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Pathways from Early Childhood Adversity to Later Adult Drug Use and Psychological Distress: A Prospective Study of a Cohort of African Americans

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Abstract

Drawing on the life course perspective, this research addresses the direct and indirect pathways between childhood adversity and midlife psychological distress and drug use across a majority of the life span in an African American cohort ($N = 1,242$) followed from age 6 to 42 (1966 to 2002). Results from structural equation models highlight the impact of low childhood socioeconomic status (SES), poor maternal mental health, and the role of first-grade maladaptation in launching a trajectory of social maladaptation from age 6 to 42. Specifically, for men, we found a direct pathway from early low SES to drug use in mid adulthood and an indirect pathway to psychological distress through first-grade maladaptation and adolescent poor mental health. For females, early SES affected first-grade maladaptation and low school bonds, which then predicted later drug use.

Keywords

adversity; classroom behavior; family bonds; psychological distress; school bonds; substance use

Extensive research has documented the negative effects of childhood adversity on physical, emotional, and cognitive development in childhood (e.g., Alwin and Wray 2005; Braveman and Barclay 2009) and on health and psychopathology in adulthood (e.g., Clark et al. 2010; Green et al. 2012). Yet, few studies have investigated the pathways that connect childhood adversity to adult outcomes over the full life course (e.g., Conger et al. 1994; Sobolewski

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AUTHORS' NOTE

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SUPPLEMENTAL MATERIAL

The online appendix is available at <http://jhsb.sagepub.com/supplemental>.

and Amato 2005). This information is critical for identifying timing of interventions to mitigate long-term negative effects.

The life course perspective (Elder 1985) posits that early events affect later health and behavior, taking into account the historical and social context in which individuals live (Elder, Johnson, and Crosnoe 2003). One central principle is that the timing and conditions of circumstances early in the life course set up chain reactions of experiences that significantly affect later life outcomes (Elder et al. 2003; Umberson et al. 2014). Therefore, childhood adversity is expected to directly impact outcomes as well as result in a cumulative disadvantage process. Cumulative disadvantage is defined as the tendency for an accumulation of failures over time, resulting in a continuation of disparities among individuals across the life course (Dannefer 2003). Failure within key institutions that are relevant for each stage of life (e.g., family, school, work) leads to later failure in the same, as well as in other, institutions throughout the life course. Thus, childhood adversity suggests an accumulation of disadvantaged circumstances, maladaptive behaviors, and compromised health in each life course stage.

This study uses the Woodlawn data, which include extensive information from a cohort of African Americans followed from ages six to 42. We focus on pathways from childhood adversity to adult outcomes among African Americans for multiple reasons. First, African Americans disproportionately experience adversity throughout the life course (McLoyd 1998; Mulia et al. 2008), yet little is known about its impact among this population. Second, understanding the pathways to drug use and psychological distress among African Americans is especially critical, as research suggests that the problems connected with substance use and psychological distress become more pronounced for African Americans in adulthood (Wallace 1991; Williams et al. 2007). Moreover, previous research suggests that pathways to and risk factors for substance use and psychological problems among African Americans may differ from those of whites (Boardman and Alexander 2011; Brown et al. 2004; Mezuk et al. 2010; Wallace and Muroff 2002), yet these risk factors and pathways have not been adequately explored.

BACKGROUND

Conceptual Framework

Figure 1 shows our conceptual framework, which outlines our hypothesized pathways from childhood adversity to adult drug use and psychological distress in line with the life course perspective. In essence, we hypothesize that various types of childhood adversity affect adult substance use and psychological distress both directly and indirectly through their impact on adaptation over the critical life stages of childhood and adolescence.

Childhood

Adversity—In the far left of Figure 1, we begin with childhood adversity, which has multiple components representing both economic and social disadvantage. Too often, studies consider only one aspect of adversity. In order to provide a more comprehensive understanding, we focus on four domains of childhood adversity (i.e., low family

socioeconomic status [SES], high levels of household crowding, poor maternal mental health, and poor family physical health). Our inclusion of childhood SES is based on extensive research showing its relationship to child development (e.g., Duncan and Magnuson 2012; Seccombe 2000), later psychopathology (e.g., Gilman et al. 2003), and health risk behaviors (e.g., Ensminger, Juon, and Fothergill 2002; Lloyd and Turner 2008). Although SES is a primary indicator of childhood adversity, few studies have examined the specific pathways from SES to adult outcomes, particularly among African Americans.

Childhood household crowding is a known risk factor for physical and psychological problems among children (Breyse et al. 2004; McNicholas et al. 2000), and the stress from crowding can negatively affect parent–child interactions and other social relationships (Evans et al. 1998). The long-term effects on adult outcomes, however, have not been established.

Poor parental mental health is a well-recognized source of adversity during a child's development (Gump et al. 2009; Kessler et al. 2010). Maternal mental health is particularly important among African Americans as they live disproportionately in single-mother households (Ensminger et al. 2003; Martin et al. 2012). Parents with mental health problems may have difficulty with childrearing tasks and may poorly model how to provide emotional support and manage conflict (Bandura, 1971). Furthermore, parental mental health problems can also indicate a genetic risk in the child (Kendler 1995). Studies have found that children of depressed parents are at an increased risk for poor mental health across the life course (e.g., Danese et al. 2009; Kessler et al. 2010), but the impact of parental mental health on later drug use is not well examined, particularly among African Americans.

Finally, family physical health, including having a parent or sibling with a chronic illness or who is hospitalized, can negatively impact a child (Emerson 2003; Sharpe and Rossiter 2002). The emotional stress and strain on resources resulting from a family member's illness can affect marital, parental, and psychological functioning (Fisman et al. 2000; Williams et al. 2010). Additional research is needed to better understand how having an ill family member in childhood affects adult outcomes.

First-grade Classroom Maladaptive Behavior—As shown in Figure 1, childhood adversities are hypothesized to indirectly impact substance use and psychological distress in adulthood through first-grade maladaptive behaviors. According to life course theory, starting life in adverse circumstances can lead to poor adaptation in key social contexts. In support of this notion, the literature has consistently demonstrated a relationship between economic and social disadvantage and behavioral problems in early childhood (e.g., Bradley and Corwyn 2002; Pebley and Sastry 2004). For a six-year-old, the first-grade classroom is a critically important social context (Kellam et al. 1975), and failure to adapt in the classroom can lead to a chain of maladaptive behaviors over time (Fothergill and Ensminger 2006; Odgers et al. 2008).

Adolescence

Adolescent Substance Use—We include adolescent substance use an indicator of social maladaptation (see Figure 1). Although historically substance use has been lower among

African American adolescents than among whites (Johnston et al. 2015), there are general patterns of use over the life course that apply across racial groups regardless of level of use. Substance use and other deviant behaviors typically peak in adolescence and then decline in early adulthood (Ellickson et al. 2005; Johnston et al. 2015), although for African Americans, drug use tends to begin later in adolescence and decline less than whites' drug use in early adulthood (Chen and Jacobson 2012). Although a large number of adolescents experiment with drugs and alcohol without becoming frequent users (Chen and Jacobson 2012), use in adolescence has been repeatedly shown to predict later use in adulthood (Finlay et al. 2012; Gil, Wagner, and Tubman 2004). In particular, researchers have identified early initiation and frequency of drug and alcohol use in adolescence to be significant predictors of later substance use (Kandel and Chen 2000).

Mental Health Problems—Mental health problems also often emerge in adolescence (Kessler et al. 2007) and can lead to adult depression and substance use (Aalto-Setälä et al. 2002; Suh et al. 2008), and there is increasing evidence that these problems are related to experiencing adversity early in life (Kessler et al. 2010). No known studies, however, have prospectively examined whether childhood adversity operates through adolescent mental health problems to affect adult substance use and mental health.

Social Bonds in Adolescence—According to Hirschi (1969), strong ties to societal institutions, such as family, school, or work, decrease the likelihood that individuals engage in deviant behavior as societal bonds promote conventional behaviors. Studies have found that school and family ties deter adolescent drug use (Ford 2009; Galambos, Barker, and Almeida 2003) and in some cases have lasting effects on adult drug use (Ensminger et al. 2002; Fothergill and Ensminger 2006). Similarly, various family processes, such as family support and time spent with family, have been positively linked to adult mental health (Amato and Sobolewski 2001; Barrett and Turner 2005).

It may be that childhood adversity indirectly affects later drug use and psychological distress through its negative impact on adolescent social bonds. According to Conger et al. (1994), family processes mediate the impact of a household's socioeconomic characteristics on the child's adjustment. More specifically, the stress of economic disadvantage can increase hostile parenting, family conflict, or time spent with the child, which can increase the child's risk for developmental problems. Evidence in support of this perspective has been found with both white and African American populations (Conger et al. 1994, 2002).

Less is known about whether or how adversity operates through school bonds. Childhood adversity may affect the child's ability to connect with school, which is a critical influence in an adolescent's development (Catalano et al. 2004). In turn, failure to bond with school could increase the risk for deviant behavior and psychological distress (Ensminger, Brown, and Kellam 1982), and thus it is critical to study this pathway.

Gender Differences—The life course perspective recognizes the heterogeneity of cohorts (Elder, 1998), allowing for consideration of gender differences along the pathways from adversity to drug use and psychological distress. Gender role theorists argue that males are socialized to be strong and action oriented; females are socialized to be dependent and

relationship oriented (Gilligan 1982; Lorber and Moore 2002). In addition, girls are socialized to express anxiety and sadness, but boys are taught to be courageous in face of fear (Bem, 1981; McLean and Anderson 2009).

Reactions to adversity may differ by gender because of these normative expectations and rules regarding gender roles (Dohrenwend 2000; Mirowsky and Ross 1995). For example, boys are more likely to respond with externalizing behaviors, while girls are more likely to have internalizing reactions (Dohrenwend 2000; Piccinelli and Wilkinson 2000). Studies have consistently shown higher rates of substance use among males compared to females (Doherty et al. 2008; National Institute on Drug Abuse 2009), and many show higher rates of internalizing conditions among women compared to men (Cyranowski et al. 2000; Kessler 2003). Further, studies have found that the predictors of internalizing (e.g., depression) and externalizing (e.g., drug use) behaviors also differ by gender (e.g., Brady and Randall 1999; Chermack et al. 2000; Dakof 2000; Green et al. 2013; Hammack et al. 2004; Kendler, Thornton, and Prescott 2001). For example, Doherty and colleagues (2008) show that early family factors have a consistent association with later drug use among African American women but not men. In addition, Maciejewski, Prigerson, and Mazure (2001) found that exposure to a stressful life event is more likely to lead to major depression among females than among males.

Gender theory also suggests that the salience of key social bonds (i.e., family and school bonds) may differ for men and women (Block 1984; Booth, Farrell, and Varano 2014). For example, social bonds may play an important mediating role for women given their socialization to value close relationships and define themselves in terms of those relationships (Giordano and Cernkovich 1997). In line with this notion, there is some evidence that social bonds are protective against drug use for females but not males (Dakof 2000; Svensson 2003). However, much of what we know about the mediating role of social bonds is based on research on men, and thus the identified mechanisms of social bonding may not apply in the same way to females (Booth et al. 2014; Erickson, Crosnoe, and Dornbusch 2000). Additional research is needed to determine how school bonds and family bonds differentially affect the relationship between child adversity and drug use and mental health problems for males and females.

Finally, it is important to recognize that gender roles within African American communities can be different from the traditional roles with larger society (Hill 2002). Cultural practices and family functioning among African Americans have been greatly influenced by the history of slavery and discrimination (Sudarkasa 2004). As African American men have struggled to maintain work due to multiple factors, including discrimination, poor access to employment resources, and incarceration, African American women often serve as primary caretakers of the family and sole breadwinners for the household (Boyd-Franklin 2003; Williams 2003). As a result, African American children are influenced by the social roles within the African American community as well as more traditional roles of the larger society (Hill 2002; Williams and Sternthal 2010).

Study Purpose

We use prospective data to examine the pathways from different types of childhood adversity to adult drug use and psychological distress among a cohort of African Americans followed from age 6 to 42. By studying several different types of adversity, we can assess their relative influence on life course pathways to drug use and psychological distress. The inclusion of both drug use and psychological distress allows us to take into account their frequent co-occurrence while also capturing externalizing and internalizing responses to adversity, which may facilitate the identification of gender differences. By studying drug use and psychological distress in both early and mid-adulthood, we can better understand whether mid-adult problems stem from problems developed in early adulthood or emerge independently in midlife and how these problems differentially relate to adversity earlier in the life course.

DATA AND METHODS

Study Design

This is a prospective study of a cohort of 1,242 children (606 males and 636 females) who began first grade in 1966–1967 in Woodlawn, an inner-city community on the south side of Chicago (Kellam et al. 1975). The cohort was followed for more than 35 years. When this study began, the neighborhood community was the fifth poorest of the 76 Chicago communities. First-grade teachers rated each child's social adaptation in the classroom; mothers (or mother surrogates) provided reports about their children and their families. In 1975–1976, when the study cohort was in adolescence, 939 (75%) of the mothers or mother surrogates were reinterviewed, and 705 cohort adolescents were assessed for psychological well-being, family and school life, drug use, delinquency, sexual activity, and social bonds (Kellam, Simon, and Ensminger 1983). In 1992 to 1994, when the cohort was ages 32 to 34, 80% ($n = 952$) of those who were alive were interviewed (Ensminger, Anthony, and McCord 1997). In 2002–2003, we successfully located 1,002 (84%) of the 1,187 living cohort members. Of these, 833 (83%) were reinterviewed (Crum et al. 2006; see Figure 2).

As in all prospective studies, the Woodlawn Study has experienced attrition. In adolescence, only those who remained in Chicago were interviewed. Those missing in adolescence were more likely to have a mother who had a child in her adolescence and to have gone to a parochial school and less likely to have an adult interview. They did not differ in terms of SES or first-grade adaptation. We compared those who had at least one adult interview ($n = 1,054$) with those who did not ($n = 188$). Those interviewed were more likely to have graduated from high school and less likely to be in poverty in first grade or adolescence. Those who had died by mid-adulthood ($n = 86$) were more likely to be male, to have dropped out of high school, and to have smoked heavily during adolescence (Ensminger et al. 2009).

Measures

Adult Outcomes—*Psychological distress* was measured in both early ($\alpha = .85$) and mid-adulthood ($\alpha = .85$) with seven indicators from self-reports: “Do you feel nervous,

under pressure, tense, tight inside; do your hands sometimes shake; do new situations make you tense; do you startle easily?" (0 = "not at all"; 6 = "very, very much").

Drug use in early (alpha = .77) and mid-adulthood (alpha = .82) were latent constructs comprising four indicators: number of times used marijuana or cocaine in past year (0 = "never"; 8 = "daily"), and recency of use of marijuana and cocaine (0 = "never/more than a year ago," 1 = "in the past year," 2 = "in the past six months," and 3 = "in the past month").

Adversity in Childhood (Assessed at Age 6)—*Low family SES* was a latent variable with two indicators from mothers' reports ($r = .29$, $p < .001$): income (1 = \$10,000 to \$1,000) and mother's education (number of years completed, reverse coded high to low).

Household crowding, based on guidelines from the U.S. Department of Housing and Urban Development (2007), was the ratio of people in the household to the number of rooms in the home, both reported by the mothers. This ranged from 1 (<1 person per room = low crowding) to 4 (>1.5 persons per room = severe crowding).

Poor maternal mental health comprised two indicators from mothers' reports ($r = .44$, $p < .001$): how often mother feels sad and how often mother feels tense and nervous (0 = "hardly ever" to 3 = "very often"). For the validity and reliability of these measures, see Ensminger et al. (2003). With only 42% of the first-grade households including a father, there were both theoretical and practical reasons for the omission of paternal mental health.

Poor family health was comprised of two indicators from mothers' reports ($r = .23$, $p < .001$): number of family members with chronic illness and number of family members hospitalized for an extended period.

Maladaptive Behavior and Mental Health—*First grade maladaptive behavior* was a latent variable comprising teachers' ratings of child performance in first grade (alpha = .84) in five domains—aggressive behavior, shy behavior, immaturity, underachievement, and restlessness—with scores ranging from 0 ("fully adapting within normal limits") to 3 ("severely maladapting") (Kellam et al. 1975, 1983). In this study we used four of these five measures to capture those behaviors we expected to increase the risk of drug use and psychological distress—we excluded shy behavior as we found it to be protective against some later problems (Fothergill et al. 2009).

Adolescent substance use comprised six indicators from self reports (alpha = .84): number of times ever used marijuana, beer or wine, and hard liquor (1 = "never" to 6 = "40+ times") and age at first use of beer or wine, hard liquor, and marijuana (1 = "never," 6 = "age 8 or younger").

Adolescent mental health problems comprised six indicators from self-reports (alpha = .73): "Do you cry for no reason, feel sad, hopeless, nervous, tense, under pressure?" (0 = "not at all" to 5 = "very, very much").

Adolescent Social Bonds. School bonds (alpha = .67) had five indicators from self-reports: "How important is school performance?" (0 = "very much"; 5 = "not at all"), "How do you

think teacher thinks you are doing?" (0 = "very well"; 5 = "not well at all"), "How satisfied are you with teacher's view? (0 = "very much"; 5 = "not at all"), "How far would you like to go in school," and "How far do you think you will go?" (0 = "beyond college"; 4 = "some high school").

Family bonds comprised five indicators from adolescent reports on frequency of doing the following with family ($\alpha = .69$): things around the house, homework, recreation and sports, going out for entertainment, and community activities (0 = "several times/week"; 1 = "1 time/week"; 2 = "every 2 weeks"; 3 = "1/month"; 4 = "every few months"; 5 = "less often").

For descriptive information on these variables, see the appendix in the online supplemental material, available at <http://jhsb.sagepub.com/supplemental>.

Analyses

Multivariate analyses were conducted through structural equation modeling with AMOS 19.0. This method had several advantages for this study: it identified pathways over the life course, it assessed direct and indirect effects, it allowed for the use of both latent and observed indicators, and it used maximum likelihood estimation (MLE) to account for missing data, which increases the likelihood of obtaining unbiased estimates and standard errors. The MLE was especially important for handling the missing data from the adolescent assessment, which had higher attrition than the other assessments because of funding constraints.

Measurement Model—We began our analyses with confirmatory factor analyses to check the measurement models for both males and females. Each measurement model had statistically significant factor loadings, $p < .005$. We then tested for gender differences in the measurement models using a multi-group modeling. We found a lack of measurement invariance between the male and female constructs, suggesting that constraining the measurement models to be equal for both sexes would be inappropriate. We therefore conducted analyses separately for males and females.

Structural Model—Next we built a full structural model, which shows the strength and direction of the hypothesized relationships among constructs. To represent our research questions, the structural model included direct paths from each of the childhood variables to drug use and psychological distress in early and mid-adulthood. It also included indirect pathways over the life course: paths from each childhood adversity variable to maladaptive classroom behavior in first grade and to each adolescent construct, from maladaptive first-grade classroom behavior to each adolescent construct, from each adolescent construct to each early-adult construct, and from each early-adult construct to each mid-adult construct. We also included the correlations among constructs within each time period, as indicated by double-headed arrows in the structural model.

The fit of the model was evaluated according to two criteria: the root mean square error of approximation (RMSEA; Hox and Bechger 1998) and the relative chi-square index (Garson 2012). A RMSEA less than .05 was considered a good fit, and a fit less than .08 is

acceptable (Arbuckle and Wothke 1999). For the ratio of the chi-square statistic to the degrees of freedom, values less than five indicated an acceptable model (Bollen and Long 1993).

RESULTS

Female Model

Figure 3 provides the path diagram with the statistically significant standardized path coefficients for females. In this figure, we show only significant paths ($p < .05$) between each time period; we included marginally significant paths ($p < .01$) from first-grade adversity indicators to early or mid-adulthood outcomes based on the understanding that distal effect sizes will be small, and therefore, marginally significant relationships over such a time lag indicate findings of potential theoretical and empirical import (Shrout and Bolger, 2002). According to the fit statistics, the model fit the data reasonably well: RMSEA = .042; CMIN/ df = 3.17. Table 1 summarizes the direct, indirect, and total effects of all hypothesized paths to drug use and psychological distress.

There were no statistically significant direct effects of adversity on adult drug use or psychological distress. Low SES in first grade had a marginally significant positive direct effect on psychological distress in early adulthood (.117, $p = .07$), and poor family health had a marginally significant negative effect on psychological distress in early adulthood ($-.125$, $p = .06$).

We found significant indirect pathways from adversity to drug use and psychological distress in adulthood. First, poor maternal mental health increased the risk for low school bonds (.165), which in turn increased the risk for early adult drug use (.130), which increased the risk for mid-adult drug use (.496). Second, those females who lived in a low-SES household in first grade had a significantly higher risk of having higher classroom maladaptive behavior in first grade (.195), which in turn increased the risk for low school bonds in adolescence (.121).

The total effects capture the combination of direct and indirect effects on adult drug use and psychological distress, helping assess the overall impact of each type of adversity over the life course. Although AMOS does not provide significance levels for these analyses, effects of .100 or greater are considered to be potentially important because some direct effects of that magnitude are statistically significant. There were three adversity total effects at .100 or greater for females in the hypothesized direction: poor maternal mental health's effect on mid-adult psychological distress (.101), low family SES's effect on young adult psychological distress (.100), and low family SES's effect on mid-adult drug use (.106). Counter to our hypothesis, poor family health reduced the likelihood of young adult psychological distress ($-.124$).

Male Model

Figure 4 provides the statistically significant standardized path coefficients for males. As with Figure 3, we included marginally significant paths ($p < .10$) from first-grade adversity indicators to the adult outcomes. The fit statistics suggest the model fit the data reasonably

well: RMSEA = .046; CMIN/ df = 2.28. Table 1 summarizes the direct, indirect, and total effects of all hypothesized paths to adult drug use and psychological distress for males.

We found that low SES had a marginally significant positive direct effect on mid adult drug use (.179, p = .096). Counter to our hypothesis, we found that poor maternal mental health significantly decreased the risk of drug use in early adulthood (–.225, p = .048).

We also found significant indirect paths. Males who had low childhood SES were more likely to have maladaptive behavior in first grade (.190), which in turn increased the risk of mental health problems in adolescence (.175), which then increased the risk for psychological distress in early adulthood (.211), which increased the risk for psychological distress in mid-adulthood (.269).

There were three total effects of adversity greater than .100 in the hypothesized direction: low SES's effect on mid-adult drug use (.219) and poor family health's effect on mid-adult psychological distress (.174) and mid-adult drug use (.147). There were two effects that were counter to our hypotheses: poor maternal mental health's effect on young adult drug use (–.195) and mid-adult drug use (–.125).

DISCUSSION

Recent studies have found a relationship between childhood adversity and adult outcomes (e.g., Clark et al. 2010; Danese et al. 2009). However, few studies have extended into mid-adulthood or have attempted to trace the pathways through which childhood adversity operates over the life course for males and females. These pathways are especially important to understand among African Americans because of their disproportionate experience of adversity and the high rate of problems stemming from substance use and psychological distress in adulthood (Mulia et al. 2008; Wallace and Muroff 2002; Williams et al. 2007).

By using prospective data collected over 35 years from multiple sources and focusing on African American males and females, this study provides a rare opportunity to identify the direct and indirect effects of early adversity on adult drug use and psychological distress in an understudied population with high rates of poverty. In line with a life course perspective, we found evidence for effects through first-grade maladaptation, adolescent social bonds, and adolescent mental health. While the direct effects are fairly straightforward to assess, the effects through indirect pathways are complicated and more indicative of how early adversity influences later life stages. Thus, when drawing conclusions, we rely on the total effects that capture the full impact of adversity over the life course.

Overall, results support other longitudinal research suggesting that psychological distress and drug use have early origins, particularly rooted in adversity (e.g., Clark et al. 2010; Daniel et al. 2009) and that early intervention is critical for preventing a cascade of social maladaptation over the life course. One consistent finding across gender was the importance of early SES in mapping pathways to poor outcomes, extending our understanding of the relationship between early SES and later outcomes found previously among both whites and African Americans (e.g., Jeynes 2002; Gilman et al. 2003).

The finding that SES leads to first-grade maladaptive behavior suggests that African American males and females from low-SES families need additional support to succeed in the role of student and prevent a trajectory of maladaptation. Partially based on earlier findings from the Woodlawn study, a universal classroom-based intervention aimed at adaptation was implemented in Baltimore first-grade classrooms and, in randomized trials, has been shown to affect adult outcomes, including drug use and high school graduation (Kellam et al., 2008). The next step in advancing this and other early interventions is to consider adversity as a moderating or mediating factor in the design and implementation of the intervention.

Adolescence also emerged as an important stage of life for intervention. For the males, we found that first-grade maladaptation affects adult psychological distress through adolescent mental health problems, highlighting the importance of intervening early to reduce continuation of problems into adulthood. This is particularly critical in light of recent research finding higher rates of depression among African Americans adults compared to whites (Pratt and Brody 2008) after years of research showing African Americans to have comparable or better mental health than whites (e.g., Breslau et al. 2006; Riolo et al. 2005). Further, greater adolescent substance use predicted continued substance use in adulthood, which underscores the critical nature of early intervention, considering literature suggesting the course of substance use extends later for African Americans compared to white populations (Caetano and Kaskutas 1995).

For females, the emergence of school bonds as a significant link in the pathway to adult drug use is important as no known studies have considered the role of school bonds as a mechanism through which early disadvantage affects later problems. In accordance with social control theory (Hirschi 1969), the finding suggests that for African American girls growing up in adverse circumstances, the development of strong ties to school may redirect the negative trajectory of early disadvantage. This builds upon prior research showing that school involvement is more salient for African American girls than for boys (Cernkovich and Giordano 1992) and extends prior Woodlawn findings that school bonds are protective against female drug use (Ensminger et al. 2002). The finding also corresponds with recent work proposing that social integration is a mechanism for how SES influences health (Berkman and Glass 2000).

Theoretical Implications

The pathways (or lack thereof) indicate a level of complexity that may be underappreciated in much of life course research. For instance, although prior work has found connections between childhood adversity and adolescent and adult outcomes (e.g., Green et al. 2012; McLoyd 1990), when the full life course is modeled, these robust relationships are not evident as direct effects but, rather, operate largely through indirect pathways. However, the fact that low SES and first-grade maladaptive behavior emerged as important in these complex models supports a major tenet of the life course perspective, namely, that early adverse circumstances can lead to a chain of maladaptation over the life course. The finding of different pathways by gender, especially in adolescence, also supports the life course notion of the relative influence of key social factors on later life outcomes by gender.

However, we discovered unexpected relationships suggestive of nuances in this framework that should be further explored. For instance, although poor maternal mental health increased the risk for drug use through its impact on school bonds among females as expected, for males the findings suggest early a *protective* effect. The role of family health in childhood also differed by gender. For males, although poor family health showed no significant direct effects, its total effects were large and in the expected direction for males. On the other hand, females who lived in households with a sick family member were marginally *less* likely to have adult psychological distress. It may be that findings in directions opposite to our hypotheses reveal relationships related to resiliency or some other protective processes, which may or may not be particularly relevant to African Americans. For example, with respect to family health, it could be that extended family members provided assistance to households with sick members and the child benefited from these supportive relationships (Billingsley 1998; Jones et al. 2006). Future research should explore these relationships further.

Limitations

Study limitations should be noted. First, the Woodlawn population is all African American and from a specific community in Chicago; thus the generalizability of the findings is limited until they are replicated with other populations. However, by focusing on a specific community, the study design naturally controls for neighborhood, age, and race. So even within the context of a poor neighborhood with a more limited range of SES than would be found in a more heterogeneous population, we were able to find a significant impact of household SES. Second, attrition must be considered even though missing data were taken into account using MLE. Our attrition analyses found that those not followed had lower incomes in first grade; thus, we could be underestimating the impact of SES.

Another issue is the measurement of adversity. While it is a strength that we were able to consider multiple indicators of adversity at one time, other adversities that should be considered were not available in our data set (e.g., childhood sexual and physical abuse). Also, we do not include paternal mental health; however, maternal mental health is a critical indicator of adversity and is widespread in the literature (Beck 1999). Further, self-reports of both drug use and psychological distress may be biased (Schwarz 1999), although studies have shown self reports to be valid 70% to 90% of the time (Darke 1998).

Finally, we did not find that childhood adversity operated through family bonds. One explanation could be that family bonds do not carry as much weight in adolescence as they do earlier in development (Adler and Adler 1998). Alternatively, it could be that our measure of bonds, which reflects amount of time spent with family doing various activities, may not fully capture the family processes through which adversity affects drug use and psychological distress. Although our measure corresponds with Hirschi's (1969) concept of attachment, it may be that other indicators of family bonds, such as indicators of the quality of the bonds, are more relevant here.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Biographies

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Figure 1.
Conceptual Framework.

Figure 2.
The Woodlawn Data Set.

Figure 3.

Female Model with Full-information Maximum Likelihood Standardized Estimates.

Note: Rectangles represent observed variables; ellipses represent latent variables. Arrows represent significant pathways (solid lines, $p < .05$; dashed lines, $p < .10$). Two-headed arrows represent significant correlations with $p < .05$. Nonsignificant paths are not shown, except for marginally significant paths ($p < .10$) from first-grade adversity indicators to early or mid-adulthood outcomes.

Figure 4.

Male Model with Full-information Maximum Likelihood Standardized Estimates.

Note: Rectangles represent observed variables; ellipses represent latent variables. Arrows represent significant pathways (solid lines, $p < .05$; dashed lines, $p < .10$). Two-headed arrows represent significant correlations with $p < .05$. Nonsignificant paths are not shown, except for marginally significant paths ($p < .10$) from first-grade adversity indicators to early or mid-adulthood outcomes.

Table 1

Standardized Direct, Indirect, and Total Effects for all Hypothesized Pathways for Males and Females Measured Using Data from Four Waves of the Woodlawn Study: 1966, 1976, 1992–1993, and 2002–2003 ($N = 1,242$).

Predictor	Dependent Variable	Direct Effects		Indirect Effects		Total Effects	
		Females	Males	Females	Males	Females	Males
Low SES	Poor maternal mental health	.064	.004	.000	.000	.064	.004
	First-grade maladaptive classroom behavior						
	Low school bonds	.165*	.184	.008	.000	.173	.184
	Adolescent mental health problems	.132 [†]	.051	.006	.001	.138	.052
	Adolescent substance use	-.009	-.079	.003	.000	-.007	-.079
	Low family bonds	.026	-.082	-.003	.000	.023	-.082
	Young adult psych distress	.065	.087	.028	-.017	.092	.071
	Young adult drug use	-.071	-.225*	.019	.030	-.052	-.195
	Mid-adult psych distress	.065	-.133	.036	.038	.101	-.094
	Mid-adult drug use	.045	-.037	-.031	-.088	.013	-.125
High household crowding	First-grade maladaptive classroom behavior	.195*	.190*	.000	.000	.195	.190
	Low school bonds	.021	-.026	.024	.023	.045	-.004
	Adolescent mental health problems	-.038	-.002	.017	.033	-.021	.031
	Adolescent substance use	-.076	.054	.008	.018	-.068	.072
	Low family bonds	-.069	-.050	-.009	-.007	-.078	-.057
	Young adult psych distress	.119 [†]	.039	-.018	.015	.100	.053
	Young adult drug use	.052	.079	-.003	.019	.049	.098
	Mid-adult psych distress	-.054	.067	.036	.005	-.018	.072
	Mid-adult drug use	.087	.179 [†]	.018	.040	.106	.219
	First-grade maladaptive classroom behavior	-.014	-.054	.000	.000	-.014	-.054
Low SES	Low school bonds	-.036	.046	-.002	-.006	-.038	.040
	Adolescent mental health problems	.043	.118	-.001	-.009	.041	.109
	Adolescent substance use	-.080 [†]	-.088	-.001	-.005	-.081	-.093
	Low family bonds	-.085 [†]	-.024	.001	.002	-.084	-.022
	Young adult psych distress	-.018	-.079	-.002	.006	-.020	-.073
	Young adult drug use	.039	.087	-.017	-.001	.022	.086

Predictor	Dependent Variable	Direct Effects		Indirect Effects		Total Effects	
		Females	Males	Females	Males	Females	Males
Poor family health	Mid-adult psych distress	-.039	-.020	-.008	-.028	-.047	-.048
	Mid-adult drug use	-.013	-.018	.012	.041	-.001	.023
	First-grade maladaptive classroom behavior	.032	.054	.000	.000	.032	.054
	Low school bonds	-.058	-.045	.004	.006	-.054	-.038
Adolescent mental health problems	Adolescent mental health problems	-.023	-.041	.003	.009	-.020	-.032
	Adolescent substance use	.025	.017	.001	.005	.027	.022
	Low family bonds	.008	-.013	-.002	-.002	.006	-.015
	Young adult psych distress	-.125 [†]	-.026	.000	-.002	-.124	-.028
First-grade maladaptive classroom behavior	Young adult drug use	.079	.091	-.002	-.001	.077	.090
	Mid-adult psych distress	.097	.190	-.049	-.017	.049	.174
	Mid-adult drug use	.024	.106	.045	.041	.069	.147
	Low school bonds	.121 [*]	.119	.000	.000	.121	.119
Low school bonds	Adolescent mental health problems	.088 [†]	.175 [*]	.000	.000	.088	.175
	Adolescent substance use	.041	.094	.000	.000	.041	.094
	Low family bonds	-.048	-.036	.000	.000	-.048	-.036
	Young adult psych distress	.000	.000	.018	.041	.018	.041
Low school bonds	Young adult drug use	.000	.000	.024	.042	.024	.042
	Mid-adult psych distress	.000	.000	.006	.007	.006	.007
	Mid-adult drug use	.000	.000	.011	.016	.011	.016
	Young adult psych distress	-.039	-.063	.000	.000	-.039	-.063
Adolescent mental health problems	Young adult drug use	.130 [*]	.151	.000	.000	.130	.151
	Mid-adult psych distress	.000	.000	-.018	-.032	-.018	-.032
	Mid-adult drug use	.000	.000	.067	.069	.067	.069
	Young adult psych distress	.243 [*]	.211 [*]	.000	.000	.243	.211
Adolescent substance use	Young adult drug use	-.010	.028	.000	.000	-.010	.028
	Mid-adult psych distress	.000	.000	.091	.054	.091	.054
	Mid-adult drug use	.000	.000	-.019	.001	-.019	.001
	Young adult psych distress	.104 [†]	.147 [†]	.000	.000	.104	.147
	Young adult drug use	.186 [*]	.146 [†]	.000	.000	.186	.146

Predictor	Dependent Variable	Direct Effects		Indirect Effects		Total Effects	
		Females	Males	Females	Males	Females	Males
Low family bonds	Mid-adult psych distress	.000	.000	.033	.025	.033	.025
	Mid-adult drug use	.000	.000	.086	.056	.086	.056
	Young adult psych distress	.058	.052	.000	.000	.058	.052
	Young adult drug use	-.040	-.146 [†]	.000	.000	-.040	-.146
Young adult psych distress	Mid-adult psych distress	.000	.000	.023	.029	.023	.029
	Mid-adult drug use	.000	.000	-.023	-.066	-.023	-.066
	Mid-adult psych distress	.375 [*]	.269 [*]	.000	.000	.375	.269
	Mid-adult drug use	-.060	-.052	.000	.000	-.060	-.052
Young adult drug use	Mid-adult psych distress	-.030	-.100	.000	.000	-.030	-.100
	Mid-adult drug use	.496 [*]	.435 [*]	.000	.000	.496	.435 [*]

Note: AMOS provides significance levels for direct effects only. Psych distress = psychological distress; SES = socioeconomic status. Indirect and total estimates $\geq .10$ are considered potentially significant.

[†] $p < .10$.

^{*} $p < .05$.