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Childhood Traumatic Experiences and the Association with Marijuana and Cocaine Use in Adolescence through Adulthood

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Abstract

Background and aims—Examination of longitudinal relationships between childhood traumatic experiences and drug use across the life-course at the national level, with control of confounding by other forms of trauma, is needed. We aimed to estimate the prevalence of nine typologies of childhood traumas and the cumulative number experienced, correlation between traumas, and associations between individual and cumulative number of traumas with drug use during adolescence, emerging adulthood, and adulthood.

Design—Secondary data analysis using the National Longitudinal Study of Adolescent to Adult Health

Setting—United States of America.

Participants—A nationally-representative sample of individuals in grades 7–12 (ages 11–21) during 1994–95, who were re-interviewed during emerging adulthood (2001–02; ages 18–26) and adulthood (2007–08; ages 24–32). The analytic sample is 12,288 participants with data at all three waves.

Measurements—Nine typologies of childhood traumas: neglect; emotional, physical, and sexual abuse; parental incarceration and binge drinking; and witnessing, being threatened with, and experiencing violence. Indicators of each were summed to measure cumulative dose. Outcomes were marijuana and cocaine use during adolescence, emerging adulthood, and adulthood.

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Findings—Approximately 53% experienced at least one childhood trauma; traumas were not highly correlated. We observed a dose-response relationship between the number of traumas and drug use in adolescence (marijuana adjusted odds ratio (AOR) one trauma vs. none=1.65, 95% confidence interval (CI): 1.42, 1.92; two traumas=2.58, 95%CI: 2.17, 3.06; ≥four traumas=6.92, 95%CI: 5.17, 9.26; cocaine AOR one trauma=1.87, 95%CI: 1.23, 2.84; two traumas=2.80, 95%CI: 1.74, 4.51; ≥four trauma=9.54, 95%CI: 5.93, 15.38). Similar dose-response relationships with drug use were observed in emerging adulthood and adulthood. Each individual trauma was independently associated with either marijuana or cocaine use in adolescence, emerging adulthood, and/or adulthood.

Conclusions—Childhood trauma is prevalent in the US and individual types as well as the total number experienced are significantly associated with Marijuana and cocaine use throughout the life-course.

Keywords

childhood trauma; marijuana; cocaine; adolescence; young adulthood; life-course

Introduction

In 2013, almost one-quarter of 18 to 25 year olds and nearly one in ten 12 to 17 year olds in the United States (US) reported use of drugs, including marijuana, cocaine, and heroin (1). Drug use is associated with substantial morbidity and mortality, including physical and mental illness, increased risk of sexually transmitted infections (STI), HIV, and viral hepatitis (2–6), as well as social repercussions such as criminal justice involvement and domestic violence (1, 7–10). Initiation of drug use in youth is associated with subsequent use and abuse (11–13). Identifying risk factors for drug use throughout the life-course is critical to developing prevention strategies.

Childhood traumatic experiences may play a role in adolescent initiation of drug use, and trauma's effects may extend well into adulthood. Further exploration of this potential risk factor is critical given that childhood adversity appears to be common; almost 700,000 cases of childhood sexual and physical abuse and neglect were documented by US Child Protective Services in 2014 and this is likely a gross underrepresentation (14). Other prevalent traumatic experiences include exposure to household dysfunction, such as having a parent incarcerated or engage in substance use (15, 16). Under a broader definition, almost half of US children have experienced at least one trauma (17).

Childhood trauma is associated with depression and other mental disorders (18–23), which can lead to self-medication with drugs to attempt to regulate negative emotions (18, 24). Given childhood is a highly formative development period, exposure to trauma and its co-occurring stress is associated with adverse effects on neurodevelopment and various neurological functions, including cognition, memory, and affect regulation (25, 26) There is a complex hypothesized relationship between these functions and drug initiation and continued use (27).

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Numerous studies have documented associations between childhood traumatic experience and drug use in both adolescent and adulthood periods (15, 18, 28–32). Among the more rigorous was a prospective case-control study of court-documented cases of abuse and neglect before the age of 12 in the US Midwest, which demonstrated that trauma was associated with an approximately 50% increase in past year marijuana use when participants were followed up during adulthood (approximately 40 years of age) (33). In that study, all forms of trauma were combined and thus unable to isolate the main effects of each. The landmark Adverse Childhood Events (ACE) study, a retrospective cohort study conducted in a sample of HMO enrollees in California, examined childhood abuse plus a range of additional traumatic experiences and observed each distinct domain (e.g., abuse, neglect, household dysfunction) and the cumulative number of traumatic experiences were associated with substantial increases in the risk of both early initiation and adulthood continuation of drug use (29). While this study, notably, indicated that both abuse and non-abuse traumas had comparably strong associations with drug use, an important limitation, aside from the geographically-fixed convenience sample, was that analyses did not carefully control for confounding factors including other traumatic experiences. Since traumas may be correlated, failure to adjust for other traumas limits our ability to identify whether certain traumatic experiences may be stronger determinants of drug use.

These extant studies highlight the significance of the spectrum of traumatic childhood experiences in drug risk and indicate need for comprehensive study of the longitudinal relationships between childhood trauma and drug use across the life-course at the US national level, with careful control of potential confounders and each other form of trauma. To address these gaps, we aimed to use a rich, nationally-representative dataset to: 1) Estimate the prevalence of nine types of childhood traumatic experiences as well as the cumulative number of traumas experienced; 2) Describe the co-occurrence among traumas by estimating the prevalence for each pair of traumas that are co-reported by participants; 3) Estimate the magnitude and precision of associations between each individual trauma and two commonly used drugs (marijuana and cocaine) at three life-course time points (adolescence, emerging adulthood, and adulthood); and 4) Estimate the magnitude and precision of associations between the cumulative number of traumas experienced and drug outcomes at the three time points, and assess whether a dose-response relationship exists. Understanding the effects of a diverse range of childhood traumas from adolescence into adulthood is crucial for the development and timing of interventions and, ultimately, prevention of drug use.

Methods

Design Overview

In this secondary data analysis, we used the National Longitudinal Study of Adolescent to Adult Health (Add Health) dataset (34) to measure prevalence of childhood traumatic experiences before the age of 18 and associations with marijuana and cocaine use during adolescence, emerging adulthood, and adulthood. Add Health is a nationally-representative sample of US adolescents who were in 7^{th}–12^{th} grade (ages 11–21 years) in 1994–1995 and have been followed into adulthood through three additional waves of data collection (34).

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The study has been described in detail elsewhere (35, 36). Briefly, at Wave I, over 20,000 adolescents were drawn from a stratified, random sample of US schools and completed an in-home interview that collected data on a range of topics, including substance use, sexual behaviors, and sociodemographics. A parent of the participant also completed an in-home interview at Wave I. Add Health participants were re-interviewed in 2001–2002 (Wave III ages 18–28; n=15,197; response rate: 77.4%) and 2007–2008 (Wave IV ages 24–34; n=15,701; response rate: 80.3%) (37).

Analytic Sample

We used Waves I, III and IV, and included participants with data, including sample weights, at each wave (n=12,288). These three waves correspond to the life-course periods that we refer to as adolescence, emerging adulthood, and adulthood. Study activities were approved by Institutional Review Boards at the University of Florida and NYU School of Medicine.

Measures

Childhood Traumatic Experiences—Using interview data from Waves I (adolescence), III (emerging adulthood) and IV (adulthood), we created nine dichotomous measures of self-reported traumatic experiences before the age of 18, defined as follows based on previous studies of childhood maltreatment using Add Health (38, 39). 1) Neglect: left alone when an adult should have been present and/or not having basic needs met by an adult caregiver ≥six times. 2) Emotional abuse: parent/adult caregiver said things that really hurt one's feelings or made one feel unloved ≥six times. 3) Physical abuse: slapped, hit, kicked, or thrown by a parent/adult caregiver ≥six times. 4) Sexual abuse: parent/adult caregiver touching the participant or forcing the participant to touch him or her in sexual way, or forcing sexual relations. 5) Parental incarceration: Participants were asked whether their biological mother/mother figure and/or biological father/father figure ever spent time in jail/prison, and if so, how old the participant was the first time this happened; we combined these questions to capture experience of parental incarceration before the age of 18. 6) Parental binge drinking: ≥five drinks on one occasion at least once in the past month reported by the parent during the Wave I parent interview. 7) Witnessing violence: saw someone shoot or stab another person. 8) Threatened with violence: someone pulled a knife or gun on participant. 9)Experienced violence: been shot or cut/stabbed.

We summed each of the nine dichotomous traumas to create an indicator of the cumulative number of childhood traumas, which we then categorized into none, one, two, three, and ≥four traumas. We excluded participants that did not have complete data for each of the nine traumas, which yielded a sample of n=9,569 for analyses with the cumulative number of traumas. Results did not appreciably change when those with incomplete data were included.

Drug Use—Participants reported substance use at each wave. Marijuana use was defined as having ever used at adolescence, and having used in the past year at emerging adulthood and adulthood. Cocaine use was defined as having ever used at adolescence, having used in the past year at emerging adulthood, and initiation of use between emerging adulthood and

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adulthood (i.e., new users in adulthood). Since emerging adulthood users were excluded in analysis of adulthood initiation of cocaine use, the sample size is smaller.

Sociodemographics—We measured the following sociodemographic characteristics: age; gender, defined as male and female; race/ethnicity, categorized as non-Hispanic white, non-Hispanic African American, Hispanic, and other; poverty during adolescence and emerging adulthood, defined as not having enough money to pay utility/housing bills, reported by the parent during adolescence and the participant during emerging adulthood; and adulthood educational attainment, which was categorized as less than a high school education, high school education, and greater than high school education.

Analyses

Due to Add Health's complex design, to yield nationally-representative estimates we used survey procedures in SAS 9.4 (SAS Institute Inc., Cary, NC, USA) for all analyses to account for clustering, unequal selection probabilities, and stratification (40). We used univariable and bivariable analyses (PROC SURVEYFREQ) to estimate the weighted prevalence of the individual and cumulative number of childhood traumas in the entire sample and within each gender and to examine co-occurrence among traumas. We used logistic regression (PROC SURVEYLOGISTIC) to estimate unadjusted and adjusted odds ratio and 95% confidence intervals for associations between individual traumas and the cumulative number experienced and drug use during adolescence, emerging adulthood, and adulthood. For the cumulative number of traumas, we estimated associations with the numbers of traumas included as an ordinal variable to estimate the odds ratio for each unit increase in number of traumas, as well as a categorical variable to estimate the odds ratio for each level of trauma; we also assessed the linear trend using orthogonal polynomial contrasts. Adjusted models for adolescent drug use controlled for age, race, gender, adolescent poverty, and each other form of trauma. Emerging adulthood models adjusted for emerging adulthood poverty in addition to the previously mentioned covariates, and adulthood models included all of those covariates as well as adulthood educational attainment. Although mental disorders are associated with both childhood trauma and substance use, we hypothesize that these disorders may act as a mediator in the relationship and therefore did not control for it to avoid overadjustment and biasing results towards the null (41). We conducted additional analyses to examine whether associations between trauma and drug use differed when estimating initiation of drug use at each period (i.e., excluding users at the previous period as was done for adulthood cocaine use); however, estimates were the same as those obtained without this restriction and thus we do not report them.

Results

Study Population Characteristics

In the total analytic sample (n=12,288), approximately half were female. The majority was white (65.6%), followed by African American (16.0%), Hispanic (11.9%), and other (6.5%) (data not shown in tables). Participants were on average 15.9 years old at Wave I. Approximately 15% met criteria for poverty during adolescence and emerging adulthood.

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Approximately 8% did not complete high school, 18% completed high school, and 74% had beyond a high school education by adulthood.

Childhood Traumatic Experiences

Childhood traumatic experiences ranged in prevalence from approximately 5% to 16%; experiencing violence was the rarest reported trauma, with emotional abuse the most common (Table 1). Emotional and sexual abuse were significantly higher among females, while the violence exposures were more commonly reported by males.

Of 9,569 who provided data for all nine traumas, 47% did not experience any trauma, 28% experienced one, 13% experienced two, 7% experienced three, and 5% experienced four or more.

Types of traumatic experiences did not appear to cluster (Table 2). Emotional and physical abuse were modestly correlated; approximately 40% of those who reported emotional abuse also reported physical abuse. The strongest interrelations were among the violence variables. Of those who were threatened with violence, nearly half had also witnessed violence.

Associations between Individual and Cumulative Traumas & Marijuana Use

Adolescence—Marijuana use was common during adolescence (approximately 28%). In unadjusted models, each trauma was significantly associated with marijuana, ranging from an approximately 50% to 400% increase in the odds (Table 3). Estimates were similar after adjustment for sociodemographics and each trauma, with the exception of sexual abuse which lost statistical significance. The highest odds of marijuana were associated with witnessing and threatened with violence. Relative to no trauma, the adjusted odds of marijuana increased approximately 60% with each increase in the number of traumas.

Emerging Adulthood—During emerging adulthood, approximately 33% reported past year marijuana use. In unadjusted models, all forms of trauma continued to be significantly associated with marijuana, except sexual abuse (Table 3). Estimates were attenuated relative to associations in adolescence. After adjustment, emotional abuse, parental incarceration, parental binge drinking, witnessed violence, and threatened with violence remained significant independent correlates of marijuana. The association between emerging adulthood marijuana and the number of traumas experienced was like that of adolescent marijuana, though somewhat weaker. With each unit increase in the number of traumas, there was an approximately 22% increase in the adjusted odds of marijuana.

Adulthood—As participants aged, marijuana use decreased slightly to approximately 23%. In unadjusted models, all traumas were significant correlates, with parental incarceration and threatened with violence being the strongest (Table 3). These factors, along with physical abuse, remained significantly associated in adjusted models. When assessing the number of traumas, all levels were significant, with an approximately 24% increase in the adjusted odds of marijuana for each unit increase in number of traumas.

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Associations between Individual and Cumulative Traumas & Cocaine Use

Adolescence—Though cocaine use was not prevalent during adolescence (3%), exposure to traumas was strongly related to use (Table 4). In unadjusted models, each type of trauma exposure was significantly associated; the strongest correlates were indicators of violence, all with an at least three-fold increase in the odds of cocaine. After adjustment, six of the nine traumas remained significantly associated. Assessing the association with number of traumas, each unit increase in the number of traumas was associated with an approximately 70% increase in the adjusted odds of cocaine.

Emerging Adulthood—Cocaine use increased during emerging adulthood, with past year use reported by approximately 7%. In unadjusted models, all traumas except parental incarceration and binge drinking were associated (Table 4). Threatened with violence had the highest estimate. After adjustment, only sexual abuse and witnessing violence remained significant correlates. The strength of associations for number of traumas was not as strong as during adolescence, with the adjusted odds of cocaine increasing approximately 24% for each unit increase in the number of traumas.

Adulthood—By adulthood, approximately 16% of participants who had not used cocaine during emerging adulthood reported they had used cocaine. In unadjusted models, all traumas were significantly associated with cocaine, with experiencing violence showing the strongest relationship (Table 4). After adjustment, emotional abuse was the strongest correlate, with only parental incarceration and binge drinking also remaining significantly associated. There was a stepwise increase in associations between the cumulative number of traumas and cocaine, with an approximately 30% increase in the adjusted odds for each unit increase in numbers of traumas.

Discussion

Over half of participants in this nationally-representative US sample experienced at least one type of childhood trauma. Emotional abuse was the most frequently reported trauma, observed among one in six. Other traumas were common, with physical abuse and neglect, parental binge drinking or incarceration, being threatened at knife or gun point, and witnessing a shooting or stabbing each reported by 10%. In analyses controlling for sociodemographics and each other traumatic event, we observed moderate to strong associations between each individual trauma and adolescent use of marijuana and/or cocaine. The cumulative number of traumas was associated in a dose-response fashion with drug use. The association with drug use appears to weaken over time, though multiple traumas remained independently associated with drug use during emerging adulthood and adulthood.

Our results support previous findings documenting the adverse effects of childhood trauma on drug use (18, 29, 30, 32, 33). The ACE study, the first to evaluate a diverse range of childhood traumatic events as correlates of numerous health outcomes including substance use, found that each of ten childhood traumas substantially increased the likelihood of adolescent and adulthood use of “street” drugs (29). Comparisons between the current Add Health findings with those of the ACE study should be made with care because some

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measurement of the traumas differed somewhat between the two studies. Moreover, ACE did not evaluate use of specific substances (e.g., marijuana, cocaine), the average age of the ACE study population was 55 years versus 28 years among adult Add Health participants at Wave IV, and Add Health is represents US race and gender distributions. That said, our results of relationships between trauma and drug use, in particular cocaine, appear to echo those of ACE. As ACE demonstrated that each trauma was associated with elevated odds of early initiation (defined as 14 years or younger) and lifetime use of street drugs (29), we also found each traumatic event was moderately to strongly associated with an increase in the odds of adolescent and adult use of cocaine. In addition, we observed in the Add Health sample, as was observed in the ACE sample, that a cumulative increase in childhood trauma was linked in a dose-response manner to drug use in adolescence and adulthood. This dose-response gradient has been observed in other studies; for example, lifetime cocaine dependence increased with each increasing quartile of number of traumas among patients in an Atlanta hospital (18).

The especially strong associations we observed in adolescence may be driven by the temporal proximity of the trauma exposures and drug use outcomes. However, our findings demonstrated a persistent relationship between trauma and drug use well into adulthood. Initiation of drug use in youth may lead to higher prevalence of drug use later in life among people with a history of childhood trauma, because early initiation may lead to abuse/dependence, whereas most youth can be expected to outgrow risky behaviors like drug use (42). Our findings highlight the potential utility of addressing childhood traumatic experiences early as a means of preventing substance use throughout the life-course.

Given the link between childhood trauma and mental disorders, it is possible that mental disorders, such as depression, are an important mediator underlying the relationship between trauma and drug use. Drug use may be more prevalent among those who are attempting to alleviate symptoms of psychological stress and psychiatric disorders (24, 43). However, this relationship is complicated because although drugs are often used to self-medicate mental disorders, drug use itself can worsen symptoms or trigger new symptoms (44). Future research using fine-grained longitudinal assessment of trauma, substance use, and mental health functioning is needed to elucidate pathways and hence potential intervention targets.

An important limitation of this secondary data analysis is measurement of indicators is dependent on definitions used in the parent study, which may be too narrow in some instances and too broad in others. For example, measurement of sexual abuse was restricted to parents and/or caregivers, potentially excluding participants who were abused by siblings, while defining emotional abuse as hurt feelings/feeling unloved may be too low of a threshold. We also could not include other important forms of trauma that were not measured in Add Health, such as domestic violence in the home. Finally, our dichotomous drug use outcomes may capture experimental rather than problematic use, though similar single-item screening questions are valid for detecting substance use disorders (45, 46). Overall, despite the variation in measurement of trauma and outcomes in our study compared to others (e.g., ACE), we feel our findings further highlight the strong link between trauma and drug use (15, 33).

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Additional limitations include selection bias, as the Add Health cohort is a school-based sample and in our analyses we included only those who participated in all three waves of data collection. Given that childhood trauma and drug use are both associated with dropping out of school (47), individuals who experienced trauma and/or adolescent drug use may no longer have been in school when Add Health enrolled the original cohort or these participants may have had higher rates of attrition. For the cumulative number of traumas, ACE participants with incomplete information about adverse events were assumed to not have had the experience, while we restricted the sample to only those with no missing trauma data. Both strategies may have yielded conservative estimates, though we found our results did not differ when including those with incomplete data. When estimating associations between trauma and emerging adulthood and adult drug use, we did not control for adolescent drug use as we felt it could act as a mediator rather than a confounder. Finally, both childhood trauma and drug use are sensitive topics that may be affected by recall and/or social desirability bias; Add Health's use of audio computer-assisted self-interview (ACASI) surveys likely reduced this since ACASI is associated with more valid and reliable reporting of sensitive topics compared to other methods (48).

This study builds upon the work of the ACE study by prospectively examining associations between childhood traumatic experiences and drug use throughout the life-course in a US nationally-representative sample, providing further evidence that traumatic events during childhood have long-lasting detrimental effects. While primary prevention of childhood trauma is the ultimate and ideal goal, interventions should address diverse types and the cumulative number of childhood traumas to reduce prevent drug use.

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Table 1

Prevalence of each childhood trauma experience and cumulative number of childhood traumatic experiences

Childhood Traumatic Experiences	Women (n=6,684) Percent (95% CI)	Men (n=5,604) Percent (95% CI)	Total (N=12,288) Percent (95% CI)
Emotional Abuse	19.1 (17.6, 20.5)	13.2 (11.9, 14.4)	16.1 (15.0, 17.1)
Physical Abuse	11.5 (10.4, 12.5)	11.7 (10.5, 13.0)	11.6 (10.8, 12.4)
Sexual Abuse	9.5 (8.5, 10.5)	6.3 (5.3, 7.4)	7.9 (7.1, 8.7)
Neglect	11.8 (10.8, 12.9)	12.9 (11.6, 14.1)	12.4 (11.5, 13.2)
Parental Incarceration	10.6 (9.4, 11.8)	10.2 (8.8, 11.7)	10.4 (9.3, 11.6)
Parental Binge Drinking	10.7 (9.6, 11.8)	12.3 (10.6, 14.0)	11.5 (10.3, 12.6)
Witnessed Violence	8.7 (7.3, 10.1)	13.0 (11.0, 15.0)	10.9 (9.3, 12.5)
Threatened with Violence	6.3 (5.3, 7.3)	17.7 (15.8, 19.6)	12.1 (10.9, 13.3)
Experienced Violence	2.9 (2.3, 3.4)	7.2 (6.2, 8.2)	5.1 (4.5, 5.7)
Cumulative Number of Traumas *			
0	50.0 (47.8, 52.2)	44.3 (41.9, 46.7)	47.2 (45.4, 49.0)
1	26.9 (25.1, 28.7)	29.3 (27.5, 31.0)	28.1 (26.8, 29.3)
2	12.9 (11.7, 14.2)	13.6 (12.0, 15.2)	13.3 (12.2, 14.3)
3	5.8 (5.0, 6.7)	7.6 (6.5, 8.6)	6.7 (6.0, 7.4)
4+	4.3 (3.6, 5.1)	5.2 (4.1, 6.4)	4.8 (4.0, 5.6)

* The cumulative number of traumas is calculated for those who had data for all nine forms of trauma (n=9,569; women: n=5,274 (50.2%), men: n=4,295 (49.8%))

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Table 2

Weighted prevalence of reporting both childhood traumatic experience among pairs of nine trauma types

First Type of Trauma	N	Physical Abuse	Sexual Abuse	Neglect	Parental Incarceration	Parental Binge Drinking	Witnessed Violence	Threatened with Violence	Experienced Violence
Emotional Abuse	1981	38.7 (35.6, 41.8)	16.5 (14.1, 18.9)	24.0 (21.5, 26.5)	18.3 (15.6, 21.0)	15.7 (13.2, 18.1)	15.8 (12.9, 18.7)	14.9 (12.4, 17.4)	6.8 (5.3, 8.3)
Physical Abuse	1477	—	17.5 (14.8, 20.3)	28.9 (25.7, 32.1)	19.6 (16.1, 23.2)	10.8 (8.6, 13.1)	16.7 (13.5, 19.9)	17.3 (14.1, 20.5)	7.7 (5.5, 9.9)
Sexual Abuse	984		—	20.8 (17.3, 24.3)	20.4 (16.5, 24.3)	14.4 (11.5, 17.2)	16.8 (13.8, 19.9)	15.1 (12.0, 18.3)	8.3 (5.9, 10.7)
Neglect	1550			—	16.9 (13.8, 20.0)	13.3 (10.9, 15.8)	15.1 (11.7, 18.6)	16.2 (13.5, 18.8)	7.2 (5.2, 9.2)
Parental Incarceration	1279				—	20.0 (16.8, 23.1)	18.0 (14.8, 21.3)	18.0 (14.3, 21.7)	9.4 (6.8, 11.9)
Parental Binge Drinking	1271					—	12.9 (10.2, 15.6)	13.9 (11.3, 16.5)	5.7 (4.1, 7.3)
Witnessed Violence	1445						—	47.8 (44.1, 51.6)	22.5 (19.4, 25.6)
Threatened with Violence	1490							—	26.2 (22.9, 29.5)
Experienced Violence	619								—

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Table 3

Associations between Individual and Cumulative Number of Traumas & Marijuana Use in Adolescence, Emerging Adulthood, and Adulthood

	Adolescence			Emerging Adulthood			Adulthood		
	% with Outcome	OR (95% CI)	AOR[a] (95% CI)	% with Outcome	OR (95% CI)	AOR[b] (95% CI)	% with Outcome	OR (95% CI)	AOR[c] (95% CI)
Emotional Abuse									
No	26.1	1.00	1.00	32.4	1.00	1.00	22.4	1.00	1.00
Yes	36.1	1.60 (1.39, 1.84)	1.22 (1.02, 1.46)	39.3	1.35 (1.19, 1.54)	1.21 (1.03, 1.43)	28.3	1.37 (1.18, 1.59)	1.09 (0.89, 1.34)
Physical Abuse									
No	26.0	1.00	1.00	32.9	1.00	1.00	22.1	1.00	1.00
Yes	39.8	1.89 (1.60, 2.24)	1.38 (1.09, 1.76)	40.3	1.38 (1.18, 1.62)	1.05 (0.86, 1.30)	30.7	1.56 (1.33, 1.84)	1.26 (1.01, 1.58)
Sexual Abuse									
No	26.8	1.00	1.00	33.4	1.00	1.00	22.9	1.00	1.00
Yes	38.2	1.69 (1.39, 2.05)	1.29 (0.97, 1.71)	36.1	1.13 (0.92, 1.38)	1.10 (0.87, 1.40)	27.2	1.26 (1.02, 1.55)	1.20 (0.93, 1.54)
Neglect									
No	26.4	1.00	1.00	32.5	1.00	1.00	22.4	1.00	1.00
Yes	35.1	1.50 (1.29, 1.76)	1.36 (1.12, 1.66)	40.2	1.39 (1.21, 1.60)	1.15 (0.98, 1.35)	28.4	1.37 (1.17, 1.61)	1.10 (0.90, 1.34)
Parental Incarceration									
No	26.1	1.00	1.00	32.7	1.00	1.00	22.1	1.00	1.00
Yes	40.7	1.95 (1.65, 2.30)	1.83 (1.50, 2.22)	40.0	1.37 (1.16, 1.63)	1.25 (1.01, (1.55)	33.1	1.75 (1.45, 2.11)	1.51 (1.21, 1.88)
Parental Binge Drinking									
No	25.7	1.00	1.00	32.8	1.00	1.00	22.7	1.00	1.00
Yes	33.4	1.45 (1.21, 1.74)	1.52 (1.24, 1.83)	40.6	1.40 (1.19, 1.66)	1.28 (1.05, 1.56)	27.9	1.31 (1.10, 1.57)	1.16 (0.93, 1.44)
Witnessed Violence									
No	24.9	1.00	1.00	31.0	1.00	1.00	22.3	1.00	1.00
Yes	49.4	2.94 (2.44, 3.54)	1.97 (1.55, 2.48)	40.2	1.40 (1.18, 1.65)	1.26 (1.02, 1.73)	30.2	1.50 (1.26, 1.80)	1.26 (0.99, 1.59)
Threatened with Violence									

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	Adolescence			Emerging Adulthood			Adulthood		
	% with Outcome	OR (95% CI)	AOR[a] (95% CI)	% with Outcome	OR (95% CI)	AOR[b] (95% CI)	% with Outcome	OR (95% CI)	AOR[c] (95% CI)
No	23.9	1.00	1.00	32.0	1.00	1.00	21.9	1.00	1.00
Yes	54.2	3.75 (3.24, 4.36)	2.31 (1.86, 2.86)	43.3	1.62 (1.38, 1.92)	1.40 (1.13, 1.73)	32.9	1.75 (1.49, 2.06)	1.45 (1.16, 1.81)
Experienced Violence									
No	26.3	1.00	1.00	32.7	1.00	1.00	22.7	1.00	1.00
Yes	51.1	2.92 (2.34, 3.65)	1.49 (1.06, 2.09)	45.8	1.74 (1.42, 2.12)	1.03 (0.77, 1.38)	32.0	1.60 (1.26, 2.04)	0.91 (0.62, 1.33)
Cumulative Number of Traumas (Ordinal)		1.55 (1.47, 1.63)	1.59 (1.51, 1.68)		1.21 (1.15, 1.28)	1.22 (1.15, 1.29)		1.26 (1.19, 1.33)	1.24 (1.17, 1.32)
Cumulative Number of Traumas (Categorical)									
No Trauma	18.5	1.00	1.00	29.3	1.00	1.00	18.4	1.00	1.00
One Trauma	26.5	1.58 (1.38, 1.83)	1.65 (1.42, 1.92)	36.8	1.41 (1.23, 1.61)	1.44 (1.25, 1.65)	26.3	1.58 (1.36, 1.84)	1.55 (1.33, 1.80)
Two Traumas	35.2	2.39 (2.03, 2.82)	2.58 (2.17, 3.06)	39.5	1.58 (1.33, 1.87)	1.62 (1.35, 1.95)	27.8	1.71 (1.39, 2.11)	1.72 (1.38, 2.15)
Three Traumas	42.9	3.31 (2.59, 4.22)	3.67 (2.83, 4.75)	42.7	1.80 (1.41, 2.29)	1.81 (1.40, 2.33)	32.2	2.12 (1.67, 2.68)	1.96 (1.52, 2.54)
4+ Traumas	59.4	6.43 (4.98, 8.30)	6.92 (5.17, 9.26)	45.8	2.04 (1.60, 2.62)	2.02 (1.52, 2.70)	34.5	2.34 (1.76, 3.11)	2.23 (1.65, 3.01)
P value for trend		<0.0001	<0.0001		<0.0001	<0.0001		<0.0001	<0.0001

[a] for adolescent outcomes: individual trauma models adjusted for each other type of trauma, age, gender, race, and poverty; cumulative number of traumas models adjusted for age, gender, race, and poverty

[b] for emerging adulthood outcomes: individual trauma models adjusted for each other type of trauma, age, gender, race, and adolescent and emerging adulthood poverty; cumulative number of traumas models adjusted for age, gender, race, and adolescent and emerging adulthood poverty

[c] for adulthood outcomes: individual trauma models adjusted for each other type of trauma, age, gender, race, education, and adolescent and emerging adulthood poverty; cumulative number of trauma models adjusted for age, gender, race, education, and adolescent and emerging adulthood poverty

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Table 4

Associations between Individual and Cumulative Number of Traumas & Cocaine Use in Adolescence, Emerging Adulthood, and Adulthood

	Adolescence			Emerging Adulthood			Adulthood[d]		
	% with Outcome	OR (95% CI)	AOR[a] (95% CI)	% with Outcome	OR (95% CI)	AOR[b] (95% CI)	% with Outcome	OR (95% CI)	AOR[c] (95% CI)
Emotional Abuse									
No	3.1	1.00	1.00	6.6	1.00	1.00	15.0	1.00	1.00
Yes	5.4	1.80 (1.37, 2.36)	1.39 (0.98, 1.95)	9.2	1.44 (1.07, 1.93)	1.03 (0.70, 1.52)	22.2	1.62 (1.39, 1.89)	1.46 (1.20, 1.76)
Physical Abuse									
No	3.1	1.00	1.00	6.7	1.00	1.00	15.2	1.00	1.00
Yes	5.7	1.90 (1.40, 2.57)	0.79 (0.53, 1.17)	9.8	1.50 (1.14, 1.98)	1.21 (0.83, 1.76)	21.8	1.55 (1.28, 1.89)	1.04 (0.81, 1.34)
Sexual Abuse									
No	2.9	1.00	1.00	6.6	1.00	1.00	15.8	1.00	1.00
Yes	7.8	2.82 (1.92, 4.14)	2.81 (1.78, 4.41)	10.7	1.69 (1.19, 2.40)	1.63 (1.03, 2.57)	20.0	1.34 (1.04, 1.73)	1.35 (0.98, 1.86)
Neglect									
No	3.1	1.00	1.00	6.4	1.00	1.00	15.6	1.00	1.00
Yes	5.7	1.89 (1.33, 2.69)	1.24 (0.83, 1.87)	10.3	1.68 (1.30, 2.18)	1.36 (0.98, 1.90)	19.7	1.33 (1.11, 1.58)	1.09 (0.88, 1.34)
Parental Incarceration									
No	3.1	1.00	1.00	7.0	1.00	1.00	15.5	1.00	1.00
Yes	6.4	2.11 (1.45, 3.06)	1.74 (1.15, 2.64)	6.8	0.97 (0.73, 1.31)	0.76 (0.51, 1.14)	22.3	1.56 (1.25, 1.95)	1.40 (1.04, 1.88)
Parental Bi Drinkingnge									
No	3.0	1.00	1.00	7.0	1.00	1.00	15.5	1.00	1.00
Yes	4.7	1.61 (1.07, 2.44)	1.57 (1.02, 2.42)	8.5	1.24 (0.96, 1.60)	1.02 (0.74, 1.40)	20.2	1.37 (1.12, 1.69)	1.29 (1.02, 1.64)
Witnessed Violence									
No	2.8	1.00	1.00	6.7	1.00	1.00	15.8	1.00	1.00
Yes	8.5	3.17 (2.26, 4.44)	2.66 (1.59, 4.46)	9.0	1.37 (1.02, 1.83)	1.45 (1.02, 2.07)	18.8	1.23 (0.98, 1.55)	1.16 (0.86, 1.58)
Threatened with Violence									

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	Adolescence			Emerging Adulthood			Adulthood[d]		
	% with Outcome	OR (95% CI)	AOR[a] (95% CI)	% with Outcome	OR (95% CI)	AOR[b] (95% CI)	% with Outcome	OR (95% CI)	AOR[c] (95% CI)
No	2.7	1.00	1.00	6.5	1.00	1.00	15.3	1.00	1.00
Yes	8.9	3.50 (2.57, 4.76)	1.62 (1.01, 2.61)	10.7	1.74 (1.33, 2.26)	1.37 (0.97, 1.93)	22.6	1.62 (1.32, 1.99)	1.28 (0.91, 1.81)
Experienced Violence									
No	3.0	1.00	1.00	6.8	1.00	1.00	15.6	1.00	1.00
Yes	11.5	4.19 (2.91, 6.04)	1.65 (0.98, 2.76)	10.5	1.62 (1.11, 2.36)	1.12 (0.64, 1.98)	25.9	1.89 (1.47, 2.43)	1.43 (0.95, 2.17)
Cumulative Number of Traumas (Ordinal)		1.70 (1.52, 1.91)	1.71 (1.52, 1.91)		1.25 (1.13, 1.36)	1.24 (1.13, 1.37)		1.29 (1.21, 1.38)	1.31 (1.22, 1.41)
Cumulative Number of Traumas (Categorical)									
No Trauma	1.6	1.00	1.00	5.0	1.00	1.00	13.0	1.00	1.00
One Trauma	3.0	1.92 (1,26, 2.91)	1.87 (1.23, 2.84)	8.9	1.84 (1.41, 2.41)	1.89 (1.44, 2.47)	14.8	1.17 (0.97, 1.40)	1.20 (1.00, 1.45)
Two Traumas	4.1	2.72 (1.70, 4.35)	2.80 (1.74, 4.51)	8.0	1.65 (1.13, 2.41)	1.74 (1.17, 2.59)	20.1	1.69 (1.35, 2.12)	1.79 (1.42, 2.27)
Three Traumas	5.9	3.92 (2.20, 7.00)	4.18 (2.29, 7.63)	9.8	2.05 (1.35, 3.13)	2.10 (1.36, 3.25)	23.8	2.09 (1.49, 2.93)	2.01 (1.37, 2.95)
4+ Traumas	13.5	9.86 (6.17, 15.74)	9.54 (5.93, 15.38)	11.3	2.40 (1.52, 3.79)	2.32 (1.39, 3.89)	29.0	2.73 (2.02, 3.69)	3.06 (2.22, 4.21)
P value for trend		<0.0001	<0.0001		<0.0001	<0.0001		<0.0001	<0.0001

[a] for adolescent outcomes: individual trauma models adjusted for each other type of trauma, age, gender, race, and poverty ; cumulative number of traumas models adjusted for age, gender, race, and poverty

[b] for emerging adulthood outcomes: individual trauma models adjusted for each other type of trauma, age, gender, race, and adolescent and emerging adulthood poverty; cumulative number of traumas models adjusted for age, gender, race, and adolescent and emerging adulthood poverty

[c] for adulthood outcomes: individual trauma models adjusted for each other type of trauma, age, gender, race, education, and adolescent and emerging adulthood poverty; cumulative number of trauma models adjusted for age, gender, race, education, and adolescent and emerging adulthood poverty

[d] Analyses conducted in subpopulation of those who had not used cocaine at Wave III