



Original article

Investigating Longitudinal Associations Between Sexual Assault, Substance Use, and Delinquency Among Female Adolescents: Results From a Nationally Representative Sample

Angela D. Moreland, Ph.D.^{*}, Kate Walsh, Ph.D., Chelsey Hartley, Ph.D.,
Rochelle Hanson, Ph.D., Carla Kmett Danielson, Ph.D., Benjamin Saunders, Ph.D.,
and Dean G. Kilpatrick, Ph.D.

Medical University of South Carolina, Charleston, South Carolina

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ABSTRACT

Purpose: Few studies have explored relations among sexual assault and prospective development of high-risk behaviors among adolescent girls.

Methods: The present study examined longitudinal associations among child sexual assault (CSA) and high-risk behaviors (nonexperimental alcohol and drug use; delinquent behavior) in a nationally representative sample of adolescent girls aged 12–17.

Results: Using path modeling, findings provided support for the link between CSA and nonexperimental alcohol use, drug use, and delinquent behavior after controlling for demographic characteristics and Time 1 functioning. Additionally, past 6-month post-traumatic stress disorder assessed at Time 1 was significantly associated with CSA and delinquency measured at Time 2, although the indirect effects did not reach traditional levels of significance.

Conclusions: These findings suggest that CSA may potentiate risk for a number of public health problems.

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IMPLICATIONS AND CONTRIBUTION

These findings have significant implications in prevention and intervention services for adolescent girls exposed to sexual assault. Specifically, results provide support for the relationship between child sexual assault and subsequent substance use and delinquency, which highlights the importance of addressing high-risk behaviors within current treatment interventions following sexual assault.

Approximately 1.8 million adolescents report exposure to at least one incident of child sexual assault (CSA) [1]. CSA lifetime prevalence ranges from 14% to 26%, with a disproportionate number of girls impacted [2–5]; making this a significant public health concern in the United States. CSA increases risk for dysfunction into adulthood [6,7], including heightened rates of post-traumatic stress disorder (PTSD) and anxiety [8], depression [8], suicide attempts [6], attention and impulsivity

problems [9], substance use [4,10], and delinquency [11]. CSA increases persistent negative affect [12], and victims may self-medicate with drugs or alcohol, consistent with the self-medication hypothesis [13]. Thus, adolescents may engage in high-risk behaviors (i.e., substance abuse and delinquency), as a means of “acting out” the depression or anger that arises from a stressor, such as CSA. Indeed, anger has been found to mediate CSA and delinquency among adolescents [14], in support of general strain theory. Associations between CSA and substance use are especially profound among adolescent girls [10], highlighting need to examine relationships among this population.

^{*} Address correspondence to: Angela D. Moreland, Ph.D., Medical University of South Carolina, 67 President Street, Charleston, SC 29425.

E-mail address: moreland@musc.edu (A.D. Moreland).

CSA and substance use

Fifty percent of U.S. adolescents reported using substances at some point in their lifetime [15]. Further, results from a nationally representative sample demonstrated that 25.2% of adolescents met criteria for alcohol abuse, 11.2% for drug use, and 7.4% for both [16]. Female CSA victims were three times as likely to report substance use problems compared to nonabused girls (40.5% vs. 14%) [17], which was consistent across multiple substances [18]. Further, PTSD symptoms were not significantly related to the relationship between CSA and substance use [16], suggesting that the link is not accounted for by PTSD symptoms.

CSA and delinquent behavior

Adolescent CSA victims were twice as likely to be arrested for a violent offense (13.6% vs. 6.3%) and 1.35 times more likely to be arrested for a property offense (9.2% vs. 6.3%) [19]. Risk for delinquency is even higher when PTSD symptoms are involved, as adolescents who reported CSA and PTSD engaged in delinquency behaviors more frequently than CSA adolescents without history of PTSD (odds ratio [OR] = 2.4) [16]. Of particular relevance, research has indicated a significant link between CSA and delinquent behavior among girls, but not among boys [19].

CSA and multiple high-risk behaviors

Substance use and delinquency are more likely to occur simultaneously in adolescence than during other developmental periods [20], as 25% of adolescents detained for delinquent acts reported alcohol use, 70% drug use, and 75% either alcohol or drug use [21]. Developmentally, adolescence is associated with heightened risk-taking behavior, as adolescents are less likely to perceive situations, such as substance use and delinquency, as harmful [22,23]. Youth who simultaneously engage in these behaviors are at increased risk for detrimental outcomes including physical health problems, lower life expectancy, psychosocial adjustment problems, and difficulty transitioning to adulthood [24]. Females, specifically, who engage in substance use or delinquency are unlikely to abstain from these behaviors later in development [20].

Aims of the current study

While the link between CSA and high-risk behaviors has been established [10,11,19], less information is available regarding the simultaneous effects of CSA, substance use, and delinquent behaviors. Analysis from the National Survey of Adolescents (NSA) [25] indicated that CSA predicted high-risk behaviors among adolescent girls; however, reverse relationships were not significant (i.e., high-risk behaviors did not predict subsequent CSA). Associations between CSA and individual high-risk behaviors were not examined. As PTSD mediated the link between CSA and delinquency, but not CSA and substance use [16], it is also important to examine PTSD. To our knowledge, no study has utilized a nationally representative sample of adolescent girls and longitudinal design to investigate relationships between CSA, subsequent onset of alcohol use, drug use, and delinquent behavior, and postonset PTSD.

This study longitudinally examined the relations among CSA, substance use (i.e., nonexperimental alcohol use and nonexperimental drug use), and delinquent behavior among girls, utilizing a nationally representative sample of adolescents. We hypothesized that CSA would predict each type of subsequent high-risk behavior

(nonexperimental alcohol use, nonexperimental drug use, and delinquent behavior) after controlling for earlier levels of that behavior. Given high association between CSA, PTSD, and high-risk behaviors, as well as the impact of PTSD on CSA and delinquency but not CSA and substance use [16], it is important to examine mediation of PTSD.

Methods

The NSA-replication was a longitudinal telephone survey of 3,614 youths, aged 12–17 years, living in U.S. households. The NSA-R identified the prevalence of physical assault, sexual assault, and witnessed violence in the home, school, and community, and mental health problems commonly associated with victimization, such as PTSD, depression, substance use, and delinquency.

Participants

The NSA-R included a national household probability sample and oversample of urban-dwelling adolescents. Recruitment began following Institutional Review Board approval. Sample selection and interviewing were conducted by Schulman, Ronca, and Bucuvalas, Inc. The initial probability sample used a multistage, stratified, area probability, random-digit-dialing six-stage sampling procedure. The urban dwelling sample used similar selection procedures limited to telephone banks within urban areas defined by the Census Bureau. Detailed information on sampling procedures are contained in Kilpatrick et al. [26].

Parents in 6,694 households with an eligible adolescent completed a brief structured interview; 5,426 (81%) consented for adolescents to be interviewed. A total of 188 adolescents (2.8%) refused to be interviewed; 119 (2.2%) interviews were initiated but not completed; and 1,505 (28.5%) adolescents were unreachable or not available for interview. Thus, 3,614 cases (67%) resulted in complete interviews at Time 1 (T1), including 2,459 from the national cross-section and 1,155 from the urban-dwelling adolescents sampling.

Of these adolescents, 2,511 (69%) completed the follow-up assessment at Time 2 (T2; mean between T1 and 2 = 15.29 months, standard deviation = 4.58 months). The 1,103 uncompleted T2 assessments were due to technical problems or nonworking number (29%); inability to reach the participant (24%); adolescent refusal during T2 recontact (17%); wrong telephone number (12%); ineligibility (9%); or only partial completion of the interview (9%). To examine attrition, effect sizes compared participants who completed versus did not complete the T2 assessment. Effect sizes were small for all CSA and high-risk behavior variables (range of $d = 0.04–0.13$); indicating minimal differences between completers and noncompleters on all variables.

Because adolescents were oversampled in urban areas, cases were weighted to maximize representativeness to the 2005 U.S. adolescent population. Cell weights restored urban cases to their true proportion of the urban/suburban/rural variable, based on 2005 U.S. Census estimates. Next, cell weights adjusted the weights based on age and sex. Generated sample frequencies were computed by age cohort and sex and compared this distribution to the U.S. Census estimates, and weightings were assigned to each sex \times age group cell within the sample. This procedure resulted in weighted sample distributions that closely approximated 2005 U.S. Census estimates.

Of the weighted sample of 3,614 participants, the sample of 1,763 girls between aged 12 and 17 ($M = 14.50$, standard

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