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RESEARCH ARTICLE

The Role of Emotional Abuse in Youth Smoking

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Introduction: The purpose of this prospective study is to examine the role of emotional abuse in predicting youth smoking.

Methods: Data were drawn from the Longitudinal Studies of Child Abuse and Neglect. The sample was restricted to those who had an interview at age 12 years and at least one interview at ages 14, 16, or 18 years (n=775). Self-reported smoking at ages 14, 16, and 18 years was the time-varying dependent variable. Peer and household smoking were modeled as time-varying predictors. Type of abuse, youth sex, race/ethnicity, history of child neglect, and study site were modeled as time-invariant predictors. Dates of data collection from age 4 years to age 18 years range from July 1991 to January 2012. Analyses were conducted in 2017.

Results: After controlling for a history of neglect, sex, race/ethnicity, study site, household and peer smoking, those with physical and/or sexual abuse only, or emotional abuse only, were at no greater risk of smoking compared with the no abuse group. However, those classified as having a combination of physical and/or sexual abuse and emotional abuse were at significantly greater risk for youth smoking compared with those with no reported physical/sexual or emotional abuse (β=0.51, z=2.43, p=0.015).

Conclusions: Emotional abuse, in combination with physical and/or sexual abuse, predicted youth smoking, whereas the other types of abuse (physical and/or sexual abuse), or emotional abuse alone, did not. Considering the important health implications of early smoking initiation, it is important to document critical influential factors to better inform intervention efforts.

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INTRODUCTION

Tobacco use is the leading cause of morbidity and mortality in the U.S.[1] Most smokers begin smoking in early adolescence with the majority of new cigarette smokers (55.7%) initiating smoking prior to age 18 years.[2] Recent data suggest that roughly 8% of teens aged 12 to 17 years are current smokers.[2] Among adolescents aged 16 to 17 years, the rate is substantially higher (15%), with a continued increase in prevalence among young adults aged 18 to 20 years (31.6%).[2] Adolescents who initiate smoking are likely to continue throughout adulthood.[3] A myriad of negative outcomes are associated with teen cigarette use including respiratory problems, asthma, and allergy symptoms.[4] Teen smoking is associated with a roughly fourfold

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increase in the risk of illegal drug use, increased risk of problem alcohol use, frequent smoking, sleep disturbances, academic difficulties, physical and mental health problems, and increased risk of other problematic health behaviors.[2,5–7]

Child maltreatment has also been identified as a significant risk factor for the use of cigarettes,[8–18] with much of the extant research focused on risk associated with physical and sexual abuse.[17] Findings typically demonstrate significant increases in the likelihood of smoking onset or frequency among those with these abuse experiences.[14,17,18] However, a number of limitations plague these studies including (1) retrospective recall of abuse experiences and smoking onset among adult populations; (2) utilization of a single source of maltreatment data (Child Protective Services [CPS] or self-report data); (3) failure to include less studied, but more common forms of maltreatment including emotional abuse; and (4) failure to account for the co-occurrence of other maltreatment types, specifically emotional abuse.

Scholars have increasingly called for greater consideration and examination of the impact of childhood emotional abuse on child and adolescent outcomes.[19–22] Some emerging evidence suggests emotional abuse may be more impactful than other forms of maltreatment including outcomes, such as emotional dysregulation,[23] which has been implicated in theoretic models of substance use and substance use disorders[24,25] that posit smoking is a maladaptive, but potentially effective, way to cope with dysregulated internal states.[26,27]

Emotional abuse often occurs in combination with other maltreatment types[28–30] including physical and sexual abuse, yet the link among these victimization types and substance use has not typically accounted for the potential, and perhaps greater, impact of emotional abuse.[31] This could potentially lead to inflated associations between physical/sexual abuse and adolescent substance use, including smoking. For example, Rosenkranz and colleagues[32] examined the role of emotional abuse and emotional neglect on substance use problem severity and found only emotional abuse and emotional neglect predicted substance use severity when considering all maltreatment types simultaneously. However, the data were limited by adolescent self-report of maltreatment experiences, the sample comprised youth entering substance use treatment (single-time assessment), and tobacco use was not assessed.

The purpose of the current study is to examine the unique and combined role of emotional abuse in smoking during adolescence among a large sample of high-risk youth. This study addresses limitations of prior studies by using prospective data on youth smoking, multisource maltreatment data, and inclusion of emotional maltreatment. Hypotheses are that (1) emotional abuse would be significantly associated with smoking risk, and that (2) emotional abuse combined with physical abuse or sexual abuse would be associated with greater smoking risk than physical or sexual abuse without co-occurring emotional abuse. The authors controlled for other predictors of smoking including peer smoking, household smoking, race/ethnicity, and youth sex.[8,9,33]

METHODS

Study Sample

Data for analyses were drawn from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN), a longitudinal study of the antecedents and consequences of child maltreatment. LONGSCAN comprised five sites and a coordinating center, and operated under common protocols and shared measures, data collection, data entry, and data management procedures. Site samples were selected for maltreatment risk at recruitment, varying from those removed from their families prior to age 4 years to those at high risk but not reported by age 4 years. Approximately two thirds of the baseline sample had one or more referrals to CPS by age 4 years. The remaining third included those matched largely on sociodemographic risk. Detailed information regarding the site samples is available in Runyan et al.[34] Each site received approval from its respective institution's IRB.

LONGSCAN conducted face-to-face interviews with the child participants and/or their primary caregivers approximately every 2 years beginning when the child participants were aged ≅ 4 years (with the exception of a child aged 10 years when interviews were conducted by phone). Each caregiver provided consent for him/herself and his/her child. Child participants provided assent for participation beginning at age 8 years and consent for participation in the age 18 years interview. Data for the current study were drawn from the youth interviews conducted at ages 12, 14, 16, and 18 years, and the review of CPS administrative records conducted throughout the study. Youths and caregivers participated in separate interviews using an audio computer-assisted self-interview format. A trained interviewer was present to facilitate the interviews, answer questions, and administer the few questionnaires that were not self-administered. Dates of data collection from age 4 to age 18 years range from July 1991 to January 2012. Analyses were conducted in 2017.

The LONGSCAN baseline sample consisted of 1,354 children. The analytic sample for the current study was restricted to those who had non-missing data at age 12 years and at least one interview at age 14, 16, or 18 years, yielding an analysis sample of 775 participants (totaling 1,752 observations summed across all interviews between ages 12 and 18 years). The majority of youth participants were black (56%), followed by white (25%), and other race (19%), with approximately equal sex representation (51% female). The analysis sample did not differ from the baseline sample with respect to youth sex, site representation, CPS history through age 4 years, or race/ethnicity.

Measures

At age 14 years, items from the Youth Diagnostic Interview Schedule for Children[35] nicotine and alcohol abuse/dependence

modules were utilized to assess tobacco use. At ages 16 and 18 years, items from a project-developed measure assessing tobacco, alcohol, and drug use were used to capture youth report of cigarette use.[36,37] Across measures, youth self-reported whether they had ever smoked cigarettes, and if yes, how often in the previous 30 days. For the current study, if a youth reported any use in the previous 30 days, youth smoking was coded as one; and if not, then youth smoking was coded as zero.

To assess history and type of maltreatment, CPS case narratives were abstracted and coded using the Modified Maltreatment Classification System (MMCS). The MMCS enables the standardization of maltreatment type regardless of definitional differences among agencies and across states.[38,39] Because previous research has demonstrated that substantiated maltreatment is no better at predicting outcomes than alleged maltreatment,[40] any allegation to CPS was considered indicative of maltreatment, regardless of substantiation. For each participant, dichotomous indicators were created for three types of maltreatment: physical victimization (physical and/or sexual abuse), emotional abuse, and neglect (from birth through age 12 years). Examples of indicators of emotional abuse included in the MMCS are (1) the caregiver rejects or is inattentive to or unaware of the child's needs for affection and positive regard, (2) the caregiver undermines the child's relationships with other adults significant to the child (e.g., makes frequent derogatory comments about the other parent), (3) the caregiver often belittles or ridicules the child, and (4) the caregiver demonstrates a pattern of negativity or hostility toward the child.

Beginning at age 12 years, LONGSCAN incorporated youth self-report measures of specific maltreatment experiences.[41] Each measure of abuse type contains stem questions addressing specific abuse experiences (i.e., physical abuse includes 15 items, sexual abuse includes 11 items, and emotional abuse includes 16 items). Sample items for emotional abuse were, *Have your parents ever called you names or teased you in a way that made you felt really bad about yourself?* and *Have any of your parents ever humiliated you very badly by putting you down a lot in front of other people?* When one of the stem questions was endorsed, the youth was asked follow-up questions, such as age at the time the abuse occurred, perpetrator, and frequency of the abuse. For the current study, separate dichotomous indicators were derived to account for whether or not the youth endorsed any of the stem questions for physical and sexual abuse or emotional abuse.

Given the potential biases in singular reliance on self-report or CPS records, scholars have recommended the inclusion of both sources as a more accurate representation of maltreatment experience.[42] Accordingly, both self-report data (collected at age 12 years) and CPS allegation data (from birth through age 12 years) were used to group participants into one of four mutually exclusive abuse categories: (1) no maltreatment, (2) emotional abuse only (i.e., without either physical or sexual abuse), (3) physical victimization only (i.e., physical and/or sexual abuse without emotional abuse), and (4) both physical victimization and emotional abuse. Physical and sexual abuse were of primary interest given these were most often examined in previous studies.[18] These types were combined following suit of other studies[43] and because examining each type individually would lead to cell sizes too small for meaningful analyses. A history of CPS allegations for neglect (birth to age 12 years) was included to account for any potential co-occurrence with physical victimization and emotional abuse categories.

The Risk Behavior of Family and Friends[37,41] was administered at ages 12, 14, and 16 years, and was used to capture youth self-reports of someone in the home smoking, as well as peer smoking behaviors. For household smoking, youth were asked to indicate whether they lived with anyone who smoked cigarettes; if positively endorsed, household smoking was coded as one, if not, household smoking was coded as zero. For peer smoking, youth were asked to indicate *how many of your closest friends smoke cigarettes (0=none, 1=some, 2=most)?* If the participant answered *none*, then peer smoking was coded as zero; if the participant answered *some* or *most*, then peer smoking was coded as one.

Demographic information collected at age 4 years included youth sex and race/ethnicity. Race/ethnicity was coded as one if white or as zero if non-white. Study site was collapsed into a dichotomous variable (Eastern, Midwestern, and Southern sites as one; Southwestern and Northwestern as zero) combining sites with the lowest and the highest maltreatment rates, respectively.

Statistical Analysis

To examine the prospective effect of maltreatment type on youth smoking longitudinally, a generalized estimating equation (GEE)[44] approach was used. GEE is appropriate for correlated data and can accommodate unbalanced designs, missing data, and both fixed and time-varying covariates. All analyses were conducted using Proc GENMOD in SAS, version 9.4. Youth self-reported smoking at ages 14, 16, and 18 years was the dependent variable. Peer and household smoking were modeled as time-varying predictors for the timeframe preceding measurement of the dependent variable (e.g., age 12 years peer smoking predicting age 14 years youth smoking). Maltreatment type, youth sex, race/ethnicity, history of child neglect, and study site were modeled as time-invariant predictors. Data for each participant at all available time points were included, resulting in a total of 1,752 observations representing 775 unique participants (Table 1). Among the analysis sample, 56% of participants had data for all three outcome time points (ages 14, 16, and 18 years); 13% had data for two of the outcome time points; and 30% had data for one of the outcome time points.

RESULTS

Six percent of youth endorsed smoking at age 14 years, 17% at age 16 years, and 31% at age 18 years. Reports of household smoking were consistent over time (56% at age 12 years, 55% at age 14 years, and 54% at age 16 years). Reports of peer smoking increased over time (7% at age 12 years, 22% at age 14 years, and 45% at age 16 years). As shown in Table 1, 69% of youth self-reported or had CPS allegations for one or more types of maltreatment. Fifty-seven percent had a history of neglect, 17% were classified as victims of emotional abuse only, 12% as victims of physical victimization (physical and/or sexual abuse) without emotional abuse, and 40% as victims of physical victimization and emotional abuse. Only 31% had no CPS or self-report of any maltreatment by age 12 years.

Table 1. Demographics of the Analysis Sample

Study variables	*n* (%)
Gender (male)	382 (49.3)
Race/Ethnicity	
White	195 (25.0)
Black	431 (55.6)
Other	149 (19.2)
Site	
Eastern, Midwest, Southern	433 (55.9)
Southwest, Northwest	342 (44.1)
History of neglect (ages 0–12)	444 (57.3)
Abuse (ages 0–12)	
No abuse	237 (31.1)
Emotional abuse only	129 (16.7)
Physical victimization only	95 (12.3)
Physical victimization + emotional abuse	314 (40.5)
Total N	775

Unadjusted associations between study variables and youth smoking (controlling for repeated measurement) indicated significant associations ($p<0.05$) for race/ethnicity (OR=1.97), study site (OR=1.35), neglect (OR=1.63), household smoking (OR=1.68), peer smoking (OR=5.60), and the combination of emotional abuse and physical victimization (OR=1.86). As indicated in Table 2, analyses from a GEE model (controlling for gender, neglect, race/ethnicity, and study site) indicated a significant main effect for maltreatment type, such that those classified as having physical victimization and emotional abuse were at significantly greater risk for smoking compared with all other abuse categories (β=0.51, z=2.43, p=0.015). Considering demographic and control variables, white youth were more likely to smoke than non-white youth (β=0.62, z=3.59, $p<0.001$). Those who indicated that some or most of their peers smoked were more likely to smoke than those who did not (β=1.67, z=12.80, $p<0.001$). Similarly, youth with a smoker in the household were more likely to self-report smoking than those without (β=0.45, z=3.07, p=0.002).

DISCUSSION

The purpose of the current study was to prospectively examine the contribution of emotional abuse to adolescent smoking among a high-risk sample of youth. Findings provided support for the hypothesis that emotional abuse combined with physical victimization is associated with greater risk of smoking than physical victimization without co-occurring emotional abuse. Emotional abuse alone did not predict smoking, nor did physical and/or sexual abuse alone. Neglect was associated with smoking only in unadjusted models.

Physical victimization with co-occurring emotional abuse was significantly more common in this high-risk sample (40%) than physical victimization experiences without emotional abuse (12%). After accounting for peer smoking and other relevant controls, only the combination of these abuse experiences predicted smoking. This could suggest that links between physical/sexual abuse and substance use without accounting for co-occurring emotional abuse could be inflated, particularly for teen smoking, or that emotional abuse may be contributing something unique that exacerbates existing or subclinical problems in physically victimized youth, such as internalizing problems. However, in the absence of a significant bivariate association of emotional abuse alone, it could be that the combined effect reflects more of a dose–response or cumulative relationship, such that as the number of maltreatment types increases, so does the risk for tobacco use.[11,15,16] Given the high prevalence of co-occurring maltreatment experiences, it is unclear whether it is simply the sum of types that increases risk

Table 2. Model Results for Youth Smoking (Past 30 Days)

Study predictors	β	SE	Z	*p*-value	OR
Gender (ref=female)	0.03	0.15	0.22	0.83	1.03
Race (ref=non-white)	0.62	0.17	3.59	**<0.001**	1.87
Site (ref=E/S/MW)	−0.11	0.19	−0.56	0.58	0.90
History of neglect	0.29	0.20	1.39	0.17	1.32
Household smoking	0.45	0.15	3.07	**0.002**	1.56
Peer smoking	1.67	0.13	12.80	**<0.001**	5.30
Abuse type (ref=no abuse)					
EA only	0.08	0.26	0.59	0.76	1.08
PV only	0.35	0.28	0.90	0.20	1.42
PV + EA	0.51	0.21	2.43	**0.02**	1.66

E/S/MW, East, Southern, and Midwest sites combined; EA, emotional abuse; PV, physical victimization (physical abuse and/or sexual abuse).

or the constellation of specific co-occurring types. Further efforts in this area are needed to determine if emotional maltreatment has a unique impact in the context of cumulative risk.

Contrary to expectations and published findings, emotional abuse alone was not associated with increased smoking risk. This discrepant finding could reflect the heterogeneity across studies with regard to sample characteristics, informant sources, measurement, and definitions of emotional abuse.[20,45] In this study, both CPS and youth self-report of victimization experiences were used. It is possible that studies relying on CPS identify only the most severe or chronic cases. Additionally, emotional abuse during adolescence may be more closely associated with current risk than early childhood experiences. Although this study examined the impact of childhood experiences, there was no assessment of chronicity, timing, severity, or adolescent maltreatment. More data are needed to assess the role of these potentially important factors as well as distal versus proximal associations with smoking.

Finally, neglect emerged as the only maltreatment type associated with smoking in unadjusted models. However, after including other predictors of teen smoking and adjusting for the presence of other maltreatment types, the effect of neglect did not remain significant. This finding could suggest potential mediating effects aside from internalizing problems. For example, scholars have posited a pathway to substance use via association with deviate or substance-using peers, particularly among youth with early experiences of poor or absent parenting.[46] In this study, peer smoking was highly predictive of youth smoking, and the effect of neglect was eliminated with the inclusion of peer smoking. Testing potential mediators of tobacco use among youth with a history of neglect could provide important intervention guidance.

Limitations

This study adds to the literature in three ways. First, smoking was assessed prospectively at three time points during adolescence. Second, the longitudinal, multimethod assessment of maltreatment types provides a comprehensive history of maltreatment experiences from birth to age 12 years. Third, a number of important demographic and influential factors including peer influence were included as controls. These study strengths address prior limitations in extant literature including retrospective recall of maltreatment, single time point assessments of smoking behavior, and limited categorization of maltreatment experiences. Some limitations are of note, including the reliance on self-report to assess smoking, potential lack of generalization of study findings to youth without similar risk histories, and dichotomization of maltreatment variables, which could limit statistical range and variability. This study did not account for the possible effect of current maltreatment or control for other adverse experiences. Other important factors associated with adolescent smoking were unassessed in this study (e.g., socioenvironmental factors, family factors, individual factors, community factors, SES, accessibility, and psychopathology).[8,9,33,47–48] Finally, the number of respondents with only physical and only sexual abuse was too small for meaningful analyses. Combining both types into a single variable could have attenuated the effect if one type had weaker associations with smoking.

CONCLUSIONS

Given the high prevalence of emotional abuse, but low representation in empiric studies, this study addresses an important gap in understanding the impact of psychological maltreatment on adolescent smoking risk. Further efforts are needed to test potential mechanistic mediating pathways, including whether different mediators (e.g., emotion dysregulation, or deviant peers) may be associated with different maltreatment types and smoking outcomes for high-risk adolescents.

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