HHS Public Access

Author manuscript

Emerg Adulthood. Author manuscript; available in PMC 2021 March 24.

Published in final edited form as:

Emerg Adulthood. 2020 December ; 8(6): 542–547. doi:10.1177/2167696819830481.

Substance use and mental health outcomes during emerging adulthood among individuals with different patterns of child maltreatment

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Abstract

The aim of the current study was to identify patterns of child maltreatment experienced prior to age 18 and examine the relationship between those patterns and substance use and mental health disorders among emerging adults. Data were from the National Epidemiologic Survey on Alcohol and Related Conditions-III. The analytic sample consisted of 5,194 adults between 18 to 25 years old. Latent class analysis revealed a 3-class model: Rare Maltreatment (59%); Occasional Maltreatment, Rare Sexual Abuse (37%); and Frequent Maltreatment, Some Sexual Abuse (4%). Risk for substance use disorders and poor mental health was higher for the two classes who experienced maltreatment, however those with Frequent Maltreatment had higher risk for poor mental health, but not substance use disorders compared to those with Occasional Maltreatment. Patterns of child maltreatment are important predictors of substance use and mental health disorders in emerging adulthood, but different patterns may necessitate specific intervention efforts.

Keywords

child maltreatment; latent class analysis; substance use; mental health

It is estimated 37% of children will undergo an investigation of child maltreatment (CM; e.g., physical abuse, emotional abuse, neglect, sexual abuse) before age 18 (Kim, Wildeman, Jonson-Reid, & Drake, 2017). The experience of CM places an individual at-risk for poor mental health including post-traumatic stress disorder (PTSD), depression, and substance use problems or disorders (Anda et al., 2006; Cougle, Timpano, Sachs-Ericsson, Keough, & Riccardi, 2010; Enoch, 2011). The mental health effects of CM endure decades after the experience of CM (Springer, Sheridan, Kuo, & Carnes, 2007) and are exacerbated by frequency (Edwards, Holden, Felitti, & Anda, 2003; Felitti et al., 1998; Jonson-Reid, Kohl, & Drake, 2012). Additionally, exposure to one form of CM is likely to coincide with other

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Disclosure of Potential Conflicts of Interest. The authors have no conflicts of interest to declare.

Ethical approval. For this type of study (secondary data analysis) formal consent is not required. All procedures performed in the original study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent. Informed consent was obtained from all individual participants included in the study.

forms of CM; individuals with a history of sexual abuse were three times more likely to also report experiencing physical abuse and neglect (Dong, Anda, Dube, Giles, & Felitti, 2003). However, the relationship between different patterns of CM exposure and adverse mental health outcomes is not well understood. A limitation in the understanding of patterns of CM and associated outcomes is that findings largely come from child welfare samples. Use of nationally representative non-child welfare data is important to maximize the generalizability of findings. If different patterns of CM lead to different substance use and mental health outcomes, different prevention strategies may be warranted.

Emerging adulthood, the developmental period between ages 18 and 25 is an important target for prevention science. During this period, rates of substance use and mental health diagnoses increase, likely due to changes in autonomy, responsibilities, and the legality of some behaviors (Arnett, 2000). According to data collected in 2014 by the Center for Behavioral Health Statistics and Quality: Illicit drug use in the past month was reported most often among the 18 to 25 age group; nearly 10 million young adults aged 18 to 25 reported using tobacco products in the past month, 4.3 million of whom (43%) reported daily cigarette smoking; and 20.8 million young adults reported being current alcohol users, 3.8 million of whom were heavy drinkers (Center for Behavioral Health Statistics and Quality, 2016). Not only is substance use within emerging adulthood well documented, but it is not atypical (Arnett, 2005). However, health behaviors, such as substance use, during the emerging adulthood developmental period can dictate the health trajectory for the rest of the life course. Prevention programs could benefit from an understanding of how patterns of CM impact substance use during the emerging adulthood developmental period beyond typical use behaviors of this period.

Research has linked CM exposure to internalizing and externalizing symptoms in emerging adulthood (Mersky & Topitzes, 2010), but patterns of multiple types of CM were not considered in analytic models. Hahm and colleagues (2010) used cumulative classification (i.e., sum across CM types) and expanded hierarchical type classification (i.e., weighted sum across CM types) to examine the effect of multiple types of CM on risk behaviors in a nationally representative sample of women during emerging adulthood. Women with a history of sexual abuse and any other type of CM had the poorest sexual, delinquency, and suicidal outcomes (Hahm et al., 2010). These findings, although meaningful, are not sufficient in identifying the heterogeneity of CM experience that may lead to differential health outcomes (Lanza & Rhoades, 2013). Latent class analysis (LCA) provides an opportunity to examine unobserved heterogeneity among individuals with a shared characteristic. Using LCA it would be possible to understand patterns of CM, not simply the experience of multiple types of CM.

To understand the full impact of CM and design effective, holistic interventions for a developmentally important period, it is important to identify unique, within-person patterns of CM and the relationship between these patterns and subsequent substance use and mental health disorders. The present analyses had two aims: to explore (1) the population-level patterns of CM among emerging adults in the U.S. and (2) the associations between different patterns of CM and self-reported substance use and mental health disorders.

Method

Sample

Data were extracted from the National Epidemiological Survey on Alcohol and Related Conditions-III (NESARC-III). Interviews were conducted with 36,309 non-institutionalized U.S. adults over 18 years old between 2012 and 2013 (Grant et al., 2014). Research protocols were approved by the National Institutes of Health and Westat Institutional Review Boards. The present study included a subsample of 5,194 emerging adults between 18 and 25 years old.

Measures

Indicators.—Participants were asked a series of questions regarding their history of CM exposure adapted from the Conflict Tactics Scale-2 (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) and Childhood Trauma Questionnaire (Bernstein et al., 1994). Respondents indicated the frequency they experienced any or all instances of CM by a parent or an adult before 18, but were not asked to specify the age at which the CM occurred. Physical abuse, actual (e.g., “push, grab, shove, slap, or hit”) and threatened (e.g., “threaten to hit your or throw something at you, but didn’t do it”), was the subject of five items. Items related to the threat of abuse could be conceptualized as emotional abuse, but as the threat was of physical abuse, we kept these items in the physical abuse conceptual category. Physical neglect was the subject of five items, such as “make you go hungry or not prepare regular meals”. Sexual abuse was the subject of four items, such as “touch or fondle you in a sexual way when you didn’t want them to or when you were too young to know what was happening”. The frequency of physical abuse, physical neglect, and sexual abuse were indicated on a five-point scale (1 = *Never* to 5 = *Very Often*). Participants were asked 5 questions about emotional neglect for which they indicated how true the statement was on a five-point scale (1 = *Never True* to 5 = *Very Often True*); for example, how true it was that “there was someone in [their] family who helped [them] feel that [they] were important or special.” For the present analysis, the reported frequency of these adverse experiences was re-categorized into three levels for physical neglect, physical abuse, and emotional neglect (i.e., *Never*, *Occasionally*, *Often*) and two levels for sexual abuse (i.e., *Yes or No*) so as to maximize interpretability and to reflect frequencies of experiences.

Outcomes.—Substance use disorders in the past year were diagnosed using Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria (American Psychiatric Association, 2013). The present analyses focused on alcohol use disorder, marijuana use disorder, opioid use disorder, and other substance use disorders. As the NESARC-III assessment did not include nicotine dependence, a dichotomous variable of daily tobacco use was created. Diagnoses of mental health disorders in the past year were made using the DSM-5. Diagnoses of interest include generalized anxiety disorder, PTSD, and major depressive disorder. Suicidality was assessed through four items (e.g., “*did you attempt suicide or try to kill yourself*” or “*did you think a lot about your own death*”). All outcomes were dichotomized.

Analytic Plan

LCA was used to identify patterns of CM (i.e., heterogeneity in CM exposure) using categorical indicators of CM prior to age 18 for physical abuse, physical neglect, emotional neglect, and sexual abuse among a sample of emerging adults. As related to our research question, the LCA described herein was exploratory and, thus, no hypotheses regarding the number of classes were made. Model selection was conducted using a combination of fit criteria (AIC, BIC, consistent AIC [CAIC], sample size adjusted BIC [SABIC]), entropy, model stability, and interpretability (Collins & Lanza, 2010; Masyn, 2013). All models accounted for the complex sampling design of NESARC III and corresponding survey weights. Lower AIC, BIC, CAIC, and SABIC values are preferred; entropy values closer to 1 indicate less classification error. The currently recommended Bolck-Croon-Hagenaars (BCH) stepwise procedure for LCA with an outcome variable (e.g., Bakk & Vermunt, 2016) was used to examine associations between latent class membership and substance use and mental health disorders. Descriptive analyses were conducted with SAS; all LCA models were estimated using Mplus Version 7.

Results

The sample of emerging adults (*M* age = 21.5 years old; *SD* = 0.04)–equally proportioned between males and females–was primarily White (57%), had at least some college education (56%), was employed at least part-time (46%), and was not married (78%). Table 1 includes the overall endorsement rates of the CM indicators; about 71% of the sample indicated experiencing at least one type of CM. Table 2 includes the overall endorsement rates of the substance use and mental health disorders. Approximately 27% met criteria for alcohol use disorder; the frequencies for marijuana, opioid, and other substance use disorders were markedly lower (Table 2). Approximately 18% of the sample reported daily tobacco use. Frequencies of mental health disorders in the past year were low overall (Table 2). The most reported mental health disorder was suicidality (16%), followed by major depressive episode (15%). Four percent reported generalized anxiety disorder, and 5% reported PTSD.

Models with 2–4 latent classes were considered; the 3-class model was selected as optimal. The 2- and 4-class models had lower entropy, but the 3-class model had the lowest AIC, BIC, CAIC, and SABIC values and the strongest interpretation. Table 1 presents the parameter estimates from the selected LCA model. Class 1, approximately 61% of the sample, labeled Rare Maltreatment, comprised individuals with low frequencies of all types of CM. Specifically, 88% reported no physical neglect, 82% reported no physical abuse, 97% reported no sexual abuse, and 67% reported no emotional neglect. Class 2 (34%), labeled Occasional Maltreatment, Rare Sexual Abuse, comprised individuals who experienced occasional physical neglect (66%), physical abuse (75%), and emotional neglect (63%), but low levels of sexual abuse (13%). Class 3 (5%), labeled as Frequent Maltreatment, Some Sexual Abuse, comprised individuals who endorsed experiencing all types of CM at higher frequencies (more than 50% indicated occasionally or often experiencing physical neglect, physical abuse, and emotional neglect), but are distinct from other classes with regard to the high endorsement of sexual abuse (43%).

The relationship between these three distinct patterns of CM exposure and substance use and mental health disorders were examined. Table 2 presents the proportion of emerging adults experiencing the outcome, conditional on latent class membership. Across all substance use disorders, there was a statistically significant difference between those in the Rare Maltreatment group and those in the two classes with higher levels of CM exposure (*ps* < .05). There were no significant differences between the Occasional and Frequent Maltreatment classes. Similarly, with regard to mental health outcomes, there were significant differences between those in the Rare Maltreatment class and those in the two classes with higher levels of CM exposure ($p < .05$). However, there were statistically significant differences between the Occasional and Frequent Maltreatment classes for all mental health disorders (*ps* < .05).

Discussion

The present analyses sought to explore population-level patterns of CM among emerging adults in the U.S. and the associations between patterns of CM exposure and current self-reported mental health and substance use disorders. The findings are not unexpected: Emerging adults in this nationally representative sample experienced multiple types of CM and report elevated levels of substance use and mental health disorders. However, one unique contribution of this research is the application of LCA to a nationally representative sample of men and women in emerging adulthood to understand the patterns of CM, not just simply the experience of multiple types of CM.

The prevalence of retrospectively reported CM among the emerging adults in this sample aligns with national prevalence estimates (DHHS, 2017). Approximately 80% reported some form of neglect (physical or emotional), 44% reported physical abuse, and 8% reported sexual abuse. Three distinct patterns of type and frequency of experience emerged suggesting that certain types of CM are more likely to co-occur. This may have important implications for prevention: if a child comes to the attention of child protective services for one type of CM, it is likely specific types of CM, but not all, may be co-occurring.

The findings presented here suggest a prioritizing of prevention efforts specific to these different patterns of CM. As expected given prior research on substance use in the emerging adulthood developmental period (Arnett, 2005), the distinct profiles were significantly associated with substance use. Our findings extend this and suggest that substance use prevention should be a standardized component of intervention for anyone who experiences CM of any type, at any frequency. Our findings also suggest that different mental health disorders are associated with different patterns of CM. Thus, a second unique contribution of our findings is the notion that differential mental health treatment may be warranted for different types and levels of CM. Those in the Occasional Maltreatment, Rare Sexual Abuse class were less likely to report a mental health diagnosis than those who experienced CM, including sexual abuse, frequently. From a prevention perspective, it would be logical to prioritize mental health treatment for those who report Frequent Maltreatment. Prioritization of prevention efforts may increase the availability and accessibility of services and thereby improving substance use and mental health outcomes for emerging adults.

There are limitations to these findings. CM was self-reported retrospectively; recollections may not be accurate. Related, as CM was not the focus of the original NESARC study, the sensitivity of the questions related to CM was not comprehensive. Of particular importance is the lack of detail about the experience of emotional abuse given indications that this type of CM is highly prevalent (Vachon, Krueger, Rogosch, & Cicchetti, 2015). Additionally, details of reported CM, such as the age at which it occurred, were not available in the dataset. Given the impact of CM and other adverse childhood experiences on health outcomes, future epidemiological surveys should consider a more comprehensive panel of questions related to CM exposure. The use of data from prospective cohorts or a matching of administrative records with self-report would address these limitations. Though NESARC is a nationally representative dataset, the generalizability of these findings should be interpreted with caution. NESARC-III is cross-sectional in nature and precludes incarcerated or institutionalized individuals who are known to have high rates of substance use and mental health concerns (Osher, D'Amora, Plotkin, Jarrett, & Eggleston, 2012; Taxman & Pattavina, 2013).

The findings presented here may inform interventions to reduce the consequences of CM among emerging adults. Future research should consider individual characteristics within identified classes and the potentially time-varying development of substance use and mental health disorders in this developmental period. If it is not possible to prevent CM, then it is our responsibility to reduce the burden of its consequences.

Funding Acknowledgement.

This research was supported in part by grants T32DA017629 and P50DA039898 from the National Institute on Drug Abuse (NIDA). The content is solely the responsibility of the authors and does not necessarily represent the official views of NIDA or the National Institutes of Health.

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Table 1

Parameter Estimates for the Three-Class Model (n= 5,188)

	Overall Sample	Rare Maltreatment	Occasional Maltreatment, Rare Sexual Abuse	Frequent Maltreatment, Some Sexual Abuse
		Latent class membership probabilities		
		.61	.34	.05
Indicators		Item-response probabilities		
Physical abuse				
Never	**.56**	**.82**	.16	.01
Occasionally	.38	.18	**.75**	.32
Often	.06	0	.09	**.67**
Physical neglect				
Never	**.65**	**.88**	.34	0
Occasionally	.33	.12	**.66**	**.65**
Often	.2	0	0	.35
Emotional neglect				
Never	**.51**	**.67**	.30	.02
Occasionally	.42	.30	**.63**	.40
Often	.07	.03	.07	**.58**
Sexual abuse				
No	**.92**	**.97**	**.87**	**.58**
Yes	.08	.03	.14	.43

Note. Item-response probabilities indicate proportions of individuals in a particular class endorsing an item. Latent class membership probabilities indicate the proportion of individuals in each latent class. To assist with interpretation, probabilities ≥ .50 are bolded.

Table 2

Class-Specific Proportions of Emerging Adults with Substance Use and Mental Health Disorders

	Overall Sample	Rare Maltreatment	Occasional Maltreatment, Rare Sexual Abuse	Frequent Maltreatment, Some Sexual Abuse	Pairwise Significance Tests
	%		μ (SE)		
Substance use disorders, past year					
Alcohol use disorder	27	0.21 (0.01)	0.37 (0.02)	0.45 (0.49)	1 < 2, 3
Marijuana use disorder	8	0.04 (0.01)	0.15 (0.01)	0.18 (0.04)	1 < 2, 3
Opioid use disorder	1	0.01 (0.002)	0.02 (0.004)	0.06 (0.022)	1 < 2, 3
Other substance use disorder	2	0.01 (0.003)	0.04 (0.01)	0.06 (0.02)	1 < 2, 3
Daily tobacco use	18	0.137 (0.01)	0.24 (0.02)	0.38 (0.05)	1 < 2, 3
Mental health status, past year					
Generalized anxiety disorder	4	0.03 (0.01)	0.06 (0.01)	0.18 (0.04)	1 < 2 < 3
Major depressive episode	15	0.09 (0.01)	0.23 (0.02)	0.40 (0.05)	1 < 2 < 3
Post-traumatic stress disorder	5	0.02 (0.01)	0.07 (0.01)	0.33 (0.05)	1 < 2 < 3
Suicidality	16	0.08 (0.01)	0.26 (0.02)	0.54 (0.05)	1 < 2 < 3