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CLINICAL RESEARCH ARTICLE

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Psychometric evaluation of a novel measure of trauma-related cannabis use to cope

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ABSTRACT

Background: Posttraumatic stress disorder (PTSD) and cannabis use disorder (CUD) are commonly comorbid and are associated with many negative public health outcomes. One plausible explanation for this comorbidity comes from a self-medication framework, which suggests people use cannabis to cope with PTSD symptoms. Despite theoretical and empirical evidence for PTSD-related cannabis use to cope, no measure of this construct exists.
Objective: We sought to address this gap by developing and validating a novel measure of PTSD-specific cannabis self-medication, which we have termed the Trauma-Related Cannabis Use to Cope (TRCU) questionnaire.
Method: The psychometric properties of the TRCU and how it relates to relevant constructs were examined among a diverse sample of 345 trauma-exposed undergraduate cannabis users ($M_{age} = 22.19$, $SD = 6.45$; 46.7% White; 79.7% woman-identifying) using structural equation modelling in Mplus.
Results: Study findings indicate that the TRCU is a more precise and targeted measure of cannabis use to cope with PTSD symptomology, as compared to existing measures of cannabis coping motives. Furthermore, our data support the use of the TRCU as a four-factor scale, assessing cannabis use to cope with the four *DSM-5* PTSD symptom clusters ($\chi^2(164) = 257.83$, $p < .001$; CFI = .969; TLI = .965; RMSEA = .041). We also found strong evidence supporting the construct and criterion validity of the TRCU, specifically in relation to PTSD symptoms, cannabis use, and cannabis-related issues and dependence.
Conclusions: Results support the use of the TRCU in future self-medication research and as a clinically useful screening tool for identifying individuals with PTSD who are at risk for developing CUD.

Evaluación psicométrica de una nueva medida del uso de cannabis como afrontamiento al trauma

Antecedentes: El trastorno de estrés postraumático (TEPT) y el trastorno por consumo de cannabis (TCC) son comúnmente comórbidos y se asocian con numerosos resultados negativos para la salud pública. Una posible explicación de esta comorbilidad proviene del marco de automedicación, que sugiere que las personas consumen cannabis para afrontar los síntomas del TEPT. A pesar de la evidencia teórica y empírica sobre el consumo de cannabis relacionado con el TEPT como afrontamiento, no existe una medida que lo evalúe.
Objetivo: Buscamos abordar esta deficiencia mediante el desarrollo y la validación de una nueva medida de automedicación con cannabis específica para el TEPT, denominada cuestionario sobre el consumo de cannabis para el afrontamiento relacionado con el trauma (TRCU, por sus siglas en inglés).
Método: Se examinaron las propiedades psicométricas del TRCU y su relación con constructos relevantes en una muestra diversa de 345 estudiantes universitarios consumidores de cannabis expuestos a trauma (edad media = 22,19; desviación estándar = 6,45; 46,7% caucásicos; 79,7% mujeres) mediante modelos de ecuaciones estructurales en Mplus.
Resultados: Los hallazgos del estudio indican que el TRCU es una medida más precisa y específica del consumo de cannabis para afrontar la sintomatología del TEPT, en comparación con las medidas existentes sobre los motivos de afrontamiento del cannabis. Además, nuestros datos respaldan el uso del TRCU como una escala de cuatro factores, que evalúa el consumo de cannabis para afrontar los cuatro grupos de síntomas del TEPT del DSM-5 ($\chi^2(164) = 257,83$; $p < 0,001$; CFI = 0,969; TLI = 0,965; RMSEA = 0,041). También encontramos evidencia sólida que respalda la validez de constructo y de criterio del TRCU, específicamente en relación con los síntomas de TEPT, el consumo de cannabis y los problemas y la dependencia relacionados con el cannabis.

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HIGHLIGHTS

- Posttraumatic stress disorder (PTSD) and cannabis use disorder (CUD) often occur together, and this study suggests people may use cannabis to cope with PTSD symptoms. However, no specific tool existed to measure this behaviour until now.
- This study introduces the Trauma-Related Cannabis Use to Cope (TRCU) questionnaire, a novel tool for identifying cannabis use as a coping mechanism for PTSD symptoms.
- The TRCU provides a more targeted measure than existing tools, which can help clinicians better identify individuals with PTSD at risk for developing cannabis use disorder.

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Conclusiones: Los resultados respaldan el uso del TRCU en futuras investigaciones sobre automedicación y como una herramienta de tamizaje clínicamente útil para identificar a personas con TEPT en riesgo de desarrollar TCC.

Cannabis use is increasing, as demonstrated by national survey data. In 2019, 15.2% of adults aged 26 and older and 35.4% of adults aged 18–25 reported using cannabis in the past year, whereas by 2022, these rates had risen to 20.6% and 38.2%, respectively (Substance Abuse and Mental Health Service Administration, 2020, 2023). With increasing medical and recreational legalisation (Pew Research Center, 2024), it is imperative to identify risk factors and behaviours that heighten the risk for cannabis-related problems, including cannabis use disorder (CUD). One significant risk factor for problematic cannabis use is trauma exposure (Degenhardt et al., 2022; Kevorkian et al., 2015). The relationship between trauma and increased cannabis use is well-documented (Hicks, Zaur, et al., 2022), with individuals often turning to cannabis to cope with the psychiatric distress that can accompany traumatic experiences (Hicks, Bountress, et al., 2022). This pattern of coping aligns with extensive research showing elevated cannabis use among those with posttraumatic stress disorder (PTSD) and may help explain the high comorbidity rate between PTSD and CUD (Kevorkian et al., 2015; Kondev et al., 2021).

PTSD and CUD comorbidity presents a considerable clinical burden. Individuals with both PTSD and CUD tend to exhibit more severe psychiatric and physical health issues compared to those suffering from either condition alone (Bryan et al., 2021; Watson et al., 2011). This dual diagnosis often results in worse overall mental health outcomes, exacerbated symptoms, and increased difficulty in treatment (Bonn-Miller et al., 2013, 2015). For instance, individuals with comorbid PTSD and CUD are more likely to experience heightened anxiety, depression, and social impairment (Simpson et al., 2019), contributing to a significant public health challenge.

Understanding the etiology of PTSD and CUD comorbidity is crucial given its prevalence and impact. The self-medication model offers a compelling framework for examining the intersection of PTSD and CUD. This model posits that PTSD symptoms can lead to maladaptive coping strategies, such as substance use, which may evolve into pathological behaviour (Khantzian, 1997). Extensive literature supports this model, indicating that individuals with PTSD may use cannabis as a means to self-medicate, thereby increasing the risk of developing CUD (Hicks, Zaur, et al., 2022).

Despite the robust body of research on cannabis use and PTSD, existing studies often focus on cannabis use to cope with negative affect broadly (e.g. depression, anxiety) rather than with PTSD symptoms specifically (Hicks, Zaur, et al., 2022). This represents a critical gap in the literature. Studies have shown a general increase in cannabis use among individuals with PTSD (Dworkin et al., 2017; Metrik et al., 2022), but they do not differentiate whether this use is specifically to manage PTSD symptoms or to help manage negative affect more broadly. To our knowledge, there are no self-report survey tools available to assess the use of cannabis use behaviours to cope with PTSD symptoms specifically.

To address this gap, we developed the Trauma-Related Cannabis Use to Cope (TRCU) questionnaire, a novel self-report survey designed to assess the use of cannabis specifically to cope with PTSD symptoms. The rationale for creating this measure builds off existing work by our group demonstrating that measuring PTSD-specific coping motives offers clinical and statistical advantages over using general coping measures to infer PTSD-specific self-medication. Specifically, we previously demonstrated that a brief four item screener of trauma-related drinking to cope (TRD) was distinct from a general measure of drinking to cope, that it was more strongly associated with pathological forms of alcohol use compared to general alcohol consumption (Hawn, Aggen, et al., 2020), and that it uniquely mediated the association between PTSD and alcohol use disorder above and beyond general coping motives (Hawn, Bountress, et al., 2020). We recently extended this work by creating a comprehensive 20-item version of the TRD measure, which showed a similar pattern of overall findings (Hawn et al., under second review). Furthermore, we recently developed and validated a measure of trauma-related eating to cope (TREC), which was found to be distinct from general eating to cope motives, was the sole predictor of PTSD symptoms when included in the same model as general eating to cope motives, and mediated associations between PTSD and a range of disordered eating outcomes (Hawn, Kliebhan, et al., 2025). Together, this burgeoning line of evidence underscores the need for measures that assess coping behaviours that are specific to PTSD symptoms. The specificity of cannabis use to cope with PTSD has yet to be explored. Our hope is that the TRCU will enhance clinical assessment and treatment planning by directly assessing PTSD-specific cannabis coping motives. The current study aimed to psychometrically evaluate the TRCU questionnaire through four primary aims:

(1) Examine the distributional properties of the TRCU, compare them to an existing measure of general cannabis coping motives (i.e. cannabis

use to cope with general negative affect rather than with PTSD specifically), and test omnibus differences in TRCU scores based on probable PTSD and at-risk CUD caseness. *Hypothesis 1:* Compared to a measure of general coping motives, the TRCU is expected to be endorsed at lower rates and exhibit distinct response patterns among individuals with PTSD and at-risk CUD, indicating its greater specificity.

(2) Investigate the factor structure measurement properties of the TRCU items. *Hypothesis 2:* The TRCU will evidence four factors corresponding with cannabis use to cope with the four symptom clusters of PTSD (i.e. intrusion, avoidance, negative alterations in cognition and mood, arousal) and these four factors will load onto a single higher order factor indexing overall trauma-related cannabis use to cope.

(3) Externally validate the TRCU by examining the association between the TRCU higher order factor and a general cannabis use to cope common factor and comparing how these two constructs differentially relate to PTSD. *Hypothesis 3a:* Trauma-related cannabis use to cope and general cannabis to cope will be correlated yet distinct constructs. *Hypothesis 3b:* PTSD factors will be more strongly associated with the TRCU higher order factor compared to the general cannabis to cope common factor.

(4) Externally validate the TRCU in relation to PTSD symptoms and cannabis consumption and related problems. *Hypothesis 4a:* Each TRCU factor will be most strongly associated with the PTSD symptom cluster (i.e. factor) that it was designed to represent (e.g. arousal factor of PTSD would be most strongly associated with the TRCU item querying frequency of cannabis to cope with arousal symptoms). *Hypothesis 4b:* Each PTSD factor will significantly predict the TRCU latent factor. *Hypothesis 4c:* The TRCU common factor will be significantly associated with cannabis consumption and related problems.

1. Method

1.1. Participants

Participants were 345 trauma-exposed undergraduates from a large urban public university who reported at least some cannabis use over the past six months and completed a 45-minute online survey. Participants were recruited through a psychology research pool and received course credit as compensation. To determine eligibility, participants first completed a brief online screener. Those who were 18 years or older and endorsed exposure to any of the potentially traumatic events listed on the Life Events Checklist for *DSM-5* (LEC-5; Weathers, Blake, et al., 2013) were considered eligible for the study and were then redirected to the online study battery. Of the 881 participants who enrolled in the study, 844 completed the entire survey with 726 (86%) passing four out of the five attention checks. Given the focus of the current study and to reduce zero-inflation, the sample was restricted to individuals who endorsed at least some cannabis use over the past six months ($n = 345$; 47.5%). The final sample identified primarily as women (79.7%) and consisted of 46.7% White, 40.5% Black or African American, 3.6% Asian, 0.6% American Indian/Alaskan Native, 0.6% Native Hawaiian/Pacific Islander, and 8.0% Other identifying individuals. Participants ranged in age from 18 to 59 years old ($M = 22.19$, $SD = 6.45$). All relevant ethical safeguards have been met in relation to experimentation including consent and review by the Institutional Review Board at [MASKED FOR REVIEW] [IRB# 2015270]. Due to the collection of completely de-identified data, this study was deemed exempt.

1.2. Measures

1.2.1. Demographics

Participants self-reported a range of demographic information, including age, sex assigned at birth, gender identity, race and ethnicity, employment status, marital status, etc. Given the low endorsement rates (4.6%) of individuals identifying in categories other than cisgender, a binary variable representing cisgender men and women was included in the correlation analysis.

1.2.2. Trauma exposure

The Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) was used to assess trauma history. The TLEQ is a 23-item self-report questionnaire which assesses frequency and timing of a range of potentially traumatic events (e.g. natural disaster, assault, accidents, illness/injury). The TLEQ assesses a wide range of potentially traumatic events that align with the *DSM-5* definition of trauma, while also querying subjective distress – a residual criterion from the previous edition of the *DSM*. The TLEQ captures both direct exposures (e.g. experiencing a sexual assault) and indirect exposures (e.g. witnessing family violence or learning about trauma to a close other), providing a comprehensive assessment of trauma history. The TLEQ has good test-retest reliability and good convergent validity with interview assessments of trauma exposure (Kubany et al., 2000). A lifetime trauma load variable was created by summing the frequency endorsements for each trauma assessed in the TLEQ.

1.2.3. PTSD

Past month PTSD symptom severity was assessed using the PTSD Checklist-5 (PCL-5; Weathers, Litz, et al., 2013). The PCL-5 consists of 20 items that

align with the PTSD symptom criteria outlined in the *DSM-5* (APA, 2013). Responses are recorded on a Likert-type scale ranging from 0 ('Not at all') to 4 ('Extremely'). The PCL-5 has shown strong internal consistency ($\alpha = .94$) and test-retest reliability ($r = .82$), as well as good convergent (r's = .74 to .85) and discriminant (r's = .31 to .60) validity (Blevins et al., 2015). Cronbach's α from the present sample indicated high internal consistency (0.96). A PCL-5 cutoff score of 33 (Bovin et al., 2016) was used to determine probable PTSD caseness.

1.2.4. Cannabis consumption and related consequences

The Cannabis Use Disorders Identification Test-Revised (CUDIT; Adamson et al., 2010) is an 8-item, self-report screening tool designed to identify problematic cannabis use and potential cannabis use disorders. The CUDIT has demonstrated good psychometric properties, including reliability and validity (Adamson et al., 2010) and showed evidence of strong internal consistency in the present study sample ($\alpha = .84$). Based on prior work (Adamson et al., 2010), a cutoff score of 12 or higher was used to identify probable CUD cases.

1.2.5. Trauma-related cannabis use to cope

A 20-item trauma-related cannabis use to cope (TRCU) questionnaire was designed by psychologists specialising in PTSD and comorbid substance use disorders with the intent to more effectively identify individuals at risk for developing comorbid PTSD-CUD via the use of cannabis use to cope with PTSD symptoms. Response options included 0 ('Never'), 1 ('Rarely'), 2 ('Sometimes'), 3 ('Often'), and 4 ('Always'). TRCU items were developed to obtain information regarding past-month frequency of cannabis use to cope with each of the 20 PTSD symptoms, as defined by the *DSM-5*. Consistent with the development of the Trauma-Related Drinking to Cope-20 Item Version (TRD-20; Hawn et al., under second review) and Trauma-Related Eating to Cope (TREC; Hawn, Kliebhan et al., 2025) questionnaires, the specific wording related to each PTSD symptom was modelled directly after the frequently used and validated PCL-5 to ensure content validity (Weathers, Litz, et al., 2013). Specific prompts orienting the reader to anchor responses to cannabis use specifically were provided (e.g. 'Trouble remembering important parts of the stressful experience (you used cannabis either because you were upset that you could not remember or to help you remember)?') All TRCU items are presented in Table 1. In the present study, there was excellent internal consistency across all TRCU items ($\alpha = .98$), as well as across items within the four TRCU subscales indexing cannabis use to cope with the four symptom clusters of PTSD: intrusion ($\alpha = .96$), avoidance ($\alpha = .94$), negative alterations in cognition and mood ($\alpha = .97$), and arousal ($\alpha = .93$).

1.2.6. General cannabis use to cope motives

The coping subscale of the Marijuana Motives Questionnaire (MMQ-Cope; Simons et al., 1998) was used to assess cannabis use to cope with general negative affect (e.g. 'to forget my worries') using a rating scale to indicate the frequency of marijuana use on a 1 ('Almost Never/Never') to 5 ('Almost Always') scale. The MMQ-Cope has demonstrated strong psychometric properties (Simons et al., 1998) and evidenced excellent internal consistency within the present sample ($\alpha = .91$).

1.3. Data analytic plan

1.3.1. Aim 1

Descriptive analyses were conducted in R 4.2.2 (Team, 2022) and SPSS Version 28. Descriptive statistics (e.g. item endorsements, frequency distributions) were examined for the TRCU (trauma-related cannabis use to cope) and compared (using a Chi-square test) to those for the MMQ-Cope (cannabis use to cope with negative mood more broadly) in the full sample and across probable PTSD and CUD cases and controls (Hypothesis 1). Pearson and point-biserial correlational analyses were also conducted to examine how the TRCU relates to relevant demographic variables (i.e. gender, race), trauma load, MMQ-Cope, PTSD symptoms, and cannabis use and related-problems, and t-tests compared the endorsement levels of relevant variables across probable PTSD and probable CUD cases and controls.

1.3.2. Aim 2

Structural equation modelling (SEM) analyses were performed using Mplus 8.10 software (Muthén & Muthén, 2017). Maximum likelihood robust (MLR) estimation was used to account for data non-normality. Confirmatory factor analyses (CFA) were used to first evaluate the factor structure for the TRCU. Given the TRCU was developed to assess the use of cannabis to cope with *DSM-5* PTSD symptoms, the measurement model specified a four-factor solution (Hypothesis 2), modelling the use of cannabis to cope with the four *DSM-5* symptom clusters of PTSD (i.e. intrusion, avoidance, alterations in cognition and mood, arousal; Model 1). A higher order factor model accounting for the shared variance among the four TRCU latent factors was then estimated (Model 2). Good model fit was determined using the thresholds for omnibus fit indices recommended by Hu and Bentler (1999): Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) values 'close to' .95

Table 1. Scale instructions, item descriptions, and standardised factor loadings for trauma related cannabis use to cope.

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then select one of the numbers to the right to indicate how often you ***used cannabis to cope*** with that problem in the past month.

Response options: Never – 0 **Rarely** – 1 S**ometimes** – 2 **Often** – 3 **Always** – 4

	Item	Intrusion Estimate	Avoidance Estimate	Neg Cog/ Mood Estimate	Arousal Estimate
1.	Repeated, disturbing, and unwanted memories of the stressful experience?	0.918			
2.	Repeated, disturbing dreams of the stressful experience?	0.900			
3.	Suddenly feeling or acting as if the stressful experience were happening again (as if you were actually back there reliving it)?	0.911			
4.	Feeling very upset when something reminded you of the stressful experience?	0.914			
5.	Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0.894			
6.	Avoiding memories, thoughts, or feelings related to the stressful experience?		0.933		
7.	Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?		0.956		
8.	Trouble remembering important parts of the stressful experience (you used cannabis either because you were upset that you could not remember or to help you remember)?			0.837	
9.	Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?			0.909	
10.	Blaming yourself or someone else for the stressful experience or what happened after it?			0.919	
11.	Having strong negative feelings such as fear, horror, anger, guilt, or shame?			0.908	
12.	Loss of interest in activities that you used to enjoy (either because you were upset by this loss of interest or to help enjoy activities)?			0.901	
13.	Feeling distant or cut off from people (either because you were upset that you felt distant or to help you feel closer to others)?			0.911	
14.	Trouble experiencing positive feelings like love or happiness (either because you were upset that you were having trouble experiencing positive emotions or to help you experience positive emotions)?			0.895	
15.	Irritable behaviour, angry outbursts or acting aggressively (either because you were upset by your behaviour or to change the behaviour)?				0.855
16.	Taking too many risks or doing things that could cause you harm (either because you were upset about your risk taking or to make it easier to do risky things)?				0.807
17.	Being 'superalert' or watchful or on guard?				0.861
18.	Feeling jumpy or easily startled?				0.875
19.	Having difficulty concentrating?				0.877
20.	Trouble falling or staying asleep?				0.753

and a Root Mean Square Error of Approximation (RMSEA) value 'close to' .06.

1.3.3. Aim 3

To examine the association between the TRCU and MMQ-Cope (Hypothesis 3a), we employed a correlated higher-order factor model (Model 3), whereby the higher-order TRCU factor, which accounted for the shared variance among the four TRCU latent factors, was correlated with the MMQ-Cope common factor. Next, both the TRCU higher order factor and MMQ-Cope common factor were regressed onto the four oblique PCL-5 common factors in the same model, while allowing their residual variances to correlate (Hypothesis 3b; Model 4).

1.3.4. Aim 4

Given our interest in determining how the PTSD symptom clusters relate to the four TRCU subscales (Hypothesis 4a), the four oblique PCL-5 common factors were first specified as predictors of each TRCU latent factor (Model 5). To determine how the PTSD symptom clusters relate to overall TRCU (Hypothesis 4b), the four oblique PCL-5 common factors were then used to predict the higher order TRCU latent factor (Model 6). We also sought to test how variation in TRCU may predict cannabis consumption and related problems (Hypothesis 4c). Therefore, we completed our conceptual self-medication model by regressing the TRCU factor onto the four oblique PCL-5 common factors, as before, as well as regressed two lower-order factors of the CUDIT representing cannabis consumption and related problems onto the TRCU factor (Model 7). Given the PCL-5 and CUDIT total score were associated with gender and race at the bivariate level, respectively, the final model conditioned the PCL-5 factors on gender and the CUDIT factors on race.

2. Results

2.1. Aim 1

Table 2 provides descriptive information for the study variables. The average total composite sum scores for the TRCU, MMQ-Cope, PCL-5, CUDIT, and lifetime trauma load were all significantly higher among individuals exceeding the suggested PCL-5 diagnostic cutoff for PTSD ($n = 167$; 48.55%) compared to those who did not. The average total scores across variables were also all significantly higher among probable CUD cases ($n = 101$; 30.42%) compared to controls. Alcohol was the most commonly used substance, with 41.5%

Table 2. Descriptive summary of study construct sum score composite variable.

					PTSD Status						
		Full Sample			Non-PTSD			Probable PTSD			
Variable	Range	Mean (*SD*)	Skew	Kurtosis	Mean (*SD*)	Skew	Kurtosis	Mean (*SD*)	Skew	Kurtosis	*t*
TRCU	0–80	16.85 (22.29)	1.205	0.340	5.44 (10.70)	2.531	6.302	28.49 (24.86)	0.401	−0.975	−10.872***
MMQ-Cope	5–25	12.67 (6.53)	0.480	−1.057	10.44 (5.66)	1.019	−0.006	14.95 (6.54)	0.015	−1.234	−6.784***
PCL-5	0–80	32.12 (21.17)	0.343	−0.829	14.67 (9.48)	0.255	−1.068	50.29 (13.16)	0.611	−0.740	−28.572***
CUDIT	1–32	9.18 (6.94)	0.994	0.377	7.66 (6.04)	1.125	0.859	10.75 (7.49)	0.795	−0.155	−4.188***
Trauma Load	1–66	18.70 (13.52)	1.033	0.671	13.06 (9.81)	1.360	2.426	24.53 (14.39)	0.663	−0.179	−8.566***
					CUD Status						
					Non-CUD			Probable CUD			
Variable					Mean (*SD*)	Skew	Kurtosis	Mean (*SD*)	Skew	Kurtosis	*t*
TRCU					11.24 (18.00)	1.710	2.161	29.69 (25.70)	0.395	−1.074	−6.549***
MMQ-Cope					10.70 (5.62)	0.842	−0.408	17.30 (6.17)	−0.315	−1.076	−9.648***
PCL-5					30.07 (20.46)	0.474	−0.601	36.85 (22.13)	0.035	−1.063	−2.744**
CUDIT					5.35 (3.09)	0.246	−1.042	18.05 (5.02)	0.803	−0.252	−23.808***
Trauma Load					17.72 (13.49)	1.047	0.530	20.99 (13.37)	1.089	1.184	−2.065*

Note. Abbreviations: PTSD, Posttraumatic Stress Disorder; CUD, Cannabis Use Disorder; CUDIT, Cannabis Use Disorders Identification Test; MMQ-Cope, Marijuana Motives Questionnaire Coping subscale; TRCU, Trauma-Related Cannabis Use to Cope; PCL-5, PTSD Symptom Checklist, DSM-5.
***$p < .001$. **$p < .010$. *$p < .050$.

reporting consumption two to four times per month and 34.2% reporting monthly or less use. Marijuana use was also highly prevalent, with 38.6% reporting use four or more times per week. Use of e-cigarettes was reported by 50.9% of participants, with 31.0% indicating use within the past year and 17.5% reporting frequent use (i.e. four or more times per week). Cigarette use was reported by 26.0% of the sample, with only 8.2% indicating use in the past year. Of the full sample, 17.5% indicated non-medical use of at least one of class of prescription drugs (i.e. use without a prescription or in excess of prescribed dosage). Illicit drug use (e.g. cocaine, methamphetamine, heroin) was reported by 12.3% of participants, with 3.8% indicating past-year use.

Correlational analyses (Table 3) showed that all main study constructs were significantly correlated. Whereas neither race nor gender were associated with the TRCU total score (*p*s > .05), both were associated with the MMQ-Cope total score, such that female ($r = .16$, $p = .004$) and Black ($r = .11$, $p = .040$) identifying individuals were more likely to endorse general cannabis use to cope than their male and other race identifying peers, respectively. TRCU and MMQ-Cope total scores were moderately correlated ($r = .54$, $p < .001$), but not multicollinear. A Variance Inflation Factor (VIF) of 1 for the TRCU and MMQ-Cope total scores further indicated no issues with multicollinearity, as values below 10 are considered to reflect low multicollinearity.

Whereas approximately 84.29% of participants reported at least some level of cannabis use to cope with negative affect broadly (i.e. any item endorsement on the MMQ-Cope), significantly fewer participants (61.75%) reported at least some level of trauma-related cannabis use on the TRCU, χ^2 (1, $N = 345$) = 20.42, $p < .001$. Histograms comparing the distributions of TRCU and MMQ-Cope total scores revealed that greater variability was observed in the MMQ-Cope total scores compared to the TRCU total scores (Figure 1). Additionally, the distributions of TRCU and MMQ-Cope among probable PTSD cases were substantially more dispersed compared to probable non-PTSD controls (Figure 2), suggesting greater variability in cannabis coping motives among individuals with PTSD compared to those without. This was further demonstrated by a skewed (2.53) and kurtotic (6.30) distribution of TRCU scores among the non-PTSD controls and low skewness (.40) and kurtosis (−.98) among the probable PTSD cases. A total of 77.78% of individuals exceeding the PCL-5 cutoff for PTSD endorsed at least some trauma-related cannabis use to cope and those with probable PTSD had higher TRCU scores on average ($M = 28.49$, $SD = 24.86$) compared to non-PTSD controls ($M = 5.44$, $SD = 10.70$), $t(329) = -10.87$, $p < .001$.

A similar pattern of findings was seen with the CUDIT (Figure 3), wherein TRCU and MMQ-Cope scores were notably more dispersed among probable CUD cases compared to controls. A total of 83.17% of individuals exceeding the CUDIT cutoff for probable CUD endorsed at least some TRCU and those with probable CUD had higher TRCU scores on average ($M = 29.69$, $SD = 25.70$) compared to non-CUD controls ($M = 11.24$, $SD = 18.00$), $t(330) = -6.55$, $p < .001$.

2.2. Aim 2

A four factor model indexing cannabis use to cope with symptoms aligning with the four PTSD symptom clusters fit the data well ($\chi^2(164) = 257.83$, $p < .001$; CFI = .969; TLI = .965; RMSEA = .041). All indicators loaded strongly onto their respective factors, with all standardised factor loadings > .75 (see Table 1). A higher order factor model with the four TRCU latent factors loading onto single higher order TRCU factor also fit the data well ($\chi^2(166) = 257.77$, $p < .001$; CFI = .970; TLI = .966; RMSEA = .041), with all first order factors loading onto the second order factor at >.94.

2.3. Aim 3

The correlated higher-order factor model used to test the association between the TRCU and MMQ-Cope latent factors (Model 3) demonstrated good fit ($\chi^2(270) = 446.32$, $p < .001$; CFI = 0.961; TLI = 0.957; RMSEA = .044), and indicated that the latent factors were correlated, $\rho = 0.56$, $p < .001$. Next, to evaluate the TRCU and MMQ-Cope factor structures in the context of PTSD, the four oblique PCL-5 common factors were treated as external predictors of both the TRCU higher order factor and the MMQ-Cope common factor, while allowing their residuals to correlate (Model 4). The model demonstrated acceptable fit ($\chi^2(926) = 1{,}810.95$, $p < .001$; CFI = 0.919; TLI = 0.914; RMSEA = 0.053). The PCL-5 factor indexing PTSD intrusion symptoms significantly predicted TRCU ($\beta = .32$, S.E. = .156, $p = .040$), while none of the PCL-5 factors significantly predicted the MMQ-Cope common factor (Figure 4).

2.4. Aim 4

Model 5, which explored associations between the TRCU and PCL-5 common factors, demonstrated acceptable model fit ($\chi^2(712) = 1{,}420.13$, $p < .001$; CFI = 0.925; TLI = 0.917; RMSEA = .054). A summary of the path coefficients between the PCL-5 and TRCU latent variables is provided in Table 4. Contrary to the hypothesis that each PCL-5 factor would predict its corresponding TRCU factor (e.g. PTSD intrusion symptoms would predict cannabis use to cope with intrusion symptoms), only the intrusion and arousal

Table 3. Pearson product moment and point-biserial correlations.

Variable	1	2	3	4	5	6	7
(1) TRCU	1	–	–	–	–		
(2) MMQ-Cope	.537**	1					
(3) PCL-5	.599**	.354**	1				
(4) CUDIT	.468**	.546**	.206**	1			
(5) Trauma Load	.337**	.205**	.476**	.179**	1		
(6) Gender [a]	.108	.160**	.165***	.070	.132*	1.00	
(7) Race 1 [b]	−.077	−.125*	.041	−.156**	.028	−.102	1.00
(8) Race 2 [c]	.079	.111*	−.105	.154**	.024	.132*	−.744**

Note. Abbreviations: CUDIT, Cannabis Use Disorders Identification Test; MMQ-Cope, Marijuana Motives Questionnaire Coping subscale; TRCU, Trauma-Related Cannabis Use to Cope; PCL-5, PTSD Symptom Checklist, DSM-5.
[a]Gender was coded [0]Male and [1]Female.
[b]Race 1 was dummy coded to represent: [0]Non-White and [1]White.
[c]Race 2 was dummy coded to represent: [0]Non-Black and [1]Black.
*** $p < .001$. ** $p < .010$. * $p < .050$.

PCL-5 factors significantly predicted the TRCU intrusion and arousal factors, respectively. None of the other PCL-5 factors significantly predicted any of the other TRCU factors. Next, the TRCU higher order factor was regressed onto the four oblique PCL-5 common factors (Model 6). This model produced acceptable model fit ($\chi^2(726) = 1{,}448.64$, $p < .001$; CFI = 0.923; TLI = 0.917; RMSEA = .054). The intrusion factor was the only PCL-5 factor that was significantly associated with the TRCU higher order factor ($\beta = .33$, S.E. = .156, $p = .033$; Table 4; Figure 5). Follow-up bivariate analyses of observed (rather than latent) variables revealed that each TRCU subscale was positively correlated with its corresponding PCL-5 subscale and all other PCL-5 subscales. Additionally, bivariate correlations at the manifest level showed that all PCL-5 factors were positively associated with the TRCU total score (Table 5).

The final validation model extended Model 6 to test whether the TRCU factor significantly predicted cannabis consumption and related problems in the context of PTSD (Model 7). Overall, this model demonstrated acceptable model fit ($\chi^2(1,153) = 2{,}104.39$, $p < .001$; CFI = 0.914; TLI = 0.909; RMSEA = .05). Standardised path coefficients are provided in Figure 5. Consistent with the previous model, only the PCL-5 intrusions factor significantly predicted the TRCU factor. Moreover, TRCU was significantly and positively associated with both cannabis consumption ($\beta = .56$, S.E. = .062, $p < .001$) and cannabis-related problems/dependence ($\beta = .52$, S.E. = .058, $p < .001$). Follow-up multiple regressions were used to examine whether the TRCU total score was significantly associated with cannabis consumption and cannabis-related problems/dependence above and beyond general coping motives, as measured by the MMQ-

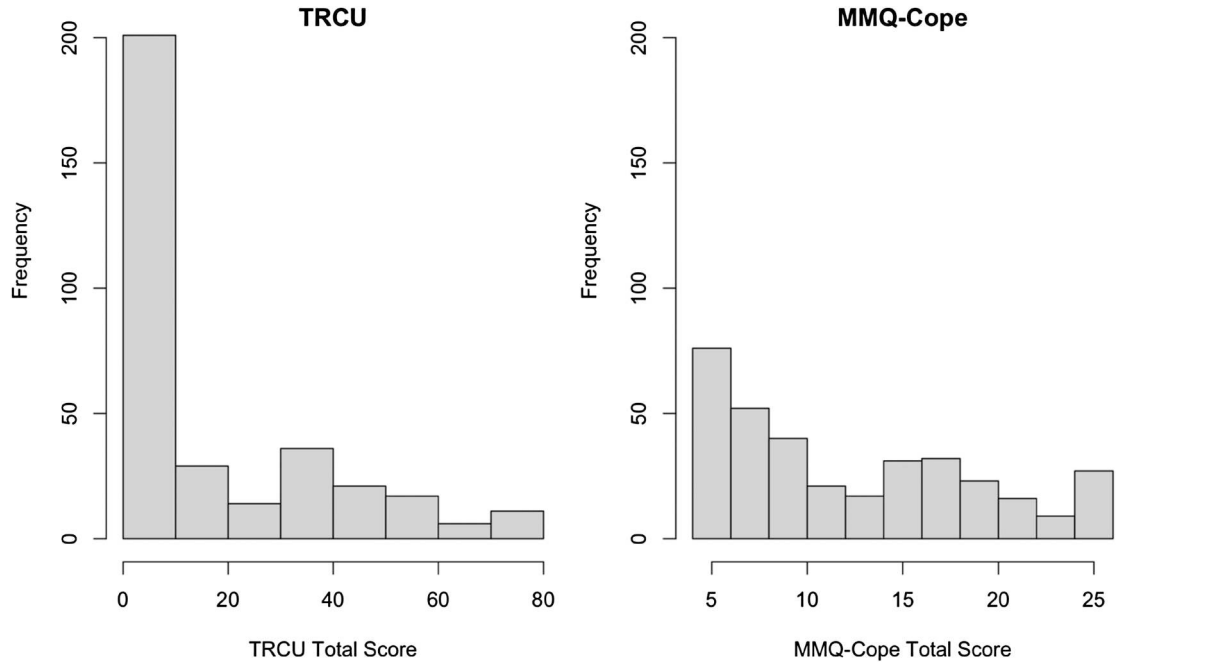

Figure 1. TRCU vs. MMQ-Cope frequency distributions. TRCU = Trauma-Related Cannabis Use to Cope; MMQ-Cope = Marijuana Motives Questionnaire-Coping Subscale.

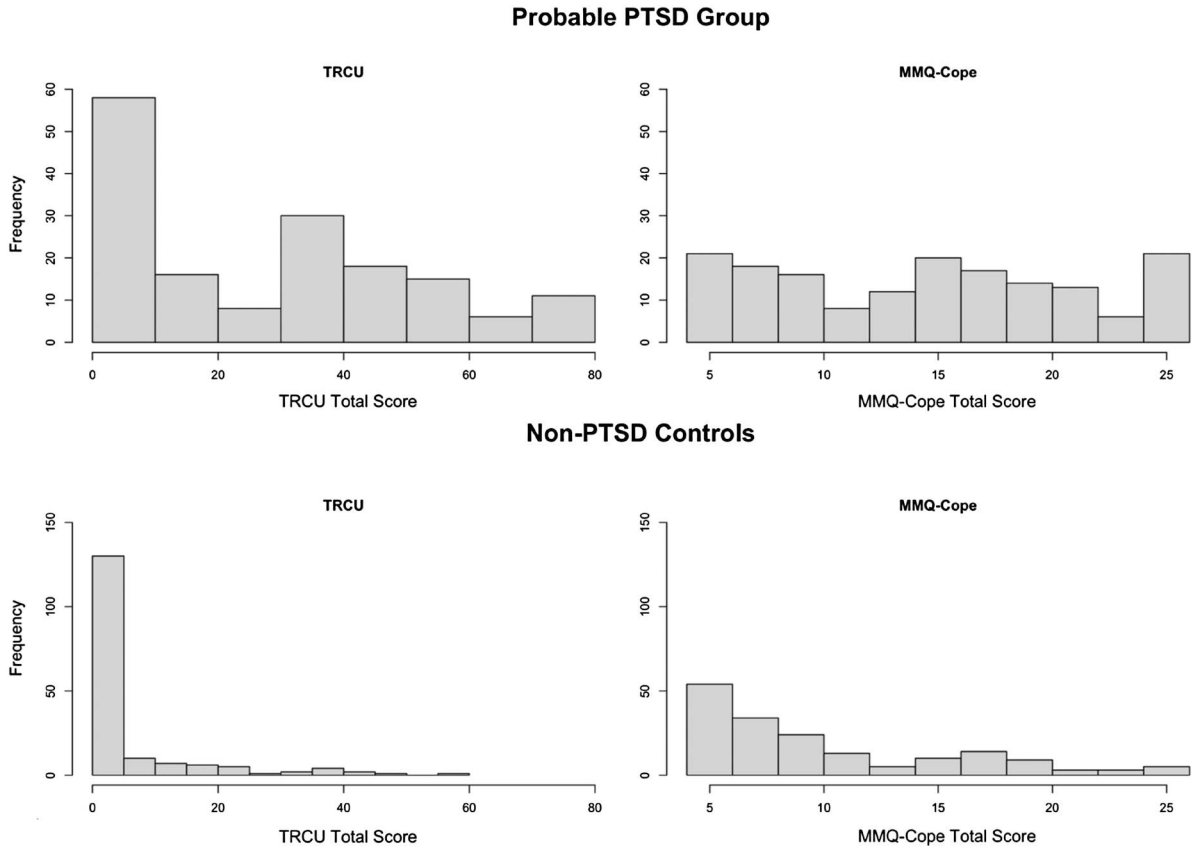

Figure 2. TRCU vs. MMQ-Cope frequency distribution by PTSD diagnostic cutoff. TRCU = Trauma-Related Cannabis Use to Cope; MMQ-Cope = Marijuana Motives Questionnaire-Coping Subscale.

Cope total score. In the first model, cannabis consumption was regressed on TRCU and MMQ-Cope scores. Both TRCU ($\beta = .239$, $p < .001$) and MMQ-Cope ($\beta = .321$, $p < .001$) emerged as significant positive predictors of cannabis use frequency. In the second model, scores for cannabis-related problems/dependence were regressed on TRCU and MMQ-Cope simultaneously. Again, both TRCU ($\beta = .195$, $p < .001$) and MMQ-Cope ($\beta = .460$, $p < .001$) were significant predictors.

3. Discussion

3.1. Overall summary of the findings

The goal of the current study was to address an existing gap in the literature by creating and assessing a self-report tool that evaluates the usage of cannabis specifically for managing symptoms of PTSD. We have named this newly developed measure the Trauma-Related Cannabis Use to Cope (TRCU) questionnaire. In general, our findings indicate that the TRCU is a more precise and targeted measure of cannabis use to cope with PTSD symptomology, as compared to existing measures like the MMQ-Cope, which assesses cannabis use for coping with negative emotions in a broader sense. Furthermore, our data support the use of the TRCU as a four-factor scale, assessing cannabis use to cope with the four *DSM-5* PTSD symptom clusters. We also found strong evidence supporting the construct and criterion validity of the TRCU, specifically in relation to PTSD symptoms, cannabis use, and cannabis-related issues and dependence. The findings from the four study aims are reviewed in the following sections.

3.2. What are the distributional properties of the TRCU, and how do they compare to the MMQ-Cope?

Greater variability was observed in the MMQ-Cope total scores compared to the TRCU total scores. This difference in variability is consistent with our first hypothesis, as we would expect more individuals to use cannabis to cope with general negative affect, leading to greater variability in scores. In contrast, fewer individuals are likely to use cannabis specifically to cope with PTSD symptoms, resulting in less variability in the TRCU scores. The reduced variability in the TRCU suggests that it is a more precise measure, specifically targeting cannabis use for PTSD-related coping. Moreover, the observed endorsement rates for any item on the TRCU and the MMQ-Cope were significantly different, with statistically far fewer participants endorsing any amount of trauma-related cannabis use to cope compared to cannabis use to cope more broadly. This difference in

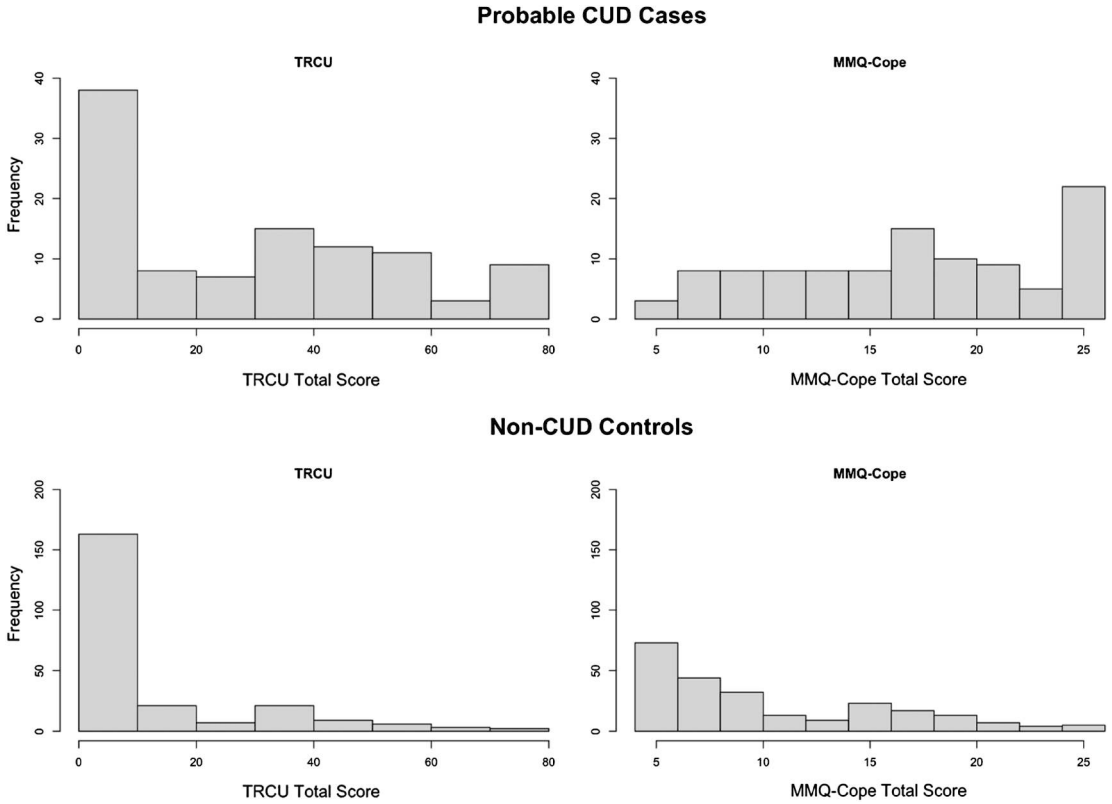

Figure 3. TRCU vs. MMQ-Cope frequency distribution by probable CUD caseness. TRCU = Trauma-Related Cannabis Use to Cope; MMQ-Cope = Marijuana Motives Questionnaire-Coping Subscale.

endorsement rates across any item is particularly striking given that the TRCU includes four times as many items as the MMQ-Cope, providing evidence for the TRCU as a more precise assessment of cannabis use-to-cope motives. This pattern of zero-inflation observed in the TRCU supports its validity. Since individuals without trauma exposure or PTSD symptoms would naturally have a score of zero, this pattern aligns with the measure's intended function as a symptom-specific coping assessment. Rather than serving as a broad measure of cannabis use for coping, the TRCU is specifically designed to examine how individuals use cannabis as a coping strategy in response to trauma-related symptoms. The disparity between the high rates of cannabis use for general coping purposes and the lower rates of cannabis use specifically for

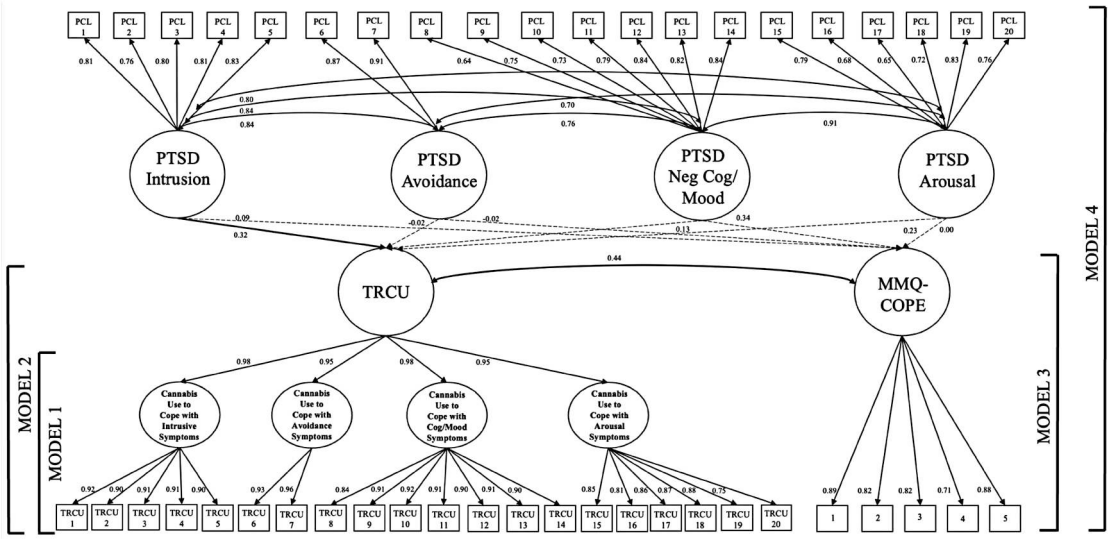

Figure 4. Factor loadings presented here are from the correlated higher-order factor model (Model 4). Significant paths represented with solid lines. Nonsignificant paths represented with dashes. TRCU, Trauma-Related Cannabis Use to Cope; MMQ-Cope, Marijuana Motives Scale-Coping Subscale.

Table 4. Summary of PCL-5 prediction effect sizes for each of the four TRCU latent factors and the TRCU higher order factor.

	PCL Factor 1: Intrusion	PCL Factor 2: Avoidance	PCL Factor 3: Cognitions/Mood	PCL Factor 4: Arousal
Standardised loading (standard error)				
TRCU Factor 1: Intrusion	0.417 (0.157)**	−0.026 (0.115)	0.102 (0.196)	0.157 (0.177)
TRCU Factor 2: Avoidance	0.242 (0.165)	0.070 (0.120)	0.147 (0.209)	0.180 (0.189)
TRCU Factor 3: Cognitions/mood	0.305 (0.159)	−0.100 (0.118)	0.256 (0.190)	0.151 (0.176)
TRCU Factor 4: Arousal	0.247 (0.161)	−0.012 (0.116)	−0.061 (0.208)	0.473 (0.192)*
Higher Order TRCU	0.332 (0.156)*	−0.030 (0.115)	0.143 (0.197)	0.213 (0.178)

Note. Abbreviation: TRCU, Trauma-Related Cannabis Use to Cope; PCL, Posttraumatic Symptom Checklist.
*** $p < .001$. ** $p < .010$. * $p < .050$.

coping with PTSD symptoms also challenges the prevailing misconception in the self-medication literature that using cannabis to cope with negative emotions is the same as using it to cope with trauma-related symptoms. Furthermore, the distributions of the TRCU and MMQ-Cope total scores were significantly more dispersed among the probable PTSD and probable CUD cases, compared to trauma-exposed controls, which was expected given the focus on evaluating cannabis use to cope with symptoms associated with PTSD of the TRCU. Consequently, we would not anticipate high endorsement rates by those who do not experience these symptoms.

3.3. What is the factor structure of the TRCU?

Confirmatory factor analysis for the TRCU scale supported a four-factor solution. This aligns with the conceptual theory underlying the development of the TRCU, which was to create a measure that would accurately assess cannabis use to cope with traumatic distress specifically, as defined by the *DSM-5* diagnostic criteria for PTSD, which groups symptoms of PTSD into four clusters: Intrusion (e.g. recurrent, involuntary, and intrusive distressing memories of the traumatic event), Avoidance (e.g. avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event), Negative Alterations in Cognition and Mood (e.g. markedly diminished interest or participation in significant activities.), and Arousal (e.g. hypervigilance, sleep difficulties) (APA, 2013). Moreover, the four TRCU factors strongly loaded onto a single higher order factor. Thus, the present findings suggest that the TRCU can be used to measure overall cannabis use to cope with all PTSD symptoms (i.e. a total composite score across all items) or can be used in a more nuanced way to index cannabis use to cope with any of the four *DSM-5* defined symptom clusters of PTSD (i.e. subscales).

The overlapping structure of the TRCU and PCL-5 aligns with the objective of the TRCU, which is to measure the distinct ways individuals use cannabis to manage trauma-related symptoms. The TRCU's design inherently links its scores to both the presence and severity of PTSD symptoms. By introducing each item with 'how often did you use cannabis to cope with:' the measure explicitly assesses coping behaviours rather than simply measuring symptom severity. This approach allows the TRCU to distinguish individuals based on their behavioural coping responses to trauma-related distress, even among those with similar PTSD symptom levels.

3.4. How does trauma-related cannabis use to cope relate to general cannabis use to cope, and is PTSD differentially associated with the two constructs?

As anticipated, the TRCU and MMQ-Cope were moderately correlated at the manifest (i.e. composite scores) and latent levels, providing evidence that these are related but distinct constructs. When examining the predictive effects of the four common factors of the PCL-5 on both the TRCU higher-order factor and the MMQ-Cope common factor in the same model, while allowing their residual variances to correlate, only the PCL-5 factor representing PTSD intrusion symptoms was associated with TRCU, while none of the PCL-5 factors were associated with MMQ-Cope. This provides further support that the TRCU is a more specific measure of cannabis use to cope in the context of PTSD.

3.5. How do the TRCU subfactors and higher-order factor relate to each PTSD symptom cluster?

There was strong evidence supporting the external validation of the TRCU. Bivariate analyses examining the relationships among the TRCU total score, its subscales, and PTSD symptom clusters at the observed level revealed positive associations between the TRCU total score and all PTSD symptom clusters. Additionally, each TRCU subscale demonstrated a positive correlation with its corresponding PCL-5 subscale, supporting strong associations between the TRCU and the PTSD symptom dimensions it aims to assess. SEM analyses revealed that only two of the four TRCU factors (intrusion and arousal) were significantly associated with their corresponding PTSD symptom cluster at the latent level. The other two factors indexing cannabis use to cope with avoidance and negative alterations in cognition and mood PTSD

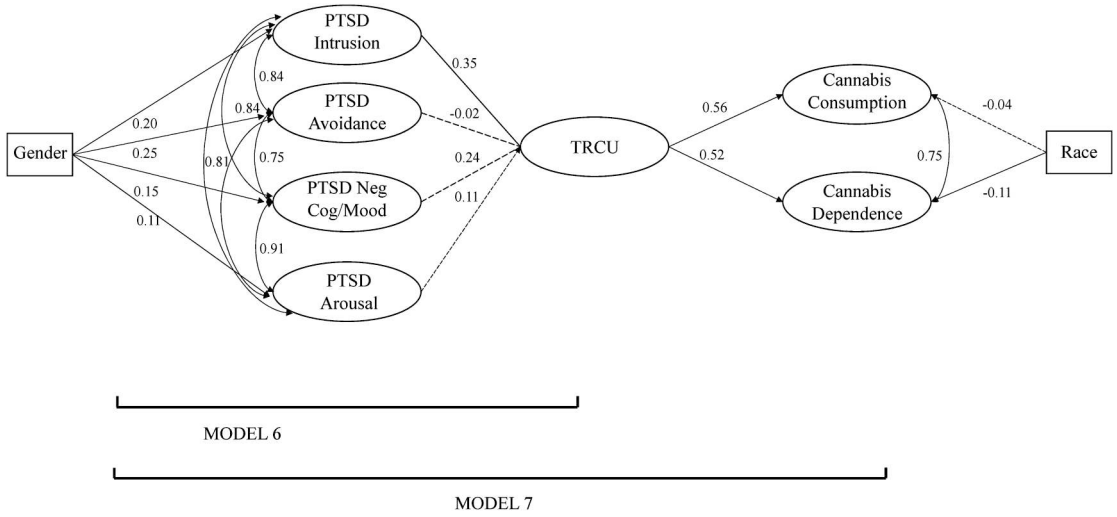

Figure 5. Factor loadings presented here are from the full TRCU psychometric validation model with PCL-5 external prediction and TRCU prediction of CUDIT factors (Model 7). Significant paths represented with solid lines. Nonsignificant paths represented with dashes. TRCU, Trauma-Related Cannabis Use to Cope.

symptoms were not significantly associated with their analogous PTSD symptom cluster but were significantly associated with intrusion and avoidance, respectively, and both were significantly associated with arousal symptoms. At the higher-order level, only PTSD intrusion symptoms were associated with the TRCU. The difference between significant bivariate correlations and SEM findings is a well-known occurrence in multivariate analysis. Bivariate correlations reflect the overall association between two variables, capturing both their unique and shared variance. In contrast, SEM separates this shared variance, isolating each predictor's distinct contribution while controlling for its overlap with other predictors in the model. Due to high intercorrelations among the PCL-5 factors (.70 – .91), the associations between the TRCU total score and the avoidance, negative alterations in cognition and mood, and arousal PCL5 factors were likely attenuated, as intrusion symptoms accounted for a larger proportion of the variance in trauma-related cannabis use to cope.

Table 5. Bivariate associations between TRCU and PCL-5 manifest variables.

	PCL-5 Intrusion	PCL-5 Avoidance	PCL-5 Cognition/ Mood	PCL-5 Arousal
TRCU-Intrusion	0.557***	0.471***	0.545***	0.519***
TRCU-Avoidance	0.520***	0.467***	0.522***	0.504***
TRCU-Cognition/ Mood	0.519***	0.425***	0.545***	0.517***
TRCU-Arousal	0.527***	0.446***	0.531***	0.563**
TRCU Total Score	0.554***	0.465***	0.560***	0.551***

Note. Abbreviation: PCL-5, Posttraumatic Stress Disorder Symptom Checklist, DSM-5; TRCU, Trauma-Related Cannabis Use to Cope.
***$p < .001$.

Given that intrusive and unwanted trauma memories are among the core symptoms of PTSD, the use of cannabis to cope with PTSD may be especially reinforcing for individuals suffering from high levels of intrusion symptoms due to its demonstrated negative effect on memory. The endocannabinoid system (ECS) is an intricate cell signalling network that helps maintain homeostasis within the human body. The ECS is comprised of endocannabinoids, receptors, and enzymes. Cannabis contains multiple cannabinoids, and the most abundantly researched are Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD). The administration of THC has been shown to cause a variety of learning and memory deficits in animal models, such as impaired spatial discrimination and associated learning (Abela et al., 2019; Niloy et al., 2023). When cannabinoids enter the body through various routes of administration (smoking, vaporisation, ingestion, topical application), they bind to endocannabinoid receptors such as the CB1 receptor and CB2 receptor. The most abundant endocannabinoid receptor in the human body is the CB1 receptor, which has demonstrated significant effects on impairing memory, immediate and delayed recall, emotional memory, and learning (Borgan et al., 2019; Niloy et al., 2023; Wise et al., 2009). Interestingly, research has shown that individuals with PTSD have greater availability of the CB1 receptor compared to trauma-exposed and healthy controls (Passie et al., 2012; Pietrzak et al., 2020), suggesting that cannabis may have a greater impact on memory processing among those with PTSD compared to those without. Given the prominent role of intrusion symptoms in PTSD psychopathology (Bryant et al., 2017; Li et al., 2020), the use of cannabis to cope with intrusion symptoms specifically may be particularly reinforcing, ultimately leading to increased and pathological use. An

interesting direction for future research would be to compare associations – including dynamic associations – between various self-medication behaviours (e.g. alcohol versus cannabis to cope with PTSD) and the symptom clusters of PTSD.

3.6. Does trauma-related cannabis use predict cannabis use and related problems?

The TRCU higher-order factor predicted both cannabis consumption and related problems in the final validation model, which included the predictive effects of PTSD symptoms on trauma-related cannabis use to cope. The finding that the TRCU was independently associated with cannabis-related problems, above and beyond general consumption, has important clinical implications by suggesting that PTSD-specific motives for using cannabis are uniquely associated pathological forms of use that supersede a general pattern of increased and risky consumption. These results lend support to the self-medication hypothesis of PTSD by demonstrating that trauma-related cannabis use to cope played a role in the association between PTSD symptoms and cannabis-related problems. Moreover, TRCU was significantly associated with both cannabis frequency and related problems above and beyond general coping motives. This provides evidence for the incremental validity of the TRCU and supports its utility in capturing cannabis use frequency and cannabis-related problems that are not accounted for by existing general coping-oriented measures. Overall, these findings support the use of the TRCU as a tool for identifying risk for CUD among individuals with PTSD.

3.7. Limitations

These results should be considered in light of the following limitations. First, the TRCU items were not subjected to pilot testing prior to the implementation and analysis in the present study. Pilot testing is regarded as an important step in measurement development as it aims to assess content validity and internal reliability of the items to be included in the measure (Germain, 2006). However, the TRCU items were conceptually constructed by leading experts in PTSD-related comorbidity and were modelled after a widely recognised and validated measure, the PCL-5 (Weathers, Litz, et al., 2013). Furthermore, the TRCU items exhibited excellent internal reliability within the present sample.

Second, the data were cross-sectional and, therefore, preclude assumptions of causality and do not account for the temporal relationship between the analysed constructs. Third, the present study included a primarily woman-identifying college students and utilised self-report measures. The former may limit generalizability of the findings, and the latter can be subject to recall bias, social desirability effects, and other quality issues. Future studies investigating associations between the TRCU and biological and health correlates should consider exploring sex as a biological variable, in addition to gender identity, to better understand potential biological influences on these outcomes.

Fourth, given that the intended purpose of the TRCU is to assess an individual's motives to use cannabis to cope with the full range of PTSD symptoms, the lack of association between the TRCU higher-order factor and three of the four PCL-5 latent factors is potentially problematic with regard to criterion validity. However, given the TRCU total score was associated with all four PCL-5 subscales at the bivariate level, it is possible that this finding is due to suppressor effects related to the high intercorrelations between the PCL-5 common factors. Thus, this finding may instead reflect the particularly important role that intrusion symptoms of PTSD play in cannabis coping motives. This finding, if replicated, has significant clinical implications and could elucidate important differences in the motives underlying various forms of substance use to cope with PTSD symptoms. Exploring differences across PTSD symptom clusters and various coping behaviours (e.g. cannabis, alcohol, eating) is an important area for future work, as is examining the roles of polysubstance use in conjunction with various coping motives for PTSD.

A fifth potential limitation of this piloted version of the TRCU is the ambiguity regarding the reference for frequency ratings. Specifically, it is unclear whether respondents interpreted higher frequency responses (e.g. 'always') as indicating that cannabis was used every time a given symptom occurred or that every cannabis use episode was motivated by coping with that symptom. To enhance conceptual clarity and alignment with the concept of self-medication, we recommend re-anchoring the prompt to focus explicitly on symptom episodes (e.g. 'How often did you use cannabis to help manage?'). It might also be useful to include more cannabis-related prompts in specific items. For example, 'Loss of interest in activities that you used to enjoy (you used cannabis either because you were upset by this loss of interest or to help you enjoy activities)?'. This adjustment would ensure that the question more accurately captures the relationship between symptom distress and cannabis use as a coping mechanism.

Sixth, the TRCU was designed to assess PTSD according to the *DSM-5* symptom criteria. The TRCU was intentionally designed to anchor respondents' answers to both the presence and intensity of PTSD symptoms, thereby situating cannabis use behaviours within the context of trauma-related coping. By preceding each item with the prompt 'how often did

you use cannabis to cope with', the measure emphasizes coping behaviour in response to specific symptomatology, rather than assessing symptom severity in isolation. This is evidenced by a strong positive correlation between the TRCU and PCL-5 total scores that is well below the threshold indicative of multicollinearity. This design allows the TRCU to differentiate individuals based on the behavioural expression of trauma-related coping, even among those reporting comparable levels of PTSD symptoms. Given the complex multifaceted nature of PTSD as a construct, future research should explore associations between the TRCU and alternative models of PTSD. Moreover, new PTSD diagnostic criteria would necessitate a re-evaluation of the validity of the TRCU. Lastly, the present study is conceptualised through the lens of the self-medication model, which, despite its strengths, is not exhaustive. Indeed, there is substantial evidence supporting other models for PTSD-CUD comorbidity (e.g. shared genetic risk; Krueger & Markon, 2006), which are not mutually exclusive from the self-medication model. We direct readers to the systematic review by Hicks, Zaur (2022) for a comprehensive overview of theories explaining the comorbidity between PTSD and CUD (2022). Future work could apply the TRCU measure in the context of alternative or integrative models of PTSD-CUD comorbidity.

3.8. Conclusions

It is important to identify reasons for the elevated rates of cannabis use among those diagnosed with PTSD. The TRCU questionnaire emerges as a valid and reliable measure, providing a robust tool for assessing the frequency in which individuals with PTSD use cannabis to cope with their symptoms. As a proof of concept for the self-medication model, the TRCU not only has the potential to enhance our understanding of the nuanced relationship between PTSD and cannabis use, but also offers a promising avenue for early identification of those at risk for developing CUD and other trauma-related comorbidities. Specifically, the findings suggest that the TRCU may serve as valuable clinical tool for screening individuals at risk for problematic cannabis use, particularly in the context of trauma-related coping. By identifying trauma-specific cannabis use early, clinicians can target this behaviour as a maladaptive coping strategy for PTSD, potentially mitigating the risk for developing CUD among those with PTSD. Early intervention could therefore prevent the progression of cannabis use into a more severe disorder, improving long-term outcomes for individuals with PTSD. Moreover, given the TRCU's dual focus on trauma and cannabis, it provides clinicians with a comprehensive tool to assess both PTSD symptoms and related problematic cannabis use in tandem, offering an integrated and efficient approach to simultaneously assess the co-occurrence of trauma-related psychological distress and substance use. Furthermore, the growing body of evidence linking PTSD to various physical health conditions underscores the potential value of the TRCU in identifying mechanisms by which trauma-related coping strategies – specifically through cannabis use – contribute to adverse physical health outcomes. For instance, trauma-related substance use may exacerbate the risk for conditions such as cardiovascular disease, chronic pain, and metabolic disorders, which are commonly seen in individuals with PTSD. By identifying these behaviours early, the TRCU could guide clinicians in adopting a more holistic treatment approach that not only targets the psychological aspects of PTSD but also addresses its physical health consequences. In summary, the TRCU offers a unique and practical opportunity to assess trauma-specific cannabis use and its relationship with PTSD symptoms and other trauma-related outcomes. By identifying individuals at risk for both CUD and trauma-related physical health comorbidities, the TRCU has the potential to inform clinical interventions that are both comprehensive and tailored to the specific needs of individuals with PTSD. Additionally, it provides a foundation for future research aimed at better understanding and mitigating the complex interplay between trauma, substance use, and both mental and physical health outcomes.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

Raw data were generated at Old Dominion University. Derived data supporting the findings of this study are available from the corresponding author on request.

All relevant ethical safeguards have been met in relation to experimentation including consent and review by the Institutional Review Board at Old Dominion University. Due to the collection of completely de-identified data, the study was deemed exempt.

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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