Original Research

Cumulative Violence Exposure and Alcohol Use Among College Students: Adverse Childhood Experiences and Dating Violence

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Abstract

Multiple types of childhood adversities are risk factors for dating violence among college-age youth and in turn, dating violence is associated with alcohol use. This work quantitatively examines associations of childhood adversity and dating violence with alcohol use among college students using a cumulative stress approach. Multi-campus surveys were collected from March to December 2016 in four universities across the United States and Canada ($n = 3,710$). Latent class analysis identified patterns of childhood adversity and dating violence.

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Regression analyses investigated the associations of latent class patterns with past year number of drinks, alcohol use frequency, and problematic drinking. Latent class analysis produced seven classes: "low violence exposure" (18.5%), "predominantly peer violence" (28.9%), "peer violence and psychological child abuse" (10.8%), "peer and parental domestic violence" (9.9%), "peer and psychological dating violence" (17%), "peer and dating violence" (6.6%), and "childhood adversity and psychological dating violence" (8.3%). Compared to the "low violence exposure" group, "peer and psychological dating violence" ($B = .114$, $p < .05$), "peer and dating violence" ($B = .143$, $p < .05$), and "childhood adversity and psychological dating violence" ($B = .183$, $p < .001$) groups were significantly associated with problematic drinking. Results highlight how childhood adversity and dating violence contribute to problematic alcohol use, suggesting interventions that address both childhood adversity and dating violence may be most effective at reducing alcohol misuse among college students.

Keywords
violence, alcohol and drugs, violence exposure, child abuse, dating violence, domestic violence

Introduction

Alcohol use is reported by more than 50% of college students (ages 18–25 years) with more than one-third having engaged in binge drinking behaviors in the prior month (Substance Abuse and Mental Health Services Administration [SAMHSA], 2017a). The intensity and frequency of alcohol use accelerates most during young adulthood (SAMHSA, 2014), and thus, understanding salient factors for alcohol use during this developmental period could further improve prevention of problematic alcohol use among college students.

Dating violence (DV) during college years has been associated with increased alcohol problems (Dardis et al., 2015). Many college students are new to dating relationships and are often unequipped to navigate the complexities that dating relationships may produce; this can result in limited communication and relationship skills (Fredland et al., 2005) that lend to maladaptive responses and reactions, such as DV. Problematic alcohol use might represent a maladaptive coping mechanism in response to distress associated with DV (Enoch, 2011).

Experiences of childhood adversities may further influence coping behaviors; these adversities are associated with both DV (Capaldi et al., 2012) and alcohol use (Enoch, 2011). A cumulative stress model argues that accumulation of multiple risk factors, rather than any single risk exposure, can greatly compromise developmental outcomes (Appleyard et al., 2005). This model has

been widely used in studies examining young adults' developmental outcomes, including alcohol problems (Lee et al., 2014). However, to date, no identified study has examined the cumulative effect of experiencing both childhood adversity and DV on alcohol use behaviors of college students. Furthermore, a single cumulative risk index is most commonly created by summing positively endorsed risk factors without any reference to a source of risk. A single summative risk approach has the advantage of parsimony but with a distinct disadvantage: a single cumulative risk index obscures risk sources and their specific constellations. Consequently, it is hard to generate specific recommendations for the design of effective alcohol prevention approaches (Ackerman et al., 1999). To address these gaps, we used latent class analysis to identify intersecting patterns of childhood adversities and DV experiences, and subsequently investigated whether varying constellations of violence exposure were associated with problematic alcohol use among college students.

DV and Alcohol Use Among College Students

Rates of DV range between 10% and 50% among college students (Kaukinen, 2014). Verbal and psychological aggression, however, tend to occur more frequently than physical violence (Shorey et al., 2008). While rates of violence vary, DV has been consistently associated with increased alcohol use among college students (Dardis et al., 2015; Shorey et al., 2011), with alcohol use linked to partner violence (Devries et al., 2014; Shorey et al., 2011). Furthermore, violence among dating couples has been associated with high-risk drinking (Linden-Carmichael et al., 2016). These studies have informed intervention efforts to decrease alcohol use (see review by Samson & Tanner-Smith, 2015) and to increase bystander interventions to reduce DV on college campuses (Coker et al., 2015; Fleming, Wiersma-Mosley, 2015).

Childhood Adversity and DV

Childhood adversity is a risk factor for DV victimization among college-age youth (Kaukinen, 2014). Violence exposure during childhood, such as child abuse (Richards et al., 2017), parental domestic violence (Paat & Markham, 2019; Richards et al., 2017), and peer victimization (Foshee et al., 2016) experiences, is associated with DV victimization (Capaldi et al., 2012). Peer victimization, which is often overlooked in studies examining long-term impacts of childhood adversity, is associated with DV in young adulthood (Hébert et al., 2019), rendering peer victimization an important aspect to consider in the context of childhood adversity. Victims of bullying are likely to

experience psychosocial adjustment issues later in life (Juvonen & Graham, 2014). Assessing multiple forms of childhood adversity enables the identification of unique victimization profiles (Finkelhor et al., 2005).

Childhood Adversity and Alcohol Use

Childhood adversity experiences, particularly child maltreatment, are linked to alcohol use in emerging and middle adulthood (Cicchetti & Handley, 2019; Shin et al., 2019). Young adults with a greater number of adverse childhood experiences (ACE) are more likely to report alcohol-related problems than their peers with fewer ACE, even when controlling for common sociodemographic factors and peer substance use behaviors (Shin et al., 2018).

The use of alcohol among individuals with ACE may be linked to a cumulative stress process across childhood and young adulthood. Cumulative stress is defined as continued risk exposure throughout one's life (O'Rand, 2009), and the cumulative toll increases risk for experiencing health issues in later life (Goldstein et al., 2010). Cumulative life stress is associated with early onset of drinking in adolescence and alcohol dependence in early adulthood (Enoch, 2011). Coupled with stress from DV, childhood adversities might place college students in a particularly vulnerable position to misuse alcohol (Boden et al., 2014; Enoch, 2011; Magrys & Olmstead, 2015). Individuals who experience early multiple victimizations are prone to adjustment problems throughout life. Self-medication theories suggest that youth with multiple victimizations may use alcohol to relieve feelings of anxiety or stress stemming from their victimization experiences. Without effective prevention approaches, this behavior can develop into a lifelong pattern (Magrys & Olmstead, 2015).

To date, no study has examined alcohol use behaviors among college students using a cumulative stress approach including both childhood adversity and concurrent DV experiences. Understanding ways in which multiple childhood adversity experiences intersect with DV is important to increase our understanding of alcohol use behaviors among college students and provides an opportunity to expand interventions for alcohol use/misuse on college campuses. Our central research questions included (a) What are specific intersecting patterns of childhood adversities and DV? and (b) Is a cumulative exposure pattern, specifically exposure to both childhood adversities and DV, associated with elevated risk for alcohol use?

Methods

Data for this study came from online surveys of childhood adversity, DV exposure, and their mental-, behavioral-, and physical health outcomes,

which were conducted from March to December 2016 in four universities in the United States and Canada. Each university independently recruited undergraduate students either through simple random sampling (three universities) or a convenience sample (one university). Response rates ranged from 2.92% to 8.53%. A total of 3,710 students participated in the survey. The mean age for participants was 20.6 years old, with a predominantly female (72%), White (74%), and heterosexually identified (87%; see Table 1) sample. Survey participants (except for two universities where incentives were not allowed) were given the option of opting into a raffle, with gift cards in the amount of $50 awarded to four participants who were randomly selected. The study design and protocols were approved by Human Subjects Review Committees at each participating institution.

Measures

Childhood adversity was assessed using items from the Juvenile Victimization Scale, developed by Finkelhor and colleagues (2005) and modified for this study. Participants were asked to consider experiences with childhood caregivers such as parents, stepparents, and parental partners. All items were highly correlated (Cronbach α = .99): (a) peer victimization (four items), (b) child abuse and neglect and other household dysfunction (five items), and (c) exposure to domestic violence (four items). Thirteen items were anchored by a 4-point scale inquiring about childhood prevalence of incidences: *never, just once, 2 to 3 times*, and *4 times and more*. All items were dichotomized (0/1) as *never experienced* and *ever experienced* and entered as indicators of latent class models.

Dating violence (DV). Twelve items (Ansara & Hindin, 2010; Hamby, 2013; Southworth et al., 2007) were adapted from prior research (e.g., The Partner Victimization Scale; Hamby, 2013) and utilized to assess DV victimization (Cronbach α = .88). The question prompted participants to consider each item in relation to any boyfriend, girlfriend, husband, or wife including former relationships. Physical violence referred to acts such as being shaken and hit by any partner and sexual violence referred to nonconsensual sexual acts against participants' will. Psychological DV included questions about limiting contact with family or friends and putting down or calling names (see Table 1). Response categories were on a 4-point Likert-type scale: *never, just once, 2 to 3 times*, and *4 times or more*. Items were dichotomized (0/1) as *never* and *ever* (i.e., "just once" or more) for analysis and entered as indicators of latent class models.

Table 1. Baseline Sample Characteristics (n = 3,710).

Variable	n (%) or M (SD)
Female	2,669 (71.9)
Age	20.59 (2.99)
Race/ethnicity	
White	2,756 (74.3)
Asian	375 (10.1)
Black	202 (5.4)
Other[a]	377 (10.2)
Heterosexual	3,235 (87.2)
Number of drinks daily (past 12 months)	3.17 (2.27)
Alcohol use frequency (past 12 months)	
No drinking in past 12 months	608 (16.4)
Drink less than 1–2 times/week	2,776 (74.8)
Drink more than 3–4 times/week	324 (8.7)
Problematic drinking (past 12 months)	
Never	2,381 (64.2)
Less than monthly	965 (26.0)
At least monthly	314 (8.5)
Dating violence	
Threats	398 (12%)
Push, grab, shook	640 (19.3%)
Hit	334 (10.1%)
Beat up	75 (2.3%)
Sexual acts without consent	651 (19.7%)
Text message/email threats	513 (15.5%)
Internet harassment	268 (8.1%)
Limiting contact with family/friends	600 (18.1%)
Name calling	920 (27.8%)
Not allow to talk to others	1,223 (37%)
Demand whereabouts at all times	789 (23.9%)
Threaten to hurt close others	175 (5.3%)
Peer victimization	
Pick on/chase/grab/make do something	2,311 (62.6%)
Name calling/saying mean things	2,451 (66.3%)
Spread lies/rumors/make other dislike you	2,674 (72.3%)
Intentionally exclude/ignore	2,724 (73.6%)
Child abuse and neglect	
Hit by grown-up	954 (25.7%)
Name calling/said mean things/verbal abuse	925 (25%)

(continued)

Table 1. (continued)

Variable	n (%) or M (SD)
Neglect (insufficient food/ no sick visits)	257 (6.9%)
Parental alcohol/drug use	391 (10.6%)
Parental disappearance	416 (11.2%)
Parental domestic violence exposure	
Threats to harm	560 (15.1%)
Break/ruin belongings/punch wall/throw	1,095 (29.6%)
Parental hit/push	606 (16.4%)
Parental kick/choke/beat	234 (6.3%)

ᵃOther group includes Latino, Multi-ethnic, and Native American Indians.

Alcohol use. The three items measured for this study were adapted from the validated AUDIT Questionnaire: (a) number of drinks daily (i.e., *On the days you drank in the past 12 months, about how many drinks did you usually have per day?*), (b) frequency of drinking (i.e., *In the past 12 months, how often did you usually have at least one drink?*), and (c) problematic drinking (i.e., blackouts) in the last 12 months (i.e., *How often during the past 12 months have you been unable to remember what happened the night before because you had been drinking?*) (Bush et al., 1998). Responses for typical number of drinks per day in the past 12 months resulted in a continuous variable. For drinking frequency in the past 12 months, original response categories included *did not drink in the past year, less than once a week, 1 to 3 days per month, 1 to 2 days per week, 3 to 4 days per week*, and *nearly every day*, which were recoded to reflect the following three groups: (a) *did not drink*, (b) *drank less than 1 to 2 drinks per week*, and (c) *drank more than 3 times per week*. Original response categories for problematic drinking in the past 12 months included *never, less than monthly, monthly, weekly*, and *daily or almost daily*, which were recoded into (1) *never*, (2) *less than monthly*, and (3) *at least monthly*.

Covariates included age (years), race (White, Black, Asian, Other) with non-White as the reference group, gender (male/female; 0/1), and sexual orientation (minority sexual orientation/heterosexual; 0/1).

Statistical Analysis

Latent class analysis empirically locates subgroups of individuals who are likely to provide similar responses to the variables included in the model. A two-step process was implemented to address our research questions. We first applied latent class analysis to identify unobserved groups of individuals based on indicators of DV (i.e., 12 types of DV victimization) and

childhood adversities (i.e., nine items of child abuse and household dysfunction, four items of peer victimization). Selection of the number of classes was informed by multiple model fit statistics, including lower values in Akaike information criterion (AIC), Bayesian information criterion (BIC), Lo-Mendell-Rubin adjusted likelihood ratio test (LMR), and the bootstrapped likelihood ratio test (BLRT; Nylund et al., 2007). Lower AIC and BIC scores and statistical significance of LMR and BLRT indicate a better fitting model. Entropy, an indicator of quality classification, was also examined (range from 0 to 1 with higher values indicating better fit) with scores over .7 signifying good classification (Celeux & Soromenho, 1996). Considerations such as meaningfulness of the number and types of classes and their analytic utility (e.g., the proportion of the sample assigned to each class) were evaluated for substantive interpretation and selection of the best solution (Muthén & Muthén, 2000). Latent class analysis models were estimated using Mplus version 7.4.

In the second step, we estimated linear regression models with outcomes (a) past year number of drinks daily (i.e., on the days you drank in the past 12 months, about how many drinks did you usually have per day), (b) past year alcohol use frequency (i.e., how often did you usually have at least one drink), and (c) problematic drinking (i.e., how often in the past year have you been unable to remember what happened the night before because you had been drinking). All three outcomes had acceptable skewness (1.419, -0.162, and 1.197, respectively) and kurtosis (3.337, 0.930, and 0.242, respectively). All covariates (i.e., age, race, gender, and sexual orientation) were controlled for in both models. Regression models were estimated using SPSS version 25. Of note, to address possible clustering issues (i.e., students were nested within universities), intra-class correlation (ICC) was evaluated with its maximum value of .04, suggesting that site clustering may not be likely to influence the conclusions of the study. According to Muthén and Satorra's (1995) simulation of clustering effects, our ICC results suggest that potential bias in standard errors is negligible, ruling out the need for a multi-level model and we thus proceeded with individual level analysis.

Results

To identify distinct patterns of childhood adversities and DV, we estimated 1-, 2-, 3-, 4-, 5-, 6-, 7-, and 8-latent class models. Model fit statistics (see Table 2) provided slightly different results as to the best-fitting class. BIC value reductions were observed up to the eight-class solution and entropy was high in all models. The Lo-Mendell-Rubin adjusted likelihood ratio test

Table 2. Model Fit Information for Latent Class Analysis.

Model	AIC[a]	BIC[b]	SABIC[c]	Entropy	LMR LRT[d] (*p*)	BLRT[e] (*p*)
1-Class	79,299.919	79,455.389	79,375.951	n/a	n/a	n/a
2-Class	69,916.149	70,233.307	70,071.254	0.865	<.001	<.001
3-Class	66,505.957	66,984.803	66,740.135	0.860	<.001	<.001
4-Class	64,775.449	65,415.984	65,088.700	0.835	<.001	<.001
5-Class	63,583.738	64,385.962	63,976.062	0.829	<.001	<.001
6-Class	62,899.545	63,863.457	63,370.942	0.819	<.001	<.001
7-Class	62,538.701	63,664.301	63,089.171	0.806	<.001	<.001
8-Class	62,231.992	63,519.281	62,861.536	0.813	e[f]	<.001

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; LMR = Lo-Mendell-Rubin; LRT = likelihood ratio test; BLRT = bootstrapped likelihood ratio test; SABIC = Sample adjusted Bayesian information criterion.
[a]Akaike information criterion.
[b]Bayesian information criterion.
[c]Sample adjusted Bayesian information criterion.
[d]Lo-Mendell-Rubin adjusted likelihood ratio test.
[e]Parametric bootstrapped likelihood ratio test.
[f]Not properly converged.

was significant up to the seven-class solution. Model selection included evaluation of substantive meaningfulness—the seven-class solution had an additional distinctive latent class compared to the six-class solution. Based on these criteria, a seven-class model of childhood adversity and DV experiences was selected.

The first class was made up of students with no history of childhood or dating victimization ("low violence exposure"; 18.52%; *n* = 687). The next and largest class included students with only childhood peer victimization experiences ("predominantly peer violence"; 28.92%; *n* = 1,073). A third class comprised students with childhood peer violence and psychological child abuse experiences ("peer violence and psychological child abuse"; 10.81%; *n* = 401). The fourth class included students with childhood peer violence and witnessing parental violence experiences ("peer and parental domestic violence"; 9.92%; *n* = 368). The fifth class was made up of students who reported childhood peer violence and later psychological dating victimization ("peer and psychological dating violence"; 16.95%; *n* = 629). The next (and smallest) class comprised students with childhood peer violence and multiple types of DV ("peer and dating violence"; 6.55%; *n* = 243). Finally, the last class included students with several types of childhood adversity combined with later psychological DV ("childhood adversity and psychological dating violence"; 8.33%; *n* = 309). Additional detail of latent class profiles and proportions are provided in Table 3.

Table 3. Profiles of Ever Experiencing Childhood Adversities and Dating Violence ($n = 3,710$).

Variable	Low Violence Exposure	Predominantly Peer Violence	Peer Violence and Psychological Child Abuse	Peer and Parental Domestic Violence	Peer and Psychological Dating Violence	Peer and Dating Violence	Childhood Adversity and Psychological Dating Violence
	$n = 687$ (18.52%)	$n = 1,073$ (28.92%)	$n = 401$ (10.81%)	$n = 368$ (9.92%)	$n = 629$ (16.95%)	$n = 243$ (6.55%)	$n = 309$ (8.33%)
Dating violence victimization							
Threats	.01	.00	.00	.02	.13	.73	.45
Push, grab, shook	.04	.02	.04	.08	.31	.80	.63
Hitting	.03	.01	.02	.03	.12	.49	.36
Beat up	.00	.00	.00	.00	.00	.17	.09
Sexual	.05	.03	.11	.10	.34	.67	.55
Threats by text	.01	.01	.00	.01	.23	.86	.54
Internet harassment	.00	.00	.00	.00	.07	.56	.30
Limit contact with others	.03	.00	.01	.05	.33	.85	.56
Name calling	.05	.03	.07	.10	.55	.97	.84
Limit talking with others	.18	.09	.12	.18	.78	.96	.83
Demand whereabouts	.05	.01	.04	.06	.51	.91	.69
Threats to hurt others	.00	.00	.00	.00	.04	.39	.19
Peer victimization							
Pick on, coerce to do something	.29	.69	.86	.70	.61	.63	.78
Name calling/say mean things	.11	.77	.95	.68	.74	.75	.86
Spread lies/rumor	.14	.85	.93	.75	.83	.82	.92
Intentionally exclude/ignore	.14	.91	.94	.75	.83	.79	.94

Table 3. (continued)

Variable	Low Violence Exposure	Predominantly Peer Violence	Peer Violence and Psychological Child Abuse	Peer and Parental Domestic Violence	Peer and Psychological Dating Violence	Peer and Dating Violence	Childhood Adversity and Psychological Dating Violence
	$n = 687$ (18.52%)	$n = 1,073$ (28.92%)	$n = 401$ (10.81%)	$n = 368$ (9.92%)	$n = 629$ (16.95%)	$n = 243$ (6.55%)	$n = 309$ (8.33%)
Household/parental adversity							
Hit by grown-up	.08	.10	.59	.55	.17	.19	.63
Emotional abuse	.04	.05	.70	.53	.14	.22	.73
Neglect	.01	.00	.16	.17	.01	.04	.35
Parent alcohol/drug use	.02	.01	.20	.26	.04	.05	.48
Parental disappearance	.02	.02	.23	.27	.05	.05	.45
Parental threats to harm	.00	.01	.10	.73	.04	.04	.65
Parent ruin belongings/punch wall/throw	.05	.11	.37	.92	.20	.24	.85
Parent hit/push	.01	.01	.08	.84	.04	.05	.65
Parent kick/choke/beat	.00	.00	.01	.39	.00	.01	.27

Note. Probabilities indicate affirmative responses to indicators of ever experiencing the stated event.

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We conducted sensitivity analyses to examine possible differences in group membership by gender, race/ethnic, and sexual orientation, by adding each of these variables to our base LCA model as an additional covariate. The class classification and composition remained unchanged in these additional models, suggesting that gender, race/ethnicity, and/or sexual orientation did not significantly influence group membership. As a result, we kept the original group membership variable. Gender socialization (Chodorow, 1978) suggests that women's distress may manifest in a more internalized form, because women are socialized not to express their distress through outward behavioral problems, such as substance use (Nolen-Hoeksema, 2004). As such, we conducted additional analyses in which gender was added as a potential moderator. The interaction terms were not statistically significant, and all the substantive findings remained unchanged. Regarding possible moderation effects by race/ethnicity and sexual orientation, we did not conduct additional analyses, as we did not have substantive theory or literature to expect the impacts of childhood and concurrent violence exposure on alcohol use would differ by either race/ethnicity or sexual orientation.

Next, multiple linear regressions examined whether the resulting latent class membership from the first step, was associated with past year number of drinks daily, alcohol use frequency, and problematic drinking (see Table 4). Guided by our conceptual framework and research questions, we selected the "low violence exposure" and "childhood adversity and psychological dating violence" latent classes as reference groups. The "childhood adversity and psychological dating violence" resulted in the subgroup with the most accumulated risk exposure in our analysis. Results were similar across all three dependent variables. Specifically, controlling for demographic covariates, compared to the "low violence exposure" class, the "peer and psychological dating violence" ($B = .389$), "peer and dating violence" ($B = .389$), and "childhood adversity and psychological dating violence" ($B = .546$) groups were all significantly associated with number of drinks daily in the past 12 months. Compared to "low violence exposure," the "peer and psychological dating violence" ($B = .116$), "peer and dating violence" ($B = .115$), and "childhood adversity and psychological dating violence" ($B = .087$) groups were significantly associated with frequent alcohol use. Using "childhood adversity and psychological dating violence" as the reference group, the "low violence exposure" ($B = -.087$), "predominantly peer violence" ($B = -.095$), "peer violence and psychological child abuse" ($B = -.086$), and "peer and parental domestic violence" ($B = -.087$) groups reported statistically significant lower past year drinking frequency. For problematic drinking, compared to "childhood adversity and psychological dating violence" as the referent, the "low violence exposure" ($B = -.183$), "predominantly peer violence"

Table 4. Multiple Linear Regression of the Association Between Class Membership on Alcohol Use.

Variable	Past Year Number of Drinks Daily		Past Year Drinking Frequency		Past Year Problematic Drinking	
	Low Violence Exposure[a]	Childhood Adversity and Psychological Dating Violence[a]	Low Violence Exposure[a]	Childhood Adversity and Psychological Dating Violence[a]	Low Violence Exposure[a]	Childhood Adversity and Psychological Dating Violence[a]
	B	B	B	B	B	B
Predominantly peer violence	.103	−.443*	−.009	−.095**	.005	−.179**
Peer violence and psychological child abuse	.184	−.361†	.000	−.086*	.024	−.159*
Peer and parental domestic violence	−.003	−.549*	.000	−.087*	.053	−.130*
Peer and psychological dating violence	.389*	−.157	.116**	.029	.114*	−.069
Peer and dating violence	.389*	−.157	.115*	.028	.143*	−.040
Childhood adversity and psychological dating violence	.546*	–	.087*	–	.183**	–

Note. Controlled for race (non-White as referent), gender (0 = female/1 = male), and sexual orientation (0 = not heterosexual/1 = heterosexual).
[a]Referent group.
†$p < .10$. *$p < .05$. **$p < .001$.

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($B = -.179$), "peer violence and psychological child abuse" ($B = -.159$), and "peer and parental domestic violence" ($B = -.130$) groups reported statistically significant lower past year problematic drinking.

Discussion

We investigated whether specific constellations of DV and experiences of childhood adversity influenced alcohol use among college students. Results of our latent class analysis empirically derived seven distinct subgroups of childhood adversity and later DV. Compared to the "low violence exposure" group, three classes emerged at highest risk for alcohol use: "peer and psychological dating violence," "peer and dating violence," and "childhood adversity and psychological dating violence" groups. Our results support previous research highlighting the influence of DV (Reingle et al., 2014; Shorey et al., 2011) and childhood adversity in shaping young adults' alcohol use. Furthermore, findings from regression estimates showed that college students at highest risk for problematic drinking were those classified in the "childhood adversity and psychological dating violence" group. DV has been independently linked to increased alcohol use among college students (Dardis et al., 2015; Shorey et al., 2011). Separately, childhood adversity, including child maltreatment and family violence, has been associated with later alcohol use (Boden et al., 2014; Enoch, 2011). Our study findings suggest that such associations might be amplified, when college students have experienced both childhood adversity and DV.

The three latent classes significantly associated with alcohol use were defined by a combination of a minimum of one childhood adversity type and a minimum of one DV type. Consistent with a cumulative stress model (Appleyard et al., 2005; Lee et al., 2014), results from this study suggest college students most at risk for higher alcohol use and problematic drinking were those experiencing both childhood adversity and partner victimization. As discussed in prior literature, exposure to cumulative stress is associated with early drinking onset and potential alcohol dependence (Enoch, 2011). The latent groups significantly associated with problematic drinking showed features of childhood adversity indicating an important area for screening among college students, to intervene and prevent the escalation of problematic drinking behaviors. To our knowledge, this is the first study using a cumulative stress model examining the intersection of childhood adversities and DV, and their association with alcohol use, among college students. Results from this study highlight the link between early life victimization, later DV, and problematic alcohol use among college students, emphasizing the need for college programming addressing the potential co-occurrence of childhood adversity and DV to curb alcohol use.

A notable result of this study reinforces prior literature concerning psychological DV prevalence among college-aged students (Shorey et al., 2011). Psychological DV was elevated and a central feature in two of three high-risk latent classes, which were associated with increased alcohol use. Possibly due to its lack of visible harm, psychological DV is perceived to be less detrimental compared to physical and sexual violence. Given the limited attachments among college dating partners, psychological violence may be more common (Dardis et al., 2017), yet harder to detect. More increased awareness about its potential harm must be an important feature of prevention programs.

Another noteworthy finding was that nearly one-third of college students in this study were classified in the "predominantly peer violence" group, made up of students experiencing mostly childhood peer victimization. The "predominantly peer violence" group surpassed the "low violence exposure" class by nearly 10% of the total sample size, indicating a high endorsement of childhood peer victimization among this sample of college students. Other than the "low violence exposure" group, all classes had a high probability on indicators of childhood peer victimization (see Table 3). These latent class analysis patterns are consistent with existing literature showing that peer victimization is associated with DV victimization (Garthe et al., 2017) emphasizing the importance of college prevention programs to explore multiple types of childhood victimization. Finally, the prevalence of childhood adversity and DV among a population of college students is striking, as they are often assumed to be high functioning and well-adjusted. Our study findings suggest that such assumptions may be unfounded, calling for a deepened understanding of vulnerabilities of college students and developing prevention and intervention strategies on campus.

Results from this study broaden current understanding about the possible constellations of childhood adversity combined with DV, and their association with alcohol use. Existing research shows early victimization experiences influence later functioning (Boden et al., 2014; Enoch, 2011; Magrys & Olmstead, 2015). Boden and colleagues (2014) identified a longitudinal link between stressful early life events, including interpersonal crises, and alcohol dependence among individuals 18 to 30 years old. Similarly, Enoch's (2011) review observed a direct pathway from early chronic stress exposure, such as child maltreatment and family violence, to early onset of alcohol use and alcohol dependence in young adulthood. Study findings also confirmed Kaukinen's (2014) review indicating the risk for DV among college youth with childhood experiences of family violence. Notwithstanding the cross-sectional design, study findings advance research by identifying associations between childhood adversity, DV in young adulthood, and vulnerability for problematic drinking among college students. Using a cumulative stress

approach, our study suggests that specific early life vulnerabilities, particularly peer victimization, combined with DV in young adulthood, can increase the likelihood of alcohol use and potentially escalate to problematic drinking in a college setting.

Findings from this study have important public health implications for adolescents and young adults with any history of childhood adversity and peer victimization, as these factors contribute to increased vulnerability for alcohol misuse. Implications extend to colleges supporting the behavioral health and well-being of students. We were not able to identify any college DV or alcohol/substance use prevention programs addressing the intersection of childhood adversities, DV, and alcohol/substance use. DV prevention programs include well-known bystander intervention models and motivational interviewing approaches with couples (Brem et al., 2019). However, bystander models have historically focused on sexual assault prevention in contrast with emphasizing a broader DV prevention approach, and their long-term effectiveness is not well understood (Brem et al., 2019). Furthermore, campus-based violence prevention programs are limited in scope and generally are not theory-based (Brem et al., 2019; Coker et al., 2015; Fleming & Wiersma-Mosley, 2015). Model university-level programs addressing alcohol and substance use concerns have been identified by the U.S. Department of Education, and the SAMHSA (2017b) has provided grant funding to colleges for implementation of the Screening, Brief Intervention, and Referral to Treatment (SBIRT) models. Yet, these programs overlook potentially critical sources of substance use vulnerability, such as childhood adversities and DV. College programs seeking to reduce alcohol use among students should address violence exposure during childhood and possible victimization in college, as alcohol use may reflect unhealthy coping mechanisms in response to psychological distress stemming from childhood adversity and/or dating victimization. Future directions of this work would explore best practices that enhance existing interventions to address the linkage between childhood adversities, DV, and alcohol use. One example may be integrating psychoeducation and role-play exercises into existing interventions to raise awareness among college students about associations between early life adversities and alcohol use behaviors.

Limitations

Our study results must be considered in the context of some limitations. First, a convenience sampling approach produces concerns of selection effects. Second, self-report surveys may result in social desirability bias, related to stigma associated with childhood adversity and interpersonal violence. Third, our alcohol measures were limited in that only three AUDIT items were

assessed. As such, the severity in drinking behavior and/or clinical significant forms of alcohol problems, such as meeting the diagnosis threshold for alcohol dependence disorder, cannot be assessed. Fourth, data collection in this study was cross sectional thereby limiting conclusions about causal relationships. Finally, although participants comprised students from four colleges across North America, our sample was largely made up of White college-age young adults, thus limiting generalizability to young adults from diverse racial/ethnic backgrounds and those not attending a higher education institution.

Conclusion

In summary, findings from this study have important implications for research, policy, and public health practice as it concerns potential consequences of cumulative stress from childhood extending into college life. Findings support continued focus on the long-term vulnerability of individuals experiencing co-occurring childhood adversities, DV, and alcohol use. Advances in prevention and intervention models emphasizing a cumulative stress approach and potential consequences in young adulthood must be achieved to provide more effective services and support to college students.

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