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Trauma Exposure and Heavy Drinking and Drug Use among College Students: Identifying the Roles of Negative and Positive Affect Lability in a Daily Diary Study

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Abstract

Trauma exposure is linked to heavy drinking and drug use among college students. Extant research reveals positive associations between negative affect lability and both trauma exposure and alcohol use. This study aimed to extend past research by using daily diary methods to test whether (a) individuals with (versus without) trauma exposure experience greater negative and positive affect lability, (b) negative and positive affect lability are associated with heavy drinking and drug use, and (c) negative and positive affect lability mediate the relations between trauma exposure and heavy drinking and drug use. Participants were 1,640 college students (M age = 19.2, 54% female,

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Conflict of Interest

The authors declare that they have no conflicts of interest.

Contributors

Authors SA and HT designed the larger study. Author NHW conceptualized the current study, conducted literature searches, and provided summaries of previous research studies. Author KWB conducted the statistical analysis. Authors NHW, AAC, and TPS wrote the first draft of the manuscript and all authors contributed to and have approved the final manuscript.

80% European American) who provided daily diary data for 30 days via online surveys. Daily diaries assessed negative and positive affect and substance use (i.e., percent days of heavy drinking, percent days of drug use, total number of drugs used). Individuals with (versus without) a history of trauma exposure demonstrated higher levels of negative and positive affect lability. Negative, but not positive, affect lability was associated with percent days of heavy drinking, percent days of drug use, and total number of drugs used, and mediated the associations between trauma exposure and heavy drinking and drug use outcomes. Findings provide support for the underlying role of negative affect lability in the relations between trauma exposure and heavy drinking and drug use among college students, suggesting that treatments targeting negative affect lability may potentially serve to reduce heavy drinking and drug use among trauma-exposed college students.

Keywords

trauma exposure; negative affect lability; positive affect lability; alcohol use; heavy drinking; drug use

1. Introduction

Most college students in the United States report exposure to at least one traumatic event (Frazier et al., 2009), with lifetime prevalence rates ranging from 52% (Owens & Chard, 2006) to 96% (Scarpa, 2001). Trauma exposure among college students is associated with deleterious outcomes (Anders, Frazier, & Shallcross, 2012), including alcohol and drug use (Read et al., 2012; Shorey, McNulty, Moore, & Stuart, 2016; Snipes, Green, Benotsch, & Perrin, 2014). Alcohol and drug use among college students is highly prevalent. Findings from a national survey (Substance Abuse and Mental Health Services Administration, 2014) revealed that fulltime college students endorse binge and heavy drinking at significantly higher rates compared to young adults not enrolled full-time in college, and 22.3% endorse past-month illicit drug use. Further, heavy drinking and drug use among college students has been linked to both acute and long-term negative consequences (Caldeira, Arria, O'Grady, Vincent, & Wish, 2008; Dennhardt & Murphy, 2013; O'Neill, Parra, & Sher, 2001; Rimsza & Moses, 2005). Thus, research elucidating the mechanisms linking trauma exposure to heavy drinking and drug use among college students is needed to inform interventions aimed at reducing alcohol and drug use in this population.

Affect lability – defined here as changes in affective experiences in response to specific situations (Ebner-Priemer et al., 2009) – may underlie the relation between trauma exposure and heavy drinking and drug use. Trauma exposure has been linked to physiological changes that may result in higher levels of affect lability, including increased activation in the amygdala (van Harmelen et al., 2013), associated with greater emotional reactivity (Gallagher & Chiba, 1996), and changes to the prefrontal cortex (Márquez et al., 2013), central in the generation of strategies for emotional modulation (Ochsner & Gross, 2005). Thus, trauma-exposed individuals may be both reactive to emotional stimuli and deficient in regulating resulting emotional experiences, a combination that may lead to higher levels of affect lability.

Consistent with this research, individuals with a history of trauma exposure report higher levels of affect lability (Aas et al., 2014; Goodman et al., 2003). Given that intense emotions are more difficult to modulate (Mennin, Heimberg, Turk, & Fresco, 2005), individuals who experience frequent, intense shifts in positive or negative affect (i.e., positive or negative affective lability), such as those with a history of trauma exposure, may engage in heavy drinking or use drugs to dampen or avoid emotional distress and arousal, consistent with self-medication (Khantzian, 1997) and negative reinforcement (Baker, Piper, McCarthy, Majeskie, & Fiore, 2004). Yet, only a handful of studies have examined the role of affect lability in relation to alcohol and drug use. These initial investigations have found higher levels of negative affect lability to be associated with increased alcohol use (Gottfredson & Hussong, 2013; Jahng et al., 2011; Rankin & Maggs, 2006) and substance use broadly (use of alcohol and/or drugs; Shadur, Hussong, & Haroon, 2015).

Notably, research on affect lability has focused almost exclusively on negative emotion experiences. Literature suggests that individuals experience dysregulation across both negative and positive emotional systems (Cyders et al., 2007; Weiss, Gratz, & Lavender, 2015). Trauma-exposed individuals may be motivated to avoid any arousal-inducing experience (Hayes, Strosahl, Wilson, & Bissett, 2004), including positive emotions (Roemer, Litz, Orsillo, & Wagner, 2001; Tull & Roemer, 2003). Indeed, trauma-exposed individuals have been found to exhibit heightened physiological arousal to stimuli that elicit positive emotions (Litz, Orsillo, Kaloupek, & Weathers, 2000); this greater sensitivity to positive emotion-inducing stimuli may make them prone to positive affect lability as shifts in positive emotions are a direct consequence of positive emotional sensitivity (Carpenter & Trull, 2013). Higher levels of positive emotion lability among trauma-exposed individuals may motivate heavy drinking and drug use. For example, trauma-exposed individuals may be less accepting of positive emotions because they elicit arousal that is experienced as distressing (Roemer et al., 2001; Tull & Roemer, 2003). Consistent with tension reduction theory (Conger, 1956), heavy drinking and drug use may then serve to reduce arousal from positive emotions among trauma-exposed individuals. Alternatively, higher levels of positive affect lability may reduce the capacity to control heavy drinking and drug use in the context of urges or cues for them (Baumeister, Bratslavsky, Muraven, & Tice, 1998). Consistent with this theory, positive affect lability has been shown to predict alcohol use (Jahng et al., 2011; Rankin & Maggs, 2006), although mixed findings have been detected, with another study finding no support for this association (Gottfredson & Hussong, 2013). This theory and empirical work suggests the need for research on the relations between positive affect lability and heavy drinking and drug use.

To summarize, there are several noteworthy limitations in the existing literature examining trauma exposure, affect lability, and alcohol and drug use. First, no study to date has examined whether negative or positive affect lability is related to drug use specifically. Further, research has yet to examine whether positive or negative affect lability are unique pathways that explain the observed relations between trauma exposure and both alcohol and drug use. The current study aims to fill these gaps in the literature using daily diary assessments collected over 30 days with a large sample of alcohol-using college students to test whether (a) individuals with (versus without) trauma exposure experience greater negative and positive affect lability, (b) negative and positive affect lability are related to

heavy drinking and drug use, and (c) negative and positive affect lability mediate the relations between trauma exposure and heavy drinking and drug use.

2. Methods

2.1 Participants

Undergraduate psychology students were recruited as part of a project examining daily experiences and alcohol use. Eligibility criteria were: (a) 18 years of age, (b) alcohol use at least twice in the past 30 days (to recruit individuals who would show meaningful within-person variation in drinking behavior), and (c) no past treatment for alcohol problems (to decrease error variability in modeling the relationships of interest). The final sample included 1,640 students, 54% female ($n=881$), and the average age was 19.2 ($SD=1.4$). In terms of race/ethnicity, 79.5% ($n=1304$) were White or European American, 11.8% ($n=193$) Asian American, 4.3% ($n=70$) Black or African American, 3.6% ($n=60$) Latino, and 0.8% ($n=13$) Native American or other; race was categorized for analyses as White ($n=1304$) vs. other ($n=336$).

2.2 Procedures

Procedures were approved by the institutional review board at the University of Connecticut. Students were recruited through the undergraduate psychology participant pool and an email-based campus-wide announcements system. Overall, 2269 prospective participants contacted the study researchers to participate in the information sessions. Among the 2269 participants, 350 individuals did not show up for the information sessions, 45 individuals did not meet the inclusion/exclusion criteria, and 26 individuals chose not to participate in the study. Of the 1848 eligible participants that consented to participate, 1818 participants completed the online baseline survey. An additional 178 participants either (a) did not participate in the daily diary phase (i.e., daily diary data for 30 days via online surveys, available from a secure website), (b) failed to complete at least 15 diary entries, or (c) had missing data on relevant person measures. This resulted in a final N of 1640. Participants were compensated up to \$135 for completing the baseline and daily diary protocols.

2.3 Measures

2.3.1 Baseline Measures

2.3.1.1 Demographic questionnaire: Information regarding age, gender, and racial/ethnic status was obtained.

2.3.1.2 Trauma exposure: The *Traumatic Experiences Screening Instrument* (TESI; Ford et al., 2000) is an 18-item, self-report measure designed to screen for trauma events in a respondent's lifetime. Consistent with DSM-IV guidelines for determining Criterion A trauma exposure for PTSD, participants were asked only to endorse an event if it elicited fear, helplessness, or horror. The TESI has shown evidence of adequate reliability and validity. Individuals who endorsed at least one trauma event on the TESI were classified as "trauma-exposed."

2.3.2 Daily Diary Measures

2.3.2.1 Affect lability: Positive and negative affect lability was constructed as an index from daily mood ratings across 30 days. Positive and negative affect items were extracted from the Positive and Negative Affect Schedule – Expanded Form (Watson & Clark, 1999). Positive affect items included: “happy,” “cheerful,” “excited,” “enthusiastic,” “energetic.” Negative affect items included: “nervous,” “irritable,” “hostile,” “guilty,” “sad,” “ashamed,” “angry.” Items were rated from 1 (not at all) to 5 (extremely) and were averaged to create daily positive and negative affect scores. These subscales had good internal consistency in the current sample (Cronbach’s $\alpha > .83$ for both scales).

Affect lability values were created by calculating standard deviation scores for the daily positive and negative affect scales for each participant and computing a total sum lability score. Affect lability thus reflects the total deviation from the mean, or degree of intra-individual fluctuation, in positive and negative affect across the 30-day period. Using this approach, higher levels of affect lability are indicated by greater within-person standard deviations. Prior research supports the reliability and validity of this measure of mood lability (Behrendt, Wittchen, Höfler, Lieb, & Beesdo, 2009; Eid & Diener, 1999; Penner, Shiffman, Paty, & Fritzsche, 1994; Silk, Steinberg, & Morris, 2003; Weinstein, Mermelstein, Shiffman, & Flay, 2008).

2.3.2.2 Heavy drinking and drug use: Alcohol use was assessed by asking how many standard drinks were consumed each day (range 0 to >15). This measure was dichotomized to measure heavy drinking defined according to National Institute on Alcohol Abuse and Alcoholism (NIAAA) guidelines of 4 or 5 standard drinks on any given day for females or males, respectively. Drug use was assessed by asking if any of the following were used each day (yes/no): marijuana, ecstasy, amphetamines, cocaine, opiates, other. Outcomes of interest included (a) percent days of heavy drinking (b) percent days of drug use, and (c) and total number of drugs (i.e., marijuana, ecstasy, amphetamines, cocaine, opiates, other) used over the 30-day period.

2.4 Data Analysis

Descriptive statistics were used to characterize variables of interest. Mediation was tested with Mplus (version 6.12) using maximum likelihood estimation with robust standard errors. Mediation models simultaneously examined 1) the relation between trauma exposure (independent variable) and positive and negative affect lability (both mediator variables), and 2) the relation between affect lability (both mediator variables) and substance use outcomes (dependent variable), while controlling for sex, age, and race/ethnicity given prior research indicating significant associations with substance use outcomes (Hasin & Grant, 2015). The mediated, or indirect effect, was estimated as the product of the path coefficients (a_1b and a_2b , Figure 1), and standard errors and 95% confidence intervals around the indirect effects were calculated to determine statistical significance of the mediation (Preacher and Hayes, 2004). Results were consistent when positive and negative affect lability were examined as independent or parallel mediators (except where noted), so results are presented when both affect lability measures were in the model to estimate the unique variance

accounted for by each. Lastly, to confirm the direction of the mediated effect, we tested the models when switching the mediator and outcome variables.

Substance use outcomes included percent days of heavy drinking, percent days of drug use, and total number of drugs used. Given the zero-inflated nature of the substance use outcomes, models were specified with a negative binomial distribution with log-link function for these outcomes. Percent outcomes were calculated as the total number of days reporting substance use divided by the total number of reports available for each person, to account for differential completion rates. The frequency of use of each separate drug was relatively low (Table 1) and did not allow for estimates across each individual drug, so all drug categories were combined into composite variables (i.e., percent days of drug use, total number of drugs used).

3. Results

Out of the 30 days of possible data, participants had alcohol data for an average of 29.7 ($SD=0.94$) days and drug use data for an average of 28.9 ($SD=2.1$) days, indicating excellent compliance with the study protocol. In total, 77.7% ($n=1274$ out of $n=1640$) reported trauma exposure, with slight differences in trauma exposure by sex (female 79.6% vs. male 75.5%, $\chi^2(n=1,640)=3.90$, $p=.04$) and age (endorsing trauma exposure $M=19.26$, $SD=1.48$ vs. not $M=19.11$, $SD=1.14$), $t(748.32)=-2.12$, $p=.03$), but not race $\chi^2(n=1,640)=0.34$, $p=.56$. Average positive and negative mood lability scores (i.e., within-person standard deviations) were .63 ($SD=.21$) and .34 ($SD=.20$) respectively and evidenced minimal overlap ($r=0.33$).

3.1 Relations between Trauma Exposure and Affect Lability

Trauma exposure was positively associated with affect lability. Specifically, those who reported trauma exposure had greater positive affect lability ($B=.04$, $SE=.01$, $p=.001$) and negative affect lability ($B=.03$, $SE=.01$, $p=.01$) compared to those who did not have a history of trauma exposure (see Figures 2–4). Males also had less affect lability (positive affect, $B=-.07$, $SE=.01$, $p<.001$; negative affect, $B=-.04$, $SE=.01$, $p<.001$) compared to females, and White (vs. Other) individuals had significantly lower negative affect lability ($B=-.04$, $SE=.01$, $p=.002$) but not positive affect lability ($B=.003$, $SE=.01$, $p=.82$). Age was not significantly related to affect lability ($p's>.12$).

3.2 Percent Days of Heavy Drinking

Positive and negative affect lability were examined as mediators of the relationship between trauma exposure and percent days of heavy drinking (Figure 2). The mediated effect was significant for negative affect lability ($ab=.01$, $SE=.005$, 95% $CI=.001-.02$, $p=.05$), but not for positive affect lability ($ab=.002$, $SE=.01$, 95% $CI=-.01-.01$, $p=.72$). Specifically, trauma exposure was positively associated with greater negative affect lability which was significantly associated with greater percent days of heavy drinking. Greater heavy drinking frequency was associated with being male (vs. female), $B=.35$, $SE=.04$, $p<.001$, White (vs. other), $B=.60$, $SE=.07$, $p<.001$, and older, $B=.06$, $SE=.02$, $p=.007$.

In models that switched the outcome (percent days of heavy drinking) and mediator (affect lability), the mediation was not significant. Specifically, percent days of heavy drinking was

not a significant mediator of the relationship between trauma exposure and positive affect lability, $ab=.001$, $SE=.001$, $p=.26$, or negative affect lability, $ab=.002$, $SE=.001$, $p=.12$.

3.3 Percent Days of Drug Use

Similar results were seen when examining positive and negative affect lability as mediators of the relationship between trauma exposure and percent days of drug use (Figure 3). The mediated effect was significant for negative affect lability ($ab=.03$, $SE=.01$, 95% CI=.001–.06, $p=.04$), but not for positive affect lability ($ab=.006$, $SE=.01$, 95% CI=–.02–.03, $p=.62$). Greater drug use frequency was associated with being male (vs. female), $B=1.03$, $SE=.12$, $p<.001$, and White (vs. other), $B=.34$, $SE=.16$, $p=.03$, but was not significantly associated with age, $B=.01$, $SE=.04$, $p=.74$. In models that switched the outcome (percent days of drug use) and mediator (affect lability), the reverse mediation was significant. Specifically, percent days of drug use was a significant mediator of the relationship between trauma exposure and negative affect lability, $ab=.002$, $SE=.001$, $p=.03$, but not positive affect lability, $ab=.001$, $SE=.001$, $p=.22$.

3.4 Total Number of Drugs Used

Lastly, positive and negative affect lability were examined as mediators of the relationship between trauma exposure and total number of drugs used in the past 30 days. The mediated effect was significant for negative affect lability ($ab=.05$, $SE=.02$, 95% CI=.01–.08, $p=.01$), but not for positive affect lability ($ab=–.01$, $SE=.01$, 95% CI=–.03–.01, $p=.39$), (Figure 4). Greater total number of drugs used was associated with being male (vs. female), $B=.58$, $SE=.09$, $p<.001$, but was not significantly associated with race ($B=.20$, $SE=.12$, $p=.10$), or age ($B=–.03$, $SE=.02$, $p=.30$).

Similar to the above results, in models that switched the outcome (number of drugs used) and mediator (affect lability), the reverse mediation was significant. Specifically, total number of drugs used was a significant mediator of the relationship between trauma exposure and negative affect lability, $ab=.004$, $SE=.002$, $p=.05$, but not positive affect lability, $ab=.001$, $SE=.001$, $p=.30$.

4. Discussion

The current study examined the relations among trauma exposure, negative and positive affect lability, and heavy drinking and drug use. Extending prior evidence of an association between negative affect lability and alcohol use (Gottfredson & Hussong, 2013; Jahng et al., 2011; Shadur et al., 2015), negative affect lability was found to be positively associated with percent days of heavy drinking, percent days of drug use, and total number of drugs used over a 30-day period. Further, and as expected, negative affect lability was heightened among individuals with a history of trauma exposure and mediated the link between trauma exposure and heavy drinking and drug use outcomes. These findings suggest that college students who have a history of trauma exposure experience a greater degree of fluctuation of shifts in negative emotional intensity and that such shifts explain, at least in part, their greater likelihood of heavy drinking and drug use.

Prior evidence indicates that negative affect lability is linked to alcohol and drug use, particularly among trauma-exposed populations. To elaborate, individuals with a history of trauma exposure may perceive arousal stemming from negative emotions as distressing because it may elicit trauma memories or cues (Tull, Jakupcak, McFadden, & Roemer, 2007). Consistent with self-medication (Khantzian, 1997) and negative reinforcement (Baker et al., 2004) models, trauma-exposed individuals may engage in heavy drinking or use drugs to dampen or avoid emotional distress and arousal stemming from negative emotions. Alternatively, negative affect lability may increase the likelihood of heavy drinking and drug use by reducing the capacity to control these behaviors in the context of urges or cues for them (Baumeister et al., 1998). Thus, trauma-exposed individuals may have fewer self-regulation resources available to adequately control impulses for heavy drinking or drug use when faced with cues for these behaviors following labile negative emotions.

Conversely, whereas positive affect lability was related to trauma exposure, it did not predict percent days of heavy drinking, percent days of drug use, or total number of drugs used, nor did it mediate the links between trauma exposure and these heavy drinking and drug use outcomes. Although research examining the relation of positive affect lability to alcohol and drug use is limited (Gottfredson & Hussong, 2013; Jahng et al., 2011; Rankin & Maggs, 2006), and these few studies have focused exclusively on alcohol use and found mixed findings, a growing body of literature underscores the role of positive emotional experiences in alcohol and drug use (Cooper, Kuntsche, Levitt, Barber, & Wolf, 2016; Smith & Cyders, 2016; Weiss, Tull, Dixon-Gordon, & Gratz, in press). One explanation for our divergent findings is that other forms of dysfunction stemming from positive emotional experiences may be more relevant to heavy drinking and drug use than positive affect lability. For instance, researchers have begun to distinguish responses to emotions (e.g., acceptance of emotions) from the quality of emotions (e.g., emotional intensity; Gratz & Tull, 2010; Mennin et al., 2005). According to this conceptualization, individuals who experience a greater degree of shifts in positive emotions may not be at risk for heavy drinking and drug use if they respond adaptively to (e.g., are accepting of) such emotions. Future studies are needed to clarify the role of the different facets of positive emotional experiences in heavy drinking and drug use, including responses to versus quality of (e.g., see Weiss et al., 2015 for a measure of difficulties regulating positive emotions) positive emotions. Given evidence here for higher levels of positive affect lability among trauma-exposed individuals, it also will be important for future investigations to identify the contribution of positive affect lability to other health consequences, including risky behaviors (e.g., risky sexual behavior) and psychopathology (e.g., posttraumatic stress; Chen et al., 2010; Weiss, Dixon-Gordon, et al., in press).

Of note, to confirm the direction of the mediated effects, we tested the models when switching the mediator and outcome variables. For the drug use outcomes, directionality of the mediation could not be established because significant mediation was detected in both directions. These findings suggest two possibilities: (1) trauma exposure may increase negative affect lability, leading to greater drug use, or (2) trauma exposure may lead to greater drug use, heightening negative affect lability. Of note, bidirectional relations among these variables are not entirely surprising. Consistent with the self-medication (Khantzian, 1997) and negative reinforcement (Baker et al., 2004) models, drugs may be used to manage

trauma-related symptoms and distress following a trauma event. However, while drug use may result in the immediate reduction of trauma-related symptoms and distress, it is likely to have paradoxical consequences in the long-term, preventing exposure to corrective information and interfering with emotional processing (Foa & Kozak, 1986). Thus, using drugs to manage trauma-related distress may likely exacerbate these experiences in the long-term (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Future research using longitudinal methods is needed to better understand the directionality of the relations among trauma exposure, negative affect lability, and heavy drinking and drug use outcomes.

Finally, consistent with past research, women (Tolin & Foa, 2006) and older participants (Sullivan, Contractor, Gerber, & Neumann, 2017) reported greater trauma exposure; women (Diener, Sandvik, & Larsen, 1985) and non-White participants (Newhill, Each, & Conner, 2009) reported greater affect lability; men (SAMSHA, 2014) and White participants (O'Malley & Johnson, 2002) reported greater heavy drinking frequency and drug use frequency; and men reported greater total number of drugs (SAMSHA, 2014). These findings underscore sex, age, and race/ethnicity as potential vulnerability factors for trauma, affect lability, and/or heavy drinking and drug use. Future research is needed to better understand the role of sex, age, and race/ethnicity in the relations examined here. For instance, recent evidence suggests that greater susceptibility to stress among women is associated with increased circuit-specific glutamatergic plasticity in reward-related brain regions (Brancato et al., 2017; Hodes, Kana, Menard, Merad, & Russo, 2015), which may relate to heavy drinking and drug use vulnerability (Burnett, Chandler, & Trantham-Davidson, 2016; Quintero, 2013).

Although the results of this study highlight one mechanism that may underlie the associations between trauma exposure and heavy drinking and drug use, several limitations warrant consideration. First, causality cannot be established given that our data do not allow for the temporal sequencing of affect lability and heavy drinking and drug use; however, testing the reverse mediation models by switching the mediator and outcome variables increases confidence in the mediating effect of affect lability in the relation between trauma exposure and heavy drinking. Second, though use of daily diary assessments was a strength of the current study, given our lengthy reporting period (i.e., 30 days), we only collected data once daily to reduce participant burden. Thus, consistent with other research (Behrendt et al., 2009; Eid & Diener, 1999; Penner et al., 1994; Silk et al., 2003; Weinstein et al., 2008), we aggregated affect ratings across the 30-day reporting period. Future research would benefit from collecting multiple, within-day reports of affect to test within-day lability as a mediator of the relations between trauma and heavy drinking and drug use. Third, our analyses examined heavy drinking (4 or 5 standard drinks for females or males, respectively) and any drug use (yes/no), and future investigations should consider the role of other measures of quantity and severity of alcohol and drug use. Fourth, we utilized a composite drug use variable because some substances were not reported frequently. As such, we were unable to differentiate among the various types of drugs. Fifth, to reduce participant burden, we did not comprehensively assess all negative and positive emotional experiences. Finally, our findings may not generalize to other substance-using populations (e.g., treatment-seeking, inpatient) or more diverse samples (e.g., age, race/ethnicity, education).

Despite limitations, the results of this study add to the literature on the interrelations among trauma exposure, negative and positive affect lability, and heavy drinking and drug use. Our findings indicate higher levels of negative and positive affect lability among trauma-exposed individuals. Moreover, they suggest that negative affect lability is positively associated with percent days of heavy drinking, percent days of drug use, or total number of drugs used, and mediates the relations between trauma exposure and these heavy drinking and drug use outcomes. These results highlight negative affect lability as a potential target for clinical interventions aimed at reducing heavy drinking and drug use among trauma-exposed college students, suggesting the utility of teaching skills for reducing the degree to which an individual experiences shifts in negative emotional intensity or their responses to such emotional experiences. Future research would benefit from examining whether empirically-supported treatments that target experiences of and responses to negative affect lability (e.g., dialectical behavior therapy; Linehan, 1993) result in lower levels of negative affect lability among trauma-exposed college students, as well as whether these lower levels of negative affect lability relate to reductions in heavy drinking and drug use.

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Highlights

- Trauma-exposed individuals reported higher negative and positive affect lability
- Negative affect lability was associated with substance use outcomes
- Negative affect lability mediated the trauma exposure-substance use relations

Figure 1.
Hypothesized relations among trauma exposure, affect lability, and substance use in the past 30 days

Figure 2.

Indirect effects of affect lability on the relationship between trauma exposure and the percent days of heavy drinking in the past month

Note: Estimates are adjusted for all variables in the model, including demographic covariates (age, sex, race). B = unstandardized regression coefficient. SE = sampling error.

Figure 3.

Indirect effects of affect lability on the relationship between trauma exposure and the percent days drug use in the past month

Note: Estimates are adjusted for all variables in the model, including demographic covariates (age, sex, race). B = unstandardized regression coefficient. SE = sampling error.

Figure 4.

Indirect effects of affect lability on the relationship between trauma exposure and poly-drug use in the past month

Note: Estimates are adjusted for all variables in the model, including demographic covariates (age, sex, race). +when examined in independent models, the relation between positive affect lability and the substance use outcome is still not significant, but is in the opposite direction $B = .33, SE = .23, p = .15$. B = unstandardized regression coefficient. SE = sampling error.

Table 1

Substance use in the past 30 days among the total sample (N=1640)

Substance Use Variables	Mean	SD	Range
Heavy alcohol use	11.98%	11.64%	0–60
Number of drugs used	0.53	1.00	0–6
Any drug use	8.09%	18.54%	0–100
Marijuana use	6.64%	16.87%	0–100
Amphetamine use	0.89%	5.95%	0–96.5
Opiates use	0.58%	3.22%	0–62.9
Cocaine use	0.28%	2.15%	0–44.4
Ecstasy use	0.23%	2.06%	0–55.6
Other drug use	0.97%	5.50%	0–100

Note: Number of drugs used represents the total number of drugs (i.e., marijuana, ecstasy, amphetamine, cocaine, opiates, other). Other outcomes represent the percent of days using the substance.