



Child maltreatment and age of alcohol and marijuana initiation in high-risk youth



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HIGHLIGHTS

- Longitudinal data were used to assess the impact of child maltreatment, and internalizing and externalizing behavior problems, on the initiation of alcohol and marijuana use among high-risk youth.
- Externalizing problems at age 8 mediated the link between child maltreatment and both alcohol and marijuana use initiation.
- There was a direct effect of physical abuse on alcohol use initiation, and mediated effects from sexual abuse and neglect through externalizing behaviors for alcohol and marijuana use.
- Externalizing behaviors are one mechanistic pathway from early childhood to age of substance use initiation among maltreated youth.

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ABSTRACT

Introduction: Youth with a history of child maltreatment use substances and develop substance use disorders at rates above national averages. Thus far, no research has examined pathways from maltreatment to age of substance use initiation for maltreated youth. We examined the longitudinal impact of maltreatment in early childhood on age of alcohol and marijuana use initiation, and whether internalizing and externalizing behaviors at age 8 mediate the link between maltreatment and age of substance use initiation.

Materials and methods: Data were drawn from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN) at ages 4, 8, 12, and 18. Maltreatment was assessed through reviews of administrative records and youth self-reports. Behavior problems were assessed with the Child Behavior Checklist. Age of substance use initiation was assessed with the Young Adult version of the Diagnostic Interview Schedule for Children.

Results: Path analyses indicated mediated effects from a history of maltreatment to age at first alcohol and marijuana use through externalizing behaviors. Considering type of maltreatment, direct effects were found from physical abuse to age of alcohol initiation, and mediated effects were found from sexual abuse and neglect to initial age of alcohol and marijuana use through externalizing behaviors. Direct effects for marijuana use initiation and indirect effects through internalizing behavior problems were not significant for either substance.

Conclusions: Externalizing behavior is one pathway from childhood maltreatment to age of substance use initiation. Services for maltreated youth should incorporate substance use prevention, particularly among those with early externalizing problems.

1. Introduction

In 2015, approximately 7.2 million U.S. children were reported to

child protective services (CPS) for child abuse or neglect (U.S. Department of Health and Human Services, 2017). Youth with a history of child maltreatment use substances and develop substance use

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disorders (SUD) at rates above national averages (Aarons, Brown, Hough, Garland, & Wood, 2001; Fettes, Aarons, & Green, 2013; Leslie et al., 2010; Pilowsky & Wu, 2006; Traube, James, Zhang, & Landsverk, 2012). Yet our ability to prevent SUD continues to be profoundly limited by a poor understanding of the pathways leading from child maltreatment to the development of substance use problems among this population. From a prevention standpoint, one critical step in that pathway is the initiation of substance use.

Researchers have long observed a link between early substance use initiation and progression to substance abuse and related problem behaviors (Jackson, Henriksen, Dickinson, & Levine, 1997). Recent longitudinal research has found that early initiation of substance use plays a causal role in the subsequent development of SUD and related problem behaviors, even when controlling for underlying genetic risk (Irons, Iacono, & McGue, 2015). Because cognitive, emotional, and neural development continue throughout adolescence (Keating, 2004; Paus, 2005; Steinberg, 2005), earlier use may cause more harm to the developing adolescent than later use, and younger adolescents may be uniquely vulnerable to subsequent escalation (Glantz & Leshner, 2000). Early initiation has been linked to brain changes that increase the likelihood of SUD and associated problem behaviors (Gruber, Dahlgren, Sagar, Gönenç, & Lukas, 2014). Adolescents who have initiated substance use at an early age perform more poorly on executive functioning tasks than non-users or adolescents who have initiated at a later age (Gruber, Sagar, Dahlgren, Racine, & Lukas, 2012). For these reasons, delaying substance use initiation has long been identified as an important goal of prevention (DeWit, Adlaf, Offord, & Ogborne, 2000).

Despite the urgent need to identify predictors and pathways that precede early initiation of substance use for maltreated youth, there is a paucity of long-term longitudinal research on antecedents of early initiation with this high-risk population. A handful of longitudinal studies conducted by Dodge and colleagues with community samples have linked early initiation of substance use to childhood physical abuse (Lansford, Dodge, Pettit, & Bates, 2010), harsh parenting (Dodge et al., 2009), parental substance abuse, poor parental verbal reasoning, and children's hyperactivity, internalizing behavior problems, and social problem solving skill deficits (Kaplou, Curran, Dodge, & Conduct Problems Prevention Research Group, 2002). However, despite consistent findings that they experience higher rates of substance use and SUD, no research thus far has examined pathways from maltreatment to age of substance use initiation for youth with a history of CPS involvement.

Our research was guided by two ecological-developmental theoretical perspectives – developmental psychopathology (Sameroff, 2009; Sroufe & Rutter, 1984) and the multifactorial model of complex disorders (Falconer, 1965; Lander & Schork, 1994; Tarter, 2002) – both of which suggest that individual behavior is the product of reciprocal interactions between characteristics of the individual and his or her life experiences. Within this framework, maltreated children face elevated risk of developing SUD as adolescents or adults due to both genetic and environmental factors. The present study focused on the family environment and its longitudinal effect on child behavior and age at initiation of substance use. We conceptualized maltreatment in early childhood as an environmental risk factor that would increase a child's probability of developing behavior problems in middle childhood, which in turn would increase the risk of initiating substance use at an early age. We aimed to examine effects that occurred above and beyond the risk conferred by parental substance use or abuse.

The present study examined the longitudinal impact of maltreatment in early childhood on age at first use of alcohol and marijuana, two of the most commonly used substances in adolescence. Data were drawn from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN), a multisite, 20-year prospective study of the antecedents and consequences of child maltreatment. We hypothesized that: (1) Maltreatment during the first 6 years of life would predict earlier age of initiation of alcohol and marijuana; and that (2) The effects of

maltreatment on age of initiation would be mediated by externalizing and/or internalizing behavior problems at age 8. Although we did not formulate specific hypotheses regarding type of maltreatment, we did explore the differential effects of neglect, physical abuse and sexual abuse on behavior problems and on age at initiation. Hypotheses were tested by estimating path analysis models using the maximum likelihood robust (MLR) procedure in MPlus (Muthén & Muthén, 2014). All statistical models controlled for child sex, ethnicity, site, and caregiver substance use.

2. Material and methods

2.1. Participants and procedure

Data for the current study were drawn from LONGSCAN. Site samples vary by maltreatment risk such that the final pooled sample represents a continuum of early maltreatment risk ranging from those removed from the home prior to age 4 to a set of socio-demographically matched participants (see Runyan et al., 1998 for more detailed information about site samples and recruitment). Bi-annual face-to-face interviews were conducted with children/youth and their primary caregiver beginning at age 4 through age 18. Caregivers provided consent for their participation and that of the child; children provided assent from age 8 until the age of 18 at which point they provided consent for their own participation. All sites shared common protocols and instruments. Each site and the Coordinating Center received ongoing approval from their respective institutional review boards.

The LONGSCAN baseline sample consists of 1354 children. For the current study, participant data were excluded if they did not complete any of the age 12, 14, 16, or 18 interviews ($n = 188$). Observations were also excluded if there were missing data on the measure of internalizing/externalizing behaviors at age 8 and missing data for the outcome of interest ($n = 61$). The sample size for analyses assessing age of initiation of alcohol and marijuana use was 1105 and 1038 respectively. Child gender representation was approximately equal (female = 53%). The majority of child participants were African American (56%), followed by Caucasian (25%), and those indicating mixed race (11%). See Table 1 for sample demographics.

Table 1
Demographic characteristics of the analysis sample ($N = 1105$).

Demographic characteristics	%	N
Gender		
Female	52.85	584
Male	47.15	521
Race/ethnicity		
African American	55.75	616
Caucasian	24.89	275
Mixed race	11.22	124
Latino/a	6.88	76
Other	1.3	14
Study site		
Southwest	25.07	277
Eastern	21.18	234
Northwest	19.10	211
Midwest	17.83	197
Southern	16.83	186
Maltreatment history (birth – age 6)		
Any CPS or self-reported maltreatment	70.95	784
Neglect (CPS Only)	50.86	562
Physical abuse (CPS or self report)	28.42	314
Sexual abuse (CPS or self report)	14.84	164
	M	SD
Child age at age 18 interview	18.51	0.61

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