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Predictors of Substance Use in a Clinical Sample of Youth Seeking Treatment for Trauma-Related Mental Health Problems

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Abstract

Child maltreatment and traumatic events are well established risk factors for adolescent substance use problems, but little is known about the unique contributions of etiological factors on trauma-exposed youths' pre-treatment substance use in clinical settings. This study examined associations between substance use and risk and protective factors measured across multiple ecological levels among a unique sample of youth seeking treatment for trauma-related mental health problems in child advocacy centers. Participants were adolescents (N=135; 85% female; 60% white, 31% black) aged 13–17 years (M=15.4) with 1 experience of child maltreatment or other interpersonal violence, current substance use, and 5 PTSD symptoms. Youth and caregivers completed validated questionnaires and clinical interviews at a pre-treatment assessment in a randomized controlled trial of a treatment for co-occurring traumatic stress and substance use. Negative binomial regression models identified different patterns of risk and protective factors for alcohol and cannabis. Clinical implications of these results are discussed, including the potential targets for integrated psychotherapies that address co-occurring substance use and traumatic stress in youth.

Keywords

adolescents; substance use; child maltreatment; trauma PTSD; coping

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1. Introduction

There is a well-established connection between substance use, interpersonal trauma exposure, and traumatic stress in adolescents (Blumenthal et al., 2008; Danielson et al., 2007; Simmons & Suarez, 2016) but research is needed to elucidate the unique variance in substance use associated with trauma, posttraumatic stress disorder (PTSD) symptoms and other individual and environmental factors among trauma-exposed youth to guide clinical decisions. It is especially important to clarify these connections in clinical samples – including those seeking treatment for trauma-related mental health problems – in order to strengthen relevance to service providers working with youth and families. The epidemiology and functional connections across substance use, trauma exposure, and traumatic stress have largely been studied in adults and non-clinical youth samples. With regard to associations between trauma exposure and substance use, higher rates of substance use are observed in youth who have experienced child sexual abuse (Rothman et al., 2008; Clark & Bukstein, 1998), physical abuse (Kilpatrick et al., 2000), and/or who have experienced a greater number of trauma types in community (Ford, Elhai, Connor, & Freuh, 2010; Kilpatrick & Saunders, 1997), justice-involved (Ford, Grasso, Hawke, & Chapman, 2013), disaster-exposed (Danielson et al., 2017), trauma-treatment seeking (Adams et al., 2016), and substance use treatment seeking (Davis et al., 2019) samples.

Prior research supports considering both trauma exposure and PTSD in relation to substance use. Adolescents with PTSD are 4 times more likely to have an alcohol use disorder and 6 times more likely to have a cannabis use disorder than adolescents without PTSD (Kilpatrick et al., 2003). PTSD symptoms mediated the relationship between sexual abuse and alcohol use in justice-involved youth (Sanders et al., 2018), and meeting diagnostic criteria for PTSD independently predicted cannabis and illicit drug abuse and dependence in a national community sample of adolescents even when accounting for violence exposure and parental substance use (Kilpatrick et al., 1997). In large, prospective studies involving community samples of adolescents, PTSD was identified as a significant predictor of drug and alcohol problems above and beyond other risk factors including demographic characteristics, transmissible SUD risk, family factors, trauma exposure, and affiliation with deviant peers (Cornelius et al., 2010; Haller & Chassin, 2014). It is unknown whether similar patterns of association between risk factors and substance use would be observed in youth seeking outpatient treatment for PTSD and other trauma-related mental health concerns.

Moreover, it is unclear whether specific PTSD symptom domains are predictive of substance use above and beyond other symptom domains in treatment-seeking youth. PTSD is a multicomponent disorder and each diagnostic symptom criterion (DSM-IV: Re-experiencing, Avoidance, Hyperarousal, American Psychiatric Association, 2000)¹ may be differentially related to substance use outcomes (Sullivan & Holt, 2008), a question that has largely been untested in youth. Per the self-medication hypothesis (Khantzian, 1997), substance use may be a strategy for escaping or avoiding distressing thoughts or feelings related to a prior traumatic experience. Thus, substance use may be more strongly associated

¹DSM-IV-TR PTSD criteria were used, because data were collected before DSM-5 (APA, 2013).

with PTSD-Avoidance symptoms relative to other symptom domains – a notion examined in the current study.

Additional individual-level factors– including several implicated by the self-medication hypothesis – may uniquely contribute to substance use in youth seeking treatment for trauma-related mental health problems. For instance, personality traits associated with impulsive behaviors, including lack of planning, sensation seeking, and urgency have been linked to substance use and substance use disorders in youth and adults (Hershberger, Um, & Cyders, 2017; Tomko, Prisciandaro, Falls, & Magid, 2016), and higher rates of violence exposure and injury. Negative urgency – a tendency to engage in risky behaviors under conditions of strong negative emotions – has been implicated in the trauma-substance use connection. Youth with PTSD who are high in negative urgency may be at increased risk for frequent or impairing substance use, as has been observed in adults (Hahn, Tirabassi, Simons, & Simons, 2015; Weiss, Tull, Sullivan, Dixon-Gordon, & Gratz, 2015). Negative urgency has been observed to mediate the association between child maltreatment and alcohol and cannabis use (Wardell, Strang & Hendershot, 2016) and substance use related problems (Mirhashem et al., 2017) in young adults, supporting consideration of how negative urgency and other impulsivity related traits factor into patterns of substance use among trauma-exposed, treatment-seeking youth.

Substance use motives, or the reasons endorsed for using substances, also may influence substance use behaviors in this population. In keeping with the self-medication hypothesis, higher endorsement of coping motives (e.g., using cannabis to alleviate distress related to reminders of sexual abuse) may be related to greater substance use those seeking treatment for PTSD symptoms and problematic substance use. Among adults, use of substances to cope mediated the relationship between sexual assault and later problematic substance use (e.g., Ullman, Relyea, Peter-Hagene, & Vasquez, 2013). Coping motives also are related to substance use in trauma exposed adolescents (Bujarski et al., 2012; Cloutier et al., 2018). Enhancement motives (to enhance positive emotions) and social motives (to make social gatherings more fun) also are commonly endorsed among youth but do not tend to be as strongly linked to problematic substance use compared to coping motives (Kuntsche et al., 2005) and do not have similar theoretical connections to traumatic stress. Moreover, little is known about the contribution of these motives after accounting for other relevant factors such as trauma exposure, PTSD, and personality in youth.

1.1. Current Study

Although prior research has provided valuable insights into how trauma exposure, PTSD, impulsivity related personality traits, and coping motives relate to substance use, it remains unknown how these individual level factors are related to substance use when considered together in a sample of trauma-exposed youth who are seeking mental health treatment. The current study leverages a large, well-characterized clinical sample wherein several theoretically and empirically justified variables were assessed to inform which factors might be prioritized in interventions to reduce co-occurring substance use and PTSD in youth who presented to a child advocacy center (CAC) for treatment of trauma-related mental health concerns. It is important to study these associations in such samples of youth to maximize

the relevance of findings to practitioners working in clinical settings. One objective was to clarify the association of specific PTSD symptom domains relative to other risk factors for adolescent substance use when examined simultaneously. We hypothesized that a) PTSD-Avoidance symptoms would be related to substance use even when accounting for other PTSD symptoms, consistent with the negative reinforcement “self-medication” model; and b) negative urgency and coping motives would explain unique variance in substance use beyond other impulsivity-related personality traits and substance use motives given their connection to both distress and problematic substance use. Results of the current study have implications for better understanding etiology and presentation of substance use symptoms, as well as possible treatment needs, among youth who have experienced child maltreatment and other forms of trauma.

2. Method

The current study was part of a NIDA-funded randomized controlled trial (RCT; detailed descriptions published elsewhere (Hahn et al., 2020)). Relevant methods are summarized here.

2.1. Participants

Participants were 135 adolescents who presented for mental health treatment and met the following inclusion criteria: 1) Aged 13 to 18 years; 2) Reported at least one memorable experience of interpersonal violence (sexual abuse, physical abuse, physical assault, threat with a weapon and/or witnessing violence); 3) Reported current non-tobacco substance use as defined by at least one substance using day in the past 90 days; and 4) Reported five or more DSM-IV PTSD symptoms. Youth were excluded if they: 1) Were previously identified as having a Pervasive Developmental Disability or Moderate to Severe Intellectual Disability; 2) Were actively suicidal or homicidal; or 3) Reported active psychotic disorder.

Approximately 85% of the sample was female; mean age was 15.4 years ($SD = 1.3$). Sixty percent of the sample identified as white, 31% black, and 9% multiracial. Participants were recruited from two child advocacy centers in the Southeastern United States that provide mental health services to youth who have experienced child maltreatment and other traumas. All variables were assessed during an initial baseline research appointment for the aforementioned RCT following consent and assent procedures. All diagnostic information was gathered through a structured in-person clinical interview with a highly trained research team member. Additional measures were administered via written survey. Youth and caregivers were paid for their time.

2.2. Measures

2.2.1. UCLA PTSD Index for DSM-IV (Steinberg, Brymer, Decker, & Pynoos, 2004).—The UCLA PTSD Index is a widely accepted and well-validated instrument for assessing trauma and PTSD in youth (Steinberg et al., 2004; Steinberg et al., 2013). Twelve trauma exposure items were summed for an overall count of trauma types (e.g., child maltreatment, interpersonal violence, disasters, accidents) for each participant. Twenty-two items assessed PTSD symptomology corresponding with DSM-IV re-experiencing,

avoidance, and arousal symptom cluster criteria. Mean scores for each symptom cluster were used (alpha reliabilities ranged from .69–.85 across scales).

2.2.2. Children’s Depression Inventory (CDI; Kovacs, 1992).—Depressive symptoms were assessed using the CDI, a 27-item scale developed to assess depressive symptoms in youth. Items were summed such that higher scores indicate greater depression symptom severity (alpha reliability=.90).

2.2.3. Drinking Motives Questionnaire, Revised (DMQ-R; Cooper, 1994).—The DMQ-R is a 20-item measure of substance use motives that has been replicated and validated in adolescents (Kuntsche et al., 2006). Participants reported their motives for any substance use rather than alcohol use only. The social, enhancement, and coping subscales were used. Alpha reliabilities were .82, .89, and .91, respectively. The conformity motives subscale often demonstrates poor psychometrics (Read, Wood, Kahler, Maddock, & Palfai, 2003) and was not included.

2.2.4. UPPS-R-Child Impulsivity Scale (UPPS-R-C; Zanolski, Stairs, Settles, Combs, & Smith, 2010).—The sensation seeking, negative urgency, and (lack of) premeditation subscales of the UPPS-R-C was used for the current study. The UPPS has been validated among a sample of treatment-seeking adolescents (Tomko et al., 2016). Mean subscale scores were used (alpha reliabilities: lack of premeditation=.78, sensation seeking=.78, negative urgency=.84).

2.2.5. Timeline Followback (TLFB; Sobell & Sobell, 1992).—The TLFB is a well-validated and widely used retrospective measure of substance use using a calendar method. Interviewers recorded participants’ self-reported daily substance use over the previous 90 days. The total number of substance using days (i.e., total days in which alcohol was consumed, total days in which marijuana was used) were used for the current study.

2.3. Statistical Methods

Data cleaning and analyses were completed using STATA 15 (StataCorp, 2017). Hypotheses were evaluated with a series of negative binomial regressions using STATA 15. Alcohol use and cannabis use were represented by the number of use days during the three months prior to data collection. Negative binomial regression was used because each of the dependent variables were count variables with over-dispersion. Separate models were estimated for both substances. Each analysis included PTSD symptom clusters, impulsivity related traits, substance use motives, and depression. Gender age were included as covariates. Finally, we controlled for cannabis use in the alcohol model and controlled for alcohol use in the cannabis model. Post-hoc power analysis using Monte Carlo simulation demonstrated adequate power for all significant effects (i.e., >.80). Non-significant effects all demonstrated power that was less than .80.

3. Results

3.1. Descriptive Statistics and Bivariate Correlations

Descriptive statistics are presented in Table 1 and bivariate associations are presented in Table 2. On average, participants endorsed over three types of traumatic experiences during their lifetime. Participants reported consuming alcohol on an average of three and a half days over the past three months and using cannabis on approximately eight days during the same time-frame. Other substance use also was assessed for each participant using the TLFB. During the three months prior to data collection, few participants endorsed opioid misuse ($n=6$), cocaine use ($n=1$), or stimulant misuse ($n=1$); no participants endorsed using club drugs, hallucinogenic substances, inhalants, or heroin. Compared to male participants, female participants reported higher levels of depression and coping motives, as well as higher levels of all three *DSM-IV* PTSD symptom clusters (Reexperiencing, Avoidance, and Arousal). Older adolescents endorsed greater drinking motives across all three subscales (social, enhancement, and coping). Moreover, age was significantly associated with greater alcohol use. With respect to magnitude of associations, all significant correlations observed between substance use (alcohol use, cannabis use) and other variables met or exceeded the typical/moderate threshold as described in Gignac & Szodorai's (2016) empirically derived recommendations for individual differences research, indicating their potential clinical relevance.

3.2. Alcohol Use

The first negative binomial regression model examined youth self-reported independent variables in predicting alcohol use (Table 3). Among the substance use motives, only social motives had a significant relationship with alcohol use. Sensation seeking had a significant positive association with alcohol use, but lack of premeditation and negative urgency did not have significant independent associations. Depression was significantly associated with alcohol use. With regard to PTSD symptom clusters, Avoidance symptoms had a significant positive association with alcohol use. However, Reexperiencing and Arousal symptoms were not significantly associated with alcohol use. Gender was not significantly associated with alcohol use. However, age had a significant effect such that older participants reported greater alcohol consumption. Finally, greater marijuana use was associated less alcohol use.

3.3. Cannabis Use

The next negative binomial regression model examined youth self-reported independent variables in predicting cannabis use (Table 4). Holding all other independent variables constant, enhancement motives and coping motives were significant in predicting cannabis use. However, contrary to hypothesis, social motives were not significantly associated with cannabis use. Lack of premeditation – but not sensation seeking or negative urgency – had a significant negative association with cannabis use. Reexperiencing symptoms had a significant negative association with cannabis use, but Avoidance and Arousal symptoms were not significantly associated with cannabis use. Age and gender were not significantly associated with cannabis use, but greater alcohol use was significantly associated with less cannabis use.

4. Discussion

This study investigated associations between substance use, trauma exposure, PTSD and a related set of theoretically relevant and clinically addressable variables in a diverse sample of youth seeking treatment for trauma-related mental health problems. We focused on identifying factors that were significantly associated with substance use (alcohol use, cannabis use) when holding other variables constant.

Consistent with hypotheses, PTSD symptoms and substance use motives were important factors in predicting substance use, though different patterns were observed for alcohol use and cannabis use. Coping motives were independently associated with cannabis use and avoidance and depression symptoms were associated with alcohol use, consistent with the self-medication model (Khantzian, 1997). For those youth, substance use may be perceived as a means to manage distressing trauma-related thoughts and feelings. This is unlikely to be the only motivation for why youth use substances, however. Indeed, social motives were a strong, significant predictor of alcohol use in this sample, as observed in non-clinical youth samples (Carrus et al., 2016) and enhancement motives were significantly associated with cannabis use. Moreover, sensation seeking – but not negative urgency – was significantly associated with alcohol use in the negative binomial model despite both traits demonstrating significant bivariate correlations with alcohol use. These results reinforce the importance of assessing multiple reasons youth identify for why they engage in substance use, recognizing that both positive and negative reinforcement mechanisms contribute substance use in trauma-exposed youth rather than assuming all substance use is due to attempts to manage trauma-related distress.

Re-experiencing symptoms also showed a nonsignificant positive bivariate association with cannabis use but had significant negative association with cannabis use in the negative binomial regression analysis. Given the opposite direction of the associations in the bivariate correlations versus regression coefficients, these results may simply be byproducts of substantial shared variance among PTSD symptom clusters rather than a true effect. This finding is somewhat consistent with research conducted among adolescents in a juvenile detention center, wherein Kerig et al. (2012) found significant bivariate associations between the three PTSD symptom clusters and alcohol/drug use. But after they included all clusters in a path model while controlling for interpersonal trauma, none of the PTSD symptom clusters were significant.

4.1. Limitations and Future Directions

Findings should be interpreted in light of design limitations. First, the study's cross-sectional design limits conclusions about causality. The relationship between substance use and traumatic stress is likely bidirectional (Simmons & Suarez, 2016). Future prospective studies should clarify developmental trajectories and mechanistic associations among etiological factors and clinical outcomes. Moreover, a larger sample size would allow for stronger interpretation of both significant and non-significant effects. Second, other potentially relevant factors were not measured here (e.g., family history), though several mutable factors that may be addressed in outpatient psychotherapies were included. Third, the current study used *DSM-IV* PTSD diagnostic criteria and did not include negative alterations in cognitions

and mood (*DSM-5* PTSD Criterion D). However, depression symptoms were measured and were predictive of alcohol use after accounting for other variables in the model, which might give an approximation of how *DSM-5* PTSD Criterion D would have performed in the model. Fourth, although substance use was assessed thoroughly, the present analyses did not include measures of substance-related impairment or substance use disorder symptoms. Substance use at any level in adolescence is illegal and potentially harmful; still, future studies should examine how the factors observed here relate to SUD symptoms, particularly in light of conceptual models outlining shared pathophysiology for PTSD and SUDs (Gisquet-Verrier & Le Dorze, 2019). Moreover, to reduce the length of the assessment battery, only three of the UPPS-R-C subscales were used, and it is unclear how inclusion of the (lack of) Perseverance and Positive Urgency scales may have impacted results. Finally, other ecological factors beyond the individual (e.g., family factors; community level impacts like the COVID-19 pandemic or racial discrimination) may impact substance use risk and factors for adolescents who have experienced child maltreatment and should be examined in future studies.

4.2. Conclusions

The current study examined risk factors for alcohol use and cannabis use among youth seeking treatment for trauma-related mental health problems. Collectively, these results demonstrate the shared risk and protective factors that broadly underlie substance use among trauma-exposed, treatment-seeking adolescents, while also highlighting unique and nuanced differences between the two substances most commonly used by adolescents. Findings suggest potential value of implementing efficacious integrated treatments that address PTSD, substance use and shared risk factors (Danielson et al, 2020) as a departure from standard practice involving singular, sequential, or parallel treatments.

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Highlights

- Substance use risk factors were examined in trauma-exposed youth seeking treatment.
- PTSD-Avoidance and depression symptoms were associated with alcohol use.
- Social motives and sensation seeking were also associated with alcohol use.
- Coping and enhancement motives were independently associated with cannabis use.

Table 1

Descriptive Statistics for Sample

	M (SD)	Range	Skew
Age	15.34 (1.28)	13 – 18	-
Number of Traumatic Experiences	3.55 (2.02)	1 – 10	0.76
Depression	17.97 (10.06)	0 – 46	0.34
Reexperiencing Symptoms	2.16 (1.09)	0.00 – 4.00	-0.13
Avoidance Symptoms	1.82 (0.77)	0.00 – 3.75	0.02
Arousal Symptoms	2.22 (0.94)	0.00 – 4.00	-0.03
Sensation Seeking	2.78 (0.65)	1.13 – 4.00	-0.17
Lack of Premeditation	2.02 (0.56)	0.38 – 3.38	-0.10
Negative Urgency	2.95 (0.66)	1.13 – 4.00	-0.65
Social Motives	2.01 (0.79)	1.00 – 3.80	0.41
Enhancement Motives	2.43 (0.98)	1.00 – 4.00	-0.02
Coping Motives	2.50 (1.01)	1.00 – 4.00	-0.14
Total Days of Alcohol Use	3.50 (7.19)	0 – 39	3.15
Total Days of Marijuana Use	8.02 (16.16)	0 – 91	3.01

Note. $N=135$. Gender = 118 Females, 17 Males; Alcohol Days = Total number of days in which the adolescent consumed alcohol during the 90 days prior to data collection. Marijuana Days = Total number of days in which the adolescent used marijuana during the 90 days prior to data collection.

Table 2

Correlation Matrix for Key Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Age													
2. Gender	-.00												
3. Social Mot.	.25**	-.16											
4. Enh. Mot.	.22*	-.14	.74***										
5. Coping Mot.	.21*	-.20*	.52***	.74***									
6. (Lack of) Premed.	-.05	-.06	.18*	.25**	.23**								
7. SS	.08	.01	.28**	.19*	.14	.12							
8. NU	.01	-.26	.31***	.32***	.34***	.49***	.13						
9. Depression	.00	-.28**	.27**	.29**	.29**	.36***	.08	.53***					
10. Reexp.	.05	-.31***	.18*	.17	.24**	.15	-.03	.37***	.47***				
11. Avoidance	.03	-.26**	.22*	.13	.17	.11	.12	.40***	.60***	.63***			
12. Arousal	.07	-.26**	.23*	.10	.16	.18*	.03	.39***	.50***	.69***	.63***		
13. Alcohol	.26**	-.05	.35***	.20*	.23**	.10	.22*	.26**	.27**	.16	.28**	.14	
14. Cannabis	.16	-.06	.14	.28**	.25**	-.12	-.03	.12	-.01	.02	-.00	-.03	-.14

Note. Enh. Mot. = enhancement motives. (Lack of) Premed. = lack of premeditation. SS = sensation seeking. NU = negative urgency. Reexp = Reexperiencing. Alcohol = Total days of alcohol use over past 90 days. Marijuana = Total days of marijuana use over past 90 days. Total Use = Total days of any substance use over past 90 days.

* $p < .05$

** $p < .01$

*** $p < .001$.

Table 3

Negative Binomial Regression Predicting Alcohol Use

Variable	<i>b</i>	<i>Robust SE</i>	<i>z</i>	<i>p</i>	<i>95% CI</i>	<i>IRR</i>	<i>95% CI</i>
Social Motives	0.84	0.21	4.04	.000	0.43 – 1.24	2.31	1.54 – 3.46
Enhancement Motives	-0.17	0.25	-0.66	.510	-0.66 – 0.33	0.85	0.52 – 1.39
Coping Motives	-0.03	0.18	-0.14	.885	-0.39 – 0.27	0.97	0.68 – 1.40
Lack of Premeditation	-0.22	0.25	-0.88	.380	-0.72 – 0.27	0.80	0.49 – 1.32
Sensation Seeking	0.41	0.17	2.34	.019	0.07 – 0.75	1.50	1.07 – 2.11
Negative Urgency	0.37	0.24	1.55	.121	-0.10 – 0.83	1.44	0.91 – 2.30
Depression	0.93	0.44	2.11	.035	0.07 – 1.79	2.54	1.07 – 6.01
Reexperiencing	-0.10	0.14	-0.70	.485	-0.37 – 0.18	0.91	0.69 – 1.19
Avoidance	0.58	0.24	2.43	.015	0.11 – 1.04	1.78	1.12 – 2.83
Arousal	-0.20	0.17	-1.21	.227	-0.53 – 0.13	0.82	0.59 – 1.14
Gender	0.16	0.33	0.49	.625	-0.48 – 0.80	1.17	0.62 – 2.23
Age	0.19	0.09	2.15	.032	0.02 – 0.36	1.21	1.02 – 1.44
Cannabis Use	-0.02	0.01	-4.15	.000	-0.03 – -0.01	0.98	0.97 – 0.99

Note. $X^2(13; N = 133) = 111.13, p < .001$. *b* = unstandardized coefficients. IRR = Incident Rate Ratio.

Table 4

Negative Binomial Regression Predicting Cannabis Use

Variable	<i>b</i>	<i>Robust SE</i>	<i>z</i>	<i>p</i>	<i>95% CI</i>	<i>IRR</i>	<i>95% CI</i>
Social Motives	-0.28	0.24	-1.16	.247	-0.75 – 0.19	0.76	0.47 – 1.21
Enhancement Motives	0.96	0.27	3.52	.000	0.42 – 1.49	2.61	1.52 – 4.44
Coping Motives	0.72	0.22	3.35	.001	0.30 – 1.15	2.06	1.35 – 3.15
Lack of Premeditation	-1.06	0.28	-3.73	.000	-1.61 – -0.50	0.35	0.20 – 0.61
Sensation Seeking	-0.19	0.20	-0.93	.353	-0.59 – 0.22	0.83	0.55 – 1.23
Negative Urgency	0.37	0.33	1.13	.258	-0.27 – 1.02	1.45	0.76 – 2.77
Depression	0.45	0.60	0.74	.458	-0.73 – 1.63	1.56	0.48 – 5.10
Reexperiencing Symptoms	-0.56	0.20	-2.79	.005	-0.96 – -0.17	0.57	0.38 – 0.85
Avoidance Symptoms	-0.13	0.28	-0.45	.651	-0.68 – 0.43	0.88	0.50 – 1.53
Arousal Symptoms	-0.08	0.23	-0.36	.721	-0.54 – 0.37	0.92	0.58 – 1.45
Gender	-0.15	0.37	-0.41	.680	-0.89 – 0.58	0.86	0.41 – 1.78
Age	0.10	0.10	0.95	.344	-0.10 – 0.29	1.10	0.90 – 1.34
Alcohol Use	-0.13	0.04	-2.93	.026	-0.22 – -0.04	0.88	0.80 – 0.96

Note. $\chi^2(13; N=133) = 102.94, p < .001$. *b* = unstandardized coefficients. IRR = Incident Rate Ratio.