An Examination of Coping with Physical Health Symptoms as a Motive for Cannabis Use among Young Adults

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Abstract

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Existing measures assessing 'coping' as a motive for cannabis use typically include coping with mental health (MH) but not physical health (PH) symptoms, despite coping with PH symptoms being described in the literature. This study examined (1) the extent to which young adults (YA) used cannabis to cope with PH symptoms and for which symptoms they used it, (2) preliminary psychometric properties of coping with PH symptoms items, and (3) differential associations between coping with PH and MH symptoms and cannabis outcomes, in a community sample of 265 YAs with past 30-day use (M_{age}=24.6; 44% female, 7.5% gender diverse). Of participants, 40.6% reported at least occasional medicinal use, primarily for sleep, pain, and appetite. Pilot PH coping items had comparable descriptive statistics to Comprehensive Motives Questionnaire (CMQ) items, moderate to strong inter-item correlations, and convergent and discriminant validity with other CMQ motives. Quasi-poisson linear regressions indicated neither coping with PH nor MH symptoms were associated with use; both motives were positively associated with cannabis consequences. Results support coping with PH symptoms as a motive for cannabis use and suggest differential associations of PH and MH coping motives on cannabis outcomes.

An Examination of Coping with Physical Health Symptoms as a Motive for Cannabis Use among Young Adults

Cannabis is currently the most commonly used controlled substance in the US (Degenhardt & Hall, 2012; United Nations Office on Drugs and Crime, 2018). Young adults (i.e., 19-30) report the heaviest use with 42% reporting use at least once in the past year (Schulenberg et al., 2021) and 10% reporting daily or near daily use in 2020. Additionally, prevalence and frequency of use among this group have been increasing with 5-year trends demonstrating an annual and daily use increase of 9.8% and 2.8%, respectively. Notably, heavy, frequent use of cannabis tends to be associated with an increased risk of experiencing cannabis-related consequences including a variety of physical and psychological outcomes (National Academies of Sciences, Engineering, and Medicine, 2017). Rising use rates and associated risk for unwanted consequences makes young adults an important population to focus on in pursuing prevention and harm reduction methods for cannabis use.

In order to reduce problematic cannabis use and/or harms associated with use, it is important to understand a variety of cannabis use antecedents that may be associated with use or related harms. One antecedent consistently shown to be associated with cannabis outcomes is motives; cannabis use motives are self-described reasons why an individual chooses to use. Previous literature has shown a unique association between cannabis use motives and cannabis use and related consequences such that specific self-reported motives tend to be important in predicting the frequency of use and likelihood of experiencing problematic outcomes associated with use (e.g., neglecting responsibilities, feeling physically or psychologically dependent; (Bonn-Miller et al., 2007; Cooper et al., 2016; Lee et al., 2009; Simons et al., 1998). This

underscores the importance of capturing a variety of motives individuals may have for using cannabis beyond general motivation to use. By capturing a range of specific motives an individual may have for using cannabis, researchers and clinicians will be better equipped to understand preceding and maintaining factors for an individual's cannabis use and better incorporate cannabis motives into prevention and intervention efforts.

Currently, cannabis use motives are commonly operationalized using one of four scales. Lee and colleagues (Lee et al., 2009) characterize motives across 12 factors (i.e., enjoyment, conformity, coping, experimentation, boredom, prevalence of alcohol use, celebration, altered perceptions, social anxiety, relative low risk, sleep, availability). Simons and colleagues (Simons et al., 1998) characterize motives across 5 factors (i.e., social, coping, enhancement, conformity, expansion). Newcomb and colleagues (Newcomb et al., 1988) characterizes motives across 4 factors (i.e., enhance positive affect and creativity, reduce negative affect, social cohesion, and addiction) and Comeau and colleagues (Comeau et al., 2001) characterizes motives across 4 factors (i.e., social, coping, enhancement, conformity). Of the variety of motives captured in the four commonly use cannabis motives measures, coping motives tend to be one of the cannabis use motives most closely related to negative cannabis use outcomes (Bravo et al., 2019; Buckner, 2013; Cooper et al., 2016; Lee et al., 2009; Simons et al., 1998). Notably, current coping subscales on existing motives measures include items that exclusively evaluate using cannabis to cope with mental health symptoms (e.g., "to forget my worries") rather than cope with physical health symptoms.

Despite the focus of existing measures on motives related to coping with emotional distress, extant research shows cannabis has also been used for medicinal purposes by various individuals for centuries (Hill et al., 2017; Russo, 2007). Individuals report using cannabis to

cope with a wide range of physical health symptoms including seizures, pain, nausea, sleep, and muscle spasticity (Ebbert et al., 2018; Metrik et al., 2018). While medicinal cannabis is typically recommended for individuals experiencing severe levels of some of these symptoms, it is possible that the widespread accessibly of cannabis has led to the general population using cannabis to cope with lower levels and a wider range of physical health symptoms.

The idea that individuals use cannabis to cope with physical health symptoms is not a novel idea; however, it is not explicitly captured in any of the motive measures currently available for non-medical samples (i.e., generally healthy samples not recruited based on physical health condition/symptoms) of individuals who use cannabis. Some studies have tested a 'medicinal' or related motive as a factor in motive scale development (Lee et al., 2009); however there was not sufficient statistical support to justify including the factor among a general sample of college students. Additionally, one study among a sample of veterans showed individuals who use for medicinal versus recreational reasons differed significantly on reported cannabis consequences and many cannabis use motives (Metrik et al., 2018). However, this study did not directly include an assessment of coping with physical health symptoms as a motive. Thus, currently there is a disconnect between the existing practice detailed in the literature of cannabis being used to cope with physical health symptoms and the quantitative support or measure for this motive. It is particularly important to understand this discrepancy because, from a theoretical perspective, underlying needs motivate different behaviors that, in turn, are maintained by different factors (Cooper et al., 2016). This key difference in understanding motives for cannabis use becomes relevant when we are aiming to tailor our prevention and intervention efforts to the underlying processes/maintaining factors within and between individuals (Cooper et al., 2016). When specifically considering coping motives for

cannabis use, the discrepancy between reports of the medicinal uses of cannabis to cope with physical health symptoms and existing measures that do not assess this motives leaves it unclear how often individuals use to cope with physical symptoms and whether individuals who use for this motive are at comparable risk for experiencing negative cannabis consequences as those who use to cope with mental health symptoms.

Although few studies have investigated the topic, the literature currently has failed to find support for or develop a measure for medical use as a motive for cannabis use in college or general community samples of young adults (e.g., (Lee et al., 2009). There may be several possible reasons for this failure to identify a subscale of coping with physical health symptoms for cannabis use motives among young adults. One possibility is that young adults, as a generally healthy demographic, simply do not experience substantive physical health symptoms, and thus have no reason to use cannabis to cope with these symptoms. Relatedly, as the motive of coping for physical health symptoms would presumably only be relevant for those young adults who do experience physical health symptoms, samples of young adults included in prior studies of coping with physical health symptoms may not have included adequate representation of young adults with physical symptoms and/or did not assess which young adults were using for primarily medicinal reasons. Notably, one recent study provides some support for this possibility; specifically, researchers assessed reasons for cannabis use among individuals living with HIV in Florida who self-identified as using for “recreational”, “therapeutic”, and “both equally” reasons (Sajdeya et al., 2021). They found both individuals who use for “therapeutic” and “both equally” reasons reported “pain” as the 1st and 2nd most frequently reported reason for using cannabis, respectively, with 21% of those who used for “therapeutic” and 12% of those who used for “both equally” reasons reporting using for “pain”. However, less than 5% of those who used for

"recreational" reasons reported using cannabis for "pain". Additionally, among the "both equally" group, "pain" and "anxiety and stress" were both reported by 12% of individuals, suggesting both coping with physical and mental health symptoms are important motives for this group. Given this, research examining coping with physical health as a motive for cannabis use must also consider the frequency with which individuals are using cannabis to cope with physical health symptoms and the self-reported medical vs recreational use for these individuals.

Present study

The present study examined (1) the extent to which young adults in a non-medical community sample used cannabis to cope with physical health symptoms (i.e., medical use) and which physical health symptoms they are using cannabis to cope with, (2) preliminary psychometric properties of coping with physical health symptoms pilot items, and (3) differential associations between coping with physical and mental health symptoms and cannabis use outcomes (i.e., use, consequences). Further examination of these research areas will provide additional insight into the disconnect between reported medicinal use of cannabis in the literature and failure to identify and measure coping with physical health symptoms as a motive for cannabis use in a non-medical sample of young adults. This research was designed to offer more insight into the underlying reasons why certain motives/reasons for use are being quantitatively supported in our motives scales while others are not, as well as provide preliminary proof-of-concept to support further research on different types of marijuana motives, including coping with physical and mental health symptoms, and their relation with cannabis use and consequences in relatively healthy young adult populations.

Methods

Participants and Procedures

Participants consisted of a high-risk community sample of young adults (i.e., 18-25) recruited in Washington state as part of a larger parent study assessing simultaneous alcohol and cannabis use (R01AA025037). To meet criteria for the parent study, participants had to report simultaneous alcohol and marijuana (SAM) use at least once in the past month, report drinking alcohol 3 or more times in the past month, live within 60 miles of the study office, and be willing to complete online daily surveys, receive study-related text messages, and attend an in-person session for consent, identity/age verification, and an online baseline survey. Data collection included a combination of daily and annual assessments. For the present study, we also restricted our analyses to only include Year 3 data due to availability of measures, and only include individuals who had used cannabis in the past 30-days to capture a sample of individuals who are currently using in order to capture motives for use. This resulted in a sample of 265 young adults. Of participants (M_{age}=24.6, SD_{age} = 2.20), about 44% identified as female, 48% male, 7.5% gender diverse; 55% white, 1% American Indian/Alaska Native, 17% Asian or South Asian, 6% Black/African American, 2% Native Hawaiian/Pacific Islander, <1% Arab/Middle Eastern/North African, 15% Multiracial, 4% "other race"; 84% non-Hispanic/Latin and 16% Hispanic/Latin. All procedures were approved by the university's Institutional Review Board.

Measures

Demographic Information

Participants reported on their age, gender, race, and ethnicity.

Using Cannabis to Coping with Physical and Mental Health Symptoms

To assess physical and mental health symptoms for which participants used cannabis to cope, participants were provided with a list of mental and physical health symptoms including sleep, anxiety (general), social anxiety, depression, stress, nausea, physical pain, headaches, poor

appetite, other (please indicate), or none of the above which was adapted from the Daily Sessions, Frequency, Age of Onset, and Quantity of Cannabis Use Inventory (DFAQ-CU) (Cuttler & Spradlin, 2017). Following participants were asked to "Please indicate which conditions you use marijuana for with or without a physician's recommendation" with response options "yes" or "no".

Physician Recommendation

Physician recommendation was measured by asking participants "In the past year, have you had a physician's recommendation to use marijuana for general medicinal purposes (e.g., for mental health, physical health, sleep, pain management)"? which was adapted from the DFAQ-CU (Cuttler & Spradlin, 2017). Participants were given response options "No", "Yes", or "Yes, but I use it for both medicinal and recreational purposes".

Medical vs Recreational Use

Self-reported medicinal versus recreational use was assessed by asking participants "What percentage of the time do you use marijuana for recreational (rather than medicinal) purposes"? which was adapted from the DFAQ-CU (Cuttler & Spradlin, 2017). Participants provided a number between 0 and 100 with 0 indicating exclusively medicinal use and 100 indicating exclusively recreational use.

Cannabis Use Motives

Cannabis use motives were measured using the Comprehensive Marijuana Motives Questionnaire (Lee et al., 2009). Participants are presented with a list of 36 items (e.g., "To relieve boredom", "To forget your problems") and asked "Thinking of all the times you have used marijuana, how often would you say that you use for each of the following reasons?" on a scale of 0-4 (i.e., 0=Almost never/never, 1=Some of the time, 2=Half of the time, 3=Most of the

time, 4=Almost always/always). Subscale scores for each of the 12 motives were measured by mean scoring their respective items. A full list of items and summary statistics for subscale and items (i.e., mean, standard deviation, range) are provided in Table 1.

Pilot Coping with Physical Health Symptoms Items

Coping with physical health symptoms pilot items consisted of 6 items designed to assess coping with physical symptoms/ailments and mirror other Comprehensive Motives Questionnaire (CMQ) items (Lee et al., 2009). These items used the same probe and response options as the CMQ motives items above. Items included (1) "To alleviate physical pain", (2) "To alleviate headaches", (3) "To relieve nausea", (4) "To take the place of medication", (5) "To relieve aches and pains", and (6) "Because you had a headache". These items were mean scored to get a subscale score for this motive of coping with physical symptoms or ailments. Notably, these items were included in Year 3 data collection and designed to gather exploratory information for proof-of-concept, not for psychometric development. For that reason, all items were included in the mean scoring as our data collection methods do not support item reduction at this time despite slight overlap in items. Statistics for the subscale and items are provided in Table 1.

Cannabis Use

Cannabis use was examined by asking participants "On how many occasions (if any) have you used marijuana (weed, pot) or hashish (hash, hash oil) during the last 30 days?" on a scale of 0-6 (i.e., 0 = 0 occasions, 1 = 1-2 occasions, 2 = 3-5 occasions, 3 = 6 – 9 occasions, 4 = 10 – 19, 5 = 20 – 39 occasions, 6=40 or more occasions). Participants reported using cannabis an average of 3.52 (SD = 1.92) on the scale indicating using averaging use on about 12 occasions in the past 30 days.

Cannabis Consequences

To measure cannabis consequences, we used the Marijuana Consequences Checklist (Lee et al., 2021). Participants were presented with 26 items and asked, "How many times did these things happen to you while you were using marijuana (or because of your marijuana use) during the past 30 days?" Consequences included items such as "Made decisions you later regretted" and "Had relationships with friends, partners, or family impacted negatively". Items were dichotomously scored and summed to calculate the total number of different consequences experienced. Participants reported an average of 7.75 (SD = 5.75) consequences in the past 30 days.

Analysis Plan

All analyses we completed using R (R Core Team, 2022) version 4.2.1.

Aim 1

To assess the frequency of cannabis use to cope with physical health symptoms and the physical health symptoms for which individuals are using cannabis to cope, we examined descriptive statistics on measures of physician recommendation, medicinal versus recreational use, and endorsement of using cannabis to cope with mental and physical health symptoms from the provided list.

Aim 2

Preliminary psychometric analyses for the coping with physical health symptoms measure were assessed by examining descriptive information for each item, inter-item correlations to determine if the items were measuring a similar construct yet offering unique information, and correlations between the coping with physical health symptoms subscale and all other motives on the CMQ to examine convergent and discriminant validity.

Aim 3

Quasipoisson-specified generalized linear models were used to examine the differential impacts of coping with physical and mental health symptoms on cannabis use and consequences due to the positive skew and count distribution of the outcome variable. These analyses were completed using the *glm* function from the *stats* package (R Core Team, 2022). Model 1 assessed both coping with physical and mental health symptoms as predictors of 30 days cannabis use. Model 2 assessed both coping with physical and mental health symptoms as predictors of cannabis-related consequences, controlling for use.

Results

Aim 1

The frequency table for physician recommendation revealed the vast majority of participants had not received a physician recommendation to use cannabis for medicinal purposes in the past year (90.6%). However, 3.4% of participants reported they had received a physician recommendation and 6.0% reported they received a physician recommendation but used cannabis for both medicinal and recreational purposes. In examining participants' self-reported medicinal versus recreational use, the majority of participants reported using for exclusively recreational purposes (59.4%). However, about 40% of participant reported using cannabis for medicinal reasons some percent of the time including 3.1% using for exclusively medicinal purposes (see Figure 1 for frequency distribution). Lastly, there were a range of physical and mental health symptoms for which participants endorsed using cannabis to cope. For physical health symptoms, 60.4% of participants reported using cannabis to cope with sleep, 17.7% for nausea, 26.8% for pain, 16.6% for headaches, and 22.6% for appetite. For mental

health symptoms, 49.4% of participants reported using cannabis to cope with (general) anxiety, 17.7% for social anxiety, 32.5% for depression, and 49.8% for stress.

Aim 2

Descriptive statistics for the coping with physical health symptoms items and subscale are included in Table 1. Each item and the overall subscale maintained comparable means, standard deviations and ranges to other motives on the CMQ. Notably, the coping with physical health symptoms items and measure demonstrated endorsement rates on the lower end of endorsement rates across motives with "To take the place of medication" being the lowest endorsed item out of the coping with physical health symptoms items (M= 0.38). In assessing inter-item correlations (Table 2), all items maintained moderate to strong correlations with other items on the scale. Strongest correlations were among items with overlapping item content. Lastly, correlation coefficients between the coping with physical health symptoms motive and all over motives ranged between 0.11 and 0.55. This indicates the pilot measure is capturing a related but distinct construct from other motives on the CMQ. Additionally, correlations between the coping with physical health symptoms motive and all over motives on the CMQ demonstrated the pilot measure maintains convergent and discriminant validity (see Table 3). Stronger correlations were with items expected to be more related such as social anxiety, sleep, and coping with mental health symptoms and weaker correlations were mostly among measures expected to be less related such as enjoyment, conformity, and prevalence of alcohol use. The overall motive of coping with physical health symptoms had an alpha of .90.

Aim 3

Main effects of both coping with physical health (IRR = 1.25, 95% CI [.96, 1.58]) and mental health symptoms motives (IRR = 1.12, 95% CI [0.92, 1.34]) on use were not statistically

significant. However, both motives were significantly, positively associated with cannabis consequences with coping with mental health symptoms (IRR = 1.34, 95% CI [1.25, 1.44]) being associated with greater consequences than motives to cope with physical health symptoms (IRR = 1.12, 95% CI [1.01, 1.24]). In the consequence model, the control variable of cannabis use did not significantly predict cannabis consequences beyond the other motives in the model (IRR = 1.02, 95% CI [1.00, 1.04]).

Discussion

The present study sought to examine coping with physical health symptoms as a motive for cannabis use in a non-medical sample of young adults. Results from Aim 1 indicated most participants had not received a physician recommendation to use cannabis in the last year. However, more than 40% of participants reported using for medicinal reasons at times. Primary physical health symptoms individuals reported using cannabis to cope with were sleep, pain, and appetite. Endorsement of coping with physical health symptoms was comparable, though generally lower, than endorsement of using to cope with the specified mental health symptoms. In conducting psychometric analyses on the items and subscale assessing coping with physical health symptoms for Aim 2, descriptive statistics on coping with physical health symptoms were comparable to other items and subscales on the CMQ. Additionally, coping with physical health symptoms maintained moderate to strong inter-item correlations, with the strongest correlations among items with overlapping content. The overall subscale measuring the coping with physical health symptoms motive demonstrated convergent and discriminant validity with other CMQ motives and strong internal consistency reliability. Lastly, results from regression models found neither coping with physical nor mental health symptoms was associated with cannabis use. However, both motives were significantly associated with cannabis consequences with coping

with mental health symptoms being associated with greater consequences than coping with physical health symptoms. Taken together, results from the present study provide preliminary support for coping with physical health symptoms as a motive for cannabis use in a non-medical sample of young adults and deepens insight into potential reasons why this motive may be missing from the extant literature on cannabis motives.

With almost half of individuals (40%) reporting using for medicinal reasons and 16.6% to 60.4% endorsing using cannabis to cope with specific physical health symptoms, it is crucial to assess coping with physical health symptoms as a motive for cannabis use. Importantly, the majority of existing motives measures were developed prior to cannabis legalization in US states, both recreational and medicinal in many cases. This lends to the possibility that motives for use among young adults in the current legalized context may be broader than those identified prior to expansion of legal access and merging of medicinal and recreational markets in many states including Washington. As the legal landscape surrounding cannabis is evolving, it is possible reasons for using cannabis might be evolving as well. Therefore, there may be less differentiation between those who use for primarily medicinal or recreational reasons. Both the availability of cannabis products and the ways in which individuals use these products have changed rapidly over the past several years. Thus, prior failures to find evidence of coping with physical health symptoms as a motive for cannabis use among young adults may have resulted from either a failure to include adequate samples of individuals experiencing physical symptoms in prior studies, a lack of evaluating whether or not participants were experiencing physical symptoms with which they may need or want to cope by using cannabis, failure to assess the extent to which individuals report using cannabis for recreational, medicinal, or combination purposes, and/or examining the motive of coping with physical health symptoms with a lack of

consideration of the context of the current legal climate. With an increasing number of US states legalizing both medical and non-medical (recreational) cannabis use and previous research showing that various motives for use tend to be uniquely associated with use frequency and negative cannabis-related consequences (Bonn-Miller et al., 2007; Cooper et al., 2016; Lee et al., 2009; Simons et al., 1998), it is crucial we have a better understanding of individual's motives for use in an evolving legal and social context.

In an effort to begin examining coping with physical health symptoms as a motive for cannabis use, the present study aimed to provide preliminary support for developing a measure of coping with physical health symptoms as a motive for cannabis use. Pilot items examined in Aim 2 demonstrated the coping with physical health items maintain similar endorsement, standard deviations, and ranges as other items on the CMQ. Additionally, items maintained moderate to strong inter-item correlations which provides promise yet would likely be improved by developing items via a structured scale development process. This would avoid overlap in item content and ensure the items are capturing an adequate range of physical health symptoms for which young adults may be using cannabis to cope. In examining the measure, the pilot items maintain sufficient reliability and convergent and discriminate validity. Using to cope for physical health symptoms had the strongest correlations with (general) anxiety, social anxiety, and sleep, and had the weakest correlations with enjoyment, conformity, and prevalence of alcohol use. While prevalence of alcohol use might raise questions for validity given that alcohol can also be a common coping mechanism for physical and mental health symptoms, the small correlation is expected given the items included in the prevalence of alcohol use motive. Prompts included "because you were under the influence of alcohol", "because you were drunk", and "because you had gotten drunk and weren't thinking about what you were doing". In this

context, it is reasonable to assume the prevalence of alcohol use motive would maintain a small correlation with using to cope with physical health symptoms; however, we may expect to see a different association with using cannabis to cope with physical health symptoms if we were to examine a measure of using alcohol to cope. Notably, further scale development for the cannabis motive of using to cope with physical health symptoms should consider how using for sleep may align or differ from the overall construct the present study aims to capture. Using cannabis to sleep is a motive currently specified in the CMQ and had the highest endorsement rate (60.4%) of all physical and mental health symptoms for which individuals reported using cannabis to cope. However, this item was not included in the pilot items for coping with physical health symptoms. Despite the lack of inclusion of sleep as a physical health symptom in pilot item, the overall coping with physical health symptoms motive maintained the strongest correlation with the motive of using for sleep on the CMQ. This could suggest that using for physical health symptoms and sleep maintain significant overlap and should be conceptualized within one subscale rather than separate subscales. Further research including scale development are needed to better understand and capture coping with physical health symptoms as a motive for cannabis use.

Previous research has shown coping motives (focused on coping with mental health symptoms) have a unique association with cannabis use and negative consequences, (Brodbeck et al., 2007; Buckner et al., 2007; Lee et al., 2009) making coping motives an important focus for potential prevention and intervention efforts. Given this, it is important to understand if individuals using cannabis to cope with physical health symptoms experience the same risk for negative consequences as individuals who use cannabis to cope with mental health symptoms. Results indicated individuals' motives to use cannabis to cope with either physical or mental

health symptoms were not associated with cannabis use; however, both motives were positively associated with cannabis consequences. Further, higher coping with mental health symptoms motives were associated with greater consequences than motives to cope with physical health symptoms. This indicates using to cope with physical health symptoms still maintains risk for experiencing unwanted consequences but may not maintain the same risk previous research has identified as being associated with using to cope with mental health symptoms. This underscores the importance of considering both motives to cope with mental and physical health symptoms in a non-medical sample of young adults.

Limitations and Future Directions

Though this study possesses notable strengths, study results should be viewed in light of a few limitations. First, there is a known association between physical health and mental health in which they bi-directionally influence each other. This is a very important point to consider in trying to partition out coping with physical and mental health symptoms. Second, the use of a young adult sample ages 18-25 may limit generalizability to individuals in other age demographics. One group to which findings may not generalize is older populations. Though college students tend to be in a high using, high risk group, they do also tend to be one of the healthiest demographic groups. This could be particularly relevant when assessing coping with physical health symptoms. Lastly, analyses were conducted on cross-sectional data which precludes causal temporal inferences. Further exploration will be needed to assess these coping behaviors among non-college students, individuals of varying ages including older age groups, and individuals with chronic or severe presenting health problems. Additionally, longitudinal studies will need to be conducted in order to establish temporal precedence.

Conclusion

The present study examined coping with physical health symptoms as a motive for cannabis use in a non-medical sample of young adults. Results provide support for assessing physical health symptoms and measuring motives to use cannabis to cope with physical health symptoms, but this motive has not been included in the majority, if not all, of the currently available motives measures. Further exploration of coping with physical health symptoms as a motive for cannabis use is needed including structured scale development. This will assist in better understanding risks associated with using for this motive as results from the present study showed coping with physical health symptoms may maintain risk for experiencing cannabis related consequences though potentially less risk than using to cope with mental health symptoms. By better understanding various components of cannabis use motives, specifically coping motives, we can better tailor our clinical efforts to prevent or reduce individuals' experience of cannabis-related consequences.

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Table 1: Descriptive Statistics for Cannabis Motives

Subscale	N	Mean	SD	Range
Coping – Physical Health Symptoms	**261**	**0.60**	**0.71**	**0-4**
To alleviate physical pain	264	0.76	0.92	0 – 4
To alleviate headaches	263	0.57	0.78	0 – 4
To relieve nausea	263	0.62	0.91	0 – 4
To take the place of medication	263	0.38	0.82	0 – 4
To relieve aches and pains	264	0.77	0.98	0 – 4
Because you had a headache	264	0.48	0.78	0 – 4
Enjoyment	**264**	**2.49**	**1.07**	**0-4**
To enjoy the effects of it	264	2.67	1.26	0-4
Because it is fun	264	2.33	1.26	0-4
To feel good	264	2.47	1.28	0-4
Conformity	**264**	**0.19**	**0.45**	**0-2.67**
Because you felt pressure from others who do it	264	0.18	0.51	0-3
Because you didn't want to be the only one not doing it	264	0.20	0.59	0-4
To be cool	264	0.18	0.56	0-4
Coping – Mental Health Symptoms	**264**	**0.91**	**1.02**	**0-4**
To forget your problems	262	1.00	1.22	0-4
Because you were depressed	264	0.88	1.15	0-4
To escape from your life	264	0.85	1.12	0-4
Experimentation	**264**	**0.31**	**0.62**	**0-4**
Because you were experimenting	264	0.27	0.67	0-4
Because you were curious about marijuana	264	0.26	0.70	0-4
To see what it felt like	263	0.40	0.84	0-4
Boredom	**264**	**1.33**	**1.06**	**0-4**
To relieve boredom	264	1.46	1.21	0-4
Because you had nothing better to do	264	1.26	1.22	0-4
Because you wanted something to do	264	1.26	1.19	0-4
Prevalence of alcohol use	**264**	**0.47**	**0.66**	**0-3.67**
Because you were under the influence of alcohol	264	0.55	0.81	0-4
Because you were drunk	263	0.53	0.80	0-4
Because you had gotten drunk and weren't thinking about what you were doing	264	0.33	0.65	0-4
Celebration	**264**	**1.00**	**0.90**	**0-4**
To celebrate	263	1.10	1.05	0-4
Because it was a special day	263	0.95	0.99	0-4
Because it was a special occasion	264	0.93	0.99	0-4
Altered perceptions	**264**	**1.25**	**1.13**	**0-4**
Because you want to alter your perspective	264	1.30	1.26	0-4
To allow you to think differently	264	1.38	1.24	0-4
So you can look at the world differently	263	1.08	1.21	0-4
Social anxiety	**264**	**0.61**	**0.87**	**0-4**
Because it makes you more comfortable in an unfamiliar situation	264	0.58	0.97	0-4
To make you feel more confident	264	0.56	0.95	0-4
Because it relaxes you when you are in an insecure situation	264	0.70	1.03	0-4
Perceived relative low risk	**264**	**0.90**	**1.09**	**0-4**
Because it is safer than drinking alcohol	264	0.89	1.18	0-4
Because it is not a dangerous drug	264	0.92	1.31	0-4
Because there are low health risks	264	0.89	1.21	0-4
Sleep	**264**	**1.10**	**1.08**	**0-4**
To help you sleep	264	1.41	1.29	0-4

Because it helps make napping easier and enjoyable	263	0.83	1.16	0-4
Because you are having problems sleeping	263	1.06	1.20	0-4
Availability	**264**	**1.19**	**0.94**	**0-4**
Because it is readily available	264	1.53	1.24	0-4
Because you can get it for free	264	0.59	1.01	0-4
Because it is there	264	1.45	1.22	0-4

Note: Table 2 provides the mean, standard deviation, and range for each of the motive subscales and respective items

Table 2: Inter-item Correlations for Coping with Physical Health Symptoms Items

Variables	Correlations				
	1	2	3	4	5
1. To alleviate physical pain	--				
2. To alleviate headaches	0.69***	--			
3. To relieve nausea	0.56***	0.54***	--		
4. To take the place of medication	0.53***	0.48***	0.42***	--	
5. To relieve aches and pains	0.79***	0.65***	0.61***	0.54***	--
6. Because you had a headache	0.60***	0.81***	0.53***	0.59***	0.62***

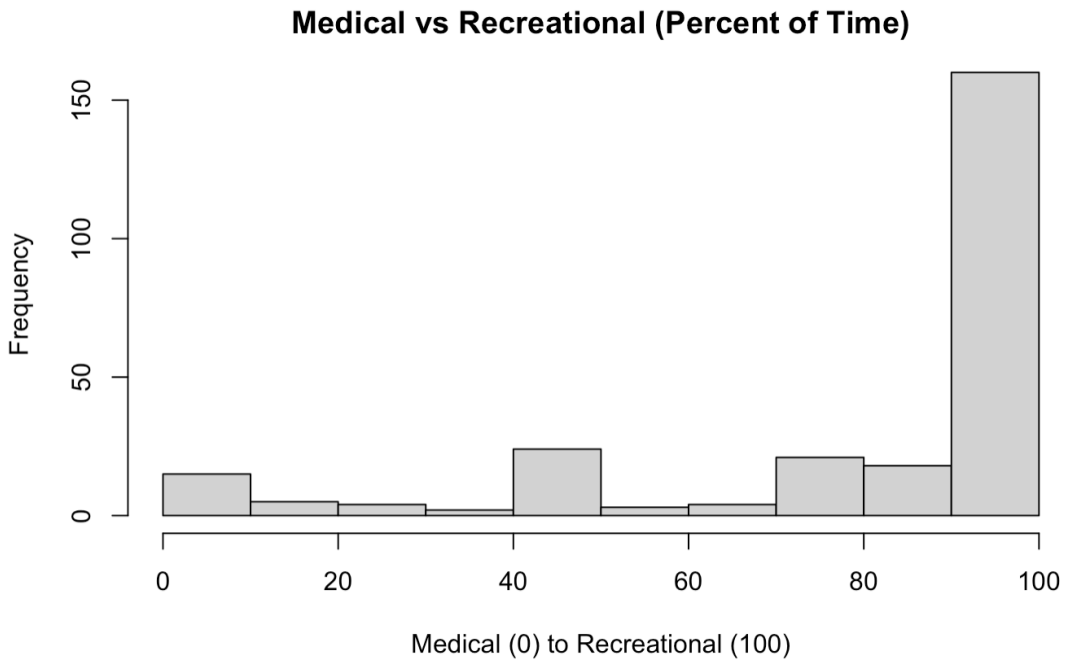
Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Correlations for Cannabis Motives

Variable	Correlations											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Coping – Physical	--											
2. Enjoyment	0.16**	--										
3. Conformity	0.18**	-0.17**	--									
4. Coping - Mental	0.47***	0.25***	0.11	--								
5. Experimentation	0.25***	0.11	0.43***	0.21***	--							
6. Boredom	0.24***	0.45***	0.09	0.40***	0.23***	--						
7. Prevalence of alcohol use	0.11	-0.03	0.30***	0.07	0.25***	0.23***	--					
8. Celebration	0.24***	0.25***	0.25***	0.21***	0.27***	0.23***	0.29***	--				
9. Altered perceptions	0.37***	0.45***	0.08	0.46***	0.41***	0.38***	0.12*	0.32***	--			
10. Social anxiety	0.53***	0.25***	0.21***	0.57***	0.27***	0.39***	0.07	0.34***	0.56***	--		
11. Perceived relative low risk	0.35***	0.31***	0.15*	0.32***	0.37***	0.41***	0.16**	0.25***	0.45***	0.40***	--	
12. Sleep	0.55***	0.17**	0.18**	0.45***	0.23***	0.35***	0.06	0.16*	0.38***	0.48***	0.34***	--
13. Availability	0.20**	0.28***	0.20***	0.25***	0.25***	0.67***	0.35***	0.28***	0.32***	0.31***	0.41***	0.30***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1: Histogram of Self-reported Medical vs Recreational Use



Note: 0 indicates exclusively medical use; 100 indicates exclusively recreational use