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Young Adult Victimization and Midlife Consequences: Sensitization or Stealing Effects of Childhood Adversity?

Elaine Eggleston Doherty, PhD, Brittany Jaecques, BA,

Department of Criminology and Criminal Justice, University of Missouri, St. Louis, Missouri

Kerry M. Green, PhD,

Department of Behavioral and Community Health, University of Maryland School of Public Health,
College Park, Maryland

Margaret E. Ensminger, PhD

Department of Health, Behavior and Society, Johns Hopkins University School of Public Health,
Baltimore, Maryland

Abstract

The interrelationship between victimization, violence, and substance use/abuse has been well established, yet those who experience victimization do not necessarily respond with violence or substance use or escalate to experiencing substance abuse symptoms. Drawing on literature from both the syndemic research from medical anthropology and the resilience research from psychology, this study examines the interaction between early childhood adversity and young adult violent victimization on later substance use/abuse and violent offending to provide insight into conditional effects. Data are derived from the Woodlawn Study, an African American cohort of men and women from a socioeconomically heterogeneous community in the South Side of Chicago, who were followed from first grade through age 42. Results indicate that those with lower levels of childhood adversity are more likely to suffer the negative consequences of violent victimization than those with higher childhood adversity, providing support for a “stealing” effect.

Keywords

violence; substance use; substance abuse; African Americans; longitudinal

Nationally representative studies show that victims of crime in the United States are more likely to experience substance use, substance use disorders, and antisocial behavior (e.g., Vaughn et al., 2010). In fact, the interrelationship between victimization, violence, and substance use/abuse has been so well established (e.g., Goldstein, 1985; Hindelang, Gottfredson, & Garofalo, 1978; Lauritsen, Sampson, & Laub, 1991) that one could argue that these three interrelated issues constitute a “syndemic.” According to (Singer, 1996), “a syndemic is a set of closely intertwined and mutually enhancing health problems that significantly affect the overall health status of a population within the context of a

perpetuating configuration of noxious social conditions” (p. 99). Indeed, not only are those who experience victimization more likely to experience substance use, abuse, and violence, those who use or abuse illegal substances, and those who participate in violent offending, are more likely to be victimized. In turn, substance use and abuse, as well as violent offending, can damage family relationships, contribute to residential instability, and exacerbate poverty, further perpetuating disadvantage (Collins, Ellickson, & Klein, 2007; Henkel, 2011; Wilson, 1987).

Similar to syndemics studied by medical anthropologists (e.g., substance use, violence, and HIV), victimization, violence, and substance use tend to co-occur more often in certain populations, namely urban poor minorities. In 2012, there were 6.8 million violent crimes committed in the United States, affecting roughly 26 out of every 1,000 Americans (Truman, Langton, & Planty, 2013), yet these crimes are not evenly distributed. For instance, while the overall rate of serious violent victimizations is 8 per 1,000 in 2012, the estimated rate for African Americans is 11.3 per 1,000 compared to 6.8 and 9.3 per 1,000 for Whites and Hispanics, respectively (Truman et al., 2013). The data also show that African Americans have higher rates of substance use, especially in adulthood (French, Finkbiner, & Duhamel, 2002), and are disproportionately likely to be arrested for a violent offense; as of 2013, 38.7% of violent arrests were of African Americans (Uniform Crime Report [UCR], 2013), who make up only 13.2% of the total U.S. population (U.S. Census Bureau, 2013).

Individuals living in urban areas are also more likely to be victimized by serious violent crime, with urban dwellers having victimization rates nearly twice of those living in the suburbs (11.4 per 1,000 vs. 6.6 per 1,000), and more than twice of those living in rural areas (vs. 5.1 per 1,000; Truman et al., 2013). Individuals in urban areas are also more likely to report substance use (Gfroerer, Larson, & Colliver, 2007) and to commit violent offenses, with metropolitan areas having violent offense rates of 282.9 per 100,000 and nonmetropolitan areas having rates of 171.6 per 100,000 (UCR, 2013).

The current study focuses on three consequences of victimization among a community cohort of African Americans from a poor urban neighborhood: violence, substance use, and substance abuse. While the literature is replete with studies linking victimization to violence (e.g., Menard, 2002; Nofziger & Kurtz, 2005; Rivera & Widom, 1990; Shaffer & Ruback, 2002) and substance use outcomes (e.g., Doherty, Robertson, Green, Fothergill, & Ensminger, 2012; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Kilpatrick et al., 2003; Pimlott-Kubiak & Cortina, 2003; Silverman, RaJ, Mucci, & Hathaway, 2001), not all victims experience these consequences, introducing questions about what might predict differential effects in the wake of a similar life event (e.g., Langton & Truman, 2014).

Drawing on literature from both the syndemic research from medical anthropology and the resilience research from psychology, one possible explanation for differential reactions to victimization, even among disadvantaged men and women, is a potential interaction with past experiences, such as levels of childhood adversity (e.g., Rutter, 2012; Singer & Clair, 2003). Childhood adversity subsumes both economic and social disadvantage experienced in the formative years, which has been shown to impact child development (e.g., Duncan & Magnuson, 2012), psychopathology (Gilman, Kawachi, Fitzmaurice, & Buka, 2003), and

health risk behaviors (Lloyd & Turner, 2008; Turner & Lloyd, 2003). These adversities can include a wide range of difficulties encountered in early life such as poverty, household crowding, and poor parental mental health, to name a few. As opposed to controlling for these factors, we study the *interaction* between adversity and victimization, which is hypothesized to work in one of two ways. According to the syndemic literature, the adversity could create a *sensitization* effect whereby those who experience high levels of adversity in childhood will have worse long-term outcomes following victimization than those who did not experience such high adversity (see Singer & Clair, 2003). In contrast, according to the resilience literature, high levels of childhood adversity could lead to a *steeling* effect where a certain amount of adversity early in life is associated with fewer/less severe ramifications following victimization in later life (see Rutter, 2012).

To frame this study, we draw on the life course perspective, which posits that lives are shaped by multiple trajectories that represent different dimensions of life. Embedded within these long-term trajectories are transitions, which are short-term discrete events (Elder, 1985). Thus, this study conceptualizes violent victimization as one such discrete event, which may influence a person's future life course. Using a socially disadvantaged but somewhat economically diverse cohort of African American men and women, this study addresses the unanswered question of whether childhood structural adversity moderates the impacts of victimization on substance use and violence *within* an urban African American population, thus controlling for race, age, and urban background. In addition, we examine this question *within* each gender, as research has found that the impact of violent victimization may differ by gender; studies have shown that men tend to react to victimization with externalizing behaviors (e.g., violence) whereas women are more likely to react with internalizing behaviors (e.g., substance use; Eaton et al., 2012). Through gender-specific analyses among a community cohort of African Americans, we are better able to isolate the role of adversity on within-group heterogeneity in consequences, in essence holding race, age, childhood neighborhood, *and* gender constant.

ADVERSITY AS A MODERATOR OF VIOLENT VICTIMIZATION

Despite the fact that the stress literature has routinely emphasized the importance of contingencies in the impact of stressful life events on health and achievement (Dohrenwend, Link, Kern, Shrout, & Markowitz, 1990; Thoits, 2010; Wheaton, 1990), few empirical studies have examined the potential role of childhood individual and structural factors as a contingency in the long-term impacts of victimization in adulthood on consequences into midlife (for a notable exception, see Widom, Marmorstein, & White, 2006). This study emphasizes the notion that an outcome may be dependent on certain personal characteristics, environment, or background such that these factors exacerbate or buffer the effect of a life event (Elder, 1985; Rutter, 1996). With respect to adversity as a moderator of violent victimization, the syndemic and resilience perspectives hypothesize different moderating effects.

According to the syndemic conceptualization, it is important to acknowledge not only the interrelationship between each “disease” (i.e., victimization, violence, and substance use/abuse) but also the interaction with adverse social conditions. This conceptualization

emphasizes that the disease will be *enhanced* by “harmful social conditions and injurious social connections” (Singer & Clair, 2003), which implies that adverse social factors and contexts (i.e., the presence of childhood adversity) will exacerbate the impacts of victimization on violence and substance use and abuse. This rationale is in line with the notion that early adversities may lead to an increase in vulnerability or “sensitization effect” such that negative events have their greatest impact on the most vulnerable (Caspi & Moffitt, 1993).

In contrast, resilience researchers argue that early adversity would lead to a decrease in vulnerability, labeled a “steeling effect,” resulting in violent victimization being largely irrelevant to those who have experienced high levels of adversity (Rutter, 2012). “Resilience can be defined as reduced vulnerability to environmental risk experiences, the overcoming of stress or adversity, or a relatively good outcome despite risk experiences” (Rutter, 2012, p. 336). Thus, those with more adverse early life circumstances may be *less* affected by violent victimization than those with fewer adverse early life circumstances because the former have been afforded earlier opportunities to overcome obstacles (Macmillan, 2001; Rutter, 1987; Rutter & Quinton, 1984). Rutter further describes resilience as an “*interactive concept*” (2012, p. 336, emphasis in original) that can explain “individual variations in outcomes among individuals who have experienced significant major stress” (2012, p. 336; see also Rutter, 1987). Thus, according to the steeling effect hypothesis, experiencing family and structural adversities as a child may provide the experiences necessary to promote resilience, “inoculating” someone against the potential consequences of experiencing a violent victimization later in the life course (Moen & Erickson, 1995, p. 178, see also Rutter, 1987).

Drawing on these two bodies of literature within a life course framework, then, it is an open question as to how violent victimization in young adulthood might interact with early adversity in its impact on substance use outcomes and violence in midlife for men and women, as violent victimizations may be met with an exacerbating effect (i.e., those with adverse backgrounds being particularly susceptible to negative consequences; Singer & Clair, 2003) or a steeling effect (i.e., those with adverse backgrounds being inured to victimization consequences due to their exposure to other adversities throughout life; Rutter, 2012).

To investigate these competing hypotheses, the current study uses data from the Woodlawn cohort of urban African Americans to explore the impact of childhood adversity and violent victimization in young adulthood and how these two potentially interact to predict individuals’ long-term outcomes with regard to substance use, substance abuse, and self-reported violent offending. This study builds on a prior study using the Woodlawn data, which found that African Americans who experienced poverty in early childhood, one indicator of adversity, were less impacted by violent victimization on their continuity of substance use into midlife (Doherty et al., 2012). This study expands earlier work by investigating a multitude of adversities that constitute child structural and family contexts, taking into account the dosage of these adversities, and examining the impact of victimization on substance use as well as violence and substance abuse in midlife.

DATA AND METHODS

Woodlawn Cohort

The Woodlawn cohort is composed of male and female first graders from Woodlawn, an inner-city community in the South Side of Chicago. Data from multiple sources (e.g., the cohort members, their mothers, their teachers), were first collected in 1966 ($N = 1,242$) and at three additional time points (age 16, 32, and 42). Only 13 families (1%) declined participation, minimizing selection bias. During the first grade assessment, mothers were interviewed about the child's family background (e.g., income, family structure, residential mobility, and mother's education) and teachers were interviewed about the child's behavior and social adaptation (e.g., aggressive behavior, inattention).

Because of the residential segregation of African Americans in the 1960s, the community predominantly consisted of African Americans (97%) yet with socioeconomic heterogeneity within the community at the individual level. At the time of recruitment in 1966, there were middle-class, working-class, and welfare families living in the community; 32% of the recruited families were on welfare and close to half were living below poverty level (53%), yet 42% of the mothers had twelve or more years of education. Ten years later, when the cohort members were age 16, a subset of the original cohort and their mothers still living in the Chicago area were interviewed about their family, environment, behaviors, and attitudes ($n = 705$). In 1992 and again in 2002, when the "children" were 32 and 42, respectively, participants were interviewed about a variety of social, psychological, and behavioral domains ($n = 952$ in 1992, and $n = 833$ in 2002). The reasons for not being interviewed at ages 32 and 42, respectively, include death ($n = 46$ and 86), too incapacitated to be interviewed ($n = 3$ and 0), refusal ($n = 39$ and 135), and inability to locate ($n = 202$ and 185). Thirty-six cohort members and 18 cohort members were interviewed in Jail or prison at age 32 and 42, respectively.

Sample Size

Data from the early childhood and the two adult interviews are used for this analysis. Thus, the final sample was reduced from the original 1,242 cohort members to 700 for a variety of reasons (60.4% of the living cohort). First, 1,158 were alive by the age 42 interview. Of those 1,158, the sample was then restricted to those for whom data was available at both ages 32 (for the violent victimization data) and 42 (for the outcome data). This narrowed the sample to 731. Second, only individuals with data for at least five out of the seven childhood adversity measures were included. This further narrowed the sample to 700. We acknowledge that this decision to include only those with complete data may lead to bias in our estimates; yet attrition analyses indicate that there is no differential attrition by adversity status or being a victim of violence. Moreover, complete case analysis is recommended when missing data exist on the outcome as imputing on the outcome does little more than introduce "noise" in the final models (i.e., larger standard errors when imputed outcomes are included; White, Royston, & Wood, 2011).

Measures

Outcomes: Midlife Substance Use, Substance Abuse, and Violent Offending.

Midlife Substance Use.: Virtually the entire sample (98.7%) used alcohol at some point in midlife; thus, we focus substance use on illegal drug use only. *Long-term illegal drug use* is a self-reported measure based on questions drawn from the mid-adult assessment about the use of marijuana, cocaine, crack, LSD, hallucinogens, or heroin, as well as nonmedical use of barbiturates, tranquilizers, stimulants, amphetamines, or analgesics in the past 10 years. We dichotomized the response to “1,” using at least one substance, and “0,” no substance use. Forty-one percent of the males and 30% of the females used at least one substance between ages 32 and 42. The majority of both males and females who used at least one type of drug used only one type (50.0% and 54.6%, respectively); 31.7% of males and 31.9% of females used two types; 18.3% of males and 13.4% of females reported using three or more types. The majority of males and females who used at least one drug type used marijuana (81.7% and 76.5%, respectively). The second most common drug type was cocaine (54.8% and 47.9%, respectively) followed by heroin (15.9% and 13.4%, respectively).

Midlife Substance Abuse.: Long-term substance abuse is operationalized in two ways using questions developed for the Composite International Diagnostic Interview (Kessler et al., 1994) that tap into the DSM-IV dimensions of abuse (American Psychiatric Association, 2000). To meet abuse criteria, according to the DSM-IV, an individual must display a maladaptive pattern of substance use leading to significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period: (a) failure to fulfill major role obligations at work, home, or school, (b) recurrent use in physically hazardous situations, (c) recurrent use-related legal problems, and (d) continued use despite persistent or recurrent social or interpersonal problems caused or exacerbated by substance use. While our measure is over a 10-year period rather than 12 months, we draw on a series of questions that were created to tap into these four dimensions.

First, *midlife illegal drug abuse* is a dichotomous measure drawn from a series of five questions asking about illegal drug abuse symptoms. Questions include (a) Was there ever a time during the past 10 years when your use of (drug type) frequently interfered with your work or responsibilities at school, on a job, or at home? (b) Was there a time when your use of (drug type) caused arguments or other serious or repeated problems with your family, friends, neighbors, or coworkers? (c) If yes to #2, did you continue to use even though it caused problems with these people? (d) Were there times when you were often under the influence of (drug type) in situations where you could get hurt, for example when riding a bicycle, driving, operating a machine, or anything else? (e) Were you more than once arrested or stopped by the police because of driving under the influence of (drug type) or because of your behavior while you were high? For the purpose of this study, answering yes to any of these questions is considered an indication of abuse. Those who answer in the affirmative to one or more drug abuse symptoms stemming from marijuana, cocaine, crack, LSD, hallucinogens, heroin, or nonmedical prescription drug use in the past 10 years are coded as having illegal drug abuse (12.3% of the cohort reported abuse in midlife; 15.4% of males and 9.9% of females). The second measure taps into *midlife alcohol abuse*, which is a dichotomous measure that draws from questions similar to the illegal drug use questions but

that ask about alcohol as opposed to illegal drugs. Again, those who answer in the affirmative to one or more alcohol abuse symptoms in the past 10 years are coded as having alcohol abuse. Close to 20% of the cohort reported at least one abuse symptom as a result of alcohol (18.9%; 30.3% of males and 10.8% of females).

Midlife Violent Offending.: *Midlife violent offending* is a variety score of eight types of self-reported violent offenses committed in the past 10 years (e.g., in the past 10 years did you beat up someone to get money, force someone to have sex, get in a gang fight; range = 0–8, mean = .42 for males and .20 for females). This variety score creates an index of offending that gives equal weight to each violent offense while allowing for the distinction between the seriousness of offenders. That is, we use an individual's variety score as a proxy for the seriousness of the offender; offenders who commit a wider versatility of offense types also tend to be more serious and frequent offenders (MacLeod, Grove, & Farrington, 2014). This type of measure also safeguards against the concern with frequency scales to indicate seriousness as frequency scales can be dominated by less serious but more frequent offenses. Variety scores have repeatedly been found to be reliable measures of offending and are widely used in criminology (see Sweeten, 2012). Among the 20.6% of the males and 11.7% of the females with at least one violent offense, there was a mean variety score of violent offending of 2.05 and 1.70, respectively.

Key Independent Variable: Young Adult Violent Victimization.: Violent victimization is measured from self-reports at the young adult interview using three types of violent victimizations against their person experienced between ages 17 and 32: (a) being purposely injured (i.e., assault), (b) having something stolen by threat (i.e., robbery), and (c) being forced to have sex (i.e., rape/sexual assault). From these reports we created a binary variable of experiencing any of these types of violent victimization between the ages of 17 and 32 (48.7% males, 41.9% females).

Moderator: Early Adversity.: A number of structural and family risk factors are related to substance use and violence (Hawkins, Catalano, & Miller, 1992; Hawkins et al., 1998; Tanner-Smith, Wilson, & Lipsey, 2013). Early adversity in this study is a summation of seven risk factors, when at least five indicators are valid (93.9% have data on all seven risk factors). We take a risk factor approach creating a series of dichotomous variables where a "1" represents adversity on each of the seven factors described below.

First, *childhood poverty* is a dichotomous measure determined at the first grade interview. This variable measures whether the household income was at or below the U.S. government poverty threshold based on family size. For those who were missing data on this variable, poverty was assessed using the measure of whether the family was supported by welfare; the eligibility requirement for receiving welfare in Illinois at this time was living below the poverty level and welfare benefits were not sufficient to raise a family income to above the poverty level (U.S. Department of Health and Human Services, 2007). Poverty and welfare are highly associated in this sample; among the participants with both measures available, those who received welfare were highly likely to also be defined as falling below the poverty line ($\chi^2 = 392.65, p < .001$). *Non-intact family* is a dichotomous measure based on the combinations of adults in the family of the first graders representing whether the child lived

with both mother and father (0) or not (1). *Low mother's education* is a continuous measure of the number of years of school the mother had completed at the time of the initial interview (range 0–18). This measure was dichotomized to reflect those who completed less than 12 years of education (1) and those who completed 12 or more years of education (0).

Household crowding is assessed through a ratio of number of people in the household to number of rooms in the home. The U.S. Department of Housing and Urban Development (2014) defines severe overcrowding as 1.5 or more people per room. In the Woodlawn cohort, approximately 25% were considered to have severe overcrowding. *Residential instability* measures the number of times a child had moved in the 6 years between his or her birth and the time of the interview in 1966–1967 (range 0–9). We dichotomized this measure into those with four or more moves between birth and first grade, which corresponds to the top quartile, and those with three or fewer moves in that time frame. At the initial interview, mothers were asked their age at the birth of the focal child. Anyone reporting an age younger than 18 years was coded as being an *adolescent mother*. Finally, poor *maternal mental health* is a mean scale of two measures indicating how often the mother feels sad or blue and how often she feels nervous or tense. Both of these measures were ranked from 1 (hardly ever) to 4 (very often) and the mean scale was then dichotomized to identify the top quartile as experiencing poor maternal mental health. Although this cut-off creates a relative score within the sample, the majority of the children labeled as having a mother with poor mental health had a mother who reported being anxious/nervous fairly or very often (94.6%) and/or sad/blue fairly or very often (63.5%).

A summative index was then created among those with data on at least five of the seven factors available ($n = 700$, range = 0–7; mean = 2.51, $SD = 1.65$). To address the potentially complex interaction of adversity with life events (i.e., allowing for some adversity to be more beneficial than having very little or a lot; see, e.g., Moen & Erickson, 1995), we then trichotomized this index to create a categorical variable which represents low adversity (experiencing 0–1 adversities), moderate adversity (2–3 adversity factors), and high adversity (4 or more adversity factors).

Controls: Aggression and High School Dropout.: Two additional variables thought to contribute to substance use and violent offending are used as controls in the models. *Childhood aggression* is a binary variable of whether the child displayed significant signs of aggression or maladaptation in first grade. This measure was obtained through the teacher's observation of classroom adaptation (TOCA). *High school dropout* is a binary variable of whether the individual completed high school, either through graduation or by obtaining a high school equivalency certificate (GED), or dropped out.

Controls: Young Adult Substance Use and Offending.: In order to control for short-term behavior, a similar measure assessed at the young adult interview is used as a control when predicting each long-term outcome. To ensure temporal ordering, these short-term substance use and offending measures are behaviors in the past year (ages 31–32). *Young adult illegal drug use* is a self-reported binary measure based on questions asking about the identical types of drugs used, like those asked at the midlife interview, but this young adult measure asks about past year use. This measure is included when analyzing the illegal drug use and

illegal drug abuse outcomes. *Young adult binge drinking* is a self-reported binary measure of whether or not the respondent drank five or more drinks on drinking days in the past year. This measure is used as a control when analyzing the alcohol abuse outcome. Past year *self-reported offending* is used as a control in the violent offending models, which is a variety score ranging from 0 to 27 different types of violent, property, and drug crimes committed in the past year drawn from a series of questions in the young adult interview.

ANALYTIC PLAN

As expected, the bivariate relationships between all outcome measures and gender are statistically significant ($\chi^2 = 9.116$ for illegal drug use, 6.463 for illegal drug abuse, 42.070 for alcohol abuse and $t = -3.399$ for violence, $p < .05$ for all). Therefore, we conduct gender-specific analyses for all of the models; we examine the relationship between childhood adversity, victimization, and the dependent variables tapping into substance use and abuse and violent offending for males and females, separately. Due to the dichotomous nature of the substance use and abuse measures, logistic regression was used to estimate these models. For the variety score measure of violent offending, negative binominal regression was used. This decision is based on the likelihood ratio test of α ($p < .001$), which indicates that the negative binomial is the appropriate test, rather than a Poisson model, due to the overdispersion of zeros.

Specifically, for all outcomes, the gender-specific model building process entails three models. First, we model the effect of violent victimization, the levels of childhood adversity (i.e., dummy variables for low and moderate adversity using high adversity as the reference category), and controls of childhood aggression and whether the individual dropped out of high school. Next we include further controls in the form of the short-term measure of either past year substance use or past year offending, measured at the young adult assessment (age 32). Finally, to examine the potential moderating relationship between victimization and childhood adversity, interaction terms between the two are introduced into the main effect models. If these terms are significant, it indicates that the impact of victimization differs across the levels of adversity, which could indicate either a sensitization or steeling effect.¹

RESULTS

Descriptive Statistics

Approximately one-third of the males (31.0%) and one-quarter of the females (40.2%) reported high levels of adversity (i.e., at least four of the seven adversities), while another quarter of each gender (28.8% and 28.1%, respectively) reported low levels of adversity (i.e., 0–1 adversity). There are no significant differences between males and females on any of the measures composing the adversity index or in the distribution across the levels of the categorical adversity measure.

¹Supplemental analyses were conducted to investigate the possibility that aggregating the three types of victimization potentially mask differential effects based on type of violent victimization experienced in young adulthood. Overall, the substantive conclusions are similar regardless of victimization type. One minor exception, detailed in the results section, appears with rape on violent offending among females (data available upon request).

Close to 50% of the males (48.7%) and 41.6% of the females experienced victimization in young adulthood with consistent percentages across levels of adversity and no gender differences in the prevalence of victimization ($\chi^2 = 3.234$, $df = 1$, $p > .05$). When disaggregated by victimization type, 35.3% of males and 21.0% of females reported being purposely injured; 28.8% of males and 27.4% of females reported having something stolen from them by threat. Many fewer respondents reported experiencing being forced to have sex (3.9% of males and 12.9% of females). Approximately one-third of the victims reported experiencing multiple types of victimization (38.3% of the 149 male victims and 36.4% of the 165 female victims).

In midlife, with respect to illegal drugs, close to half of the males used at least one type of illegal drug (41.2%) while 16.7% experienced drug abuse. Close to a third reported abuse of alcohol (29.7%) and approximately one-fifth committed an act of violence (20.6%), regardless of level of adversity. The corresponding percentages for the females with respect to illegal drugs are 30.2% for use and 10.2% for abuse; 10.4% reported a symptom of abuse for alcohol and 11.7% committed some type of violence. There are no significant relationships between adversity and any of the young adult or midlife variables of interest for either gender.

Adversity and Victimization on Substance Use and Abuse

Table 1 shows the three models for illegal drug use, illegal drug abuse, and alcohol abuse separately, for the males. Model 1 shows a significant relationship between victimization and illegal drug use for males. Men who were victimized at least once between the ages of 17 and 32 are 60% more likely to use illegal drugs during midlife than men not victimized during the same time period ($OR = 1.60$). This relationship falls to nonsignificance once young adult illegal drug use is added to the model (Model 2), while Model 3 introduces the interactions between adversity and victimization, which shows no significant interaction effect for the males. There is no significant association between violent victimization in young adulthood and either measure of abuse (illegal drug or alcohol) among the males (see Models 4 and 7, respectively). Moreover, this relationship is not moderated by one's level of early adversity as indicated by the nonsignificant odds ratios in Models 6 and 9 for illegal drug abuse and alcohol abuse, respectively.

Table 2 shows the victimization and substance use and abuse results for the females. While there is no significant association between violent victimization and illegal drug use or abuse for females (Models 1 and 4), women who experience a violent victimization are over twice as likely to report alcohol abuse symptoms in midlife (Model 7). This significant relationship between victimization and alcohol abuse remains even after controlling for young adult binge drinking (Model 8). With respect to the interaction between violent victimization and early adversity on these outcomes for the females, a significant interaction effect between the lowest and highest levels of adversity is present for illegal drug use (see Model 3), but there is no interaction for either of the abuse outcomes (Models 6 and 9).

Estimated predicted probabilities from the Model 3 coefficients of Table 2, setting the other variables in the model at their mean, indicate that among those who are victimized, low levels of childhood adversity are associated with a predicted probability of midlife illegal

drug use that is 10% higher than those with the highest levels of adversity (data not shown). These findings begin to suggest that higher levels of childhood adversity may protect women from the substance use associated with victimization.

Adversity and Victimization on Violent Offending

The rate of self-reported violent offending increased by a factor of 2.1 for males who experienced a victimization (Table 3, Model 1); however, this effect falls to nonsignificance once young adult offending is introduced (Model 2). For females, the relationship between victimization and violent offending is also significant, with victimization predicting a large increase in the rate of self-reported violence that remains after prior offending is included in the model (Model 5). The final models for each gender reveal a statistically significant interaction between adversity and victimization on midlife violence. For the males, both the low-adversity and moderate-adversity groups are statistically significantly different from the high-adversity group (Model 3) yet, in the female model, only the moderate group is statistically significantly different from the high-adversity group (Model 6). The interaction with low levels of adversity is likely not significant due to a lack of power, as only 14 females with low levels of adversity were victims in young adulthood and violent in midlife.

To assist with the interpretation of the interaction terms, Figures 1 and 2 depict the predicted counts of violent offending for the different levels of adversity and victimization for males and females, respectively, with all control variables held at their mean. Figure 1 shows that, for victimized men, those with low levels of childhood adversity have predicted violent offending counts that are almost twice those of men with the highest level of adversity. Furthermore, victimized men with moderate adversity have counts that are roughly 10% higher than the high-adversity group, indicating a continuum of reduced consequences from victimization as childhood adversity increases.² Figure 2 shows similar patterns for females. While victimization does not impact the level of offending for those with high levels of childhood adversity, experiencing victimization increases the level of violence by threefold for the low-adversity and moderate-adversity groups.³

DISCUSSION

There is heterogeneity in early structural and family adversity among this African American urban population. While many studies that investigate the impact of victimization may control for structural adversities, we are able to use a breadth of adversity measures and consider the possible interaction between adversity and victimization in a life course framework. Moreover, although violent victimization is strongly concentrated early in the life course (i.e., childhood and adolescence; Klaus & Rennison, 2002; Laub, 1997; Macmillan, 2001), this study fills a gap in the research on the long-term impact of young adult victimization on midlife adult consequences. We find that, among this African

² Although Figure 1 shows a negative slope as males move from not victimized to victimized among the high-adversity group, stratified models show that this change in the mean counts of violence is not statistically significant.

³ Supplementary analyses disaggregating the type of victimization reveal a slightly different result for women who experience rape. While any victimization is related to a significantly higher rate of violent offending among the moderate-adversity group, the victimization-specific model for rape indicates no effect of victimization on violence for the moderate group (IRR = .860). For both models, although not statistically significant, those in the lowest adversity group have a higher rate of violence in midlife.

American community cohort, the relationship between victimization and midlife violence, in particular, depends on one's level of early adversity. Specifically, experiencing a violent victimization for those in the low-adversity group significantly increases one's rate of violent offending, regardless of gender. Similarly, women with low adversity have low risk of illegal drug use in midlife, but only if they have not been victimized; victimization is related to higher rates of illegal drug use among those with low levels of childhood adversity.

Thus, although victimization, substance use and abuse, and violence may in fact be syndemic, unlike findings among medical anthropology studies on biological ills, these social ills interact with preexisting conditions in a way that experiencing early adversity buffers against the impact of victimization on future problems rather than enhances it (see Singer & Clair, 2003). Specifically, although childhood adversity on its own is not related to later victimization or deviance (i.e., violent offending or substance use and abuse), the findings indicate that young adult victims of violence who experienced high adversity in childhood reported lower rates of violent offending than those who grew up in the context of low or moderate adversity. This finding offers support for the steeling hypothesis suggested by Rutter (2012); that is, the high adversity experienced early in life may "inoculate" an individual against the negative effects of victimization.

This finding leads to two strands of future research. First, how does experiencing adversity in childhood strengthen one's ability to endure violence in young adulthood? What mechanisms facilitate the resilience evidenced among those with higher adversity? Second, on the other hand, why would low levels of adversity early in life be particularly onerous with regard to violence when coupled with victimization? One important area of future research to build upon this moderation analysis would be to conduct a path analysis, structural equation model, or mediational regression model that could examine the mechanisms inherent in these pathways from young adult violent victimization to midlife consequences among those with varying levels of childhood adversity. It may be that those with low adversity have more trust in others and are less suspicious such that in the wake of victimization, that trust may erode forcing a reevaluation of the world, which is a traumatic undertaking that requires coping (Macmillan, 2001). In contrast, past experiences with higher levels of adversity could translate into an existing lack of trust or confidence in others. In turn, situations of violence do not trigger a reevaluation of interactions with others or the need for coping, resulting in a steeling effect.

Although more research is needed regarding the mechanisms that might explain these findings, the analyses suggest that taking a life course perspective to accommodate the interaction of life events with earlier life circumstances is important when understanding victimization. Using a life course framework to examine the deviant consequences stemming from adult victimization into midlife, rather than a snapshot at a single point in time, provides a more comprehensive view of the burden of violent victimization that extends into adulthood (Macmillan, 2001). By looking at the conditions under which life events influence these costs, we can begin to understand why people respond differently to life events and the complexity that characterizes pathways to substance use and crime. Filling this gap is particularly important for African Americans, who are disproportionately affected by

victimization (Harrell, 2007) and whose substance use and violence continue later in the life course than Whites (Doherty & Ensminger, 2014; Elliott, 1994; French et al., 2002).

It is also important to note that future research should place context at the forefront. Although the participants of this study varied in their socioeconomic resources at the individual level, they were all first graders in the same high crime, relatively disadvantaged African American community. As adults they had often left their first grade neighborhood, but many were likely to live in contexts in which they perceived high crime rates and lack of safety. In those situations, early low adversity at the individual level may not have been protective given the criminogenic neighborhood-level context. Researchers have found that living in a neighborhood of high concentrated poverty entails risk for those who themselves are not poor (e.g., Massey, Gross, & Eggers, 1991). Thus, the socioeconomic background, the possible interrelationship of victimization and violent offending, and the community context in which they occur may all be influential in understanding the impact of victimization. Future studies could further investigate this level of complexity and others, as our data lack details on the characteristics of the victimizer, frequency of victimization, seriousness of victimization, and perceptions of victimization risk.

However, this study is not without its limitations. First, the lack of findings for the majority of substance use outcomes may be due to the dichotomous nature of our substance use and abuse measures; this dichotomization may mask the differences in substance use and abuse severity and simplify the adversity-victimization moderating relationship. Moreover, we combine marijuana with other more criminalized illegal drugs, which does not allow for the studying of the differential effects by drug type. Replications of these hypotheses among clinical samples with more variation on the outcomes of interest and with a higher prevalence of a wider variety of drugs would be important contributions to the literature. Second, this cohort comprises African American first graders from one urban community, which may limit the generalizability of the findings. Further research could add to the research base by examining the interrelationship between adversity and victimization among additional African American cohorts and among other vulnerable populations, such as Hispanic Americans and Native Americans.

Despite these limitations, this study highlights the importance of considering how individuals differentially experience life events and the remarkable resilience of those from the most adverse conditions as they are seemingly inured to the negative impact of violent victimization. Simultaneously, this study highlights that the least disadvantaged (i.e., those with the low levels of adversity) may be in the most need of victim services. Thus, interventions to reduce the negative consequences of victimization should focus on those at greatest risk of poor outcomes, who might be those with the least adversity, instead of erroneously assuming those from the most adverse backgrounds are most in need of intervention.

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FIGURE 1.

Predicted mean types of violent offenses (33–42) by victimization status (17–32) and levels of childhood adversity, males ($n = 306$). *Note.* Models stratified by adversity level show that the slope coefficients of victimization on violence are significant only for low adversity males.

FIGURE 2.

Predicted mean types of violent offenses (33–42) by victimization status (17–32) and levels of childhood adversity, females ($n = 394$). *Note.* Models stratified by adversity level show that the slope coefficients of victimization on violence are significant for low- and moderate-adversity females, but not for high-adversity females.

TABLE 1.

Logistic Regression Results of the Long-Term Substance Use and Abuse, Males ($n = 306$)

	Illegal Drug Use				Illegal Drug Abuse				Alcohol Abuse									
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9	
	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>
Violent victimization	.480 (.235)	1.616 *	.212 (.252)	1.237	.444 (.447)	1.558	.525 (.314)	1.690	.269 (0.335)	1.301	.518 (.537)	1.679	.291 (.255)	1.338	.089 (.271)	1.093	.334 (.461)	1.397
Low adversity	−.356 (.313)	.701	−.333 (.329)	.717	−.366 (.467)	.693	−.709 (.421)	.492	−.733 (.435)	0.480	−.647 (.672)	.524	−.308 (.339)	.735	−0.424 (.356)	.655	−.430 (.523)	.651
Moderate adversity	−.096 (.279)	.909	−.142 (.295)	.868	.141 (.405)	1.151	−.426 (.356)	.653	−.558 (.372)	.572	−.263 (.549)	.769	−.225 (.299)	.798	−.413 (.316)	.662	−.123 (0.436)	.885
Childhood aggression	.034 (.247)	1.034	−.040 (.261)	.961	−.040 (.262)	.961	−.272 (.334)	.762	−.411 (.348)	.662	−.405 (.349)	.667	.260 (.264)	1.300	.206 (.276)	1.228	.210 (.277)	1.233
High school dropout	−.020 (.293)	.980	−.172 (.312)	.842	−.162 (.314)	.850	.161 (.373)	1.175	−.017 (.392)	.983	−.019 (.395)	.981	.628 (.300)	1.874 *	.553 (.314)	1.739	.567 (.317)	1.763
Young adult substance use			1.391 (.279)	4.020 *	1.389 (.280)	4.009 *			1.394 (.336)	4.032 *	1.385 (.336)	3.993 *			1.367 (.273)	3.924 *	1.352 (.275)	3.865 *
Low adversity × violent victimization					.033 (.650)	1.033					−.166 (.867)	0.847					−.023 (.711)	.977
Moderate adversity × violent victimization					−.587 (.587)	.556					−.539 (.741)	.583					−.588 (.623)	.555
Constant	−.464 (.264)	.628	−.675 (.278)	.509 *	−.785 (.327)	.456 *	−1.476 (0.337)	.228 *	−1.718 (.354)	.179 *	−1.853 (.428)	.157 *	−1.080 (.286)	.339 *	−1.432 (.307)	.239 *	−1.551 (.361)	.212 *

Note. The reference group for the categorical adversity measure is high.

^{*}
 $p < .05$.

TABLE 2.

Logistic Regression Results of the Long-Term Substance Use and Abuse, Females ($n = 394$)

	Illegal Drug Use				Illegal Drug Abuse				Alcohol Abuse									
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9	
	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>	<i>b</i> (<i>SE</i>)	<i>OR</i>
Violent victimization	.202 (.227)	1.224	−.078 (.248)	.925	−.727 (.445)	.483	.532 (.343)	1.703	.244 (.362)	1.276	−.286 (.637)	.752	.978 (.345)	2.658 *	.849 (.357)	2.338 *	.248 (.662)	1.281
Low adversity	−.194 (.308)	.824	−.276 (.327)	.759	−.926 (.442)	.396 *	.260 (.466)	1.297	.201 (.480)	1.223	−.061 (.655)	.941	−.394 (.519)	.674	−.489 (.532)	.613	−.591 (.779)	.554
Moderate adversity	−.184 (.269)	.832	−.249 (.287)	.780	−.505 (.376)	.603	−.008 (.413)	.992	−.078 (.424)	.925	−.582 (.618)	.559	.420 (.398)	1.521	.373 (.409)	1.453	−.272 (.634)	.762
Childhood aggression	.541 (.261)	1.717 *	.642 (.278)	1.899 *	.596 (.281)	1.815 *	.518 (.376)	1.679	.564 (.391)	1.757	.536 (.392)	1.709	.104 (.396)	1.110	−.029 (.412)	.972	−.075 (0.418)	.928
High school dropout	.834 (.279)	2.301 *	.577 (.303)	1.781 *	.567 (.307)	1.762 *	1.118 (.376)	3.060 *	.845 (.398)	2.327	.812 (.398)	2.253 *	.097 (.418)	1.102	−.012 (.431)	.988	−.065 (.435)	.937
Young adult substance use			1.873 (.303)	6.509 *	1.886 (.306)	6.596 *			1.542 (.374)	4.672 *	1.588 (.379)	4.894 *			1.565 (.363)	4.784 *	1.622 (.390)	5.066 *
Low adversity × violent victimization					1.497 (.650)	4.471 *					.508 (.915)	1.662					0.154 (1.045)	1.167
Moderate adversity × violent victimization					.605 (.582)	1.832					.956 (.854)	2.600					1.079 (.837)	2.942
Constant	−1.089 (.258)	.337 *	−1.274 (.275)	.280 *	−.990 (.313)	.372 *	−2.925 (.423)	.054 *	−3.122 (.436)	.044 *	−2.855 (.491)	.058 *	−2.811 (.421)	.060 *	−3.063 (.439)	.047 *	−2.706 (.525)	.067 *

Note. The reference group for the categorical adversity measure is high.

* $p < .05$.

TABLE 3.

Negative Binomial Regression Results of the Long-Term Violent Offending

	Males (<i>n</i> = 306)				Females (<i>n</i> = 394)							
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	<i>b</i> (<i>SE</i>)	IRR	<i>b</i> (<i>SE</i>)	IRR	<i>b</i> (<i>SE</i>)	IRR	<i>b</i> (<i>SE</i>)	IRR	<i>b</i> (<i>SE</i>)	IRR	<i>b</i> (<i>SE</i>)	IRR
Violent victimization	.755 (.308)	2.128 *	.539 (.316)	1.715	-.531 (.484)	.588	1.196 (.344)	3.308 *	.883 (.352)	2.418 *	-.265 (.658)	.767
Low adversity	-.511 (.404)	.600	-.445 (.398)	.641	-1.678 (.652)	.187 *	.179 (.466)	1.196	.424 (.471)	1.529	-.205 (.652)	.814
Moderate adversity	-.554 (.358)	.575	-.514 (.351)	.598	-1.130 (.483)	.323 *	.142 (.418)	1.152	.294 (.421)	1.341	-.629 (.609)	.533
Childhood aggression	-.038 (.310)	.963	-.101 (.309)	.904	-.078 (.301)	.925	.286 (.388)	1.331	.272 (.389)	1.312	.165 (.390)	1.178
High school dropout	.765 (.354)	2.149 *	.708 (0.348)	2.031 *	.801 (.339)	2.229 *	.830 (.402)	2.293 *	.648 (.405)	1.911	.623 (.406)	1.865
Young adult offending			.175 (.095)	1.192	.177 (.087)	1.193 *			.327 (.138)	1.387 *	.354 (.132)	1.424 *
Low adversity × violent victimization					2.241 (.818)	9.402 *					1.319 (.901)	3.739
Moderate adversity × violent victimization					1.383 (.669)	3.985 *					1.762 (.841)	5.825 *
Constant	-1.149 (.309)	.317 *	-1.210 (.306)	.298 *	-.823 (.336)	.439 *	-2.686 (.416)	.068 *	-2.864 (.424)	.057 *	-2.321 (.473)	.098 *

Note. The reference group for the categorical adversity measure is high adversity.

* *p* < .05.