighborhood racial segregation is associated with violence because of differences in the spatial proximity of Black and White communities to neighborhoods with concentrated disadvantage (Patillo-McCoy 1999; Sharkey 2014), and because Black and White communities are differentially policed and surveilled, resulting in higher levels of legal cynicism in Black communities which subsequently affects resident's willingness to rely upon law enforcement to mediate conflicts (Kirk and Papachristos 2011; Desmond, Papachristos and Kirk 2016).

I find evidence that neighborhood racial composition is associated multiple types of exposures to violence and is most strongly associated with witnessing violence and being threatened with a weapon. These results have important implications for the study of racial inequality and health in the US. Racial discrimination and institutional racism in the US have and continue to be important drivers of higher stress and adversity among the Black population, relative to their White counterparts. The high rates of exposure to violence during adolescence observed in this study suggests that exposure to violence is an important, but understudied mechanism of racial inequality in health and life chances in the US. This research underscores the importance of continual expansion of funding for violence prevention programs, especially programs at the local-level (Sharkey, Torrats-Espinosa and Takyar 2017).

This study does not come without limitations. First, due to data limitations, I am unable to directly test the proposed mechanisms linking neighborhood racial segregation with exposure to violence. Future research might consider directly testing these mechanisms in relation to exposure to violence. Second, the measures of exposure to violence used in this study are do not reveal the context in which the exposure occurred (i.e., school, community etc). As a result, it is unclear whether exposure to violence is occurring in one ecological context more than another (e.g., school vs. community). Future research might explore neighborhood racial composition and more detailed measures of exposure to violence that capture the ecological context in which the exposure occurred.

Chapter 3

Family Structure, Childhood Trauma, and the Intergenerational Transmission of Disadvantage

ABSTRACT

Since the 1960s, the number of children raised outside of two parent families has increased dramatically. Although prior research finds that children in single mother families do not fare as well as their counterparts raised in stable, two parent families, we still do not fully understand the mechanisms that link family structure with children's life chances. While much of the previous literature has focused on differences in parenting practices and parental investments, there has been relatively little research rooted in the fact that children in single mother families are more likely to experience childhood trauma. As previous research shows that childhood trauma is associated with long-term cognitive and social-emotional impairments, I argue that trauma is an important mechanism linking family structure with children's life chances. Using three waves of data from the National Longitudinal Study of Adolescent to Adult Health, I estimate whether childhood trauma mediates the relationship between family structure at birth and several outcomes among young adults including earnings, college completion, and criminal justice involvement. The findings provide several important contributions to the literature. First, I find that children born to single mothers are more likely to experience multiple trauma exposures during childhood. Second, I find that evidence that experiencing multiple childhood traumas mediates the relationship between family structure at birth and young adult outcomes. Third, I find significant heterogeneity in the effect of family structure by class background. The effect of family structure on college graduation and earnings is significantly larger among children from more advantaged backgrounds, consistent with a "floor effects" hypothesis. Implications for policy and research are discussed.

INTRODUCTION

Family formation is playing an increasingly important role in social and economic stratification in the United States. Since the 1960s, the number of children who will spend time living outside of two-parent homes has risen dramatically. In 1960, only 6 percent of children would spend time living in a single-parent family, whereas today more than half of all children will spend some time residing outside of a home with two biological parents (McLanahan and Percheski 2008, 258). The rising number of single parent families can be attributed to a sharp increase in the number of non-marital births and higher rates of divorce (Ellwood and Jencks 2004; Tach 2015). Since children who live in single parent families are more likely to reside in poverty, the declining number of children being raised in two parent families has helped fuel rising levels of income inequality in the US (Western, Bloome and Percheski 2008).

The rising number of children who spend time living outside of a home with two biological parents (hereafter "two parent families") has garnered significant social policy and research interest. The "diverging destinies" perspective suggests that there is a widening gap in the resources available to children raised in or outside of stable, two parent families (McLanahan 2004; Augustine 2014). Studies find that children raised outside of two parent families are more likely to meet the criteria for poverty status as adults, are more likely to have downward mobility, have lower levels of educational attainment (Astone and McLanahan 1991; Harper and McLanahan 2004; Wagnmiller and Adelman 2009; Bloome 2017). Yet, while we know that children raised in single mother families do not fare as well as their counterparts in two-parent families, we know relatively less about the mechanisms that lead to disparate outcomes between these two groups. Understanding the mechanisms linking family

structure background with adult outcomes is important because it allows researchers and policymakers to identify processes contributing to the intergenerational transmission of socioeconomic status and barriers to equality of opportunity (Bowles and Gintis 2002; Jencks and Tach 2005).

In the current study, I argue that childhood trauma has been an overlooked, but potentially critical mechanism in the intergenerational transmission of disadvantage by family structure background. Specifically, I argue that children in single mother families may experience poorer outcomes as adults because they are more likely to experience psychological trauma during childhood. While previous studies have primarily focused on the role of investments and parenting practices to explain disparities across family structure background (Heckman 2006; Kalil 2015; Kalil and Ryan 2020), very little sociological research has considered the importance of childhood trauma as an explanation for variation in adult outcomes by family structure.

Despite having received little attention in the sociological literature, childhood trauma is highly prevalent and has been described as a “silent epidemic” (Kaffman 2009). Trauma refers to “a circumstance in which an event overwhelms or exceeds a person’s capacity to protect his or her psychic wellbeing and integrity” (Cloitre, Cohen and Koenen 2006). Moreover, trauma refers to specific response(s) of individuals to events or circumstances, rather than the actual events or circumstances themselves (van der Kolk 2006). These responses are referred to as “trauma symptoms” and can include (but are not limited to) aggression, fear, anxiety, depressive symptoms, dissociation, and posttraumatic stress. Children are particularly vulnerable to trauma, which often occurs due to physical abuse, emotional abuse, sexual abuse, neglect, and exposure to community or domestic violence. Studies show that children who experience trauma often experience multiple forms of abuse and victimization over time, referred to as “complex trauma.” Studies show that children who experience trauma often experience multiple types of abuse and victimization over time, referred to as “complex trauma.” Previous studies show that children who experience complex trauma fare worse in their complexity and intensity of trauma symptoms relative to children who experience trauma stemming from a single event or experience (Arata et al 2005; Martin et al 2013; Finkelhor et al 2007). Even though childhood trauma is prevalent, especially among children from disadvantaged backgrounds, I am aware of no research that considers the role of trauma as a mechanism of family structure effects.

In the current study, I use data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) to estimate whether complex trauma during childhood mediates the relationship between family structure at birth and several important outcomes among adults, including personal earnings, college completion, and criminal justice involvement (i.e., incarceration). The study of childhood trauma in the context of family structure can be informative theoretically and empirically for several reasons. First, previous studies find that children raised in single parent families are more likely to experience trauma (Barrett and Turner 2005; Turner, Finkelhor and Ormrod 2007; Mersky et al 2009; Schneider 2017). This suggests that trauma might be an important mechanism through which the effects of family structure operate through. Second, childhood trauma has been shown to be associated with cognitive and socio-emotional impairments, posttraumatic stress, substance use problems, physical health problems, and an increased risk for developing psychiatric disorders. As a result, the effects of childhood trauma can have important and long-term implications for adulthood outcomes. Lastly, given inequalities in trauma exposure by socioeconomic status (Assari 2020), trauma is important to the sociological study of inequality as it might be a key mechanism in the intergenerational transmission of disadvantage by family

background. Yet, I am aware of no studies that estimate whether childhood trauma mediates the relationship between family structure at birth and adult outcomes.

This study contributes several important findings to the literature on family structure and social inequality (McLanahan 2004; McLanahan and Percheski 2008). First, I find that adolescents born to single mothers, relative to adolescents born into two parent families, experience significantly higher levels of childhood trauma. Second, I find evidence that childhood trauma mediates the relationship between family structure at birth and several important outcomes among adults between the ages of 24 and 32. Third, I find heterogeneity in the effect of childhood trauma by family structure. These results show that the effect of childhood trauma is particularly consequential for college completion among adolescents who are born to two parent families. I argue that the effect of complex trauma on college graduation among adolescents from two parent families is larger because these adolescents have further to fall in terms of their educational achievement compared to adolescents from single mother families who tend to have lower base levels of college graduation. This is referred to as the “floor effects” hypothesis in the family structure literature. Taken together, these analyses suggest that childhood trauma is an important mechanism linking family structure at birth with children’s adult outcomes. I find that childhood trauma mediates a similar portion (comparable to that of parenting practices) of the effect of family structure effects on college graduation, and mediates a significantly larger portion of the effect of family structure on incarceration.

MECHANISMS LINKING FAMILY STRUCTURE WITH ADULT OUTCOMES: THE ROLE OF CHILDHOOD TRAUMA

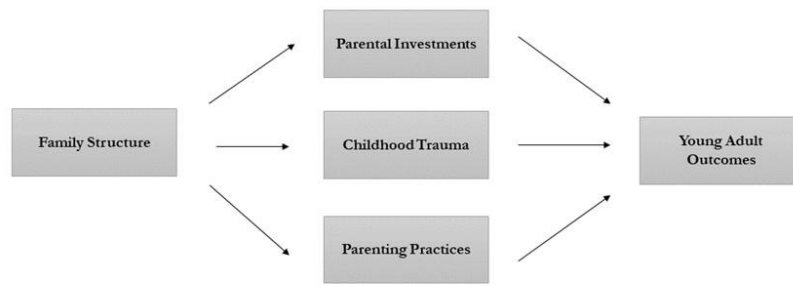
A large literature, including work using a variety of strategies designed to provide for causal inference, finds evidence of significant negative effects of non-marital family structure on children’s later life outcomes (Cavanagh 2008; Bloome 2017; Lee and McLanahan 2015). Theoretically, scholars have suggested that family structure might operate on later life outcomes by diminishing parental investment and negatively shaping parenting practices (Sigle-Rushton and McLanahan 2004; McLanahan and Percheski 2008). Empirically, it appears that children in single mother families do receive lower levels of parental investments and poorer quality parenting practices, in part due to economic strain and disadvantage, financial and family instability, and residence in neighborhoods and schools with higher levels of violence (Sigle-Rushton and McLanahan 2004; Turner, Finkelhor and Ormrod 2007; Ribar 2015; Kalil and Ryan 2020).

However, relatively overlooked as a mediating process is the role of childhood trauma in shaping the association between family structure and later life outcomes. Childhood trauma usually refers to maltreatment and exposure to domestic violence or community violence. Child maltreatment is a general term used for the following categories: physical abuse, sexual abuse, emotional abuse, and neglect.⁷ Childhood trauma is prevalent, with more than 60 percent of children reporting having experienced at least one potentially traumatic event by the age of 16, and 30 percent reporting exposure to multiple events by this age. Studies also suggest that childhood trauma is highest among children who are not living with both biological parents (McLaughlin et al 2013). Childhood trauma, especially maltreatment, is associated with a host of deleterious consequences, including posttraumatic stress, dissociation, depression, and substance use (Scheidell et al 2017; Copeland et al

⁷ Child maltreatment is defined as “any act or series of acts of commission or omission by a parent or other caregiver that results in harm, potential for harm, or threat of harm to a child” (Leeb et al 2008 11).

2007; Copeland et al 2018). Figure 1 below shows the aforementioned mechanisms linking family structure with adult outcomes.

Figure 1. Mechanisms Linking Family Structure at Birth with Adult Outcomes



Studies on childhood trauma over the last two decades have yielded an important finding suggesting that children who experience one type of abuse also tend to have a high risk for other forms of abuse and victimization. Scholars refer to multiple traumas in childhood as complex trauma or “polyvictimization.” Empirically, previous studies find that trauma survivors tend to experience multiple traumatic events over time. One study estimates that 22 percent of children experience four or more different types of victimization during a single year (Finkelhor, Ormrod and Turner 2007). These studies have found that being exposed to multiple types of traumas has more deleterious consequences compared to experiencing one trauma, the latter of which is statistically common in the general population (Arata et al; 2005; Martin et al 2013; Finkelhor et al 2007; Putnam, Harris and Putnam 2013; Copeland et al 2018). Researchers have also incorporated a broader range of potentially traumatic events, including “vicarious traumas”, or traumas that are not directly experienced but are in close proximity to an individual (e.g., see Howard 2020). This perspective suggests that it not merely the number of times a specific traumatic event is experienced, but the frequency at which children are exposed to *different categories* of trauma. In other words, this perspective suggests that a child who experiences physical abuse and neglect will, on average, have worse developmental and health-related outcomes compared to a child who experiences a similar frequency of physical abuse but does not experience neglect. Studies spanning multiple scientific disciplines, including neuroscience and environmental psychology suggest that children who are repeatedly exposed to these types of stressful events develop more cognitive and social-emotional impairments, including issues with self-regulation and executive functioning (Evans and Kim 2013; see McEwen and McEwen 2017 for a review).

There are several reasons that children in single mother families will have a higher risk for childhood trauma. These include economic disadvantage and strain, family instability, and residence in neighborhoods and schools with higher levels of violence. Economic disadvantage is likely to be an important contributor to elevated rates of trauma among children born to single mothers, as previous research shows that single parent families often have significant stressors resulting financial difficulties (Sigle-Rushton and McLanahan 2004). Turner, Finkelhor and Ormrod (2007) find that youth who are not living with two biological parents have higher rates of victimization, particularly in stepparent families and single parent families. They find that the higher rate of victimization in stepparent families is accounted for by higher levels of family problems, whereas victimization in single parent families is influenced more by economic disadvantage and residing in neighborhoods and schools with higher levels of violence. One reason that economic disadvantage can lead to childhood traumas, especially maltreatment, is because it affects the availability of resources that are needed to support and care for children. For example, studies leveraging exogenous variation find that increases in family income are associated with reductions in child maltreatment (Cancian, Slack and Yang 2010; Berger et al 2017).

HETEROGENOUS EFFECTS OF CHILDHOOD TRAUMA

There is reason to suspect that the effects of childhood trauma might vary by family structure. Studies suggest that coping resources can buffer against the harmful consequences of childhood trauma (Louie and Wheaton 2019). Previous studies on heterogenous effects of family structure also provide two important hypotheses in relation to whether childhood trauma might have differential effects by family structure. These include the “compensation hypothesis”, and the “floor effect hypothesis” (Bernadi and Radl 2014). The compensation hypothesis predicts that children in two parent families will experience less penalties associated with childhood trauma. This perspective draws from the fact that children with two parents have a greater availability of resources, including economic resources and higher parenting quality and greater coping resources that might buffer against any negative effects of childhood trauma (Sigle-Rushton and McLanahan 2004; Cooper et al 2009; Augustine 2014). Therefore, children living with two parents might be able to compensate for harmful effects of childhood trauma more easily. Consequently, this perspective also suggests that children from more single mother families will experience more severe consequences associated with childhood trauma since they have less economic and parental resources to compensate.

On the other hand, the “floor effect” hypothesis predicts that children from single mother families might experience less harmful effects of childhood trauma since their labor market and educational prospects are already low, and the risk for criminal justice involvement is already higher, given their greater disadvantages in economic and parental resources. This perspective also suggests that children in two parent families might experience more harmful effects from living in a single mother family as they have “more to lose” in terms of moving down from an already (relatively) advantaged position. Previous studies have yielded mixed findings in relation to the compensation and floor effect hypotheses in the family structure literature (Mandemakers and Kalmijn 2014; Augustine 2014; Martin 2012; Bernadi and Radl 2014; Alamillo 2016). I am aware of no previous research that has examined whether the effect of childhood trauma varies by family structure background.

METHODS

The current study uses data from the in-home survey of Wave I (1994-1995), Wave III (2001-2002) and Wave IV (2008-2009) of the National Longitudinal Study of Adolescent to Adult Health (Add Health). The use of Add Health data to study childhood trauma is advantageous as previous research suggests that most traumas occur before the age of 20 (Breslau et al 1998). Add Health is a nationally representative, longitudinal survey of adolescents in the United States in grades 7 through 12 (Harris et al 2009). Add Health data were collected through a multistage cluster sampling design. The Add Health study sampled high schools and middle schools from a list of U.S. high schools maintained by Quality Education Data Inc. The initial survey was conducted in schools and included a total of 90,118 students, a 79 percent response rate. The first in-home survey was conducted in 1995 and included 20,745 students that were selected from the school rosters using a stratified sampling design which was based on grade and sex. The response rate for the Wave 1 in home survey was 80 percent. I use data for respondents that had no missing sampling weights and completed Waves I, III and IV of the in-home questionnaires (N = 12,288). There were a total of 188 adolescents living in step-parent families or single father families at birth. Given the small number of cases in these categories, I limit the analysis to adolescents who were living with either two biological or adoptive parents or single mothers at birth.

I use three outcomes to study life chances among adults. These include personal earnings, criminal justice involvement, and college completion. Personal earnings are measured using the following question from Wave IV, “Over the past year, how much income did you receive from personal earnings before taxes, that is, wages or salaries, including tips, bonuses, and overtime pay, and income from self-employment?” I use a log-transformation of the earnings variable to reduce the skew of the earnings measure. College completion is measured at Wave IV using the following question, “What is the highest grade or year of regular school you completed?” From these responses, I construct a binary measure for college completion (0 = less than four years of college; 1 = four years of college or more). Lastly, criminal justice involvement is measured using the following question, measured at Wave IV, “Have you ever spend time in a jail, prison, juvenile detention center or other correctional facility?” Using information on the age of first incarceration, I construct a binary measure indicating whether a respondent’s first incarceration occurs at the age of 18 or older (0 = No, 1 = Yes). Respondents who were incarcerated before the age of 18 were coded as 0. I measure incarceration at 18 or older to avoid introducing a temporal ordering between incarceration as an outcome and traumas that are measured in childhood (before the age of 18).

Family structure at birth indicates whether an adolescent resided with a single parent, stepparent family or two biological or adoptive parents (hereafter “two parent family”) during the first year of life. In the analytic sample, 82 percent of adolescents were in two parent families at birth and 18 percent were in single mother families. Parent’s marital status at birth is not available in the data.

I define childhood trauma as the accumulation of different categories of potentially traumatic events (Martin et al 2013). This measure captures the frequency for which children experience multiple types of traumas (before the age of 18), rather than the frequency for which they experience a single type of trauma (e.g., physical abuse). I measure several types of caregiver abuse usually referred to as “child maltreatment.” These include indicators for physical abuse, sexual abuse, emotional abuse, and neglect by caregivers before the age of 18. Physical abuse is measured at Wave IV and asks respondents retrospectively, “Before your 18th birthday how often had your parents or other adult caregivers slapped, hit or kicked you?” Emotional abuse is measured at Wave IV and asks respondents retrospectively, “Before your 18th birthday, how often did a parent or other adult

caregiver say things that really hurt your feelings or made you feel like you were not wanted or loved?” I incorporate two separate indicators for neglect, measured retrospectively at Wave III. These include: (1) supervisory-based neglect, “By the time you started 6th grade, how often had your parents or other adult caregivers left you home alone when adult should have been with you?”, and (2) material neglect, “How often had your parents or other adult caregivers not take care of your basic needs, such as keeping you clean or providing food or clothing?” For each abuse and neglect category, respondents who reported experiencing 6 or more events were categorized as having experience physical abuse, emotional abuse, or neglect. These thresholds are necessarily arbitrary as there is no consensus among researchers as to how many incidents of these constitute abuse/neglect (Haskett, Portwood and Lewis 2010).

Sexual abuse is measured retrospectively at Wave IV and asks respondents, “How often had one of your parents or other adult caregivers touched you in a sexual way, forced you to touch him or her in a sexual way, or forced you to have sexual relations?” (0 = this never happened; 1 = one or more times). Exposure to community violence uses the following indicator measured at Wave I, asking respondents, “During the past 12 months, you saw someone shoot or stab another person” (0 = Never; 1 = Once; 2 = More than once). Given the skewed responses for these indicators, I dichotomized each to indicate any exposure versus no exposure. Using the measures described above, I construct a binary measure of traumas occurring in childhood (hereafter “childhood trauma”) that captures exposure to two or more traumas during childhood (0 = 0 or 1 exposure; 2 or more exposures). In the analytic sample, approximately 66 percent of respondents experience no childhood trauma exposure, 22 percent have one trauma exposure, and 12 percent have 2 or more childhood trauma exposures.

Parent investments is a scale that combines responses from the following questions at Wave 1: “During the past four weeks did your biological or resident mother/father (1) talk about schoolwork or grades, (2) work on a school project, (3) talk about other things you were doing in school ($\alpha = .72$). While this measure does not capture the vast array of ways in which parents can invest in their children, it provides a rough proxy of the extent to which parents are more less active in relation to nurturing their children’s development. Studies on parental investments suggest that children raised in single mother families do not fare as well because they receive fewer investments which promote cognitive and socio-emotional development. These include monetary investment including parents sending their children to private schools and expenditures on extra-curricular enrichments or private tutoring (Park et al 2016). Non-monetary investments are investments in children’s development that do not directly involve financial resources, including parent’s language use, and the quantity of time spent engaging in stimulating activities with children (Kalil et al 2012).

I use a composite measure to gauge parenting practices from several items at Wave 1. These measures gauge parents’ responsiveness, parental monitoring, parental warmth, and parent-child communication. They include the following items: “You are satisfied with your relationship with your mother/father”, “You are satisfied with the way your mother/father and you communicate”, and “Most of the time your mother/father is warm and loving toward you” (1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree; 5 = strongly disagree). This scale also provides a reasonable proxy for parental monitoring as prior research suggests that monitoring involves an relationship between parents and their children that is rooted in active communication (Wang et al 2013; Tobler and Komro 2010). I reverse-coded these measures so that higher values of the scale indicate higher quality of parenting practices whereas a lower score indicates lower quality parenting practices ($\alpha = .88$). Studies have found that increased parental support, the avoidance of harsh

punishment, and parental warmth are positively associated with child wellbeing (Amato and Fowler 2002; Khaleque 2013). There are several reasons that children in single mother households might experience lower parental responsiveness, monitoring, and warmth. These include single mothers having lower levels of mental wellbeing (Demo and Acock 1996) and increased economic hardship which can lead to more physical punishment and harsher parenting (Eamon and Zuehl 2000)

I control for several potential confounders of the relationship between family structure and outcomes in adulthood. These include the respondents' *age* at Wave 1, a binary variable for *race* (0 = Non-Hispanic White; 1 = Non-Hispanic Black), gender (0 = Female; 1 = Male), mother's total years of schooling, and family income. Family income is measured at Wave 1 during the parental questionnaire using the following question, "Over the past year, how much total income, before taxes, did your family receive? Include your own income, the income of everyone else in your household, and income from welfare benefits, dividends, and all other sources." These responses are taken as a measure of the respondent's total family income. To reduce influential values of family income, I use a log-transformation of the family income variable.

A total of 4,847 observations had at least one missing value. I constructed 20 datasets using multiple imputation by chained equations (MICE) in Stata 15.1. MICE allows researchers to conduct multiple imputation under scenarios where there are missing values on multiple variables of interest using chained regression equations (White, Royston, and Wood 2010). There were a total of 659 missing observations on the dependent variables. I include the dependent variables in the imputation and drop their missing values after the imputation procedure. This leads to a final analytic sample of 11,441 observations. Survey weights were included for the imputation models (Reist and Larsen 2012). I re-estimate all models in the analysis on the original data using listwise deletion. Although these results generally showed larger effect sizes for family structure, they do not change substantively change the findings presented in the paper.

Analytical Approach

This study examines whether and to what extent childhood trauma mediates the relationship between family structure at birth and adult outcomes. The analysis proceeds as follows: I use linear probability models (LPM) to estimate (1) the association between family structure at birth and adult outcomes, (2) the association between family structure at birth and the mediators (childhood trauma, parental educational investments, parenting practices) and (3) the relationship between the mediators and adult outcomes, and (4) heterogeneous effects of family structure on the adult outcomes. LPM is used for the continuous earnings measure and both binary outcomes (college graduation, incarceration) to simplify the interpretation of coefficients. The use of OLS (i.e., linear probability models or "LPM") for binary outcomes has been proposed as one solution to the re-scaling issue in relation to comparing logit coefficients across models (Mood 2010). All model results that use LPM for binary outcomes were re-examined using logit models. These results did not differ significantly from the results presented using LPM. Since economic resources are considered a key mechanism through which family structure has effects on adult outcomes (Sigle-Rushton and McLanahan 2004), all model results are presented with and without controlling for family income.

For the mediation analyses, I use the Karlson-Holm-Breen (KHB) method with LPM (Karlson et al 2012). KHB can be used to decompose the total effect of a variable into a direct and indirect effect. One advantage of using the KHB approach is that it decomposes the direct, indirect and total effect of family structure at birth on the adult outcomes and calculates the statistical contribution of each mediator relative to the specific outcome. Given that I examine multiple mediators, the KHB

analyses examine each mediator one at a time while controlling for covariates and the other mediators. Since my measures of childhood trauma, parental investments, and parenting practices are not correlated with one another, examining each mediator separately is an appropriate strategy (VanderWeele and Vansteelandt 2014). The KHB analyses are also presented with and without family income adjustments.⁸ All analyses were conducted using the “svyset” and “svy” commands in Stata 14 (StataCorp 2015) to account for the complex, multistage sampling design of AddHealth, including survey weights, strata and cluster.

RESULTS

Descriptive Results

Table 1 shows mean characteristics by family structure type at birth. I begin by describing the average differences in adult outcomes by family structure type. These results show that adolescents born to single mother families relative to those in two parent families have lower earnings, are less likely to graduate from college, and are more likely to be incarcerated. On average, adolescents born to single mother families are 19.1 percentage points less likely to graduate from college and are 6 percentage points more likely to be incarcerated at 18 or older.

Table 1. Mean Characteristics for Analytic Sample

	Full Sample	Two Parent Family	Single Mother
<u>Outcomes</u>			
Personal Earnings (logged)	9.456 (0.054)	9.580 (0.053)	8.864 (0.115)
College Graduate	0.322 (0.017)	0.355 (0.018)	0.164 (0.013)
Incarcerated at 18 or Older	0.136 (0.006)	0.126 (0.006)	0.186 (0.015)
<u>Demographics</u>			
Age (Wave 1)	15.141 (0.124)	15.109 (0.126)	15.296 (0.150)
Non-Hispanic Black	0.141 (0.019)	0.106 (0.015)	0.311 (0.035)
Male	0.492 (0.007)	0.492 (0.008)	0.492 (0.015)
Mother's Years of Schooling	13.221 (0.095)	13.346 (0.096)	12.627 (0.138)
Family Income (logged)	3.522 (0.035)	3.615 (0.032)	3.077 (0.049)
<u>Trauma Type</u>			
Multiple Traumas (≥ 2)	0.118	0.103	0.193

⁸ For the KHB models, I randomly selected 1 of the 20 imputed datasets to perform the analysis (e.g., see Jacobsen, Pace and Ramirez 2019). The results did not vary significantly across imputed datasets.

	(0.005)	(0.005)	(0.012)
Physical Abuse	0.060 (0.003)	0.053 (0.003)	0.093 (0.009)
Sexual Abuse	0.048 (0.003)	0.042 (0.004)	0.076 (0.008)
Emotional Abuse	0.165 (0.006)	0.153 (0.006)	0.221 (0.014)
Neglect (Material)	0.036 (0.003)	0.031 (0.003)	0.057 (0.007)
Neglect (Supervisory)	0.111 (0.005)	0.101 (0.005)	0.157 (0.013)
Witnessed Violence	0.090 (0.007)	0.081 (0.006)	0.133 (0.011)
Observations	11,441	9,337	2,104

Standard errors in parentheses

I now describe differences in childhood trauma exposure by family structure type at birth. These results show significant gaps in childhood trauma by family structure type at birth. On average, adolescents who are born to single mothers are 9 percentage points more likely to experience 2 or more childhood traumas. When disaggregating by trauma type, the largest gap between children born to two parent families and single mother families is for emotional abuse. I estimate that 22.1 percent of adolescents born to single mothers report experiencing emotional abuse, compared to 15.3 percent of adolescents born to two parent families, a 6.8 percentage point gap. I estimate that adolescents born to single mothers are 4 percentage points more likely than adolescents born to two parent families to experience physical abuse, are 3.4 percentage points more likely to experience sexual abuse, are 2.6 percentage points more likely to experience material neglect, are 5.6 percentage points more likely to experience supervisory neglect, and are 5.2 percentage points more likely to witness community violence.

Table 2 presents OLS coefficients estimating the association between family structure at birth and adult outcomes. These results show that adolescents born to single mothers, relative to adolescents born to two-parent families, experience a 48.7 percentage point reduction of earnings in adulthood. These results also suggest that adolescents born to single mothers are 10.1 percentage points less likely to graduate from college and are 3.5 percentage points more likely to be incarcerated. The effect size for each outcome increases slightly when removing family income, suggesting that economic resources contribute to part of the effect of family structure on adult outcomes.

Table 2. OLS Estimates for the Effect of Family Structure on Adult Outcomes

	Personal Earnings (Logged)	College Graduate	Incarcerated
Single Mother Family	-0.487*** (0.116)	-0.101*** (0.015)	0.035* (0.013)
Non-Hispanic Black	-0.079 (0.130)	0.005 (0.024)	0.015 (0.016)
Male	1.032*** (0.082)	-0.071*** (0.012)	0.135*** (0.010)
Age (Wave 1)	-0.014 (0.020)	-0.003 (0.004)	0.003 (0.003)
Mother's Years of Schooling	0.076*** (0.020)	0.048*** (0.004)	-0.008*** (0.002)
Family Income (logged)	0.289*** (0.063)	0.103*** (0.011)	-0.030*** (0.008)
Constant	7.222*** (0.435)	-0.584*** (0.088)	0.227*** (0.048)
Observations	11,441	11,441	11,441

Note. Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3 display OLS coefficients estimating the association between family structure at birth, childhood trauma, parental investments, and parenting practices. These results show that adolescents born to single mothers, relative to adolescents born to two-parent families, are more likely to experience two or more childhood traumas. The results indicate that adolescents born to single mothers, relative to adolescents born into two parent families are 9.2 percentage points more likely to experience two or more childhood traumas. These estimates also show that family structure at birth is associated with parental investments and parenting practices. On average, being born to a single mother, relative to a two parent family, leads to a .059 decrease in parental investments, and a .112 reduction in parenting quality.

Table 3. OLS Estimates of the Effect of Family Structure on Proposed Mechanisms

	Parental Investments	Parenting Practices	Childhood Trauma
Single Mother Family	-0.059* (0.025)	-0.112*** (0.031)	0.080*** (0.014)
Age at Wave 1	-0.024*** (0.006)	-0.077*** (0.005)	0.003 (0.002)
Non-Hispanic Black	0.043 (0.031)	0.065* (0.031)	-0.035** (0.013)
Male	-0.003 (0.016)	0.189*** (0.021)	-0.013 (0.009)
Mother's Years of Schooling	0.021*** (0.004)	0.003 (0.005)	0.003 (0.002)
Family Income (logged)	0.029* (0.014)	0.014 (0.015)	-0.035*** (0.007)
Constant	-0.013 (0.100)	1.014*** (0.098)	0.159** (0.051)
Observations	11,441	11,441	11,441

Note. Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Mediation Analyses

Table 4 displays standardized coefficients from the KHB analyses. The coefficients represent the difference between the family structure coefficient with and without including the specified mediator. For example, in column 1 of Table 4, the value of -0.005 indicates that the family structure coefficient for personal earnings decreases by .005 after the inclusion childhood trauma. The difference for this outcome is not statistically significant. The results from the mediation analyses indicate that childhood trauma and parenting practices mediate the relationship between family structure, college graduation and incarceration.

The inclusion of childhood trauma whilst controlling for covariates and the other two mediators reduces the coefficient on college graduation by .002 and reduces the coefficient for incarceration by .003. Taken together, these results indicate that childhood trauma mediates approximately 2.5 percent of the relationship between family structure and college graduation, and 9.7 percent of the relationship between family structure and incarceration. I also find that parenting practices mediate the relationship between family structure, college graduation, and incarceration. These results indicate that the inclusion of the parenting practices scale while controlling for childhood trauma, parental investments, and covariates, reduces the family structure coefficient for college graduation by .003, and reduces the family structure coefficient for incarceration by .001. This suggests that parenting practices mediate 2.8 percent of the relationship between family structure and college graduation, and 4.8 percent of the relationship between family structure and incarceration. In sum, these results suggest that childhood trauma is equally important as parenting practices in terms of explaining the relationship between family structure and college graduation, and mediates about two

times more of the relationship between family structure and incarceration. I do not find evidence that parental investments mediate the relationship between family structure and the adult outcomes.

Table 4. Standardized Coefficient Differences in Mediators for Adult Outcomes

	Personal Earnings (Logged)	College Graduate	Incarcerated
Childhood Trauma	-0.005 (0.005)	-0.002* (0.001)	0.003* (0.001)
Mediation %	0.985	2.456	9.719
Parental Investments	-0.001 (0.002)	-0.001 (0.001)	0.000 (0.000)
Mediation %	0.276	1.542	1.223
Parenting Practices	-0.010 (0.005)	-0.003* (0.001)	0.001* (0.001)
Mediation %	2.161	2.881	4.779
Observations	11,441	11,441	11,441

Note. Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Heterogenous Effects of Family Structure by Class Background

Table 5 shows the effects of childhood trauma on adult outcomes among adolescents born to two-parent families. The model estimates suggest that childhood trauma among adolescents born to two parent families reduces the probability of earning a college degree by 7.5 percentage points, and increases the probability of incarceration by 8.8 percentage points.

Table 5. OLS Estimates for the Effect of Childhood Trauma among Two-Parent Families

	Personal Earnings	College Degree	Incarcerated
Childhood Trauma	-0.125 (0.127)	-0.075*** (0.022)	0.088*** (0.017)
Parental Investments	0.083 (0.049)	0.038** (0.011)	-0.004 (0.007)
Parenting Practices	0.127** (0.048)	0.037*** (0.008)	-0.014* (0.006)
Mother's Education	0.081*** (0.022)	0.051*** (0.004)	-0.006** (0.002)
Age at Wave 1	-0.002 (0.022)	0.003 (0.005)	0.001 (0.003)
Black	-0.021 (0.110)	-0.021 (0.030)	0.014 (0.016)

Male	1.030*** (0.079)	-0.084*** (0.014)	0.126*** (0.011)
Family Income (logged)	0.266*** (0.063)	0.113*** (0.013)	-0.036*** (0.008)
Constant	7.067*** (0.467)	-0.731*** (0.101)	0.254*** (0.057)
Observations	9,337	9,337	9,337

Note. Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 shows the effect of childhood trauma on adult outcomes among adolescents born to single mother families. While the prior results showed that childhood trauma reduces the probability of earning a college degree for adolescent born to two parent families, these model results show no association between childhood trauma and earning a college degree among adolescents born to single mother families. However, the model results show a slightly stronger association between childhood trauma and incarceration in this group.

Table 6. OLS Estimates for the Effect of Childhood Trauma among Single Mother Families

	Personal Earnings	College Degree	Incarcerated
Childhood Trauma	0.300 (0.218)	0.010 (0.031)	0.107** (0.033)
Parental Investments	-0.092 (0.168)	0.045** (0.017)	-0.041* (0.019)
Parenting Practices	0.052 (0.121)	0.011 (0.012)	-0.014 (0.012)
Mother's Education	0.048 (0.047)	0.027*** (0.005)	-0.011* (0.004)
Age at Wave 1	-0.012 (0.062)	-0.008 (0.005)	0.001 (0.008)
Black	-0.187 (0.280)	0.032 (0.025)	0.040 (0.032)
Male	0.929*** (0.264)	-0.042 (0.022)	0.197*** (0.027)
Family Income (logged)	0.337* (0.157)	0.051*** (0.014)	0.003 (0.015)
Constant	6.940*** (0.957)	-0.197 (0.106)	0.164 (0.114)
Observations			

Note. Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

CONCLUSION

Studies on family structure in the United States have raised concerns regarding a growing divergence between children raised in stable two parent families and children raised outside of two parent families (McLanahan 2004; McLanahan and Percheski 2008; Augustine 2014). These studies suggest that children raised outside of two parent families do not fare as well in adulthood as their counterparts who are raised in two parent families. Yet, there has been relatively less research on the mechanisms linking family structure with children's adult outcomes outside of parental investments and parenting practices.

This study provides several important contributions to the literature and policy discussions. First, I find that adolescents born to single mothers are significantly more likely to experience a range of traumas throughout their childhood, offering a novel explanation for the diminished prospects of children born single mothers. The results indicate that adolescents born to single mothers are more likely to experience a vast array of traumas associated with their family environment, including child maltreatment and witnessing community violence. Second, I find evidence that childhood trauma mediates the relationship between family structure and adult outcomes, suggesting that childhood trauma is one mechanism involved in the intergenerational transmission of disadvantage by family background (Bowles and Gintis 2002; Jencks and Tach 2005).

Moreover, the results suggest that childhood trauma plays a role that is parallel in its importance to that of parenting practices, as indicated by the mediation analyses. Interestingly, I find that childhood trauma explains relatively little of the relationship between family structure and earnings. Future research should examine mechanisms that explain the earnings penalty among children from single mother families as well the potential harms of childhood trauma for other domains, including mental health, employment, and family formation. Lastly, I find heterogeneity in the effect of childhood trauma by family structure. These results showed that childhood trauma is particularly consequential for college graduation among adolescents from two parent families compared to adolescents from single mother families. The floor effects perspective suggests that adolescents from single parent families may not experience harmful consequences of trauma in terms of college graduation because their prospects for college completion are already much lower compared to adolescents from two parent families. These analyses also suggest that childhood trauma significantly increases the risk for incarceration among adolescents born to both single mother families and two parent families. These results highlight the importance for funding and support of non-profit organizations and local government agencies that engage in trauma-informed care especially for children from disadvantaged backgrounds who are more likely to experience multiple types of trauma during childhood.

This study does not come without limitations. First, since children are not randomly selected into family structures at birth, there is always the possibility that an unobserved confounder might account for the relationship between family structure and adult outcomes. For example, other aspects of socioeconomic disadvantage not measured here might account for this relationship. However, given the fact I control for family income and parent's education, this is less likely to be case. A second limitation is the inability to examine heterogeneity in the effects of family structure by race. Due to limited sample sizes when stratifying by race, I am unable to detect meaningful differences in the effect of family structure by race. Future research should explore whether

childhood trauma has heterogenous effects across family structure environments as previous research finds that socioeconomic stress might be less impactful for racial/ethnic minorities who often face higher levels of disadvantage (Cross 2020). Third, while I measure key types of childhood traumas, these measures are not exhaustive of the full range of psychological traumas that children can experience, which also include witnessing domestic violence, which is not available as a childhood measure in Add Health. Future sociological research might consider studying the effects of additional types of traumas, the interaction between specific categories of trauma and their effects, and incorporating more detailed measures of acute and chronic exposures to trauma in childhood.

Chapter 4

The Effect of Community Exposure to Violence on Criminal Legal System Involvement

ABSTRACT

While sociological studies document the many adverse consequences of criminal legal system involvement, there has been relatively little research on the relationship between early life adversities and criminal legal system involvement. In this study, we focus on an important, but overlooked pathway to criminal legal system involvement - exposure to community violence. Previous studies find that exposure to community violence can have long-term effects on children's physical and mental health, and the risk for community violence is particularly high among African American and Latina/o youth. Yet, there has been dearth of research on the relationship between community violence and adult incarceration. Using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), we show that exposure to community violence in adolescence predicts adult incarceration above and beyond other types of potentially traumatic events in childhood. Heterogeneity analysis shows a similar effect of community violence by race and ethnicity, but a significantly stronger effect on adult incarceration for boys relative to girls. This research suggests that inequality in exposure to community violence is an important mechanism in the production of racial inequality in justice system involvement.

While the incarceration rate has decreased slightly since its peak in 2007, the incarcerate rate in the United States remains remarkably high. As of 2019, there were more than 2 million people incarcerated in federal, state, and local institutions (Maruschak and Minton 2020). Sociological research has documented a plethora of harms associated with incarceration, including worsening physical and mental health, diminished labor market prospects, and an increased risk for future criminal justice involvement. This research suggests that incarceration produces significant social harms and reproduces racial and economic inequalities (Western 2006; Wakefield and Uggen 2010; National Research Council 2014).

Although previous research suggests that incarceration is a significant life stressor and has deleterious consequences for health and other important life outcomes (Massoglia and Pridemore 2015; National Research Council 2014; Kirk and Wakefield 2018), relatively little research has focused on pathways to adult incarceration. In this study, we argue that exposure to community violence - defined as witnessing a violent assault in the previous year - is a potentially important but overlooked mechanism in shaping the risk for criminal legal system involvement. While qualitative research finds high rates of stressful life events among justice involved populations (Western 2018), there has been a dearth of research on the relationship between exposure to community violence and criminal legal system involvement. This is an important omission, as previous research indicates that witnessing community violence can have long-term impacts on children's cognitive and social-emotional development (Fowler et al 2009).

In the current study, we ask "Does witnessing community violence during adolescence increase the risk for young adult incarceration?" To assess this question empirically, we use data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). We argue that witnessing community violence in adolescence will increase the risk for young adult incarceration due to poorer mental health and substance use problems. Add Health is particularly advantageous for studying the effect of witnessing community violence as previous research finds that exposure to community violence is especially consequential for adolescents relative to younger children (Fowler et al 2009).

The study of community violence in relation to young adult incarceration is important for several reasons. First, the number of adolescents who witness community violence constitutes a major public health problem in the United States, with the majority of adolescents in the US having reported witnessing violence in their lifetime (Finkelhor et al. 2015). There are also stark racial and ethnic inequalities in exposure to community violence - Black and Latina/o youth in disadvantaged communities in particular are significantly more likely to witness community violence (Zimmerman and Messner 2013). Second, previous studies find that witnessing community violence is associated with posttraumatic stress, anxiety, depression, behavioral problems, and substance use (Fowler et al 2009; Chen et al 2016; Philbrook, Buckhalt and El-Sheikh 2020; Lee, Kim and Terry 2020; Boxer, Drawve and Caplan 2020). We argue that witnessing community violence can increase the risk for criminal legal system involvement because it can lead to poorer mental health, behavioral problems, and substance use. Third, given the stark inequalities in exposure to community violence - especially by race and ethnicity - if community violence is associated with criminal legal system involvement it would also suggest that community violence plays a role in driving racial and ethnic disparities in incarceration. To the extent that exposure to community violence is associated with criminal legal system involvement, this research can inform policy interventions that seek to reduce racial and ethnic inequalities in carceral involvement which are critical to a broader decarceration strategy (Grunwald 2021).

Our study finds evidence that adolescents who witness community violence are significantly more likely to be incarcerated in young adulthood. We estimate that witnessing community violence in the previous year increases the risk for adult incarceration by 9.0 percentage points. We find heterogeneity in the effect of witnessing community violence by gender which is indicated by a significantly larger coefficient among boys. These results show that, on average, witnessing community violence increases the risk of adult incarceration among boys by 12.5 percentage points, compared to 3.8 percentage points among girls. As previous research suggests that community violence is more strongly associated with externalizing problems, we argue that witnessing community violence is especially consequential for behavioral problems among boys which can lead to a heightened risk for carceral involvement relative to girls who witness community violence (Fowler et al 2009).

INEQUALITY IN EXPOSURE TO COMMUNITY VIOLENCE

Exposure to violence is a major public health issue in the United States (Buka et al 2001). Previous studies estimate that 60 percent of children are exposed to violence, either directly or indirectly, every year in the US (Finkelhor et al 2009). In the literature, there has been relatively less attention paid toward witnessing violent events in community settings, sometimes referred to as “indirect” or “secondary” exposure to violence. Adolescents have a higher risk for witnessing violence in community or school settings. Urban adolescents are disproportionately exposed to community violence, with previous studies finding that the majority of urban adolescents will witness some form of community violence in their lifetime (e.g., Overstreet and Braun 2000). Studies also find significant racial and ethnic disparities in exposure to community violence, with previous research finding substantially higher rates among Black and Latina/o youth (Zimmerman and Messner 2013).

Sociological research finds that violent crime tends to be concentrated in more disadvantaged neighborhoods, including neighborhoods with higher levels of concentrated poverty and spatial isolation (Morenoff, Sampson and Raudenbush 2001; Peterson and Krivo 2010). Studies on gun violence, which is a key driver of community violence more broadly, find that shootings are often

concentrated in a small portion of street segments. For example, in a study of gun violence incidents in Boston, Braga, Papachristos and Hureau (2010) estimate that only less than 3 percent of street segments and intersections account for more than half of the city's gun incidents. Other research documents the concentration of gun violence and victimization within small networks of individuals. In Chicago, Papachristos, Wildeman and Roberto (2015) estimate that 70 percent of non-fatal gun injuries occur within a network comprising less than 6 percent of the city's total population. These studies suggest that youth who reside in disadvantaged neighborhoods with higher levels of violence can be at an increased risk for not only experiencing assaults themselves, but are also more likely to witness violent events in their community settings. Yet, there has been a dearth of sociological research on youth who witness violence, and we are aware of no research that has examined the relationship between witnessing violent events during adolescence and its relationship to criminal legal system involvement.

THE CRIMINALIZATION OF TRAUMA: MECHANISMS LINKING COMMUNITY VIOLENCE WITH YOUNG ADULT INCARCERATION

We know from previous research that justice involved populations are more likely to have histories of childhood trauma (Belknap and Holsinger 2006; Jaggi et al 2016). While sociological research has turned some attention toward the study of violence as a mechanism of inequality (Western; 2018; Sharkey 2018), there has been a dearth of research on the relationship between community violence and criminal legal system involvement. This is an important gap in the literature because community violence is particularly prevalent among disadvantaged youth and has been shown to have adverse developmental consequences for mental health and behavioral problems that can increase the risk for criminal legal system involvement. Since exposure to community violence can increase the risk for mental health issues, substance use problems, and other behavioral problems, we argue that witnessing community violence will also increase the risk of incarceration in young adulthood through what we refer to as “the criminalization of trauma.” - that is, the use of criminal legal system sanctioning as a response to behavioral and mental health problems that are rooted in childhood trauma. Trauma provides a novel way to understand how some individuals come to develop more significant mental health, substance use, and behavioral problems that can put them at an increased risk for criminal legal system involvement (Levenson, Prescott and Willis 2021). For example, it is well known that jail and prison inmates tend to have higher rates of mental health diagnoses and substance use problems, many of which can be “co-occurring” (McNiel, Binder and Robinson 2005).

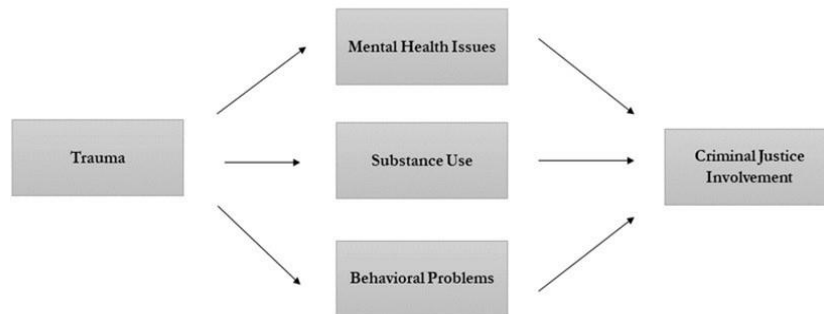
There are several complementary mechanisms that might link witnessing community violence with criminal legal system involvement. First, witnessing community violence can adversely affect adolescents' mental health. A large body of research links witnessing community violence with increased posttraumatic stress, internalizing problems (e.g., anxiety, depression) and externalizing problems (e.g., aggression). Studies have found that exposure to community violence tends to be most impactful for adolescent externalizing problems, relative to internalizing problems (Fowler et al 2009; Chen et al 2016). Some studies which estimate the effect of community violence on internalizing problems (e.g., depression) have found evidence for a “desensitization hypothesis” which suggests that youth become desensitized to violence over time. Scholars have also argued that this desensitization can impact other areas of functioning, such as aggression or academic performance (Gaylord-Harden, Cunningham and Zelencik 2011, 717).

A second reason that witnessing community violence can increase the risk for incarceration in young adulthood is because community violence can lead to externalizing behavioral problems among

adolescents. Externalizing behaviors broadly refer to behaviors that are directed outward toward the external environment, which can include aggression, disruptive behaviors and hyperactivity. In a study of incarcerated males, Kimonis et al (2011) find that anger is a key mechanism explaining the relationship between exposure to violence and violence perpetration. Other research sheds additional light on this relationship, suggesting that youth who are exposed to violence -- directly or indirectly -- are more likely to engage in weapon carrying or become involved in street gangs as a means of protecting themselves from potential victimization (Listenbee et al 2012). For example, one recent study finds that adolescents who are threatened with a weapon or experience firearm victimization are more likely to engage in firearm perpetration as adults (Teplin et al 2021). Brezina, Tekin and Topalli (2009) argue that young people in disadvantaged communities are more likely to develop a sense of “futurelessness”, referring to the anticipation of early death. In turn, they argue, this leads to high risk behaviors that are associated with immediate rewards, including violence perpetration.

A third reason that witnessing community violence can increase the risk for incarceration in young adulthood is because it can increase the risk for substance use problems. In the trauma literature, studies have found that childhood trauma (broadly) tends to be associated with substance use (Kilpatrick et al 2000;), and other research shows more directly that exposure to violence is associated with long-term substance use (Farrell and Zimmerman 2018). A primary reason that witnessing community violence can increase the risk for substance use problems is because it can lead to posttraumatic stress, internalizing problems, and externalizing problems, all of which have been shown to be associated with early initiation and chronicity of substance use (Kilpatrick et al 2000; Epstein 2000). Several studies have found an association between witnessing community violence and substance use (Zinzow et al 2009; Lee 2012). There is also reason to suspect that the effect of witnessing community violence might vary significantly by gender. For example, studies have found that males tend to exhibit more externalizing problems in response to violence, whereas females tend to exhibit more internalizing problems (Foster, Kupermine and Price 2004). Figure 1 below illustrates mechanisms linking exposure to community violence with criminal legal system involvement.

Figure 1. Mechanisms Linking Community Violence with Criminal Legal System Involvement



METHODS

The current study uses data from the in-home survey of Wave I (1994-1995) and Wave IV (2008-2009) of the National Longitudinal Study of Adolescent to Adult Health (Add Health). Add Health is a nationally representative, longitudinal survey of adolescents in the United States in grades 7 through 12 (Harris et al 2009). Add Health data were collected through a multistage cluster sampling design. The Add Health study sampled high schools and middle schools from a list of U.S. high schools maintained by Quality Education Data Inc. The initial survey was conducted in schools and included a total of 90,118 students, a 79 percent response rate. The first in-home survey was conducted in 1995 and included 20,745 students that were selected from the school rosters using a stratified sampling design which was based on grade and sex. The response rate for the Wave 1 in home survey was 80 percent. I use data for respondents that had not missing sampling weights and completed Waves I and IV of the Add Health in-home questionnaires (N = 14,800).

Measures

Incarceration in young adulthood (ages 18-34) is the key dependent variable in the study. We focus on incarceration in young adulthood because the risk for incarceration during this period is particularly high (Barnert et al 2021). Moreover, incarceration in young adulthood can have cascading effects on life trajectories, resulting in poorer labor market and educational prospects, and a higher risk for chronic homelessness which can also increase the risk for reincarceration (Kim 2015; Cox et al 2020). In the analytic sample, 14.3 percent of adolescents become incarcerated at the age of 18 or older. The average age of first incarceration in the analytic sample is 19.

Witnessing community violence is the key independent variable for this study, measured at Wave I. This measure is derived from the following posed to the adolescent respondents, “in the past 12 months, you saw someone shoot or stab another person” (0 = Never; 1 = Once; 2 = More than once). Given the skewed responses to this variable, I re-coded responses into binary categories (0 =

Never; 1 = One or more times). Using this reconstructed binary measure, I estimate that 8.4 percent of adolescents in the analytic sample report having witnessed one or more violent events in the previous year.

We control for several potential confounding variables. For race and ethnicity, we limit the sample to those who have a single racial/ethnic response in the following categories (Non-Hispanic White = 0; Non-Hispanic Black = 1) (Non-Hispanic = 0; Hispanic = 1). This excludes 2,957 respondents from the sample, 43 of which have an unknown race/ethnicity. Other control variables include family structure at birth (0 = two biological or adoptive parents; 1 = Single Mother Family; 2 = Single Father Family; 3 = Stepparent family), gender (Female = 0; Male = 1), family income, respondent’s age at Wave I, mother’s total years of schooling, and parenting practices. Parenting practices is a composite measure used to gauge parenting practices from several items at Wave 1. These measures gauge parents’ responsiveness, parental monitoring, parental warmth, and parent-child communication. They include the following items: “You are satisfied with your relationship with your mother/father”, “You are satisfied with the way your mother/father and you communicate”, and “Most of the time your mother/father is warm and loving toward you” (1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree; 5 = strongly disagree).

A total of 2,957 missing had at least one missing value. I constructed 20 datasets using multiple imputation by chained equations (MICE) in Stata 15.1. MICE allows researchers to conduct multiple imputation under scenarios where there are missing values on multiple variables of interest using chained regression equations (White, Royston, and Wood 2010). There were a total of 14 missing observations on the dependent variable. I include the dependent variables in the imputation and drop these missing values after the imputation procedure. This leads to a final analytic sample of 11,829 observations. Survey weights were included for the imputation models (Reist and Larsen 2012). We re-estimate all models in the analysis on the original data using listwise deletion. The results using listwise deletion did not differ significantly compared to the results using the imputed datasets. Table 1 shows means for the covariates and outcome for the imputed data.

Table 1. Mean Outcomes and Covariates for Analytic Sample

	(1) Mean
Incarcerated (18 or Older)	0.143 (0.006)
Witnessed Community Violence	0.084 (0.006)
Age (Wave 1)	15.199 (0.126)
Non-Hispanic White	0.291 (0.031)
Male	0.505 (0.007)
Mother’s Total Years of Schooling	13.216 (0.088)
Family Structure	0.221

	(0.012)
Family Income (logged)	3.505
	(0.036)
Observations	11,829

Standard errors in parentheses

RESULTS

Exposure to Community Violence and Adult Incarceration

Table 2 shows the bivariate relationship between witnessing community violence and adult incarceration. This relationship is also shown among those who are incarcerated by race and ethnicity. First, these results show that those who report witnessing community violence during adolescence are more likely to be incarcerated in adulthood. The bivariate results indicate that 15.4 percent of adolescents who witness community violence will become incarcerated in adulthood compared to 7.3 percent among adolescents who do not witness community violence, an 8.1 percentage point gap. We also find significant racial and ethnic disparities in witnessing community violence among those who are incarcerated. Among those who become incarcerated in adulthood, only 10.7 percent of incarcerated Whites report witnessing community violence in adolescence compared to 26.4 percent among Blacks and 26.9 percent of Latina/os.

Table 2. Exposure to Community Violence History by Adult Incarceration History

	By Incarceration History		Among Incarcerated		
	No Incarceration	Incarcerated	White	Black	Hispanic
Witnessed Community Violence	0.073	0.154	0.107	0.264	0.269
	(0.006)	(0.013)	(0.013)	(0.028)	(0.060)
Observations	10,202	1,627	980	521	126

Standard errors in parentheses

Effect of Witnessing Community Violence on Young Adult Incarceration

Table 3 displays results from LPM models estimating the association between witnessing community violence and young adult incarceration. These results indicate that witnessing community violence is positively associated with adult incarceration even after accounting for several potential confounders. For model estimates among the full analytic sample, the coefficient indicates that witnessing community violence increases the probability of incarceration in adulthood by 9 percentage points. Additional model results stratified by race and ethnicity show relatively stable effect sizes. Witnessing community violence increases the probability of adult incarceration by 9.2 percentage points among Non-Hispanic Whites and by 7.9 percentage points among Non-Hispanic Blacks. Among Hispanics, both of which are statistically significant. Witnessing violence increases the probability of adult incarceration by 9.9 percentage points, although this result is not statistically significant which is likely due to the smaller number of Hispanics in the sample.

Table 3. LPM Estimates for the Effect of Community Violence on Young Adult Incarceration

	Full Sample	Non-Hispanic White	Non-Hispanic Black	Hispanic
Witnessed Community Violence	0.090*** (0.017)	0.092*** (0.024)	0.079** (0.030)	0.099 (0.054)
Single Mother Family	0.049*** (0.014)	0.058*** (0.017)	0.046 (0.023)	-0.022 (0.048)
Single Father Family	0.014 (0.048)	0.058 (0.063)	-0.047 (0.087)	-0.207*** (0.040)
Stepparent Family	0.054 (0.056)	-0.020 (0.060)	0.231 (0.126)	0.033 (0.116)
Family Income (logged)	-0.028*** (0.008)	-0.033*** (0.009)	-0.006 (0.013)	-0.043 (0.023)
Parent-Child Relationship Quality	-0.026*** (0.006)	-0.025*** (0.007)	-0.024 (0.014)	-0.041* (0.020)
Age (Wave 1)	0.001 (0.003)	0.003 (0.003)	-0.005 (0.007)	0.001 (0.007)
Non-Hispanic Black	0.017 (0.016)			
Hispanic	-0.018 (0.020)			
Male	0.140*** (0.009)	0.126*** (0.011)	0.200*** (0.023)	0.154*** (0.040)
Mother's Total Years of Schooling	-0.006** (0.002)	-0.007* (0.003)	-0.009 (0.005)	0.003 (0.007)
Constant	0.326*** (0.052)	0.331*** (0.064)	0.376** (0.141)	0.325 (0.174)
Observations	11,829	7,845	2,966	1,018

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ *Effect Heterogeneity by Gender*

Table 4 displays results from LPM models estimating the association between witnessing community and young adult incarceration by gender. These results indicate that witnessing community violence significantly increases the risk for young adult incarceration among female and male adolescents, but we find a significantly larger effect among males. The coefficients from the LPM models show that witnessing community violence leads to a 3.8 percentage point increase in the probability of young adult incarceration for females. For males, we find that witnessing community violence leads to a

12.5 percentage point increase in the probability of young adult incarceration. These results are both statistically significant.

Table 4. LPM Estimates for the Effect of Community Violence on Young Adult Incarceration by Gender

	Women	Men
Witnessed Community Violence	0.038* (0.018)	0.125*** (0.026)
Single Mother Family	0.019 (0.013)	0.076** (0.025)
Single Father Family	0.091 (0.069)	-0.055 (0.067)
Stepparent Family	0.005 (0.054)	0.089 (0.086)
Family Income (Logged)	-0.015* (0.008)	-0.040** (0.013)
Parent-Child Relationship Quality	-0.018** (0.006)	-0.041** (0.013)
Age (Wave 1)	-0.000 (0.002)	0.001 (0.004)
Non-Hispanic Black	0.006 (0.015)	0.031 (0.024)
Hispanic	-0.010 (0.019)	-0.019 (0.037)
Mother's Total Years of Schooling	-0.004 (0.002)	-0.010** (0.004)
Constant	0.244*** (0.051)	0.597*** (0.095)
Observations	6,324	5,505

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

CONCLUSION

Sociological research has documented adverse consequences associated with incarceration, including poorer mental health, diminished labor market prospects, and continual involvement and entrapment within these systems over time (Wakefield and Uggen 2010; National Research Council 2014; Kirk and Wakefield 2018). Yet, within the sociological literature, there has been a dearth of research exploring the ways in which individuals become involved in these systems in the first place. In this paper, we argue that exposure to community violence is an overlooked, but important risk factor for justice system involvement. Given the wide range of potential adverse consequences associated with witnessing community violence - mental health issues, substance, and behavioral

problems - we argue that witnessing violence in the community significantly increases the risk for incarceration in young adulthood.

Our study provides several important findings for sociological literature and policy. First, our study is the first to empirically document an association between witnessing community violence and subsequent criminal legal system involvement in young adulthood. We find that the effect of witnessing community violence on young adult incarceration is especially large among males relative to females. Our findings suggest that exposure to community violence is an important, but overlooked determinant of criminal legal system involvement in the US. Our findings also provide important insights for the literature on criminal legal system entanglement, suggesting that exposure to violence constitutes a common and significant life stressor and is likely an important mechanism in the production of racial and ethnic inequalities in criminal legal system involvement.

Chapter 5

Conclusion

Exposure to childhood trauma and violence is widespread in the United States and has been referred to as a “silent epidemic” (Kaffman 2009). For many children, exposure to trauma, whether it occurs in the household or community, is often a recurring experience, with an estimated 1 in 3 experiencing multiple traumas by the age of 16 (Copeland et al 2007). Studies spanning multiple disciplines find that childhood trauma is associated with posttraumatic stress, behavioral problems, substance use and poor mental health (Scheidell et al 2017; Copeland et al 2007; Copeland et al 2018).

Since childhood trauma can have long-lasting consequences on children’s cognitive development, social-emotional development and mental health, the study of trauma is of central importance to sociological research on inequality. Yet, there has been a dearth of sociological research that engages with the concept of trauma both theoretically and empirically. In response, this dissertation provides three empirical analyses rooted in the sociological study of trauma. To do so, each of the three chapter uses rich longitudinal data from the National Longitudinal Study of Adolescent to Adult Health.

In the first analytical chapter, I show that neighborhood racial segregation is associated with adolescent exposure to violence, net of neighborhood disadvantage-advantage. These results suggest that racial segregation – due to spatial isolation, legal cynicism, and neighborhood disinvestment – is an important driver of exposure to violence.

In the second analytic chapter, I examine whether and to what extent complex trauma in childhood mediates the association between family structure at birth and several important “markers” of life chances in adulthood, including earnings, college completion and incarceration. I argue that children born to single mothers, relative to children born to two parent families, will be more likely to experience multiple exposures to trauma due to economic strain, lower levels of parental supervision, and family instability. I find evidence that complex trauma mediates a significant portion of the relationship between family structure at birth and the adult outcomes. These results contribute to a longstanding puzzle in sociological research by offering a novel mechanism – exposure to trauma – to explain why children from single mother families do not fare as well as children raised in two parent families.

In the final analytic chapter, I examine the relationship between witnessing community violence and criminal legal system involvement, specifically, incarceration in young adulthood. This chapter builds on prior qualitative research which shows high rates of stressful life events among justice involved populations but (e.g., Western 2018). This analysis is the first to examine how exposure to community violence might be an important factor in explaining why some individuals face a higher risk of becoming involved with the criminal legal system. I argue that exposure to community violence can lead to poorer mental health, substance use problems, and behavioral problems that can increase the risk for criminal legal system involvement, especially among boys. In the analysis, I find that adolescents who report witnessing a shooting or stabbing during the previous year are significantly more likely to become incarcerated in young adulthood. Moreover, I find that this effect is significantly larger among boys relative to girls.

Taken together, the empirical analyses presented in this dissertation offer insight into a new subfield of sociological analysis: the sociology of trauma. While each of these analyses are narrow in their scope, they offer important insights into the contours and consequences of childhood trauma. First, while trauma is prevalent among children in the US (Copeland et al 2007), exposure to trauma is also heavily rooted in socioeconomic disadvantages. In the first two analytical chapters, I show that neighborhood racial segregation (Chapter 2), and family structure (Chapter 3) are important determinants of trauma and exposure to violence. These results suggest that addressing structural inequities rooted in community and family disadvantage are crucial to reducing inequalities in violence and trauma. Second, I also show that trauma and violence have important consequences for long-term outcomes that are of interest to sociologists. I show that complex trauma mediates a significant portion of the relationship between family structure and adult outcomes, suggesting that trauma is a key mechanism through which the effects of family structure operate (Chapter 3). Finally, I show that exposure to community is an important but overlooked driver of criminal legal system involvement, building on previous qualitative research which suggests that exposure to violence is common in the life histories of justice involved populations (Western 2018). Future sociological research would greatly benefit from incorporating trauma as a category of analysis, especially within the context of socioeconomic and racial inequalities.

REFERENCES

- Adelman, Robert M. 2004. "Neighborhood Opportunities, Race, and Class: The Black Middle Class and Residential Segregation." *City & Community* 3(1):43-63.
- Alamillo, Julia. 2016. "Family Structure and the Reproduction of Inequality: A Decomposition Approach." Working Paper 49. Chicago, IL: Mathematica Policy Research.
- Altintas, Evrim. 2016. "The Widening Education Gap in Developmental Child Care Activities in the United States, 1965–2013." *Journal of Marriage and Family* 78(1):26-42.
- Amato, Paul R. and Frieda Fowler. 2002. "Parenting Practices, Child Adjustment, and Family Diversity." *Journal of Marriage and Family* 64(3):703-716.
- Amaya-Jackson L., Absher, L.E., Gerrity, E.T., Layne, C.M., Halladay Goldman, J. 2021. *Beyond the ACE Score: Perspectives from the NCTSN on Child Trauma and Adversity Screening and Impact*. Los Angeles, CA & Durham, NC: National Center for Child Traumatic Stress
- American Psychological Association. 2021. "Trauma and Shock."
<https://www.apa.org/topics/trauma>
- Anda, Robert F., Vincent J. Felitti., John D. Walker, Charles Whitfield., Bruce D. Perry., Shanta R. Dube and Wayne H. Giles. 2006. "The enduring effects of abuse and related adverse experiences in childhood: A convergence of evidence from neurobiology and epidemiology." *Eur Arch Psychiatry Clin Neurosci* 256(3):174-186.
- Arata, Catalina M., Jennifer Langhinrichsen-Rohling, David Bowers and Laura O’Farrill-Swails. 2005. "Single versus Multi-Type Maltreatment: An Examination of the Long-Term Effects of Child Abuse." *Journal of Aggression, Maltreatment & Trauma* 11(4):29-52.
- Augustine, Jennifer March. 2014. "Maternal Education and the Unequal Significance of Family Structure for Children's Early Achievement." *Social Forces* 93(2):687-718.
- Assari, Shervin. 2020. "Family Socioeconomic Status and Exposure to Childhood Trauma: Racial Differences." *Children* 7(6):57.
- Astone, Nan Marie and Sara S. McLanahan. 1991. Family Structure, Parental Practices, and High School Completion. *American Sociological Review* 56:309–320.
- Barrett, Anne E., and R. Jay Turner. 2005. "Family Structure and Mental Health: The Mediation Effects of Socioeconomic Status, Family Process, and Social Stress." *Journal of Health and Social Behavior* 46:156-169.
- Beard, Jessica H., Christopher N. Morrison, Sara F. Jacoby, Beidi Dong, Randi Smith, Carrie A. Sims and Douglas J. Wiebe. 2017. "Quantifying Disparities in Urban Firearm Violence by Race and Place in Philadelphia, Pennsylvania: A Cartographic Study." *American Journal of Public Health* 107(3):371-373.
- Belknap, J., & Holsinger, K. 2006. "The gendered nature of risk factors for delinquency." *Feminist Criminology* 1:48-71
- Bernadi, Fabrizio and Jonas Radl. 2014. "The long-term consequences of parental divorce for children’s educational attainment." *Demographic Research* 30(61):1653-1680.
- Blair, Clancy and C. Cybele Raver. 2016. "Poverty, Stress, and Brain Development: New Directions for Prevent and Intervention." *Acad Pediatr* 16(3 Suppl): S30-S36.
- Bloome, Deidre. 2017. "Childhood Family Structure and Intergenerational Income Mobility in the United States." *Demography* 54:541-569.
- Bonilla-Silva, Eduardo. 2003. *Racism without Racists: Color-Blind Racism and the Persistence of Racial Inequality in the United States*. New York: Rowan and Littlefield Publishers.
- Bowles, Samuel and Herbert Gintis. 2002. "The Inheritance of Inequality." *Journal of Economic Perspectives* 16(3):3-30.
- Boxer, Paul, Grant Drawve and Joel M. Caplan. 2020. "Neighborhood Violent Crime and Academic Performance: A Geospatial Analysis." *Am J Community Psychol*

- Braga, Anthony A., Andrew V. Papachristos and David M. Hureau. 2010. "The Concentration and Stability of Gun Violence at Micro Places in Boston, 1980-2008." *Journal of Quantitative Criminology* 26:33-53.
- Braveman, Paula, Susan Egerter and David R. Williams. 2011. "The Social Determinants of Health: Coming of Age." *Annual Review of Public Health* 32:381-398.
- Breslau, Naomi, Ronald C. Kessler, Howard D. Childcoat et al. 1998. "Trauma and Posttraumatic Stress Disorder in the Community: The 1996 Detroit Area Survey of Trauma." *Arch Gen Psychiatry* 55(7):626-632.
- Brezina, Timothy., Erdal Tekin and Volkan Topalli. 2009. "'MIGHT NOT BE A TOMORROW': A MULTIMETHODS APPROACH TO ANTICIPATED EARLY DEATH AND YOUTH CRIME." *Criminology* 47(4): 1091-129.
- Brunson, Rod K. 2007. Police don't like Black people: African American young men's accumulated police experiences. *Criminology & Public Policy* 6:71-102
- Brunson, Rod K., and Jody Miller. 2006. Young black men and urban policing in the United States. *British Journal of Criminology* 46:613-40
- Buka, Stephen L., Theresa L. Stichick, Isolde Birdthistle and Felton J. Earls. 2001. "Youth Exposure to Violence: Prevalence, Risks, and Consequences." *American Journal of Orthopsychiatry* 71(3):298-310.
- Cavanagh, Shannon E. 2008. "Family Structure History and Adolescent Adjustment." *Journal of Family Issues* 29(7):944-980.
- Chen P, Voisin DR, & Jacobson KC. 2016. "Community violence exposure and adolescent delinquency: Examining a spectrum of promotive factors." *Youth & Society* 48(1): 33-5
- Cheon, Chaeyoung, Yuzhou Lin, David J. Harding, Wei Wang and Dylan S. Small. 2020. "Neighborhood Racial Composition and Gun Homicides." *JAMA Network Open* 3(11):e2027591.
- Cloitre, Marylene, Lisa R. Cohen and Karestan C. Koenen. 2006. *Treating the trauma of childhood abuse: Therapy for the interrupted life*. New York: Guilford.
- Cross, Christina J. "Racial/Ethnic Differences in the Association Between Family Structure and Children's Education." 2020. *Journal of Marriage and Family* 81(2):691-712
- Cook, A., Joseph Spinazzola, Julian Ford, Cheryl Lanktree, Margaret Blaustein, Marylene Cloitre et al. 2005. "Complex trauma in children and adolescents." *Psychiatric Annals* 35 390-398
- Cooper, Carey E., Sara S. McLanahan, Sara O. Meadows and Jeanne Brooks-Gunn. 2009. "Family Structure Transitions and Maternal Parenting Stress." 71(3): 558-574.
- Copeland, William E., Lilly Shanahan, Jennifer Hinesley, Robin F. Chan., Karolina A. Aberg., John A. Fairbank., Edwin J. C. G. van der Oord and Jane Costello. 2018. "Association of Childhood Trauma Exposure with Adult Psychiatric Disorders and Functional Outcomes." *JAMA Network Open* 1(7):e184493.
- Copeland, William E., Gordon Keeler, Adrian Angold et al. 2007. "Traumatic Events and Posttraumatic Stress in Childhood." *Arch Gen Psychiatry* 64(5):577-84.
- Cox, Robynn, John Lahey, Harmony Rhoades, Benjamin Henwood and Suzanne Wenzel. 2020. Does the Timing of Incarceration Impact the Timing and Duration of Homelessness? Evidence from the "Transitions to Housing" Study." *Justice Quarterly* 38(6):1070-1094.
- Demo, David H., and Alan C. Acock. 1996. "Singlehood, Marriage, and Remarriage: The Effects of Family Structure and Family Relationships on Mothers' Well-Being." *Journal of Family Issues* 17(3):388-407.
- DePrince, Anne P., and Jennifer J. Freyd. 2004. "Forgetting trauma stimuli." *Psychological Science* 15(7):488-92.

- Desmond, Matthew and Bruce Western. 2018. "Poverty in America: New Directions and Debates." *Annual Review of Sociology* 44:305-318.
- Desmond, Matthew, Andrew V. Papachristos and David S. Kirk. 2016. "Police Violence and Citizen Crime Reporting in the Black Community." *American Sociological Review* 81(5):857-876.
- Duncan, Greg and Richard Murnane. 2011. *Wither Opportunity*. New York: Russell Sage Foundation Press.
- Duru, O. Kenrik, Nina T. Harawa, Dulcie Kermah and Keith C. Norris. 2012. "Allostatic Load Burden and Racial Disparities in Mortality." *J Natl Med Assoc* 104(1-2):89-95.
- Eemon, Mary Keegan and Rachel M. Zuehl B.S. 2010. "Maternal Depression and Physical Punishment as Mediators of the Effect of Poverty on Socioemotional Problems of Children in Single-Mother Families." *American Journal of Orthopsychiatry* 71(2):218-226.
- Ellwood, David T and Christopher Jencks. 2004. "The Spread of Single-Parent Families in the United States Since 1960." KSG Working Paper No. RWP04-008.
- Epstein, J., Botvin, G., Diaz, T., Williams, C., & Griffin, K. 2000. "Aggression, victimization and problem behavior among inner city minority adolescents." *Journal of Child & Adolescent Substance Abuse* 9:51-66.
- Evans, Gary W., and Pilyoung Kim. 2013. "Childhood Poverty, Chronic Stress, Self-Regulation, and Coping." *Child Development Perspectives* 7(1):43-48.
- Farrell, Chelsea and Gregory M. Zimmerman. 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.
- Felitti Vincent J., Robert F. Anda., Dale Nordenberg., David F. Williamson., Alison M. Spitz., Valerie Edwards., Mary P. Koss and James S. Marks. 1998. "Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study." *Am J Prev Med* 14(4):245-
- Finkelhor, David, Heather A. Turner, Anne Shattuck and Sherry L. Hamby. 2015. "Prevalence of Childhood Exposure to Violence, Crime, and Abuse: Results From the National Survey of Children's Exposure to Violence." *JAMA Pediatrics* 169(8):746-754.
- Finkelhor, David, Heather Turner, Richard Ormrod, and Sherry L. Hamby. 2009. "Violence, Abuse, and Crime Exposure in a National Sample of Children and Youth." *Pediatrics* 124(5):1411-23.
- Finkelhor, David, Heather Turner, Richard Ormrod, Sherry Hamby and Kristen Kracke. 2009. *Children's Exposure to Violence: A Comprehensive National Survey*. Washington, DC: U.S. Department of Justice, Office of Justice Programs.
- Finkelhor, David, Richard K. Ormrod and Heather A. Turner. 2007a. "Poly-victimization: a neglected component in child victimization." *Child Abuse & Neglect* 31(1):7-26.
- Finkelhor, David, Richard K. Ormrod and Heather A. Turner. 2007b. "Polyvictimization and trauma in a national longitudinal cohort." *Development and Psychopathology* 19(1):149-166.
- Finkelhor, David, Richard Ormrod, Heather Turner and Sherry L. Hamby. 2005. "The Victimization of Children and Youth: A Comprehensive, National Survey." *Child Maltreatment* 10(1):5-25.
- Ford, J., Elhai, J., Comor, D., and Frueh, B.C. 2010. "Polyvictimization and risk of posttraumatic, depressive, and substance use disorder and involvement in delinquency in a national sample of adolescents." *Journal of Adolescent Health* 46:545-552.

- Foster, Jennifer D., Gabriel P. Kupermine and Ann W. Price. 2004. "Gender Differences in Posttraumatic Stress and Related Symptoms Among Inner-City Minority Youth Exposed to Community Violence." *Journal of Youth and Adolescence* 33(1):59-69.
- Fowler, Patrick J., Carolyn J. Tompsett, Jordan M. Braciszewski, Angela J. Jacques-Tiura, Boris B. Baltes. 2009. "Community violence: a meta-analysis on the effect of exposure and mental health outcomes of children and adolescents." *Dev Psychopathol* 21(1):227-59.
- Gaylord-Harden, Noni K., Jamila A. Cunningham and Brett Zelencik. 2011. "Effects of exposure to community violence on internalizing symptoms: does desensitization to violence occur in African American youth?" *J Abnorm Child Psychol* 39(5):711-9.
- Geronimus, Arline T., Margaret Hicken, Danya Keene and John Bound. 2006. "Weathering and Age Patterns of Allostatic Load Scores Among Blacks and Whites in the United States." *American Journal of Public Health* 96:826-833.
- Geronimus, Arline T. 1992. "The weathering hypothesis and the health of African-American women and infants: evidence and speculations." *Ethn Dis* 2:207-221.
- Gibson, Chris L., Sara Z. Morris and Kevin M. Beaver. 2009. "Secondary Exposure to Violence During Childhood and Adolescence: Does Neighborhood Context Matter?" *Justice Quarterly* 26(1):30-57.
- Grunwald, Ben. 2021. "Toward an Optimal Decarceration Strategy" *Stanford Law & Policy Review* (2022 Forthcoming), Duke Law School Public Law & Legal Theory Series No. 2021-41, Available at SSRN: <https://ssrn.com/abstract=3931603>
- Guidi, Jenny, Marcella Lucente, Nicoletta Sonino and Giovannie A. Fava. 2021. "Allostatic Load and Its Impact on Health: A Systematic Review." *Psychother Psychosom* 90:11-27.
- Harper, Cynthia C., and Sara S. McLanahan. 2006. "Father Absence and Youth Incarceration." *Journal of Research on Adolescence* 14(3):369-397.
- Harris, K.M., C.T. Halpern, E. Whitsel, J. Hussey, J. Tabor, P. Entzel, and J.R. Udry. 2009. The National Longitudinal Study of Adolescent to Adult Health: Research Design. Available at: <https://addhealth.cpc.unc.edu//documentation/study-design>
- Harris, Kathleen Mullan. 2009. The National Longitudinal Study of Adolescent to Adult Health (Add Health), Waves I & II, 1994-1996; Wave III, 2001-2002; Wave IV, 2007-2009. Chapel Hill, NC: Carolina Population Center, University of North Carolina at Chapel Hill.
- Haskett, Mary E., Sharon G. Portwood and Kristen M. Lewis. 2010. Physical Child Abuse. Christopher J. Ferguson (Ed.), *Violent crime: Clinical and social implications* (pp. 207-228).
- Hawkins, Darnell F., John H. Laub, Janet L. Lauritsen, and Lynn Cothorn. 2000. "Race, Ethnicity, and Serious and Violent Juvenile Offending." *Juvenile Justice Bulletin*. Washington, DC: U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention.
- Haynie, Dana L., Eric Silver, and Brent Teasdale. 2006. "Neighborhood Characteristics, Peer Networks, and Adolescent Violence." *Journal of Quantitative Criminology* 22:147-169.
- Haynie, Dana L., and D. Wayne Osgood. 2005. "Reconsidering Peers and Delinquency: How do Peers Matter." *Social Forces* 84(2):1109-1130.
- Heckman, James J. 2006. "Skill Formation and the Economics of Investing in Disadvantaged Children." *Science* 312:1900-1902.
- Heron, Melonie. 2019. *Deaths: Leading Causes for 2017*. National Vital Statistics Reports 68(6):1-77.
- Hoeben, Evelien M., and Frank M. Weerman. 2016. "Why is Involvement in Unstructured Socializing Related to Adolescent Delinquency." *Criminology* 54(2):242-281.
- Howard, Stephenie. 2021. "A Causal Model of Children's Vicarious Traumatization." *Journal of Child & Adolescent Trauma* 4:1-12
- Intrator, Jake., Jonathan Tannen and Douglas S. Massey. 2016. "Segregation by race and income in the United States 1970-2010." *Social Science Research* 60:45-60.

- Jaggi, Lena J., Briana Mezuk, Daphne C. Watkins and James S. Jackson. 2016. "The Relationship between Trauma, Arrest, and Incarceration History among Black Americans: Findings from the National Survey of American Life." *Soc Ment Health* 6(3):187-206.
- Jacobsen, Wade C., Garrett T. Pace and Nayan G. Ramirez. 2019. "Punishment and Inequality at an Early Age: Exclusionary Discipline in Elementary School." *Social Forces* 97(3):973-998.
- Jencks, Christopher and Laura Tach. 2005. "Would Equal Opportunity Mean More Mobility?" KSG Working Paper No. RWP05-037.
- Kaffman, Aric. 2009. "The silent epidemic of neurodevelopmental injuries." *Biological Psychiatry* 66:624–626.
- Kalesan, Bindu., Mrithyunjay A. Vyliparambil, Erin Bogue, Marcos D. Villarreal, . . . et al. 2016. "Race and ethnicity, neighborhood poverty and pediatric firearm hospitalizations in the United States." *Annals of Epidemiology* 26(1):1-6.e2.
- Kalil, Ariel and Rebecca Ryan. 2020. "Parenting Practices and Socioeconomic Gaps in Childhood Outcomes." *Future of Children* 30(1):29-54.
- Kalil, Ariel. 2015. "Inequality Begins at Home: The Role of Parenting in the Diverging Destinies of Rich and Poor Children." (Pp. 63-83) In *Families in an Era of Increasing Inequality* Eds. Amato et al. Zurich: Springer International.
- Kalil, Ariel., Rebecca Ryan and Michael Corey. 2012. "Diverging destinies: Maternal education and the developmental gradient in time with children." *Demography* 49:1361–1383.
- Karlson, Kristian Bernt, Anders Holm and Richard Breen. 2012. "Comparing Regression Coefficients Between Same-sample Nested Models Using Logit and Probit: A New Method." *Sociological Methodology* 42(1):286-313.
- Khaleque Abdul. 2013. "Perceived parental warmth, and children's psychological adjustment, and personality dispositions: A meta-analysis." *Journal of Child and Family Studies* 22(2): 297–306.
- Kilpatrick, D. G., Acierno, R., Saunders, B., Resnick, H. S., Best, C. L., & Schnurr, P. P. (2000). Risk factors for adolescent substance abuse and dependence: Data from a national sample. *Journal of Consulting and Clinical Psychology*, 68, 19–30
- Kim, Yujin. 2015. "The Effect of Incarceration on Midlife Health: A Life-Course Approach." *Population Research and Policy Review* 34:827-849.
- Kimonis, Eva R., James V. Ray, Jessica R. Branch and Elizabeth Cauffman. 2011. "Anger Mediates the Relation Between Violence and Exposure and Violence Perpetration in Incarcerated Boys." *Child Youth Care Forum* 40:381-400.
- Kirk, David S., and Sara Wakefield. 2018. "Collateral Consequences of Punishment: A Critical Review and Path Forward." *Annual Review of Criminology* 1:171-194.
- Krivo, Lauren J., Ruth D. Peterson and Danielle C. Kuhl. 2009. "Segregation, racial structure, and neighborhood violent crime." *American Journal of Sociology* 114(6):1765-802.
- Lauritsen, Janet L. and Norman A. White. 2001. "Putting Violence in Its Place: The Effects of Race, Ethnicity, Gender and Place on the Risk for Violence." *Criminology & Public Policy* 1:37-60.
- Lee, Dohoon and Sara McLanahan. 2015. "Family Structure Transitions and Child Development: Instability, Selection, and Population Heterogeneity." *American Sociological Review* 80(4):738-763.
- Lee, Haenim., Youngmi Kim and Jasmine Terry. 2020. "Adverse childhood experiences (ACEs) on mental disorders in young adulthood: Latent classes and community violence exposure."
- Lee, Rosalyn. 2012. "Community Violence Exposure and Adolescent Substance Use: Does Monitoring and Positive Parenting Moderate Risk in Urban Communities?" *Journal of Community Psychology* 40(4):406-421.
- Leeb, Rebecca T., Leonard J. Paulozzi, Cindi Melanson, Thomas R. Simon and Ileana Arias. 2007. *Child Maltreatment Surveillance: Uniform Definitions for Public Health and Recommended*

- Data Elements, Version 1.0. Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Available at: https://www.cdc.gov/violenceprevention/pdf/cm_surveillance-a.pdf
- Levenson, Jill S., David S. Prescott, and Gwenda M. Willis. 2021. "Trauma-Informed Treatment Practices in Criminal Justice Settings" in *Handbook of Issues in Criminal Justice Reform in the United States*, Jeglic, Elizabeth and Cynthia Calkins (Eds).
- Light, Michael T., and Julia T. Thomas. 2019. "Segregation and Violence Reconsidered: Do Whites Benefit from Residential Segregation?" *American Sociological Review* 84(4):690-725.
- Listenbee, Robert L. Jr., Joe Torre, Gregory Boyle, Sharon W. Cooper, Sarah Deer, Deanne Tilton Durfee, . . . , Antonio Taguba. 2012. *Report of the Attorney General's National Task: Children Exposed to Violence*. Washington, DC: US Department of Justice.
- Louie, Patricia and Blair Wheaton. 2019. "The Black-White Paradox Revisited: Understanding the Role of Counterbalancing Mechanisms during Adolescence." *Journal of Health and Social Behavior* 60(2):169-187.
- Luthra, Rohini., Robert Abramovitz., Rich Greenberg., Alan Schoor., Jeffrey Newcorn., James Schmeidler., Paul Levine., Yoko Nomura and Claude M. Chemtob. 2009. "Relationship between type of trauma exposure and posttraumatic stress disorder among urban children and adolescents." *J Interpersonal Violence* 24(11): 1919-27.
- Massoglia, Michael and William Alex Pridemore. 2015. "Incarceration and Health." *Annual Review of Sociology* 41:291-310.
- McNiel, Dale E., Renee L. Binder and Jo C. Robinson. 2005. "Incarceration Associated With Homelessness, Mental Disorder, and Co-Occurring Substance Abuse." *Psychiatric Services* 56(7): 840-846.
- Mandemakers, Jornt J., and Matthijs Kalmijn. 2014. "Do mother's and father's education condition the impact of parental divorce on child well-being?" *Social Science Research* 44(1):187-199.
- Maruschak, Laura M., and Todd D. Minton. 2020. *Correctional Populations in the United States, 2017-2018*. US Department of Justice, Washington, DC
- Martin, Christina Gamache, Lisa DeMarni Cromer, Anne P. DePrince and Jennifer J. Freyd. 2013. "The Role of Cumulative Trauma, Betrayal, and Appraisals in Understanding Trauma Symptomatology." *Psychol Trauma* 52(2):110-118.
- Martin, Molly A. 2012. "Family structure and the intergenerational transmission of educational advantage." *Social Science Research* 41(1):33-47.
- Massey, Douglas S. 2020. "Still the Linchpin: Segregation and Stratification in the USA." *Race and Social Problems* 12:1-12.
- Massey, Douglas S. 2004. "Segregation and Stratification: A Biosocial Perspective." *Du Bois Review* 1(1):7-25.
- McEwen, Craig A. and Bruce S. McEwen. 2017. "Social Structure, Adversity, Toxic Stress, and Intergenerational Poverty: An Early Childhood Model." *Annual Review of Sociology* 43:445-472.
- McLanahan, Sara and Christine Percheski. 2008. "Family Structure and the Reproduction of Inequalities." *Annual Review of Sociology* 34:257-276.
- McLanahan, Sara. 2004. "Diverging destinies: How children are faring under the second demographic transition." *Demography* 41:607-627.
- McLaughlin, Katie A., Karestan C. Koenen, Eric D. Hill, Maria Petukhova et al. 2013. "Trauma Exposure and Posttraumatic Stress Disorder in a National Sample of Adolescents." *J Am Acad Child Adolesc Psychiatry* 52(8):815-830.
- Mersky, Joshua P., Lawrence M. Berger., Arthur J. Reynolds and Andrea N. Gromoske. 2009. Risk Factors for Child and Adolescent Maltreatment." *Child Maltreatment* 14(1):73-88.

- Morenoff, Jeffrey D, Robert J Sampson, and Stephen Raudenbush. 2001. "Neighborhood Inequality, Collective Efficacy, and the Spatial Dynamics of Urban Violence." *Criminology* 39:517-560.
- Morsy, Leila and Richard Rothstein. 2019. *Toxic stress and children's outcomes: African American children growing up poor are at a greater risk of disrupted physiological functioning and depressed academic achievement*. Washington, DC: Economic Policy Institute.
- Mood, Carina. 2010. "Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It." *European Sociological Review* 26(1):67-82.
- Mrug, Sylvie., Penny S. Loosier and Michael Windle. 2008. "Violence Exposure Across Multiple Contexts: Individual and Joint effects on Adjustment." *American Journal of Orthopsychiatry* 78(1):70-84.
- National Research Council. 2019. *The Promise of Adolescence: Realizing Opportunity for All Youth*. Washington, DC: The National Academies Press.
- National Research Council. 2014. *The Growth of Incarceration in the United States: Exploring Causes and Consequences*. Washington, DC: The National Academies Press.
- Overstreet, S., and Braun S. 2000. "Exposure to community violence and post-traumatic stress symptoms: mediation factors." *Am J Orthopsychiatry* 70(2):263-71.
- Papachristos, Andrew V., Christopher Wildeman and Elizabeth Roberto. 2015. "Tragic, but not random: the social contagion of nonfatal gunshot injuries." *Social Science & Medicine* 125:139-150.
- Park, Hyunjoon, Claudia Buchmann, Jaesung Choi, and Joseph J. Merry. 2016. "Learning Beyond the School Walls: Trends and Implications." *Annual Review of Sociology* 42:231-52.
- Pattillo-McCoy Mary. 1999. *Black Picket Fences. Privilege and Peril among the Black Middle Class*. Chicago: Univ. Chicago Press
- Peterson, Ruth D., and Lauren J. Krivo. 2010. *Divergent Social Worlds: Neighborhood Crime and the Racial-Spatial Divide*. New York: Russell Sage Foundation.
- Peterson, Ruth D., and Lauren J. Krivo. 1993. "Racial Segregation and Black Urban Homicide." *Social Forces* 71(4):1001-1026.
- Phillbrook, Lauren E., Joseph A. Buckhalt and Mona El-Sheikh. 2020. "Community violence concerns and adolescent sleep: Physiological regulation and race as moderators." *J Sleep Res* 29(3):e12897
- Putnam, Karen T., William W. Harris and Frank W. Putnam. 2013. "Synergistic Childhood Adversities and Complex Adult Psychopathology." *Journal of Traumatic Stress* 26(4):435-442.
- Pyrooz, David C., Richard K. Moule Jr and Scott H. Decker. 2014. "The Contribution of Gang Membership to the Victim-Offender Overlap." *Journal of Research in Crime and Delinquency* 51(3):315-348.
- Reist, Benjamin M., and Michael D. Larsen. 2012. "Post-Imputation Calibration Under Rubin's Multiple Imputation Variance Estimator." In Section on Survey Research Methods, Joint Statistical Meeting.
- Ribar, David C. 2015. "Why marriage matters for child wellbeing." *Future of Children* 25(2): 11-27.
- Scheidell, Joy D., Kelly Quinn, Susan P. McGorray, B. Christopher Frueh, Nisha N. Beharie, Linda B. Cottler and Maria R. Khan. 2018. "Childhood Traumatic Experiences and the Association with Marijuana and Cocaine Use in Adolescence through Adulthood." *Addiction* 113(1):44-56.
- Scheidell, Joy D., Kelly Quinn., Susan P. McGorray., B. Christopher Frueh., Nisha N. Beharie., Linda B. Cottler and Maria R. Khan. 2013. "Childhood traumatic experiences and the

- association with marijuana and cocaine use in adolescence through adulthood.” *Addiction* 113(1):44-56.
- Schneider, William. 2017. “Relationship Transitions and the Risk for Child Maltreatment.” *Demography* 53:1771-1800.
- Sharkey, Patrick. 2018. “The Long Reach of Violence: A Broader Perspective on Data, Theory, and Evidence on the Prevalence and Consequences of Exposure to Violence.” *Annual Review of Criminology* 1:85-102.
- Sharkey, Patrick. 2014. “Spatial Segmentation and the Black Middle Class.” *American Journal of Sociology* 119(4):903-954.
- Sharkey, Patrick. 2013. *Stuck in Place: Urban Neighborhoods and the End of Progress toward Racial Equality*. Chicago: University of Chicago Press.
- Sharkey, Patrick. 2010. The acute effect of local homicides on children’s cognitive performance. *PNAS* 107(26):11733-11738.
- Sheats, Kameron J., Sahlon M. Irving, Jim A. Mercy, Thomas R. Simon, Alex E. Crosby, Derek C. Ford, Melissa T. Merrick, Francis B. Annor and Rachel E. Morgan. 2018. “Violence-Related Disparities Experienced by Black Youth and Young Adults: Opportunities for Prevention.” *American Journal of Preventive Medicine* 55(4):462-469.
- Shonkoff, Jack P., Natalie Slopen and David R. Williams. 2021. “Early Childhood Adversity, Toxic Stress, and the Impacts of Racism on the Foundations of Health.” *Annual Review of Public Health* 42:23.1-23.20.
- Shonkoff, Jack P., and Andrew S. Garner. 2012. “The Lifelong Effects of Early Childhood Adversity and Toxic Stress.” *Pediatrics* 129:e232-e246.
- Sigle-Rushton, Wendy and Sara McLanahan. 2004. Father absence and child wellbeing: a critical review. In: Moynihan, D.P., Rainwater, L. and Smeeding, T., (eds.) *The Future of the Family*. Russell Sage Foundation, New York, USA, pp. 116-155
- Singer, Mark I., Trina Menden Anglin and Li yu Song. 1995. “Adolescents’ Exposure to Violence and Associated Symptoms of Psychological Trauma.” *JAMA* 273(6):477–482.
- StataCorp. 2015. *Stata Statistical Software: Release 14*. College Station, TX: StataCorp LP.
- Sterling, Peter and Joseph Eyer. 1988. Allostasis: A new paradigm to explain arousal pathology. In S. Fisher & J. Reason (Eds.), *Handbook of life stress, cognition and health* (p. 629–649). John Wiley & Sons.
- Tach, Laura. 2015. “Social Mobility in an Era of Family Instability and Complexity.” *ANNALS, AAPSS* 657:83-96.
- Teplin, Linda A., Nicholas S. Meyerson., Jessica A. Jakubowski et al. 2021. "Association of Firearm Access, Use, and Victimization During Adolescence With Firearm Perpetration During Adulthood in a 16-Year Longitudinal Study of Youth Involved in the Juvenile Justice System." *JAMA Netw Open* 4(2):e2034208.
- Tobler, Amy L., and Kelli A. Komro. 2010. “Trajectories of Parental Monitoring and Communication and Effects on Drug Use Among Urban Young Adolescents.” *J Adolesc Health* 46(6):560-568.
- Turanovic, Jillian J., and Travis C. Pratt. 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.
- Turner, Heather A., David Finkelhor and Richard Ormrod. 2007. “Family Structure Variations in Patterns and Predictors of Child Victimization.” *American Journal of Orthopsychiatry* 77(2):282-295.

- U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. 2021. *Child Maltreatment 2019*. <https://www.acf.hhs.gov/cb/data-research/child-maltreatment>
- VanderWeele, T.J., and S. Vansteelandt. 2014. "Mediation Analysis with Multiple Mediators." *Epidemiol Method* 2(1):95-115.
- van der Kolk, B. 2006. Clinical implications of neuroscience research in PTSD. In R.Yehuda (Ed.), *Psychobiology of posttraumatic stress disorders: A decade of progress* (Vol. 1071, pp. 277-293). Malden, MA: Blackwell Publishing.
- Vigil, James Diego. *A Rainbow of Gangs: Street Cultures in the Mega-City*. Austin: University of Texas Press.
- von Hippel, Paul T. 2007. "Regression with missing Ys: An Improved Strategy for Analyzing Multiple Imputed Data." *Sociological Methodology* 37(83-117).
- Wagmiller Robert L., Robert M. Adelman. 2009. *Childhood and Intergenerational Poverty: The Long-Term Consequences of Growing Up Poor*. New York: Natl. Cent. Child. Poverty
- Wakefield, Sara, and Christopher Uggen. 2010. "Incarceration and Stratification." *Annual Review Of Sociology* 36:387-406.
- Wang, Bo, Bonita Stanton, Xiaoming Li, Lesley Cottrell, Lynette Deveaux and Linda Kaljee. 2013. "The influence of parental monitoring and parent-adolescent communication on Bahamian adolescent risk involvement: a three-year longitudinal examination." *Social Sci Medicine* 97:161-169.
- Western, Bruce. 2018. *Homeward: Life in the Year After Prison*. New York: Russell Sage Foundation.
- Western, Bruce. 2006. *Punishment and Inequality in America*. New York: Russell Sage Foundation.
- Western, Bruce., Deirdre Bloome and Christine Percheski. 2008. "Inequality among American Families with Children, 1975 to 2005." *American Sociological Review* 73(6):903-920.
- Weitzer, Ronald, Steven A. Tuch, and Wesley G. Skogan. 2008. "Police community relations in a Majority-Black City." *Journal of Research in Crime and Delinquency* 45(4):398-428.
- White, Ian R., Patrick Royston and Angela M. Wood. 2010. "Multiple imputation using chained equations: Issues and guidance for practices." *Statistics in Medicine* 30(4):377-399.
- Widom, Cathy Spatz. 1989. "The Cycle of Violence." *Science* 244:160-166.
- Williams, David R., and Chiquita Collins. 2001. "Racial residential segregation: a fundamental cause of racial disparities in health." *Public Health Reports* 116(5):404-416.
- Wodtke, Geoffrey T., David J. Harding and Felix Elwert. 2011. "Neighborhood Effects in Temporal Perspective: The Impact of Long-Term Exposure to Concentrated Disadvantage on High School Graduation." *American Sociological Review* 76(5):713-736.
- Zimmerman, Gregory M., and Mackenzie Kushner. 2017. "Examining the Contemporaneous, Short-Term and Long-Term Effects of Secondary Exposure to Violence on Adolescent Substance Use." *J Youth Adolescence* 46:1933-1952.
- Zimmerman, Gregory M., and Chad Posick. 2016. "Risk Factors for and Behavioral Consequences of Direct Versus Indirect Exposure to Violence." *American Journal of Public Health* 106(1):178-188.
- Zimmerman, Gregory M., and Steven F. Messner. 2013. "Individual, family background, and contextual explanations of racial and ethnic disparities in youths' exposure to violence." *American Journal of Public Health* 103:435-442.
- Zimmerman, Gregory M., and Steven F. Messner 2010. "Neighborhood Context and the Gender Gap in Adolescent Violent Crime." *American Sociological Review* 75(6):958-980.